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**DISADVANTAGED GROUPS IN THE LABOUR MARKET  
AND EMPLOYMENT POLICY  
- THE CASE OF KOREA: 1998-1999**

**[LES GROUPES DEFAVORISES SUR LE MARCHÉ DU TRAVAIL  
ET LA POLITIQUE D’EMPLOI  
- LE CAS DE LA COREE : 1998-1999]**

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## INTRODUCTION

## 0.1. Background and questions

After a period of rapid economic growth lasting more than three decades, Korea experienced a sudden unprecedented rise in the unemployment rate during the financial crisis that occurred at the end of 1997. The unemployment rate rapidly rose from 2.1% in October 1997 to a peak of 8.6% in February 1999 and real wages shrank by 9.3% in 1998. Because of the crisis, more than one million Korean workers lost their jobs and a large part of them fell into poverty and, for the first time, a great number of unemployed stood in line in front of the Employment Security Centres. Experiencing high unemployment was a shocking new experience to many Korean workers and their families, as well as to the government. What is more important is that the adverse impact of the crisis on the labour force varied by different groups. The poor and irregular workers were most disadvantaged during the crisis.

In these circumstances, the Korean government made every effort to cope with the worsening unemployment situation, to increase job security and to protect the livelihood of the unemployed. Reflecting these efforts, government expenditures on unemployment measures increased from negligible levels in 1997 to 2.2% of the GDP in 1998 and 3.2% in 1999 (OECD, 2000a). However, the effects of these measures on labour market outcomes are not certain.

Recently, a few studies were enacted for the purpose of a broad review of Korea's unemployment countermeasures (Jeong, I.S. et al. 1999, KIHASA/KLI 2000, OECD 2000a, Park, F. et al. 2001). Studies generally appreciate that the Korean government has rapidly responded to the labour market problems in the wake of the crisis (Park, F. et al. 2001, OECD 2000a, Betcherman and Dar 2000), with the surprising result that the unemployment rate declined to 3.7% in May 2000. However, in spite of dramatic decreases in the unemployment rate, most of the newly created jobs are temporary jobs and the labour market segmentation between regular and irregular workers deepened after the crisis. In this context, there are widespread criticisms, particularly from union leaders, that Korea's labour market policies only intended to lessen open unemployment, at the cost of decreasing stable jobs. Moreover, another important criticism is that many disadvantaged groups (especially, the low-educated and poor persons) could not access to government programs, which meant that the expenditures for the unemployed were not used effectively (KIHASA/KLI 1999). The OECD also criticised that there was a general lack of targeting in many of the Korean labour market programmes, even though the portfolio of labour market programmes has been expanded

considerably (OECD, 2000a). Therefore, one of the critical subjects of policy evaluation is to evaluate how much labour market policies contributed to reducing the difficulties of disadvantaged groups, and whether they reinforced labour market segmentation between regular and irregular workers or not.

The ultimate way of evaluating labour market policies is determining whether they contribute to bringing about better solutions to societal problems than those achieved by the market alone (Schmid et al., 1996a, p9). These societal problems in the labour market may be summarized by the two main issues: high unemployment and inequality. Thus, policy interventions in the labour market may be justified if they improve both total employment and social equity.

However, most of the evaluations that have been carried out ignore the effects of employment policy on social equity, while the employment effects of specific programmes have been studied extensively (Webster and Johnson, 2001). Many studies, often assuming that any positive effect of programmes on post-programme employment prospects would improve equality, ignore the fact that many disadvantaged groups in the labour market could not participate in government supported programmes. However, if many disadvantaged persons could not have access to programmes, and relatively less-disadvantaged persons had easier access to the programmes, the so-called ‘perverse distribution effect’ would deepen in the labour market and inequality would actually increase. Thus, an evaluation of employment policy requires that we pay careful attention to ‘for whom’ the labour market policies were enacted, as well as on ‘what effect’ they produced on the participants.

In this context, we should pay a considerable amount of attention to the disadvantaged groups in the labour market. In this context, this study has four fundamental questions about the Korean labour market and related policies, focusing in particular on the disadvantaged groups in the labour market.

- 1) What kind of persons became more disadvantaged during the Korean labour market crisis? (characteristics of the unemployed).
- 2) Do more disadvantaged groups have more probability to participate in labour market programmes than less disadvantaged groups? If not, what explains this? (characteristics of participants).
- 3) After participating in government programmes, which group fared better: the more

disadvantaged group or the less disadvantaged group? (post-programme effects on the different groups).

4) If the labour market policies could not contribute to a better situation for the disadvantaged groups, which policies should be in the future?

In countries such as Korea, which do not have a well-developed social safety system, unexpected economic crisis demands various urgent unemployment countermeasures, and in this process some disadvantaged groups could be excluded not only from the labour market but also from the government programmes. However, as Nicaise et al. (1995b) noted, this phenomenon should not be considered as a social or natural law; it is the consequence of bad policy design, and therefore can be avoided.

## 0.2. Objective of the study

Based on the above-mentioned perspective, this study aims to evaluate the extent to which Korea's post-crisis employment policy was helpful to the particularly disadvantaged groups in the labour market. In other words, the main objective of the study is to evaluate the impacts of policies on lessening disadvantages in the labour market.

For addressing this broad objective, this study focuses on following four main sub-objects.

- 1) Analysing the dynamics of the Korean labour market as the field of employment policy
- 2) Identifying disadvantaged groups in the Korean labour market who should have had priority to participate in labour market programmes
- 3) Evaluating the distributional effects of employment policies, stressing the different characteristics of programme participants and non-participants
- 4) Evaluating labour market outcomes for participants, especially for disadvantaged persons who participated in training, public works and job placement services

In order to clarify this purpose, two main issues - disadvantaged groups in the labour market and employment policies for the unemployed - need to be addressed first.

### 0.2.1 Disadvantaged groups in the labour market

This Section defines disadvantages in the labour market and, using aggregate data, reviews the disadvantaged groups in the Korean labour market during the crisis, which is the first issue covered in this study.

#### A. Definition of disadvantages

In the labour market, a disadvantage means a higher risk of exclusion from gainful employment or decent work. In articles on the subject, various terms are used for defining disadvantaged groups in the labour market: the poor, the long-term unemployed, hard-to-place, hard-to-employ, and so on.

Nicaise et al. (1995a, p6) distinguish the following three different criteria for the disadvantaged group: (1) the recipients of social security, (2) the priority risk groups in the labour market: the long-term unemployed, the recurrent unemployed, people employed in precarious jobs, young low-qualified people, the older unemployed, etc., and (3) the poor who are identified in terms of income. Their study focused on the poor group, though using all types of indices based on all three criteria, due to the lack of detailed information on the poor in labour market programmes.

On the other hand, Erhel et al. (1996, p281-282) distinguish three main components for the hard-to-place population, which are more or less similar to those of Nicaise et al.: (1) the long-term unemployed, (2) the specially disadvantaged groups looking for work – they are characterized by a poor employment record and one or more specific problems, such as a criminal record, low educational attainment and experiences of recurring unemployment, and so on, and (3) the welfare recipients who are not in the active labour force. Their study focused on (1) the long-term unemployed, for the lack of comparative data precluded an overall evaluation of groups (2) and (3).

All these definitions are complementary. The characteristics of persons belonging to the above-mentioned disadvantaged groups may be very similar one another, but are also somewhat heterogeneous. For example, even though one could find a greater number of low-skilled or irregular workers among the long-term unemployed or in the poor group, one may also find some highly-educated or regular workers in the same disadvantaged groups among the short-term unemployed or in the non-poor group,.

In order to define the disadvantaged group in the Korean labour market, we need to take its labour market surroundings and institutional background into account. It is possible that the long-term unemployed, the existing welfare recipients or the poor will not be good criteria for showing the really disadvantaged group after the Korean economic crisis. In Korea, the proportion of the long-term unemployed is traditionally very low, whereas recurrent unemployment prevails (Lee B.H., 2000). Even after the crisis, the long-term unemployment rate (over 12 months) as a percentage of total unemployment registered only 3.8% in 1999, the lowest percentage after Mexico (1.7%) among OECD countries (total OECD average: 31.8%) (OECD, 2001a).

Also, in 1997 only 3% of the total Korean population benefited from the Livelihood Protection Programme which was the main public assistance provided to the low-income people. Moreover, this proportion did not increase significantly during the crisis, mainly because of the implementation problem, that is to say, the means test problem.

On the other hand, many of the existing poor before the crisis were closely related to the economically inactive situation<sup>1</sup>, and not to poor employability of the economically active population, since the unemployment rate had been very low more than ten years before the crisis.

All these reasons show that the long-term unemployed, the existing welfare recipients or the poor cannot be reasonable criteria for defining the disadvantaged group *in the labour market* after the crisis. The target groups of labour market programmes in Korea can not be restricted in these ways.

Thus, this study will define the disadvantaged group as *a certain group having a higher probability of unemployment and/or a lower probability of (re-) employment (to a stable job) than the other group in a given labour market and time*<sup>2</sup>. This concept is not absolute but relative. For example, if women have a higher probability of unemployment and a lower probability of re-employment than males in a given place and time, women can be a more

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<sup>1</sup> In 1996, about 66.4 percent of the households benefiting from the Livelihood Protection Programme were not able to work due to the household members' age, disease, disability or due to being a single-parent household (Park C. and Kim M., 1998, p62).

<sup>2</sup> If some group having a higher probability of unemployment has a higher probability of (re-)employment, such as young persons who experience recurrent unemployment, as seen in many countries' labour markets, one may encounter an interpretational problem. In such a case, we can take the sum of repeated unemployment spells into account.



disadvantaged group than males. So, the disadvantaged groups can vary depending on the labour market situation. This concept will be useful for understanding the disadvantaged groups generated from unexpected shocks of unemployment in a short period, as experienced in Korea after the financial crisis, since a large number of the unemployed were generated day after day in the early stage of the crisis, and also a lot of the unemployed found jobs in the last stage of crisis. The adverse impacts of the crisis may be significantly different in different groups. Some groups may lose much, other may not. Thus, labour market policies need to have timely access depending on the groups' loss.

Although the long-term unemployed, the poor or welfare recipients are not good criteria for defining the disadvantaged groups in the Korean labour market, this study will examine these groups together in order to analyse the disadvantaged groups.

## B. Disadvantages in the Korean labour market

It will be useful to survey the Korean labour market trend before and after the crisis, before addressing disadvantaged groups defined above. With aggregate data (see Annex Table 0.1 for data sources)<sup>3</sup> related to employment, unemployment and earnings, we see the dynamics of the Korean labour market.

### Overviews (Table 0.1)

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<sup>3</sup> Concerning employment and unemployment data, this study uses data from the Economically Active Population Survey (see Annex Table 0.1), which is an official household survey according to ILO standards. The concepts and definitions of employment and unemployment are as follows: (1) The population above working age limit (15 years) except the armed force, prisoners and foreigners, is divided into economically active and not economically active population. The economically active population comprises all persons who were employed or unemployed during the reference week. (2) The employed comprise all persons who work at least one hour or more for pay or profit, of those who work 18 hours or more as unpaid family workers during the reference week. (3) The unemployed comprise all persons who are not working, but are available for work and are actively seeking work during the reference week. Persons who do not work on account of bad weather, temporary illness, or due to arrangements to start a new job within a month subsequent to the reference week, are also considered as the unemployed.

Table 0.1 Indices of the Korean labour market

	63-70	71-80	81-90	91-95	'96	'97	'98	'99	'00	'01
Economic growth rate <sup>1</sup>	7.6	7.6	9.1	8.9	6.8	5.0	-6.7	10.7	8.8	3.0p
Participation rate <sup>2</sup> (Female)	57.1 (37.7)	58.8 (41.7)	58.1 (43.8)	61.2 (47.6)	62.0 (48.7)	62.2 (49.5)	60.7 (47.0)	60.5 (47.4)	60.7 (48.3)	60.8 (48.8)
Unemployment rate <sup>2</sup>	6.3	4.1	3.3	2.4	2.0	2.6	6.8	6.3	4.1	3.7
Comp. of the employed in primary industries <sup>2</sup>	56.5	43.6	25.2	14.6	11.7	11.3	12.4	11.6	10.9	10.3
Comp. of Active Population under primary school <sup>2</sup> (College & university)	At the year of the 1980 : 50.0 (6.7)		36.8 (10.6)	23.9 (17.2)	20.3 (20.0)	20.0 (20.3)	18.3 (23.2)	18.0 (23.5)	17.7 (24.0)	17.2 (24.9)
Growth rate of real wages <sup>3</sup>	-	-	-	7.1	6.7	2.4	-9.3	11.1	5.6	0.8
Gini coefficients <sup>4</sup>	-	-	-	0.284	0.291	0.283	0.316	0.320	0.317	0.319

Sources 1) The Bank of Korea

2) Economically Active Population Survey (Korea National Statistical Office)

3) Monthly Labour Statistics Survey (Korea Ministry of Labour)

4) Family Income and Expenditure Survey (Korea National Statistical Office)

Before the crisis, Korea experienced rapid economic growth above 7% annually and nearly full employment: with a 2.0-2.5% unemployment rate in the 1990s (Table 0.1). Labour market participation (women especially) increased continuously with increasing educational attainment, and the growth rate of real wages was about 7%, with declining income inequalities.

However, since the crisis, Korea has experienced many difficulties. In 1998, the GDP decreased by 6.7% and the unemployment rate reached 6.8% (8.6% in February 1999). Real wage growth slowed in 1997 (only 2.4%) and fell dramatically by 9.3% in the first year following the crisis<sup>4</sup>. And income inequalities deepened to the extent that the Gini coefficient rose from 0.283 in 1997 to 0.320 in 1999.

<sup>4</sup> During the crisis, price-related adjustments were especially significant in Korea. Other countries which experienced the crisis had varying responses – real wages fell quite steeply in Thailand in the year following the crisis (-7.4%, in 1998) and also fell more modestly in Malaysia (-1.1%, in 1998) and Japan (-2.0%, in 1998) (Betcherman et al. 2000). Betcherman et al. compared Korea's labour impacts of the economic crisis with those of the Malaysia, Thailand, Canada, Japan and the United Kingdom at the time they were affected by declines in GDP (Canada and U.K. in the early 1990s and Japan in the late 1990s). They concluded, "the Korean labour market has demonstrated significant flexibility- both in terms of prices and quantity during the crisis. This is true in comparison to other East Asian countries and especially true in relation to OECD countries. Significant downward and upward adjustment, especially on the wage front, indicate a high level of responsiveness to shocks (it should be noted though that growth rates fell and rose much more sharply than other OECD countries)". The issue of labour adjustment will be a main issue in Chapter 2 of this study.

On the other hand, Korea's economic recovery was as dramatic as the crisis. The GDP increased by 10.9% in 1999 and the unemployment rate decreased to 4.1% in 2000, and to 3.7% in 2001. Nevertheless, income inequalities and the labour force participation rate (at least for males) did not improve. This means that labour market problems are changing, rather than being solved.

*Impact of the crisis on the labour force status by population groups (Table 0.2 and Table 0.3)*

We will now examine the different impacts on different demographic groups. Table 0.2 shows the changes in labour force status by population groups before and after the crisis. As the economic crisis occurred, male unemployment increased (4.8%p in 1998) more than female unemployment (3.3%p in 1998). In Korea, men tend to remain in the labour force while women tend to leave the labour market when they lose their jobs. The female participation rate decreased by 2.5%p in 1998, while for males only by 0.4%p in the same year. Even though women lost their jobs more than men in 1998 (see the increase rates in employment in Table 0.2), many of them left the labour market. Male participation rates have continuously decreased since 1995 and have been affected little by the crisis, while for women the strong increase in participation rates has been seriously affected by the crisis, as has the increase in their employment.

By age group, the younger age group and older workers lost their jobs more than the prime age group after the crisis. Young persons' employment decreased by more than 14% in 1998. But their responses to the situation were different. Youth unemployment increased considerably (for teenagers, it increased by 11%p in 1998), while a great number of elderly persons left the labour market.

In terms of education, traditionally, the unemployment rate was higher for 'university' than for 'middle school'. However, the unemployment gap between the two groups narrowed with time, and totally reversed after the crisis. Surprisingly, the employment for the highly educated persons increased by 10% in 1998, while the employment for 'under primary school' and for 'middle school' decreased by 12% and 17% respectively in the same year.

Table 0.2 Changes in labour force status by population groups

	1995	1996	1997	1998	(98-97)	1999	2000	2001
	(%)							
<b><u>Unemployment rates</u></b>								
Total	2.0	2.0	2.6	6.8	(4.2p)	6.3	4.1	3.7
Male	2.2	2.3	2.8	7.6	(4.8p)	7.1	4.6	4.2
Female	1.7	1.6	2.3	5.6	(3.3p)	5.1	3.3	3.0
15-19 years	8.1	7.5	9.9	20.9	(11.0p)	19.7	13.6	13.3
20-29	4.3	4.4	5.4	11.4	(6.0p)	10.2	7.1	7.0
30-39	1.3	1.4	1.9	5.7	(3.8p)	5.3	3.4	3.0
40-49	1.1	1.1	1.5	5.5	(4.0p)	5.2	3.3	2.8
50-59	0.9	0.9	1.3	5.2	(3.9p)	5.2	2.9	2.7
60 years & over	0.4	0.4	0.7	2.4	(1.7p)	2.4	1.4	1.1
Primary school & under	0.7	0.7	0.9	4.1	(3.2p)	3.8	2.4	1.1
Middle school	1.6	1.6	2.2	7.8	(5.2p)	6.9	4.3	3.8
High school	2.5	2.5	3.3	8.2	(4.9p)	7.6	4.7	4.3
Junior college	4.0	3.6	3.5	8.3	(4.8p)	7.5	5.8	5.3
University	2.2	2.2	2.7	4.8	(2.1p)	4.4	3.0	3.0
<b><u>Labour force participation rates</u></b>								
Total	61.9	62.0	62.2	60.7	(-2.5p)	60.5	60.7	60.8
Male	76.5	76.1	75.6	75.2	(-0.4p)	74.4	74.0	73.6
Female	48.3	48.7	49.5	47.0	(-2.5p)	47.4	48.3	48.8
15 - 19 years	11.9	11.0	10.8	10.6	(-0.2p)	11.2	12.0	11.7
20 - 29	66.2	66.8	67.4	64.7	(0.3p)	63.9	64.7	64.7
30 - 39	75.8	76.3	76.9	75.2	(-1.7p)	75.2	75.1	74.9
40 - 49	80.3	80.5	80.4	79.0	(-1.4p)	78.6	78.9	78.6
50 - 59	72.0	71.5	72.1	70.0	(-2.1p)	69.6	68.8	68.7
60 years & over	39.0	39.6	40.4	38.1	(-2.3p)	38.4	38.0	38.2
Primary school & under	53.5	52.9	53.0	50.7	(-2.3p)	50.5	50.2	49.0
Middle school	49.4	49.0	48.9	46.6	(-2.3p)	47.1	48.1	48.2
High school	66.5	66.6	67.1	64.7	(-2.4p)	64.5	64.5	64.5
Junior college	79.2	79.8	81.5	78.6	(-2.9p)	78.0	77.3	77.8
University	81.2	81.2	81.4	78.9	(-2.5p)	77.2	76.9	77.1
<b><u>Increase rates of employed persons</u></b>								
Total	2.6	1.9	1.4	-5.3	(-6.7p)	1.4	3.8	1.4
Male	2.6	1.4	0.6	-4.1	(-4.7p)	0.6	3.1	0.9
Female	2.6	2.6	2.5	-6.9	(-9.4p)	2.7	4.9	2.2
15 - 19 years	-6.7	-3.0	-3.0	-14.9	(-11.9p)	6.5	12.1	-7.2
20 - 29	1.4	0.0	-0.7	-14.1	(-13.4p)	-2.4	3.1	-2.3
30 - 29	1.1	-0.6	-2.0	-1.1	(0.9p)	-1.0	-1.1	-1.3
40 - 49	7.6	6.2	3.9	-0.5	(-4.4p)	5.8	8.7	5.1
50 - 59	0.4	1.3	4.4	-6.3	(-10.7p)	1.1	4.5	2.1
60 years & over	6.1	7.0	7.8	-4.7	(-12.5p)	6.1	5.2	7.1
Primary school & under	-3.8	-2.2	0.4	-12.3	(-12.7p)	-0.4	1.2	-1.6
Middle school	0.2	1.4	4.6	-17.0	(-21.6p)	2.1	3.8	-2.6
High school	4.5	2.2	-0.0	-4.7	(-4.7p)	1.5	4.3	2.1
College & university	8.7	6.2	2.9	10.3	(7.4p)	2.4	5.1	5.1

Source : Economically Active Population Survey (Korea National Statistical Office)

As we have seen above, the index of the unemployment rate is not enough to explain the dynamics of the Korean labour market. So, we need to consider participation and unemployment dynamics together for a better understanding of the impacts of the labour market crisis.

According to Clark and Summer (1981), one can analyse the dynamics of participation and unemployment together, and also separately, using the following simple model. They used a simple model to examine the demographic differences in patterns of employment variation over the business cycle. The connections among participation, unemployment, and employment can be seen in the following identity:

$$(1) \quad (E/P)_i = (E/L)_i (L/P)_i$$

where E is employment, P is population, L is labour force, and  $i$  indexes demographic groups. Expressing (1) in logs and differentiating yields the basic decomposition:

$$(2) \quad d\ln(E/P)_i = d\ln(E/L)_i + d\ln(L/P)_i$$

$$(3) \quad d\ln(E/P)_i = d\ln(1-UR)_i + d\ln(L/P)_i$$

Table 0.3 Decomposition of changes in the employment ratio  
- Comparison of before(1996-7) and after(1998-2001) the crisis -

	<i>Crisis/Pre-crisis</i> <i>(1996-97) → (1998-99)</i>			<i>Recovery/Crisis</i> <i>(1998-99) → (2000-01)</i>			<i>Recovery/Pre-crisis</i> <i>(1996-97) → (2000-01)</i>		
	<i>dln</i> <i>(E/P)</i>	<i>dln</i> <i>(E/L)</i>	<i>dln</i> <i>(L/P)</i>	<i>dln</i> <i>(E/P)</i>	<i>dln</i> <i>(E/L)</i>	<i>dln</i> <i>(L/P)</i>	<i>dln</i> <i>(E/P)</i>	<i>dln</i> <i>(E/L)</i>	<i>dln</i> <i>(L/P)</i>
Total	<b>-6.86</b>	-4.44	-2.42	<b>3.11</b>	2.81	0.31	<b>-3.75</b>	-1.63	-2.12
Male	<b>-6.50</b>	-5.07	-1.43	<b>1.80</b>	3.13	-1.33	<b>-4.70</b>	-1.94	-2.76
Female	<b>-7.41</b>	-3.50	-3.91	<b>5.02</b>	2.29	2.73	<b>-2.39</b>	-1.21	-1.18
15 - 29 years old	<b>-12.29</b>	-6.97	-5.32	<b>6.23</b>	4.41	1.81	<b>-6.06</b>	-2.55	-3.51
30 - 54	<b>-6.01</b>	-4.15	-1.86	<b>2.32</b>	2.45	-0.13	<b>-3.69</b>	-1.70	-1.99
55 years & over	<b>-7.66</b>	-2.76	-4.90	<b>-1.21</b>	1.68	-2.89	<b>-8.86</b>	-1.07	-7.79
Middle & under	<b>-8.88</b>	-4.34	-4.53	<b>2.78</b>	2.55	0.23	<b>-6.10</b>	-1.79	-4.30
High school	<b>-8.74</b>	-5.26	-3.49	<b>3.45</b>	3.58	-0.13	<b>-5.29</b>	-1.68	-3.62
College & Univ.	<b>-6.69</b>	-2.86	-3.83	<b>0.60</b>	1.81	-1.21	<b>-6.09</b>	-1.05	-5.04

\*Note:  $d\ln$  means differentiating and natural logarithm. E is employment, P is population, and L is labour force.

\*Source: Author's calculations based on the Economically Active Population Survey (Korea National Statistical Office)

Table 0.3 simply reports the dynamics of unemployment and participation together. We compare the dynamics among three periods, or period of pre-crisis (1996-97), period of crisis (1998-99) and period of recovery (2000-01). The first three columns in Table 0.3 show the dynamic changes during two years of crisis (1998-99). The first column, the log change in employment ratio ( $d\ln E/P$ ), verifies more clearly the above-mentioned fact that women, younger and older workers, and the low-educated were more disadvantaged in the Korean labour market. In particular, the log change in employment ratio ( $d\ln E/P$ ) for the youth amounts to minus 12.29. For males and prime-age workers, the log changes in employment rates ( $d\ln E/L$  or  $d\ln(1-UR)$ ) hold most of changes in the employment ratio, while the log changes in participation ( $d\ln L/P$ ) for older workers and women are greater than the log changes in employment rates.

The second three columns in Table 0.3 show the patterns of recovery in employment and participation rates during the two years after the crisis (2000 - 2001). Women, young people and the low-educated are more sensitive to the recovery, as well as to the recession, while men, the elderly and highly educated people are less sensitive, and continue to decrease in participation rates during the period of recovery.

The last three columns compare the period of recovery with the pre-crisis period. The log changes in the employment ratio decreased more for males, the elderly and youths compared to females and prime-age groups. On the other hand, these changes are not clear among different educational groups.

#### *Impact of the crisis on employment on the demand side (Table 0.4)*

Reduction on the demand side was different in different industries, occupations and employment status (Table 0.4). By industries, the employed in construction and manufacturing sectors greatly decreased, by 21 and 13% in 1998 respectively. On the other hand, employment in the agricultural sector increased sharply (by 4% in the same year), and it fell dramatically in 1999 when total employment was increasing. It is commonly believed that employment in agriculture is countercyclical in Korea (Kang, S.H. et al., 2001). Also, the rise in employment in the agricultural sector, with the increase in unpaid family employment, implies an increase in underemployment (Gazier and Herrera, 2000). It suggests that rural

area and the traditional family system in Korea played a critical role as a buffer between typical employment and unemployment.

Table 0.4 Employment by industry, occupation & labour status (change over the years)

	(%)							
	1995	1996	1997	1998	1999	(Compo)	2000	2001
Total	2.7	1.9	1.4	-5.3	1.4	(100.0)	3.8	1.4
Agriculture, forestry & fishing	-5.9	-4.1	-1.8	4.0	-5.3	(11.6)	3.8	
Mining & manufacturing	1.4	-2.3	-4.4	-13.1	2.7	(19.9)	-	
Manufacturing	1.7	-2.2	-4.5	-13.0	2.8	(19.8)	5.9	
SOC & Service	5.1	4.6	3.9	-4.3	2.3	(68.6)	4.4	
Construction	6.7	3.5	1.7	-21.3	-6.5	(7.3)	-	
Wholesale, retail, restaurant & hotels	3.1	4.9	2.9	-4.0	2.7	(28.2)	-	
Business, personal, public service	7.0	5.1	6.6	1.1	6.0	(23.3)	-	
Electricity, transport & communication	5.4	3.7	3.8	-0.4	-0.3	(9.8)	-	
Professionals & technicians	8.5	5.8	4.5	1.3	3.4	(19.0)	1.8	
Clerks	3.2	1.9	0.2	-6.0	-8.2	(10.9)	6.3	
Service & sales workers	4.1	4.5	3.8	-2.7	1.8	(23.8)	4.5	
Agricultural & fishery workers	-6.2	-2.6	-2.0	4.0	-6.2	(10.9)	-2.8	
Crafts & elementary occupations	2.5	0.1	-0.1	-12.5	6.2	(35.4)	5.8	
Regular workers	4.2	-0.4	-3.4	-9.7	-6.3	(29.8)	3.3	4.0
Temporary workers	3.6	8.9	8.3	-4.4	4.6	(20.6)	7.8	2.0
Daily workers	2.0	-0.3	4.9	-8.3	31.9	(11.3)	3.9	-5.9
Self-employed	2.7	2.1	2.9	-3.4	1.1	(28.8)	2.7	2.8
Unpaid family workers	-4.0	-0.7	-2.2	6.8	-5.4	(9.5)	0.1	-3.3

Source : Economically Active Population Survey (Korea National Statistical Office)

The crafts and elementary workers were most affected by the crisis (a decrease of 13% in 1998), while professionals and technicians increased slightly (1.3% in 1998). This suggests that job losses during the economic crisis were not evenly distributed across different occupations, with workers at lower echelons bearing most of the burden (Kang et al., 2001). Importantly, clerks continued to decrease even in 1999, whereas crafts and elementary workers started increasing. It may suggest that employment adjustment to business cycle was enacted more rapidly for the latter than for the former.

The most surprising things happened among the workers of different employment status. Regular employment fell sharply before and after the crisis (from 1996 to 1999), whereas temporary and daily employment increased rapidly in 1999 and 2000. This suggests that many

regular workers displaced during the crisis could not be re-employed to regular jobs even after the crisis. The increase in temporary and daily workers has become a sensitive issue in Korea since the crisis, showing the increasing segmentation of the labour market between regular and irregular workers. Moreover, the number of unpaid family workers increased by 6.8% in 1998, which indicates increasing underemployment as described above in agricultural employment.

*Impact of the crisis on earnings by groups (Table 0.5 and Table 0.6)*

We can use data of the Wage Structure Survey (conducted every year by the Ministry of Labour; sample of about 3,400 establishments which employ 10 or over permanent workers) and the Family Income and Expenditure Survey (conducted every month by the National Statistical Office: see Annex Table 0.1 for details) to measure earnings losses and earning distribution after the crisis by gender, age and educational attainment<sup>5</sup>.

Table 0.5 reports the changes in nominal wages from data of the Wage Structure Survey. We cannot find special differences in wage impacts between men and women. However, in terms of age groups, nominal wages decreased for young workers in 1998, whereas they increased slightly for workers aged 40 years and over. This implies that though many elderly workers were displaced or retired from their regular jobs (see Table 0.2), the remainders, maybe mostly the core workers in firms, were relatively less affected by the crisis. Also, the differences of wage increase rates between educational groups are clear. Less educated persons suffered decreases in nominal wages, while the highly educated did not.

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<sup>5</sup> In Korea, there was no official survey that provides data on the combination of labour force status and income. Even if 'the Korea Labour Panel Survey' (conducted by the Korea Labour Institute; sample of about 5,000 households) provides data on labour status and income together, this survey cannot provide information before the crisis since the survey started in 1998. Although 'the Family Income and Expenditure Survey' has been most widely used for analysing income distribution, it doesn't have information on the households of which heads have no jobs. Another survey, 'the Monthly Labour Statistics Survey' (conducted every month by the Ministry of Labour: see Annex Table 0.1 for details) is also widely used, and it provides useful information on wage levels, hours and days worked and the number or rates of labour turn-over for the wageworkers. Even if most wage statistics are cited from this survey, it cannot produce any information about the differences in workers' demographic characteristics except gender.



Table 0.5 Percent change in nominal wages (in June of given year)

	( % )					
	1995	1996	1997	1998	(98-97)	1999
Total	12.1	13.1	7.8	1.5	(-6.3p)	5.5
Male	11.8	12.1	7.2	1.0	(-6.2p)	6.6
Female	14.1	15.2	9.0	1.9	(-7.1p)	7.7
19 years & less	14.1	13.4	7.3	-1.9	(-9.2p)	1.5
20 – 29	10.9	13.1	8.0	-1.7	(-9.7p)	4.8
30 – 39	12.4	12.6	6.8	-0.6	(-7.4p)	6.7
40 – 49	12.6	14.3	6.3	2.9	(-3.4p)	5.5
50 – 59	12.2	13.8	6.2	3.2	(-3.0p)	3.6
60 years & over	8.4	8.8	6.1	2.8	(-3.3p)	5.8
Middle school & less	11.6	10.6	6.8	-1.5	(-8.3p)	6.2
High school	11.2	12.4	8.0	-0.4	(-8.4p)	4.6
Junior college	11.9	11.3	6.3	0.1	(-6.2p)	1.6
University	10.0	12.7	6.7	2.0	(-4.7p)	6.5

\* Wage is based on “Regular Payment + Overtime Payment + (Last year Special Payment/12)”

\* Source: Wage Structure Survey (Ministry of Labour)

Table 0.6 Monthly nominal earnings of household heads (change over the years)

	( % )						
	1995	1996	1997	1998	1999	2000	2001
Income decile 1	10.8	7.8	5.1	-22.5	6.8	10.3	13.9
Income decile 2	12.0	8.8	6.8	-12.7	0.1	8.2	9.3
Income decile 9	13.2	14.4	5.5	-6.0	4.5	4.9	11.3
Income decile 10	14.2	12.3	2.2	-0.5	3.6	9.2	12.3

Source : Family Income and Expenditure Survey (Korea National Statistical Office)

Now we can verify from the earnings data of household heads that the poor experienced more severe earnings loss after the crisis (Table 0.6). Household heads in income decile 1 suffered about 23% of earnings loss in 1998, whereas household heads in income decile 10 suffered little earnings loss in the same year. This result is very surprising<sup>6</sup>.

#### Main disadvantaged groups addressed in this study

<sup>6</sup> Park, S. J. (2000) tried to find out the causes of worsening earning distributions between the ninetieth and tenth percentile. Using raw data of the same Family Income and Expenditure Survey, he found that such a phenomenon was apparent within narrowly defined education and labour market experience variables, and the increases in earning inequality came from the rapidly increasing return to skills, rather than schooling and experience.

As we examine the different impacts of the crisis on different demographic groups as well as on different demand sectors, this study pays particular attention to the degree of disadvantages for various groups: 1) young workers, older workers, (prime-age) women relative to prime-age males, 2) low-educated people relative to highly educated people, 3) the poor relative to the non-poor, or sometimes low wage workers relative to high wage workers, and 4) temporary workers relative to regular workers.

### 0.2.2 Employment policy

This Section defines employment policy and investigates Korea's employment policies after the crisis.

#### A. Definition of employment policy

“Employment policy” can be defined as all kinds of public intervention in the labour market for the purpose of improving its function and of reducing the disequilibrium which could happen there (Gautié, 1993, p12). The concept of employment policy is very often considered the same as “labour market policy”. This study does not distinguish employment policy from labour market policy.

Generally, employment policies are separated into two main groups, that is, so-called “active” and “passive” measures. The former comprises a wide range of policies aimed at improving the access of the unemployed to the labour market and jobs, job-related skills and the functioning of the labour market while the latter relates to spending on income transfers, namely unemployment benefits and early retirement pension (Martin, 2001). However, this distinction is not absolute (Gautié, 1993, p12; Redor, 1999, p298). In fact, job training programmes for the unemployed usually belong to active measures, but sometimes they take roles of decreasing official unemployment rate during training period rather than improving job skills for the unemployed. On the contrary, unemployment benefits, always considered as passive measures, could have active roles of allowing better job search opportunity to the unemployed experiencing financial difficulties, and of creating employment by increasing public expenditures and effective demand.

“Unemployment Countermeasure” that was in common use in Korea during the crisis does not have the same object as employment policy. Unemployment countermeasures comprise some type of macroeconomic or industrial policy aiming at job creation or economic stabilization, intending indirect effects on the labour market. This study will exclude these types of unemployment countermeasures relating to macroeconomic or industrial policies. On the other hand, in a period of labour deficiency, employment policy could take measures for promoting labour supply or for encouraging the industrial sector to adopt labour-saving equipment.

## B. Employment policy in Korea

After the crisis, Korea enacted very comprehensive unemployment countermeasures, which could not be seen in other Southeast Asian countries that suffered from similar financial crisis in 1997 and 1998, such as Indonesia, Malaysia, the Philippines and Thailand (Betcherman and Islam, 2001b; Kang, S. H. et al., 2001). Most of the programmes were newly introduced or strongly reinforced after the crisis, since LMPs were not very developed in the era of continuous full employment. The Korean unemployment countermeasures can be classed into three categories: 1) income support, including passive labour market policies (PLMPs), such as unemployment benefits, temporary livelihood protection programme and loans of livelihood safety funds, 2) active labour market policies (ALMPs), such as job placement, vocational training, public works and support for business start-up for the unemployed, and 3) industrial or economic policies for job creation. In 1998, the government expended a total unemployment-related budget of 10 trillion won, which held 2.2% of the GDP, and in 1999, it expanded to 16 trillion won, or 3.2% of the GDP (OECD, 2000a)<sup>7</sup>. However, we will not consider job creation programmes hereafter, such as SOC investment measures and support for small and medium-sized companies, perceiving these as indirect unemployment measures, as mentioned above.

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<sup>7</sup> OECD included all unemployment-related government expenditures, which included budgets for job creation, such as SOC investment measures, support for small and medium-sized companies, and excluded local government expenditures for unemployment countermeasures. OECD (2001a) also calculated the public expenditures and participant inflows in labour market programmes based on OECD standards. According to these data Korea expended 0.88 percent of the GDP for labour market programmes and 17.53 percent of the labour force participated in these programmes in 1999 (France recorded 3.11 percent of GDP and 17.04 percent of labour force in 1998, respectively) (p. 233 and p.236).

Table 0.7 Public expenditures and participants of unemployment measures (1998,1999)

<i>Unemployment countermeasures</i>	(billion won, thousand persons)			
	<i>1998</i>		<i>1999</i>	
	<i>Budget</i>	<i>Persons covered</i>	<i>Budget</i>	<i>Persons covered</i>
Total	5,667	4,274	9,240	5,744
Job Keeping*	122	781	483	667
- Support for retaining employees*			427	371
- Wage subsidy for hiring the unemployed*			14	101
- wage subsidy for elderly workers, etc.*			42	195
Short-term Job Creation (Public works)	1,044	438	2,622	1,525
Training and Job Placement	901	386	687	399
- Training for the unemployed**	738	363	545	371
- Training for college graduates	81	20	24	17
- Training & job placement for women	16	3	24	11
- PES administration	66	-	93	-
Social Protection	3,599	2,669	5,448	3,153
- Unemployment benefits*	850	413	1,501	463
- Loans for the unemployed	750	109	1,138	99
- Livelihood protection programme (LPP)	1,379	1,160	1,453	1,175
- Temporary LPP for the unemployed	216	333	628	640
- Support for returning to agricultural & fishery sector	22	1	41	2
- Support for educational expenses	100	256	200	300
- Support for children's school lunch	45	122	82	150
- Guarantee for wages & severance payments	190	-	-	-
- Other income support	85	275	406	324

Notes: 1) Indirect unemployment-related budgets, such as job creation measures, are excluded.

2) No. of persons covered based on the participant flows in programmes.

3) \* indicates budget of Employment Insurance System (EIS) and \*\* indicates budget including most EIS funds.

Source: Korea Ministry of Labour

Table 0.7 shows the public expenditures on unemployment countermeasures enacted in Korea after the crisis, which exclude the budgets for job creation. The contents of main programmes can be summarised as follows (Kang, S. H. et al., 2001):

#### Active labour market programmes

*Programmes for job keeping* included wage subsidies to firms hiring laid-off workers or

elderly workers and retaining redundant workers during a period of short-term financial difficulty. Measures for retaining redundant workers covered temporary shutdown, reduction in working hours and training to retain employees. All these programmes were financed by the Employment Insurance System (EIS), which was introduced in July, 1995.

*Public works programmes* (short-term job creation) were widely enacted during the crisis. The number of participants in public works programmes reached almost 1.5 million persons in 1999. Public works were divided into central and local government projects. Each project usually continued for 3 months, while some projects lasted 12 months. Persons eligible for public works were those who were unemployed or daily workers without a regular income. Those receiving unemployment benefits were not eligible. Screening decisions for local government projects were made based on scores in nine categories: age, status in household (head or otherwise), number of dependants, property status, gender (for household heads), handicap, duration of unemployment, public works experience (including in a previous stage of the same project), and household income. Those who participated in three stages consecutively were excluded from participating in the next stage.

Budgets of Short-term job creation also included budgets for an *internship programme* for the young unemployed, which was a kind of wage subsidy programme for firms. The internship programme benefited 58,000 unemployed college graduates and 10,000 high school graduates in 1999.

Also, *training programmes* for the unemployed and *employment service* (job placement services) were greatly reinforced after the crisis. Almost 400,000 persons participated in government supported training programmes in every year of the crisis. Training programmes were supported by the EIS fund and by governmental general accounts. More than half of training programme participants benefited from the EIS.

The number of public employment service (PES) agencies managed by the central government increased from 52 in February 1997 to 134 in March 1999, and the number of staff in PES agencies also increased from 141 to 2,684 during the same period.

#### *Passive labour market programmes*

Social protection programmes can be quite complex to explain. The main income support

programme for the unemployed was *unemployment benefits*. However, the coverage was limited to regular workers in firms with more than 30 employees before the crisis. Moreover, the duration of benefits was limited to 60 to 120 days. The coverage was extended rapidly after the crisis: to workplaces with more than 10 employees in January 1998, those with more than 5 employees in March 1998, and lastly to firms with fewer than 5 workers, temporary workers employed for one month, and part-time employees working more than 18 hours a week. In addition a special 60-days extension of benefits was granted during the crisis. Nevertheless, only 12.3% of the unemployed were eligible for unemployment benefits in August 1999.

The traditional Livelihood Protection Programme (LPP), created in 1961, provides support for households in which the members are unable to work. It made up about 2.5~3% of the total population before the crisis. So, the government introduced the *Temporary Livelihood Protection Programme* (TLPP) for poor households of the unemployed. The TLPP protected 640,000 persons (1.4% of the total population) in 1999.

Another important income support programme was the '*Loans for the Unemployed*'. An unemployed person needing direct income support or money for urgent medical, wedding, or funeral expenses, children's school fees, housing costs, or business-related expenses could apply for a long-term loan. And, the Wage Guarantee System for employees who cannot receive severance payment or delayed wages from the bankrupt firms was established in July 1998.

#### *Main programmes addressed in this study*

We cannot cover all these programmes, although they all contributed to assisting the unemployed or poor following the crisis.

Since one of the main intentions of this study is to analyse the distributional effects of the labour market programmes on the disadvantaged unemployed, first of all we will exclude job keeping programmes aimed at firms, and some income support programmes aimed at the poor who are not able to work, such as LPP. Accordingly, for analysing the programme-participation likelihood of disadvantaged groups, this study mainly deals with the following

six programmes directly targeted at the unemployed: 1) public works programmes, 2) job training for the unemployed, 3) job placement services, 4) unemployment benefits, 5) the temporary livelihood protection programme, and 6) loans for the unemployed. And we will concentrate specifically on the three main programmes: public works, job training, and unemployment benefits, since these programmes have a large number of participants.

And in order to evaluate the effects of programme participation for various groups, we will mainly deal with the “*Re-employment Training for the Unemployed*” (RETU). The RETU is the largest training programme in Korea. We will also analyse the effects of programme participation in other labour market programmes, such as public works, job placement services, unemployment benefits and loans for the unemployed. The varying effects of programme participation will be analysed *by looking at different (disadvantaged) groups*.

## 0.3 Approaches

### 0.3.1 Framework of analysis

#### *The Target-Oriented Evaluation Approach*

This study adopts the concept of the “Target-Oriented Policy Evaluation Approach” (Schmid, 1997; Schmid et al., 1996b; Pierre, 1999).

This approach starts from the understanding on limitations of conventional evaluation approaches. According to Schmid (1997), conventional approaches, the so-called “Programme-Oriented Policy Evaluation Approaches”, are characterised by the following two standpoints: 1) a strong focus on individual policy instruments and programmes, or assessing the impacts of these single purpose programmes by contrasting explicit programme goals with measurable programme outcomes, 2) treating policy processes (policy formation and implementation processes) largely as a black box, which results in neglecting the links and interactions between particular policies and the institutional regimes governing a particular target area.

On the contrary, target-oriented policy evaluation goes beyond conventional evaluation approaches, while guided by empirically grounded notions about the measured net impacts of individual policies and programmes. Schmid (1997) summarizes its concept as follows;

“(Labour market policy evaluation) has to adopt a broad approach in order to reflect the complex interrelationships of various programmes within different institutional settings and economic conditions. Instead of starting from specific policy programmes and only attempting to measure the impacts of these programmes on labour market performance, the target-oriented approach starts from broadly-defined policy goals and asks which combination of policies contribute most to the realization of these goals. The answer to this question requires first an explicit theory to explain why the labour market systematically fails to meet the target and why policy has to intervene. Second, the target-oriented approach also needs a theory to explain policy failure in order to develop hypotheses regarding which policies or policy combinations might work under given circumstances. And third, target-oriented evaluation adopts the advanced methodologies available to measure the impact of policies against the contra-factual, which means the situation without the policies under review.” (p. 429)

The following three steps in the policy evaluation cycle are main components in the target-oriented evaluation approach<sup>8</sup>.

Step 1: Defining the targets on the basis of an analysis of market failures<sup>9</sup> (Target formation); This step does not mean a step for defining the target that the government established in advance, but it means a step to make a broad definition of target or target groups. Theoretical notions - including possibly normative aspects - about why these groups

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<sup>8</sup> Originally, Schmid (1997) presents six steps as follows: defining of the targets, analysing policy choices, analysing implementation process, analysing policy adoption or take-up, analysing the net impacts of programmes, and estimating the net costs and benefits. On the other hand, Schmid et al. (1996b) also categorizes them into four steps; defining the targets, monitoring the implementation process, monitoring performance and accessing the net impacts, and estimating the net costs and benefits.

<sup>9</sup> This market failure is due to various reasons. The main types of market failures are known as external effects, incomplete information and power asymmetries in the form of monopolies and monopsonies (Schmid et al., 1996b, p6-7). Market failures bring about inefficiency or inequity. In this case, appropriate government intervention could cure these phenomena. Even though the government intervention is justified when market failure exists, government failures are also well known. Government failures comes from the state's monopoly as a producer of services, the lack of effective budget constraints, insufficient information-processing capacities of public agencies and self-interested bureaucracies (Schmid et al., 1996b, p7). Gautié (1998, p.413) uses the term 'institutional failure' instead of 'government failure'. Some authors use the term 'policy failure'.



need policy intervention are required. The necessity of policy intervention comes from market failures or market imperfections, not from government aims. Policy targets can cover a broad range of objects, not restricted to specific individuals or groups. They may include various goals such as improving overall functioning of labour markets or decreasing inequality that may not be solved by the labour market alone.

Step 2: Analysing the policy choices and implementation process; Although the sources of market failures have been identified, it is not enough to justify government intervention. The possibility of policy failures has to be considered. Once again, it is not enough to start with a given programme; it is important to know why a certain programme has been selected or not selected, and which other programmes or institutional arrangements might influence the target area (policy formation). Moreover, even in the case where policy makers had successfully set the target groups and had appropriately taken policy options, it would be another thing if the target groups actually received the benefits from government programmes. Good implementation and policy adoptions are important factors to make policies successful (implementation process).

Step 3: Assessing policy impacts; The impacts of individual programmes have been considered to be at the centre of evaluation objects in conventional evaluation approaches. In order to assess the net impacts of policies, the main task is to prove the counter-factual outcomes without the policies. Experimental and non-experimental research techniques are used in that aim. Also, the estimation for net costs and benefits of policy intervention is an important task, which needs to take into account tangible or intangible costs and benefits together.

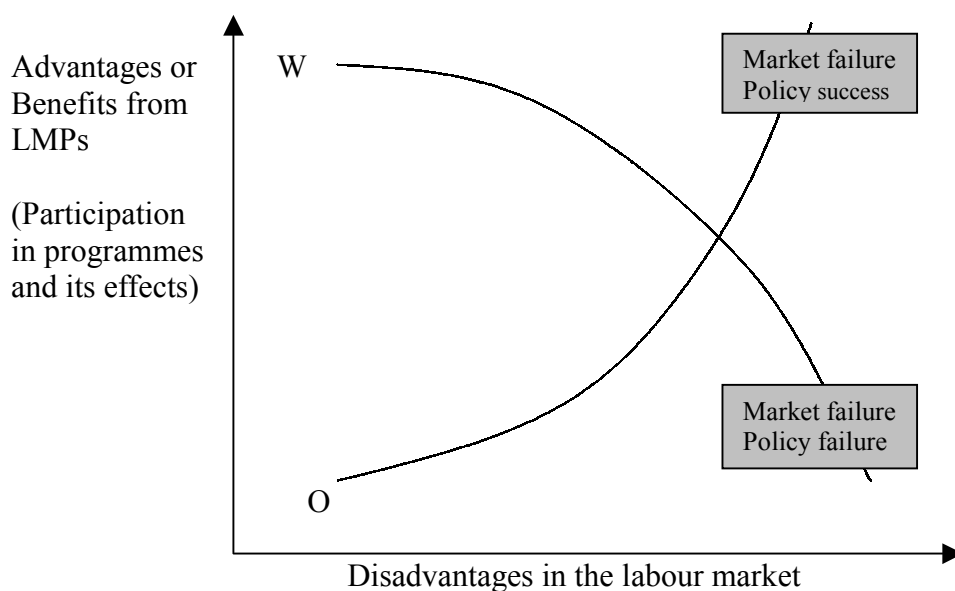
Target-oriented evaluation approach is a theory driven approach that rests on a set of general theoretical notions about the functioning of labour markets and the role of labour market policy. It assumes that neither markets nor public policies alone can ensure optimal solutions to societal problems, regarding both as imperfect alternatives. They may provide better solutions to the unsolved problems if they are combined and co-ordinated correctly.

### *The framework of the study*

As this study aims to evaluate the effects of employment policies on compensating disadvantages in the labour market, we can easily apply the target-oriented approach. A

conventional programme-oriented evaluation would study, for example, the impact of job training programmes to help disadvantaged young people get access to paid employment. Such studies are necessary but not sufficient. They restrict the evaluation to the third step, or the step for assessing policy impact, of the target-oriented evaluation. The target-oriented approach requires the first step for defining disadvantaged groups or disadvantages based on the analysis of market failures. Through this first stage, we could find out the reasonable area in which policy intervention is required. Then, we need the second step for analysing policy choices and implementation. Apart from job training programmes, various measures, such as public works programmes, job placement services, or unemployment benefits, may compensate the disadvantages of each group. These measures, and the interrelationship among them have to be considered, since they all may affect the target area. Also, we must take the policy implementation and policy adoption into account, with the different institutional setting and economic circumstances. This study will comprise the basic three steps; target formation, policy process and impact analysis.

Chart 0.1 Basic framework of analysis in this study



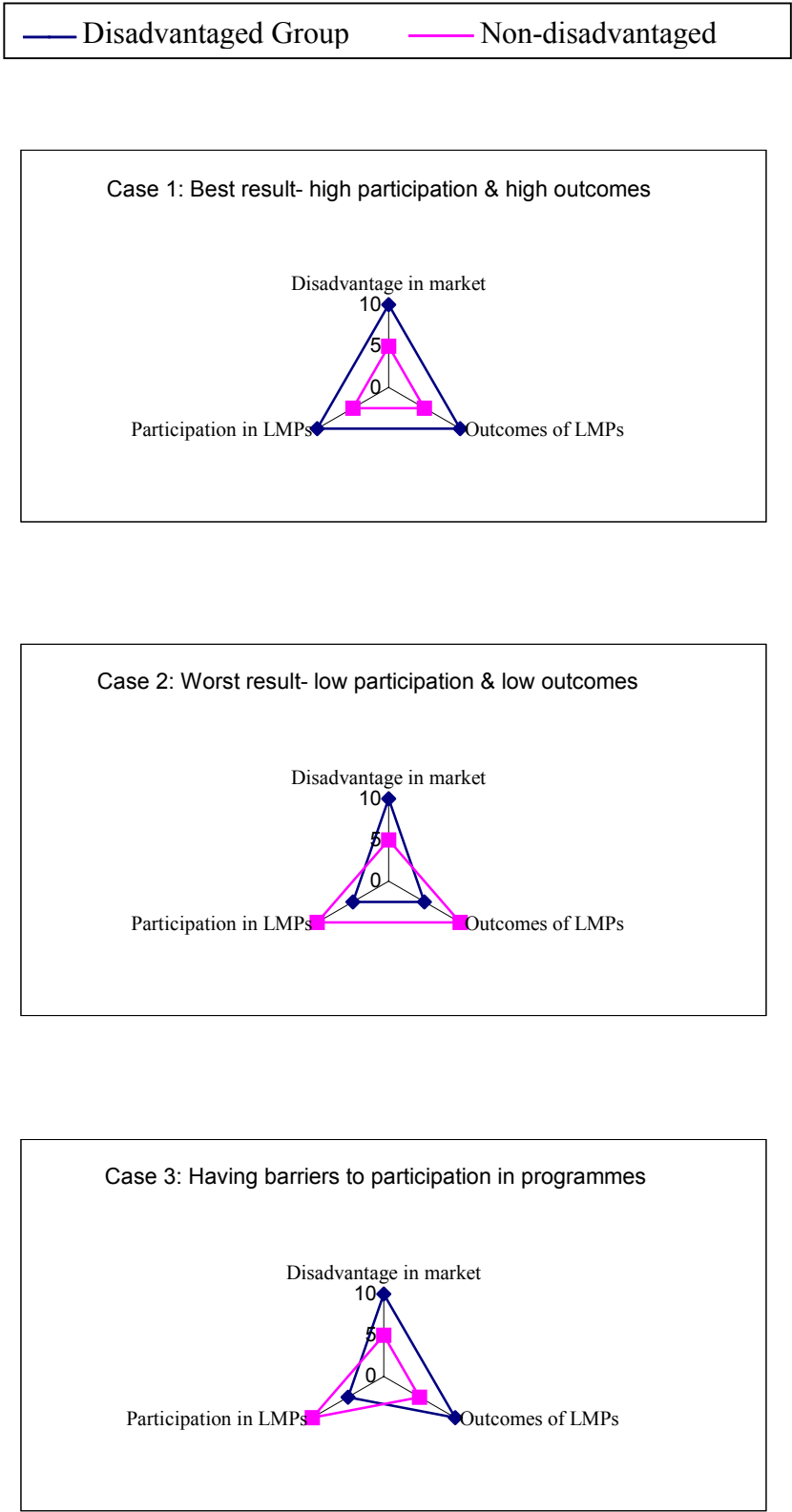
We start with Chart 0.1 as the basic framework of analysis. It divides the evaluation sectors into two parts - the labour market and employment policy. The horizontal axis of

Chart 0.1 indicates the extent of disadvantages in the labour market for a certain group. Various types of disadvantages in the labour market could be identified by some criteria, such as higher probability of becoming unemployed or lower accessibility to a regular job. For example, in terms of unemployment likelihood, highly educated people are expected to have low probability of unemployment and thus expected to occupy the left side of the horizontal line, while the “less educated” stay to the right. The process of situating each group on a certain point of the horizontal line corresponds to the first step of target-oriented evaluation, which can define the area of market failures and thus the target area of policy intervention. The target area may be appropriately defined by analysing not only the dynamics of the labour market on the macro-level but also the causes of disadvantages on the micro-level.

On the other hand, the vertical axis of Chart 0.1 relates to the labour market policy, which shows the extent of advantages or benefits from labour market policies for a certain group. The advantages may include the main two elements - participation in labour market programmes and its positive effects, for example, in terms of post-programme’s employment prospects. Programme participation itself is not a sufficient indicator for obtaining advantages (or benefits) from LMPs, since some evaluation studies argue that the effects of active labour market programmes are often insignificant or even negative (Martin, 2001). The process of situating each group on a certain point of the vertical line corresponds to the second and third step of target-oriented evaluation. In these processes, policy decision, implementation, policy adoptions and policy impacts should be analysed rigorously.

This study assumes that every demographic or social group in the labour market has its point on the space of Chart 0.1. The curve O indicates the *optimal* combinations of disadvantages in the labour market with benefits from LMPs for various groups. It means that more disadvantaged groups in the labour market have more benefits from LMPs. In this case LMPs contribute to compensate disadvantages generated from market failures. On the other hand, the curve W indicates the *least* favourable combinations of disadvantages with benefits from LMPs. Inequalities in the labour market become larger due to the distorted public intervention. Most disadvantaged groups suffer not only from the labour market (or market failure), but also from policy failure. Policy failures may prevail in policy formation and implementation around the curve W.

Chart 0.2 Policy effects for disadvantaged groups: three possible cases



Now, we decompose the sector of LMPs in Chart 0.1 into two sub-sectors, or participation in LMPs and its effects in terms of labour market outcomes. Chart 0.2 shows three possible cases of policy effects. To simplify, we assume that in the labour market there are only two groups: the disadvantaged group and the non-disadvantaged group. Case 1 obtains the best results for the disadvantaged group. The disadvantaged group has a higher probability of participation in programmes and also gets more positive effects of programmes relative to the non-disadvantaged group. Case 2 reports the worst result, with lower accessibility to LMPs and with smaller (sometimes even negative) outcomes for the disadvantaged group relative to the non-disadvantaged group. However, these two extreme cases may be rare in actual policy. More possible cases will be Case 3, or others not seen in the Chart 0.2. Many disadvantaged persons might be excluded from LMPs due to several barriers to getting access to LMPs (information deficiency, livelihood reasons, etc.), but once they participated in LMPs the outcomes of LMPs might greatly benefit them. We could easily expect that the marginal utility, for example, of job training will be larger for lower qualified workers (higher outcomes), while they are more vulnerable to unemployment in the labour market (more disadvantages). Case 3 of Chart 0.2 shows such a case. This last case might correspond to the case of Korean LMPs during the crisis, partially from the fact that Korea did not (or does not) have a good administrative infrastructure for the implementation of LMPs.

### 0.3.2 Methodologies

Different types of policies require different methodological evaluation approaches. The target-oriented evaluation approach recommends the use of various advanced methods of impacts and process analysis, with the strong focus on the comparative approach (Schmid, 1997). This study will use very comprehensive approaches to better analyse the broad subjects related to disadvantages in the labour market and labour market outcomes of LMPs.

First, a broad range of time series macro data are widely analysed to understand the behaviour of the labour market where disadvantages occur. Some international comparisons in terms of labour market performance will also be used.

Second, apart from micro data, we use rigorous regression analysis with the cross-sectional micro data for Korea. It will make it possible to identify the determinants of disadvantages in the labour market, the causes of possible policy failures or the picture of labour market

outcomes of LMPs for various groups.

Third, we examine policy process, in particular, for analysing policy implementation that affects the probability of participation in programmes for various groups. In this context, variables such as budget allocations or number of staff in public employment agencies will be considered.

Lastly, in order to evaluate the effects of programme participation on re-employment perspectives we use the non-experimental method, which enables us to analyse the effects of programmes by comparing the outcomes of programme participants with those of non-participants.

### 0.3.3 Structure of this study

Two main Parts and a Conclusion organize this study. The first Part analyses the labour market, and the second Part evaluates employment policies. We arrange our study in three steps of the target-oriented evaluation approach mentioned above. Part I corresponds to the step of target formation (step 1), which composes three Chapters. Part II corresponds to the second and third step for policy evaluation (step 2 and step 3), which is also composed of three Chapters.

Chapter 1 is an introductory Chapter for labour market analysis. The Chapter outlines the various unemployment theories, and discusses the justice and extent of government interventions in the labour market with the different theoretical points of view. The analytical frameworks for Chapter 2 and Chapter 3 are presented here.

Chapter 2 analyses the dynamics of the labour market with time-series macro data. We also compare the labour market performance and disadvantaged groups of Korea with those of other OECD countries with longer-term aggregate data. The process of labour adjustment to external shocks is one of the main themes of this Chapter. The macro-analysis of the labour market will allow for a useful perspective to understand the origin of market failure and thus the area of government intervention in the labour market.

Chapter 3 deals with the disadvantaged groups in the Korean labour market with cross-sectional micro data. The degree and causes of disadvantages of various groups are analysed by four main indicators: unemployment likelihood, re-employment likelihood, quality of re-

employed job and the sum of (repeated) spells of unemployment. Disadvantaged groups are categorized by criteria such as gender and age, educational attainment, household income levels and employment status. We argue that the disadvantaged groups identified in this Chapter should have priority in participating in labour market programmes.

Chapter 4 is also another introductory Chapter. Here, we discuss various evaluation issues and methodologies for labour market policy evaluation. We suggest that the distributional effects of government programmes should be an important object in policy evaluation. In this context, we pay a special attention to the barriers or access of disadvantaged groups to the participation in government programmes. We also make a brief international comparison on programme distribution among various groups.

Chapter 5 analyses the distributional effects of labour market programmes with cross-sectional micro data, which corresponds to the step of analysing policy formation and implementation (step 2). The Chapter concentrates on the different probabilities of participation in LMPs for various groups during the Korean financial crisis. The institutional or non-institutional barriers to access to programmes, especially to disadvantaged groups, will be revealed. In this Chapter, we examine the relationship between disadvantages in the labour market and priorities in programme participation.

The last Chapter, Chapter 6, corresponding to the step of assessing policy impacts (step 3) in the target-oriented approach, evaluates the effects of labour market programmes for different types of participants. The Chapter evaluates, by a non-experimental method, the effects of programme participation on re-employment probability by groups. The programmes evaluated comprise job training, public works, job placement services, unemployment benefits and loans for the unemployed. In particular, we try to determine whether the effects of programmes are greater for more disadvantaged groups than for those less disadvantaged.

## PART I. LABOUR MARKET ANALYSIS

This Part is composed of three Chapters which analyse the dynamics of the Korean labour market. The main goal is to determine the key area of government intervention in the labour market by analysing the Korean labour market and the disadvantaged groups.

In Chapter 1, after surveying various theories from the (neo-)classical view to the institutional approaches related to unemployment and government intervention, we present a broad analytical framework for labour market analysis in this study.

Chapter 2 addresses the performance of the Korean labour market at the macro-level and thus we try to search out the desirable role of government.

Chapter 3 empirically analyses the disadvantaged groups in the Korean labour market with micro data.



## Chapter 1. Unemployment Theories and Government Intervention

Disadvantages in terms of employment opportunity in the labour market are due mainly to high unemployment, and are related to the unequal consequences of unemployment among specific groups. These undesirable problems may attract government attention, but do not always justify government intervention in the labour market. From a theoretical point of view, government intervention can be adopted when some types of market failures or imperfections are identified, since employment policy aims to improve some type of dysfunction or disequilibrium of the labour market. Various unemployment theories focus on different types of market failures, so government interventions are usually based on different unemployment theories (Snower, 1997). Different types of market failures may call for different types of interventions.

Unemployment theories could be divided into two main parts: macro theory and micro theory. Macro unemployment theories can be divided into the (neo-)classical view and the Keynesian view, which relates to macro-economic policies. The problem of unemployment was originally macro-economic issue. However, the causes of unemployment have a tendency to be explained more and more by micro-theories. These micro unemployment theories can be split into three main theoretical branches: the neo-classical standard, the so-called new theories of the labour market, and the institutional and organizational approach, which relates to employment policies (Redor, 1999)<sup>10</sup>. However, it is not easy to distinguish macro from micro theories. For example, the theory of NAIRU - which relates mainly to the level of aggregate unemployment - is deeply based on micro unemployment theories (see Subsection 1.1.6 of this Chapter).

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<sup>10</sup> Originally, D. Redor (1999) divided the labour market theories into five categories: neo-classical standard, Keynesian view, institutional and organizational theories, new theories of the labour market, and natural rate or NAIRU theory. He also classifies the Keynesian view and the NAIRU theory as the theories related to the macroeconomic policies, rather than to employment policies. This is because he considers that the instruments and effects of employment policy relate to long-term perspectives, for it deals with a dysfunction or structural disequilibrium of the labour market, while instruments and effects of macroeconomic policies of labour adjustment relate to short-term models (Redor, 1999, p297).

It should also be noted that these theories are complementary to each other rather than mutually exclusive because each of them might explain different aspects of unemployment. In the case of a serious unemployment problem in most developed countries, one might not insist that only one special theory could explain the overall causes of unemployment. In fact, there is no single economic theory that can give a correct and sufficient answer to the existing unemployment problems. A pluralistic approach is required to better understand the characteristics of unemployment and the area of government intervention in the labour market (Redor, 1999, p.2).

Thus, this Chapter starts with the various macro- and micro-theories of unemployment according to the textbooks of labour economics, without being restricted to just one theoretical framework (Section 1). The second Section deals with more detailed debates on the disadvantaged groups in the labour markets. In the last Section, we will discuss the condition of a good theoretical framework to understand the Korean labour market, its disadvantages and the role the government should play.

## 1.1 Causes of unemployment and government intervention<sup>11</sup>

### 1.1.1 Basic concepts: Types and costs of unemployment

Economists often split unemployment into different types. It is often difficult to distinguish between different types of unemployment, which remains essential in order to determine the right policy. In order to resolve different types of unemployment, different policy is required. Before examining detailed unemployment theories, it will be useful to take a glance at the basic concept of unemployment.

Unemployment is divided into the following three types in textbooks:

*Frictional or search unemployment:* This results from workers moving between jobs. It will take a jobseeker a reasonable period of time to search for the right job. This creates unemployment while he is looking. Frictional unemployment arises when the process of matching job-seekers and job-providers is not instantaneous.

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<sup>11</sup> In addressing many unemployment theories, this Section largely depends on two textbooks: Redor (1999) and Snower (1997).

*Demand-deficient or cyclical unemployment:* Demand-deficient unemployment occurs when there is not enough demand to employ all those who want to work. Keynesian economists in particular focus on this cause. It is also often known as cyclical unemployment because it will vary with the business cycle.

*Structural unemployment:* This occurs when the structure of the economy changes. When the demand for labour changes in specific industries, regions and occupations, skills or locations of workers may not match those of unfilled vacancies. The extent of structural unemployment will depend on various things: such as mobility of labour between declining and growing industries, the speed of technology changes, or the regional structure of industry (area with many declining industries or not). However, the distinction between frictional and structural unemployment is not clear, because structural unemployment may be considered as a longer-term or more stubborn form of frictional unemployment. Moreover, repeated cyclical unemployment may bring about a high degree of structural unemployment (we will address this issue in Subsection 1.1.6 in detail). Nevertheless, large-scale and persistent unemployment in Europe and a number of other OECD countries since the late 1970s are often cited as structural unemployment. Thus, most of the current theories of unemployment focus on the causes of structural unemployment and on the countermeasures against it.<sup>12</sup>

In any case, the cost of unemployment is high. In many countries unemployment is the main cause of poverty, inequality, and social instability. Unemployed individuals may get discouraged with unemployment and may lose their self-esteem and confidence as well as their incomes. This may affect their motivation to work. The unemployed may lose their skills as unemployment duration becomes longer, which could also hurt the economy.

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<sup>12</sup> Additionally, unemployment can be split into two main types, that is, *demand-side unemployment and supply-side unemployment*. The former corresponds to the demand-deficient unemployment, as mentioned above. The latter results from imperfections in the labour market. For example, it may happen because wages don't fall properly enough to clear the market, or because there is occupational or geographical immobility. It may also happen because there is poor information about job opportunities. Thus, supply-side unemployment usually corresponds to structural or frictional unemployment. Meanwhile, unemployment can be divided into *voluntary unemployment and involuntary unemployment*. Voluntary unemployment occurs when a person rejects a job offer with a lower wage than his/her reservation wage. But this concept is not clear, for the official concept of unemployment is premised on "active job seeking". Involuntary unemployment can be defined as the proportion of the labour force which is actively seeking a job at the existing wage level, but unable to get one. In many cases, frictional unemployment corresponds to voluntary unemployment, while structural and demand-deficient unemployment correspond to involuntary unemployment (Elmsekov, 1993).

Unemployment may even lead the unemployed to commit a crime. There will be macro- as well as these micro-economic effects. As the unemployed cannot produce goods and services, and have no earnings, the society experiences a loss of GDP and tax revenue. Loss of earnings of the unemployed results in reduced aggregate demand and a decrease in company profits, thus firms get fewer funds for investment. Furthermore, the government has to pay for benefits to support the unemployed, despite the loss of taxes.

Government intervention to tackle unemployment relates to both the cost of unemployment and the cost of intervention. If the cost of unemployment is larger than the cost needed for government intervention, the intervention may be justified. But it is said that different sorts of unemployment require different policy responses. *Frictional unemployment* can be minimised by policies designed to improve the flow of information about unfilled job vacancies. And, *structural unemployment* can be reduced by policies designed to assist workers in obtaining skills, or to improve geographical mobility. Reducing wage rigidity is a main issue for reducing structural unemployment. Measures for increasing aggregate demand could be required for reducing the *demand-deficient unemployment*. However, it is very difficult to identify the different types or characteristics of unemployment. The following Subsections present theories to identify them.

#### 1.1.2 Classical Unemployment and laissez-faire

The basic idea of Classical unemployment is that if the labour market were in equilibrium, with labour demand equal to the labour supply, the labour market would clear at the prevailing wage with the consequence that there would be no unemployment. The observed swings in unemployment are viewed as the outcome of the optimizing decisions by job-seekers and job-providers in efficient markets. In this context, the government has little or nothing to influence unemployment. However, these perspectives could not explain why high unemployment prevailed in most advanced countries in the 1930s.

#### 1.1.3 The Keynesian view and active macro-policies

The Keynesian view assumes that wages and prices are rigid, and that there exists disequilibrium in the labour market. In the 'short term', in which wages and prices respond sluggishly to demand fluctuations, recessions are characterized with deficient labour and product demand reinforcing one another: deficient demand in the labour market originates in

the product market and deficient demand in the product market originates in the labour market. A fall in product demand will reduce labour demand if wages do not fall sufficiently, and a fall in labour demand will reduce product demand if prices are sluggish downward. Thus, the Keynesian view argues that *involuntary unemployment* may exist even in the long run because of a lack of aggregate demand. Even though this theory cannot clearly present the causes of the rigidity of prices and wages, it sheds some light on unemployment behaviour during deep recessions (Snower, 1997, pp. 20-21).

A justification of Keynesian policies was supported by the Phillips curve, which was a relationship between unemployment and inflation (originally, a variation of nominal wages). The Phillips curve indicated that there was a trade-off between unemployment and inflation, so it showed that any attempt by government to reduce unemployment was likely to lead to increasing inflation. Policy-makers have to choose between inflation and unemployment. Until the oil crisis of the 1970s, many advanced countries believed that a pertinent aggregate demand management policy could reduce unemployment, even though some degree of inflation was inevitable.

In this context, *benefits* for the unemployed or some type of *government employment policies* are desirable. A rise in government expenditures for the unemployed will raise their purchasing power. They, in turn, will demand more goods and services, thereby inducing firms to employ more people, and so on. Nevertheless, these types of policies depend on the macro-economic issues. Unemployment problems remain a macro-economic issue.

#### 1.1.4 The neo-classical approaches and limited government role

##### *Natural Rate of Unemployment and macro policies*

In the 1970s, the Phillips curve began to break down as the economy suffered from unemployment and inflation rising at the same time (stagflation). The so-called neo-classical approach, tried to explain this new phenomenon. The approach assumes that prices and wages are flexible, and that expectations of economic agencies are rational. Thus the existence of competitive market clearing with complete information, say, the equilibrium of the labour market, is recognized. Milton Friedman developed a variation on the original Phillips Curve called the expectations-augmented Phillips curve. His analysis predicts that in the long run when the actual rate of inflation is equal to the expected rate of inflation, the inflation-

unemployment trade-off vanishes: The Phillips curve thus becomes vertical. This means that a certain unemployment rate ( $U_n$ ) can be compatible with any constant actual rate of inflation, the value of which will be equal to the expected rate of price inflation. In this context, this rate of unemployment ( $U_n$ ) was called the *natural rate of unemployment* by Friedman. The natural rate of unemployment is accomplished when labour demand and labour supply are in equilibrium in a given time and place, and is determined by existing real conditions in the labour market (principally the existence of frictions of various forms which determine the speed of adjustment of supply to demand in the labour market). Given all the imperfections and institutions of the market, the natural rate of unemployment can prevail in equilibrium.

From this point of view, any fiscal or monetary policy designed to reduce the rate of unemployment below the natural rate of unemployment ( $U_n$ ) will result in an ever-rising inflation rate. This natural rate of unemployment can only be lowered by reducing frictions in the labour market, not by increasing the aggregate demand. Macro-economic cyclical disturbances were not an important issue, but micro-economic policies aimed at reducing labour market frictions are required.

#### *Micro theories and employment policies for reducing frictions*

As the neo-classical approach assumes that there is market equilibrium in the long run, involuntary unemployment may be a short-term phenomenon resulting from too high real wages. Over time the wage level will be reduced and there will be no involuntary unemployment except for frictional search unemployment. And the existence of insufficient information on the labour market can be acknowledged as a cause of frictional unemployment in this theory.

The *Job Search theory* is concerned with the idea that unemployment is in part due to imperfect information on the characteristics and the location of vacant jobs. According to the Job Search theory, the job-seeker, who normally knows the range of the wage offer distribution in the various positions available to him/her in the labour market, conducts search activities until he/she finds the best new job. The longer he/she searches, the more likely he/she will get a high wage offer (searching benefits). Search activities are time-consuming and demand searching costs (searching costs, such as opportunity costs). He/She also has his/her asking wage that determines whether he/she accepts or rejects a job offer. Each time he/she applies for a new job, the asking wage will respond to the benefits and costs of search activities. Job search activities will continue until the marginal revenue meets the marginal

cost of the search, for the worker pursues the maximization of his/her revenue (through out his/her life). While searching, the worker remains unemployed.

From this perspective, improving the quality and circulation of information on the labour market, which can reduce searching costs, should be main object of employment policy. Thus, *public employment service*, such as providing workers with information about job openings and providing firms with information about job seekers, is useful for reducing frictional unemployment. As this information has the characteristics of public goods generating external benefits, it can be supplied appropriately by the government. On the other hand, Job Search theory suggests that the *unemployment insurance system*, may lead to longer unemployment spells, and may increase the unemployment rate. The unemployment insurance system may reduce the marginal costs of searching, and then may increase the asking wage, for the government is subsidizing the search. Meanwhile, the existence of the *labour union* may not be desirable, since any sort of monopoly hindering competition should be rejected. If the labour union is inevitable, it is desirable that wage bargaining is taken at the individual firm-level, for partners in this level have the best information required in bargaining (price, profits, employment capacity of the firm).

In short, in the concept of a competitive labour market, the objects and means of employment policy are very limited. However, this neo-classical theory is criticized for ignoring the existing involuntary unemployment stemming from various wage rigidities. Wage rigidity as a cause of unemployment has been a main issue in the new theories of the labour market (see Subsection 1.1.6).

#### 1.1.5 Institutional approaches and active interventions

Now, we address the institutional approaches<sup>13</sup>. They assume that lots of labour transactions are realized outside the market. Institutional factors, such as hierarchical relations in internal firms and legal or regulatory systems established by a nation, are given equal weight as important fields of labour transactions. Thus, the approaches place importance on the fact that the labour market does not have the same characteristics as the commodity market. In this context, if a government only intends to improve the function of the labour

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<sup>13</sup> In this study, we consider the institutional approaches as a theoretical branch that gives special importance to institutional or organizational factors in the labour market. Thus they widely cover the institutional and organizational approaches, which may be considered to have many common features with the structural approach.

market based on the rationality of individual economic agents, labour market problems, such as high and persistent unemployment or inequality, could not be solved. The government should take a role of building institutions which comprise the social security system, labour laws and other regulations. Thus the roles of employment policies are considered to be important, and thus direct government intervention is required. The institutional approach pays particular attention to the workability of the institutions in a given society, rather than the optimal institution applied to any society. A certain policy which works well under some circumstances may not operate under other circumstances. Different societies demand different policy interventions, because each society has its own standard values, cultures, and societal and economic systems. From the employment policy point of view, an employment policy interacts with other social and economic systems, such as the social protection system, system of labour laws, economic policies, political systems, labour market circumstances, etc..

In terms of the labour market theory, the institutional approaches are criticized that theoretical backgrounds are relatively weak. Here, we see the perspectives of the *theory of internal labour market* and the *theory of labour market segmentation* that are relatively well known.

#### *The theory of internal labour market*<sup>14</sup>

The theory of internal labour market focuses on the construction of hierarchical organizations. The internal labour market means an administrative unit, such as a manufacturing plant, where the wage, employment, and training decisions are governed by a set of administrative rules and procedures - while in the external labour market these factors are controlled directly by economic variables. The internal labour markets are a logical development in a competitive market, because employers are encouraged to invest in training and to reduce turnover for the following reasons: 1) the *enterprise-specific skills* cannot be transferred, 2) *on-the-job training* occurs almost automatically as workers repeatedly perform their job, and 3) workers come to acquire an ethical status (*custom*) within the work group based on repeated practice. Thus, new entrants demand additional adjustment costs, such as recruitment, screening, and training costs. Naturally, movement between these two markets occurs only at a certain job classification which constitute *ports of entry and exit* to and from the internal market. The remainder of the jobs within the internal market are filled with the promotion or transfer of workers who have already gained entry. Consequently, these jobs are

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<sup>14</sup> This part widely depends on the work of Doeringer and Piore (1971).



protected from direct competition by workers in the external market. In this sense, unemployment is affected by the rigidity of the internal labour market (the boundary of internal market and internal allocation rules), which means that unemployment problems cannot be solved only by improving the (external) labour market function.

From the policy point of view, policies aiming at reducing the rigidity of internal markets are recommended. Government programmes for training in general literacy or occupational skills are useful for reducing the adjustment costs in internal markets. Again, an extensive governmental recruitment may play a role in reducing the employers' screening and recruitment costs.

### *The theory of labour market segmentation*<sup>15</sup>

The theory of labour market segmentation (hereafter segmentation theory) argues that the labour market is divided into a primary and a secondary market. The primary sector offers more attractive high-wage jobs with good working conditions, employment stability, chances of advancement, equity, and due process in the administration of work rules. The secondary sector jobs have low wages and fringe benefits, poor working conditions, high labour turnover or instability, little chance of advancement, and often arbitrary and capricious supervision. There are also distinctions between workers in the two sectors: workers in the secondary sector exhibit greater turnover, higher rates of lateness and absenteeism, and more insubordination (Doeringer and Piore, 1971, pp. 165-166). Apart from the divergence of the two markets, a more precise definition of segmentation identifies the following two crucial aspects. First, the labour market can be usefully thought of as being made up of several distinct segments with different rules for wage determination and employment policies. The theory argues that returns to education (or other measures of skills) are lower in the low wage 'secondary' sector, relative to the high wage 'primary' sector. Second, mobility is limited between segmented labour markets. Limited mobility may be partly due to exogenous factors, such as geographical distance. But it is mainly due to an endogenous phenomenon through divergence in skills, which includes a whole range of characteristics including education, on-the-job-training, or work norms. This endogenous factor results from divergence between labour market segments and reinforces the segmentation. The theory assumes that investment in skills for oneself and for one's children is possible only if high wages are earned. These

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<sup>15</sup> This part widely depends on Doeringer and Piore (1971) and Lay (2001).

fundamental tendencies of segmentation are reinforced by “secondary” factors, such as race, gender, and class.

The segmentation theory gives many useful suggestions concerning the policies to prevent inequalities in the labour market, such as unequal distribution of unemployment and wage inequality among different social groups. Section 1.2 will deal with the issue of inequality. The theory does not, however, give a clear explanation for the effect of labour market segmentation on aggregate unemployment.

#### 1.1.6 The new theories of the labour market and the NAIRU

##### *The new theories of labour market and employment policy (micro approach)*

These new theories, which have been developed since the early 1970s, established a microeconomic foundation in analysing the causes of the rigidities of real wages. In fact, in the modern labour market, empirical evidence shows that real wage is not perfectly flexible in relation to the economic situation, while the neo-classical theory assumed it perfectly flexible.<sup>16</sup> The existence of imperfect competition and involuntary unemployment in the labour market are acknowledged in these theories. Moreover, the roles of institutional factors in the labour market, such factors as wage-bargaining systems and other determinants of wages and employment within firms, are taken into accounts. The following theories may be considered to be new theories of the labour market.

1) *The efficiency wage theory* (Snower, 1997, pp 30-31): Here Firms are assumed to have imperfect information about individual employees' productivity and are thus unable to make their wage offer dependent on their employees' performances (asymmetric information problem). The firms, as wage-setters, observe that by raising their wage offers they are able to stimulate the average productivity of their workforce. The reason is that higher wage offers enable a firm to recruit more highly qualified workers or motivate employees to work harder (or discourage workers to shirk: moral hazard problem). And higher wages discourage workers from quitting the firm, thereby reducing the firm's labour turnover costs. Consequently firms may have an incentive to keep the wage above the level that would be

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<sup>16</sup> Although the wage rigidity issue was also the main object for the Keynesians, the source of the rigidity is not clearly explained.

necessary to ensure full employment. The unemployed are unable to get jobs by offering to work for less than the prevailing wage, because it is not in the firms' interests to allow the wage to fall. Involuntary unemployment exists.

In this theory, policies that improve the dissemination of information about workers' ability, motivation, and quitting behaviour would enable firms to base their wage offers more closely to the market equilibrium: thereby reducing the roles of wages as an incentive mechanism and bringing down the associated level of unemployment. However, this type of policy would be very difficult to realize. *Public employment service* with accurate information on workers' detailed characteristics could take a limited role in reducing unemployment.

2) *The implicit contracts theory* (Sapsford and Tzannatos, 1993, pp. 411-416): This theory focuses on the nature of optimal labour contracts between risk-averse workers, who do not like fluctuation in their wage/employment status, and risk-neutral employers. Employers and workers typically have an implicit agreement in the form of shared informal understandings as to how each party will respond to various contingencies. Implicit labour contracts provide risk-averse workers with a wage level which is lower than that of the conventional marginal productivity framework and does not vary over the cycle. This means that wages are sticky over the business cycle and that unemployment increases during a recession.

In this context, employment policies aiming at reducing workers' risk-averse tendency will be required for decreasing unemployment. *Unemployment benefits*, which cover workers against fluctuations in their income over the cycle, may reduce workers' risk-averse tendency.

### 3) *The theories related to the labour union and bargaining system*

(3-1) *The Theory of the Labour Union*: If the unions have preferences for salaries above market wages, this results in a certain amount of unemployment. And union theories recognize that employed workers have greater access to work than the unemployed do. Some empirical evidence indicates the inverse relation between inter-country differences in unemployment rates and inter-country differences in indexes of the union power and union coverage.

(3-2) *The Bargaining theory* (Snower, 1997, pp. 33-34;): This theory focuses on the economic efficiency of wage bargaining systems. When there is a high degree of centralisation in bargaining, the negotiating partners internalise most of the effects of their claims: in particular, unions take into account the price increases associated with their wage

claims, and employers take into account the wage increases associated with their employment and pricing decision (such as in Austria and Sweden). On the other hand, when there are a large number of negotiating workers and firms, each occupying a small portion of the market, the resulting activity is efficient for standard competitive reasons (such as in the USA). On the contrary, it is only in the intermediate range (industrial level), where the independent negotiators are sufficiently few in number to have market power - but sufficiently numerous to ignore the external effects of their decisions - that gross inefficiencies arise. Thus, it has been argued that wage-bargaining systems need to be either highly centralised or highly decentralised. The role of employment policy may be important, for example, in France, where traditionally the industrial level bargaining system has been dominant and *the firm-level wage bargaining was compelled by 'les lois Auroux de 1982'* (Redor, 1999, p301).

(3-3) *The insider-outsider theory*: The focus in this theory is the turnover costs of labour. This means that there are significant costs involved in firing, hiring and training workers. Not only are there exogenously determined costs, but also the insiders can increase the costs of turnover by refusing to cooperate with hiring outsiders (those who are unemployed). The insiders i.e. those who already have a job, gain market power over wages as a result of these costs. They then use this power to gain higher wages. The employers are willing to give the workers higher wages because it is more profitable than the costly process of turnover. The insiders are able to raise the wage above market level and thus ensure the continuation of involuntary unemployment. In this context, employment policies aiming at reducing the turnover costs, such as *de-regulation of employment protection legislation, public employment service, and job training*, are important.<sup>17</sup>

#### *NAIRU model and role of government (macro approach mixed with micro approach)*

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<sup>17</sup> Here, we need to add another important theory, or, the matching theory, which belongs to the new theories of the labour market. The matching theory is often called the search theory, and is different from the job search theory that concentrates on the job searching process of workers. The matching theory deals with the implications of frictions for individual behaviour and market performance, due usually to imperfect information about exchange possibilities. Individuals search for job offers by choosing a reservation wage, and firms create jobs to maximise profit. The probability of realizing a match is derived from an aggregate matching function that gives the number of jobs formed in terms of the search efforts of firms and workers (Pissarides, 2000). From the policy point of view, the main ideas in the matching theory are not very different from other new theories of the labour market. Furthermore, it can be used to construct equilibrium models of the labour market, such as the NAIRU model.

The theory of NAIRU (the Non-Accelerating Inflation Rate of Unemployment) can be considered as an unemployment theory on structural unemployment in equilibrium that is similar to the concept of the natural rate of unemployment. However, these two theories are different in terms of their micro-foundations. The theory of NAIRU assumes that there exists imperfect competition in the labour and product markets. The level of effective demand, the existence of price and wage rigidity, and the obstacle and delay of these variables are taken into account. In this context, it is not far from the Keynesian concept (Redor, 1999, p.269). The NAIRU model is widely represented by the work of Layard, Nickell and Jackman (1991). Since in the long run the determinants of NAIRU are similar to those of the natural rate of unemployment, we present three main points that are significantly different from the neo-classical approach.

First, equilibrium unemployment is not market-clearing because of the ‘efficiency wage’ or because of ‘labour unions’, which means that the theory of NAIRU is based on the new theories of the labour market. And the theory recognizes that there is a secondary labour market, where wages clear the market and jobs are available even when unemployment is high<sup>18</sup>. Many unemployed people decide against these unpleasant or low-paid jobs, but cannot obtain good ‘primary’ sector jobs. Thus, the concept of equilibrium unemployment is considered to be a good theoretical foundation of the existence of involuntary unemployment in the labour market.

Second, the theory recognizes that unemployment can easily depart from equilibrium as a result of shocks (aggregate demand and short-run aggregate supply), since there is ‘nominal inertia’ in price- and wage-setting. Moreover, once unemployment is away from the long-run NAIRU, it takes some time to return. The so-called *hysteresis effect*, which means that unemployment depends on the last period’s unemployment, makes already increased unemployment persist<sup>19</sup>.

Lastly, the theory accepts that unemployment is also affected by the search behaviour of the unemployed, and is higher when the unemployed search less, due to unemployment benefits or demoralization arising from long-term unemployment. If an increase in unemployment decreases the job-seeking activity of the unemployed, the hysteresis effect becomes stronger, and it takes more time for the increased unemployment to return.

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<sup>18</sup> However, the NAIRU model itself does not contain the factors related to the dual labour market. The model considers that it may be good enough to proceed as though there was only one sector (Layard et al., 1991, p44).

<sup>19</sup> In this view, Layard et al. (1991, p10) argue that there is some ‘short-term NAIRU’, which depends on short-term ‘hysteresis’ and would be consistent with stable inflation.

From the policy perspective, the theory of NAIRU gives the following suggestions to policy-makers: 1) In the short term, it is important to avoid big rises in unemployment, especially when hysteresis is strong. The role of *demand side policy* should not be underestimated. 2) In the long term, many helpful policy options are recommended. The unconditional *benefits* for the unemployed should be avoided. Instead, *active labour market policies*, such as job placement services, retraining, recruitment subsidies for the long-term unemployed, and temporary public employment, should be reinforced. And the theory suggests the merits of limiting the power of individual *unions*. But, for a given union coverage, a *co-ordinated bargaining system* is desirable. Active government intervention in the labour market can reduce NAIRU. But, the efforts mentioned above should focus on diminishing the *dysfunction of the labour market*. This standpoint is different from the institutional approaches, which were addressed above.

## 1.2 The causes of disadvantages and policy options

After examining the various unemployment theories in the previous Section, we will now address more detailed theoretical debates on the disadvantages in the labour market. Historical evidence shows that unemployment is concentrated in particular individuals, households, socio-economic groups, and geographical areas. Focusing solely on the aggregate unemployment rate overlooks these problems (Dickens et al., 2000). These problems are related to the unemployment structure, and are the main focus of this study.

Disadvantages may be related to the extent of aggregate unemployment, because when the full employment continues, a significant portion of disadvantages in terms of higher probability of unemployment will disappear. In this sense, every unemployment theory mentioned in the preceding Section may be adopted to analyse the causes of disadvantages in the labour market. Of course, various theories will give different policy implications.

Apart from these implications related to aggregate unemployment, we can also infer the policy implications related to unequal distribution of unemployment from almost every unemployment theory. Ehrel et al. (1996, pp 277-279) briefly defined the situations leading to the risk of exclusion from gainful employment as a mix of market failures and institutional failures. Differences in unemployment rates between disadvantaged and non-disadvantaged groups might disappear in the long run if the labour market functions perfectly (neo-classical view). If one group has higher unemployment, it must have lower wages. Thus, wage rigidities may cause disadvantages. In such a case, the problem may be the discrepancy between the supposed productivity level and reservation wage of the disadvantaged. However, the wage rigidity problem cannot explain the causes of disadvantages if wage flexibility in disadvantaged sectors is much higher than in less disadvantaged sectors, as is the case in many countries. Furthermore, information problems can bring out disadvantages (the new theories of the labour market). Deficiencies of information can lead to discrimination, that is, so-called statistical discrimination or the stigma effect. Employers may simply rely on the mean productivity of the group to which the applicant belongs, in order to assess the productivity and motivation of a job applicant (statistical discrimination). So-called institutional failures also can reveal disadvantages. Unemployment benefits, welfare payments and minimum income allowances could undermine job seekers' effort by providing financial support (the job search theory). Labour market policies might even generate perverse distribution of employment probability – as in the case where more educated groups mainly

participate in government supported training programmes, and less educated groups are excluded from them.

In this Section, we will focus on two approaches: the queue theory and the segmentation theory according to Doeringer and Piore (1971, pp. 163-188).

### 1.2.1 The queue theory

The queue theory asserts that workers are ranked according to the relationship between their potential productivity and their wage rates. Employers ration the available jobs among workers according to their hiring preferences. The most preferred workers are selected from the queue first, leaving the less preferred to find work in the least desirable jobs or to remain unemployed. Thus the number and the characteristics of the employed are determined by total labour demand, the wage structure of the economy, and relative worker productivity. By definition, therefore, the disadvantaged are located at the back of the labour queue and have limited access to preferred employment opportunities. According to the postulates of the theory, expanding *aggregate demand* for labour should encourage employers to reduce their hiring standards, to recruit from the disadvantaged labour force, and to provide additional *training* to raise the productivity of the disadvantaged.

### 1.2.2 The segmentation theory

We have already surveyed the main concepts of the segmentation theory (see Subsection 1.1.5), and we will now focus on the desirable policy options which are suggested by the segmentation theory. The segmentation theory implies that expansion in aggregate demand will not necessarily solve the problems of the disadvantaged. Further increase in output will be obtained by shifting demand into the secondary sector without any transfer of the secondary work force into the primary sector. Two kinds of policies for the secondary sector are required; one aimed at the work force and designed to develop the worker traits required to retain primary employment, and the other aimed at converting what are now secondary jobs into primary employment.

To enhance the mobility of disadvantaged workers into primary sector, different types of disadvantages must be considered while identifying the causes of disadvantages and assessing their adaptability to primary employment. Various labour market programmes, aimed at improving their employability (job training, special health and child care services), extensive



counselling (for motivating or changing workers' behaviour), and removing discrimination in employment, should be applied to the different groups. Sometimes the accumulated disadvantages may need a set of programmes. As the labour market segmentation may correlate to another dichotomy in society, employment policies must be connected with other measures, for example, measures for eliminating segregated schooling or housing.

Policy options for converting secondary employment into primary jobs may be more limited. If labour laws and social welfare legislation, such as minimum wage legislation, anti-discrimination legislation, unemployment benefits or the social security system, apply mainly to primary sector workers, employers who want to be exempt from the coverage of these regulations will increase the number of secondary jobs. In this context, it is desirable that these regulations cover the primary and secondary workers equally, and should be designed adequately.

### 1.3 Theoretical framework for the analysis of the Korean labour market

As outlined above, there are lots of unemployment theories that explain the causes of unemployment and those of unequal distribution of unemployment. Each theory is based on different assumptions, and indicates different ideas related to government intervention. This Section discusses the condition of desirable theoretical framework for understanding the Korean labour market and the area of government intervention. We have several fundamental questions here: What can we learn from the various theories regarding Korea's labour market problems? What is a good theory and how many answers does the right theory, if it exists, have for the labour market problems? First of all, we address the labour market problems in Korea.

#### 1.3.1 Labour market problems in Korea

In terms of labour market performance, Korea occupies a special place among the 30 OECD countries. When compared with other OECD countries, Korea stands out in four ways.

First, Korea had enjoyed *the lowest unemployment rate* in the period between the years of 1994 and 1997, before the economic crisis. The unemployment rate was just 2% in 1995 and in 1996 (see Annex Table 1.1)<sup>20</sup>.

Second, Korea has registered *the longest working hours* among 21 OECD countries for which this statistic is known. In Korea, the average annual hours worked per person was 2,497 hours in 1999, while the Czech Republic has the second largest hours worked at 2,088 hours, and the Netherlands has the shortest hours worked at only 1,343 hours in the same year (OECD, 2001a)<sup>21</sup>. We must note that the longest hours worked in Korea coexist with the *low labour force participation rate*. Korea had the 9<sup>th</sup> lowest participation rate of the 30 OECD countries in 2000 (see Annex Table 1.2).

Thirdly, in terms of *the incidence of low pay* that is defined as less than two-thirds of median gross earnings, Korea is the second highest (23%), after the United States (25%),

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<sup>20</sup> The definitions of unemployment rates are a little different in the OECD countries. The Korea's unemployment rate based on ILO standards is 0.3-0.4 percentage points lower than that of OECD standards. The Korea National Statistical Office has released the unemployment rate by OECD standards as well as by ILO standards since 1999.

<sup>21</sup> In most of developed countries, such as France, Germany, United Kingdom, Italy, the United States and Canada, the average annual hours worked per person decreased to under 2,000 hours in 1960s, but in Japan it decreased to under 2,000 hours in 1991 (OECD, 1998, p.155, Chart 5.1).

among 19 OECD countries in the mid-1990s, and the low pay incidences for old workers (43%) and women (49%) in Korea are the highest (OECD, 1999c, pp. 89-92).

Lastly, Korea has experienced an *exceptional rapid increase in the unemployment rate followed by a dramatic decrease* after the financial crisis. In 1998 unemployment rate in Korea (6.8%) was 2.6 times as high as that of the previous year (2.6%). No country among the 30 OECD countries has experienced such a rapid increase in the unemployment rate within a single year (since the mid-1980s). But the high unemployment lasted only two years. In 1999 it starts to decrease rapidly. The unemployment rate in 2002 is expected to decrease to under 3% again. Such a case is very similar to that of Mexico in the mid-1990s (see Annex Table 1.1).

What do all these factors in Korea indicate? The Korean labour market has had different experiences from those of other OECD countries. As Blank (1997) suggested, we should examine different stories in different countries. Until the economic crisis Korea had experienced a decrease in unemployment and improving equality, which has rarely been obtained together in other countries. After the crisis, Korea experienced increasing unemployment and increasing inequality, which was not surprising, as some other countries had a similar experience. The problem is now and the future. Unemployment is rapidly decreasing, but inequality and the long working hours are not. So, how should the Korean government respond to the probable labour market problems within the Korean economic and social systems and the changing global circumstances?

### 1.3.2 Historical lessons from theoretical trends

Historical evidence shows that each period with different labour market problems has its own dominant theory. The Keynesian views prevailed in the period between the Great Recession of the 1930s and the early 1970s. It is clear that the Keynesians aimed to alleviate the economic problems in their eras. Korea's high unemployment after the crisis may be a little similar to that of the Great Recession since unemployment comes from great demand shocks. The causes of demand shock, however, are very different. The financial crisis in Korea as the direct cause of soaring unemployment relates deeply to economic globalization, which was not a main issue in the 1930s. Anyway, the unemployment after the Korean financial crisis may be based more on the macro-economic problem than the micro-economic

supply-side problem. The lesson from the Keynesian views may be that unemployment is still an important macro-economic issue.

The new economic situation of high unemployment with high inflation rates since the late 1970s has made the original Keynesian views fade away. The neo-classical approach replaced the Keynesians. The role of macro-economic policies in reducing unemployment has been less taken into consideration. Unemployment issues became a micro-economic problem, in which government needs to improve the 'distorted labour market'. The terminology of 'flexibility' in the labour market has been very popular in many developed countries since the 1980s. According to Blank (1997), "over the last two decades virtually every European nation has faced high and persistent unemployment. In frustration, many Europeans have looked to the United States, with its lower unemployment rates, as a model of labour market flexibility" (p11). Many OECD and South American countries have tried to create greater flexibility in their labour markets by weakening labour market regulations and generous social assistance programmes. Following the publication of "The OECD Job Study" in 1994, the concept of labour market flexibility has spread more rapidly around the world, and thus many governments have tried to deregulate protective legislation. The trend towards flexibility has been supported by the neo-classical approach and the new theories of the labour market, such as the theory of natural rate of unemployment, the NAIRU model, the searching theory, the efficiency wage theory, the union and bargaining model, and the insider-outsider model. We may call this type of theoretical trend 'the flexibility theory'.

However, the concept of labour market flexibility is somewhat vague and multipurpose (Regini, 2000). Generally, labour market flexibility is seen as the capacity of the labour market to respond to fluctuations in its environment. Labour flexibility may relate to four different areas of the employment relationship: entry and exit from employment (numerical or employment flexibility); the assignment of tasks and horizontal and vertical mobility (functional flexibility); the level and structure of compensation (wage flexibility); and working time (Regini, 2000, pp. 15-17). Nevertheless, employment or numerical flexibility tends to be considered as the most important factor among these four types of flexibility, especially in Korea (Choi, 2001). Concerning employment flexibility, the Korean labour market is seemingly very flexible because unemployment rapidly decreased after the peak of the crisis.

On the other hand, the concept of a flexible labour market is, in many cases, confused with an 'unstable' market system. If the importance of employment flexibility is overestimated,

flexibility may not be far from instability. Korea's labour market problems, such as high wage inequality and the longest working hours, may suggest an unstable system. This unstable system may be related to inflexibility in working hours or job rotation, rather than employment or wage rigidity. The lesson from the flexibility theory may be that we must recognise which type of labour flexibility should be improved in order to cope with different labour market problems in different countries, and which type of workers are more vulnerable to the open labour market.

We also should note that employment relationship is determined not only by the market system but also by other social systems. Apart from the institutional approaches, conventional economic theories recognise that the proper functioning of a market depends on a stable social system. In fact, there are two main critics of the strong trend towards flexibilization: 1) apart from high unemployment, the other side of labour market problems - inequality - has been downplayed, and 2) in many countries, there has been little concern on institutional settings surrounding the labour market problems. If the flexibility theory is only concentrated on the issue of structural and persistent high unemployment, it may not give a good answer to the Korea's labour market problems. In this context, we need to research a more broad approach to labour market problems and institutional settings surrounding them. Here, we will introduce the concept of "the employment systems approach", which may be useful for better understanding the sources of Korea's labour market problems.

### 1.3.3 The employment systems approach

Schmid et al (1999) suggest the "employment systems approach" as a broad framework for comparing the performances of labour market and employment policies among different countries. Employment systems mean the set of institutions that simultaneously determine the level of employment. The systems interact with two subsystems: the production system and the labour market system. Decisions on production are taken in the production system, where unemployment can be seen as the result of unrealised or uncompetitive production. And employment decisions are made in the labour market, where unemployment can be seen as the result of unrealised or misplaced employment. Employment decisions depend on the following institutions, and all of them interact with each other: 1) The private household system offers alternatives to paid employment, shapes cultural attitudes toward work and affects the volume of working time. 2) The education system produces general knowledge,

skills, and vocational qualifications. 3) The industrial relation system affects the level and structure of wages. 4) The social security system affects employment decisions through different measures such as government employment, state-regulated benefits system, and employment protection legislation. Labour market policy can influence employment decisions through all four of these institutional channels. And each country has its own employment system.

Within this framework, Schmid et al. evaluated the labour market performances in the United States, Japan, the EU, the Netherlands, and Germany. They focused on various interrelationships as follows; 1) the relationship between the production system and the labour market system (elasticity of employment), 2) the relationship between labour utilization (employment rate) and the structural (working-age population), behavioural (labour force participation) and employment policy elements (unemployment rate), and 3) the interrelationship between welfare measures (GDP per capita) and employment indicators (productivity, working hours and employment rate)<sup>22</sup>. This broad approach offers many advantages that help to understand the varying complex and interrelated factors that affect labour market problems, such as unemployment, inequality, and poor working conditions. Schmid et al. argue that; “If high employment rates correlate with low or declining productivity, consequently real wages will be low or declining, and extreme wage inequalities may force people to stay involuntarily in the labour market or to take two or three jobs” (pp. 894-895).

#### 1.3.4 A broad analytical framework of the Korean labour market

In analysing the Korean labour market, we will take the macro- and micro economic analyses together. A simple macro- or a micro-approach may not be sufficient in cope with the serious labour market problems. Chapter 2 analyses the macro labour market issue, such as aggregate unemployment, wages and working hours. Chapter 3 will address workers’ behaviour in the labour market.

(1) In order to analyse the performance of the macro labour market, we adopt the employment systems approach as a starting point. We will make a broad comparison of the Korean performance with that of other OECD countries in order to clarify the Korean labour

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<sup>22</sup> These procedures, somewhat complicated, will be presented in detail in Section 2.1 of Chapter 2.

market problems. Starting from the broad employment systems approach, we will continue on the issue of labour market flexibility. In order to analyse the causes of the dramatic changes in the unemployment rate after the Korean economic crisis, we will analyse the process of labour adjustment to business cycles and the speed of labour adjustment to equilibrium. We have particular concerns on in the following three types of flexibility: employment flexibility, wage flexibility, and working-hour flexibility: which type of flexibility should be improved in order to cope with Korean labour market problems? We also focus on the processes of labour adjustment among different workers' groups, which may indicate useful information on the causes of unequal distribution of unemployment, and on the extent of the labour market segmentation between worker groups.

(2) Based on these macro analyses, Chapter 3 empirically analyses the disadvantaged groups as the desirable target groups of employment policy. In analysing the causes of disadvantages, we try to assess which micro labour market theories can be applied to the Korean labour market. The segmentation theory and the job search theory are widely adopted in the modelling process. One of the main interests is whether or how much the Korean labour market is segmented between the regular and irregular sectors<sup>23</sup>.

All these approaches aim at finding out the appropriate target area for government intervention in the labour market by analysing the performance of the labour market.

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<sup>23</sup> In this study, we define a regular worker as a worker who has an employment contract over one year, which is the same concept as in the Economically Active Population Survey by the Korea National Statistical Office. On the other hand, we define an irregular worker as a worker who is a temporary or daily worker with an employment contract under one year, or who is a self-employed worker with monthly earnings of under the average monthly earnings of regular workers (see Subsection 3.4.1 of Chapter 3). However, these conceptions are not clear in several Sections, where irregular workers are usually considered as temporary (with an employment contract of 1-12 months) or daily workers (with an employment contract less than one month).

## Chapter 2. Employment Systems and Dynamics of the Labour Market

This Chapter reviews the performance of the Korean labour market. Labour market performances are based on different institutional settings around labour markets as well as the economic situation. Thus, differences in labour market performances and institutional settings require different policy interventions in the labour market.

The main questions are as follows: 1) What are the differences in employment systems that determine the levels of employment among various countries? What place does the Korean labour market have among OECD countries? 2) How does the Korean labour market react to business cycles? Which type of labour adjustment was strong before and after the Korean economic crisis: employment, wage or working hours? 3) What kinds of persons suffer from the business cycles? What kinds of workers were exposed to the open labour market? Is there any evidence of the labour market segmentation between worker groups? Answers to these questions may lead us to a better understanding the direction Korean policy interventions should take.

This Chapter is made up of four main Sections and a conclusion. The first Section deals with the mechanisms of employment systems according to the methods of Schmid et al. (1999). A very broad approach is applied to analysing the Korean labour market problems with the perspectives of international comparisons. Section 2 analyses different types of labour market reactions to external shocks, especially during a period of labour market crisis. Labour adjustment or labour market flexibility in a business cycle will be closely examined. Section 3 goes further to the issue of labour market flexibility using error correction models for labour adjustments. Long-term market equilibrium will be a main issue. We focus on different types of labour flexibility for different worker groups. Section 4 discusses disadvantaged groups in OECD countries in a business cycle, which will lead into the third Chapter.



## 2.1 The employment systems

Using the methods of the employment systems approach (Schmid et al., 1999), we will investigate the three types of interrelationships between factors determining labour market performances and the level of workers' welfare. The first is the relationship between the production system and the labour market system, which is simply measured by employment elasticity in relation to the rate of the gross domestic product (GDP). The second one is related to interrelationships among employment rates, population structure and the behaviour of the labour force participation. The last relationship focuses on the links between welfare measures (GDP per capita) and labour market indicators, such as labour productivity, working hours and employment rates.

### 2.1.1 Economic growth and employment growth (Table 2.1)

The level of employment depends largely on economic growth. A given amount of economic growth does not, however, correspond to a given amount of labour. The production system affects the level of employment, which is influenced by various demand side factors, such as capital investments, technological innovations, interest rates, industrial structures, levels of competitiveness in the production market, exchange rates, the structure of imports and exports, and other external shocks. The labour market system also affects economic growth, with various factors, such as labour force participation, the number of employees, working hours, workers' skills, etc.. The labour market system reacts to changes in the production system, and vice versa. Depending on the relationship between the two systems 'jobless growth' or the opposite (for example, in former socialist countries) may appear. One can calculate the relationship by the conventional concept of employment elasticity.

In order to do this, we estimate a simple linear regression function:  $\Delta EMP = a + b \Delta GDP$ , where  $\Delta EMP$  is the yearly rate of change of employment,  $\Delta GDP$  the yearly rate of change of the gross domestic product (GDP) at a constant price,  $a$  a constant term, and  $b$  the regression coefficient<sup>24</sup>. The constant  $a$  indicates the rate of employment increase in the case of zero economic growth, and  $b$  reflects the elasticity of employment, i.e. the employment increase rate obtained by one percentage point of the GDP growth rate (at a given  $a$ ). With this equation we investigate the different interrelationships between the labour market system and

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<sup>24</sup> Schmid et al. (1999) used  $\Delta GDP$  as a dependent variable, and  $\Delta EMP$  as an independent variable.

the production system among eleven OECD countries, including three countries that experienced great economic shocks during the 1990s: Sweden, Finland, and Mexico.

Table 2.1 Relationship between employment growth and economic growth: OECD countries

	$\Delta\text{EMP}$ (increase rate of employment) = $a + b \Delta\text{GDP}$ (GDP growth rate)										
	1971-2000 <sup>1)</sup>			1971-1985			1986-2000 <sup>1)</sup>			Growth rate for	
	$R^2$	$a$	$b$	$R^2$	$a$	$b$	$R^2$	$a$	$b$	0% EMP.	1.5% EMP.
Korea	0.51 (0.05)	-0.27 (1.70)*	0.39** (0.13)	0.18 (0.00)	1.20 (3.09)**	0.24 (-0.01)	0.79 (0.14)	-1.20* (0.88)	0.48** (0.20)	2.5	5.6
Japan <sup>1)</sup>	0.37 (0.43)	0.10 (0.00)	0.22** (0.24)**	0.19 (0.12)	0.30 (0.43)	0.14 (0.11)	0.64 (0.85)	-0.10 (-0.37)**	0.34** (0.39)**	(0.9)	(4.7)
France	0.37 (0.11)	-0.38 (-0.04)	0.34** (0.21)**	0.65 (0.31)	-0.65** (-0.43)	0.30** (0.21)**	0.56 (0.28)	-0.53 (-0.12)	0.57** (0.41)**	0.9	3.6
Germany	0.14 (0.18)	-1.49 (-1.83)	1.19** (1.37)**	0.10 (0.26)	-0.56 (-0.93)	0.25 (0.39)**	0.27 (0.33)	-3.50 (-3.94)	2.52** (2.78)**	(1.4)	(2.0)
Sweden	0.51 (0.48)	-1.14** (-1.07)**	0.71** (0.70)**	0.21 (0.17)	0.15 (0.24)	0.25* (0.23)	0.73 (0.69)	-2.07** (-1.97)**	0.98** (0.97)**	2.1	3.6
Finland	0.55 (0.73)	-1.60** (-1.83)**	0.65** (0.75)**	0.12 (0.50)	0.13 (-0.63)	0.24 (0.48)**	0.75 (0.82)	-2.30** (-2.30)**	0.79** (0.85)**	(2.7)	(4.5)
Spain	0.39 (0.23)	-1.65** (-1.12)	0.72** (0.55)	0.46 (0.36)	-2.02** (-1.99)	0.40** (0.35)	0.76 (0.44)	-2.10** (-0.92)	1.27** (0.94)**	1.7	2.8
United Kingdom	0.44 (0.53)	-0.71** (-0.77)**	0.51** (0.55)**	0.36 (0.48)	-0.74* (-0.79)*	0.35** (0.41)**	0.62 (0.63)	-1.02* (-1.04)*	0.76** (0.76)**	(1.4)	(3.4)
Canada <sup>1)</sup>	0.70 (0.25)	-0.06 (0.84)	0.68** (0.40)**	0.65 (0.09)	0.07 (1.72)	0.67** (0.25)	0.76 (0.60)	-0.12 (0.11)	0.66** (0.56)**	0.2	2.4
United States	0.67 (0.21)	0.12 (0.92)**	0.53** (0.30)**	0.72 (0.22)	0.39 (1.27)*	0.53** (0.29)*	0.61 (0.25)	-0.16 (0.46)	0.53** (0.34)*	0.3	3.1
Mexico <sup>1)</sup>							0.36 (0.20)	1.80** (4.09)**	0.38** (-0.29)	-4.7	-0.8
Mean <sup>2)</sup> (non-weighted)	.47 (.32)	-.71 (-.32)	.59 (.52)	.36 (.25)	-.17 (.19)	.34 (.27)	.65 (.50)	-1.31 (-.92)	.89 (.82)	0.1 (1.1)	1.8 (3.0)
Standard Deviation	.16 (.21)	.71 (1.21)	.27 (.37)	.24 (.16)	.87 (1.49)	.16 (.15)	.15 (.25)	1.15 (1.46)	.63 (.74)		

Notes: 1) Data covers the period 1971-1999 for Japan and Canada, 1988-1999 for Mexico.

2) Figures in parentheses are related to the GDP growth rates of the previous year, in which related data covers the period from 1972 to 2000 (for Mexico 1989-2000).

3) Mexico is excluded in the calculation of non-weighted means.

4) \* and \*\* indicate the significance levels of 0.05 and 0.10, respectively.

Sources: Author's calculations based on OECD data (provided by the Korea National Statistical Office).

Table 2.1 reports the relationships between employment increase rates and GDP growth rates of *the current year*, and the relationships between employment increase rates and GDP growth rates of *the previous year* (figures in parentheses). We will call the former ‘labour-growth relationships’, and the latter ‘lag-labour-growth relationships’. We can establish the following facts:

(1) Over the last three decades, the labour-growth relationships are very strong in Canada and the U.S., but they are weak in Germany, Japan, and France (see the *R-square* in the first column of the Table 2.1). Korea has the medium level of relationship ( $R^2$  0.51).

The breakdown of the whole period into sub-periods 1971-1985 and 1986-2000 reveals significant trends. The labour-growth relationships become stronger in almost every country except France and the United States (compare the fourth column with the seventh column). Every country except Germany and Mexico begins to have strong labour-growth relationships over 0.55  $R^2$  in the period 1986-2000. As a result, the non-weighted mean of  $R^2$  increases from 0.36 to 0.65 (the lower side of Table 2.1).

During the period 1971-1985, Korea has a low labour-growth relationship with Germany, Finland, Japan and Sweden (see the fourth column). During the period 1986-2000, however, Korea becomes the country with the highest labour-growth relationship out of eleven countries ( $R^2$  0.79). Similar trends are seen in Finland and Sweden. All three countries experienced unexpected economic shocks in the 1990s. Japan, which has experienced a deep recession for more than a decade, is heading down the same path. All these results suggest that the dependency of the labour market on the changes in global economic circumstances is becoming stronger in many countries.

(2) As regards the lag-labour-growth relationship, we have different results (see figures in parentheses of Table 2.1). In four countries (Finland, U.K., Japan and Germany) out of eleven, the level of employment is more affected by economic growth of the previous year than that of the current year (see the first column of Table 2.1).

The different patterns among countries have not changed much over time (compare the fourth column with the seventh column). Korea, the United States and France have relatively short “lag effect” in terms of the labour-growth relationships during the period 1986-2000. In Korea in particular the level of employment in the current year is affected little by the economic growth rate of the previous year, which ranks Korea as the country with the lowest lag-labour-growth relationship concerning all periods ( $R^2$  0.05 during the whole period,  $R^2$  0.00 during the period 1971-1985, and  $R^2$  0.14 during the period 1986-2000). As a result,

Korea is in a special category: having lowest lag-labour-growth relationship and the highest labour-growth relationship during the period 1986-2000 (see the seventh column). It implies that Korea's labour market system responds rapidly to external shocks.

(3) Now we address coefficient  $b$ , the elasticity of employment, and the value of constant  $a$ , the growth rate of employment in the case of zero economic growth. Comparing two sub-periods, we can see that the constant  $a$  decreases in every country except France, but the employment elasticity (coefficient  $b$ ) increases in almost every country (though Canada and the U.S. have the same high level of employment elasticity). The recent trend shows that zero economic growth stimulates more and more reverse impacts on the labour market, and low growth rates bring about greater employment reductions (see non-weighted mean of  $a$  and  $b$  at the bottom of Table 2.1).

Though Korea has the same trend, it has a low level of  $b$  and a low level of  $a$ . Korea has a relatively low level of employment elasticity (coefficient  $b$ )<sup>25</sup> behind Japan and France for the whole period, and behind Japan and Mexico for the period 1986-2000 (see the third and ninth column). On the other hand, the value of constant  $a$  is lower in Korea than in Japan and Mexico for the period 1986-2000 (during the period 1971-1985 Korea has the lowest value of  $a$ ).

As a result, Korea requires higher economic growth for the same level of employment growth. The last two columns in Table 2.1 show the real GDP growth rates for the period 1986-2000 required to hold employment at a constant level (zero employment growth), and the real GDP growth rates required for 1.5% employment growth, respectively. In Korea, 2.5% and 5.6% annual economic growths are necessary to sustain respectively the existing employment level and 1.5% employment growth. Among eleven OECD countries the conditional economic growth rates for the same level of employment growth are highest in Korea. Korea has similar figures to those of Japan and Finland, and very different from those of Mexico.

(4) The analyses of employment elasticity imply that countries with very different labour market regulations and institutions show similar labour-growth relationships. France and

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<sup>25</sup> Korea's low level of employment elasticity suggests that the increase in labour productivity might be larger than other countries during the same period, because coefficient  $b$  ( $\Delta \text{EMP} / \Delta \text{GDP}$ ) is a reciprocal of labour productivity rate. However, our model is too simple to explain the cause of the low employment elasticity in Korea.

Spain, which are usually classified as countries with high labour regulations, have similar labour-growth relationships with those of the United States and the United Kingdom, which have low regulations<sup>26</sup>. As employment growth becomes more sensitive to economic growth in many countries, as Cadiou and Guichard (1999) noted, a high degree of labour market flexibility may not compensate for the loss of national economic policy. The roles of macro economic policies become more important for aggregate employment growth. Economic globalization may stimulate this trend.

In any case, in terms of employment sensitivity to economic growth, among eleven OECD countries during last three decades, Korea has changed from one of the least sensitive countries to the most sensitive country. Stable economic growth is more important to Korean workers than to workers in other countries. But economic growth can be affected by labour utilization, which will be now discussed further.

#### 2.1.2 Labour utilization and its determinants (Table 2.2 and Table 2.3)

Labour capacity utilization in a given country can be analysed by decomposing the interrelationship among three distinct elements: the structure of the working-age population, the labour force participation rate and the unemployment rate. We compare the Korean labour capacity with that of OECD countries in Table 2.2.

The first column indicates the labour capacity utilization, that is to say, the proportion of total employed persons aged between 16 and 64 years to the total population. 44.5% of the Korean population were integrated into the labour market in 2000, which corresponds to the OECD average. Korea ranks nineteenth among thirty OECD countries, after Germany (45.5%) and Finland (45.5%). Luxembourg has the highest rate (59.7%) and Turkey has the lowest (31.5%) of the OECD countries.

The second column indicates the proportion of working-age (15-64 years) population to the total population. The column clearly shows the advantage of Korea in the structure of working-age population. Korea has the highest proportion of working-age population (71.2%) among OECD countries, followed by east European countries, such as the Czech Republic (69.7%), Slovakia (69.1%), Poland (68.6%) and Hungary (68.4%). Mexico has the lowest

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<sup>26</sup> Nevertheless, how many studies, even in Korea, are concentrated on the estimation of labour market flexibility, in order to find out the causes of different labour market performances among countries?

percentage of working-age population (only 61.0%), after Sweden (64.3%), Norway (64.8%), Turkey (64.9%) and France (65.1%).

Table 2.2 Decomposition of labour utilization

	Decomposition in 2000						Average yearly growth rates (1990-2000)*							
	E/POPT	=	POPL /POPT	x	LF /POPL	x	E/LF	E/POPT	=	POPL /POPT	+	LF /POPL	+	E/LF
CANADA	0,487	=	0,684	x	0,764	x	0,932	0,24	=	0,05	+	0,05	+	0,14
MEXICO*	0,388	=	0,610	x	0,650	x	0,978	1,13	=	0,57	+	0,46	+	0,10
UNITED STATES	0,495	=	0,661	x	0,781	x	0,960	0,28	=	0,03	+	0,17	+	0,08
AUSTRALIA	0,475	=	0,672	x	0,753	x	0,938	0,29	=	0,05	+	0,17	+	0,08
JAPAN	0,508	=	0,679	x	0,786	x	0,953	0,06	=	-0,27	+	0,60	+	-0,27
KOREA	0,445	=	0,712	x	0,652	x	0,959	0,56	=	0,28	+	0,44	+	-0,16
(Korea's ranking)	(19/30)		(1/30)		(23/30)		(10/30)	(6/29)		(6/29)		(9/29)		(21/29)
NEW ZEALAND	0,467	=	0,653	x	0,760	x	0,940	0,52	=	-0,05	+	0,38	+	0,19
AUSTRIA	0,466	=	0,677	x	0,713	x	0,964	0,54	=	0,04	+	0,53	+	-0,03
BELGIUM	0,387	=	0,655	x	0,649	x	0,911	0,12	=	-0,22	+	0,37	+	-0,02
CZECH	0,461	=	0,697	x	0,724	x	0,913	-0,40	=	0,56	+	-0,16	+	-0,80
DENMARK	0,510	=	0,667	x	0,802	x	0,954	-0,17	=	-0,10	+	-0,46	+	0,40
FINLAND	0,455	=	0,669	x	0,753	x	0,903	-1,05	=	-0,06	+	-0,31	+	-0,68
FRANCE	0,403	=	0,651	x	0,686	x	0,903	0,11	=	-0,10	+	0,30	+	-0,09
GERMANY*	0,455	=	0,678	x	0,729	x	0,919	-0,30	=	-0,22	+	0,21	+	-0,29
GREECE	0,374	=	0,676	x	0,623	x	0,889	0,18	=	0,08	+	0,53	+	-0,43
HUNGARY**	0,384	=	0,684	x	0,600	x	0,936	-0,31	=	0,23	+	-1,02	+	0,47
ICELAND*	0,555	=	0,651	x	0,874	x	0,975	0,50	=	0,14	+	0,33	+	0,04
IRELAND	0,441	=	0,670	x	0,688	x	0,957	3,01	=	0,94	+	1,08	+	0,99
ITALY	0,371	=	0,678	x	0,612	x	0,895	-0,33	=	-0,15	+	-0,25	+	0,08
LUXEMBOURG	0,597	=	0,667	x	0,911	x	0,981	2,18	=	-0,36	+	2,62	+	-0,08
NETHERLANDS	0,495	=	0,676	x	0,754	x	0,970	1,60	=	-0,20	+	1,31	+	0,49
NORWAY	0,505	=	0,648	x	0,807	x	0,966	0,55	=	0,01	+	0,35	+	0,19
POLAND**	0,378	=	0,686	x	0,655	x	0,840	-0,54	=	0,65	+	-0,80	+	-0,39
PORTUGAL	0,491	=	0,679	x	0,752	x	0,960	0,26	=	0,23	+	-0,03	+	0,06
SLOVAK REPUBLIC	0,393	=	0,691	x	0,699	x	0,814							
SPAIN	0,370	=	0,681	x	0,631	x	0,860	1,12	=	0,24	+	0,65	+	0,23
SWEDEN	0,469	=	0,643	x	0,774	x	0,941	-1,04	=	0,00	+	-0,63	+	-0,41
SWITZERLAND	0,544	=	0,673	x	0,830	x	0,974	-0,45	=	-0,16	+	-0,07	+	-0,22
TURKEY	0,315	=	0,649	x	0,519	x	0,936	-0,57	=	0,73	+	-1,45	+	0,15
UNITED KINGDOM	0,465	=	0,652	x	0,755	x	0,945	-0,06	=	-0,02	+	-0,18	+	0,14
OECD-Total	0,445	=	0,665	x	0,714	x	0,939							
EU15	0,427	=	0,668	x	0,696	x	0,917							

Notes : 1) E = Employment ; POPT = total population ; POPL = working-age population (15-64) ; LF =active labour force ; LF/POPL=labour force participation rate ; E/LF =active labour force utilization rate (corresponding to 1-Unemployment rate)

2) \* To calculate average yearly growth rates, we used data for year 1991 in Mexico, Germany, and Iceland; \*\* and data for year 1992 in Hungary and Poland (instead of 1990).

Sources: OECD Labour force Statistics, 1980-2000; author's calculations.

The third column indicates the labour force participation rate of the working-age population. Korea has a poor rate of labour force participation (65.2%), which is 10-20 percentage points lower than eleven countries' participation rates, including Luxembourg (91.1%), Iceland (87.4%), Switzerland (83.0%), Norway (80.7%), Denmark (80.2%), Japan (78.1%), the U.S. (78.1%), Sweden (77.4%), Canada (76.4%), New Zealand (76.0%) and U.K. (75.5%). Nordic countries and Anglo-Saxon countries are good performers. Korea's participation rate is slightly higher than several East and Southern European countries' participation rates, including Hungary (60.1%), Italy (61.2%), Greece (62.3%) and Spain (63.1%). The level of the labour force participation in Korea is low enough to slightly weaken the high share of working-age population.

The fourth column indicates the proportions of the employed to the total labour force. Korea has a relatively good performance with respect to employment rates.

The dynamic approach of the labour utilization index and its composition as shown in the right columns of Table 2.2 is a more useful analysis than this static explanation.

The fifth column shows that in the period 1990-2000, 18 countries experienced improved labour utilization, and 11 countries suffered decreased labour utilization. Ireland, Luxembourg, the Netherlands, Mexico and Spain did the best in terms of aggregate increases in labour utilization, recording more than 1% average yearly growth. On the contrary, Finland, Sweden and Turkey are the worst performers, with an average yearly decrease of over 0.5%.

Korea has a relatively good performance with regards to the changes in labour utilization (0.56% average yearly increase). The last three columns show that the most important factor related to increased labour utilization in Korea is the increase in the share of the working-age population (Korea ranks six out of 29). After the Korean economic crisis, the employment rate decreased and Korea ranks 21 out of 29 countries.

Other countries experience very different patterns of changes in labour utilization and it is difficult to categorize the patterns because the determinants of changes in labour utilization are correlated to each other in a complex manner. The excessive growth rate of the working-age population in the Czech Republic leads to a decrease of participation and employment rates. The opposite is somewhat true for the Netherlands. But in other countries, the relationships are not clear. 15 countries show a positive correlation between the labour force participation rates and employment rates, while 14 countries show a negative correlation between them. The complicated correlation between the determinants of labour utilization requires a more systematic analysis.

Therefore, we will look at Pearson's correlation for the determinants of labour utilization in OECD countries. Table 2.3 shows the results.

Table 2.3 Correlation between the determinants of labour utilization (OECD countries)

Proportions in 2000 (No.: 30)						Average yearly growth rates 1990-2000 (No.: 29)					
	Mean	Std. Dev.	E /POPT	POPL /POPT	LF /POPL		Mean	Std. Dev.	E /POPT	POPL /POPT	LF/POPL
E /POPT	.45	.06				E /POPT	.28	.89			
POPL /POPT	.67	.02	.00(.98)			POPL /POPT	.10	.32	.16(.39)		
LF /POPL	.72	.09	.96(.00)	-.10(.59)		LF /POPL	.18	.75	.80(.00)	-.32(.09)	
E/LF	.93	.04	.64(.00)	-.35(.05)	.48(.01)	E/LF	-.00	.36	.62(.00)	.19(.33)	.17(.37)

Notes: 1) Definitions and data are the same as in Table 2.2.

2) Figures in parentheses indicate significance levels.

Concerning the static labour utilization rate, the share of the working-age population cannot explain the various levels of labour utilization between OECD countries (correlation zero, standard deviation 0.02). The most important determinant is the labour force participation rate (correlation 0.96, standard deviation 0.09). Employment rate, that is to say, the reverse of unemployment rate, is the second most important determinant of labour utilization (correlation 0.64, standard deviation 0.04). And the percentage of the working-age population is negatively correlated to the employment rate (correlation -0.35), i.e. positively correlated to the unemployment rate, but not significantly correlated to the labour force participation. On the other hand, labour force participation rate is positively correlated to the employment rate (correlation 0.48), that is to say, negatively correlated to the unemployment rate.

With respect to the dynamic changes in the labour utilization index, the results of correlation analyses are not much different from those in static labour utilization. Increasing labour utilization is largely related to increasing participation rates (correlation 0.80, standard deviation 0.75) and decreasing unemployment rates (or increased employment rates: correlation 0.62). But the increasing share of the working-age population (supply shock) tends to decrease the labour force participation rate (correlation -0.32), though it does not greatly affect the change of (un)employment rates. The relationship between the change in the labour force participation rate and the change of the (un)employment rate is not clear.



Whether in terms of the static or dynamic analysis, the participation rate has the highest correlation with labour utilization, and has the largest standard deviation. It shows the important role of the participation rate in improving labour utilization.

In short, Korea's low labour utilization is mainly based on low participation rates, but the extremely high share of working-age population in Korea tends to disguise this fact. The population structure, however, has changed rapidly in Korea. The peak of the working-age proportion already passed in 1999 (71.4%: KLI, 2001). But low unemployment rate in Korea may still depend partly on low participation rate. The experiences of OECD countries show that employment policy aimed at increasing labour force participation rates may be required in Korea.

### 2.1.3 Welfare and labour market indicators (Tables 2.4 and 2.5)

Although we consider labour utilization among OECD countries as a good indicator of labour market performance, the employment ratio (employment/total population) does not consider other important factors, such as labour productivity and working hours. Here we analyse the relationship between economic welfare indicators and the employment ratio. We use the GDP per capita in purchasing power parity (PPP) as a main economic welfare indicator, and decompose it into labour productivity, working hours and employment ratio. Table 2.4 reports the results of international comparisons concerning the interrelationship between the determinants of GDP per capita. We look at 19 OECD countries for which the working hour data<sup>27</sup> are available.

Concerning the GDP per capita, Korea's performance is very poor in relation to these OECD countries, recording \$15,055 of GDP per capita in PPP (the first column of Table 2.4). Only Mexico (\$9,152) and the Czech Republic (\$14,284) are behind Korea. Though Korea is just after Spain (\$20,124) and New Zealand (\$20,285), the differences of GDP per capita between Korea and these two countries are large. Moreover, many countries with better performances than Spain and New Zealand are concentrated on the level about \$25,000 (Australia, Finland, France, Germany, Italy, Japan, Sweden and United Kingdom), which is

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<sup>27</sup> Although working hour data for several OECD countries are available from OECD Employment Outlook, the survey methods of working hours are different among countries. The OECD notes that the data may not be appropriate for international comparisons (OECD, 2001a). Nevertheless, these are the only data available for use. Thus, cautious interpretations are required with respect to working hour data.

much higher than in Korea. Thus, it is very difficult to compare Korea with other OECD countries regarding economic welfare indicators.

Table 2.4 Decomposition of GDP per capita (OECD countries: 2000)

	<b>GDP/POP</b>	<b>=</b>	<b>GDP/H</b>	<b>x</b>	<b>H/E</b>	<b>x</b>	<b>E/POP</b>
AUSTRALIA	26,338	=	29,813	x	1,860	x	0,475
CANADA	27,998	=	31,933	x	1,801	x	0,487
CZECH REPUBLIC	14,285	=	14,818	x	2,092	x	0,461
FINLAND	25,175	=	32,168	x	1,721	x	0,455
FRANCE	24,152	=	38,341	x	1,562	x	0,403
GERMANY	25,885	=	38,479	x	1,480	x	0,455
ICELAND	29,302	=	28,001	x	1,885	x	0,555
ITALY	25,161	=	41,490	x	1,634	x	0,371
JAPAN	25,968	=	27,788	x	1,840	x	0,508
<b>KOREA</b>	<b>15,055</b>	<b>=</b>	<b>13,659</b>	<b>x</b>	<b>2,474</b>	<b>x</b>	<b>0,445</b>
<b>(Korea's ranking)</b>	<b>(17/19)</b>		<b>(18/19)</b>		<b>(1/19)</b>		<b>(15/19)</b>
MEXICO	9,152	=	12,497	x	1,888	x	0,388
NETHERLANDS	27,836	=	41,911	x	1,343	x	0,495
NEW ZEALAND	20,285	=	23,920	x	1,817	x	0,467
NORWAY	30,166	=	43,392	x	1,376	x	0,505
SPAIN	20,124	=	30,001	x	1,812	x	0,370
SWEDEN	24,843	=	32,711	x	1,624	x	0,468
SWITZERLAND	30,148	=	34,904	x	1,588	x	0,544
UNITED KINGDOM	24,398	=	30,717	x	1,708	x	0,465
UNITED STATES	35,619	=	38,312	x	1,877	x	0,495
<b>Average(non-weighted)</b>	<b>23,640</b>		<b>30,343</b>		<b>1,753</b>		<b>0,462</b>

Notes : 1) GDP = gross domestic product measured in PPP in US\$ and in PPP (purchasing power parity);  
POP = Population; H = yearly working hours (for dependent labour force in Netherlands);  
E = employment (15-64)

2) Data for working hours are data from 1999 in France, Italy, Japan and Netherlands.

Sources: OECD Main Economic Indicators (Updated February 2002); OECD Employment Outlook, 2001;  
OECD Labour Force Statistics, 1980-2000; author's calculations.

Nevertheless, we can note several significant facts. Korea has the second lowest labour productivity: slightly higher than that of Mexico and slightly lower than that of the Czech Republic (the second column in Table 2.4). But the difference between Korea and New Zealand - which has fourth lowest productivity - is greater (\$13,659: \$23,920). The extremely long working hour in Korea may be related to the low productivity. When we compare Korea with Mexico and the Czech Republic, we can easily understand that Korea's higher GDP per

capita is not based on higher labour productivity, but based on the ‘perspiration’<sup>28</sup>. It is interesting to compare the relation between Korea and Mexico with the relation between the United States and France. France has the same level of labour productivity as the United States, but shorter working hours and a lower employment ratio than the U.S.. It results in lower GDP per capita in France.

We now calculate the correlation between the GDP per capita and its determinants based on the data of 19 OECD countries in Table 2.4 (the results are not presented in Tables). The GDP per capita correlates positively to labour productivity (correlation 0.82) and to the employment ratio (correlation 0.59), but it correlates negatively to working hours per person (correlation -0.51). And the labour productivity correlates negatively to working hours (correlation -0.83), but the employment ratio does not have a significant correlation to labour productivity or to working hours. All these results show the trade-offs between productivity and working hours. In this respect, for improving workers’ welfare reducing working hours and improving labour productivity in Korea should be an important policy target in the future.

Table 2.5 Decomposition of GDP per capita: average yearly growth rates

		Average yearly growth rates of						
	Period	GDP/POP	=	GDP/H	+	H/E	+	E/POP
Korea	1983-90	9,4	=	8,3	+	-1,1	+	2,3
	1990-96	7,0	=	5,9	+	-0,3	+	1,4
	1996-00	3,7	=	4,3	+	0,1	+	-0,6
Germany	1991-96	0.9	=	2.9	+	-0.4	+	-1.6
Netherlands	1991-96	1.6	=	1.7	+	-0.7	+	0.6
USA	1991-95	1.9	=	-0.5	+	2.0	+	0.4
Japan	1991-95	1.1	=	2.1	+	-1.1	+	0.1

Notes: GDP= gross domestic product measured in PPP in US\$ and in PPP (purchasing power parity), for Korea real GDP in Korean Won; POP= Population; H= yearly working hours; E = employment (15-64)

Sources: 1) Author’s calculations for Korea, based on the Bank of Korea, OECD Employment outlook, 2001; and OECD Labour Statistics, 1980-2000.

2) Schmid et al. (1999) for Germany, Netherlands, USA and Japan

<sup>28</sup> Dunford (2000) properly explained the situation in eastern Asia as follows; “the Asian growth in the twenty years up to the early 1990s was a product of ‘perspiration’ (a high savings rate and increased capital and labour inputs) rather than ‘inspiration’ (technological progress). None the less, in the light of this experience it is frequently argued that these economies illustrate the ways in which investment in education and capital equipment in a context of global free trade can lead to strong convergence.”

Are Korean employment systems doing the right thing by increasing productivity and decreasing working hours? Table 2.5 shows that may not be the case. We analyse the dynamic changes in economic welfare indicators and labour market indicators in Table 2.5.

Table 2.6 Public expenditure and participant inflows in LMPs in OECD countries (1999)

	Total		Active Measures		Proportion of Active measures	
	Expenditure (% of GDP)	Participant (% of LF)	Expenditure (% of GDP)	Participant (% of LF)	Expenditure	Participants
Denmark	<b>4,85</b>	47,39	1,76	25,66	36,3	54,1
Netherlands	<b>3,93</b>	11,25	1,64	5,67	41,7	50,4
Belgium	<b>3,69</b>		1,35		36,6	
Finland	<b>3,53</b>		1,22	10,27	34,6	
Sweden	<b>3,50</b>		1,82	8,69	52,0	
Germany	<b>3,42</b>		1,30	4,25	38,0	
France(1998)	<b>3,11</b>	17,04	1,30	10,04	41,8	58,9
Spain	<b>2,41</b>	20,06	1,01	18,60	41,9	92,7
New Zealand	<b>2,17</b>	20,78	0,55	10,57	25,3	50,9
Portugal(1996)	<b>1,74</b>	14,17	0,85	10,04	48,9	70,9
Austria	<b>1,71</b>	23,32	0,52	3,84	30,4	16,5
Switzerland	<b>1,55</b>		0,66		42,6	
Australia	<b>1,51</b>		0,46		30,5	
Canada	<b>1,49</b>		0,50		33,6	
Norway	<b>1,28</b>	8,20	0,81	3,50	63,3	42,7
Hungary	<b>0,96</b>	12,86	0,40	5,42	41,7	42,1
United Kingdom	<b>0,94</b>	12,72	0,37	2,56	39,4	20,1
<b>Korea</b>	<b>0,88</b>	<b>17,53</b>	<b>0,69</b>	<b>15,39</b>	<b>78,4</b>	<b>87,8</b>
<b>(Korea's Ranking)</b>	<b>(18/23)</b>	<b>(5/14)</b>	<b>(11/23)</b>	<b>(3/18)</b>	<b>(2/23)</b>	<b>(3/14)</b>
Greece(1998)	<b>0,83</b>		0,34		41,0	
Japan	<b>0,82</b>		0,28		34,1	
Czech Republic	<b>0,50</b>		0,19	1,27	38,0	
United States	<b>0,38</b>		0,15		39,5	
Mexico	<b>0,08</b>	5,17	0,08	5,17	100,0	100,0
Italy(1998)		10,05		4,40		43,8
Poland		8,11		4,35		53,6

Source : OECD Employment Outlook, 2001(pp, 229-241),

In the period 1983-1990, Korea has good results with strong growth of GDP per capita, increasing productivity and labour utilization, and a decrease in working hours. But in the period 1990-1996 the performances worsen in every area. Working hours decreased by only

0.3%, which is smaller than the decrease in Japan, the Netherlands and Germany during the same period. Moreover, during the economic crisis (the period 1996-2000), working hours increase rather than decrease, in spite of decreasing employment. Why is this the case even in a period of increasing unemployment? One probable explanation may be that employers may react to the business cycle by reducing employment rather than by reducing working hours. We will examine this question in the following Sections (Sections 2.2 and 2.3).

Table 2.5 shows the cases of other countries according to the results of Schmid et al (1999). In the period 1991-1995, the United States performs best in terms of overall welfare (GDP per capita) among four compared countries. But most of the increase in GDP per capita comes from the increased hours worked. Labour productivity decreases in the same period. Schmid et al. (1999) note that the case of the United States eventually leads to a decline in real hourly wages for the bulk of employees. On the contrary, three other countries - Germany, the Netherlands and Japan - experience decreased working hours and increased productivity.

#### 2.1.4 Policy implications in Korea

The employment systems approach taken above has three implications for the direction of government interventions. First, the Korean labour market is very sensitive to economic growth with little time lag. Macro economic policy may be more important to the Korean workers than to workers in other countries. As economic globalization makes the labour market more sensitive to external shocks, a social safety net for disadvantaged workers should be reinforced. Second, Korea's low labour utilization should be improved by increasing labour force participation rate. Third, working hours should and can be reduced by increasing participation rate, which will lead to an increase in labour productivity.

However, as the employment systems approach takes into account a broad analysis of the relationships between the labour market system and the production system, it is difficult to understand a more detailed process of labour adjustment - especially, in the period of external shocks. The labour market behaviour in wage adjustment, for example, was not considered in this approach. The following Section deals with the dynamic reactions of the labour market when faced with external shocks.

## 2.2 Labour market reactions to business cycles

As we have said, the Korean labour market is very sensitive to economic growth - especially in terms of aggregate employment. How can we explain the causes of the rapid rise in unemployment and its dramatic fall after the financial crisis? Labour market flexibility is the main issue at stake. The consensus on the issue, however, may not be obtained among specialists in Korea (Choi, 2000). Many analysts consider the Korean labour market to be flexible, but others do not. Nevertheless, since the economic crisis, improving labour market flexibility has been a main target of the Korean government, due mainly to the IMF (International Monetary Fund) requirements. Here, we try to analyse the dynamics of the Korean labour market - especially in the period of the crisis. First, we briefly survey the institutional settings related to labour market flexibility. We then empirically analyse the pattern and speed of labour adjustment in a business cycle.

### 2.2.1 Institutional settings related to labour market flexibility<sup>29</sup>

Under successive military governments from 1962 to 1987, economic growth became the main priority under the slogan “develop first, share later” in Korea (OECD, 2000a). The division of Korea and the threat emanating from the North was another crucial factor contributing to the evolution of an authoritarian industrial relations environment. As a counterpart to restrictions on union powers, the government adopted protective labour regulations to protect wages and working conditions which could not be obtained through the operation of free collective bargaining. An abundant labour supply from agricultural areas interacted with these political factors. The strong government intervention in the labour market was based on the government pushing for economic growth.

During the 1980s, the situation was changed. The rural labour supply dried up and the 1987 social movement was a turning point in Korean industrial relations. An upsurge in union memberships and a tightened labour market brought about labour market rigidity. The issue of labour market flexibility arose, and economic globalisation set the issue on fire.

The estimation of labour market flexibility is often measured by the response of wages to labour market disequilibria and by the adjustment of employment to output. Institutional settings affecting the wages and employment adjustment can be classified into four categories: bargaining systems, employment protection legislation, replacement incomes for

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<sup>29</sup> This part largely depends on the work of the OECD (2000a).

the unemployed, and active labour market policies (Cadiou and Guichard, 1999). We will review Korea's labour market institutions according to this classification.

### *Bargaining systems*

Trade union membership and density is very low in Korea. In 2000, only 12% of the total wagedworkers were union members. Union membership grew immediately after the democratisation in 1987 to peak at almost 19% in 1989, but steadily declined thereafter to 11.2% in 1998, which was the level unprecedented since 1965<sup>30</sup>. The financial crisis deepened the decline of union membership. Within the OECD countries, Korea thus has the second-lowest overall trade union density, after France and before the United States (OECD, 2000a). The difference of the union rate between larger- and smaller-sized firms is significant. Whereas 71% of firms with more than 300 employees are unionized, only 1.1% of firms with less than 100 workers are organized. Based on this information, the trade unions' impact in the social and political arena is still considerable.

The law requires employers in companies where over half of the workforce is unionised to extend the contract to the total workforce in the firm. So, 16% of dependent employment can be estimated to fall under collective agreements, the lowest share within the OECD area, below even the United States and Japan (OECD, 2000a).

But lower unionisation does not necessarily mean fewer labour disputes. The lost workday ratio grew from 8.5 per 1,000 workers in 1986 to 756 in 1987, and then progressively declined to average 80 during the period from 1993 to 1998. After the crisis, the number of labour disputes - that averaged about 100 during the mid-1990s – more than doubled after the crisis, increasing to 198 in 1999 and to 250 in 2000. As a result, the lost workday ratio increased to 119 per 1,000 workers in 1998 and to 144 in 2000 (KLI, 2001). With about 80 lost workdays during the mid-1980s, Korea occupies an average position among OECD countries, on a level with Ireland, Norway, Sweden and Australia (OECD, 2000a).

The Korean wage bargaining system has never been centralized or coordinated. 84.1% of collective bargaining was conducted at the company-level in 1999, which was slightly less than the 88.1% in 1995 (Lee, W. & Lee, J., 2002).

The minimum wage system in Korea was first introduced for manufacturing in 1988 and extended to firms in all industries employing ten or more workers in 1990, to firms employing

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<sup>30</sup> Union density in Korea (source: KLI, 2001): 11.6% ('65)→15.8% ('75)→11.7% (June '87)→13.8% (December '87) → 18.6% ('89)→11.2% ('97)→12.0% (2000).

five or more workers in 1999, and to all firms in 2000. The current level of minimum wage corresponds to less than a quarter of the average wage in the manufacturing industry, a slight decrease from the beginning of the decade. The 1997 amount is the lowest – along with Mexico and the Czech Republic among OECD countries where data are available (OECD, 2000a). The proportion of workers covered by the minimum wage has fallen from 10.7% in 1989 to 0.4% in 1998, and increased again to 2.1% in 2000 because all firms were included.

### Employment protection legislation

Korea has been known as a country with a high level of employment security protection for regular workers. An OECD study (OECD, 1999d) gave Korea the second-highest ranking out of a sample of 27 OECD countries in terms of the strictness of protection of regular (permanent) employment contracts, after scoring the countries on several features of regulation<sup>31</sup>. The study has been widely quoted by analysts and employer associations in Korea. The situation of employment protection legislation in Korea is as follows.

The Labour Standard Act of 1998 introduced the concept of redundancy dismissal and employment adjustment for “urgent managerial needs”, which are further defined by a reference to “transfers, mergers and acquisitions”. Even before 1998, under the Act, individual and collective dismissals of regular employees were allowed for “just causes”. The Act entitles employees to a 30-day notice period or wage in lieu. The one-month notice period, even for workers with high tenure, is below international standards. The problem relates to other procedures of dismissal. The 1998 Act also specifies that, prior to layoffs, employers must make every effort to avoid dismissal; apply fair standards in selecting employees for dismissal; and consult with trade unions or other worker representatives over efforts to avoid dismissal and over fair and reasonable selection criteria. Worker representatives have to be informed 60 days prior to planned dismissals for managerial reasons. When recruiting new personnel at a later stage, an employer must make efforts to rehire dismissed workers within a period of two years after the date of dismissal. Collective dismissals involving larger numbers

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<sup>31</sup> In ranking the 27 member countries according to the flexibility of employment protection of regular employment, OECD placed Korea at 26<sup>th</sup> next to the Netherlands in ‘Regular procedural inconveniences’, at 16<sup>th</sup> in ‘Notice and severance pay for no-fault individual dismissals’, at 23<sup>th</sup> in ‘Difficulty of dismissal’, and at 26<sup>th</sup> in ‘Overall strictness of protection against dismissals’. On the other hand, Choi (2001) argues as follows; “Further, it seems that Korea has been ranked low in ‘Notice and severance pay’ due to an error in severance pay computation as indicated in Table 2.A2 of the same article. Thus, it seems to be unarguably evident that the job security regulation of Korea is the stiffest among the OECD countries with respect to the regular employment.”



of workers give rise to additional requirements; in this case, the company also needs to notify the Ministry of Labour 30 days in advance, providing the rationale for lay-offs and the proof of sufficient consultation. The OECD (2000a) noted that “the newly legislated preconditions for such conditions for such dismissals --- still make Korea resemble other high-protection OECD countries such as Japan, Portugal, France or Germany”.

Moreover, there is a generous severance payment system in Korea. Employers have to pay a retirement allowance equal to at least 30 days’ wages per year of service. This severance payment must be made regardless of the circumstances of termination, even in the case of dismissal with just cause. The generous payment contributes the Korean ranking among the highest group in ‘the strictness of employment protection for regular employment’.

On the other hand, employment protection for workers without a permanent employment contract is much weaker than that for their regular counterparts. As a result, the share of fixed-term and daily workers in dependent employment, which is over 50%, is the highest of OECD countries (OECD, 2000a). In the case of workers with fixed-term contracts, the OECD (1999d) ranked Korea in an average position among OECD countries. The Act of Korea permits fixed-term contracts of up to one year without specifying a specific reason, unlike France, Italy, Spain, or the Nordic countries where fixed-term contracts are allowed only for specific reasons. Under the law, longer contract duration is only allowed for the “completion of a certain project”, but no maximum cumulative duration of successive contracts has been specified. Moreover, the regulation on repeated fixed-term contracts is very often ignored by employers. Though the Ministry of Labour recommends employers to change the repeated fixed-term workers to regular workers, the court declares the ‘repeated’ fixed-term contracts as the contracts repeated ‘several times’, where ‘several times’ implies repetitions of greater significance than once or twice. Employers, thus, face no major difficulty in circumventing the existing restrictions (OECD, 2000a).

In July 1998, the Dispatched Workers Act was enacted to enhance labour market flexibility. Dispatching agencies are allowed to hire out workers to user firms for up to two years in 26 occupations. Moreover, dispatched workers can be used in all industries and occupations except construction in order to fill vacancies due to temporary absences of other employees.

#### *Replacement incomes for the unemployed*

As we saw in the Introduction to this study, the unemployment benefits system is very weak in Korea. The EIS (employment insurance system) covers only one-third of the total labour force, or 60% of dependent employment in 2001. An average of 14% of the unemployed received unemployment benefits from January 2001 to September 2001. The coverage of unemployment benefits is clearly narrow compared to other countries. The statutory replacement is 50% (or about 54% when taking into account the fact that benefits are tax- and contribution-free in Korea), which, together with the United States, is the lowest of the OECD countries. In addition, benefits are subject to a relatively long waiting period of two weeks. The duration of benefits, which ranges between three and seven months, is shorter than in the majority of OECD member countries.

### Active labour market policies

Expenditure on labour market programmes (LMPs) is highly sensitive to the business cycle in Korea. Korea increased expenditure on LMPs from 0.11% of the GDP in 1997 to 0.64% in 1998, and to 0.88% in 1999. Table 2.6 reports public expenditures and participant inflows in LMPs in OECD countries. In terms of the proportion of total LMP expenditure, in 1999 Korea ranks 18<sup>th</sup> among the 23 OECD countries from which data are available. But the proportion of participant inflow to the total labour force is comparatively high (17.5%), which ranks Korea 5<sup>th</sup> among 14 OECD countries. It indicates a low level of benefits and a short duration of programmes in Korea.

Regarding active LMPs, Korea has an average position among OECD countries in terms of expenditures (0.7% of GDP), and a high position in terms of participation inflows. The share of expenditures on active LMPs is 78% of the total expenditure on LMPs in Korea in 1999 (the last column of Table 2.6). It is the highest amount (except Mexico) among OECD countries, followed by Norway. In particular, it can be argued that active labour market programmes can be more effective in reducing the risk of long-term unemployment when they respond quickly and effectively to changes in labour market conditions, as has been the case in Korea (OECD, 2000a).

### 2.2.2 The business cycle and labour adjustment

When external shocks occur, the labour market responds in different ways. The patterns of labour adjustment can be divided into three types as mentioned above: employment adjustment, working hour adjustment and wage adjustment. The adjustment patterns and speed are affected not only by institutional settings related to the labour market but also by the aspects of long-run or short-run development of the labour market. Thus, to better understand the process of labour adjustment in a country, we need to take into accounts the three types of adjustment, institutional settings and the labour market situation. Though there have been several previous studies on labour adjustment in Korea, most of the studies and debates have focused on employment adjustment (BOK, 1999; Lee J.H. et al, 2001; Choi, 2001; and Park D.J. et al, 2000)<sup>32</sup>. Many studies explicitly or implicitly consider the Korean labour market to be inflexible (Jang and Han, 1999; Im, Y. S., 2000; BOK, 1999; Choi, 2001), especially in terms of the ease with which workers are laid-off, whereas other studies focus on how the labour market is segmented between the regular and irregular sectors (Kim Y.S., 2001; Ann,

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<sup>32</sup> A few empirical studies have been carried out concerning the impacts of changed institutional settings around the labour market. Park, D. J. et al. (2001) analysed the effects of the legislation which was amended in 1998 to legalise collective dismissals for managerial reasons. The study, based on an enterprise survey, concluded that even after the labour Standards Act was amended, dismissal was not the major method of employment adjustment. Most separations were ‘honourable retirements (by paying some amount of money in addition to the mandatory severance pay to the retirees)’, spin-offs, early retirement, or attrition. The authors argue that Korea’s social safety net needs to be expanded to enhance labour market flexibility because this is necessary for workers to accept dismissal more easily. Choi (2001) discovered a lot of improved labour market flexibility after the crisis, such as increased job creation and job destruction, increased labour turnover rates, shortened job tenure and unemployment duration. But he argued that the causes of these changes could not be attributed to the deregulation of employment protection legislation after the crisis, but to the changed demand side factors in the labour market. His opinion was supported by the fact that the changes in labour market circumstances were not found in the sector of regular workers where employment protection was strong. Another study, Lee, J. H. et al. (2001), argued that the short-term employment and working hour adjustment of manufacturing regular workers decreased in the post period (from July 1987 to December 1998) compared to the pre-1987 period (from 1978 to June 1987). The authors correlated these results to the abrupt ‘unleashing’ active unionism in 1987. On the other hand, the effect of unemployment benefits on unemployment duration is widely recognised as insignificant in Korea because of short benefit duration and low coverage (Jun, 2002). The Bank of Korea (BOK, 1999) found that employment indicators such as employment, unemployment and total labour inputs, responded more sensitively to business cycles after the crisis. However, the BOK argued that “labour flexibility in Korea is still far behind other developed countries, though it has improved somewhat (after the crisis)”, and recommended further policy for improving labour market flexibility, such as working time flexibility.

2002; and Lee, H.S., 2001). Keeping these factors in mind, we must also examine the dynamics of labour adjustment with a broad approach - including working hour and wage adjustment to the external shocks, especially in order to understand the soaring unemployment rate and its subsequent dramatic decrease in Korea.

In this context, we can ask several questions about labour adjustment in Korea. Was the Korean labour market originally sensitive to business cycles before the crisis? Which type of labour adjustment has prevailed in Korea: quantitative adjustment, wage adjustment or working hour adjustment? Have the speed or patterns of labour adjustment changed since the crisis? Is there any evidence that the strong employment protection legislation for regular workers has hindered the employment adjustment for them?

To answer these questions, we examine the methods of Millard, Scott and Sensier (1999). In outlining the stylised key facts about the cyclical behaviour of the UK labour market during the period 1976 Q2-1996 Q2, they analysed the cross-correlation for the cyclical component of labour market variables, such as total labour input (total hours), employment, average working hours, real wages and unemployment. They then estimated a simple equation for investigating the asymmetric behaviour in the labour market over the business cycles. Recently, Jang and Han (1999) applied the method of Millard, Scott and Sensier to analyse the Korean labour market. The study covered the period 1985 Q3-1999 Q3, and dealt with labour force, employment, unemployment and working hours. Thus, it had difficulty in analysing the dynamics of employment recovery after the economic crisis because the employment began to recover from 1999 Q1. Our study covers the period 1982 Q3 to 2002 Q1 (79 quarters)<sup>33</sup>, and comprises the dynamics of wage adjustment. The overall advantage of our study may be that it takes into account different patterns and the speed of labour adjustment according to various employment statuses. Wages and working hours are also analysed by employment status, which tends to be overlooked in Korea.

## A. Data and methods

### Data (Table 2.7 and Chart 2.1)

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<sup>33</sup> In Korea quarterly data for labour force is available from 1982 Q3. The period covers from 1982 Q4 to 2002 Q1 (78 quarters) when the increase rates of labour indicators are used, and covers from 1983 Q1 to 2002 Q1 (77 quarters) when the lagged values of increase rates are used in models.

Table 2.7 Definitions and sources of data for labour adjustment analysis

1. All data is quarterly from 1982 Q3 to 2002 Q1 except data for regular and temporary employment. 2. EAPS*: Economically Active Population Survey by the National Statistical Office (NSO) (household survey). 3. MLSS*: Monthly Labour Statistics Survey by the Ministry of Labour (establishment survey covering the firms with 10 or more permanent workers). 4. FIES*: Family Income and Expenditure Survey by the National Statistical Office (household survey).		
<i>Data</i>	<i>Definitions</i>	<i>Sources</i>
EMP	Total employed persons	EAPS
EMP_N	Employed persons in the non-agricultural sector	
DEP	Dependent workers	
DEP_M	Male dependent workers	
DEP_F	Female dependent workers	
DEP_N	Dependent workers in the non-agricultural sector	
PER	Permanent workers (= REGR + TEMP: employment contract over one month)	
PER_M	Male permanent workers	
PER_F	Female permanent workers	
PER_N	Permanent workers in the non-agricultural sector	
REGU	Regular workers (employment contract over one year)	
REGU_M	Male regular workers	
REGU_F	Female regular workers	
TEMP	Temporary workers (employment contract 1-12 months)	
TEMP_M	Male temporary workers	
TEMP_F	Female temporary workers	
DAILY	Daily workers (employment contract less than one month)	Data from 1989 Q1
DAILY_M	Male daily workers	
DAILY_F	Female daily workers	
UN	Total unemployed persons	
UN_N	The unemployed in the non-agricultural sector	
LF	Total labour force	
LF_N	Labour force in the non-agricultural sector	
HOUR_A	Average monthly working hours of employees (the self-employed included) in the non-agricultural sector (household survey)	EAPS
HOUR_P	Average monthly working hours of permanent workers (employment contract over three months) in firms with 10 or more permanent workers (establishment survey)	MLSS
WAGE_A	Average hourly real wage of dependent workers in urban areas, which is calculated from average monthly nominal household earnings divided by average number of workers in household, divided by monthly working HOUR_A, and deflated by the consumer price index.	FIES
WAGE_P	Average hourly real wage of permanent workers in firms with 10 or more permanent workers (establishment survey), which is calculated from average monthly nominal wage deflated by the consumer price index and divided by monthly working HOUR_P.	MLSS
INPUT	Total actual monthly working hours = $\text{HOUR\_A} \times \text{EMP}$	EAPS
INPUT_A	Labour input of dependent workers = $\text{HOUR\_A} \times \text{DEP}$	FIES
INPUT_P	Labour input of permanent workers = $\text{HOUR\_P} \times \text{PER}$	MLSS
PROD	Labour productivity per hour = $\text{Real GDP} / \text{INPUT}$	Bank of Korea
RGDP	Gross domestic product at the price of 1995 (real GDP)	
RECESS	Business cycle based on the RGDP (1=recession period, 0=expansion period)	NSO

Note) \* See Annex Table 0.1 for detailed information on surveys.

All data we use are quarterly data and they cover the period from 1982 Q3 to 2002 Q1 - except data related to regular and temporary workers which are available only since 1989 Q1. In order to analyse the trend and cyclical components of labour indicators, we extract the seasonal and irregular components from the raw data using ARIMA X12 method<sup>34</sup>. We then calculate the increase rate over the pervious quarter. Table 2.7 shows the definitions and sources of macro quarterly data, and Annex Table 0.1 reports detailed information on related surveys.

Increase employment data are divided into seven types: total employed persons (EMP), employed persons in the non-agricultural sector (EMP\_N), dependent workers (DEP), permanent workers (PER), regular workers (REGU), temporary workers (TEMP) and daily workers (DAILY). Workers are then divided into by sexes (for example, DEP\_M and DEP\_F for dependent workers). The indicators related to regular workers are used to analyse the impacts of employment protection legislation which is considered to be very strong for (male) regular workers. We assume that the indicator for male regular employees represents the insiders in the Korean labour market who are protected by employment protection legislation and the trade union. The unemployed are also divided into the total unemployed (UN) and the unemployed in the non-agricultural sector (UN\_N). We also analyse the total labour force (LF) and the labour force in the non-agricultural sector (LF\_N). All these data are based on the household labour force survey.

In Korea, data for working hours and wages are usually quoted from the Monthly Labour Statistics Survey, which is an establishment survey covering firms with 10 or more ‘permanent’ workers. The permanent workers indicate workers with employment contracts over three months. Thus, we use the data from the establishment survey as basic data sets for working hours and real wages (HOUR\_P and WAGE\_P). As these data do not cover non-permanent workers or workers in firms employing less than 10 workers, we need other data sets for wages and working hours covering all workers including non-permanent workers. Some household surveys give us useful information on working hours and wages for all workers. Among these data, the working hours data comprise all employees in the non-agricultural sector (HOUR\_A), while wage data cover all dependent workers in the urban area (WAGE\_A). Real wages are based on the average *hourly* wage divided by two types of

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<sup>34</sup> We used SAS 8.1 version for ARIMA X12 method.

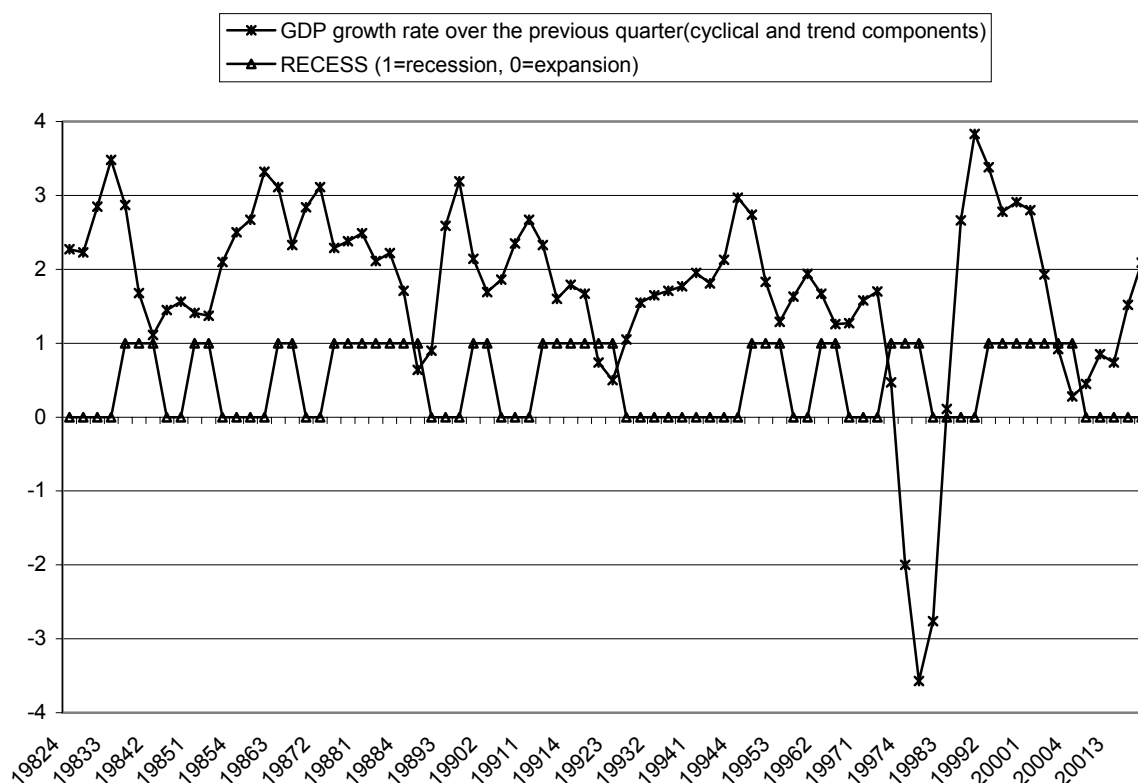
monthly working hours. WAGE\_P corresponds to HOUR\_P and WAGE\_A correspond to HOUR\_A<sup>35</sup>.

Total labour input (INPUT) indicates the total actual working hours, which is obtained by multiplying the average monthly working hours for all employees in the non-agricultural sector (HOUR\_A) by the total employees (EMP). Finally, we calculate labour input of dependent workers ( $INPUT\_A = HOUR\_A \times DEP$ ) and labour input of permanent workers ( $INPUT\_P = HOUR\_P \times PER$ ).

Productivity means labour productivity per working hour, which is the real GDP divided by the total working hours (INPUT).

And we use the real GDP increase rate as a criterion of the business cycle. Chart 2.1 shows the business cycles and the period of recession in Korea. As a result, we divide a total of 78 quarters from 1982 Q4 to 2002 Q1 into 41 quarters of business expansions (RECESS=0) and 37 quarters of business recessions (RECESS=1).

Chart 2.1 Business cycle and recession periods (1982 Q4-2002 Q1)



<sup>35</sup> We should note that WAGE\_A and HOUR\_A are based on different surveys and cover different types of workers. See Table 2.7 for details.

We also test whether the growth rates of variables are indeed stationary. The results of the unit root test by the ADF (Augmented Dickey-Fuller) method with one lagged difference term are presented in Annex Table 2.1. The test statistics in growth rates of total regular workers (REGU) and female regular workers (REGU\_F) are ones that do not exceed the 5% critical value. But when the constant term is deleted from the model, all test statistics exceed this corresponding critical value, which means that all variables are stationary (I(0)) in terms of growth rates<sup>36</sup>.

*Previous review on long-term labour market trends: a graphical analysis*

In order to understand the dynamics of the labour market, a simple graphical analysis may sometimes be more useful than any complicated econometric model. In order to avoid the possible misinterpretation of econometric results, we review the long-term labour market trend related to several main labour indicators: real GDP, employment in the non-agricultural sector, regular workers, unemployment in the non-agricultural sector, monthly working hour of permanent workers (HOUR\_P) and all workers (HOUR\_A), hourly real wage of permanent workers (WAGE\_P) and all dependent workers (WAGE\_A), and labour productivity. Here, we use natural logarithms of level data instead of first difference data, and we do not extract irregular component from the seasonally adjusted data to better understand the real facts of labour market.

Chart 2.2 shows the long-term trend of the Korean labour market for two decades. We fix the log value of 1982 Q3 at zero by subtracting the log value of 1982 Q3 (1989 Q1 for regular workers) from each log value of labour indicators. Working hour data are quadruplicated because of their smaller variations.

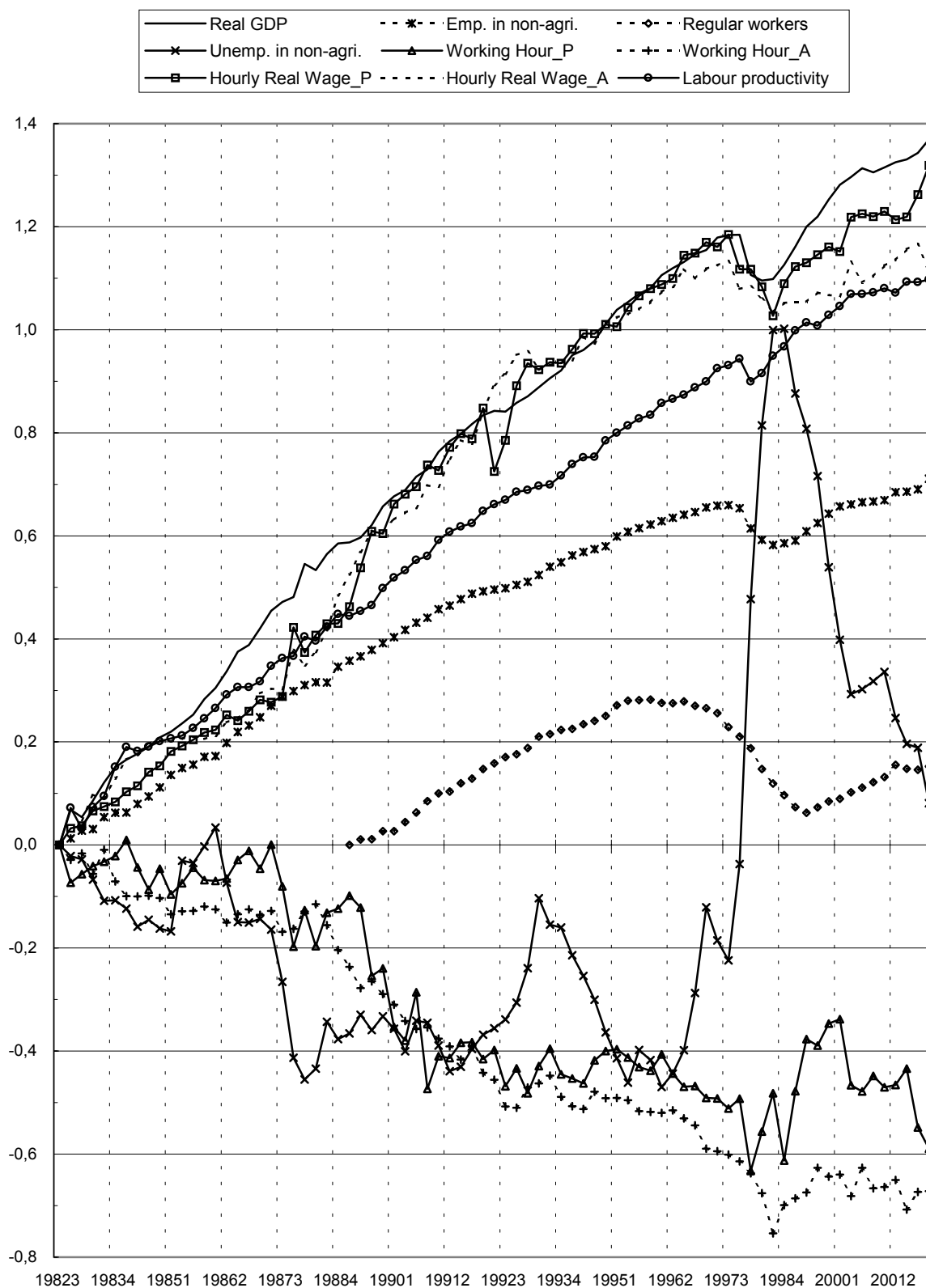
To understand the dynamics of the Korean labour market better, it will be useful to divide the two decade period into three sub-periods according to two great shocks: the social movement in June 1987, and the beginning of economic crisis in November 1997.

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<sup>36</sup> The studies of Millard, Scott and Sensier (1999) and Jang and Han (1999) were based on detrended data using the Hodrick-Prescott filter. As our study uses the data with (long-term) trend components, we need the stationarity test.



Chart 2.2 Log of main labour indicators: long-term trend (1982 Q3-2002 Q1)



The first period corresponds to the pre-social-movement: 1982 Q3-1987 Q2. Log wages are under log productivity and log real GDP. We can see that workers must be resigned to low wages and long working hours under the military regime. Unemployment does not decrease much, thus the labour market is not tight.

The second period corresponds to the period between the social movement and the economic crisis: 1987 Q3-1997 Q3. After the social movement, real wages rise rapidly over labour productivity with the strong activity of the labour union. Moreover, unemployment decreases rapidly, which accelerate wage increase. The continuous low unemployment brings about full employment and labour shortage, which induces foreign workers into the Korean labour market for the first time.

There are also two important institutional or policy changes in this period. The first modification is related to the legal working hours. Legal working hours are reduced from 48 weekly hours to 46 hours a week in 1989 Q2, from 46 hours to 44 hours in 1991 Q4. Chart 2.2 shows that during these six quarters, working hours fall rapidly and hourly real wage increases again (with the tightened labour market circumstances). The second change is related to wage policy in order to cope with the continuous wage increase over labour productivity: the government drives strong income policy with a ‘rigid wage guideline’, especially to larger firms at the beginning of 1992. The impact of the ‘wage guideline’ is presented in our graph; hourly real wages of permanent workers (WAGE\_P) decrease exceptionally in 1992 Q2-Q3. And the graph also shows that the governmental income policy appear unsuccessful. The policy impacts last only two quarters, and are only for permanent workers. Starting in 1992 Q4, wage level recovers to the long-term trend. A more significant feature may be the fact that wage is increasing along with an increase in unemployment.

Until the crisis, the gap between real wages and labour productivity expanded. On the other hand, regular employment stops increasing in 1995, while working hour of permanent workers (HOUR\_P) stops decreasing in 1991. On the other hand, working hours of all the employees (HOUR\_A) continue to decrease along with the total increase in employment (in the non-agricultural sector).

The last period corresponds to the period between the beginning of the economic crisis and the latest quarter, 1997 Q4-2002 Q1. An important institutional change is the adoption of employment adjustment for “urgent managerial needs” in early 1998. Every labour market indicator experiences severe change during this period. Generally, all labour indicators except

working hours show quick and strong adjustment to external shocks. Wage adjustment seems to be very strong: real wages decrease at the same rate as unemployment increases.

However, more complex labour adjustments among different types of workers are seen in Chart 2.2. First of all, we can see that the rise and recovery of unemployment is very significant. Another very significant change is seen in regular employment: its decrease is very large but its recovery is the slowest. Total employment does not show a quick recovery pattern either, in spite of decreasing unemployment. The reasons of delayed employment recovery may be partly explained by the changing patterns of working hours and real wages. Working hours show an increasing trend in permanent workers (HOUR\_P) and stop the decreasing trend in all employees (HOUR\_A) after the crisis. Real wages of all dependent workers (WAGE\_A) have access to labour productivity, while real wages of permanent workers (WAGE\_P) tend to have access to its long-term trend (over labour productivity). It is clear that higher wages (over labour productivity) and longer working hours in permanent workers reflect the low level of regular employment after the crisis. For the irregular workers, the opposite case is true because employment, wages and working hours of total employees show different adjustment patterns: with decreased wages, hours, and increased employment. All these features suggest that income inequality and labour market segmentation between regular and irregular workers widen after the crisis with the rapid fall of unemployment.

#### Methods: a simple business cycle model

A simple method for investigating the volatility of different macro-economic variables over the business cycle is to analyse the correlation between the growth rates of the GDP and the increase rates of labour market variables. In this manner, we can analyse which labour market variables move in tandem with the business cycle.

On the other hand, for analysing the so-called non-linear behaviour (asymmetric behaviour) of the labour market over the business cycle, we use the equations of Millard, Scott and Sensier (1999) mentioned above as follows:

$$dL_t = C_0 + \alpha \text{RECESS}_t + \beta dL_{t-1} + \gamma \text{RECESS} dL_{t-1} + e_t$$

where  $dL_t$  indicates a variation (over the previous quarter) related to a particular labour market variable (such as total labour input, employment, unemployment, working hours,

hourly real wages, etc.). RECESS takes the value of one when the economy is in a recession and zero otherwise.  $dL_{t-1}$  indicates  $dL_t$  in the previous quarter. Here our main interest relates to the coefficient  $\alpha$  and  $\gamma$ . If the growth of a particular labour market variable is lower (higher in the case of unemployment) in recessions than in expansions, then we should find  $\alpha$  to be significantly negative (positive in unemployment). The coefficient  $\gamma$  relates to the speed at which the labour market variable responds to exogenous disturbances. If  $\gamma$  is negative (positive in unemployment), then labour market dynamics slow down in a recession, where if it is positive (negative in unemployment), the labour market works more quickly in recessions. Thus, let's call the variable 'RECESS  $dL_{t-1}$ ' the variable 'SPEED'. In this equation  $C_0$  means a constant, and  $e_t$ , the error term, is normally distributed.

## B. Correlation analysis on labour adjustment

### Correlation between GDP and labour market indicators (Table 2.8-2.10)

Table 2.8 shows the results of Pearson's correlation analysis for cyclical behaviour of the Korean labour market during the whole period (1982 Q4-2002 Q1). The Table indicates the cross-correlation between the increase rate of each labour market indicator and the GDP growth rate according to time lags. Column 0 indicates the correlation between the GDP growth rate and the growth rate of each labour market variable *in the current quarter*, and column minus 1 indicates the correlation between the GDP growth rate in the current quarter and the growth rate of each labour market variable *in the previous quarter*. And column 1 indicates the correlation between the GDP growth rate in the current quarter and the growth rate of each labour market variable *in the following quarter*, and so on. In this manner, we can verify whether each labour market variable leads or lags output.

Over the whole period, all labour market indicators move in tandem with the business cycle. Several important facts can be summarized as follows;

(1) Total labour input (INPUT, INPUT\_A and INPUT\_P), employment (EMP and EMP\_N) and unemployment (UN and UN\_N) correlate closely to the business cycle, while working hours (HOUR\_A and HOUR\_P) correlate less to the business cycle. Hourly real wages (WAGE\_A and WAGE\_P) and the labour force (LF and LF\_N) are also sensitive to the business cycle.

Table 2.8 Pearson's correlation between GDP rates and labour market indicators: whole period (1982 Q4-2002 Q1: Obs. 78 quarters)

	Mean	Std. Dev.	-4	-3	-2	-1	0	1	2	3	4
RGDP	1.76	1.22									
INPUT	0.35	0.92	-0.12	0.03	<b>0.30</b>	<b>0.59</b>	<b>0.73</b>	<b>0.67</b>	<b>0.46</b>	<b>0.19</b>	-0.08
INPUT_A	0.80	1.24	-0.04	0.13	<b>0.37</b>	<b>0.63</b>	<b>0.80</b>	<b>0.76</b>	<b>0.55</b>	<b>0.27</b>	0.00
INPUT_P	0.78	1.30	0.00	0.15	<b>0.28</b>	<b>0.43</b>	<b>0.59</b>	<b>0.66</b>	<b>0.60</b>	<b>0.44</b>	<b>0.19</b>
EMP	0.56	0.71	-0.12	0.07	<b>0.33</b>	<b>0.58</b>	<b>0.69</b>	<b>0.64</b>	<b>0.50</b>	<b>0.31</b>	0.07
EMP_N	0.92	0.82	-0.05	0.12	<b>0.35</b>	<b>0.62</b>	<b>0.80</b>	<b>0.76</b>	<b>0.55</b>	<b>0.31</b>	0.10
DEP	0.91	1.05	-0.03	0.15	<b>0.38</b>	<b>0.60</b>	<b>0.75</b>	<b>0.71</b>	<b>0.53</b>	<b>0.32</b>	0.11
DEP_M	0.73	0.92	-0.04	0.05	<b>0.24</b>	<b>0.52</b>	<b>0.76</b>	<b>0.81</b>	<b>0.64</b>	<b>0.41</b>	0.17
DEP_F	1.24	1.50	0.01	<b>0.23</b>	<b>0.42</b>	<b>0.55</b>	<b>0.59</b>	<b>0.53</b>	<b>0.40</b>	<b>0.23</b>	0.05
PER	0.89	1.05	-0.06	0.05	<b>0.22</b>	<b>0.43</b>	<b>0.63</b>	<b>0.73</b>	<b>0.71</b>	<b>0.61</b>	<b>0.45</b>
PER_M	0.75	0.95	0.00	0.04	0.16	<b>0.35</b>	<b>0.57</b>	<b>0.71</b>	<b>0.71</b>	<b>0.62</b>	<b>0.45</b>
PER_F	1.16	1.43	-0.09	0.09	<b>0.27</b>	<b>0.44</b>	<b>0.58</b>	<b>0.63</b>	<b>0.61</b>	<b>0.53</b>	<b>0.39</b>
DAILY	1.03	2.96	0.01	<b>0.21</b>	<b>0.42</b>	<b>0.54</b>	<b>0.49</b>	<b>0.23</b>	-0.14	<b>-0.41</b>	<b>-0.54</b>
DAILY_M	0.68	2.90	-0.09	0.10	<b>0.35</b>	<b>0.57</b>	<b>0.60</b>	<b>0.34</b>	-0.10	<b>-0.44</b>	<b>-0.56</b>
DAILY_F	1.57	3.92	0.10	<b>0.26</b>	<b>0.40</b>	<b>0.42</b>	<b>0.29</b>	0.08	-0.15	<b>-0.33</b>	<b>-0.42</b>
UN	0.49	9.72	<b>0.20</b>	0.06	<b>-0.23</b>	<b>-0.59</b>	<b>-0.82</b>	<b>-0.75</b>	<b>-0.47</b>	-0.19	-0.03
UN_N	0.53	9.74	<b>0.20</b>	0.06	<b>-0.23</b>	<b>-0.59</b>	<b>-0.82</b>	<b>-0.75</b>	<b>-0.47</b>	<b>-0.19</b>	-0.03
LF	0.54	0.45	0.02	0.18	<b>0.34</b>	<b>0.42</b>	<b>0.39</b>	<b>0.31</b>	<b>0.29</b>	<b>0.27</b>	0.14
LF_N	0.88	0.52	0.14	<b>0.28</b>	<b>0.42</b>	<b>0.52</b>	<b>0.55</b>	<b>0.47</b>	<b>0.35</b>	<b>0.26</b>	0.18
HOUR_A	-0.21	0.41	-0.04	0.01	0.17	<b>0.33</b>	<b>0.39</b>	<b>0.28</b>	0.08	-0.10	<b>-0.25</b>
HOUR_P	-0.19	0.66	0.06	0.11	0.19	<b>0.23</b>	<b>0.21</b>	0.14	-0.01	<b>-0.22</b>	<b>-0.37</b>
WAGE_A	1.47	1.66	-0.05	0.01	0.11	<b>0.24</b>	<b>0.32</b>	<b>0.38</b>	<b>0.39</b>	<b>0.36</b>	<b>0.35</b>
WAGE_P	1.71	1.93	-0.07	0.11	<b>0.31</b>	<b>0.43</b>	<b>0.39</b>	<b>0.29</b>	0.18	0.04	-0.04

Notes: The bold figures indicate that the results are statistically significant at the 0.10 level.

Sources and definitions of variables: See Table 2.7.

(2) There are no significant lags in total employment (EMP) and unemployment variables to the GDP growth rate. Total employment and unemployment respond most strongly to output at almost the same quarter. It supports the result of our previous comparative analysis within the framework of employment systems, which indicated the lowest time lag effect of economic growth on employment in Korea among eleven OECD countries (see Table 2.1). Moreover, the correlation between unemployment or total employment and the GDP disappears after three-quarters.

(3) The cause of little time lag between total employment and the GDP is explained by the fact that growth of daily workers (DAILY) leads GDP, while that of permanent workers (PER) lags GDP. The positive correlation between permanent employment and the GDP is strongest one or two quarters later, but daily employment begins to correlate negatively three-quarters

later. The high proportion of daily workers in Korea makes the total employment respond more quickly to output.

(4) Employment adjustment of female workers (DEP\_F, PER\_F and DAILY\_F) leads that of male workers (DEP\_M, PER\_M and DAILY\_M).

(5) The labour force is also sensitive to output leading by about one quarter.

(6) Working hours of permanent workers (HOUR\_P) are less sensitive to output than those of total employees (HOUR\_A).

(7) Real wages of permanent workers (WAGE\_P) tend to lead output, but real wages of all dependent workers (WAGE\_A) tend to lag output.

(8) All these results suggest that employment adjustment starts in the non-regular sector, while wage adjustment starts in the regular sector<sup>37</sup>.

We can compare these results with the cases of the United Kingdom in the period 1986-1996, according to the study of Millard, Scott and Sensier (1999). Though the data and methods are different from ours, they show that in the U.K. real wages barely correlate to output (correlation: 0.01), and average working hours correlate closely to output (correlation: 0.62). Hour adjustment is stronger in the U.K., while wage adjustment is stronger in Korea.

In Table 2.9 we analyse the trend of labour adjustment by separating the whole period into three sub-periods; the 1980s, the pre-crisis 1990s and the 1990s including the post-crisis period. We can compare the labour market behaviour in the 1980s with that of the pre-crisis 1990s. But, as the post-crisis period is comparatively short, we should compare the pre-crisis 1990s with the 1990s including the post-crisis. Changed labour market behaviours are summarized as follows:

(9) In the 1980s, labour adjustment is not very significant, except unemployment (UN) and working hours of all workers (HOUR\_A). Male daily employment (DAILY\_M) and working hours of permanent workers (HOUR\_P) have little correlation to the business cycle. Generally, the correlation between labour indicators and output are unstable in many cases, which may reflect the significant change in the labour market after the social movement in

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<sup>37</sup> As we have used data from which seasonal and irregular components are extracted, we also analysed the cross-correlation between GDP rates and growth rates of labour indicators with the raw data: 'the increase rates over the same quarter of the last year'. Though the time lag is different between the two 'increase rates' data, the results were very similar among them. Annex Table 2.2 shows the cross-correlation analysis with the growth rates 'over the same quarter of the last year'.

Table 2.9 Pearson's correlation between GDP rates and labour market indicators: with separate periods

	Mean	Std.	-4	-3	-2	-1	0	1	2	3	4
<b>The 1980s (1982 Q4- 1990 Q1): Obs. 30 quarters</b>											
RGDP	2.23	0.73									
INPUT	0.51	0.67	0.11	0.22	<b>0.39</b>	<b>0.44</b>	0.21	-0.12	-0.07	0.17	0.12
EMP	<b>0.77</b>	<b>0.57</b>	<b>0.35</b>	<b>0.35</b>	<b>0.34</b>	0.28	<b>0.03</b>	-0.25	-0.20	0.02	0.08
DEP	1.56	0.63	0.08	0.25	0.10	-0.13	-0.20	-0.15	0.06	<b>0.36</b>	<b>0.45</b>
DEP_M	1.24	0.53	-0.21	-0.21	-0.26	-0.16	0.14	0.30	<b>0.35</b>	<b>0.50</b>	<b>0.57</b>
DEP_F	2.15	1.37	0.27	<b>0.50</b>	<b>0.35</b>	-0.04	<b>-0.36</b>	<b>-0.43</b>	-0.16	0.16	0.22
PER	1.54	0.60	0.03	0.19	0.10	-0.05	-0.03	0.09	0.28	<b>0.51</b>	<b>0.61</b>
PER_M	1.38	0.61	-0.21	-0.18	-0.18	-0.18	-0.02	0.21	<b>0.40</b>	<b>0.59</b>	<b>0.68</b>
PER_F	1.89	1.09	<b>0.34</b>	<b>0.57</b>	<b>0.37</b>	0.07	-0.07	-0.14	-0.06	0.12	0.20
DAILY	1.63	2.29	0.03	0.17	0.10	-0.16	<b>-0.35</b>	<b>-0.38</b>	-0.26	-0.04	-0.01
DAILY_M	0.54	2.16	0.04	0.11	0.04	0.03	0.11	0.01	-0.20	-0.24	-0.27
DAILY_F	3.15	3.81	0.01	0.12	0.13	-0.14	<b>-0.49</b>	<b>-0.51</b>	-0.20	0.07	0.11
UN	-1.13	4.29	<b>0.32</b>	0.03	-0.09	-0.22	<b>-0.40</b>	<b>-0.47</b>	<b>-0.45</b>	<b>-0.36</b>	-0.25
HOURL_A	-0.25	0.41	<b>-0.32</b>	-0.01	<b>0.41</b>	<b>0.50</b>	0.26	-0.04	-0.04	0.18	0.15
HOURL_P	-0.26	0.68	0.16	0.05	-0.06	-0.06	0.04	0.18	0.28	0.18	-0.05
WAGE_A	2.14	1.49	-0.16	-0.20	-0.27	-0.26	-0.23	-0.05	0.23	<b>0.33</b>	0.26
WAGE_P	2.19	1.50	-0.24	-0.10	0.16	0.09	<b>-0.35</b>	<b>-0.48</b>	-0.25	-0.11	0.01
<b>The pre-crisis 1990s (1990 Q2- 1997 Q3): Obs. 30 quarters</b>											
RGDP	1.71	0.58									
INPUT	0.32	0.45	<b>0.31</b>	<b>0.36</b>	<b>0.45</b>	<b>0.60</b>	<b>0.65</b>	<b>0.31</b>	-0.04	-0.14	-0.10
EMP	<b>0.55</b>	<b>0.30</b>	<b>0.15</b>	<b>0.41</b>	<b>0.59</b>	<b>0.70</b>	<b>0.64</b>	<b>0.45</b>	<b>0.43</b>	<b>0.35</b>	0.01
DEP	0.69	0.48	<b>0.31</b>	<b>0.45</b>	<b>0.53</b>	<b>0.64</b>	<b>0.72</b>	<b>0.57</b>	<b>0.39</b>	0.21	-0.04
DEP_M	0.64	0.48	<b>0.53</b>	<b>0.47</b>	<b>0.43</b>	<b>0.53</b>	<b>0.75</b>	<b>0.65</b>	<b>0.35</b>	0.15	0.00
DEP_F	0.77	0.63	0.01	<b>0.31</b>	<b>0.50</b>	<b>0.57</b>	<b>0.46</b>	<b>0.33</b>	<b>0.35</b>	0.25	-0.09
PER	0.80	0.44	<b>0.58</b>	<b>0.62</b>	<b>0.62</b>	<b>0.66</b>	<b>0.68</b>	<b>0.54</b>	<b>0.42</b>	<b>0.32</b>	0.12
PER_M	0.65	0.50	<b>0.66</b>	<b>0.53</b>	<b>0.42</b>	<b>0.46</b>	<b>0.65</b>	<b>0.58</b>	<b>0.33</b>	0.13	-0.01
PER_F	1.05	0.61	0.23	<b>0.47</b>	<b>0.61</b>	<b>0.64</b>	<b>0.46</b>	<b>0.33</b>	<b>0.45</b>	<b>0.45</b>	0.18
DAILY	0.14	1.46	<b>-0.32</b>	-0.14	0.02	0.20	<b>0.37</b>	0.30	0.07	-0.14	-0.28
DAILY_M	0.58	1.09	-0.26	-0.11	0.10	<b>0.35</b>	<b>0.59</b>	<b>0.46</b>	0.17	0.06	0.04
DAILY_F	-0.34	2.20	<b>-0.32</b>	-0.15	-0.03	0.05	0.14	0.15	0.02	-0.18	<b>-0.33</b>
UN	0.63	4.47	<b>-0.47</b>	-0.28	-0.16	-0.26	<b>-0.55</b>	<b>-0.59</b>	<b>-0.35</b>	-0.16	-0.11
HOURL_A	-0.24	0.37	0.25	0.13	0.10	0.19	0.28	0.01	<b>-0.37</b>	<b>-0.40</b>	-0.09
HOURL_P	-0.14	0.38	0.01	-0.04	0.07	0.29	<b>0.44</b>	0.19	-0.20	<b>-0.33</b>	-0.09
WAGE_A	1.66	1.44	0.16	0.20	0.18	0.12	0.06	0.10	0.20	<b>0.40</b>	<b>0.55</b>
WAGE_P	1.72	1.86	0.15	<b>0.35</b>	<b>0.40</b>	0.27	-0.10	-0.29	-0.10	0.05	-0.06
<b>The 1990s + post-crisis (1990 Q2- 2002 Q1): Obs. 48 quarters</b>											
RGDP	1.46	1.38									
INPUT	0.24	1.04	-0.25	-0.07	0.23	<b>0.60</b>	<b>0.85</b>	<b>0.82</b>	<b>0.54</b>	0.16	-0.18
EMP	0.42	0.75	<b>-0.36</b>	-0.11	<b>0.25</b>	<b>0.62</b>	<b>0.84</b>	<b>0.83</b>	<b>0.62</b>	<b>0.33</b>	-0.02
DEP	0.51	1.06	<b>-0.27</b>	-0.04	<b>0.31</b>	<b>0.68</b>	<b>0.90</b>	<b>0.84</b>	<b>0.55</b>	0.21	-0.10
DEP_M	0.41	0.97	-0.21	-0.08	0.20	<b>0.56</b>	<b>0.84</b>	<b>0.87</b>	<b>0.65</b>	<b>0.32</b>	-0.02
DEP_F	0.67	1.30	<b>-0.33</b>	-0.04	<b>0.35</b>	<b>0.70</b>	<b>0.87</b>	<b>0.78</b>	<b>0.49</b>	0.14	-0.17
PER	0.49	1.07	<b>-0.30</b>	-0.17	0.09	<b>0.41</b>	<b>0.68</b>	<b>0.80</b>	<b>0.75</b>	<b>0.59</b>	<b>0.35</b>
PER_M	0.36	0.92	-0.19	-0.14	0.04	<b>0.33</b>	<b>0.63</b>	<b>0.79</b>	<b>0.76</b>	<b>0.59</b>	<b>0.32</b>
PER_F	0.70	1.44	<b>-0.39</b>	-0.20	0.11	<b>0.44</b>	<b>0.68</b>	<b>0.76</b>	<b>0.71</b>	<b>0.56</b>	<b>0.34</b>
DAILY	0.66	3.28	-0.07	0.16	<b>0.46</b>	<b>0.68</b>	<b>0.66</b>	<b>0.32</b>	-0.18	<b>-0.58</b>	<b>-0.74</b>
DAILY_M	0.77	3.31	-0.13	0.09	<b>0.44</b>	<b>0.74</b>	<b>0.76</b>	<b>0.44</b>	-0.09	<b>-0.49</b>	<b>-0.65</b>
DAILY_F	0.57	3.68	-0.01	0.21	<b>0.43</b>	<b>0.55</b>	<b>0.46</b>	0.14	<b>-0.29</b>	<b>-0.64</b>	<b>-0.77</b>
UN	1.50	11.86	<b>0.25</b>	0.12	-0.21	<b>-0.63</b>	<b>-0.88</b>	<b>-0.79</b>	<b>-0.46</b>	-0.15	0.03
HOURL_A	-0.18	0.41	0.07	0.05	0.13	<b>0.34</b>	<b>0.51</b>	<b>0.46</b>	0.17	-0.16	<b>-0.36</b>
HOURL_P	-0.14	0.65	0.11	0.23	<b>0.39</b>	<b>0.44</b>	<b>0.34</b>	0.18	-0.08	<b>-0.34</b>	<b>-0.46</b>
WAGE_A	1.06	1.64	-0.17	-0.06	0.12	<b>0.30</b>	<b>0.39</b>	<b>0.43</b>	<b>0.37</b>	<b>0.31</b>	<b>0.31</b>
WAGE_P	1.42	2.12	-0.13	0.07	<b>0.28</b>	<b>0.46</b>	<b>0.51</b>	<b>0.41</b>	0.22	0.01	-0.13

Notes: The bold figures indicate that the results are statistically significant at the 0.10 level.  
Sources and definitions of variables: See Table 2.7.

1987 (see Chart 2.2). We can also see very different employment adjustment between males and females. Female dependent employment (DEP\_F), daily employment (DAILY) and female daily employment (DAILY\_F) have a negative correlation to output. The negative correlation between daily workers and the GDP growth rate means that business booms lead to decreasing daily workers and increasing permanent workers. Hourly real wages of permanent workers (WAGE\_P) even show a negative correlation to output rather than a positive correlation. It may reflect the impacts of the social movement of June 1987 and the reduction of legal working hours in 1989, which brings about a significant increase in hourly real wages without connection to the business cycle (see Chart 2.2).

(10) In the pre-crisis 1990s, the Korean labour market was in the process of becoming more sensitive to the business cycles in terms of total input, employment, and unemployment. Employment tends to lead output. Though it suggests the rapid employment adjustment to output, another reasonable explanation would be that the precedent employment adjustment may be based on the tightened labour market situation in which labour shortage prevails. The different employment adjustment a pattern between male and female converges into similar pattern. Reverse adjustment of female daily employment against output disappears in the pre-crisis 1990s. But working hours of total workers (HOUR\_A) do not correlate to output (but negatively correlate two and three quarter later), while working hours of permanent workers (HOUR\_P) show a significantly positive correlation to output during this period. The correlation between real wages and output is a little unstable: WAGE\_P leads output by two or three quarters but WAGE\_A lags output by three or four quarters. It may reflect the impact of strong wage-guideline in 1992 (see Chart 2.2).

(11) When we compare the 1990s including the post-crisis period, with the pre-crisis 1990s, we can see that correlation between labour market indicators and the business cycle becomes much stronger after the crisis. Almost every labour indicator shows a very strong correlation to output with stable time lags. Female and male employees also move together in tandem with output after the crisis. Daily employment leads output, while permanent employment lags output. Hours and wages significantly correlate to output, though the relationship is weaker relative to the relationship between employment and output. All these features suggest that the Korean labour market tends to react more strongly to great external shocks.



Table 2.10 Pearson's correlation between GDP rates and different types of employment

	Mean	Std. Dev.	-4	-3	-2	-1	0	1	2	3	4
<b>Pre-crisis (1989 Q2- 1997 Q3): Obs. 34 quarters</b>											
RGDP	1.76	0.64									
REGU	0.69	0.90	<b>0.59</b>	<b>0.69</b>	<b>0.64</b>	<b>0.54</b>	<b>0.34</b>	0.23	0.25	0.21	0.10
REGU_M	0.64	0.85	<b>0.65</b>	<b>0.71</b>	<b>0.61</b>	<b>0.46</b>	<b>0.31</b>	0.27	0.28	0.21	0.05
REGU_F	0.79	1.17	<b>0.43</b>	<b>0.60</b>	<b>0.67</b>	<b>0.65</b>	<b>0.38</b>	0.10	0.08	0.15	0.23
TEMP	1.19	1.47	-0.13	-0.21	-0.14	0.04	0.17	0.10	0.02	-0.04	-0.07
TEMP_M	0.89	1.87	-0.16	<b>-0.36</b>	<b>-0.31</b>	-0.07	0.20	0.10	-0.12	-0.20	-0.08
TEMP_F	1.45	1.38	-0.05	-0.01	0.06	0.12	0.11	0.11	0.20	0.16	-0.04
DAILY	0.56	2.00	-0.12	0.00	0.20	<b>0.37</b>	0.25	-0.07	-0.14	-0.09	-0.09
DAILY_M	0.84	1.27	-0.08	0.00	0.18	<b>0.45</b>	<b>0.62</b>	<b>0.30</b>	-0.07	-0.11	0.03
DAILY_F	0.32	3.24	-0.12	0.00	0.18	0.28	0.06	-0.21	-0.16	-0.07	-0.09
<b>Whole period (1989 Q2- 2002 Q1): Obs. 52 quarters</b>											
RGDP	1.52	1.36									
REGU	0.30	1.33	-0.10	0.02	0.17	<b>0.32</b>	<b>0.46</b>	<b>0.57</b>	<b>0.62</b>	<b>0.59</b>	<b>0.47</b>
REGU_M	0.26	1.15	0.00	0.07	0.12	0.18	<b>0.31</b>	<b>0.49</b>	<b>0.64</b>	<b>0.66</b>	<b>0.53</b>
REGU_F	0.41	2.11	-0.21	-0.03	0.23	<b>0.47</b>	<b>0.59</b>	<b>0.59</b>	<b>0.51</b>	<b>0.42</b>	<b>0.33</b>
TEMP	0.99	1.55	<b>-0.33</b>	<b>-0.30</b>	-0.05	<b>0.31</b>	<b>0.56</b>	<b>0.58</b>	<b>0.43</b>	0.19	-0.04
TEMP_M	0.86	1.95	<b>-0.26</b>	<b>-0.30</b>	-0.07	<b>0.31</b>	<b>0.55</b>	<b>0.49</b>	0.21	-0.09	<b>-0.28</b>
TEMP_F	1.12	1.52	<b>-0.35</b>	<b>-0.25</b>	-0.02	<b>0.25</b>	<b>0.47</b>	<b>0.57</b>	<b>0.58</b>	<b>0.46</b>	<b>0.23</b>
DAILY	0.89	3.33	-0.04	0.18	<b>0.48</b>	<b>0.69</b>	<b>0.62</b>	<b>0.26</b>	-0.19	<b>-0.53</b>	<b>-0.67</b>
DAILY_M	0.92	3.23	-0.10	0.11	<b>0.45</b>	<b>0.74</b>	<b>0.76</b>	<b>0.43</b>	-0.10	<b>-0.49</b>	<b>-0.62</b>
DAILY_F	0.93	3.99	0.01	0.22	<b>0.46</b>	<b>0.56</b>	<b>0.41</b>	0.07	<b>-0.28</b>	<b>-0.53</b>	<b>-0.63</b>

Notes: The bold figures indicate that the results are statistically significant at the 0.10 level.  
Sources and definitions of variables: See Table 2.7.

Now we analyse the different patterns of employment adjustment by employment status. Table 2.10 shows employment adjustment patterns of regular workers, temporary workers and daily workers respectively. We restrict our analysis to the period between 1989 Q2 and 2002 Q1, for which data are available, and we also separate the pre-crisis period from the whole period to analyse the impact of the crisis.

(12) The relationship between regular employment and output is very strong even before the crisis, while temporary employment does not show a significant correlation to output. Before the crisis, regular employment tended to lead output by three quarters.

(13) During the whole period, temporary employment moves in tandem with output. Regular employment lags output by two quarters, which is a changed pattern after the crisis.

#### Correlation between real wage and other labour market indicators (Table 2.11)

We now address the important role of wage adjustment to employment, unemployment and labour productivity. Table 2.11 shows the cross-correlations between them.

Table 2.11 Pearson's correlation between real wage rates and other labour market indicators

	Mean	Std. Dev.	-4	-3	-2	-1	0	1	2	3	4
<b>WAGE_P (hourly real wage of permanent workers)</b>											
<b>Whole period (1982 Q4-2002 Q1): 78 quarters</b>											
WAGE_P	1.71	1.93									
PER_N	0.96	1.07	0.12	<b>0.21</b>	<b>0.29</b>	<b>0.31</b>	<b>0.32</b>	<b>0.39</b>	<b>0.47</b>	<b>0.45</b>	<b>0.31</b>
UN_N	0.53	9.74	0.10	0.01	<b>-0.26</b>	<b>-0.43</b>	<b>-0.44</b>	<b>-0.32</b>	-0.18	-0.12	-0.05
PROD	1.39	0.92	-0.15	-0.01	<b>0.20</b>	<b>0.22</b>	0.09	0.05	0.04	0.05	0.10
<b>The 1980s (1982 Q4-1990 Q1): 30 quarters</b>											
WAGE_P	2.19	1.50									
PER_N	1.68	0.58	0.01	0.20	<b>0.36</b>	0.17	-0.15	-0.29	-0.31	-0.28	-0.15
UN_N	-1.08	4.12	0.20	<b>0.32</b>	0.11	-0.07	-0.13	-0.04	0.17	0.31	<b>0.41</b>
PROD	1.67	1.08	-0.01	0.05	0.00	-0.24	-0.29	-0.01	0.22	0.22	0.20
<b>The pre-crisis 1990s (1990 Q2-1997 Q3): 30 quarters</b>											
WAGE_P	1.72	1.86									
PER_N	0.83	0.45	<b>0.42</b>	<b>0.39</b>	0.26	0.05	-0.11	-0.01	<b>0.35</b>	<b>0.50</b>	<b>0.43</b>
UN_N	0.64	4.45	-0.08	-0.09	-0.22	-0.17	0.14	<b>0.40</b>	0.21	-0.16	-0.27
PROD	1.39	0.42	-0.23	-0.04	0.13	0.12	-0.13	<b>-0.37</b>	-0.27	0.07	<b>0.37</b>
<b>The 1990s + post-crisis (1990 Q2-2002 Q1): 48 quarters</b>											
WAGE_P	1.42	2.12									
PER_N	0.51	1.06	0.01	0.09	0.18	<b>0.26</b>	<b>0.36</b>	<b>0.49</b>	<b>0.62</b>	<b>0.59</b>	<b>0.39</b>
UN_N	1.54	11.93	0.14	0.00	<b>-0.29</b>	<b>-0.48</b>	<b>-0.48</b>	<b>-0.36</b>	-0.22	-0.16	-0.08
PROD	1.21	0.76	<b>-0.35</b>	-0.14	<b>0.27</b>	<b>0.47</b>	<b>0.26</b>	-0.01	-0.16	-0.10	0.08
<b>WAGE_A (hourly real wage of all dependent workers)</b>											
<b>Whole period (1982 Q4-2002 Q1): 78 quarters</b>											
WAGE_A	1.47	1.66									
DEP_N	1.01	1.07	<b>0.29</b>	<b>0.28</b>	<b>0.34</b>	<b>0.43</b>	<b>0.45</b>	<b>0.47</b>	<b>0.41</b>	<b>0.27</b>	0.16
UN_N	0.53	9.74	<b>-0.25</b>	<b>-0.22</b>	<b>-0.27</b>	<b>-0.35</b>	<b>-0.38</b>	-0.34	-0.16	0.00	0.08
PROD	1.39	0.92	0.17	<b>0.23</b>	<b>0.31</b>	<b>0.37</b>	<b>0.34</b>	0.15	-0.01	-0.02	0.04
<b>The 1980s (1982 Q4-1990 Q1): 30 quarters</b>											
WAGE_A	2.14	1.49									
DEP_N	1.74	0.59	<b>-0.35</b>	<b>-0.47</b>	<b>-0.32</b>	0.03	0.39	<b>0.60</b>	<b>0.51</b>	<b>0.24</b>	0.00
UN_N	-1.08	4.12	<b>-0.42</b>	-0.27	-0.04	0.13	0.07	-0.04	-0.01	0.04	0.09
PROD	1.67	1.08	-0.02	0.14	0.22	0.19	0.12	0.00	-0.05	0.09	0.19
<b>The pre-crisis 1990s (1990 Q2-1997 Q3): 30 quarters</b>											
WAGE_A	1.66	1.44									
DEP_N	0.74	0.47	<b>0.69</b>	<b>0.69</b>	<b>0.51</b>	0.19	-0.24	<b>-0.52</b>	<b>-0.42</b>	-0.20	0.10
UN_N	0.64	4.45	<b>-0.41</b>	-0.29	-0.26	<b>-0.32</b>	<b>-0.31</b>	-0.02	<b>0.34</b>	<b>0.52</b>	<b>0.45</b>
PROD	1.39	0.42	0.16	0.13	0.22	<b>0.47</b>	<b>0.44</b>	0.07	-0.27	<b>-0.44</b>	<b>-0.39</b>
<b>The 1990s + post-crisis (1990 Q2-2002 Q1): 48 quarters</b>											
WAGE_A	1.06	1.64									
DEP_N	0.55	1.06	<b>0.29</b>	<b>0.32</b>	<b>0.39</b>	<b>0.42</b>	<b>0.34</b>	<b>0.32</b>	0.24	0.12	0.06
UN_N	1.54	11.93	-0.18	-0.17	<b>-0.29</b>	<b>-0.44</b>	<b>-0.47</b>	<b>-0.40</b>	-0.17	0.05	0.12
PROD	1.21	0.76	0.22	0.21	<b>0.30</b>	<b>0.44</b>	<b>0.43</b>	0.15	-0.16	<b>-0.26</b>	-0.15

Notes: The bold figures indicate that the results are statistically significant at the 0.10 level.

Sources and definitions of variables: See Table 2.7.

The upper side of the Table shows the correlation between the hourly real wages of permanent workers (WAGE\_P) and other labour indicators, and the lower side shows the correlation between hourly real wage of total dependent workers (WAGE\_A) and other labour indicators. Here, we use unemployed persons in the non-agricultural sector as an unemployment indicator. As an employment indicator we use different indicators with different wages: permanent employment in the non-agricultural sector (PER\_N) corresponds to WAGE\_A and dependent employment in the non-agricultural sector (DEP\_N) corresponds to WAGE\_A. In Table 2.11 too, the column -1 indicates the correlation between increase rate of real wages in the current quarter and the increase rates of other labour market indicators in the previous quarter, and so on. The main findings are as follows:

(1) Over the whole period, real wage rates significantly correlate to employment, unemployment and labour productivity. Correlation between real wage and employment amounts to 0.47, and its correlation to unemployment goes to -0.44 (-0.38 with WAGE\_A). Hourly real wages have a positive correlation to labour productivity (0.22 with WAGE\_P and 0.37 with WAGE\_A). These results are very different from the study of Millard, Scott and Sensier (1999) on the U.K. labour market in the period 1976-1996. In the U.K. labour market, real wages barely correlate to employment (p. 9). It suggests that wage flexibility may be strong in Korea.

(2) In the 1980s, these correlations are unstable or insignificant. It may reflect the impacts of the social movement in June 1987 and the reduction of legal working hour in 1989 as mentioned above.

(3) In the pre-crisis 1990s, we can see a very different relationship in WAGE\_P (wage of permanent workers) and WAGE\_A (wage of total dependent workers). WAGE\_P shows reverse relationships: a positive correlation to unemployment and a negative correlation to labour productivity<sup>38</sup>. This relationship may be distorted by the governmental wage guideline in 1992 (see Chart 2.2). However, WAGE\_A shows the opposite relationship (negative to

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<sup>38</sup> The reverse relationship also can be found in the cross-correlation between hourly real wages and working hours during the period 1982 Q4-1992 Q4. The negative relationship between real wage and working hours was strongest in the period 1982 Q4-1992 Q4 (-0.44 between WAGE\_P and HOUR\_P, -0.62 between WAGE\_A and HOUR\_A), but the relationship was positive during the period 1993 Q1-2002 Q1 (+0.43 between WAGE\_P and HOUR\_P, +0.46 between WAGE\_A and HOUR\_A). It suggests that the reduction of legal working hours (1989-1991) with the effects of the social movement (in 1987) increased hourly real wages without any connection to the business cycle.

unemployment and positive to productivity). WAGE\_A has been to sensitive to unemployment and labour productive since the pre-crisis 1990s.

(4) After the crisis (in the period between 1990 Q2-2002 Q1), WAGE\_P and WAGE\_A have a stronger correlation to employment, unemployment and productivity. The trend of increasing wage adjustment can be seen here, too.

All these above results indicate that Korea's labour market indicators are very sensitive to the business cycle, and its influence increased after the crisis. This simple cross-correlation analysis, however, cannot answer to the question: does the Korean labour market respond more quickly to business cycles in a period of recession? If so, market equilibrium may be easily obtained from a negative external shock. We now address the asymmetric behaviour in the Korean labour market in detail with the equations presented above.

### C. Asymmetric behaviour in the labour market

#### *Asymmetric behaviour in the Korean labour market (Table 2.12)*

Table 2.12 reports the OLS results on labour adjustment in Korea in different periods. The first line shows the independent variables, and the first column indicates the dependent variables. Our main interest is in the values of coefficient  $\alpha$  (RECESS) and  $\gamma$  (SPEED). In particular, we expect a positive value for  $\gamma$  (negative value in unemployment) because the speed of labour adjustment must be quicker in recessions for market clearing.

In models related to the period of pre-crisis (59 quarters), Even before the crisis, we can find that several variables have significant coefficients in  $\alpha$ . The growth rates in labour input of all dependent workers (INPUT\_A), employment in the non-agricultural sector (EMP\_N), male dependent employment (DEP\_M) and male daily employment (DAILY\_M) are lower in recession than in expansion. On the contrary, the growth rates of unemployment (UN and UN\_N) are higher during a recession than in expansion. Other labour indicators, such as permanent employment, working hours and real wages, do not have significant values in  $\alpha$ .

Table 2.12 OLS results on labour adjustment (business cycle model)

Dependent Vars.	$\alpha$ (RECESS)	$\gamma$ (SPEED)	$\beta$ ( $dL_{t-1}$ )	INTERCEPT	R <sup>2</sup>
<b>Pre-crisis period (1983 Q1-1997 Q3): Obs. 59 quarters</b>					
INPUT	-0.0013 (0.0011)	-0.1951 (0.1594)	0.7622 (0.1268)***	0.0019 (0.0009)**	0.482
INPUT_A	-0.0027 (0.0012)**	0.0573 (0.0926)	0.7988 (0.0904)***	0.0027 (0.0011)**	0.705
INPUT_P	-0.0021 (0.0019)	-0.0342 (0.1361)	0.7266 (0.1275)***	0.0038 (0.0016)**	0.472
EMP	-0.0005 (0.0009)	-0.0559 (0.1173)	0.7580 (0.1279)***	0.0019 (0.0010)*	0.498
EMP_N	-0.0016 (0.0008)*	0.0223 (0.0678)	0.8270 (0.0955)***	0.0023 (0.0011)**	0.616
DEP	-0.0015 (0.0011)	0.1127 (0.0845)	0.7726 (0.0986)***	0.0024 (0.0012)*	0.695
DEP_M	-0.0028 (0.0009)***	0.0007 (0.0807)	0.8966 (0.0990)***	0.0022 (0.0009)**	0.736
DEP_F	0.0008 (0.0021)	0.2128 (0.1069)*	0.6619 (0.0991)***	0.0025 (0.0021)	0.620
PER	-0.0013 (0.0009)	0.0721 (0.0682)	0.8402 (0.0864)***	0.0017 (0.0011)	0.751
PER_M	-0.0009 (0.0011)	-0.0008 (0.0922)	0.8565 (0.1088)***	0.0017 (0.0011)	0.686
PER_F	-0.0014 (0.0017)	0.1679 (0.0964)*	0.6593 (0.0951)***	0.0040 (0.0018)**	0.576
DAILY	-0.0021 (0.0038)	0.2528 (0.1661)	0.6034 (0.1219)***	0.0035 (0.0028)	0.554
DAILY_M	-0.0090 (0.0031)***	-0.0340 (0.1768)	0.6941 (0.1180)***	0.0064 (0.0022)***	0.535
DAILY_F	0.0096 (0.0061)	0.2383 (0.1535)	0.6956 (0.1124)***	-0.0026 (0.0045)	0.626
UN	0.0208 (0.0090)**	-0.1438 (0.1988)	0.8325 (0.1249)***	-0.0107 (0.0060)*	0.521
UN_N	0.0213 (0.0088)**	-0.1494 (0.1969)	0.8440 (0.1256)***	-0.0108 (0.0058)*	0.527
LF	0.0001 (0.0009)	-0.0332 (0.1181)	0.7262 (0.1285)***	0.0017 (0.0010)*	0.473
LF_N	-0.0005 (0.0008)	0.0067 (0.0678)	0.8179 (0.0948)***	0.0020 (0.0011)*	0.603
HOUR_A	-0.0011 (0.0009)	0.1360 (0.1892)	0.4762 (0.1428)***	-0.0006 (0.0006)	0.347
HOUR_P	-0.0005 (0.0010)	-0.1041 (0.1783)	0.7729 (0.1074)***	-0.0001 (0.0007)	0.561
WAGE_A	0.0005 (0.0026)	0.2584 (0.1048)**	0.6260 (0.1035)***	0.0040 (0.0022)*	0.647
WAGE_P	0.0000 (0.0042)	0.2346 (0.1793)	0.5138 (0.1248)***	0.0076 (0.0039)*	0.311
<b>Whole period (1983 Q1-2002 Q1): Obs. 77 quarters</b>					
INPUT	-0.0029 (0.0013)**	0.0685 (0.1334)	0.7937 (0.0938)***	0.0022 (0.0009)**	0.649
INPUT_A	-0.0051 (0.0015)***	0.1750 (0.0980)*	0.7998 (0.0734)***	0.0034 (0.0010)***	0.764
INPUT_P	-0.0019 (0.0020)	-0.0433 (0.1323)	0.8041 (0.1061)***	0.0024 (0.0014)	0.579
EMP	-0.0017 (0.0009)*	0.0224 (0.1069)	0.8294 (0.0885)***	0.0018 (0.0007)**	0.691
EMP_N	-0.0033 (0.0009)***	0.1104 (0.0758)	0.8440 (0.0662)***	0.0026 (0.0008)***	0.786
DEP	-0.0035 (0.0012)***	0.1791 (0.0854)**	0.7774 (0.0743)***	0.0029 (0.0009)***	0.782
DEP_M	-0.0042 (0.0010)***	0.0993 (0.0862)	0.8672 (0.0738)***	0.0027 (0.0007)***	0.795
DEP_F	-0.0016 (0.0019)	0.2457 (0.0972)**	0.6771 (0.0785)***	0.0032 (0.0015)**	0.709
PER	-0.0018 (0.0010)*	0.1614 (0.0729)**	0.8310 (0.0592)***	0.0014 (0.0008)*	0.840
PER_M	-0.0011 (0.0011)	0.0596 (0.0891)	0.8604 (0.0734)***	0.0012 (0.0008)	0.781
PER_F	-0.0021 (0.0016)	0.2583 (0.0856)***	0.7404 (0.0644)***	0.0024 (0.0012)*	0.784
DAILY	-0.0118 (0.0042)***	0.0730 (0.1448)	0.7559 (0.0881)***	0.0086 (0.0030)***	0.636
DAILY_M	-0.0199 (0.0040)***	0.1273 (0.1508)	0.7559 (0.0881)***	0.0123 (0.0028)***	0.660
DAILY_F	-0.0023 (0.0056)	0.0859 (0.1374)	0.7582 (0.0877)***	0.0044 (0.0041)	0.633
UN	0.0435 (0.0129)***	0.3797 (0.1296)***	0.6311 (0.1047)***	-0.0195 (0.0088)**	0.714
UN_N	0.0437 (0.0129)***	0.3851 (0.1294)***	0.6270 (0.1049)***	-0.0194 (0.0088)**	0.715
LF	-0.0001 (0.0007)	-0.0718 (0.1048)	0.8016 (0.0982)***	0.0013 (0.0007)*	0.579
LF_N	-0.0010 (0.0006)	0.0157 (0.0626)	0.8600 (0.0628)***	0.0016 (0.0007)**	0.765
HOUR_A	-0.0010 (0.0008)	0.1375 (0.1722)	0.5444 (0.1215)***	-0.0003 (0.0006)	0.375
HOUR_P	-0.0011 (0.0010)	-0.3252 (0.1564)**	0.9118 (0.0956)***	0.0000 (0.0007)	0.604
WAGE_A	-0.0003 (0.0023)	0.2920 (0.1014)***	0.6839 (0.0869)***	0.0021 (0.0017)	0.702
WAGE_P	-0.0037 (0.0037)	0.2951 (0.1620)*	0.5552 (0.1016)***	0.0079 (0.0030)***	0.415

Notes: 1) Equation:  $dL_t = C_0 + \alpha RECESS_t + \beta dL_{t-1} + \gamma RECESS_t dL_{t-1} + e_t$

2) Standard errors are indicated in parentheses.

3) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

With regard to the coefficient  $\gamma$ , the real wages of total dependent workers (WAGE\_A) have a positive  $\gamma$  value. It suggests that even before the crisis, real wages for all dependent workers

work more quickly in recession periods, but the wages of permanent workers (WAGE\_P) do not have a significant  $\gamma$  value. Concerning employment, only female employment (DEP\_F and PER\_F) indicates a positive coefficient for  $\gamma$ .

In models related to the total period including the crisis period, more variables give significant coefficients in  $\alpha$  and  $\gamma$ . The changed coefficients in models related to the whole period indicate the effects of the economic crisis on labour market behaviour. The following points can be made:

(1) Generally, many variables related to labour input and employment have significantly lower growth rates in recessions, and they move faster in recessions. However, we must pay attention to the exception in labour input of permanent workers (INPUT\_P) which does not show significant asymmetric behaviour in the business cycle.

(2) An asymmetric effect in unemployment adjustment becomes very significant after the crisis. The value of  $\gamma$  for unemployment becomes significant but it is positive. Though unemployment increases more in recession (positive value in  $\alpha$ ), it moves faster in recession than in expansion. This suggests the important fact that after the crisis unemployment tends to persist even in Korea (we will analysis this effect in detail in the following Section by the residual analysis of error correction model). Increased unemployment during the crisis may bring about the hysteresis effect of unemployment. Though the rapid recovery of unemployment in Korea after the crisis is an exceptional feature - in comparison to the European perspective in particular - it may not be very strange if we take into account the rapid economic recovery in Korea.

(3) Working hours of permanent workers (HOUR\_P) do not have significant  $\alpha$ , but has a *negative* value of  $\gamma$  (SPEED). This suggests that working hour adjustment for permanent workers is slower in recession than in expansion periods. It suggests that hour adjustment was not enacted significantly for permanent workers during the crisis. Working hours of total employees (HOUR\_A), however, do not show the evidence of slower adjustment in recessions ( $\gamma$  is positive but not significant in statistics).

(4) Real wages for permanent workers (WAGE\_P) give a significant coefficient in  $\gamma$  after the crisis and it is positive. Moreover, they have a negative coefficient in  $\alpha$ , though the coefficient is not statistically significant at 0.10 significance level. Thus, we may say that *during the crisis*, wage adjustment in permanent workers, as well as in all dependent workers, seems to be active.

The most important lesson from these results may be that if hour adjustment had been enacted more actively for permanent workers, unemployment might have been increased less during the crisis.

*Labour adjustment of regular workers (Table 2.13)*

We now compare the labour adjustments for different types of workers, such as regular workers, temporary workers and daily workers. All data relate to the period 1989 Q3-2002 Q1

Table 2.13 OLS results on labour adjustment (business cycle model): by employment status

Dependent Vars.	$\alpha$ (RECESS)	$\gamma$ (SPEED)	$\beta$ ( $dL_{t-1}$ )	INTERCEPT	R <sup>2</sup>
<b>Pre-crisis period (1989 Q3-1997 Q3): Obs. 33 quarters</b>					
REGU	0.0025 (0.0018)	-0.3341 (0.1844)*	1.1278 (0.1033)***	-0.0019 (0.0012)	0.814
REGU_M	0.0039 (0.0017)**	-0.4587 (0.1850)**	1.0721 (0.0980)***	-0.0016 (0.0011)	0.811
REGU_F	-0.0026 (0.0029)	-0.0968 (0.2286)	1.1477 (0.1494)***	-0.0014 (0.0020)	0.723
TEMP	-0.0069 (0.0028)**	0.5479 (0.3167)*	0.7396 (0.0956)***	0.0044 (0.0022)**	0.731
TEMP_M	-0.0121 (0.0041)***	0.2318 (0.4496)	0.7729 (0.1160)***	0.0070 (0.0027)**	0.635
TEMP_F	-0.0018 (0.0032)	0.2201 (0.2626)	0.7639 (0.1121)***	0.0033 (0.0027)	0.641
DAILY	-0.0053 (0.0040)	0.0755 (0.4863)	0.6035 (0.0989)***	0.0022 (0.0027)	0.605
DAILY_M	-0.0116 (0.0026)***	0.2684 (0.2201)	0.7440 (0.0966)***	0.0061 (0.0017)***	0.753
DAILY_F	-0.0008 (0.0062)	-0.0334 (0.3615)	0.5722 (0.0985)***	-0.0022 (0.0041)	0.566
<b>Whole period (1989 Q3-2002 Q1): Obs. 51 quarters</b>					
REGU	0.0010 (0.0014)	0.1470 (0.1105)	0.8769 (0.0639)***	-0.0004 (0.0009)	0.875
REGU_M	0.0035 (0.0015)**	-0.1311 (0.1479)	0.9240 (0.0704)***	-0.0013 (0.0010)	0.825
REGU_F	-0.0038 (0.0022)*	0.3842 (0.1005)***	0.7267 (0.0720)***	0.0023 (0.0014)	0.884
TEMP	-0.0080 (0.0027)***	0.0985 (0.1659)	0.8038 (0.0895)***	0.0049 (0.0018)***	0.681
TEMP_M	-0.0141 (0.0036)***	-0.0498 (0.1824)	0.8417 (0.1012)***	0.0076 (0.0023)***	0.640
TEMP_F	-0.0024 (0.0028)	0.0861 (0.1659)	0.7891 (0.0910)***	0.0028 (0.0019)	0.665
DAILY	-0.0189 (0.0052)***	0.0523 (0.2003)	0.7790 (0.0896)***	0.0101 (0.0036)***	0.704
DAILY_M	-0.0267 (0.0049)***	0.2669 (0.1766)	0.7681 (0.0944)***	0.0154 (0.0034)***	0.742
DAILY_F	-0.0129 (0.0061)**	-0.1461 (0.2276)	0.7557 (0.0827)***	0.0059 (0.0042)	0.681

Notes: 1) Equation:  $dL_t = C_0 + \alpha RECESS_t + \beta dL_{t-1} + \gamma RECESS dL_{t-1} + e_t$

2) Standard errors are indicated in parentheses.

3) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

where data by detailed employment status are available. Have regular workers enjoyed life-long employment security even in recession periods? If regular workers, especially male regular workers, were protected more by the employment protection legislation and trade union, their employment is naturally expected to give a negative or insignificant coefficient in  $\gamma$  (SPEED), and positive or insignificant coefficient in  $\alpha$  (RECESS).

Table 2.13 indicates that the answer to the question is yes.

(1) Before the crisis (1989 Q3-1997 Q3), male regular employment (REGU\_M) has a positive coefficient in  $\alpha$  and negative coefficient in  $\gamma$ . It is likely to decrease less and moves more slowly in recession than in expansion. Female regular employment (REGU\_F) does not have significant values in  $\alpha$  or  $\gamma$ . Male temporary employment (TEMP\_M) and male daily employment (DAILY\_M) have negative values in  $\alpha$ . Only male regular employment does not seem to be flexible. Employment adjustment is likely to be easy, especially for temporary workers (TEMP) relative to regular workers (REGU) before the crisis. Insignificant coefficients for daily employment (DAILY) may be based on its duplicated characteristics with counter-cyclical characteristics and pro-cyclical characteristics.

(2) In models for the total period, including the crisis period (1989 Q3-2002 Q1), the coefficients in  $\alpha$  become stronger in most of models except the model for male regular employment compared with the pre-crisis period. The positive coefficient of  $\alpha$  in the male regular employment model does not change much. On the other hand, the coefficient of  $\gamma$  in the female regular employment model becomes positive after the crisis, while in the male regular employment model it still shows a positive value (though it is not statistically significant). All these results suggest that male regular employment seems to be strongly protected and less flexible.



### 2.3 Labour market equilibrium: Error Correction Mechanism

This Section analyses the long-term dynamics of labour adjustment by analysing the Error Correction Mechanism (ECM) in the labour market. Though the previous Section dealt with the dynamics of labour adjustment to the business cycle, the models did not take into account the long-term process of labour market equilibrium. The business cycle models generally focus on the short-term process of market equilibrium. Though the increasing sensitivity of labour market variables to the short-term business cycle suggests that the Korean labour market is flexible and long-term equilibrium may be easily obtained, it does not give sufficient explanations to why Korea's high unemployment decreased so rapidly after the crisis. Although the labour indicators (for example, unemployment) have changed cyclically in many European countries, they have experienced persistent structural unemployment. It is well known that in many European countries high unemployment above its equilibrium level has not returned to the previous equilibrium.

Moreover, the business cycle model is too simple to explain the complicated labour market structure due to its limited use of variables. A certain labour indicator can be influenced by other labour indicators as well as the business cycle. For example, the fluctuations of real wages are also affected by the changes of consumer price, labour productivity and unemployment, as our cross-correlation analysis between wages and other labour indicators indicated in the previous Section. As the previous Section could not consider the interaction between them, this Section tries to address the long-term adjustment of labour indicators in the structured labour market system.

Our main concern in this section is to detect the long-term equilibrium relationship between each labour indicator (such as nominal wage, employment, unemployment, and working hour) and its determinants (for example, labour productivity and unemployment as the determinants of wage). Of course, we assume that there is some equilibrium relationship between them. The question is how long does it take before each labour indicator adjusts to the equilibrium level. We address the issue by researching the Error Correction Mechanism for four main labour indicators: wages, employment, unemployment and working hours.

### 2.3.1 Data and models

This Section uses basically the same data as we used in Section 2 of this Chapter. Only several data will be added. The data used in this Section are reported in Table 2.14.

Table 2.14 Definitions of data for ECM

<i>Data</i>	<i>Definitions</i>
RGDP	Gross domestic product at the price of 1995 (real GDP)
PROD	Labour productivity per hour
WAGE_P	Hourly real wage of permanent workers (related to HOUR_P)
WAGE_A	Hourly real wage of dependent workers in urban area (related to HOUR_A)
WAGE_PA	Hourly real wage of dependent workers in urban area (related to HOUR_P)
EMP	Total employed persons
EMP_N	Employed persons in the non-agricultural sector
UN	Total unemployed persons
UN_N	The unemployed in the non-agricultural sector
HOUR_P	Monthly working hours of permanent workers
HOUR_A	Monthly working hours of employees in the non-agricultural sector
NWAGE_P	Hourly nominal wage of permanent workers (related to HOUR_P)
NWAGE_A	Hourly nominal wage of dependent workers in urban area (related to HOUR_A)
NWAGE_PA	Hourly nominal wage of dependent workers in urban area (related to HOUR_P)
ERATE	Employment ratio (employees/working age population)
ERATE_N	Employment ratio in the non-agricultural sector
URATE	Unemployment rate
URATE_N	Unemployment rate in the non-agricultural sector
PC	Consumer Price Index

Note) Data in shaded areas are additional data used in Section 2.3. Other data are the same as Section 2.2 (see Table 2.7 for detailed definitions and sources of data).

Here we add a different type of hourly real wage (WAGE\_PA) to the wage data used in Section 2. WAGE\_PA is calculated from monthly real wage of ‘all dependent workers’

divided by monthly working hour 'HOUR\_P'<sup>39</sup>. We also analyse the flexibility of each nominal wage (NWAGE\_P, NWAGE\_A and NWAGE\_PA). We use the indicators of employment ratio (ERATE and ERATE\_N) and the unemployment rate (URATE and URATE\_N) for estimating the error correction mechanism. Lastly, consumer price index is required for estimating the nominal rigidity of wage.

Here we specify our error correction models. We exemplify our wage equation for the ECM in detail. In the empirical analysis for the ECM, we follow the usual method as follows (Gujarati, 2002, pp. 822-826; Cadiou et al., 1999):

(1) In the first step, we specify the estimating equation for the cointegration relationship between variables. We assume that the long-term hourly real wage rate may be determined by labour productivity and the unemployment rate. Our first equation for the cointegration relation is as follows:

$$\log(\text{WAGE\_P})_t = C_1 + \alpha_1 \log(\text{PROD})_t + \alpha_2 \text{URATE\_N}_t + \mathbf{e}_{1t} \quad \text{--- (1)}$$

where  $t$  is the period, and  $\mathbf{e}_{1t}$  is the error term. If real wages and the independent variables (PROD and URATE\_N) have a long-term, or equilibrium, relationship between them, they will be cointegrated. So we need to test whether the variables are cointegrated or not. Although WAGE\_P, PROD and URATE\_N are individually non-stationary ( $I(1)$ ), they are cointegrated if the error term  $\mathbf{e}_{1t}$  is stationary ( $I(0)$ ). Annex Table 2.4 reports the ADF statistics for cointegration test. The ADF test shows that these variables are cointegrated.

(2) In the second step, we specify the final error correction model as follows:

$$\begin{aligned} \Delta \text{NWAGE\_P}_t = & \alpha_1 + \beta_{11} \Delta \text{NWAGE\_P}_{t-1} + \beta_{21} \Delta \text{CP}_{t-1} + \beta_{31} \Delta \text{PROD}_{t-1} \\ & + \beta_{41} \Delta \text{UN\_N}_t + \beta_{51} \Delta \text{UN\_N}_{t-1} + \gamma_1 \mathbf{e}_{1t-1} + \varepsilon_{1t} \quad \text{----- (2)} \end{aligned}$$

---

<sup>39</sup> In calculating the 'hourly' wage in Section 2 we related HOUR\_P to WAGE\_A and HOUR\_A to WAGE\_A. As we noted above, however, HOUR\_A has some problem to be directly related to WAGE\_A because WAGE\_A and HOUR\_A are based on different surveys with different samples. WAGE\_A corresponds to 'all dependent workers in an urban area', while HOUR\_A corresponds to 'all employees in the non-agricultural sector including the self-employed' (see Table 2.7). Thus, we can also relate WAGE\_A to 'HOUR\_P' though similar problems will occur in the case of WAGE\_A. The 'hourly real wage of all dependent workers' may take an average value between WAGE\_A and WAGE\_PA.

where  $\Delta$  denotes the first difference operate,  $\varepsilon_1$  is a random error term and  $\mathbf{e}_{1t-1}$  is the one-period lagged value of the error from the cointegrating regression (1). We call the  $\mathbf{e}_{1t-1}$  the Error Correction Term (ECT). Here we assume that in the short-term the change of the nominal wage depends on the changes of consumer price, labour productivity and unemployment. Our first interest is in the size of the coefficient of  $\mathbf{e}_{1t-1}$  ( $\gamma_1$ ). If the coefficient  $\gamma_1$  is zero, then there is no tendency for a nominal wage to return to equilibrium level. On the contrary, if  $\gamma_1$  is minus one, the previous periods' errors (shocks) tend to be eliminated within one period (or, one quarter). The second concern is related to the sizes of other coefficients ( $\beta_{11}, \beta_{21}, \beta_{31}, \beta_{41}$  and  $\beta_{51}$ ), which indicate the extent of short-term adjustments of nominal wages to each related variable. Lastly we pay attention to the size and direction of the error term  $\varepsilon_1$ , in particular, during the economic crisis. If the student's residual is strongly negative during the crisis, nominal wages must be more flexible in the period. On the contrary, if the student's residual is strongly positive, nominal rigidity may exist during the great shock.

According to these methods, we specify twelve sets of equations as follows:

#### <Wage equations with unemployment>

$$\begin{aligned}
 (\text{eq. 1}) \quad & \log(\text{WAGE\_P})_t = C_1 + \alpha_1 \log(\text{PROD})_t + \alpha_2 \text{URATE\_N}_t + \mathbf{e}_{1t} \rightarrow \\
 \Delta \text{NWAGE\_P}_t = & a_1 + \beta_{11} \Delta \text{NWAGE\_P}_{t-1} + \beta_{21} \Delta \text{CP}_{t-1} + \beta_{31} \Delta \text{PROD}_{t-1} + \beta_{41} \Delta \text{UN\_N}_t + \beta_{51} \Delta \text{UN\_N}_{t-1} + \gamma_1 \mathbf{e}_{1t-1} + \varepsilon_1 \\
 (\text{eq. 2}) \quad & \log(\text{WAGE\_A})_t = C_2 + \alpha_5 \log(\text{PROD})_t + \alpha_6 \text{URATE\_N}_t + \mathbf{e}_{2t} \rightarrow \\
 \Delta \text{NWAGE\_A}_t = & a_2 + \beta_{12} \Delta \text{NWAGE\_A}_{t-1} + \beta_{22} \Delta \text{CP}_{t-1} + \beta_{32} \Delta \text{PROD}_{t-1} + \beta_{42} \Delta \text{UN\_N}_t + \beta_{52} \Delta \text{UN\_N}_{t-1} + \gamma_2 \mathbf{e}_{2t-1} + \varepsilon_2 \\
 (\text{eq. 3}) \quad & \log(\text{WAGE\_PA})_t = C_3 + \alpha_7 \log(\text{PROD})_t + \alpha_8 \text{URATE\_N}_t + \mathbf{e}_{3t} \rightarrow \\
 \Delta \text{NWAGE\_PA}_t = & a_3 + \beta_{13} \Delta \text{NWAGE\_PA}_{t-1} + \beta_{23} \Delta \text{CP}_{t-1} + \beta_{33} \Delta \text{PROD}_{t-1} + \beta_{43} \Delta \text{UN\_N}_t + \beta_{53} \Delta \text{UN\_N}_{t-1} + \gamma_3 \mathbf{e}_{3t-1} + \varepsilon_3
 \end{aligned}$$

#### <Wage equations with employment>

$$\begin{aligned}
 (\text{eq. 4}) \quad & \log(\text{WAGE\_P})_t = C_4 + \alpha_9 \log(\text{PROD})_t + \alpha_{10} \text{ERATE\_N}_t + \mathbf{e}_{4t} \rightarrow \\
 \Delta \text{NWAGE\_P}_t = & a_4 + \beta_{14} \Delta \text{NWAGE\_P}_{t-1} + \beta_{24} \Delta \text{CP}_{t-1} + \beta_{34} \Delta \text{PROD}_{t-1} + \beta_{44} \Delta \text{EMP\_N}_t + \beta_{54} \Delta \text{EMP\_N}_{t-1} + \gamma_4 \mathbf{e}_{4t-1} + \varepsilon_4 \\
 (\text{eq. 5}) \quad & \log(\text{WAGE\_A})_t = C_5 + \alpha_{11} \log(\text{PROD})_t + \alpha_{12} \text{ERATE\_N}_t + \mathbf{e}_{5t} \rightarrow \\
 \Delta \text{NWAGE\_A}_t = & a_5 + \beta_{15} \Delta \text{NWAGE\_A}_{t-1} + \beta_{25} \Delta \text{CP}_{t-1} + \beta_{35} \Delta \text{PROD}_{t-1} + \beta_{45} \Delta \text{EMP\_N}_t + \beta_{55} \Delta \text{EMP\_N}_{t-1} + \gamma_5 \mathbf{e}_{5t-1} + \varepsilon_5 \\
 (\text{eq. 6}) \quad & \log(\text{WAGE\_PA})_t = C_6 + \alpha_{13} \log(\text{PROD})_t + \alpha_{14} \text{ERATE\_N}_t + \mathbf{e}_{6t} \rightarrow \\
 \Delta \text{NWAGE\_PA}_t = & a_6 + \beta_{16} \Delta \text{NWAGE\_PA}_{t-1} + \beta_{26} \Delta \text{CP}_{t-1} + \beta_{36} \Delta \text{PROD}_{t-1} + \beta_{46} \Delta \text{EMP\_N}_t + \beta_{56} \Delta \text{EMP\_N}_{t-1} + \gamma_6 \mathbf{e}_{6t-1} + \varepsilon_6
 \end{aligned}$$

### <Employment equations>

$$\begin{aligned} \text{(eq. 7)} \quad \log(\text{EMP})_t &= C_7 + \alpha_{15}\log(\text{RGDP})_t + \alpha_{16}\text{ERATE}_t + \mathbf{e}_{7t} \rightarrow \\ \Delta\text{EMP}_t &= a_7 + \beta_{17}\Delta\text{EMP}_{t-1} + \beta_{27}\Delta\text{RGDP}_t + \beta_{37}\Delta\text{RGDP}_{t-1} + \gamma_7\mathbf{e}_{7t-1} + \varepsilon_7 \end{aligned}$$

$$\begin{aligned} \text{(eq. 8)} \quad \log(\text{EMP\_N})_t &= C_8 + \alpha_{17}\log(\text{RGDP})_t + \alpha_{18}\text{ERATE\_N}_t + \mathbf{e}_{8t} \rightarrow \\ \Delta\text{EMP\_N}_t &= a_8 + \beta_{18}\Delta\text{EMP\_N}_{t-1} + \beta_{28}\Delta\text{RGDP}_t + \beta_{38}\Delta\text{RGDP}_{t-1} + \gamma_8\mathbf{e}_{8t-1} + \varepsilon_8 \end{aligned}$$

### <Unemployment equations>

$$\begin{aligned} \text{(eq. 9)} \quad \log(\text{UN})_t &= C_9 + \alpha_{19}\log(\text{RGDP})_t + \alpha_{20}\text{URATE}_t + \mathbf{e}_{9t} \rightarrow \\ \Delta\text{UN}_t &= a_9 + \beta_{19}\Delta\text{UN}_{t-1} + \beta_{29}\Delta\text{RGDP}_t + \beta_{39}\Delta\text{RGDP}_{t-1} + \gamma_9\mathbf{e}_{9t-1} + \varepsilon_9 \end{aligned}$$

$$\begin{aligned} \text{(eq. 10)} \quad \log(\text{UN\_N})_t &= C_{10} + \alpha_{21}\log(\text{RGDP})_t + \alpha_{22}\text{URATE\_N}_t + \mathbf{e}_{10t} \rightarrow \\ \Delta\text{UN\_N}_t &= a_{10} + \beta_{110}\Delta\text{UN\_N}_{t-1} + \beta_{210}\Delta\text{RGDP}_t + \beta_{310}\Delta\text{RGDP}_{t-1} + \gamma_{10}\mathbf{e}_{10t-1} + \varepsilon_{10} \end{aligned}$$

### <Working hour equations>

$$\begin{aligned} \text{(eq. 11)} \quad \log(\text{HOUR\_P})_t &= C_{11} + \alpha_{23}\log(\text{RGDP})_t + \alpha_{24}\text{URATE\_N}_t + \mathbf{e}_{11t} \rightarrow \\ \Delta\text{HOUR\_P}_t &= a_{11} + \beta_{111}\Delta\text{HOUR\_P}_{t-1} + \beta_{211}\Delta\text{RGDP}_t + \beta_{311}\Delta\text{RGDP}_{t-1} + \gamma_{11}\mathbf{e}_{11t-1} + \varepsilon_{11} \end{aligned}$$

$$\begin{aligned} \text{(eq. 12)} \quad \log(\text{HOUR\_A})_t &= C_{12} + \alpha_{25}\log(\text{RGDP})_t + \alpha_{26}\text{URATE\_N}_t + \mathbf{e}_{12t} \rightarrow \\ \Delta\text{HOUR\_A}_t &= a_{12} + \beta_{112}\Delta\text{HOUR\_A}_{t-1} + \beta_{212}\Delta\text{RGDP}_t + \beta_{312}\Delta\text{RGDP}_{t-1} + \gamma_{12}\mathbf{e}_{12t-1} + \varepsilon_{12} \end{aligned}$$

(1) Three types of wages (WAGE\_P, WAGE\_A and WAGE\_PA) are estimated with unemployment in the non-agricultural sector (UN\_N) and employment in the non-agricultural sector (EMP\_N) respectively (six couples of wage equations).

(2) Two types of employment (EMP and EMP\_N) are estimated with the assumption that the changes in employment depend on the growth rates of real GDP (two couples of employment equation).

(3) Two types of unemployment (UN and UN\_N) and two types of working hours (HOUR\_P and HOUR\_A) are estimated with the same assumptions given in the employment equations (two couples of unemployment equations and two couples of working hour equations). The results of cointegration test by the ADF unit root test are reported together in Annex Table 2.4. All the error terms in integrating regressions are stationary, that is, the variables (of integrating regressions) seem to be cointegrated. Several error terms regarding WAGE\_A, WAGE\_P and EMP\_N, however, have low significance level (0.10) in  $t$  ( $=\tau$ ) statistics.

## 2.3.2 Estimation results in the ECM

### *Wage flexibility (Table 2.15)*

Table 2.15 shows the OLS results of wage adjustment. We estimate the wage equations by looking at different periods: the pre-crisis period and whole period. The upper side of Table relates wages to unemployment, while the lower side of Table relates wages to employment.

Table 2.15 OLS results of ECM: wage equations

	The pre-crisis period (1983 Q1-1997 Q3)			The whole period (1983 Q1-2002 Q1)		
<b>Wage equation with unemployment (rate)</b>						
Equations for cointegration relationship						
	log(WAGE_P) <sub>t</sub>	log(WAGE_A) <sub>t</sub>	log(WAGE_PA) <sub>t</sub>	log(WAGE_P) <sub>t</sub>	log(WAGE_A) <sub>t</sub>	log(WAGE_PA) <sub>t</sub>
INTERCEP	-0.261 (-1.36)	-0.317 (-1.54)	-0.055 (-0.24)	0.521 (8.38)***	0.595 (7.48)***	0.846 (9.69)***
log(PROD) <sub>t</sub>	1.503 (26.99)***	1.443 (24.18)***	1.400 (21.25)***	1.265 (60.44)***	1.157 (43.20)***	1.116 (37.96)***
URATE_N <sub>t</sub>	1.654 (1.26)	1.350 (0.96)	0.550 (0.35)	-2.698 (-6.44)***	-3.175 (-5.91)***	-3.756 (-6.38)***
R <sup>2</sup>	0.984	0.981	0.976	0.980	0.963	0.953
D.W.	0.820	0.358	0.436	0.535	0.210	0.277
Error-correction models						
	ΔNWAGE_P <sub>t</sub>	ΔNWAGE_A <sub>t</sub>	ΔNWAGE_PA <sub>t</sub>	ΔNWAGE_P <sub>t</sub>	ΔNWAGE_A <sub>t</sub>	ΔNWAGE_PA <sub>t</sub>
INTERCEP	0.019 (1.70)*	0.016 (2.08)**	0.018 (1.93)*	0.023 (2.56)**	0.009 (1.37)	0.010 (1.24)
ΔWAGE <sub>t-1</sub>	-0.065 (-0.47)	0.041 (0.30)	-0.183 (-1.33)	-0.129 (-1.05)	-0.051 (-0.40)	-0.265 (-2.22)**
ΔCP <sub>t-1</sub>	1.780 (2.69)***	1.167 (2.49)**	1.469 (2.65)**	0.914 (1.70)*	1.309 (3.05)***	1.578 (3.05)***
ΔPROD <sub>t-1</sub>	-0.327 (-1.19)	0.014 (0.07)	0.080 (0.34)	0.002 (0.01)	0.281 (1.47)	0.407 (1.70)*
ΔUN_N <sub>t</sub>	-0.012 (-0.16)	-0.068 (-1.23)	-0.101 (-1.55)	-0.043 (-0.99)	-0.022 (-0.66)	-0.015 (-0.37)
ΔUN_N <sub>t-1</sub>	-0.011 (-0.15)	0.039 (0.71)	0.027 (0.40)	-0.036 (-0.73)	-0.031 (-0.83)	-0.050 (-1.09)
ECT <sub>t-1</sub>	-0.282 (-2.69)***	-0.080 (-1.21)	-0.085 (-1.18)	-0.175 (-2.26)**	-0.053 (-1.14)	-0.096 (-1.86)*
R <sup>2</sup>	0.239	0.183	0.233	0.167	0.170	0.242
D.W.	2.214	2.172	2.176	2.053	2.159	2.261
<b>Wage equation with employment (rate)</b>						
Equations for cointegration relationship						
	log(WAGE_P) <sub>t</sub>	log(WAGE_A) <sub>t</sub>	log(WAGE_PA) <sub>t</sub>	log(WAGE_P) <sub>t</sub>	log(WAGE_A) <sub>t</sub>	log(WAGE_PA) <sub>t</sub>
INTERCEP	1.489 (1.37)	1.074 (0.92)	0.638 (0.50)	-2.163 (-5.31)***	-2.577 (-4.96)***	-2.905 (-5.09)***
log(PROD) <sub>t</sub>	1.507 (27.97)***	1.445 (24.96)***	1.407 (22.00)***	1.264 (60.11)***	1.157 (43.09)***	1.115 (37.83)***
ERATE_N <sub>t</sub>	-1.767 (-1.41)	-1.399 (-1.04)	-0.716 (-0.48)	2.684 (6.35)***	3.174 (5.88)***	3.752 (6.33)***
R <sup>2</sup>	0.984	0.981	0.976	0.980	0.963	0.953
D.W.	0.806	0.348	0.431	0.556	0.223	0.294
Error-correction models						
	ΔNWAGE_P <sub>t</sub>	ΔNWAGE_A <sub>t</sub>	ΔNWAGE_PA <sub>t</sub>	ΔNWAGE_P <sub>t</sub>	ΔNWAGE_A <sub>t</sub>	ΔNWAGE_PA <sub>t</sub>
INTERCEP	0.021 (1.35)	0.021 (1.87)*	0.023 (1.73)*	0.015 (1.50)	0.003 (0.40)	0.004 (0.49)
ΔWAGE <sub>t-1</sub>	-0.051 (-0.37)	0.052 (0.38)	-0.176 (-1.32)	-0.097 (-0.79)	0.017 (0.14)	-0.200 (-1.73)*
ΔCP <sub>t-1</sub>	1.738 (2.59)**	1.104 (2.29)**	1.488 (2.59)**	0.806 (1.50)	1.142 (2.78)***	1.345 (2.67)***
ΔPROD <sub>t-1</sub>	-0.271 (-0.98)	0.078 (0.39)	0.156 (0.65)	0.047 (0.19)	0.330 (1.80)*	0.499 (2.15)**
ΔEMP_N <sub>t</sub>	-0.338 (-0.50)	-0.507 (-1.05)	-0.408 (-0.71)	0.098 (0.19)	-0.389 (-1.04)	-0.407 (-0.88)
ΔEMP_N <sub>t-1</sub>	0.086 (0.13)	0.034 (0.07)	-0.168 (-0.29)	0.654 (1.37)	0.958 (2.69)***	0.927 (2.08)**
ECT <sub>t-1</sub>	-0.288 (-2.76)***	-0.097 (-1.48)	-0.111 (-1.54)	-0.185 (-2.48)**	-0.044 (-1.02)	-0.099 (-2.01)**
R <sup>2</sup>	0.240	0.173	0.206	0.166	0.225	0.266
D.W.	2.127	2.169	2.161	2.090	2.276	2.308

Notes: 1) In parentheses are *t* values.

2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

Regarding the wage equations related to unemployment, the results of cointegrating regression show that real wage rates become very sensitive to unemployment rates, which had not been seen before the crisis.

The ECM results show that the speed of nominal wage adjustment is very high for permanent workers (NWAGE\_P), in particular, before the crisis. The coefficient of the ECT (Error Correction Term) amounts to -0.282. It suggests that the Korean labour market already had a very flexible system in terms of nominal wages of permanent workers even before the crisis. The speed of wage adjustment, however, slows down after the crisis although it is still significantly strong. The great external shock may have created some negative effects on wage flexibility even in Korea. This result is different from the result of the previous Section, where the sensitiveness of real wages to business cycle increased after the crisis.

On the contrary, for all dependent workers (NWAGE\_A) the error correction term (ECT) has no significant coefficient. The result is not much different when the whole dependent workers' hourly nominal wage is calculated by permanent workers' working hours (NWAGE\_PA). This result was not expected in the business cycle model in Section 2, where real wages of all dependent workers was more sensitive to business cycle than that of permanent workers. Anyway, our ECM analysis suggests that nominal rigidity may exist in low-wage workers because wage level is higher for permanent workers than all dependent workers.

The short-term adjustment of nominal wages is not likely to be strong. Only the change in consumer price affects nominal wage rate significantly.

When we substitute the unemployment for employment in the wage equation (see the lower side of Table 2.15), the regression results do not change much. Short-term adjustments of NWAGE\_A and NWAGE\_PA to the change in labour productivity increase to a significant level.

#### *Flexibility of employment and unemployment (Table 2.16)*

The upper side of Table 2.16 reports the adjustment of employment. When we compare the long-term employment adjustments between two periods, we discover different changes

between EMP and EMP\_N. The speed of long-term adjustment decreases slightly in total employment after the crisis, but it increases in non-agricultural employment.

Table 2.16 OLS results of ECM: employment and unemployment equations

	The pre-crisis period (1983 Q1-1997 Q3)				The whole period (1983 Q1-2002 Q1)			
<b>Employment equation</b>								
Equations for cointegration relationship								
	log(EMP) <sub>t</sub>		log(EMP_N) <sub>t</sub>		log(EMP) <sub>t</sub>		log(EMP_N) <sub>t</sub>	
INTERCEP	4.916	15.46***	2.154	9.25***	4.840	36.72***	2.467	16.02***
log(RGDP) <sub>t</sub>	0.361	40.00***	0.540	47.16***	0.340	78.95***	0.520	84.91***
ERATE <sub>t</sub>	0.902	2.18**			1.208	9.67***		
ERATE_N <sub>t</sub>			1.479	4.18***			1.381	8.99***
R <sup>2</sup>	0.993		0.996		0.988		0.990	
D.W.	0.593		0.536		0.355		0.213	
Error-correction models								
	ΔEMP <sub>t</sub>		ΔEMP_N <sub>t</sub>		ΔEMP <sub>t</sub>		ΔEMP_N <sub>t</sub>	
INTERCEP	0.005	1.72*	0.003	1.16	-0.001	-0.35	-0.001	-0.81
ΔEMP(N) <sub>t-1</sub>	0.060	0.45	0.045	0.34	0.103	0.96	0.103	1.08
ΔRGDP <sub>t</sub>	0.164	1.89*	0.218	3.04***	0.291	5.43***	0.347	7.66***
ΔRGDP <sub>t-1</sub>	-0.079	-1.03	0.170	2.63**	0.038	0.69	0.184	3.65***
ECT <sub>t-1</sub>	-0.262	-2.76***	-0.045	-0.59	-0.227	-3.77***	-0.084	-2.25**
R <sup>2</sup>	0.191		0.204		0.412		0.622	
D.W.	1.860		1.791		1.877		1.826	
<b>Unemployment equation</b>								
Equations for cointegration relationship								
	log(UN) <sub>t</sub>		log(UN_N) <sub>t</sub>		log(UN) <sub>t</sub>		log(UN_N) <sub>t</sub>	
INTERCEP	1.690	6.08***	0.421	0.94	2.651	12.89***	0.555	2.90***
log(RGDP) <sub>t</sub>	0.328	14.42***	0.446	11.96***	0.260	14.13***	0.441	26.17***
URATE <sub>t</sub>	31.801	30.17***			24.785	46.83***		
URATE_N <sub>t</sub>			23.899	20.50***			21.898	52.03***
R <sup>2</sup>	0.965		0.925		0.970		0.976	
D.W.	0.408		0.270		0.339		0.378	
Error-correction models								
	ΔUN <sub>t</sub>		ΔUN_N <sub>t</sub>		ΔUN <sub>t</sub>		ΔUN_N <sub>t</sub>	
INTERCEP	0.041	1.93*	0.042	2.01**	0.104	5.90***	0.104	5.88***
ΔUN(N) <sub>t-1</sub>	0.218	1.68*	0.207	1.59	0.224	2.27**	0.224	2.26**
ΔRGDP <sub>t</sub>	-1.132	-1.77*	-1.058	-1.65	-3.885	-7.36***	-3.800	-7.22***
ΔRGDP <sub>t-1</sub>	-1.017	-1.79*	-1.133	-2.01**	-1.833	-3.08***	-1.902	-3.15***
ECT <sub>t-1</sub>	-0.393	-1.47	-0.345	-1.81*	-0.227	-1.69*	-0.227	-1.54
R <sup>2</sup>	0.201		0.209		0.646		0.640	
D.W.	2.056		2.049		1.888		1.887	

Notes: 1) The figures in italics are *t* values.

2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

The speed of employment adjustment to equilibrium is much stronger in total employment (EMP) than in employment in the non-agricultural sector (EMP\_N). Concerning the whole period, the coefficient of ECT amounts to -0.227 in total employment, while it only registers -0.084 in non-agricultural employment. This suggests that employment in the agricultural



sector may play an important role in returning to the labour market to the previous equilibrium level.

Concerning short-term adjustment, the change of employment becomes more sensitive to the change of the GDP after the crisis. This result is similar to that of the business cycle models.

The lower side of Table 2.16 shows the OLS results on unemployment adjustment. The speed of unemployment adjustment to the equilibrium level is not very significant in statistics, even though the coefficients are not small. Moreover, after the crisis the sizes of coefficients of ECT tend to decrease. It suggests that although the Korean labour market has experienced rapid recovery in unemployment after the crisis, the negative external shock tends to make increased unemployment persistent.

The short-term adjustment of unemployment to the change in GDP becomes stronger after the crisis. It supports the results in employment adjustment in the same Table.

#### *Hour flexibility (Table 2.17)*

Table 2.17 shows the OLS result on working hour adjustment. In integrating equations, working hours are affected significantly only in the models for the whole period. Before the crisis, it was not seen.

Table 2.17 OLS results of ECM: working hour equations

	The pre-crisis period (1983 Q1-1997 Q3)				The whole period (1983 Q1-2002 Q1)			
Equations for cointegration relationship								
	log(HOUR_P) <sub>t</sub>		log(HOUR_A) <sub>t</sub>		log(HOUR_P) <sub>t</sub>		log(HOUR_A) <sub>t</sub>	
INTERCEP	6.820	33.82***	6.554	95.16***	7.325	62.34***	7.061	198.03***
log(RGDP) <sub>t</sub>	-0.130	-7.78***	-0.107	-17.69***	-0.163	-16.66***	-0.140	-44.70***
URATE_N <sub>t</sub>	-0.274	-0.52	0.114	0.75	-1.092	-3.58***	-0.526	-6.70***
R <sup>2</sup>	0.850		0.811		0.951		0.964	
D.W.	0.592		0.576		0.410		0.446	
Error-correction models								
	ΔHOUR_P <sub>t</sub>		ΔHOUR_A <sub>t</sub>		ΔHOUR_P <sub>t</sub>		ΔHOUR_A <sub>t</sub>	
INTERCEP	-0.009	-2.21**	-0.008	-3.95***	-0.007	-2.67***	-0.006	-4.73***
ΔHOUR <sub>t-1</sub>	-0.182	-1.45	-0.062	-0.49	-0.136	-1.28	-0.142	-1.26
ΔRGDP <sub>t</sub>	0.312	2.54**	0.133	2.16**	0.289	3.35***	0.095	2.19**
ΔRGDP <sub>t-1</sub>	0.027	0.25	0.157	2.79***	-0.012	-0.14	0.116	2.75***
ECT <sub>t-1</sub>	-0.232	-2.63**	-0.237	-3.14***	-0.269	-3.53***	-0.206	-2.74***
R <sup>2</sup>	0.314		0.227		0.317		0.224	
D.W.	1.906		1.790		1.966		1.942	

Notes: 1) The figures in italics are *t* values.

2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

The long-term adjustment of working hours is also strong and significant. Short-term adjustment to the change of GDP is significant, too. This result seems to be a little different from the results in our business cycle models, where working hour adjustment to the business cycle was not very strong, especially in recession periods. It is not clear how to interpret these different results. We will address this problem in the following Subsection by residual analysis.

### 2.3.3 Residual analysis of the ECM (Table 2.18)

Although our analysis of ECM gave a lot of indication on labour adjustment before and after the crisis, we need a more detailed analysis on the special reaction of the labour market to the crisis, in particular, during the several quarters of crisis. As the economic crisis occurred in November 1997 and was followed by a rapid recovery, it is natural to pay special attention to the process of short-term labour adjustment during this period. To analyse the special impacts of economic crisis in detail, we examine the student's residuals of the previous error correction models during the period between the beginning of crisis and the end of it. In terms of unemployment the peak of the labour market crisis corresponds to the period between 1998 Q1 and 1999 Q2. During the six quarters, seasonally adjusted unemployment rates in the non-agricultural sector were at around 8% in Korea<sup>40</sup>.

Table 2.18 reports the statistics of the student's residuals of the previous error correction models. The Table addresses only 20 quarters (5 years) before and after the crisis. Annex 2.3 reports the complete sets of residual analyses for the 79 quarters for the whole period<sup>41</sup>. The main finding are as follows:

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<sup>40</sup> Seasonally adjusted unemployment rates in the non-agricultural sector in Korea;

'97 Q4	'98 Q1	'98 Q2	'98 Q3	'98 Q4	'99 Q1	'99 Q2	'99 Q3	'99 Q4	'00 Q1	'00 Q2
3.0%	<b>5.5%</b>	<b>7.8%</b>	<b>8.6%</b>	<b>8.4%</b>	<b>8.4%</b>	<b>7.5%</b>	6.5%	5.3%	4.8%	4.4%

<sup>41</sup> From Annex Table 2.3, we obtain very useful information on the transition of Korea's labour market. Especially, the impacts of several external shocks and institutional changes can be deeply analysed. Several institutional shocks are important: the social movement in June 1987, the reduction of legal working hour between 1989 Q2 to 1991 Q3, and the strong governmental wage-guideline in 1992 Q1. All these periods show larger residuals in wages and working hours. Comparing Annex Table 2.3 with Chart 2.2, we learn much about the negative impacts of inadequate government intervention in the labour market.

Table 2.18 Student's Residuals of ECM: equations of wages, (un)employment and working hours (see Annex Table 2.3 for full information)

Quarter	Hourly nominal wage				Employment		Unemployment		Working hours	
	With unemployment		With employment		EMP	EMP_N	UN	UN_N	HOUR_P	HOUR_A
	WAGE_P	WAGE_A	WAGE_P	WAGE_A						
19972					*	*	**	**		
19973						*	*	*		
19974	****	*****	****	*****	**	**	***	***	*	
19981						****	*****	*****	*	
19982	***	*****	**	***	*	*			**	*
19983	***	*	***	*	*				***	*****
19984							**	**	*****	
19991	*	*	*	*	*	**	**	**	**	*
19992		*			*		*	*	*****	
19993					*				*	*****
19994					*		**	**	**	
20001	***	**	**	**		*			**	
20002	*	**	*	****	**	****	*	*	**	**
20003		***		****	*	**	*	*		*****
20004	**	*	**	*	*		*	**	***	
20011		*		*	*		*	*		**
20012	**	*	**		*	**	***	***	*	**
20013	**		**		**	**	*	**	**	**
20014		*		*		*			**	
20021	*	*****	**	*****	*	**	*	*	**	*
Statistics of Student's Residual										
19972	-0.278	0.050	-0.353	-0.225	-0.932	-0.922	-1.154	-1.334	-0.220	-0.139
19973	0.081	-0.215	0.344	-0.035	-0.365	-0.803	-0.862	-0.921	0.000	0.064
19974	-2.119	-2.535	-2.021	-2.542	-1.014	-1.075	1.668	1.710	0.725	0.193
19981	1.477	2.039	0.585	0.828	-0.292	-2.270	4.609	4.594	-0.641	1.231
19982	-1.504	-2.443	-1.373	-1.716	-0.929	0.707	-0.221	-0.234	1.095	0.668
19983	-1.623	-0.816	-1.531	-0.532	-0.540	-0.474	-0.135	-0.021	1.575	-2.546

19984	1.517	0.391	1.681	0.833	-0.407	-0.197	-1.095	-1.085	-2.953	1.694
19991	0.548	-0.713	0.731	-0.542	-0.626	-1.450	-1.207	-1.083	1.249	0.676
19992	-0.147	-0.528	0.128	-0.076	0.864	-0.008	0.821	0.874	2.086	0.230
19993	-0.474	-0.054	-0.490	-0.119	0.655	0.182	-0.492	-0.473	0.669	2.104
19994	-0.189	-0.425	-0.045	-0.309	0.654	0.292	-1.082	-1.104	1.119	0.214
20001	-1.579	-1.469	-1.418	-1.369	-0.078	-0.696	-0.109	-0.120	1.052	0.321
20002	0.585	1.433	0.755	1.511	-1.406	-1.582	-0.582	-0.594	-1.395	-1.096
20003	-0.274	-1.759	-0.160	-1.786	-0.955	-1.251	0.605	0.562	-0.116	2.465
20004	-1.266	-0.806	-1.132	-0.506	-0.649	-0.261	-0.951	-1.050	1.643	0.084
20011	-0.394	0.680	-0.240	0.928	-0.834	-0.312	-0.640	-0.699	0.388	1.089
20012	-1.454	-0.527	-1.250	-0.072	0.682	1.364	-1.698	-1.726	0.692	1.491
20013	-1.373	-0.196	-1.268	-0.325	-1.174	-1.045	-0.968	-1.101	1.482	-1.153
20014	-0.177	-0.845	0.042	-0.575	-0.411	-0.561	-0.316	-0.367	-1.383	1.642
20021	0.928	-2.506	1.118	-2.096	0.979	1.063	-0.907	-0.946	-1.218	0.829

(1) The residuals in nominal wage equations are very impressive. In the first quarter of the crisis (1997 Q1), the student's residuals record under minus two in every model. It may not be expected in any other country. This trend continues for four quarters (other than the second quarter). The positive value in the second quarter may reflect the fact that nominal wages decrease too much in the first quarter. In the fifth quarter after the crisis, the residuals of NWAGE\_P record a strong positive figure, but those of NWAGE\_A do not show significant positive values of residuals in the same period. It suggests that nominal wages were most flexible during the first four quarters of the crisis. This quick and flexible wage reduction may contribute to the rapid recovery from the economic crisis, and then to the decrease in rising unemployment.

(2) The student's residuals of employment and unemployment equations are significant for the first two quarters of the crisis. The rise in unemployment is most strong just after the crisis. It suggests that employment adjustment also very rapid and strong at the height of the crisis.

(3) The student's residuals of working hours show very different patterns from those of wages and (un)employment. The residuals of working hour equations have positive values during almost ten quarters after the crisis (with one or two exceptional quarters). It strongly suggests that there may exist an over-reduction in employment during the crisis. This result corresponds with the results of our business cycle models.

All these results in residual analysis of error correction models are very similar to those of business cycle models. Though our ECM models are relatively simple due to limited variables, the results may be stable and reliable if we take the error terms into account appropriately.

## 2.4 Impacts of the business cycle on disadvantaged groups

As the following Chapter will examine the disadvantaged groups in the labour market in detail, we will now briefly investigate the disadvantaged groups by comparing the Korean case with that of other OECD countries. Three categories of workers are discussed in this subsection: by gender, age, and educational attainment. Facing different types of external shocks, various types of workers will suffer different types of difficulties in the labour market under their own labour market circumstances and institutional settings. We cannot, however, discuss all these aspects here. The main concerns are which types of persons are excluded from the labour market in business recessions, and which types of workers can enjoy the effect of the economic recovery in various countries.

In order to measure the extent of exclusion from the labour market, we decompose the change in the employment ratio into a change in labour participation and a change in employment rate (1-unemployment rate), which is a method used in the Introduction to this study. In that way, we can compare how participation and unemployment interact in different countries. We rewrite the following equation;  $d\ln(E/P)_i = d\ln(1-U/P)_i + d\ln(L/P)_i$  where  $E$  is employment,  $P$  is working age population,  $U$  is unemployment,  $L$  is labour force, and  $i$  indexes demographic groups.

### *Unemployment and labour participation by gender (Table 2.19)*

Regarding the impact of business recession on different gender groups, we compare the Korean case with those of selected twelve OECD countries. Using the criteria of the extent of variation in unemployment rates within three years (see the unemployment rates in OECD countries, Annex Table 1.1), we select five OECD countries which experienced soaring unemployment rates in the late 1990s, and seven OECD countries in which unemployment rates increased a lot in the early 1990s. Concerning the period of business recovery, we select seven OECD countries in which unemployment rates decreased in the late 1990s. Table 2.19 shows the results of the decomposition of employment ratio.

Among the compared six OECD countries which experienced an increased unemployment rate in the late 1990s (see the top of Table 2.19), unemployment rates increased most in Slovakia between 1997 and 2000 (8.5%), while they increased least in Japan in the same period (1.6%). Concerning the participation rate, Korea experienced the largest decrease

Table 2.19 Decomposition of Log Changes in Employment Ratio: by sex (OECD countries)

(%)

		Log changes									Unemployment & participation rates					
Gender(aged 15-64)		Total			Men			Women			Total		Men		Women	
Countries	Period	1-U/P	L/P	E/P	1-U/P	L/P	E/P	1-U/P	L/P	E/P	U/P	L/P	U/P	L/P	U/P	L/P
<b>During the period of business recession</b>																
<b>Korea1</b>	<b>1996</b>										<b>2,1</b>	<b>65,1</b>	<b>2,4</b>	<b>78,6</b>	<b>1,6</b>	<b>51,9</b>
	<b>1998</b>	<b>-5,1</b>	<b>-1,7</b>	<b>-6,8</b>	<b>-5,8</b>	<b>-1,0</b>	<b>-6,8</b>	<b>-4,4</b>	<b>-2,9</b>	<b>-7,3</b>	<b>7,0</b>	<b>64,0</b>	<b>7,9</b>	<b>77,8</b>	<b>5,8</b>	<b>50,4</b>
Czech Rep,	1996										3,9	72,1	3,3	80,7	4,7	63,6
	1999	-5,1	0,1	-5,0	-4,2	-0,6	-4,8	-6,3	0,8	-5,5	8,7	72,2	7,3	80,2	10,5	64,1
Greece	1996										9,9	61,0	6,2	77,4	15,8	45,8
	1999	-2,4	3,1	0,7	-1,6	-0,6	-2,3	-2,9	8,2	5,3	12,0	62,9	7,7	76,9	18,2	49,7
Japan	1997										3,5	72,6	3,5	85,4	3,6	59,7
	2000	-1,6	-0,1	-1,7	-1,7	-0,2	-1,9	-1,1	-0,2	-1,3	5,0	72,5	5,1	85,2	4,7	59,6
Poland	1997										11,5	66,4	9,8	73,2	13,5	59,9
	2000	-5,7	-0,9	-6,6	-5,5	-2,1	-7,5	-5,8	0,0	-5,8	16,4	65,8	14,6	71,7	18,4	59,9
Slovak Rep,	1997										11,5	73,3	11,0	77,2	12,9	62,0
	2000	-8,5	0,3	-8,2	-9,0	-0,3	-9,3	-6,8	1,9	-4,9	18,7	73,5	18,7	77,0	18,6	63,2
<b>Korea2</b>	<b>1991</b>										<b>2,4</b>	<b>63,5</b>	<b>2,6</b>	<b>77,1</b>	<b>2,0</b>	<b>50,3</b>
	<b>1993</b>	<b>-0,5</b>	<b>0,9</b>	<b>0,4</b>	<b>-0,7</b>	<b>1,5</b>	<b>0,8</b>	<b>-0,3</b>	<b>0,0</b>	<b>-0,3</b>	<b>2,9</b>	<b>64,1</b>	<b>3,3</b>	<b>78,3</b>	<b>2,3</b>	<b>50,3</b>
France	1991										9,1	66,0	7,1	74,5	11,7	57,5
	1994	-3,8	0,9	-2,9	-4,2	-0,7	-4,8	-3,1	2,9	-0,2	12,5	66,6	10,9	74,0	14,4	59,2
Germany	1991										5,6	71,0	4,5	81,3	7,1	60,6
	1994	-3,1	-0,7	-3,8	-2,9	-1,9	-4,7	-3,3	0,5	-2,8	8,5	70,5	7,2	79,8	10,1	60,9
Mexico	1992										3,2	60,6	2,8	86,8	4,1	36,3
	1995	-2,7	2,0	-0,8	-3,0	-0,5	-3,5	-2,1	6,9	4,8	5,8	61,8	5,7	86,4	6,1	38,9
Spain	1991										16,2	60,9	12,1	79,9	24,0	42,2
	1994	-9,9	0,7	-9,2	-8,9	-3,2	-12,1	-10,5	7,3	-3,2	24,1	61,3	19,6	77,4	31,6	45,4
Sweden	1990										1,8	84,6	1,8	86,7	1,8	82,5
	1993	-8,3	-5,3	-13,6	-10,2	-5,3	-15,5	-6,3	-5,5	-11,8	9,6	80,2	11,3	82,2	7,8	78,1
U.K.	1990										6,8	77,8	7,1	88,3	6,5	67,2
	1993	-3,9	-1,9	-5,9	-6,0	-3,2	-9,2	-1,3	-0,3	-1,6	10,4	76,3	12,5	85,5	7,7	67,0
United States	1989										5,3	76,6	5,3	85,9	5,4	67,8
	1992	-2,5	0,0	-2,5	-2,9	-0,8	-3,7	-1,8	0,9	-0,9	7,6	76,6	8,0	85,2	7,1	68,4
<b>During the period of business recovery</b>																
<b>Korea</b>	<b>1998</b>										<b>7,0</b>	<b>64,0</b>	<b>7,9</b>	<b>77,8</b>	<b>5,8</b>	<b>50,4</b>
	<b>2000</b>	<b>3,0</b>	<b>0,5</b>	<b>3,4</b>	<b>3,3</b>	<b>-1,2</b>	<b>2,1</b>	<b>2,5</b>	<b>2,7</b>	<b>5,3</b>	<b>4,2</b>	<b>64,3</b>	<b>4,8</b>	<b>76,9</b>	<b>3,4</b>	<b>51,8</b>
France	1997										12,4	67,1	10,9	74,3	14,2	60,1
	2000	2,6	1,3	3,9	2,7	0,1	2,8	2,5	2,6	5,2	10,1	68,0	8,5	74,4	12,0	61,7
Hungary	1996										9,9	58,5	10,7	67,4	8,8	49,9
	1999	3,2	2,4	5,5	3,5	0,6	4,1	2,7	4,7	7,4	7,0	59,9	7,5	67,8	6,3	52,3
Mexico	1996										4,5	61,9	4,3	86,4	4,9	39,3
	1999	2,5	1,0	3,4	2,6	0,0	2,6	2,3	3,5	5,8	2,1	62,5	1,8	86,4	2,7	40,7
Spain	1996										22,1	62,0	17,4	77,1	29,8	47,0
	1999	7,7	3,0	10,7	7,4	1,5	8,9	9,0	6,0	15,0	15,9	63,9	11,1	78,3	23,2	49,9
Sweden	1997										10,4	78,7	10,8	81,0	9,9	76,3
	2000	4,9	0,3	5,2	4,9	0,2	5,2	4,9	0,1	5,0	5,9	78,9	6,3	81,2	5,4	76,4
U.K.	1996										8,2	76,1	9,8	84,6	6,3	67,5
	1999	2,3	0,3	2,5	3,3	-0,6	2,7	1,3	1,3	2,6	6,1	76,3	6,8	84,1	5,1	68,4
United States	1996										5,5	77,1	5,4	84,3	5,5	70,1
	1999	1,3	0,1	1,4	1,4	-0,4	1,0	1,2	0,9	2,0	4,3	77,2	4,1	84,0	4,4	70,7

Notes: U = unemployment, L = labour force, and P= working age population.

Sources: Author's calculations based on OECD data (OECD, 1999a; OECD, 2000b; OECD, 2001a; and OECD, 2001b)

among the six OECD countries (-1.7%), while Greece (3.1%), Slovakia (0.3%) and the Czech Republic (0.1%) experienced an increased participation rate. This reveals that the discouraged worker effect was most significant in Korea, while the added worker effect was most strong in Greece. As a result, the employment ratio (E/P) decreased 6.8% in Korea, the second highest rate after Slovakia (-8.2%).

Comparing these figures among gender groups, we can see that only in Korea did the participation rate decrease more for females (-2.9%) than for males (-1.0%). Regarding the employment ratio, Korean females suffered a larger decrease (-7.3%) than that of their male counterparts (-6.8%). Though the Czech Republic also experienced a higher decrease in the female employment ratio, the cause is different from Korea because females in the Czech Republic experienced a higher increase stronger increase in the unemployment rate than that of their male counterparts.

The same pattern happened in the early 1990s (see the middle of Table 2.19). In the early 1990s, only Korean females experienced a larger decrease in the employment ratio than their male counterparts compared to other OECD countries.

On the other hand, during the period of recovery, the patterns of employment recovery by gender group are very similar among OECD countries (see the bottom of Table 2.19). Among eight OECD countries, the female participation rate increased more than male participation rate in all except Sweden. Six countries out of eight have experienced a higher recovery in male unemployment than female unemployment, and a higher recovery in the female employment ratio than the male employment ratio. Korea conforms to this trend in the recovery period.

Moreover, Korea is a country with a very low female participation rate (50.3%-51.9% - see the last column of Table 2.19), alongside Mexico, Greece, Spain and Hungary. And, the female unemployment rate is lower than the male unemployment rate in Korea, as the cases in the United Kingdom and in Hungary.

All these figures indicate that the disadvantage of women relative to men in the labour market is the largest in Korea compared to other OECD countries. Korean women are easily discouraged in business recessions and have the lowest labour force participation rate, which suggests the existence of the strong male breadwinner model in Korea. The longest working hours in Korea may be explained by this fact.

*Unemployment and labour participation by age groups (Table 2.20)*

Among the same countries and the same periods as those in Table 2.19, we compare the different labour market situations among age groups. Table 2.20 reports the results.

In almost every OECD country, youths (15-24 years) tend to get more disadvantages in business recessions than the prime-age group (25-54 years). Among thirteen compared OECD countries, Greece is the exception in the period 1996-1999, and Korea in the period 1991-1993 (but not very significantly because of the low increase in unemployment).

On the contrary, in the recovery periods, youth unemployment and employment tend to recover more quickly relative to the prime-age group. Only the United Kingdom, in the period 1996-1999, differs from the compared countries.

For older workers (55-64 years), the patterns of the changing unemployment rate are a little complex among different countries. During recession periods, unemployment increased less for older workers relative to prime-age group in seven among thirteen countries: Korea, the Czech republic, Greece, France, Spain, Sweden and the United Kingdom. In recovery periods, however, the recovery from high unemployment rates tends to be smaller for older workers relative to the prime-age group in many countries. Seven among eight countries, with the exception of Hungary, show this trend.

Regarding participation rates in the recession period, ten out of thirteen countries (other than the Czech Republic, Germany and the United States) had participation rates for older workers that decreased more than those of the prime-age group. The recovery of participation rates for older workers is higher relative to the prime-age group in most countries with exception of Korea. The participation rate of older workers in Korea does not recover after the economic crisis, while those of the youth and prime-age groups do.

On the other hand, the labour participation rate is low for the youth and it is high for older workers in Korea. Korea has the second lowest youth participation rate out of fourteen countries (31.8% in 2000), after France (29.5% in 2000). And Korea has the fourth highest participation rate of older workers (59.2% in 2000) among fourteen countries, after Japan, Sweden and Slovakia.



Table 2.20 Decomposition of Log Changes in Employment Ratio: by age groups  
(OECD countries)

(%)

		Log changes									Unemployment & participation rates					
Age groups		15~24			25~54			55~64			15~24		25~54		55~64	
Countries	Period	1-U/P	L/P	E/P	1-U/P	L/P	E/P	1-U/P	L/P	E/P	U/P	L/P	U/P	L/P	U/P	L/P
<b>During the period of business recession</b>																
Korea1	1996										6,1	35,4	1,6	76,1	0,7	63,6
	1998	-11,1	-12,3	-23,5	-4,9	-1,5	-6,4	-3,4	-3,4	-6,7	16,0	31,3	6,3	75,0	4,0	61,5
Czech Rep,	1996										7,2	49,4	3,2	88,7	3,5	38,5
	1999	-11,2	-2,3	-13,4	-4,5	-0,1	-4,7	-1,4	2,3	1,0	17,0	48,3	7,5	88,6	4,8	39,4
Greece	1996										31,2	36,9	7,7	75,3	3,0	41,9
	1999	-0,7	6,3	5,6	-2,3	3,0	0,7	-1,5	-4,1	-5,6	31,7	39,3	9,8	77,6	4,4	40,2
Japan	1997										6,6	48,6	2,8	82,2	3,9	66,9
	2000	-2,8	-3,3	-6,2	-1,3	-0,4	-1,7	-1,8	-0,6	-2,4	9,2	47,0	4,1	81,9	5,6	66,5
Poland	1997										24,7	38,3	10,0	82,9	5,3	35,5
	2000	-15,0	-1,3	-16,3	-4,4	-0,6	-5,0	-4,4	-12,6	-17,0	35,2	37,8	13,9	82,4	9,4	31,3
Slovak Rep,	1997										21,7	48,1	9,9	88,0	10,6	68,8
	2000	-18,9	-1,9	-20,8	-6,4	0,5	-6,0	-9,0	0,1	-8,9	35,2	47,2	15,5	88,4	18,3	68,9
Korea2	1991										7,4	36,1	1,6	74,9	0,6	62,9
	1993	-1,7	1,6	-0,1	-0,5	-0,1	-0,6	0,0	-0,2	-0,2	9,0	36,7	2,1	74,8	0,6	62,8
France	1991										19,4	34,4	7,9	84,5	6,6	37,2
	1994	-10,6	-11,4	-22,0	-3,6	1,6	-2,0	-0,4	-3,6	-4,0	27,5	30,7	11,2	85,9	7,0	35,9
Germany	1991										5,4	60,8	5,4	83,3	7,4	38,8
	1994	-3,0	-8,2	-11,2	-2,9	-0,5	-3,4	-4,6	4,5	-0,1	8,2	56,0	8,1	82,9	11,6	40,6
Mexico	1992										5,4	53,3	2,3	66,3	1,0	54,5
	1995	-4,2	1,5	-2,7	-2,2	2,2	0,1	-2,4	-3,0	-5,3	9,3	54,1	4,4	67,8	3,3	52,9
Spain	1991										29,0	53,2	13,7	71,1	8,5	39,5
	1994	-21,6	-8,0	-29,6	-8,7	3,3	-5,4	-4,2	-7,1	-11,3	42,8	49,1	20,9	73,5	12,3	36,8
Sweden	1990										4,5	69,1	1,3	92,8	1,5	70,5
	1993	-22,7	-22,8	-45,5	-7,0	-2,7	-9,8	-4,3	-5,1	-9,3	23,9	55,0	8,0	90,3	5,6	67,0
U.K,	1990										10,1	78,0	5,8	83,9	7,2	53,0
	1993	-8,5	-9,0	-17,5	-3,1	-0,2	-3,4	-3,1	-2,5	-5,5	17,4	71,3	8,7	83,7	10,0	51,7
United States	1989										10,9	68,6	4,2	83,4	3,2	55,5
	1992	-3,8	-3,7	-7,5	-2,3	0,2	-2,1	-2,0	1,3	-0,7	14,2	66,1	6,4	83,6	5,1	56,2
<b>During the period of business recovery</b>																
Korea	1998										16,0	31,3	6,3	75,0	4,0	61,5
	2000	6,7	1,6	8,3	2,7	0,3	3,0	1,4	-3,8	-2,4	10,2	31,8	3,7	75,2	2,6	59,2
France	1997										28,1	28,0	11,1	86,0	8,5	36,7
	2000	9,8	5,2	15,0	2,1	0,2	2,3	0,7	1,4	2,0	20,7	29,5	9,2	86,2	7,9	37,2
Hungary	1996										18,0	37,1	8,7	77,1	5,6	18,4
	1999	6,6	9,3	15,9	2,7	0,0	2,7	3,0	7,8	10,9	12,4	40,7	6,2	77,1	2,7	19,9
Mexico	1996										7,7	53,1	3,3	68,4	2,1	53,2
	1999	4,6	-1,1	3,4	1,5	1,0	2,6	1,3	4,6	5,9	3,4	52,5	1,8	69,1	0,8	55,7
Spain	1996										39,8	46,7	19,1	75,3	11,6	37,3
	1999	17,2	1,5	18,7	6,2	1,2	7,4	1,9	3,7	5,6	28,5	47,4	13,9	76,2	9,9	38,7
Sweden	1997										21,0	50,2	9,0	88,6	8,2	68,2
	2000	10,9	4,1	15,0	4,4	-0,6	3,8	2,3	1,7	4,0	11,9	52,3	4,9	88,1	6,1	69,4
U.K,	1996										14,7	70,7	7,0	83,3	7,1	51,4
	1999	2,8	-2,1	0,6	2,2	0,6	2,8	2,1	1,4	3,5	12,3	69,2	4,9	83,8	5,1	52,1
United States	1996										12,0	65,5	4,3	83,8	3,4	57,9
	1999	2,4	0,0	2,4	1,1	0,4	1,5	0,7	2,4	3,1	9,9	65,5	3,2	84,1	2,7	59,3

Notes: U = unemployment, L = labour force, and P= working age population.

Sources: Author's calculations based on OECD data (OECD, 1999a; OECD, 2000b; OECD, 2001a and OECD, 2001b)

*Unemployment and labour participation by educational attainment (Table 2.21)*

To analyse the effects of educational attainment, we compare twelve OECD countries in the late 1990s. All data are related to persons aged 25-64 years. Table 2.21 shows the results of the comparison.

Table 2.21 Decomposition of Log Changes in Employment Ratio: by educational groups (OECD countries)

											(%)					
		Log changes									Unemployment & participation rates					
Education (aged 25-64)		~ Secondary			Upper secondary			Tertiary			~Secondary		Upper sec.		Tertiary	
Countries	Period	1-U/P	L/P	E/P	1-U/P	L/P	E/P	1-U/P	L/P	E/P	U/P	L/P	U/P	L/P	U/P	L/P
<b>During the period of business recession</b>																
Korea <sup>1</sup>	1996										0,9	71,8	1,7	72,9	2,0	82,0
	1998	-5,2	-2,3	-7,4	-5,2	-2,2	-7,4	-2,9	-2,5	-5,4	5,9	70,2	6,7	71,3	4,8	80,0
Czech Rep,	1996										8,9	60,3	2,4	84,3	0,8	93,5
	1999	-11,5	-4,2	-15,7	-4,3	-3,1	-7,4	-1,8	-4,0	-5,9	18,8	57,8	6,5	81,7	2,6	89,8
Greece	1996										6,5	60,7	9,2	68,9	8,0	85,9
	1999	-2,2	-1,2	-3,3	-1,9	5,5	3,6	0,5	1,6	2,2	8,5	60,0	10,9	72,8	7,5	87,3
Japan	1998										4,4	72,0	3,3	78,4	2,7	82,3
	1999	-1,3	0,3	-1,0	-1,1	-1,0	-2,2	-0,6	0,1	-0,5	5,6	72,2	4,4	77,6	3,3	82,4
<b>During the period of business recovery</b>																
Korea	1998										5,9	70,2	6,7	71,3	4,8	80,0
	1999	0,5	0,4	1,0	0,4	-0,4	0,0	0,1	-2,0	-1,9	5,4	70,5	6,3	71,0	4,7	78,4
France	1996										14,8	65,9	9,7	83,3	6,7	88,0
	1999	-0,6	1,1	0,5	0,6	-0,6	0,0	0,5	-0,9	-0,4	15,3	66,6	9,2	82,8	6,2	87,2
Hungary	1996										12,9	41,3	7,7	77,2	2,0	83,1
	1999	2,0	-2,7	-0,7	2,0	-0,9	1,1	0,6	0,1	0,7	11,1	40,2	5,8	76,5	1,4	83,2
Mexico	1998										5,4	67,4	1,4	65,0	2,3	85,9
	1999	4,1	-4,1	0,1	-0,5	-2,7	-3,2	-0,7	-0,9	-1,7	1,4	64,7	1,9	63,3	3,0	85,1
Poland	1995										13,9	58,1	11,4	78,5	3,8	87,0
	1998	0,0	-1,9	-1,9	2,6	-0,4	2,2	1,3	2,7	4,1	13,9	57,0	9,1	78,2	2,5	89,4
Spain	1996										20,1	58,9	17,4	79,8	14,3	87,4
	1999	6,5	1,5	8,1	5,3	0,1	5,4	3,7	-0,2	3,4	14,7	59,8	12,9	79,9	11,1	87,2
Sweden	1996										10,8	77,1	9,6	87,6	4,8	91,3
	1999	2,0	-5,3	-3,3	3,4	-2,9	0,5	0,9	-2,6	-1,6	9,0	73,1	6,5	85,1	3,9	89,0
U,K,	1996										10,9	62,0	7,1	82,1	3,5	88,3
	1999	1,0	-6,0	-5,0	2,6	1,0	3,5	0,8	2,0	2,8	10,0	58,4	4,7	82,9	2,7	90,1
United States	1996										10,9	60,2	5,1	79,7	2,4	87,4
	1999	3,5	4,1	7,6	1,5	-0,6	0,8	0,3	-1,2	-0,8	7,7	62,7	3,7	79,2	2,1	86,4

Notes: U = unemployment, L = labour force, and P= working age population.

Sources: Author's calculations based on OECD data (OECD, 1999a; OECD, 2000b; OECD, 2001a and OECD, 2001b)

In recession periods, Korea has a comparatively lower advantage of high education with regards to increasing unemployment and decreasing participation rate, compared with the Czech Republic and Greece. In the Czech Republic and Greece, persons with 'secondary education and under' experienced a severe decrease in employment ratio relative to persons of a higher educational attainment. Korea and Japan did not have the same experience.

The educational effects are not clear in many countries in recovery periods either. In terms of the recovery of the employment ratio, low-educated persons tend to benefit more from business recovery in France, Mexico, Spain and the United States. In other countries the trend is not clear.

More significant differences are seen in participation rates among groups with different educational attainment. Regarding participation rates of the least educated persons, Korea is the third highest among twelve countries (70.5% in 1999), after Sweden (73.1% in 1999) and Japan (72.2% in 1999). On the contrary, participation rates for the highest educated persons are the lowest in Korea (78.4% in 1999). The loss of highly educated human capital is great in Korea.

However, we cannot visualize the significant picture of disadvantages for low-educated persons in Korea by using aggregate data. More detailed analysis with individual micro data is required. This will be examined in the following Chapter.

## 2.5 Chapter conclusion

We have analysed the dynamics of the Korean labour market by using various methods: the employment system approach, a review of institutional settings related to labour market flexibility, a graphical analysis of long-term labour market trends, cross-correlation analysis between labour indicators and the growth rate of GDP, business cycle models for asymmetric behaviour of the labour market, and the ECM and its residual analysis. We will synthesize the results of these analyses and draw policy implications from them.

(1) The institutional settings surrounding the Korean labour market can be summarized as follows: low union density and low coverage of collective agreements, stronger union power in larger scale firms, decentralized and non-coordinated bargaining systems, and a high level of employment protection for regular workers, an extremely high share of temporary workers, a low level of minimum wage, a short duration and low level of unemployment benefits, and a high share of public expenditures on active LMPs. All these factors seem to be correlated to one another. Stronger union power in larger scale firms (with the decentralized and non-coordinated bargaining systems) can aggravate wage inequality between workers employed at small and large enterprises. In fact, earning disparities among them has increased since the social movement of 1987. Employment protection for regular workers may induce employers to prefer irregular workers. Extremely low level of protection for temporary workers and high protection for regular workers may together induce the labour market to be segmented into the regular and irregular sectors, and hence may reinforce the disadvantages of temporary workers in the labour market.

(2) Most of the Korean labour market indicators are very sensitive to the economic growth and this trend is increasing. It may suggest two different meanings: the increasing flexibility of the labour market and the increasing vulnerability of (disadvantaged) workers. It may require a more active government role for vulnerable workers.

(3) Wage adjustment in Korea seems to be strong not only for the short-term business cycle but also to the long-term equilibrium. Wages tend to be more sensitive to the GDP rate in recession relative to the expansion periods. In particular, nominal wages decreased a lot for the first four quarters of the economic crisis, which may have contributed to the rapid decrease in unemployment.

(4) Total employment is most sensitive to the business cycle. But the adjustment of male regular employment is not strong, while that of female regular employment is strong. For the

regular workers, wage adjustment tends to lead employment adjustment, while for irregular workers, employment adjustment tends to lead wage adjustment. The different patterns of employment adjustment between the (male) regular sector and the irregular sector suggest that the Korean labour market is segmented between them.

(5) Though the unemployment rate rapidly increased after the Korean economic crisis, the speed of unemployment adjustment to equilibrium is not very significant relative to the adjustments of wage, employment and working hours. Moreover, our analysis of the business cycle model shows that though unemployment increases more in recession, it moves more quickly in recession than in expansion. This suggests that increased unemployment during the crisis may bring about the hysteresis effect of unemployment to some extent even in Korea.

(6) Hour adjustment, especially for permanent workers, is relatively weak during recession in Korea. The student's residuals of hour equations in the ECM show a very different pattern from those of wages and (un)employment. The residuals of hour equations have positive values for almost ten quarters after the crisis, which suggests that there may exist an over-reduction in employment during the crisis.

(7) Low labour force participation rate, in particular, for women and youth may correlate to the existence of the longest working hours. Korean women seem to be most vulnerable to business recession among twelve OECD countries, especially in terms of participation rates. This suggests that the discouraged worker effect is very strong in Korean women.

All these results clearly indicate the desirable area of government intervention in the labour market. The most important area will be the policy for reducing the dualism of the labour market between the regular and irregular sectors. Protection for irregular workers must be reinforced with the expansion of social safety net. All government measures should be concentrated on the secondary sector.

Another important area requiring policy intervention may be the improvement of hour adjustment with the reduction of total working hours. Though the Korea government has tried to reduce the legal working hours from 44 to 40 hours per week since 2000, there is no significant advance due to disagreement between employers and workers' groups. More serious social dialogue is required in order to improve working conditions and labour force participation rates. Hour flexibility also may be an important precondition for reducing the dualism of the labour market. The next Chapter will address the issue of labour market segmentation in detail.

### Chapter 3. Disadvantaged Groups in the Labour Market

This Chapter empirically analyses the extent and causes of disadvantages of various groups during the Korea's labour market crisis. The analysis will enable us to understand the area requiring government intervention - which corresponds to the step of "target formation" in our framework presented in the Introduction. Disadvantages, in terms of employment accessibility, mean unequal distribution of unemployment among various social groups. These disparities bring about inequalities and social exclusions, and affect overall unemployment. Reducing the disparities decreases the average level of unemployment and reduces inequalities. The effect of unequal distribution of unemployment on overall unemployment is well known in textbooks, although it tends to be downplayed. For example, Layard et al. (1991, p. 47) argue that the NAIRU depends on the variance of the relative unemployment rates, for wages are more sensitive to unemployment when unemployment is low. It seems, however, that disadvantages cannot be appropriately alleviated by the labour market. These factors explain why justification of policy intervention may come from the existence of disadvantages in the labour market. But the structure of disadvantages, in terms of the extent and causes of disadvantages among various social groups, may be different among societies with different economic and social surroundings. In each country, government intervention to reduce disparities should reflect the structure of disadvantages in the society.

So in this Chapter, we try to analyse the structure of disadvantages in the Korean labour market. The following questions need to be answered: What kinds of people experienced unemployment during the crisis? What kinds of unemployed people could not be (re-) employed? Among the re-employed, who had more difficulties in getting access to regular jobs, and who suffered the greatest loss in earnings? What were the main determinants of these disadvantages for different groups? Is there any evidence of the labour market segmentation between the regular and irregular sector? Who, thus, should have been the main targets of government programmes? Answers to these questions will enable us to identify the groups who should have had priority in benefiting from LMPs, independent of government aims.

To address these questions, data and models are first explained in Section 1. Section 2 deals with the different groups' probability of becoming unemployed and the determinants for each group. The (re-)employment likelihood of the various unemployed groups is analysed in Section 3. Section 4 goes on to analyse the re-employed, and focuses on the quality of the post-unemployment job and earnings loss. A simple criterion of accumulated disadvantages, the sum of (repeated) unemployment spells, in the labour market is established in Section 5 - which will be useful for comparing the extent of disadvantages of various groups with their probability of participation in LMPs, which we will discuss in Chapter 5.

### 3.1 Research design

#### 3.1.1 Data explanation and definitions

For the purpose of this study we use data from the Unemployment Reality Survey (hereafter URS) in this Chapter and in Chapter 5. The survey was conducted by the Korea Labour Institute from September to October 1999. It was specially designed to collect basic data related to unemployment and participation in unemployment countermeasures during the financial crisis from a nationally representative household sample.

#### *Explanation of the URS*

For the sample selection, 2,497 enumeration districts (EDs) of the 1997 Employment Structure Survey were used. The 2,497 EDs of the Employment Structure Survey were originally selected from data from 21,938 ordinary EDs - which composed 10% of the 1995 Population and Housing Census, and were systematically selected with a probability proportional to the size of administrative regions. The URS readjusted the sampling rates of the Employment Structure Survey, to make the URS sample a randomly selected sample of 10% of the 1995 Population and Housing Census. The final 1,088 EDs were selected for the URS and make up 5% of the 21,938 EDs of the 1995 Population and Housing Census. And 4 (in Seoul) or 5 (in the 15 other major administrative regions) households in each EDs were surveyed. As a result, interviews were successfully carried out in 4,685 households of 1,084 EDs. In this study, we use the weighted data according to different sampling rates. The weight is given on the base of 1. This study uses weighted data unless otherwise indicated.

The URS used two types of questionnaires: household questionnaires and individual questionnaires.

The main survey items of *the household questionnaire* are as follows: sex, age, educational attainment, relationship to household head, the number of household members, major economic activity during the last week (ILO standards), broadly defined economic activity during the crisis from January 1998 to the survey date (experiencing unemployment, changing jobs, being employed continuously, continuous non-activity), employment status at the date of the survey (regular, temporary<sup>42</sup>, or self-employed), household incomes and properties, unemployment countermeasures in which one participated, etc.. 12,416 household members over 15 years of age, in 4,685 households, were surveyed. Among them, since January 1998, 4,422 persons have been employed continuously, 2,317 have experienced unemployment or job changes, and the others (5,677 people) have experienced continuous non-activity or gave answers which are considered not valid.

*The individual questionnaire* was for individuals who experienced unemployment or changed jobs after January 1998. The questionnaire contains some retrospective information: 1) information on main economic activity status in each month since January 1998. For this question, respondents choose one status among three labour force statuses: employed, unemployed, and inactive, according to their own judgement, 2) information on the previous job, such as, employment status, wage, industry, occupation, establishment size, reason for leaving the work, if she/he had job experience, 3) information on the newly employed job if she/he succeeded in being (re-)employed, and 4) information on participation in the main LMPs, and reasons why she/he did/could not participate in government programmes, etc.. A total of 2,050 out of 2,317 persons to whom individual questionnaire was given, were surveyed successfully.

### *Some definitions for the data*

As mentioned above, the URS was based on the labour force approach recommended by ILO. However, we need to define some notations in detail.

(1) The unemployed (at the date of the survey): comprise all persons who are not working,

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<sup>42</sup> In the URS data, we define a temporary worker as a worker who has an employment contract less than one year, which means that temporary workers comprise daily workers.



but are able to work and were actively seeking a job *during the last four weeks*. This concept is based on OECD standards. In using the data of the Economically Active Population Survey, however, we consider the unemployed to be persons who were actively seeking work *during the last week*, as is the case in most literature.

(2) The open unemployed (during the crisis): only include individuals who have searched for a job ever since 01/01/1998 and have experienced self-reported unemployment more than one month during the period between January 1998 and July 1999. Thus, open unemployment during the crisis may be similar to ILO unemployment.

(3) The hidden unemployed or discouraged workers (during the crisis): include only those who have searched for a job since 01/01/1998 but did not self-report any unemployment experience during the period between January 1998 and July 1999. Thus, the hidden unemployed during the crisis are also considered as discouraged workers in this study.

(4) The unemployed or the unemployment experienced (during the crisis): comprise all persons who have searched for a job since 01/01/1998 and have experienced self-reported unemployment or non-activity more than one month during the period between January 1998 and July 1999. This concept covers the open unemployed and the hidden unemployed (or discouraged workers). Thus, unemployment during the crisis will be used in a very wide sense in this Chapter, including discouraged workers (or the hidden unemployed). Since discouraged workers tend to be excluded from many government programmes, it will be useful to use this concept to analyse the Korea's employment policies and labour market.

(5) The (open) unemployment spells: are calculated by the sum of the self-reported months of being (open) unemployed during the period between January 1998 and July 1999. This concept comprises all repeated or non-repeated (open) unemployment, which will be expected to easily explain the extent of the disadvantages during the crisis in terms of employment probability<sup>43</sup>.

(6) The employed (during the crisis): comprise all individuals who have been employed continuously in the same job or changed job(s), experiencing no unemployment during the period between January 1998 and July 1999.

(7) The labour force (during the crisis): includes the unemployed and the employed during the crisis. In some case, it combines the *open* unemployed with the employed during the crisis, with some explanations.

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<sup>43</sup> Because of the absence of information on the date of leaving the previous job and beginning the new job, the URS does not give information on unemployment duration.

### Basic data used in this Chapter

As this Chapter covers the disadvantages *in the labour market*, the data used in this study are restricted to the labour force among the URS data, and focus on the persons with characteristics of disadvantages, such as poverty or temporary jobs. Thus, the following data or persons will be excluded from analysis: 1) The persons who have been continuously inactive during the crisis. 2) The persons aged less than 17 years or more than 67 years at the time of the interview, which means persons aged between 15 and 65 when the economic crisis occurred. 3) For regression analyses (explained below), we exclude the data that have no information on household incomes or properties, because the variable of poverty must be regarded as important in terms of disadvantages in the labour market. 4) For the same reason, the data with missing values on employment status (or regular or temporary status) are very often excluded in this study.

#### 3.1.2 Key indicators for defining disadvantages

On the base of the URS data set, we use four key indicators to describe the disadvantages of the labour force in the labour market.

- 1) Experiencing unemployment in the labour force (indicator A)
- 2) Failure in being (re-)employed among the unemployed (indicator B)
- 3) Failure to get a regular job or experiencing greater earnings loss among the re-employed (indicator C)
- 4) Experiencing longer unemployment spells among the labour force (indicator D)

Disadvantages usually occurs when one group is more likely to be unemployed than other groups (indicator A), and/or when one group remains unemployed for a longer average time compared with other groups (indicator B). Although these two indicators are widely used in the inflow-outflow model of unemployment, they may have limitations in explaining other important factors which are needed in order to escape from the disadvantage trap (coming from recurrent unemployment or the poverty trap). Indicator C (quality of re-employed work and extent of earnings loss) may be useful for understanding whether there are mechanisms of producing the disadvantage trap or characteristics of labour market segmentation. The last indicator (unemployment spells) can reflect the effects of the first and second indicators together, since unemployment spells are decided by the interrelationship between inflow to unemployment and outflow from it. The indicator of unemployment spells may also correlate

to the third indicator - especially when the disadvantage trap exists, or when the labour market is extremely segmented. Moreover, there are many advantages in using unemployment spells instead of unemployment duration because individuals with many spells of unemployment are often found to have a shorter average spell length (OECD, 2002a). If we select only one indicator of disadvantages for simplicity, we could choose the last indicator as the best indicator in a given period and place. So we will use the indicator of unemployment spells as a representative indicator of disadvantages, which will also be useful in Chapter 5 where we compare the extent of disadvantages with the probability of participation in LMPs.

Although, due to lack of data, we do not consider other important indicators of disadvantages in the labour market - for example, indicators related to wage inequality - these four indicators will be useful for establishing the desirable targets of labour market policies.

### 3.1.3 Models and variables

#### *Methods and dependent variables*

Based on the four indicators of disadvantages mentioned above, we analyse the extent and causes of disadvantages of various groups. As we have already seen in Chapter 1 (see Section 1.2), the disadvantages in the labour market come from various factors, such as deficiency in aggregate labour demand, discrepancy between labour demand and worker skills, wage rigidity, deficiency of information on both employers and workers, discrimination, worker characteristics (skills, behaviour and demographic or social characteristics), institutional settings (unemployment benefits, minimum wages, or labour unions), and segmentation in the labour market or in other social sectors. All these factors are interrelated and interact with each other in complex ways, making it difficult to analyse each factor separately without interfering with the simultaneous nature of the processes at work (Doeringer and Piore, 1971, pp. 169-170). When it comes to estimating the extent and causes of disadvantages in a certain group, we therefore must have adequate statistical control for other concerned variables.

For this reason, we use three types of regression methods, that is, Logit, OLS and Tobit analysis - considering each disadvantage indicator as a dependent variable. Different indicators of disadvantages need different methods.

(1) We use the Logit model for measuring the indicator A (being unemployed), the indicator B (being re-employed) and the indicator of being re-employed in a regular job by the indicator C, since these indicators are binary variables.

(2) The OLS regression method is applied to estimate the earnings loss of the indicator C.

(3) For measuring unemployment spells of the labour force (indicator D) we adopt the Tobit model, rather than the OLS method. The Tobit model is known as a censored normal regression model, and can be estimated with maximum likelihood estimation. A dependent variable is censored when values beyond a certain limit (typically a lower limit equal to zero) are observed<sup>44</sup>. In such a case, there is usually a concentration of cases at the limiting value, and an explanatory variable in such a relationship may be expected to influence both the probability of limit responses and the size of non-limit responses (Jackson, 1996). Concerning the dependent variable of unemployment spells in the labour force in this study, it is equal to zero for the persons with no unemployment experience, while for the unemployed it is between one and nineteen months (during the crisis). Therefore, in our Tobit model the unemployed are non-censored observations with unemployment spells more than one month, and the employed are censored observations with a lower limit equal to zero. Thus, using the Tobit model, we can study within one model the unemployment probability (limit responses) and the duration of unemployment spells (non-limit responses) together.

Table 3.1 reports the composition of data sets and models used in this Chapter. The data sets are divided into three categories: the labour force, the unemployed and the re-employed. Every data set related to the labour force excludes the data with missing values on household incomes and on employment status. The unemployed data set excludes data with missing values on household incomes, but includes data with missing values on employment status. So the number of the unemployed is different in the labour force data set (1,496 persons) and in the unemployed data set (1,585 persons). The data set for the re-employed is composed of the persons who had experienced unemployment *or job changes* during the crisis, but succeeded in being re-employed at the date of the survey. All these data are weighted for correcting the different sampling rates by regions (EDs).

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<sup>44</sup> Jackson (1996) exemplifies such cases in models of spending patterns. The levels of spending cannot go below zero for obvious reasons, even though values of the independent variables for cases at the limit would suggest that they should.

Table 3.1 Composition of data sets and models used in Chapter 3 (non-weighted)

<i>Data sets</i>		<i>Dependent variables</i>		<i>Model</i>	<i>Indicator (Section)</i>
	<i>No.</i>		<i>No.</i>		
Total labour force (during the crisis)		The unemployed	1493	Logit	A (2)
		Unemployment spells	(3790)	Tobit	D (5)
Excluded discouraged workers	4934	The open-unemployed	1144	Logit	A (2)
		Open-unemployment spells	(3790)	Tobit	D (5)
Wage-workers only	3054	The unemployed	903	Logit	A (2)
Prime-age males (30-54)	2176	Unemployment spells	(1761)	Tobit	D (5)
Youths (17-29)	1155		(627)		
Old workers (55-66)	851		(676)		
Prime-age women (30-54)	1101		(726)		
The low-educated	1788	Unemployment spells	(1326)		
High school graduated	2254		(1537)		
College and more	1241		(927)		
The non-poor	3920	Unemployment spells	(2965)		
The poor	1363		(825)		
Regular workers	2272	Unemployment spells	(1718)		
Temporary workers	782		(433)		
Self-employed workers	1684		(1540)		
New entrants (having no previous job)	545		(99)		
The unemployed (during the crisis)		The (re-)employed	800	Logit	B (3)
		(Re-)Employed in a regular job	324		
The unemployed with previous paid-job	1069	The re-employed	515		
		Re-employed in a regular job	224		
The (re-)employed (during the crisis)	941	(Re-)Employed in a regular job	390	OLS	C (4)
The re-employed with previous job	697	Re-employed in a regular job	305		
The re-employed with previous paid-job	518	Log earning in the current job	518		
The re-employed regular workers	265		265		
The re-employed temporary workers	253		253		

Note) Numbers in parentheses indicate the censored values used in Tobit models.

Table 3.2 Variables related to labour market analysis (Chapter 3) (*continued*)

<i>Variables</i>	<i>Description</i>	<i>Reference</i>
PPARTT	part-time workers in recent job	full-timers
MANU	engaged in manufacturing sector in recent job	others
SIZE	proxy for number of employees in recent workplace(from 1 to 10)	
DISPLACE	involuntary reasons in leaving recent job	voluntary
NPARTT	part-time workers in re-employed job	full-timers
NMANU	engaged in manufacturing sector in re-employed job	others
NSIZE	proxy for the number of employees in the re-employed workplace (from 1 to 10)	
UNEMPW7	the unemployed between Jan. 1998 and July 1999	others
UNEMPN7	the open-unemployed between Jan. 1998 and July 1999	others
SPELL_W	sum of unemployment spells between Jan. 1998 and July 1999	
SPELL_N	sum of open-unemployment spells between Jan. 1998 and July 1999	
DISCOURA	discouraged workers (the hidden-unemployed) during the crisis	others
REEMP	the (re-)employed at the date of survey	others
REGULAR	the (re-)employed in a regular job at the date of survey	others
LOWEARN	less than 700 thousand Won of monthly earning in recent job	others
LEARN	logarithm of monthly earnings in recent job	
LNEARN	logarithm of monthly earnings in re-employed job	

### Model specification and dependent variables

Even though we do not intend to predetermine the disadvantaged groups before identifying the disadvantages using the four disadvantage indicators, it would be useful to classify the various groups into several possible disadvantaged groups. In constructing models for analysing the extent and causes of disadvantages on the basis of the four disadvantage indicators, we divide various demographic and social groups in the labour force into thirteen groups using the following four categories: Four groups by sex and age (*the youth, older workers, prime-age women, and prime-age men*), three groups by educational attainment (*middle school and under, high school, and college and university*), two groups by household incomes and properties (*the poor and the non-poor*), and four groups by employment status (*new entrants, regular worker, temporary workers, and the self-employed*). And for the unemployed, we add the three groups by the duration of unemployment spells (6 months and

under, *7-12 months*, and *13-19 months*). The groups mentioned in italics are considered as possible disadvantaged groups relative to the other groups. The youth, older workers, and prime-age women are traditionally considered as disadvantaged groups relative to the prime-age male (OECD, 1999c). Various unemployment theories support the idea that these groups are disadvantaged. The insider-outsider model, the male-breadwinner model and the discrimination theory may give some explanation concerning the disadvantages of these groups. The human capital theory, the queue theory and the segmentation theory could explain the disadvantages of low-educated people relative to highly educated persons. The disadvantages of the poor in labour market may be explained by the segmentation theory, even though the determinants of poverty have a close correlation to the experience of unemployment. Disadvantages of the temporary workers are often explained by the segmentation theory, too. And the effect of long-term employment on re-employment is explained by the searching theory. There are also many empirical studies on the disadvantages of these groups<sup>45</sup>. For a clearer comparison of disadvantages between groups, we apply these classifications to the following regression models by using dummy variables taking the probable advantaged groups as references, even though using dummy variables tends to more or less decrease the fitness of models.

We now address the model specifications with these groups and various independent variables. All the variables used in this Chapter are displayed in Table 3.2.

(1) Being unemployed (Indicator A): To measure the extent and causes of being unemployed in the labour force, an equation was estimated, using Logit analysis on the assumption that the error term ( $\varepsilon_i$ ) is normally distributed. That is,

$$(A) \quad \text{UNEMPW7}_i = c + \alpha X_i + \beta Y_i + \gamma Z_i + \varepsilon_i$$

where  $\text{UNEMPW7}_i$  is a binary variable with one indicating that the worker  $i$  had experienced unemployment between Jan. 1998 and July 1999, and with zero indicating that the worker had no experience of unemployment during the same period.  $X_i$  is the vector of the independent variables related to the personal or social characteristics of labour force, such as, the youth

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<sup>45</sup> Recent studies on these groups are as follows; for the youth (OECD, 2002b; Velden et al., 2000; OECD, 1999c; O'Higgins, 1997), for old workers (Scherer, 2001; Auer, 2000; OECD, 1999c) and for prime-age women (OECD, 2002c; OECD, 1999c), for temporary workers (OECD, 2002d; Lee, H.S., 2001), and for the long-term unemployed (OECD, 2002a).

(YOUTH), older workers (ELDLY), prime-age women (WOMEN), persons with a middle school education and under (MIDDLE), persons with a high school education (HIGH), the poor (POVERTY) and household head (HEAD).  $Y_i$  is the vector of the independent variables related to living area or labour demand, such as, urban area (URBAN), area of the public employment service agency in charge of LMPs implementation (from PESAREA1 to PESAREA5), increase rate of regional employment (ERATE98), and regional unemployment rate (URATE).  $Z_i$  is the vector of variables related to job experience or employer characteristics, such as temporary worker (TEMP), self-employed worker (SELF), the new entrant into the labour market (ENTER or ENTRANT), or school-leavers during the crisis (S\_LEAVE). In this equation  $c$  is a constant, and  $\alpha$ ,  $\beta$  and  $\gamma$  are the regression coefficients.

(2) Being (re-)employed (Indicator B): In measuring the (re-)employment likelihood of the unemployed, we estimate a similar equation to the equation (A) using Logit analysis. That is,

$$(B) \quad REEMP_j = c + \alpha X_j + \beta Y_j + \gamma Z_j + \varepsilon_j$$

where  $REEMP_j$  is a binary variable with one indicating that the unemployed person  $j$  was (re)employed at the date of survey (i.e. September or October 1999), and with zero indicating that the worker was not (re-)employed at the date of the survey. The vector of independent variables is similar to that of the equation (A) with several exceptions. We add two variables, which are the number of household members (NUMBER) and the proportion of unemployed persons out of the total household members (UNUMB), to the vector of independent variables related to personal or social characteristics  $X_j$ . According to the job search theory, more household members and a higher proportion of unemployed persons in a household will increase the searching cost of an unemployed person, and will have a positive effect on reducing unemployment duration. On the other hand, two variables, ERATE98 and URATE, which were not statistically significant in the model, are excluded from the vector of independent variables related to the labour demand  $Y_j$ . Instead, we add another variable, the increase rate of employment in one's occupation (DEMANDO), to the vector  $Y_j$ . We add the variables related to the patterns of unemployment, such as hidden unemployment or discouraged workers (DISCOURA) and unemployment spells (SPELL\_W or SPELL\_N), to the vector of independent variables related to job experience  $Z_j$ . We expect to see the important duration effect on re-employment likelihood in the variable for unemployment spells. We also add the variables related to previous work to some models for which the following data are available. These include the level of monthly earnings (LOWEARN for the



worker with monthly earning under 700 thousand Won), industry (MANU for the worker engaged in the manufacturing sector in a recent job), size of enterprise (SIZE), reason of leaving recent job (DISPLACE for persons with involuntary reason).

(3) Being re-employed in a regular job and the degree of earnings loss (Indicator C): To measure the quality of the new job among the re-employed, we need two separate equations. First, in order to estimate the likelihood of re-employment in regular work, we estimate a very similar equation to the equation (B) using a Logit model. That is,

$$(C-1) \quad \text{REGULAR}_k = c + \alpha X_k + \beta Y_k + \gamma Z_k + \varepsilon_k$$

where  $\text{REGULAR}_k$  is a binary variable with one indicating that the re-employed person  $k$  was re-employed to regular work at the date of the survey, and with zero indicating that the worker was re-employed to irregular work (temporary job or self-employed job with monthly earning of under 1.5 million Won) at the date of the survey. The vector of independent variables is very similar to that of the equation (B). But we use the variables related to the characteristics of the newly employed work within the vector of variables related to employer characteristics  $Z_k$ , such as industry of new work (NMANU for person re-employed in the manufacturing sector) and size of enterprise (NSIZE), instead of MANU and SIZE respectively.

Secondly, for measuring the extent of earnings loss compared with the previous job among re-employed wage-workers, we estimate the following equation using OLS regression. That is,

$$(C-2) \quad \text{LNEARN}_k = c + \alpha X_k + \beta Y_k + \gamma Z_k + \delta \text{LEARN}_k + \varepsilon_k$$

where  $\text{LNEARN}_k$  is the log of monthly earnings in the current job. The vector of independent variables is almost the same as that of the equation (C-1). The linear variable for the log of monthly earnings in the recent job (LEARN) replaces LOWEARN which is dummy variable because earnings loss can be estimated when the earnings level in the recent job is controlled. Moreover, using the variable LEARN makes it possible to get rid of biases induced by omitted variables. Since the estimation of earnings loss among different groups can be affected by the biases induced by unobservable variables - such as worker motivation, behaviour or unobserved previous job careers - we need to avoid the possible biases. Earnings level in the recent job may correct the biases induced by unobservable variables.

With this model, we also estimate the different rules for wage determination between the primary and secondary sectors by dividing the sample into regular workers and temporary

workers. Our main concern is to see whether the returns to education are different among groups, and then, we can test whether the Korean labour market is segmented or not, and to what degree is it segmented. According to the segmentation theory, the secondary sector is not structured, and the returns to education are negligible. We will test this assumption.

(4) Unemployment spells (Indicator D): To measure the extent and causes of longer unemployment spells in the *labour force*, we estimate an equation similar to the equation (A), but here we use the Tobit model as mentioned above. That is,

$$(D) \quad \text{SPELL\_}W_i = c + \alpha X_i + \beta Y_i + \gamma Z_i + \varepsilon_i$$

where all the independent variables are almost the same as in equation (A). Only the dependent variable changes for unemployment spells, and the Tobit model is used instead of the Logit model. With this model, we estimate the different determinants of unemployment spells for different groups, by dividing the labour force sample into ten sub-samples for various groups according to sex and age, household poverty status, and employment status. In analysing the various determinants of unemployment spells among different groups, we focus on investigating whether education effects on unemployment spells are different among groups. This may also lead us to test the extent of segmentation of the Korean labour market.

## 3.2 Unemployment likelihood in the labour force

### 3.2.1 Overview: unemployment experience rates (Chart 3.1)

The differences in unemployment likelihood in different groups can be presented by using the unemployment experience rates. The unemployment experience rate means the proportion of the labour force who experienced unemployment during the crisis, that is to say, during the 19 months from January 1998 to July 1999.

Chart 3.1 Unemployment experience rates of labour force

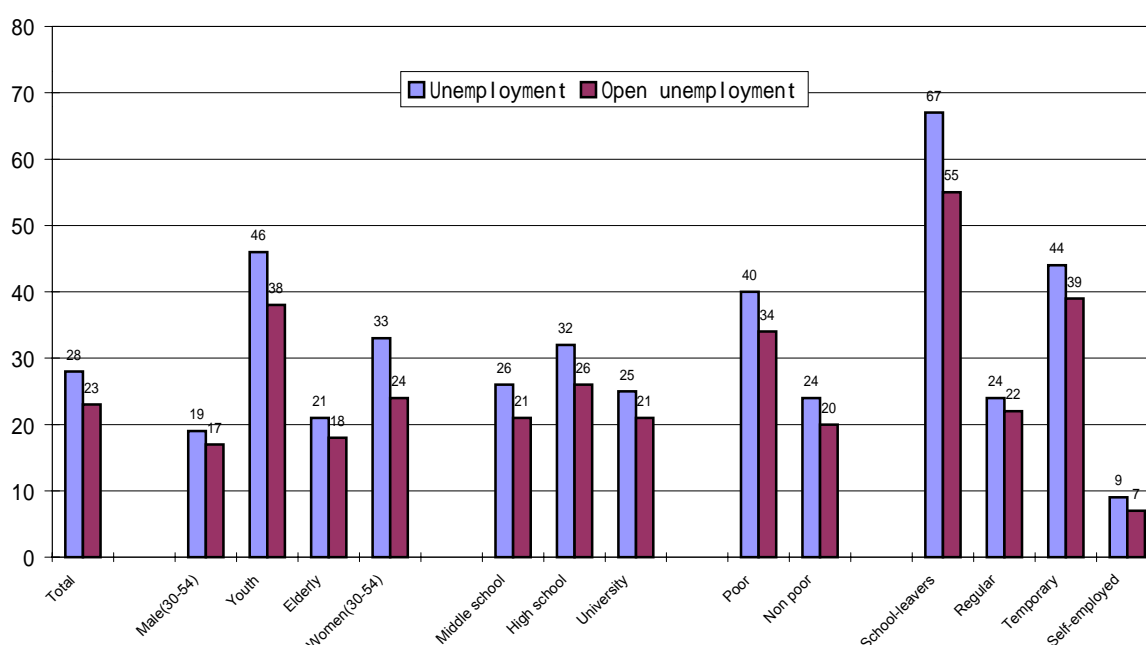


Chart 3.1 represents the experience rates of *unemployment* and *open unemployment* for the whole labour force and several main groups, according to age and gender, educational attainment, household incomes, and employment status. The chart shows that many Koreans experienced unemployment. About 28% of the labour force experienced unemployment at least one month during the 19 months after the crisis, while 23% of the labour force experienced *open* unemployment. The variations of unemployment experience rates among different groups are significant. Above 40% of youths (46%), the poor (40%), school-leavers (67%) and temporary workers (44%) experienced unemployment, while prime-age male

(19%), older workers (21%), regular workers (24%) and the self-employed (9%) recorded lower unemployment experience rates. However, based on this Chart, we cannot be sure that the lower-educated persons were more excluded from the labour market than the higher-educated were.

More detailed data for composition of samples and the results of the Chi-Square test for variables measured at the risk of unemployment are shown in Annex Table 3.1. The means of the variables and the results of the correlation analysis of variables are reported in Annex Table 3.2 and 3.3, respectively. All variables are significantly different among the employed and the unemployed at the 1% significance level. However, these results only show one of the variables of worker's characteristics unconditionally. So we need to control other variables in order to estimate the marginal effect of each characteristic on unemployment likelihood.

### 3.2.2 Empirical findings on unemployment likelihood (Table 3.3)

In the first model we start with several basic variables, such as youths, older workers, prime-age women, educational attainment and household poverty status measured by incomes and properties<sup>46</sup> (model 3.A1). We then add several variables to the starting model, for differentiating the effect of each variable affecting unemployment likelihood (model 3.A2 to model 3.A5). Table 3.3 reports the results of Logit analysis for the unemployment likelihood of the total labour force. In each model, almost all variables except variable PESAREA1 have significant effects on unemployment probabilities after the crisis.

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<sup>46</sup> We used the data of household incomes and properties *for the year of 1998* instead of 1997, which could not be obtained. So the parameter estimate for 'POVERTY' may be, to a certain extent, overestimated on unemployment likelihood for the poor because these incomes data will be conversely affected by the higher unemployment experiences of the poor in 1998. In order to estimate the extent of over-estimation, we calculated each parameter estimate with the two divided samples, that is, one labour force sample for the year of 1998, and the other labour force sample for the year of 1999, which do not affect the incomes of the year of 1998. The results were very similar. When model 3.A5 was applied, the parameter value of 'POVERTY' with sample for the year of 1998 was 1.018 (with standard error 0.091) and for the year of 1999, 0.931 (with standard error 0.090).

Table 3.3 Unemployment likelihood of labour force

### With basic variables (model 3.A1)

The results of model 3.A1 are not much different from those in Chart 3.1. Young workers are particularly affected by the crisis. Prime-age women and poor workers also have a high probability of unemployment. On the other hand, the effect of the lowest educational attainment (MIDDLE) is not statistically significant, though it is positive on unemployment likelihood, compared with college or university graduates. The next models partly explain these results.

### Effects of regional labour market situations (model 3.A2)

Model 3.A2 controls additional variables for regional labour market situations. Persons living in urban areas and in PES areas 2, 3, 4 and 5 are more likely to become unemployed than persons living in rural areas and in the reference PES area (the SEOUL-CHUNG area), other things being equal. And the increase rate of regional employment (ERATE98) has a negative effect on unemployment likelihood, whereas the regional unemployment rate (URATE) has a positive effect. We can easily accept the result that in urban areas and areas having a lower labour demand, there is a higher probability of being unemployed. But what seems more surprising is that the effect of PES areas on unemployment likelihood is relatively strong after controlling regional labour demand, which was not seen in the aggregate data in Chart 3.1. This somewhat surprising result could be explained by the fact that reference PES area and PES area1 have higher employment ratios than other PES areas even before the crisis<sup>47</sup>. A higher employment ratio in a certain area may contribute to decreasing unemployment likelihood. In any case, this result suggests that a larger proportion of labour market programmes should have been enacted in these disadvantaged PES areas.

Model 3.A2 also shows changes of other variables' effects on unemployment likelihood compared with model 3.A1. After controlling variables for living areas and regional labour demand, the effects of ELDLY and MIDDLE become larger. This means that a high proportion of older and low-educated workers in rural areas - where unemployment rates are low - may lead to underestimating the positive effects of older workers and low education on

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<sup>47</sup> Employment/population ratios are significantly different among PES areas in 1997. In the area of reference PES (SEOUL-CHUNG) and in PESAREA1 the employment ratio amounted to about 62%, while in other PES areas it recorded 59-60% in 1997 (PESAREA2: 58.7%, PESAREA3: 59.2%, PESAREA4: 60.0%, and PESAREA5: 60.1%).

unemployment likelihood in Korea. And the same effect is seen in the POVERTY effect. The POVERTY effect becomes stronger after controlling regional labour market situations, since many poor households exist in rural areas.

#### *The household head effect (model 3.A3)*

In model 3.A3, we add the variable for household head (HEAD), that is, the so-called breadwinner variable. The breadwinner effect is negative on unemployment likelihood. Controlling for the breadwinner leads to notable changes in age and gender effects. Comparing model 3.A2 and model 3.A3, we can see that the positive effect of WOMEN is greatly reduced when the household head variable is controlled. This means that the higher probability of unemployment for prime-age women is largely due to their lower composition of breadwinners compared to prime-age males. The same trends are seen in the effects of YOUTH and ELDLY. Even though the effect of HEAD is relatively strong in Korea, in interpreting this result we have to consider the problem of interrelationships between household heads and sex and age groups. 82.1% of prime-age male are household heads, while the proportion is 74.7% for the elderly, 11.3% for the youth, and only 8.3% for the prime-age female. Nevertheless, we use the household variable in almost every model, since the role of the household head is considered as important in supporting household's well-being due to the lack of social security systems in Korea.

#### *Effects of school-leavers (model 3.A4)*

In order to analyse the reasons for the high probability of being unemployed among youths, in model 3.A4 we add the S\_LEAVER variable, or school-leavers after the crisis. This model shows the strong positive effect of school-leavers on unemployment likelihood. About 67% of school-leavers experienced unemployment during the crisis (see Annex Table 3.1). Since most of the school-leavers are youths, the YOUTH effect is much reduced when S\_LEAVER variable is controlled. On the contrary, the effects of low education (MIDDLE and HIGH) increased after controlling S\_LEAVER variable, since nearly half of school-leavers are college or university graduates. This result suggests that the exceptionally high probability of being unemployed among youths largely comes from their transitional process from school to work, especially during the crisis.

*The effect of employment status on unemployment likelihood (Model 3.A5 – Model 3.A7)*

We now try to find out the very significant effect of employment status on unemployment likelihood. In order to do this, we add variable for new entrants into labour market and variables for employment status in the previous job to model 3.A5. The variable ENTER comprises all new entrants including the school-leavers (S\_LEAVER). The effect of ENTER on unemployment likelihood is stronger than that of S\_LEAVER in model 3.A4, for almost all new entrants have experienced unemployment in the process of entering the labour market. Some of them may be persons who started searching for a job because of the unemployment of male breadwinners (added worker effect)<sup>48</sup>. Model 3.A5 also show the strong positive effect of temporary workers (TEMP) and the strong negative effect of self-employed workers (SELF) on unemployment likelihood relative to regular workers. Temporary workers are easily expected to have more risks of unemployment due to their unstable employment status. On the other hand, the low probability of unemployment for the self-employed may suggests that underemployment, rather than unemployment, prevails in the self-employment sectors. This suggestion is supported by the fact that the effect of URBAN greatly decreases after controlling the employment status variable. The coefficient of URBAN is reduced by almost half, from 0.741 (model 3.A3) to 0.402 (model 3.A5), which may explain that low probability of unemployment in rural areas is due to the higher proportion of self-employed or under-employed workers in rural areas. Rural area and self-employed sectors in Korea may have an important *buffer* role between unemployment and (typical) employment, especially during an economic recession. As we have seen in model 3.A2 - especially for older workers, the low educated and the poor - the buffer role is strong.

Moreover, many other variables' influences on unemployment likelihood are reduced in model 3.A5 compared with model 3.A3, with the exception of the effects of older workers and high school education. The strong positive effect of YOUTH in model 3.A3 (coefficient: 1.012) becomes statistically insignificant in model 3.A5. This result does not mean that youths are less unemployed relative to prime-age male, but that the causes of high

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<sup>48</sup> About 23% of total new entrants are prime-age women, whereas 70% of them are youths. Most new entrants who are prime-age women may be considered as added workers. However, the discouraged worker effect may be stronger than the added worker effect for prime-age women. In many cases, it is very difficult to distinguish the added worker effect from the discouraged worker effect, since many discouraged job-seekers are found in the process of (newly-) entering the labour market. The discouraged worker effect will be analysed in more detail in model 3.A8.



unemployment for youths can be mostly attributed to their status as new entrants and their low proportion of self-employment. On the contrary, the effect of ELDLY on unemployment likelihood becomes larger in model 3.A5 compared with that of model 3.A3, which means that their high proportion of the self-employed leads to underestimating their higher probability of unemployment. This model, however, cannot clearly show the important *effect of temporary workers* on other variables, since the coefficients of other variables are also influenced by the positive effect of ENTER and by the negative effect of SELF on unemployment likelihood. We need to restrict the sample to wage-workers by excluding new entrants and self-employed workers from the sample used in model 3.A5.

Comparing model 3.A6 with 3.A7 shows more clearly the marginal effect of temporary workers on other variables. The positive effects of ELDLY, WOMEN, low education (MIDDLE and HIGH), and POVERTY become smaller after controlling the temporary worker variable in model 3.A7. The coefficient of MIDDLE (lowest educated persons) in particular reduces significantly from 0.614 to 0.416. These results mean that the high probabilities of unemployment for older workers, prime-age women, low-educated persons and the poor, are partly explained by their high proportions of temporary workers. The youth are not, however, affected by the temporary worker effect. On the other hand, URBAN effect on unemployment likelihood with the sample excluding new entrants and self-employed workers (in model 3.A6 and 3.A7) is not statistically significant - which is different from the results in the samples of the total labour force (from model 3.A2 to model 3.A5). It once again confirms the strong positive relationship between rural areas and self-employment.

#### *Discouraged worker effects and unemployment likelihood (Model 3.A8)*

Until now, we have dealt with the unemployment likelihood using the sample of the total labour force including *all the unemployed* in which discouraged workers (or the hidden-unemployed) are included. Now, we will address the effect of discouraged worker, which is significant in the Korean labour market. In order to do this, we constitute another new sample excluding the discouraged workers from the total labour force. In the new sample, we consider the open-unemployed (UNEMPN7) as a dependent variable, instead of the unemployed (UNEMPW7). Model 3.A8 in the last column of Table 3.3 shows the results of Logit analysis using the new sample. Comparing model 3.A8 with model 3.A5, the positive effects of WOMEN, the high school educated (HIGH), and new entrants (ENTER) become

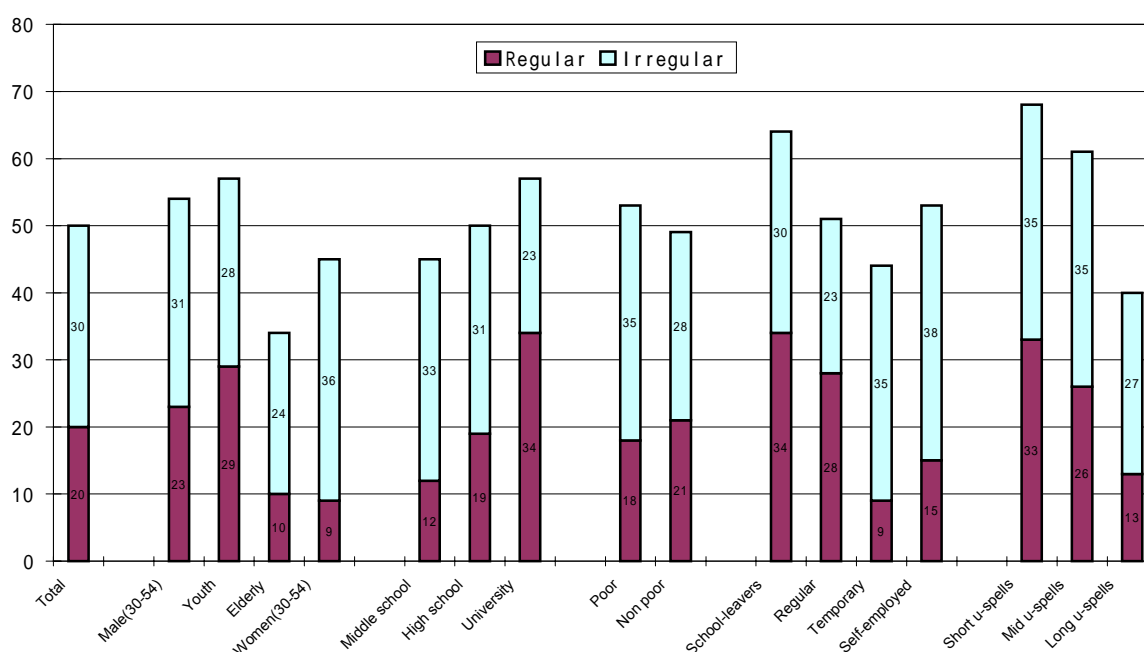
smaller, although the same trend in unemployment likelihood by group exists. In particular, the influence of prime-age women is greatly reduced, reducing the coefficient from 0.225 to 0.061 (not significant in the statistics). On the other hand, the negative effect of household head (HEAD) becomes smaller in model 3.A8, which means that household heads are less discouraged. All these results suggest that women, high school educated persons, new entrants and non-household-heads are more likely to be discouraged in finding a job.

### 3.3 (Re-)Employment likelihood of the unemployed

#### 3.3.1 Overview: (re-)employment rates (Chart 3.2)

We start by presenting the (re-)employment rates of the unemployed. Chart 3.2 shows the proportion of the unemployed who were (re-)employed at the date of the survey after experiencing unemployment during the crisis. 50% of the unemployed were employed in any job, and 20% of the unemployed in regular jobs. This means that about 40% (20%/50%) of the (re-)employed found regular jobs.

Chart 3.2 (Re-)Employment rates of the unemployed



The rate of (re-)employment (in any job) was relatively high in the younger group and in higher educated persons - indicating that 57% of the youth and the same percent of the university graduates were employed at the date of the survey. The elderly had the greatest difficulty in finding a job - only 34% of them succeeded in being (re-)employed. School-leavers were easily employed (64%), while temporary workers were less employed (44%). And the role of unemployment spells was very important in determining employment probability. Persons with shorter unemployment spells had higher employment rates - 68% of the unemployed with unemployment spells between one and six months were (re-)employed.

On the other hand, the (re-)employment rates *in regular jobs* show greater differences among different groups than those *in any job*. Regular-(re-)employment rates of youths (29%) and university graduates (34%) were nearly three times as high as those of older workers (10%), prime-age women (9%), and middle school educated persons (12%). 34% of school-leavers and 28% of regular workers were employed in a regular job, whereas only 9% of the temporary workers were re-employed in a regular job. However, the difference of (re-)employment rates between the poor and the non-poor is not very significant, although the non-poor had a slightly higher regular-(re-)employment rate.

More detailed data for the composition of samples and the results of Chi-square test for variables measured at the (re-)employment chances are shown in Annex Table 3.4. Means of variables are reported in Annex Table 3.5, while the results of correlation of variables are given in Annex Table 3.6.

### 3.3.2 Empirical findings on (re-)employment likelihood (Tables 3.4 and 3.5)

#### *With basic variables (model 3.B1)*

Table 3.4 shows the results of (re-)employment likelihood estimation of the unemployed. In the first model we start with several basic variables, such as gender and age, educational attainment and household poverty status. The effects of ELDLY, WOMEN and HIGH are negative concerning (re-)employment likelihood, while the effect of POVERTY is positive (though it is not very significant statistically). These results are not much different from those of Chart 3.2, in which aggregate data are used. But the coefficient of MIDDLE is not statistically significant, which is different from the result of Chart 3.2. This shows that low education is positively correlated to the elderly and prime-age women.

Table 3.4 (Re-)Employment likelihood of the unemployed : total

### *The effect of labour demand (model 3.B2)*

In model 3.B2 we add several variables related to the living area and labour demand. Here we use the variable DEMANDO (the increase rate of employment in one's occupation) as a demand side variable<sup>49</sup>. The effect of DEMANDO on (re-)employment likelihood is positive. When the variables related to the living area and labour demand are controlled, the negative effects of low education (MIDDLE and HIGH) on (re-)employment likelihood become stronger and statistically more significant. This result suggests that labour demand after the crisis is favourable to low-educated persons, and that (re-)employment probability of the low-educated can be underestimated when the living area is not considered.

### *Breadwinner effect and number of household members (model 3.B3)*

In model 3.B3 we add the variables of HEAD (household head), NUMBER (number of household members) and UNUMB (proportion of unemployed persons to total household members). Household heads are more likely to be (re-)employed. Thus, we can say that household heads are clearly an advantaged group in the Korean labour market, since they have a much lower probability of unemployment - as we saw in Table 3.3 - as well as having a much higher probability of (re-)employment. The influence of the number of household members (NUMBER) on (re-)employment likelihood is positive. It implies that the more household members there are, the bigger livelihood problems are, and thus, the unemployed with more household members are obliged to search for a job more actively.

By controlling these variables, we can see how the effects of other variables change. When model 3.B3 is compared with model 3.B2, the positive effect of YOUTH increases greatly, while the negative effect of WOMEN becomes statistically insignificant. Here we may need to also consider the problem of interrelationship between HEAD and sex and age groups.

### *The effects of new entrants and discouraged workers (model 3.B4)*

In model 3.B4, we can see the strong positive effects of ENTRANT (new entrants into labour market) and DISCOURA (discouraged workers) on employment likelihood. It may be

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<sup>49</sup> We tried to add several other variables, such as regional unemployment rate (URATE), increase rate of regional employment (ERATE98) and increase rate of employment in one's industry (DEMANDI), for

a somewhat unexpected result to find that new entrants without job experience have a higher probability of finding jobs than the unemployed with job experience. It might be partly due to a kind of substitution trend. Enterprises might substitute lower-wage newcomers for long-served higher-wage workers. This phenomenon might be true at least in Korea, especially during the crisis. As is well known, Korea has had a tradition of a relatively strong seniority wage system, though the tradition has weakened. In fact, from the URS data, we can confirm that the average expecting wage of the unemployed with job experience is 33% higher than that of the newly unemployed. The average expecting wage of the former amounts to 1,016 thousand Won (number of observation: 713 persons), and that of the latter amounts to 766 thousand Won (number of observation: 121 persons). Moreover, the high probability of (re-)employment for discouraged workers may not be easily explained in theory. It suggests that lots of persons in Korea enter the labour market without any open unemployment stage, as they often leave the labour market during a business recession. Korea's negligible social safety net may increase this type of hidden unemployment. In this sense, it may be better to call discouraged workers the hidden unemployed. In any case, the high probability of employment among new entrants and the hidden unemployed may verify the dynamics of the Korean labour market.

By controlling the variables of ENTRANT and DISCOURA we see a decreased effect of YOUTH on employment likelihood (YOUTH coefficient: 0.642→0.330)<sup>50</sup>. This result means that youths have a high probability of employment because employers welcome new entrants.

#### *The effect of unemployment spells on re-employment likelihood (model 3.B5)*

Model 3.B5 shows that persons with longer unemployment spells have a much lower probability of being (re-)employed than persons with shorter unemployment spells. In addition, adding the variable SPELL\_W improves the fitness of the model significantly, for –2Log Likelihood decreases from 2,062 in model 3.B4 to 1,941 in model 3.B5.

Comparing model 3.B5 with model 3.B4, we can estimate the effect of unemployment spells on (re-)employment probability for various groups. After controlling the variable

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controlling the demand side effects in this model, but the former two variables were not statistically significant and the variable related industry had less explanatory power relative to the variable related to occupation.

<sup>50</sup> A lot of literature indicates that young people are more likely to be unemployed than older people, but they remain unemployed for a rather shorter time on average (Gazier, 1991; Layard et al., 1991). Gazier (1991) found that there was a strong divergence of unemployment patterns between young and older workers in France during the period 1973-1988, along with an increase in aggregate unemployment (pp. 76-79).

SPELL\_W, the negative effect of ELDLY becomes much smaller, which means that longer unemployment spells of the elderly can explain the cause of their low employment probability. The effect of POVERTY on employment likelihood once again becomes significant in the statistics when the variable SPELL\_W is controlled. This suggests that poverty stimulates searching activity, although their longer unemployment spells can create an obstacle to (re-)employment. For the youth and the low-educated, the opposite is true. High probability of employment for the youth is partly due to their shorter unemployment spells. But low probability of employment for the low-educated is more noticeable when the variable SPELL\_W is controlled. Thus, the negative effect of low education can be underestimated if their unemployment spells are not considered. The same pattern occurs when the effect of the number of household members (NUMBER) on employment likelihood is affected by the variable SPELL\_W.

On the basis of the results in model 3.B5 we can also affirm that persons living in PES areas 2, 4 and 5 are likely to be significantly less employed than persons living in the reference PES area (Seoul-Chung) are. We need to stress the fact that, as we saw in Table 3.3, they have significantly higher probabilities of being unemployed, other things being equal. These areas may need more intensive implementation of labour market programmes from their PES agencies.

#### *(Re-)Employment likelihood in regular jobs (model 3.B6)*

For better comprehension of the (re-)employment likelihood of various groups, we need to analyse what persons have advantages in being (re-)employed *to a stable job*, that is, a regular job. Model 3.B6 of the Table 3.4 takes persons who are (re-)employed in a regular job as a dependent variable. About 20% of the unemployed are (re-)employed in a regular job at the survey date (see Chart 3.2). In comparing model 3.B6 with model 3.B5, we can see that the negative effects of ELDLY and low education (MIDDLE and HIGH) on the likelihood of being employed *to a regular job* are much stronger (model 3.B6) than those on the probability of being employed *to any job* (model 3.B5). The effect of WOMEN becomes negative as well as statistically significant. And the effect of POVERTY, which is positive in model 3.B5, has no statistical significance in model 3.B6. All these results mean that many (re-)employed older workers, the low-educated, prime-age women and the poor get temporary or self-employed jobs. On the contrary, the positive effects of YOUTH and HEAD become stronger in model 3.B6.



On the other hand, the effects of NUMBER and UNUMB (proportion of unemployed persons to total household members) on probability of employment in a regular job are different from those in model 3.B5. The positive effect of NUMBER becomes statistically insignificant, and the effect of UNUMB becomes negative and statistically significant. These results suggest that the urgent problem of livelihood leads them to irregular jobs, and renouncing their further search for a regular job.

The following Section will address the issue of quality of the re-employed job in detail.

### Previous job and re-employment (Table 3.5)

What is the effect of previous job characteristics on re-employment probability? We can verify this with a sample for the unemployed who used to be paid workers. Table 3.5 shows the result of Logit analysis for re-employment likelihood (in a regular job) of the unemployed who were wage-workers.

Table 3.5 Re-employment likelihood of the unemployed: paid workers

	<i>Model 3.B7</i>	<i>Model 3.B8</i>	<i>Model 3.B9</i>
Sample	The unemployed who were former paid workers (No. of Obs.: 1063)		
Dependent Var.	REEMP (The re-employed: 510)		<b>REGULAR</b> (220)
YOUTH	-.074(.21)	-.155(.21)	.203(.24)
ELDLY	-.832(.22) ***	-.831(.23) ***	-.608(.31) *
WOMEN	-.182(.23)	-.315(.23)	-.506(.31)
MIDDLE	-.315(.22)	-.325(.23)	-.368(.28)
HIGH	-.180(.18)	-.205(.18)	-.359(.21) *
LOWEARN	.253(.15) *	.349(.16) **	.358(.21) *
URBAN	-.458(.21) **	-.422(.21) **	.304(.28)
PES SE	-.086(.14)	-.119(.15)	-.318(.18) *
PES SW	-.324(.19) *	-.282(.19)	-.546(.25) **
DEMANDO	.017(.01) *	.019(.01) **	-.007(.01)
HEAD	.554(.18) **	.646(.19) ***	.522(.23) **
SPELL W	-.063(.01) ***	-.061(.01) ***	.069(.01) ***
MANU		.383(.15) **	.307(.18) *
SIZE		-.063(.03) **	-.023(.03)
DISPLACE		-.402(.15) ***	-.262(.18)
PTEMP		-.380(.16) **	-1.292(.22) ***
INTERCPT	1.017(.34) ***	1.387(.37) ***	-.174(.45)
-2Log L	1388.5	1368.7	951.6
Chi-square	83.5(p=0.0001)	108.3(p=0.0001)	132.1(p=0.0001)
Concordant	65.6%	67.4%	73.2%

Note: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

Model 3.B8 takes several independent variables related to the previous job, such as level of monthly earnings (LOWEARN), industry (MANU), establishment size (SIZE), employment status (PTEMP) and reason of leaving in the recent job (DISPLACE). We classify the five variables of the PES areas (from PESAREA1 to PESAREA5) into two variables (PES\_SW and PES\_SW). And we exclude several variables, such as POVERTY, NUMBER and UNUMB, to enhance model fitness. The effects of the ELDLY, DEMANDO, HEAD and SPELL\_W on re-employment likelihood are fundamentally similar to those in the previous models in Table 3.4. Model 3.B8 shows that the effect of low earning (LOWEARN) on re-employment likelihood is negative, which is similar to the effect of POVERTY in Table 3.4. Workers in the manufacturing sector (MANU) are more likely to be re-employed, compared with workers in the non-manufacturing sector. And persons who worked in larger enterprises (SIZE), displaced workers (DISPLACE) and temporary workers (TEMP) are less likely to be re-employed, compared with persons who worked in smaller enterprises, persons who left work for voluntary reasons, and regular workers. By comparing model 3.B8 with model 3.B7, we can see that the effects of other variables do not change much, and that the effects of variables related to previous work on re-employment likelihood are stronger and more significant than those of other variables, such as YOUTH, WOMEN and low education (MIDDLE and HIGH).

Model 3.B9 shows the results of Logit analysis for the likelihood of re-employment in a regular job. The negative effect of temporary workers (PTEMP) becomes stronger, as expected.

### 3.4 Quality of jobs for the re-employed

In this Section, we restrict the object of analysis to the re-employed, while the previous Sections dealt with the total labour force and the unemployed. In order to analyse the quality of re-employed jobs, we address the two following main objects: the probability of getting an (ir)regular job and the degree of earnings loss after experiencing unemployment. In order to analyse the accessibility of regular jobs among the re-employed, we focus on the mobility of workers between the regular and irregular sectors.

#### 3.4.1 Mobility between the regular and irregular sectors and its determinants

The results of the previous analysis show that the experience of a temporary job has a strong negative impact on the probability of re-employment in a regular job (see model 3.B9 of Table 3.5). Though the results suggest that there is a segmentation between the regular and irregular sectors, it cannot give more detailed information as to whether the labour market is segmented or to what degree. Since the previous analyses dealt with the re-employment probability among unemployed people, with the results we could not clearly distinguish the effect of irregular job experience on the quality of new jobs. Thus we will construct a new sample for the re-employed, excluding new entrants and continuously unemployed people. Here we define an irregular worker as a worker who is a temporary worker or who is a self-employed worker with monthly earnings of under 1.5 million Won. 1.5 million Won corresponds to average monthly earnings of regular workers. First, we analyse the mobility between the regular and irregular sectors, and then we analyse the determinants of getting a regular job, with the new sample of the re-employed.

#### *Mobility between the regular and irregular sectors (Table 3.6)*

Table 3.6 reports the flows between regular and irregular jobs of the total re-employed, comparing the recent job with the current job. Though the comparatively small size of the sample requires very cautious interpretation, we can find many significant facts about the dynamics of job changing among different groups. The main findings are as follows:

Table 3.6 Mobility between the regular and irregular sectors (the re-employed with previous job)

(1) As regards total re-employed persons (observations non-weighted: 764), we can see the workers' flows between the regular and irregular sectors in the first line of Table 3.6. 30.4% of the re-employed move from a regular job to a regular job (column A) and 34.2% of them stay in the irregular sector (column D). Concerning the rest, 35.5% of them change their sector (column B + C): 9.2% of the re-employed succeed in moving from the irregular sector to the regular sector (column C), while 26.3% move from the regular sector to the irregular sector (column B). This results in an increased proportion of irregular workers in current jobs: 60.5% (column F), relative to the proportion in recent jobs with 43.3% (column E). The causes of the increased proportion of irregular workers are more easily understood by comparing the inflow rates of regular workers in recent jobs to the irregular sector (column G) with the outflow rates of irregular workers in recent jobs out of the irregular sector (column H). Only 21.2% of irregular workers in recent jobs succeed in escaping from the irregular trap (column H), while 46.4% of regular workers in recent jobs enter into the irregular sector (column G). All these results suggest that the Korean labour market may be segmented into the regular and irregular sectors with a strong expansion of the irregular sector. So we can say that the problem of a decrease in job quality after an unemployment experience or job change is as serious a problem as the increase in the aggregate unemployment rate.

(2) The proportion of irregular workers (in current jobs) is very different by groups, which is seen in column F of Table 3.6. The 'middle school and under' educated has the highest proportion of irregular workers (72.6%). They are followed by the other workers as follows: workers in the smallest-sized firms in the current job (71.8%), prime-age women (70.3%), workers with low earnings (under 700 thousand Won) in the recent job (69.6%), workers with the longest unemployment spells of 7-19 months (69.0%), older workers (67.6%), the poor (66.3%), manual workers in the current job (65.8%), displaced workers (65.0%), and workers in non-manufacturing sectors in the current job (64.7%). On the other hand, lower proportions of irregular workers are found in other groups, such as workers in larger-sized firms in the current job (42.7% in firms with 10-99 workers and 43.7% in firms with 'over 100 workers'), workers in the manufacturing sector in the current job (45.6%), the 'college and over' educated (48.2%), professionals in the current job (49.6%), workers with shorter unemployment spells of 1-6 months (50.8%), and the youth (51.1%). All these results suggest that the determinants of getting irregular jobs are highly correlated with each other, especially concerning the demand side factors, such as industry, occupation and firm size.

In the meantime, the causes of an increased proportion of irregular sector jobs are different by groups. We can analyse the causes by comparing the inflow rates in column G with the outflow rates in column H. Since a group with higher proportion of irregular workers tends to have higher inflow rate and lower outflow rate, here we investigate several exceptions.

(3) For older workers, the high proportion of irregular workers is mainly due to a low outflow rate, rather than a high inflow rate.

(4) For prime-age women, their higher inflow rate - rather than outflow rate - leads them to get the highest proportion of irregular workers. Their outflow rate is also relatively high, and corresponds to the average rate.

(5) For workers with unemployment spells of 1-6 months, the proportion of irregular jobs (50.8% in column F) is lower than that of workers with unemployment spells less than one month (or with no unemployment spells). The latter have a higher inflow rate than the former. This suggests that it takes some time to find a regular job, and receiving unemployment benefits during a reasonable period may be helpful in finding a regular job. Long unemployment spells more than 6 months, however, lead workers to higher inflow rates and lower outflow rates.

#### *The determinants of getting a regular job (Table 3.7)*

Table 3.7 reports the results of Logit analysis on the likelihood of getting a regular job. Though the sample is comparatively small, several important facts can be determined. In model 3.C1 the effects of MIDDLE (the ‘middle and under’ educated) and LOWEARN (low earning) are negative on the probability of getting a regular job, while the effect of YOUTH is positive. These results are similar to those of Table 3.6.

Model 3.C2 shows the positive effect of UNUMB (the proportion of unemployed persons to total household members) on the probability of getting a regular job. It is the same result as model 3.B6 in Table 3.4. The effect of unemployment spells (SPELL\_W) is not significant, though it always had a strong negative effect on the re-employment probability of the unemployed in previous models. This suggests that a certain period of searching activity may be required for getting a regular job.

Model 3.C3 shows the strong effects of demand side variables on the probability of getting a regular job. Persons in manufacturing sectors in the current job (NMANU) and in larger-sized firms in the current job (NSIZE) are more likely to get a regular job. Moreover, the effect of DEMANDO (increase rate of employment in one’s occupational sector) is

statistically significant, but is negative. This indicates that occupational sectors with higher increase rates of employment<sup>51</sup>, such as elementary occupations, employ mainly irregular workers.

Table 3.7 Likelihood of getting a regular job among the re-employed

	<i>Model 3.C1</i>	<i>Model 3.C2</i>	<i>Model 3.C3</i>	<i>Model 3.C4</i>	<i>Model 3.C5</i>
Sample	The re-employed who have worked before				
Dependent Var.	REGULAR				
YOUTH	.381(.20) *	.311(.21)	.339(.22)	.338(.22)	.269(.23)
ELDLY	.047(.31)	.055(.32)	.230(.33)	.277(.34)	.076(.36)
WOMEN	-.265(.25)	-.280(.26)	-.310(.27)	-.255(.28)	-.236(.29)
MIDDLE	-.643(.25) **	-.282(.28)	-.267(.29)	-.128(.30)	-.173(.30)
HIGH	-.251(.20)	-.062(.21)	-.041(.21)	-.012(.22)	-.033(.23)
LOWEARN	-.489(.19) ***	-.442(.19) **	-.445(.20) **	-.051(.21)	.042(.22)
URBAN		.508(.28) *	.519(.29) *	.604(.30) **	.950(.32) ***
PES_SE		-.240(.18)	-.252(.18)	-.306(.19)	-.352(.20) *
PES_SW		-.403(.25)	-.351(.26)	-.246(.27)	-.178(.28)
DEMANDO		-.017(.01)	-.030(.01) **	-.030(.01) **	-.013(.01)
UNUMB		-.486(.29) *	-.393(.30)	-.466(.31)	-.447(.32)
DISCOURA		-.334(.25)	-.428(.26) *	-.425(.27)	-.768(.31) **
SPELL_W		-.016(.01)	-.019(.01)	-.018(.01)	-.017(.01)
DISPLACE		-.197(.17)	-.179(.18)	.057(.19)	.043(.20)
NMANU			.824(.21) ***	.699(.22) ***	
NSIZE			.152(.03) ***	.147(.04) ***	
MANU					.214(.21)
SIZE					-.012(.04)
PTEMP				-1.240(.22) ***	-1.367(.24) ***
PSELF				-1.012(.29) ***	-.959(.32) ***
INTERCPT	.107(.19)	.244(.38)	-.384(.40)	-.247(.42)	-.033(.47)
-2Log L	912.8	889.4	848.6	810.6	756.5
Chi-square	35.7(p=0.0001)	59.1(p=0.0001)	99.9(p=0.0001)	137.9(p=0.0001)	104.2(p=0.0001)
Concordant	58.1%	66.2%	71.6%	74.7%	72.4%
No. of Obs.	694	694	694	694	632
(regular job)	(299)	(299)	(299)	(299)	(267)

Note: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

<sup>51</sup> The values of variable DEMANDO (increase rate of employment by occupations in Sep. 1999 over the same month of 1998) are as follows: -5.0 for senior officials and managers, -4.7 for expert, 10.6 for technicians & associated professionals, -5.3 for clerks, 2.3 for service workers, -5.0 for agricultural & fishing workers, 7.4 for craft & related trades worker, 4.1 for machine operators and assemblers, and 17.7 for elementary occupations.

We add the variables of employment status in the previous job, PTEMP and PSELF, in model 3.C4. As expected, they have strong negative effects on getting a regular job. Here the effect of low earnings becomes statistically insignificant. This explains the causes for the low-earning workers' low probability of getting a regular job. Job careers in the irregular sector are the main cause of their low accessibility to regular jobs. In this model, any variable related to supply side factors - such as sex and age, education, and unemployment spells of workers - are not statistically significant. Demand side variables and workers' experiences in the (ir)regular sector are decisive in getting a regular job.

Lastly, in order to further investigate the effects of demand side variables, we replace the demand side variables of NMANU and NSIZE with MANU (manufacturing sector in the recent job) and SIZE (firm size in the recent job) in model 3.C5. These replaced variables are not statistically significant. This leads us to conclude that the causes of the expanding irregular sector are based on employer need.

### 3.4.2 Earnings loss after job changes

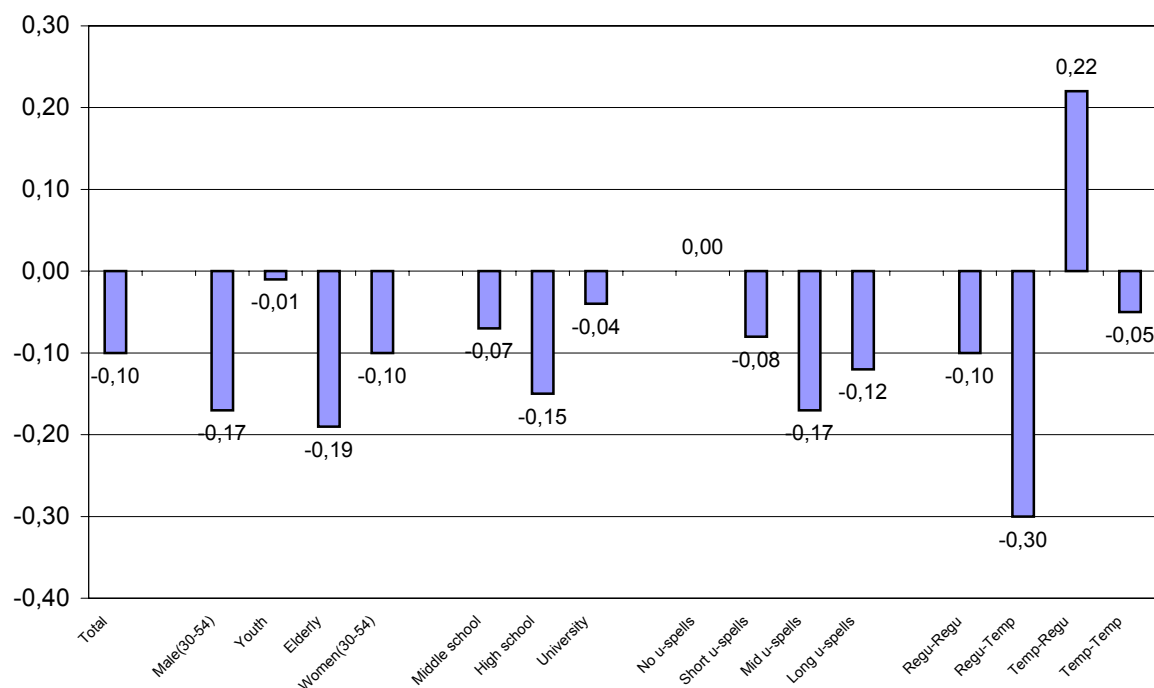
#### *Increase rate of earnings over the recent job (Chart 3.3)*

Chart 3.3 reports increase rates in the log of monthly earnings compared with the log of monthly earnings in the recent job. The total re-employed wage-workers (non-weighted observations: 518) experienced earnings decreases of 10%. Older workers (-19%) and prime-age men (-17%) suffered larger earnings loss, while youths did not experience significant earnings loss (-1%). By educational groups, the 'high school' educated were greatly affected by the crisis (-15%). Workers with unemployment spells between 6 months and 12 months experienced 17% decrease in earnings, while persons who changed their job without unemployment did not have any earnings loss (0%). The most significant changes in earnings occurred among groups according to changes in employment status. Workers who changed their job from regular to temporary jobs experienced a 30% loss in earnings. On the contrary, workers who changed from temporary to regular jobs enjoyed a 22% gain.

These results, however, cannot show the real picture of the dynamics of earnings loss among different groups because we controlled unconditionally just one of the variables of workers' characteristics unconditionally. In order to analyse the genuine effects of these variables on earning reduction, it is necessary to control the individual and employer characteristics.



Chart 3.3 Increase rates in log of monthly earning over the recent job: the re-employed



### Estimates of OLS for determination of earnings (Table 3.8)

We control earnings in the recent job (LEARN) from model 3.C6 to model 3.C9 in Table 3.8. In these models, every coefficient except the coefficient of LEARN reflects the effect of its variable on *changes* in monthly earnings, since the variable LEARN is controlled.

The first model in Table 3.8, model 3.C6, takes the variables related to a worker's labour market transition as independent variables – such as R\_TEMP (from a regular to a temporary job), TEMP\_R (from a temporary to a regular job) and TEMP\_T (from a temporary to a temporary job). The results in model 3.C6 indicate that older workers and prime-age women are more likely to experience earnings reductions than prime-age men. Household heads and workers with shorter unemployment spells are less likely to experience earnings reductions relative to non-household-heads and workers with longer unemployment spells respectively. And workers who changed their jobs from regular to temporary jobs (R\_TEMP) and workers who keep temporary jobs (TEMP\_T) are more likely to experience earnings losses relative to

Table 3.8 OLS results on earnings loss and monthly earnings of the re-employed

workers maintaining regular jobs<sup>52</sup>. Educational effects on earnings gain, however, are not statistically significant in this model. This surprising result may come from the fact that almost half of the re-employed after experiencing unemployment or job changes are temporary workers. According to the theory of labour market segmentation, returns to education are negligible in the secondary sector, such as in temporary jobs. The following models show more detailed effects of education on determining earnings levels.

We replace the independent variables of R\_TEMP, TEMP\_R and TEMP\_T with NMANU (the manufacturing sector in the current job), NSIZE (firm size in the current job), NPART (part-timers in the current job) and NTEMP (temporary workers in the current job). Here we can verify the strong effects of variables related to employer characteristics and employment statuses. Workers in larger workplaces are more likely to gain increased monthly earning relative to workers in smaller workplaces. Part-timers and temporary workers are more likely to experience earnings reductions relative to full-timers and regular workers respectively. On the other hand, the effects of DEMANDO and DEMANDI (increase rate of employment in one's industry) are negative on earnings gain. This suggests that higher increase rates of employment in some occupational and industrial sectors are based on larger wage decreases in those sectors. Wage flexibility in these sectors may contribute to decreasing unemployment rates. On the other hand, the effects of education on earning gains remain insignificant in this model.

The following two models, model 3.C7 and model 3.C8, aim at estimating the difference of educational effects on earnings gains between regular workers and temporary workers. Model 3.C8 - with the sample for regular workers - shows the negative effect of low education (especially for the high school educated) on earning gains, but in model 3.C8 - with the sample for temporary workers - the effect is not statistically significant (and positive). A similar effect is seen in the variable of firm size (NSIZE). For regular workers, firm size affects earnings, while for temporary workers it does not. On the other hand, the variables of DEMANDO and DEMANDI are not statistically significant in the model for regular workers (model 3.C8), while they are significantly negative in the model for temporary workers

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<sup>52</sup> In Chart 3.3, the negative effects of WOMEN and TEMP\_T on earnings gains were not seen, while prime-age men and workers maintaining regular jobs experienced severer earnings reductions than prime-age women and workers maintaining temporary jobs respectively. Results in the regression model are very different from those with aggregate data.

(model 3.C9). These results imply the existence of a different mechanism of earning determination between the regular workers' sector and the temporary workers' sector. Clearer differences in the mechanism of earnings determination in the two sectors are presented in the following three models.

We exclude the variable of LEARN (log of earning in the recent job) from model 3.C10 to model 3.C12, which enables us to estimate the determinants of the earnings level in the current jobs. Here the coefficients do not indicate the extent of earnings losses (or gains) relative to the previous jobs, but mean the effects on total earnings levels in the current jobs. The OLS results in model 3.C10, model 3.C11 and model 3.C12 are similar to those in model 3.C7, model 3.C8 and model 3.C9 respectively. But we can more clearly verify the different mechanisms of earnings determination between the regular and the temporary sectors. Regular workers who have a higher educational attainment or worked in a larger-sized firm are more likely to enjoy a higher level of earnings. But the same characteristics may not significantly affect the earnings level of temporary workers. They are easily affected by the labour demand in the competitive external labour market. Results from Table 3.8 correspond to the assumptions in the theory of labour market segmentation and the theory of internal labour market.

### 3.5 Unemployment spells and their determinants

#### 3.5.1 Overview: unemployment spells (Chart 3.4 and 3.5)

Here we address the last indicator of disadvantages, or unemployment spells, in terms of employment probability in the labour market. The indicator of unemployment spells has two meanings. It reflects the (re-)employment probability of the unemployed, since a higher probability of (re-)employment reduces unemployment duration, and thus it can reduce total unemployment spells in a given period. On the other hand, the indicator of unemployment spells is affected by the probability of unemployment because recurrent unemployment brings about longer spells of unemployment. The relationship between (re-) employment probability and unemployment spells may be identified by examining the unemployment spells of unemployed persons. When unemployment spells are calculated among the total labour force - in which unemployment spells are equal to zero for continuously employed persons - the probability of (re-)employment and the probability of unemployment can be easily taken into account together. Here we present two types of average unemployment spells: those among the unemployed and those in the labour force.

First, we review the average (open-)unemployment spells of all unemployed persons. Chart 3.4 shows that the unemployed experienced an average unemployment spell of 12.3 months and an average open-unemployment spell of 9.6 months between January 1998 and July 1999. Prime-age women (14.5 months), older workers (14.0 months), 'middle school and under' educated workers (13.4 months) and the poor (13.2 months) experienced longer unemployment spells. The gap between the average unemployment spells and average open-unemployment spells indicates the extent of the discouraged worker effect, or average hidden-unemployment spells. For prime-age men the gap is small, but for prime-age women it is particularly large. All results in Chart 3.4 reflect the results of the previous analyses in this Chapter. In comparing Chart 3.4 with Chart 3.2 - that indicates the (re-)employment rates of the unemployed - we can find the reverse relationship between the length of unemployment spells and (re-)employment rates. But for the poor, the relationship is negative. The poor have a higher (re-)employment rate in Chart 3.2 and a longer unemployment spell in Chart 3.4 relative to the non-poor. This reveals that the poor suffered recurrent unemployment frequently, which is supported by their lower (re-)employment rates to a regular job in Chart 3.2.

Chart 3.4 Average unemployment spells of the unemployed

(months)

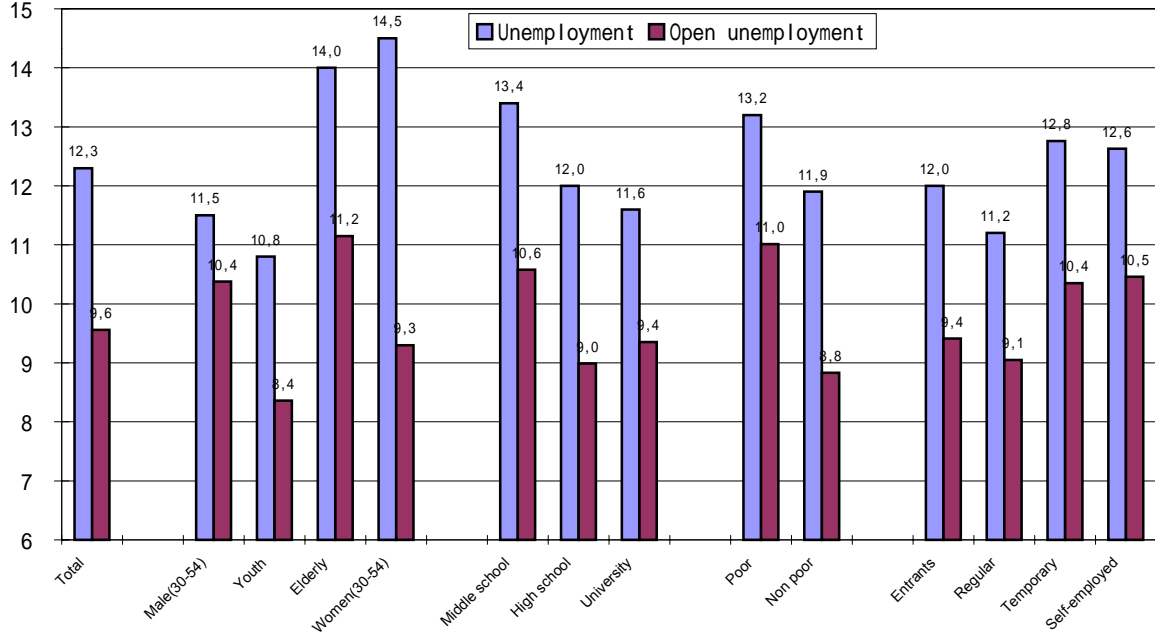
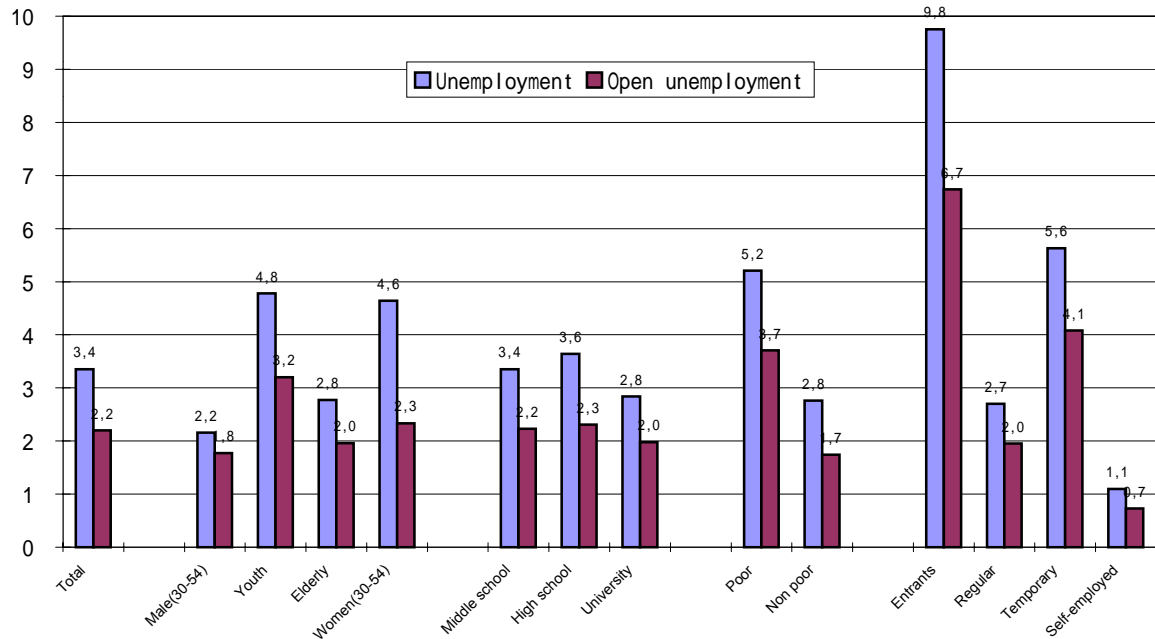


Chart 3.5 Average unemployment spells of the total labour force



The next Chart, Chart 3.5, reports the average (open-)unemployment spells of the total labour force. The economically active population experienced the average unemployment spell of 3.4 months and the average (open-)unemployment spell of 2.2 months between January 1998 and July 1999. New entrants into labour market (9.8 months), temporary workers (5.6 months), the poor (5.2 months), youths (4.8 months), and prime age women (4.6 months) experienced longer unemployment spells. The indications of Chart 3.5 are very similar to those of Chart 3.1, where unemployment experience rates of the labour force are presented. This result comes from the fact that the majority (72%) of the labour force had zero unemployment spells, namely, 28% of them experienced unemployment (see Chart 3.1). But the zero unemployment spell needs to be reconsidered in terms of disadvantages in the labour market. In Chart 3.5 the difference between zero unemployment spell and the unemployment spell of one month is considered to have the same extent of disadvantage as the difference, for example, between an unemployment spell of five months and an unemployment spell of six months. We take the different meanings of unemployment spells between continuously employed persons and the unemployed into account in the following Tobit models.

### 3.5.2 Results of the Tobit analysis on unemployment spells (Table 3.9)

As we have already explained in Subsection 3.1.3 of this Chapter, the Tobit model enables us to study unemployment probability of the labour force and unemployment spells of the unemployed within one model. Table 3.9 reports the results of the Tobit analyses on (open-) unemployment spells in the labour force. Regarding the dependent variable, unemployment spells, continuously employed persons are censored observations with a lower limit equal to zero unemployment spell.

Model 3.D1 in Table 3.9 uses the same independent variables as those of model 3.A3 in Table 3.3, where the results of Logit analysis for unemployment likelihood in the labour force are presented. Model 3.D2 corresponds to model 3.A5, and model 3.D4 corresponds to model 3.A8 in Table 3.3. The results of the Tobit analyses on unemployment spells in Table 3.9 are also very similar to those of Logit models for unemployment likelihood in Table 3.3. Here we briefly investigate the significantly different results between the two Tables.

Table 3.9 Results of Tobit analysis on (open-)unemployment spells: total

	<i>Model 3.D1</i>	<i>Model 3.D2</i>	<i>Model 3.D3</i>	<i>Model 3.D4</i>
Sample	Total labour force		Excluded discouraged workers	
Dependent Var.	SPELL_W		SPELL_N	
YOUTH	7.305(1.0) ***	.141(.88)	6.114(.92) ***	.615(.91)
ELDLY	2.274(1.0) **	2.545(.89) ***	1.424(.94)	1.744(.91) *
WOMEN	3.515(.97) ***	1.932(.91) **	.390(1.0)	-.393(.96)
MIDDLE	2.235(.87) **	1.686(.82) **	2.196(.88) ***	1.951(.85) **
HIGH	2.058(.73) ***	2.370(.67) ***	1.328(.73) *	1.740(.70) **
POVERTY	8.650(.66) ***	7.011(.61) ***	8.389(.67) ***	6.940(.64) ***
URBAN	6.773(1.0) ***	3.692(.95) ***	5.842(1.1) ***	3.067(1.0) ***
PESAREA1	-1.083(.85)	-1.573(.79) **	-1.871(.86) **	-2.294(.82) ***
PESAREA2	3.167(.84) ***	2.327(.77) ***	2.777(.84) ***	2.067(.80) ***
PESAREA3	3.585(1.1) ***	3.475(1.0) ***	1.642(1.2)	1.903(1.1) *
PESAREA4	2.682(1.1) **	1.888(1.0) *	2.559(1.1) **	2.102(1.0) **
PESAREA5	3.508(1.1) ***	2.117(1.1) **	1.878(1.2) *	.930(1.1)
ERATE98	-.269(.04) ***	-.216(.04) ***	-.257(.04) ***	-.196(.04) ***
URATE	.657(.25) ***	.660(.23) ***	.915(.25) ***	.908(.24) ***
HEAD	-5.257(.78) ***	-3.199(.73) ***	-3.257(.79) ***	-1.892(.76) **
ENTER		14.817(.83) ***		12.707(.94) ***
TEMP		5.770(.73) ***		5.248(.75) ***
SELF		-9.024(.76) ***		-8.447(.79) ***
INTERCPT	-26.386(2.0) ***	-21.076(1.9) ***	-28.141(2.1) ***	-23.199(2.0) ***
SCALE	15.614(.34)	14.017(.30)	14.512(.36)	13.393(.33)
Log L	-7834.746	-7482.522	-6058.747	-5822.509
No. of Obs.	5283	5283	4934	4934
(Censored)	(3790)	(3790)	(3790)	(3790)

Note: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

The main difference between the two Tables concerns the effect of older workers (ELDLY) on unemployment spells or unemployment likelihood. In model 3.D1 the positive effect of ELDLY on unemployment spells is statistically significant, while it is not significant in model 3.A3 of Table 3.3. And the coefficient for ELDLY is statistically more significant in model 3.D2 than in model 3.A5. These results mean that the low (re-)employment probability of older workers is considered in the Tobit model, while it cannot be taken into account by the Logit model for unemployment likelihood. On the contrary, the effect of ELDLY in model 3.D4 - in which discouraged workers are excluded from the labour force sample - is not very



significant, unlike in model 3.A8 of Table 3.3. This suggests that older workers easily get discouraged, as their unemployment duration becomes longer.

On the other hand, the positive effect of the regional unemployment rate (URATE) is statistically very significant in every Tobit model, but it is not so significant in several Logit models for unemployment likelihood (see Table 3.3). The same tendency is seen in the negative effect of the variable PESAREA1, which is significant in the Tobit model, but insignificant in every Logit model in Table 3.3. And we can see that the effect of WOMEN in the Tobit model 3.D2 is more significant than that of model 3.A5 in Table 3.3.

Nevertheless, all the results explained above cannot explore the significant difference of results between Tobit models for unemployment spells and Logit models for unemployment likelihood. The reasons may be largely explained by two facts: First, many explanatory variables that influence the probability of unemployment positively have negative or insignificant effects on (re-)employment likelihood. Such variables are related to older workers, prime-age women, the low-educated, regional unemployment rates, non-household-heads, and temporary workers (see Table 3.3 and Table 3.4). Second, though there are some independent variables that have positive effects on both unemployment likelihood and (re-)employment probability, their positive effects on unemployment likelihood may be enough to offset their positive effects on (re-)employment likelihood. Such variables are related to the youth, new entrants into the labour market and the poor (see Table 3.3 and Table 3.4).

Furthermore, the variables to lengthen unemployment spells are positively correlated to the variables which lead workers which irregular jobs and to bring about their earnings reduction (see Table 3.7 and Table 3.8). Thus, we may use the Tobit models for unemployment spells as a good means to measure the causes of accumulated disadvantages in the labour market. We therefore use the Tobit models for unemployment spells to analyse the different determinants of disadvantages among groups, instead of using other models for unemployment probability and (re-)employment likelihood among different groups.

### 3.5.3 Determinants of disadvantages for various groups

Here we address the different determinants of unemployment spells, as a representative indicator of disadvantages in the labour market for various groups. Groups are divided into three categories by sex and age, household poverty status, and employment status. Our main concern is the educational effect on unemployment spells by groups. It will be useful in

searching for a reasonable target area of government supported training programmes, and in measuring the degree of labour market segmentation. If a certain group has a strong negative effect of high education on unemployment spells, government supported training programmes targeting this group may be effective. If the different educational effects among groups are, however, based on labour market segmentation, government options to reduce the segmentation may be required.

### *Sex and age groups (Table 3.10)*

In Table 3.10, we separate sex and age groups, such as prime-aged males, the youth, the elderly and prime-aged females, from the sample of the economically active population. The four models in Table 3.10 estimate the educational effects and other variables' effects on unemployment spells for different sex and age groups.

First of all, we focus on the educational effects on unemployment spells. The effects of low education on unemployment spells are significantly positive for older workers (model 3.D7) and prime-age women (model 3.D8), whereas the effects are not statistically significant for prime-age men (model 3.D5) and the youth (model 3.D6). When the variables related to employment status are excluded from the same models, the educational effects become statistically significant in the sample for prime-age men, but they are still insignificant in the sample for youths (see the small-sized italic letters in Table 3.10). And the educational effects become stronger and more significant for older workers and prime-age women.

From these results we can obtain two types of important information. First, labour market structure of the youth may be different from that of other workers' groups. The low effect of education for the youth means that many of highly educated young workers could not be welcomed by employers. It is well known that many of new entrants with university education do not have appropriate skills, which may be due to the inefficiency of the educational system. If there are many young and highly educated workers without good skills in the labour market, additional short-term training for them will not be helpful in enhancing their employability. On the contrary, life-long training for adults, especially for prime-age women, will be more effective than training for the youth, since educational effect on unemployment spells is strong for adults. Second, the results of Table 3.10 suggest that educational effect on unemployment spells is decreased by the existence of labour market

segmentation between the regular and irregular sectors, for the effect decreases when the variables related to employment status are controlled. Table 3.11 will deal with this issue.

Table 3.10 Results of Tobit analysis on unemployment spells: by sex and age groups

	<i>Model 3.D5</i>	<i>Model 3.D6</i>	<i>Model 3.D7</i>	<i>Model 3.D8</i>
Sample	Labour force: Prime-age males	Labour force: Youths	Labour force: Older workers	Labour force: Prime-age women
Dependent var.	SPELL_W			
MIDDLE	2.326(1.44)	-.319(1.62)	6.812(3.99) *	3.126(1.78) *
HIGH	.902(1.21)	.580(0.82)	7.359(4.16) *	5.371(1.75) ***
<i>[when the variables of ENTER, TEMP and SELF are excluded]</i>				
<i>[MIDDLE]</i>	<i>[3.962(1.44)]</i> ***	<i>[.492(1.73)]</i>	<i>[12.284(4.46)]</i> ***	<i>[4.134(2.10)]</i> **
<i>[HIGH]</i>	<i>[1.057(1.26)]</i>	<i>[-.072(0.87)]</i>	<i>[8.835(4.72)]</i> *	<i>[7.970(2.10)]</i> ***
POVERTY	12.789(1.17) ***	4.673(0.97) ***	3.874(2.03) *	3.246(1.15) ***
URBAN	1.217(1.91)	1.113(1.34)	7.633(2.96) ***	4.564(2.05) **
PESAREA1	-4.345(1.48) ***	-1.560(1.19)	-3.102(2.66)	2.746(1.57) *
PESAREA2	1.128(1.13)	3.359(1.13) ***	1.837(2.54)	2.609(1.62)
PESAREA3	5.472(1.83) ***	2.987(1.71) *	-3.476(3.31)	4.581(2.04) **
PESAREA4	.003(2.10)	3.229(1.46) **	.855(2.92)	2.507(2.03)
PESAREA5	2.353(2.10)	.662(1.55)	-.124(3.27)	4.314(2.23) *
ERATE98	-.336(0.07) ***	-.065(0.05)	-.174(0.12)	-.298(0.08) ***
URARE	1.259(0.44) ***	.115(0.34)	.921(0.74)	.169(0.46)
HEAD	-6.794(1.42) ***	-3.915(1.11) ***	.442(1.99)	-2.491(1.77)
ENTER	25.094(3.85) ***	10.059(0.87) ***	22.190(4.06) ***	16.024(1.57) ***
TEMP	5.831(1.45) ***	9.307(1.19) ***	4.968(2.18) **	.742(1.38)
SELF	-4.382(1.20) ***	-4.324(1.96) **	-16.282(2.45) ***	-13.741(1.56) ***
INTERCPT	-24.646(3.59) ***	-9.103(2.59) ***	-27.828(6.70) ***	-16.706(3.87)
SCALE	15.640(0.65)	11.038(0.38)	15.791(1.00)	13.342(0.57)
Log L	-2285.075	-2386.590	-904.666	-1760.387
No. of Obs.	2,176	1,155	851	1,101
(Censored)	(1,761)	(627)	(676)	(726)

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

Other variables' effects on unemployment spells are also different for various sex and age groups. The HEAD and POVERTY effects are most important for prime-age males. This suggests that a strong male breadwinner model may be applied to the Korean labour market. The joblessness of a male breadwinner leads his household to poverty more easily, since labour force participation rates of the youth and women are especially low in Korea (the

following Section of this Chapter will address this topic). In this context, employment protection for the male breadwinners tends to be justified in Korea. As a result, male breadwinners, usually the ‘insiders’ in the labour market, may be less affected by unemployment. It may reinforce the disadvantages of ‘outsiders’.

Concerning the effects of self-employed workers (SELF) and living area (URBAN), negative SELF effect and positive URBAN effect on unemployment spells are relatively strong for older workers and prime-age women, compared with the youth and prime-age males. It may reflect the fact that many older workers and women are underemployed in rural areas and in the self-employed sector. Thus, older workers and prime-age women in rural areas and the self-employed sector in Korea may play an important role as *buffers* between unemployment and (typical) employment.

#### *The poor and irregular groups (Table 3.11)*

We will now verify the different labour market characteristics between poor and non-poor groups, and between the regular and irregular sectors. As many poor workers belong to the irregular sector<sup>53</sup>, we can expect that unemployment determinants of the poor group are similar to those of the irregular workers’ group. We try to verify this assumption in Table 3.11. We divide the labour force sample into poor and non-poor groups by household poverty status, as well as groups of regular workers, temporary workers, the self-employed and new entrants by employment status. We can see the different labour market structures among these different groups.

The main focus is, once again, educational effects on unemployment spells. The effect of low education on unemployment spells (MIDDLE and HIGH) is positive and strong for regular workers (model 3.D11) and the non-poor group (model 3.D9). But the low education effect is statistically insignificant and even negative (though insignificantly) for other groups, such as the poor, temporary workers, self-employed workers, and even new entrants. This surprising result clearly shows that the poor and irregular workers face similar labour market structures. We can affirm that the labour market is clearly segmented into the regular and non-regular sectors. Poverty is not far from the irregular sector.

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<sup>53</sup> According to data of the URS, the proportion of poor workers amounts to 38% among temporary workers and 23% among self-employed workers, while it amounts to only 19% among regular workers. The proportion of poor workers among temporary workers is twice as high as among regular workers.

Table 3.11 Results of Tobit analysis on unemployment spells: by poor groups and employment status

We can verify the same trend in the effects of ELDLY and WOMEN variables on unemployment spells. For the non-poor and regular workers, the effects of ELDLY and WOMEN are positive and strong. But for the poor and non-regular workers, the effects of ELDLY and WOMEN are statistically insignificant or weak (the effect of ELDLY for temporary workers).

All these results confirm that the Korean labour market is not structured for the poor group and the irregular sector. However, the non-poor and the regular sector are structured by workers with higher education and by prime-age men. We cannot afford to reject the assumptions of the theory of labour market segmentation. Labour market segmentation between the regular and irregular sectors may reinforce the employment instability of the temporary workers and the poor.

### 3.6 Summaries

The results of various regression analyses for disadvantages in the Korean labour market, based on four indicators of disadvantages, can be summarized in Table 3.12. We can sum up the results in the nine following points.

Table 3.12 Summary: the results of various regressions for disadvantages

Indicators	<b>A</b> <b>(being unemployed)</b>	<b>B</b> <b>(being re-employed)</b>	<b>C-1</b> <b>(getting a regular job)</b>	<b>C-2</b> <b>(earnings loss)</b>	<b>D</b> <b>(unemployment spells)</b>
Tables	3.3	3.4	3.7	3.8	3.9
Models	3.A5	3.B5 & 3.B8	3.C4	3.C7	3.D2
Youths or New entrants	<b>D</b>	<b>A</b>	-	-	<b>D</b>
Older workers	<b>D</b>	<b>D</b>	-	<b>D</b>	<b>D</b>
Prime-age women	<b>D</b>	-	-	<b>D</b>	<b>D</b>
Middle school & under	<b>D</b>	<b>D</b>	-	-	<b>D</b>
High school	<b>D</b>	<b>D</b>	-	-	<b>D</b>
The poor	<b>D</b>	<b>A</b>	-		<b>D</b>
Temporary workers	<b>D</b>	<b>D</b>	<b>D</b>	<b>D</b>	<b>D</b>
Long unemployment spells		<b>D</b>	-	<b>D</b>	

Notes: 1) 'D' means disadvantage, 'A' means advantage and '-' indicates that the related coefficient is not significant in significance level of 0.10.

2) Reference groups are prime-age men, university graduates, the non-poor, regular workers, and workers with shorter unemployment spells, respectively.

(1) Generally, those who are youths, older workers, prime-age women, low-educated, poor and temporary workers are significantly more likely to become disadvantaged than those who are prime-age males, higher-educated, non-poor and regular workers.

(2) The determinants of four indicators of disadvantages, such as being unemployed, failure in being re-employed, low quality of the new job and longer unemployment spells, are very closely correlated. Thus, we may say that a chain of disadvantages exists. The chain is easily seen in the regression result for getting a regular job in Table 3.12, which shows that the

characteristics of temporary workers comprise almost all determinants of disadvantages. The chain of disadvantages tends to be reinforced by the segmented labour market between the regular and irregular sectors. We can easily verify the existence of segmentation. Empirical results show the limited mobility between the regular and irregular sectors, and different mechanisms of wage and unemployment determination.

Nevertheless, the causes of disadvantages are different according to different groups (see Table 3.12):

(3) For the youths, disadvantages mainly come from a high probability of being unemployed. The causes of being unemployed for youths can mostly be explained by their status as non-breadwinners, new entrants into the labour market, and wage-workers (non-self-employed). But they have a relatively high probability of (re-)employment. Mobility between the regular and irregular sectors is also high for them.

(4) For older workers, the main cause of disadvantages is based on their low probability of (re-)employment, which is partly due to their longer unemployment spells. Their disadvantages in terms of being unemployed can be underestimated because of their under-employment status in rural areas and in the self-employed sector. They are also easily unemployed because of their higher proportion of temporary workers. Mobility between the regular and irregular sectors is very limited for them.

(5) Prime-age women are very easily discouraged, though many of them try to enter the labour market. Their high probability of unemployment comes from their higher proportion of temporary workers, and from their status of non-breadwinners. Their low probability of (re-)employment becomes meaningless if the breadwinner variable is controlled. Their inflow into the irregular sector is great, but their escape from the irregular sector is not easy.

(6) For low-educated people, the disadvantages can easily be underestimated on account of various factors. Above all, low education is closely correlated to the irregular sector, where returns to education are negligible. Thus, the high proportion of irregular sector workers in Korea creates obstacles to the analysis of the educational effect on disadvantages in the labour market. Moreover, their high probability of being unemployed can be underestimated because school-leavers or new entrants who have a higher educational attainment, have a high probability of unemployment, and because many of low-educated individuals are under-employed in rural areas. Their low probability of (re-)employment can also be underestimated unless we control their living areas.

(7) The poor are often unemployed, but have a relatively higher probability of (re-)



employment. Their livelihood problems oblige them to get any job. As a result, most of the poor (re-)employed workers (re-)enter the irregular sector, and then suffer recurrent unemployment. A similar trend can be seen among unemployed persons who have a higher proportion of unemployed persons to total household members. It is difficult, however, to determine the cause of their high probability of being unemployed seen in our models, which may be due to a close correlation between unemployment and poverty. We can only see that their higher proportion of temporary workers makes them more easily unemployed, and that the rural area plays a role of buffer between employment and unemployment for them (though the buffer means under-employment). Most importantly, they have a different labour market structure from that of the non-poor. The following explanations verify this.

(8) The temporary workers appear to be very representative of the disadvantaged groups in the Korean labour market. In Table 3.12 they rank 'D' (disadvantage) in every indicator of disadvantages. Their representative status among all disadvantaged groups often makes variables related to the other determinants of disadvantages insignificant in regression models (see the third and forth columns in Table 3.12). And they have their own labour market which is not structured, and in which education is not considered important. They are exposed to the open labour market. Their access to the regular sector is limited. Thus, the existence of segmentation between the regular and irregular sectors can be acknowledged.

(9) Concerning the long-spell unemployed, they have a low probability of (re-)employment and experience greater earnings loss in newly employed jobs. However, their longer unemployment spells do not hinder them from finding regular jobs, because regular jobs may require a reasonable searching period.

These microanalyses may partially explain the reasons for different labour adjustment patterns among worker groups. Disadvantaged workers seem to be more vulnerable to the business recession due to the segmented labour market. They are exposed to the open labour market, while male regular workers enjoy the strong employment protection.

## PART II. LABOUR MARKET POLICY EVALUATION

This Part is composed of three Chapters which evaluate labour market programmes. In our evaluations, we always focus on the disadvantaged groups identified in the previous chapters.

Chapter 4 is an introductory chapter which addresses the evaluation of labour market programmes. Theories and methods related to programme evaluation are briefly surveyed in this chapter. Here, we also present the analytical framework of the following chapters.

Chapter 5 deals with the distributional effects of labour market programmes. The analysis concentrates on the government programmes targeted directly at the individual unemployed, such as public work programmes, job training for the unemployed, job placement services, and unemployment benefits. The probability of participation in each labour market programme is analysed based on different groups.

Chapter 6 evaluates the labour market outcomes of participation in various programmes. The “Re-employment Training for the Unemployed” (RETU) - the largest training programme in Korea - is the main object of evaluation.

## Chapter 4. Types and Methods of Programme Evaluation (Introductory Chapter)

We start with a brief consideration of the types of evaluation for targeted labour market policies. According to Nicaise et al. (1995b), the expected economic effects of targeted labour market programmes (LMPs) can be roughly classified into three categories:

- (1) Distributional effects: Does a measure redistribute employment in the right direction? To what extent is the target group covered? What are the possible side effects for other groups?
- (2) Labour market outcomes for beneficiaries: Does the measure enhance the employment opportunities, earnings, and quality of jobs for the target group?
- (3) Macro-economic effects: Can one observe effects on the general level of employment, unemployment, wages, and the government budget?

To fully understand outcomes of labour market programmes, these three types of evaluations are required. According to this classification, we discuss, first, the programme distribution to disadvantaged groups and barriers to their participation in LMPs, we then review the evaluation methods and results related to micro- and macro-economic effects of the LMPs. As this study aims at the distributional and micro-economic effects of the programmes, macro-economic effects will only be addressed briefly.

### 4.1 Distributional effects of LMPs

While many evaluation studies concentrate on the labour market outcomes for individual programme participants, they have not paid much attention to the distributional effects. As we have seen, government intervention in the labour market can be justified when it can alleviate some types of market failures, or can improve the social equity. If a government programme is designed well and targeted at the disadvantaged groups correctly, it may contribute to enhancing social equity and to meeting redistributive goals. There are, however, many barriers to reaching the distributional goals. Some groups tend to be easily excluded from governmental concerns as well as from the labour market. If labour market programme evaluation does not take distributional effects into pertinent account, the justice of government intervention in the labour market may not be verified.

The first Subsection deals with theoretical backgrounds on the barriers to programme

participation, in particular, for the disadvantaged. The second Subsection compares the participation rates of Korean women and youths with those of selected European countries.

#### 4.1.1 Barriers to programme participation

The works of Nicaise et al. (1995a and 1995b) surveyed and described the probable barriers to programme participation for disadvantaged groups, based on wide case studies on selected European countries: legal and administrative barriers to entry, creaming-off, inconsistencies between measures, and insufficient programme supply, etc. We discuss the obstacles of programme participation, according to their concepts.

##### *Legal and administrative barriers to entry*

Many disadvantaged persons are excluded from the labour market programmes because of limited legal eligibility and administrative rules. Almost every labour market programme requires certain types of eligibility conditions.

Nicaise et al (1995b) argued that the most disadvantaged groups in many European countries are almost by definition not eligible for participation in mainstream labour market programmes - such as wage subsidy schemes, enterprise allowance schemes, or training - because most programmes are confined either to registered unemployed people or, in some cases, to those entitled to unemployment insurance benefits. While many labour market programmes target 'the unemployed', the concept of 'unemployment' is often narrowly defined by governments and administrations. Many disadvantaged persons are considered as being 'outside' of the labour market. In this context, many disadvantaged groups can be excluded from the LMPs because they are not 'narrowly defined open-unemployed' persons.

Eligibility conditions for the unemployment benefits are usually based on rather long contribution periods (varying between 4 months in France and one year in most OECD countries) and minimum weekly working hours (Finland and Korea) or earning thresholds (Austria, Norway, Poland, the United Kingdom and the United States) (OECD, 2002d). Naturally, workers in precarious, low paid or irregular employment have difficulties in benefiting from unemployment benefits, which leads to lower beneficiary rates for women and the youth, who have a higher proportion in these types of employment.

According to Grimshaw and Rubery (1997), in the 15 member countries of the European Union, the share of unemployed women who were receiving either unemployment benefits or

unemployment assistance in 1994 was 33% compared to 38% of unemployed men, according to ILO criteria. They argued that “the restriction of unemployment-insurance protection to those with standard, full-time continuing employment careers is inconsistent with the sustainable growth in atypical employment as a ‘typical’ form of employment across all labour-force segments”.

In the case of Korea, many programmes, such as unemployment benefits, wage subsidies and job training programmes are based on the Employment Insurance System (EIS), although the EIS mainly covers regular workers. As a result, the legal barriers to programme participation of temporary workers are particularly restrictive.

#### *Creaming-off: equity-efficiency dilemma*

So-called ‘creaming off’ happens in the case where an administrative organisation, such as a training centre or public employment agency, gives priority in programme participation to the fittest people, who are thought to be the most motivated and to have a goal in mind, as they are thought to have the highest employment prospects after programme participation (Nicaise et al. 1995b). Persons with longer unemployment spells are usually considered to be less motivated and to have more difficulties in re-employment. Therefore, people with a higher probability of unemployment may be excluded from the LMPs.

Employment agencies in charge of the execution of programmes in favour of disadvantaged groups may be afraid of losing their credibility among employers by using ‘adverse selection criteria’: that is, by selecting the most disadvantaged persons. Job placement by employment agencies, thus, tends to focus on the less advantaged people.

In many cases, training bodies that are awarded the ‘quality clause’ by the public employment service are entitled to larger subsidies and sometimes the clause depends on the number of trainees that find a job immediately after completing a scheme. It is therefore obvious that this criterion does not encourage the training bodies to pick the most disadvantaged people.

And when simple placement ratios are used to evaluate labour market programmes, it cannot be taken into account that the most disadvantaged groups need longer periods to get access to the labour market. In terms of ‘simple placement ratios’, measures targeted at the most disadvantaged groups are usually less successful in helping people back to work than other measures.

All these types of ‘creaming off’ are deeply based on the implicit or explicit concept of dilemma between equity and efficiency. Many policy makers or administrators tend to believe that the efficiency goals of LMPs conflict with their goals of equity.

In relative terms, however, a lot of evaluation literature shows that the measures for disadvantaged people turn out to be highly effective, and often more so than other kinds of measures targeted at the average unemployed individuals (Nicaise et al., 1995b). Only when we consider the differences in placement rates between beneficiaries and non-beneficiaries with the ‘same characteristics’, can we estimate the real effects of programmes in relative terms.

Moreover, in terms of social costs and benefits related to LMPs, genuine efficiency criteria should take the following two facts into consideration: longer expected unemployment spells relative to the average unemployed people on the cost side (Layard et al., 1991, pp. 473-475), and the expected higher return (shortened unemployment spells) from the LMPs participation for the disadvantaged people on the benefit side. So, as Nicaise et al. (1995b) noted, we can say that the whole equity-efficiency dilemma looks rather short-sighted or it may be indeed false.

In Korea, there has been an important debate on the equity-efficiency dilemma between the ‘Employment Promotion Training’ targeted at unemployed people excluded from the EIS, and the ‘Re-employment Training for the Unemployed’ (RETU) targeted at the unemployed covered by the EIS. The most disadvantaged groups are familiar with the ‘Employment Promotion Training’, and therefore its simple placement ratio after programme participation has been lower than that of RETU. This result contributes to reducing the budget for ‘Employment Promotion Training’, while the budget for the RETU expands. However, no rigorous social cost-benefit analysis related to the two training programmes has been carried out.

#### *Inconsistencies between measures and reverse substitution*

Substitution, in terms of LMPs, is generally interpreted as a reversal of the normal queuing mechanism, in which disadvantaged individuals get new employment opportunities that would otherwise be available to better-situated job seekers. Under ‘reverse substitution’, employment opportunities are diverted from those at the end of the queue towards more privileged groups, and disadvantages actually increase (Nicaise et al., 1995b). Inconsistencies

between labour market programmes, as well as the legal and administrative barriers to LMP participation and creaming-off, may bring about reverse substitutions.

Inconsistencies between measures are often seen between preventive and curative policies. According to Nicaise et al. (1995b), as nearly unconditional wage subsidies for youngsters are much more attractive to employers than wage subsidies for the long-term unemployed (LTU), in several European countries the relatively well-educated young unemployed people reach policy measures much more easily than the LTU. When the budgets of the former are exhausted more quickly than those of the latter, a tendency to shift budgets from the LTU to young workers is observed in some countries.

A typical case happened in Korea between the internship programme for the college or university graduates and for the high school graduates. At the beginning of the new internship programme in 1998, only young workers who were college or university graduates were permitted to benefit from the programme. Naturally, some criticisms of the reverse substitution happened, so the government expanded the programme to high school graduates in 1999. But, as the employers still preferred higher educated young workers, budgets for the higher educated were exhausted earlier. The budgets were then shifted from the 'high school-graduate internship' programme to the 'university-graduate internship' programme.

#### *Insufficient supply of programmes and within-group substitution*

If a programme targeted at a disadvantaged group (for example, the long-term unemployed) has budget constraints, current resources may merely be reallocated to assist some proportion of the target group more intensively, while others may be excluded from the programme. In this case, the employment probabilities will simply be redistributed within the target group.

The budget constraint, that is to say, the insufficient supply of programmes, tends to lead administrators to establish some participation criteria within the target group - such as the principle of 'first come, first served', and a weighted priority rule of participation according to different types of worker characteristics (for example, longer unemployment duration, household head, age consideration, household poverty status, etc.). If all these criteria, however, are based on the limited programme supply, the within-group substitution is inevitable.

In Korea, the rapid increase in unemployment during the crisis gave rise to an insufficient programme supply, in particular, the surplus demand in public works programmes. At the

beginning of the crisis, participation in public works programmes was decided by the principle of ‘first come, first served’ among the qualified unemployed people. As the demand of public works programmes increased, the government introduced a screening rule based on scores in nine categories (age, status in household, previous public works experience, length of unemployment duration, etc.: see the Introduction Part of this study). Even though the new screening rule is considered to be successful, the within-group substitution widely remained because the excluding rule came basically from the limited budgets or the implementation problems. Among the criteria of scored screening rules, explicit consideration of the household head led the disadvantaged non-household heads to be excluded from the programme. Though the priority rule for household heads is based on the reality of the male breadwinner system in Korea, the problem is that they are usually an advantaged group in the labour market, as we saw in the previous Chapter. And unemployment duration criterion resulted in excluding many daily and temporary workers who had experienced recurrent and repeated unemployment spells, but had relatively shorter period of unemployment in terms of their continuous duration.

#### *Workers’ limited information on programmes and other constraints*

Disadvantaged workers often face insufficient information on the programmes targeted to them. They are usually less educated, and thus have more difficulties in obtaining information on the existence of programmes and in understanding the detailed participation criteria, which are often very complex. In general, the number of local employment agencies and their staff are not enough to cover the insufficient information of disadvantaged workers.

As for the training, investment in training involves direct or indirect costs. The costs can be direct financial costs: for example for transport, material or childcare. While participants attend their courses, they have to postpone or reduce their job search activities and thus their expected unemployment spell may increase. These indirect costs are related to opportunity costs. As disadvantaged workers are mainly poor, their urgent livelihood problems may lead them to be reluctant to participate in training programmes, even in the case where they recognize that the returns to further training are greater than the direct and indirect costs. Adequate remuneration for poor participants is an essential condition of participation.

Sometimes, the psychological constraints of disadvantaged workers may be obstacles to programme participation. The obstacles, such as a negative self-image, fear of failure, and fatalism must be removed by linking LMPs with social assistance in a holistic approach.



### Level of regional unemployment and implementation capability

Other than the reasons mentioned above, there are many factors which create barriers to programme participation. Among them, we will focus on the regional labour market circumstances and the capacity of public employment agencies in particular.

Regional unemployment rates take an important role in determining programme-participation probability of disadvantaged people. If unemployment rates - especially long-term unemployment rates - are higher in certain areas than in others, the unemployed living in the areas with higher unemployment rates tend to have more difficulties in participating in LMPs. Participation competition among unemployed people may become stronger in these areas because programme supply or related budgets could not cover the extent of the regional unemployment rate, and because the implementation capability of regional employment agencies or training centres may be limited (they may have more case loads).

Several studies indicate the trade-off between regional unemployment rates and programme participation rates. When 142 areas of regional employment agencies were compared during the period 1994-1997 in Germany, Schmid et al. (2001) found that participation in training measures for the unemployed declined with increasing regional unemployment (pp. 81-83). Davia et al. (2001) found the case to be similar in Spain. They argued that there was a somewhat inverse relationship between regional unemployment rates and participation rates in training measures on the one hand, and between regional unemployment rates and expenditures on employment creation schemes on the other (pp. 145-146).

#### 4.1.2 Participation rates by groups: a brief international comparison

As the distributional effects of LMPs have not drawn much attention from evaluators, little is known concerning international differences in programme distribution among various groups. Though the OECD has recorded the expenditures and participant-inflows of LMPs annually, the information is not divided into specific workers' groups, such as gender and age groups (see Table 2.6 in Chapter 2). Very recently, the European Union published a report (EUROSTAT, 2001) containing participant data by gender and age groups. We can compare this with the Korean participation data.

Before making an international comparison of the distribution of LMPs, it will be useful to review the distribution effect of employer-provided training, which may indicate the state of

training distribution in the private market. If training distribution among groups is distorted, government-supported training programmes may need to focus on disadvantaged groups.

#### A. Participation rates of employer-provided continuing training by groups

The OECD (1999b) analyses extensively the participation rates of continuing training for adult workers (mainly workers aged 25-54). The analysed training is continuing and more or less formal training received by *incumbent* workers, and thus most training is employer-sponsored training. The study uses two types of data sets: the first data sets are composed of four “harmonised” surveys of training to assemble a set of “stylised” facts concerning differences in the level and distribution of training among 24 OECD countries. The second data sets are micro-data drawn from surveys in Australia, Canada, France, Germany, Great Britain, Italy and the Netherlands.

Though the definition of training is a little different depending on data, we are able to obtain a great deal of information on the distribution of continuing training. The main findings related to distribution effects are as follows:

- 1) The training rate is relatively low in southern European countries and relatively high in the United Kingdom, France and most Nordic countries.
- 2) Men and women appear to participate in job-related training at fairly equal rates.
- 3) By age groups, workers aged 50-54 years receive almost as much training as those aged 25-29 in the United States and most Nordic countries, while the older group receives much less training in France, Greece, Portugal and Spain.
- 4) Training tends to reinforce skill differences resulting from unequal participation in schooling in all the countries. The positive interrelation between more schooling and training remains strong, even controlling other characteristics affecting the probability of training.
- 5) Large establishments are significantly more likely to train workers.
- 6) Temporary workers and part-timers are significantly less likely to be trained.
- 7) Workers tend to receive more training in countries with higher overall average levels of educational attainment.
- 8) A higher overall training rate is also associated with more equal age and educational distributions of training programmes.
- 9) The pay premium associated with training is highest for the least educated workers. It may be concluded that the earning gains from training are higher for some categories of workers who are less likely to be trained.

## B. Participation rates of government-supported programmes by groups

### Main data and comparison issue

We use the participant database from EUROSTAT (2001), which provides information on labour market policy expenditure and participants of fifteen European Union member countries and Norway in 1998. It comprises nine broad categories of labour market programmes: 1) intensive counselling and job-search assistance, 2) training, 3) job rotation and job sharing<sup>54</sup>, 4) employment incentives<sup>55</sup>, 5) integration of the disabled, 6) direct job creation, 7) start-up incentives (for promoting entrepreneurship), 8) out-of-work income maintenance and support, and 9) early retirement. One of the best advantages of the data may be the separated information on flows and stocks of programme participants. The data also provides participant information according to personal characteristics, for example, information on the number of youth (aged 16-25) and women participants. In spite of these numerous advantages, the data has a lot of missing values, mainly because it was the first time the survey was made.

In analysing programme distribution by groups, we exclude two categories of programmes: 1) incentive counselling and job-search assistance and 5) integration of the disabled. We also exclude the data from Luxembourg, in which no separated data on youth and women is available. In analysing the participant rates, we basically use the stocks of participants, and when the stocks are not available we use supplementarily flows of participants (the number of entrants to programmes in 1998).

We are mainly interested in observing the distribution of programmes among worker groups, such as age and gender groups. We assume that a higher proportion of unemployment in a certain group may relate to its lower proportion of programme participants, because of the existence of strong competition for programme participation among unemployed people. We can easily assume this based on the fact that higher regional unemployment rates tends to lead to lower participation rates in that area, as seen above.

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<sup>54</sup> This comprises programmes that facilitate the insertion of an unemployed person or a person from another target group into job placement by substituting hours normally worked by an existing employee.

<sup>55</sup> This comprises programmes which facilitate the recruitment of unemployed persons and other target groups, or help to ensure the continued employment of persons at risk of involuntary job loss.

### Overview of programme participation rates among countries

Before analysing programme distributions among different groups, it may be useful to review programme participation rates in different countries. Participation rates are calculated by dividing the number of participants in stocks (sometimes in flows) by the number of unemployed persons<sup>56</sup>, which are obtained from the 1998 European Labour Force Survey (EUROSTAT, 1999) (for Norway, the ILO Labour Statistics (ILO, 2000)).

Table 4.1 shows the programme participation rates in European countries and Korea. Most of the data refers to the year 1998. The participant data for Korea is related to the year 1999 and is calculated based on the administrative data of the Ministry of Labour<sup>57</sup>. Though many missing values in (stock) data of individual programme participants make the international comparison difficult, we have useful information from the stock data.

Participation rates for training programmes (TRAIN) are especially high in Sweden (87.3%) and Denmark (43.3%). Korea has the lowest participation rate (8.6%) among the nine countries without missing values in participant data.

Participation rates for job rotation and job sharing (SHARE) are significantly high in Belgium (16.8%), but in most countries they are negligible.

Participation rates for employment incentives (SUBSIDY) vary in different countries. Spain (34.3%), Belgium (33.0%), Italy (more than 31.1%), France (21.1%), Ireland (20.8%), and Portugal (more than 18.6%) have comparatively higher participation rates in employment incentive programmes.

Participation rates for direct job creation (JOBCRE) are relatively high in Ireland (32.2%), Belgium (31.1%), the Netherlands (24.7%), Korea (18.8%) and France (14.8%).

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<sup>56</sup> It may be more reasonable to calculate the participation rate of active measures by using 'the sum of the unemployed people and the programme participants' as the denominator instead of 'the number of unemployed people'. However, the existence of many missing values in participant data makes this difficult.

<sup>57</sup> 'Training' programmes in Korea comprise the Re-employment Training for the Unemployed (RETU) and the Employment Promotion Training. The participants stocks for training are calculated by dividing the participant inflows by the average duration of training (for RETU 4.4 months and for the Employment Promotion Training 5.8 months: Kang and Lee, 2001). 'Direct Job Creation' comprises all sorts of public works programmes in Korea. The participant stocks of public works are calculated by dividing the participant inflows by the assumed average participation duration of two months. 'Out-of work income maintenance and support' corresponds to the unemployment benefits system in Korea.

Table 4.1 Programme participation rates: EU countries and Korea (1998)

	Active measures						Passive measures			URATE
	TRAIN	SHARE	SUBSIDY	JOBCRE	STARTUP	ACTIVE	BENEFIT	RETIRE	PASSIVE	
Belgium	10.5	16.8	33.0	31.1	0.1	91.4	143.1	31.4	174.5	9.3
Denmark	43.2	0.3	11.1	4.4	5.2	64.2	133.2	123.8	257.0	5.0
Germany	12.9	0.0	2.5	10.0	1.2	26.6	95.3	0.2	95.5	9.8
Greece	14.0	0.0	3.8	0.0	1.6	19.5	(52.5)	0.0	(52.5)	10.7
Spain	(0.6)	0.1	34.3	(0.6)	(0.0)	(35.7)	36.9	(0.2)	(37.1)	18.9
France	(7.2)	0.0	21.1	14.8	0.6	(43.7)	75.4	7.3	82.7	12.1
Ireland	17.3	0.0	20.8	32.2	6.0	76.3	157.9	11.2	169.1	7.7
Italy	(15.0)	0.0	(31.1)	4.9	.	(51.0)	(7.0)	.	(7.0)	12.1
Netherlands	.	.	.	24.7	0.0	(24.7)	230.9	43.5	274.4	4.4
Austria	(7.5)	0.0	(11.0)	1.1	0.1	(19.7)	109.5	7.4	116.9	5.4
Portugal	(16.7)	0.0	(18.6)	(8.6)	(0.2)	(44.1)	71.6	16.4	88.0	4.7
Finland	17.0	3.3	2.8	8.0	0.7	31.8	104.5	13.5	118.0	13.2
Sweden	87.3	0.0	3.2	3.1	3.2	96.8	119.4	4.9	124.3	8.9
U.K.	.	0.0	.	.	.	(6.3)	78.4	0.0	78.4	6.2
Norway	14.7	1.4	5.8	0.0	0.5	22.4	83.8	0.0	83.8	3.2
Korea	8.6	.	.	18.8	.	27.4	10.7	0.0	10.7	6.3

Notes:

1) Participation Rate = the number of programme participants in stock / the number of unemployed persons x 100

2) All data refer to 1998 except for Korea (1999).

3) Participation rates in parentheses are underestimated because of missing values in stock data of individual programme participants.

4) TRAIN = training, SHARE = job rotation and job sharing, SUBSIDY = employment incentives, JOBCRE = direct job creation, STARTUP = start-up incentives, ACTIVE = subtotal of active measures, BENEFIT = out-of-work income maintenance and support, RETIRE = early retirement, PASSIVE = subtotal of passive measures, URATE = unemployment rate.

Sources:

EUROSTAT (2001), EUROSTAT (1999), ILO (2000), Korea Ministry of Labour, Kang and Lee (2001).

Participation rates for start-up incentives (STARTUP) are comparatively high in Denmark (5.0%) and in Sweden (3.2%).

Concerning the participation rate for all active measures (ACTIVE), Sweden is the highest (96.8%), followed by Belgium (91.4%), among seven compared countries. Ireland (76.3%), Denmark (64.2%) and Italy (over than 51.0%) have also high participation rates of over 50% in active measures. Participation rate in Korea (more than 27.4%) is higher than in Greece (19.5%), Norway (22.4%) and Germany (26.6%).

Participation rates for 'out-of-work income maintenance and support' (BENEFIT) vary in different countries. For the Netherlands, it goes up to 230.9 percent, which comes mainly

from the number of participants in the 'National Assistance Benefits'. Korea has the lowest participation rate (10.7%), following Spain (36.9%). Other countries have participation rates between 71 percent (Portugal) and 158 percent (Ireland).

Participation rates for early retirement are highest in Denmark (123.8%), and relatively high in the Netherlands (43.5%), Belgium (31.4%), Portugal (16.4%), and Finland (13.5%).

Concerning the participation rates for all passive measures (PASSIVE), the Netherlands (274.4%), Denmark (257.0%), Belgium (174.5%), Ireland (169.1%), Sweden (124.3%), Finland (118.0%), and Austria (116.9%) have participation rates more than 100 percent.

What can we learn from this complex picture of participation rates in different countries? Though lots of missing values raise difficulties for an international comparison, participation rates in terms of participant stocks give some useful information: 1) In terms of participant stocks, the participation rate in Korea is very low compared with European countries. 2) Korea has very low participation rate, in particular, in passive measures. The gaps of the participation rates between Korea and European countries are more significant in passive measures than in active measures. All the compared European countries have a higher participation rate in passive measures than in active measures, though the gaps of participation rates between active measures and passive measures vary among countries (Sweden has the smallest gap, that is, 96.8% in ACTIVE versus 124.3% in PASSIVE). Korea is the only country where the participation rate in passive measures (10.7%) is lower than that of active measures (more than 27.4%). 3) Programme structures among active measures are different in various countries. Sweden and Denmark have high proportions of training programmes, while other countries show high proportions of wage subsidies or public job creation.

If a higher overall programme participation rate - as we have seen in the case of employer-provided training programmes - is associated with a more equal distribution of programmes among different worker groups, Korea may have a less equal distribution of programme because of its lower overall participation rates, especially in active measures. We will test this assumption in Chapter 5.

#### *Programme participation ratios of youths compared with average workers*

Here, we analyse the distribution of programmes by age groups. The EU participant data provides information on youth participants, aged 16-24. Therefore, we can analyse the

programme distribution for the youth. In order to do this, we must first calculate the proportion of youth participants in programmes. We then need to calculate the youth proportion of unemployment to total unemployment. Lastly, we divide the youth participation proportion by the youth unemployment proportion. Let's call the youth participation proportion adjusted by the youth unemployment proportion the 'Youth Participation Ratio'. If the youth participation ratio is larger than one, the youth have a higher participation rate than the average worker, and vice versa.

Table 4.2 Youth participation ratios: EU countries and Korea (youths aged 16-24)

	Active measures						BENEFIT	Youth unemployment	
	TRAIN	SHARE	SUBSIDY	JOBCRE	STARTUP	AVTIVE		URATE	U_PORTION
Belgium	.	.	.	.	.	.	0.57	20.5	21.2
Denmark	0.72	.	0.43	0.02	0.03	0.57	0.40	7.2	23.4
Germany	2.17	.	0.68	.	0.52	.	0.81	9.8	11.1
Greece	.	.	.	.	.	.	.	29.8	35.4
Spain	1.52	1.15	0.99	<u>0.47</u>	<u>0.66</u>	.	0.27	35.7	29.9
France	0.73	.	<u>1.76</u>	<u>1.13</u>	<u>0.26</u>	.	0.57	26.2	20.9
Ireland	1.73	.	0.16	0.29	0.16	0.72	0.73	11.4	29.0
Italy	1.44	.	1.01	0.09	<u>0.39</u>	.	<u>0.22</u>	40.3	33.4
Netherlands	.	.	.	.	.	.	0.24	8.8	32.1
Austria	.	.	.	.	.	.	0.66	7.4	19.2
Portugal	.	.	.	0.70	.	.	0.33	9.4	30.3
Finland	0.87	0.46	0.39	0.44	0.26	0.66	0.20	34.6	32.5
Sweden	1.49	.	1.41	0.22	0.36	1.31	0.67	17.4	19.1
U.K.	.	.	.	.	.	<u>2.01</u>	0.85	12.4	30.6
Norway	0.95	0.59	0.45	0.26	0.08	0.78	0.33	9.2	39.2
Korea	<u>1.26</u>	.	.	<u>0.53</u>	.	<u>0.65</u>	<u>0.57</u>	11.0	39.6
Non-weighted Mean	1.29	0.73	0.81	0.42	0.30	0.96	0.49	18.2	27.9
Correlation with U_PORTION	-0.37	-0.58	-0.37	-0.14	-0.31	-0.24	-0.54**		

Notes:

- 1) Youth Participation Ratio = proportion of youth participants / proportion of youth unemployment x 100
- 2) All data refer to 1998 and the youth aged 16-24 except for Korea (the year of 1999 and youths aged 16-29 ).
- 3) Youth Participation Ratios in underlined italics refer to the flow data of programme participants. All others refer to stock data.
- 4) TRAIN = training, SHARE = job rotation and job sharing, SUBSIDY = employment incentives, JOBCRE = direct job creation, STARTUP = start-up incentives, ACTIVE = subtotal of active measures, BENEFIT = out-of-work income maintenance and support, URATE = youth unemployment rate, U\_PORTION = the proportion of youth unemployment to total unemployment.
- 5) \*\* means the data is statistically significant at 0.05 level.

Sources:

EUROSTAT (2001), EUROSTAT (1999), ILO (2000), Korea Ministry of Labour, Kang and Lee (2001).

Table 4.2 shows the ‘Youth Participation Ratio’ by programmes. The last column of the Table shows the proportion of youth unemployment to total unemployment. The last two lines of the Table show the non-weighted means of youth participation ratios and the Pearson’s correlation between youth participation ratios and the proportion of youth unemployment.

Concerning training programmes (TRAIN), in six countries out of ten compared countries, the youth participation ratio is larger than one. The youth in Germany (2.17) and Ireland (1.73) have higher access to training programmes. Youth participation ratios for employment incentives (SUBSIDY) are larger than one in three out of the nine countries. France in particular has higher youth participation ratios in employment incentive programmes and direct job creation programmes (JOBCRE), but has a low youth participation ratio in training programmes. In almost every country, youth participation ratios are particularly low in the programmes related to direct job creation (average 0.42 in ten countries) and business start-up incentives (average 0.30 in nine countries).

Concerning the programmes related to out-of-work income maintenance and support (BENEFIT), every country has youth participation ratios much smaller than one. The non-weighted mean of youth participation ratios in the programme BENEFIT indicates 0.49.

In general, young workers - compared with average workers - have a higher participation probability of training in many countries, but a much lower probability of participation in other active or passive measures.

The last line in Table 4.2 shows the correlation between youth participation ratios in each programme and the proportion of youth unemployment in their countries. Despite the comparatively small samples, we can see that youth participation ratios correlate negatively to the proportion of youth unemployment. But the correlation is statistically significant only for the programme of BENEFIT (out-of work income maintenance and support), which may come from the small size of sample. Nevertheless, we may not deny the assumption that a higher proportion of youth unemployment may lead to the lower participation ratio for the youth.

#### *Programme participation ratios for women compared with average workers*

Using the same method as with the youth participation ratios in Table 4.2, we can calculate female participation ratios. Table 4.3 reports the programme distribution for female workers.



Table 4.3 Female participation ratios: EU countries and Korea (1998)

	Active measures						Passive measures			Women unemployment		
	TRAIN	SHARE	SUBSIDY	JOB	CRE	STARTUP	ACTIVE	BENEFIT	RETIRE	PASSIVE	URATE	U_PORTION
Belgium	.	1.61	0.76	.	.	.	.	0.99	0.21	.	11.7	53.0
Denmark	1.03	1.11	0.94	1.03	0.66	0.99	0.99	0.96	0.91	0.93	6.4	59.6
Germany	1.09	.	0.82	1.12	0.57	1.05	1.05	0.93	0.60	0.93	10.4	46.6
Greece	0.99	.	0.97	.	0.74	.	.	.	.	.	16.5	60.6
Spain	1.06	1.58	0.62	0.73	0.64	0.75	0.75	0.79	0.28	0.75	26.6	55.2
France	0.90	.	0.73	1.14	0.54	0.94	0.94	0.91	0.57	0.88	14.2	53.4
Ireland	1.35	.	0.41	1.33	0.42	1.00	1.00	0.98	0.46	0.95	7.3	37.9
Italy	0.67	.	0.89	0.89	0.47	.	.	1.02	.	.	16.5	51.6
Netherlands	.	.	.	.	.	.	.	0.88	0.37	0.79	5.8	55.9
Austria	1.06	.	1.10	1.55	0.65	1.10	1.10	0.98	0.67	0.96	5.5	44.7
Portugal	1.09	.	1.11	1.39	0.63	1.14	1.14	0.98	0.27	0.85	5.8	55.6
Finland	1.04	1.70	1.06	1.27	0.92	1.17	1.17	1.16	1.07	1.14	13.6	48.8
Sweden	1.16	.	0.92	1.35	1.15	1.15	1.15	1.41	1.15	1.40	8.0	41.6
U.K.	.	.	.	.	.	0.83	0.83	0.62	.	0.62	5.3	38.3
Norway	1.18	1.36	0.65	0.85	0.74	1.04	1.04	1.14	.	1.14	3.3	47.3
Korea	1.60	.	.	1.53	.	1.54	1.54	1.14	.	1.14	5.1	32.7
Non-weighted Mean	1.09	1.47	0.84	1.18	0.68	1.06	1.06	0.99	0.60	0.96	10.1	48.9
Correlation with U_PORTION	-0.72**	-0.52	0.33	-0.58**	-0.10	-0.46	-0.46	-0.21	-0.32	-0.33		

Notes:

- 1) Female Participation Ratio = proportion of female participants / proportion of female unemployment x 100
- 2) All data refer to 1998 except for Korea (1999).
- 3) Female Participation Ratios in underlined italics refer to the flow data of programme participants. All others refer to stock data.
- 4) TRAIN = training, SHARE = job rotation and job sharing, SUBSIDY = employment incentives, JOBCRE = direct job creation, STARTUP = start-up incentives, ACTIVE = subtotal of active measures, BENEFIT = out-of-work income maintenance and support, RETIRE = early retirement, PASSIVE = subtotal of passive measures, URATE = female unemployment rate, U\_PORTION = the proportion of female unemployment to total unemployment.
- 5) \*\* means the data is statistically significant at 0.05 level.

Sources:

EUROSTAT (2001), EUROSTAT (1999), ILO (2000), Korea Ministry of Labour, Kang and Lee (2001).

Regarding training programmes (TRAIN), in most countries the women participation ratios are close to one. Korean women (1.60) have higher access to training programmes. It may result from the fact that open unemployment of women is comparatively low in Korea because of the strong discouraged worker effect for them, as we have seen in the previous chapters. Women clearly have higher access to job rotation and job sharing programmes (SHARE). But female participation ratios for employment incentives (SUBSIDY) are lower than one in most countries. Concerning the direct job creation programmes (JOBCRE), female participation ratios are high in many countries. On the contrary, women participation ratios are very low in programmes related to business start-up incentives (average 0.68 in

twelve countries). On the whole, females do not have less access to active measures than average workers (male workers) do.

As far as passive measures go, female participation ratios are around one for measures of out-of-work income maintenance and support (BENEFIT), but are much lower than one for measures related to early retirement (RETIRE).

Our analysis generally shows that programme distribution among gender groups seems to be comparatively equal. However, we should note that female participation ratios could be overestimated in many countries because we do not take into account the high proportion of hidden unemployment or discouraged workers among women. More detailed data on female programme participation demand is required for future studies.

Nevertheless, we can obtain significant results concerning the negative relationship between the proportion of female participants and the proportion of the female unemployed. The last line in table 4.3 reports the negative correlation between them, except in employment incentive programmes (SUBSIDY). In training and direct job creation, in particular, the negative correlations are statistically significant at the significance level 0.05. A high proportion of unemployment in a group is likely to lead to a low participation probability for the group.

## 4.2 Programme effects on individual participants

### 4.2.1 Evaluation problems and evaluation methods

#### *Evaluation problem: selection bias*

A great deal of evaluation literature concerns the effects of programmes for the beneficiaries. It attempts to measure the impact of programme participation on individuals' employment and earnings after they have left the programme, judging the outcomes against the experiences of a benchmark or control group of similar individuals who did not participate in the programme (Martin and Grubb, 2001). More specifically, the evaluator may try to determine what outcome the programme participant would have had if *the same person* had not participated in a programme, comparing it with the observed outcome after participation. In this case, the essence of the evaluation problem is that the same person cannot be in two or more different labour market statuses at the same time (Heckman and Smith, 1996). The problem is mainly based on differences in unobserved characteristics between participants and non-participants, or the so-called selection bias (Fay, 1996). The selection bias can be present if, for example, the decision to participate is the result of decisions made by persons eligible for the programme, by the administrator or both. If the programme participants have important unobserved characteristics for higher employability, and selection bias is not adequately controlled, the estimated positive outcomes for them may not be significantly higher than for non-participants (Heckman and Smith, 1996; Bellmann and Jackman, 1996b; Fay 1996; Schmid et al., 1996, pp. 12-13).

Selection bias cannot be assigned *a priori* and the exact form of the bias is not usually known. Several types of econometric models can be estimated to account for different forms of bias, each with implicit assumptions about its nature (Fay, 1996, p10; Heckman and Smith, 1996). As Heckman and Smith (1996) noted, the evaluation problem is fundamentally a problem of missing data. Better data could reduce the evaluation problem. The following evaluation methods try to combat this evaluation problem within given data.

#### *Experimental method*<sup>58</sup>

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<sup>58</sup> This part mainly depends on Björklund and Regnér (1996, pp. 90-92) and Heckman and Smith (1996).

A perfect experiment solves the selection bias problem by using the method of random assignment, which means that eligible participants are randomly assigned either to the programme or to a control group (the counterfactual) that does not receive any treatment. There will be no average differences in unobserved characteristics between the two randomly chosen groups, and, therefore, post-programme differences can be attributed solely to the programme.

However, there are important limitations to experiments. If the potential programme participants know that the experiment will be carried out, they may choose not to apply for the programme, which may lead to a significant change in the pool of applicants (randomisation bias). Members of an experimental control group could gain access to close substitutes for the experimental treatment: such as similar services offered by other providers or the same service offered under different funding arrangements (substitution bias). It is possible that members of the experimental groups may get jobs at the expense of the control group, which may be especially significant on a small local labour market (displacement effect). There may be doubt as to whether the experimental results would be valid for other subjects, other times, or other settings of the treatments, as experiments are usually based on narrowly designed control groups (external validity). If participants know that they are being studied, the experiment can also affect their behaviour of work (Hawthorne effect). If the programme administrators alter the content of the programme, it is possible that participants are better serviced by the administrators than they would be under normal circumstances (disruption bias). Random assignment is often considered to be impossible for ethical reasons (ethical consideration).

Nevertheless, experiments are usually considered as very useful for the following three reasons: 1) Experiments are generally simple to interpret and to understand the results. 2) The effects of treatment on behaviour can be measured accurately. 3) They are considered to be free of selection bias.

### Non-experimental evaluation

In the non-experimental method (quasi-experiment), participants are compared with benchmark groups of persons selected *ex post*. Here, the possible selection bias is a main issue. Many statistical models to adjust this selection bias have been developed.

Evaluation studies differ with respect to the methods applied to solve this selection bias problem. The *matching method* is one of the non-experimental approaches. It consists of

selecting a comparison group from a general survey or administrative data set, by controlling for selection of observable characteristics between participants and non-participants (the first step in non-experimental evaluation). The basic idea is to search for individuals who are similar to the participants concerning all relevant characteristics from a large group of non-participants (the comparison group). Traditional propensity-score matching methods pair each programme participant with a single non-participant - where pairs are chosen based on the degree of similarity in the estimated probabilities of participating in the programme (the propensity scores).

Remaining unobservable differences between participants and non-participants need to be corrected by specifying a model for evaluating programme effects (the second step in non-experimental evaluation). Heckman's Two-Stage Procedure (Heckman, 1979) has been widely used in order to correct unobservable sample selection bias. Concerning, for example, the post-earning effect of training programmes, two reduced-form equations are required: the training participation equation and the earning equation. It is also required that there are some variables (at least more than one variable) that are included in the participation equation, but not included in the earning equation (exclusion restriction)<sup>59</sup>. In the first stage, the probability that workers are selected into training programmes is estimated. Heckman assumes that the errors in the participation equation and the errors in the reduced-form earning equation are jointly normal and are stochastically independent of the observable variables in the two reduced-form equations (the conditional expectation for both the trainees and the comparison group members). Based on this construct, one can calculate the so-called inverse Mill's ratio - which is the coefficients from a probit estimate of the reduced-form participation equation to calculate the conditional expectation. In the second stage, the resulting estimates for the inverse Mill's ratio are treated as independent variables that are proxies for the unobserved variables (for example: self-motivation or administrative criteria for "creaming off" participants), which should be included in the earning equation. (Heckman, 1979; Heckman and Smith, 1996; LaLonde, 1986).

However, there are a lot of criticisms of the non-experimental methods. Fay (1996) summarizes the disadvantages of non-experimental evaluation well. Econometric procedures usually provide a range of estimates. Results can vary depending on the model specification chosen. Numerous estimates are really only a problem if there is no adequate method to

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<sup>59</sup> With longitudinal data, the exclusion restriction is not required. The so-called fixed-effect method is widely used as a longitudinal method (Heckman and Smith, 1996, pp. 74-79).

distinguish among them. Evaluations can be difficult to understand since they typically use a complicated analysis involving a variety of econometric techniques which require strong assumptions about the distribution of the error term. It may be difficult to get a good comparison group from a general survey, particularly when programmes are focused on narrowly targeted groups. A number of suitable data sets are often needed since relatively few would have enough detailed characteristics of individuals. The most important problem may be the difficulty of solving selection bias. Selection bias is random and the extent of this problem remains uncertain.

The advantages of non-experimental methods are also cited. The studies can help build the economists' knowledge on structural aspects of the labour markets. The studies can measure the distribution of outcomes (the marginal effect on potential participants) as well as mean differences in outcomes (larger outcomes). The costs of non-experiments are usually lower than those of random assignment experiments since the evaluation usually uses existing data sources.

#### *Lessons from the numerous evaluation methods*

The work of LaLonde (1986) - which compared the results from non-experimental evaluation on American training programmes with those of experiments - has had a strong influence on promoting the use of experiments to evaluate social programmes (Heckman and Smith, 1996, p. 80). However, Heckman and Smith (1996) noted as follows; "There is no reason to expect that a single method will solve every, or almost every, evaluation problem. All evaluation methods require assumptions. Evaluating the plausibility of those assumptions in each particular evaluational context is the most important step in solving evaluation problems" (p. 83). This may show the difficulty in selecting the right method out of various methods.

Nevertheless, we can learn a great deal from the evaluation literatures. We quote several evaluation lessons from a recent work of Heckman, LaLonde and Smith (1999). They present the following methodological lessons: 1) Better data help a lot. The best solution to the evaluation problem lies in improving the quality of the data and not in the development of formal econometric methods to circumvent inadequate data. 2) It is important to compare comparable people. 3) The evidence that different estimators produce different estimates, while disappointing, does not necessarily indicate that non-experimental methods fail to measure the appropriate counterfactual. Different estimators solve the selection problem

under different assumptions. 4) Non-experimental evaluations are not necessarily less expensive than experiments because collecting new survey data (for better quality data) is costly. 5) When programmes are implemented on a large scale, they may change the prices and opportunities facing everyone in the population. Displacement and general equilibrium effects may be sizeable. Without considering this point, the output of micro effect evaluations will provide poor guides to public policy.

#### 4.2.2 A review of programme effects

It is well known that labour market programmes very often fail to obtain positive employment or earnings effects on participants for many reasons (OECD, 1993; Fay, 1996; Heckman et al., 1999; Martin and Grubb, 2001). The OECD (Martin and Grubb, 2001), following upon a lot of evaluation literature, shows that certain programmes work better under certain circumstances, and for certain groups. We will briefly review the evaluation results of individual programmes according to the work of Martin and Grubb (2001).

##### *Public training programmes*

(1) Some public training programmes work well. But others have yielded low - or even negative - rates of return for participants when the estimated programme effects on earnings or employment are compared with the cost.

(2) Most of the gains take the form of improved employment opportunities rather than higher hourly wages.

(3) The most consistently positive results are recorded for adult women. Regarding adult men, some programmes give positive results, others do not. The most discouraging picture emerged with respect to out-of-school youth. Almost no training programme worked for them.

(4) There are, however, no satisfactory answers as to why the public training programmes appear to work for some target groups and not for others.

(5) In order to enhance their effectiveness, four crucial features in programme design are required: tight targeting on participants, keeping the programmes on a relatively small scale, the programme to result in a qualification or certificate that is recognised and valued by the market, and adding a strong on-the-job component to the programme (and thus establishing strong links with local employers).

##### *Job search assistance*

(1) Most evaluations show positive outcomes for job-search assistance - such as job clubs, individual counselling and re-employment bonuses.

(2) Job search assistance does work for most unemployed people but it works better, in particular, for women and single parents.

(3) It should be combined with increased monitoring of the job-search behaviour of the unemployed and enforcement of work tests.

### Special youth measures

(1) Almost all evaluations show that special youth measures, such as public training measures, targeted wage subsidies, and direct public sector job creation schemes, are not effective for disadvantaged youth.

(2) Though some recent European studies claim to have identified some successful programmes, it is not clear whether these few success stories can be explained by differences in the degree of disadvantages among the young people in the different schemes (between the United States and European countries).

(3) Effective programmes need to combine an appropriate and integrated mix of education, occupational skills, work-based learning and supportive services for young people and their families.

(4) Early and sustained interventions are likely to be most effective.

### Subsidies to private-sector employment

(1) Hiring subsidy programmes have a greater impact than public training or direct job creation measures. At the same time, subsidies to private sector employment have both large dead-weight and substitution effects.

(2) It may be possible to raise the size of net employment gains by tight targeting at particular groups and close monitoring of employer behaviour in order to curb abuses. But, there is a trade-off between control for employer abuse and employer programme acceptance. In addition, tight targeting is associated with the risk of so-called 'stigma' - which may convey a negative signal to potential employers.

(3) Aid in starting a small business appears to be successful for males who have relatively high levels of education.

### Direct job creation in the public sector



(1) Direct public sector job creation has been of little success in helping unemployed people get permanent jobs in the open labour market. As a result, there has been a marked decline of this type of intervention.

(2) If necessary, temporary employment programmes can be used as a work test for unemployment benefit recipients and as a means of helping the most disadvantaged unemployed maintain contact with the labour market, particularly in a recession.

(3) They should, however, be short in duration and not become a disguised form of heavily subsidised permanent employment.

## 4.3 Aggregate impacts of LMPs and alternative evaluation methods

### 4.3.1 Aggregate impacts of LMPs

The third type of evaluation attempts to measure the macroeconomic effects of programmes on aggregate employment, unemployment and wages. While many evaluation studies focus on the programme effects on individual beneficiaries, little is known about the aggregate impacts of LMPs on unemployment and other labour market variables (Koning, 2001; Bellmann and Jackman, 1996a, 1996b; OECD, 1993). Before examining these evaluation results, the negative or positive aggregate effects (impacts) of LMPs should be discussed theoretically.

#### *Negative side effects of LMPs*

Deadweight loss or the windfall effect arises when a programme pays for something that would have happened anyway, which reduces the net impact of a labour market policy. Deadweight effects are extremely difficult to estimate empirically. Estimates can be made either via macro-econometric studies that include all other relevant contextual variables (growth of GDP, wages, flows of vacancies), or via surveys among employers. Although the latter are less sophisticated from the theoretical and methodological point of view, they sometimes yield more reliable results (Nicaise et al, 1995b).

In labour market programme evaluation, the so-called substitution effect is one of the important issues, which is often mentioned alongside “deadweight”. As mentioned above, the substitution effect can occur when programme participants replace the positions that would otherwise be given to the non-participants<sup>60</sup>.

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<sup>60</sup> In most evaluation literature, substitution effect and displacement effects are distinguished, and in some literature, they are not. According to Schmid et al. (1996b, pp. 12-13), the displacement effect occurs when the policy has improved the employment opportunities of programme participants at the cost of a decline in job opportunities for non-participants, whereas the substitution effect occurs when firms employing subsidized programme participants are given a competitive advantage (e.g. in prices) over those firms not benefiting from programme subsidies. In contrast, Bellmann and Jackman (1996a, pp. 156-157) suggest opposite concepts: Substitution means that subsidized or programme-supported workers replace unsubsidized workers in the firm, and displacement means the reduction or crowding out of regular employment elsewhere in the economy through competition in the goods market. On the other hand, Nicaise et al. (1995, pp. 112-118) did not distinguish between these two effects, denoting that the above typical displacement effect (the concept of Bellman and

The provision of active programmes may have an adverse effect on wage-setting similar to that of more generous unemployment compensation. By reducing income loss associated with unemployment, participation in active measures may increase reservation wages, thereby delaying the transition to regular jobs instead of speeding up the process.

#### *Positive macro-economic impacts of LMPs*

While the deadweight or substitution effects of LMPs tend to reduce the net effects of programmes, it is also possible to have no measurable effect on participants but positive effects on a macro-level. This can happen in the case where unemployed people with good labour market prospects are trained in occupations in which a shortage exists; their job chances may not increase, but other unemployed job seekers may benefit from their transition to other labour market segments (Koning, 2001).

The possible positive aggregate effects of LMPs can be summarized as follows (Layard et al, 1991; Koning, 2001; OECD, 1993): 1) A more efficient matching process may increase total employment, and decrease total unemployment and unfilled vacancies (outward shift of the labour-demand curve and inward shift of the Beveridge curve). 2) Training or other related subsidies may increase labour productivity, and an increased general productivity may increase aggregate labour demand (outward shift of the labour-demand curve). 3) LMPs may reduce the risks that the long-term unemployed and various types of ‘outsiders’ in the labour market leave the labour force, and it may increase effective labour supply and reduce wage pressure (downward shift of wage-setting schedule or labour-supply curve). 4) When (un)employment and wages are affected, other macroeconomic variables - such as consumption and investment - will change too. Increased public expenditures on active measures may be associated with possible savings on unemployment benefits.

#### *Evaluation results on aggregate impacts of LMPs*

Though several methods have been used for better analysis of aggregate impacts of LMPs, it is difficult to draw general conclusions from previous evaluation literature. Most recently, Koning (2001) made an extensive survey of the previous evaluation studies which gave the following results (pp. 40-44): 1) Among the evaluation methods, the following two methods have been used widely: simple u/v-analysis (using the Beveridge curve) to measure the

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Jackman) is completely analogous with substitution between groups of job seekers when new jobs are created. This study follows the concept of Nicaise et al..

impact of active LMPs on mismatches, and flow equations measuring the impact of active LMPs on the transition from unemployment to employment, and vice versa. 2) Generally, the studies suggest that the effects of active LMPs are minor on a macro-economic level. 3) There is more evidence that active LMPs increase the outflow from long-term unemployment to employment, but at the cost of decreasing the outflow from short-term unemployment to employment. 4) Some studies report a small positive effect on the total outflow from unemployment. 5) However, even when this effect on total outflow is zero, a redistribution of job opportunities between long-term and short-term unemployment could be seen as a positive result. 6) Nevertheless, it is difficult to judge the validity of the evaluation results because many of the studies suffer from data and estimation problems; in many studies, programme participants may be removed from the unemployment records during participation (overestimation of programme effects). Studies could also suffer from the endogenous problem as governments increase budgets on LMPs when unemployment is rising (underestimation of programme effects).

#### 4.3.2 Alternative evaluation methods

All the evaluation methods mentioned above, such as experimental or non-experimental evaluation and models for aggregate impact analysis, may be insufficient for analysing the complicated programme effects. Depending on the programme objectives, alternative or supplementary methods need to be used. Process evaluation and cost-benefit analysis are often cited as useful alternatives, especially with respect to the target-oriented evaluation approach (Schmid et al., 1996b).

##### *Process evaluation*

Process evaluation is based on the concept that different implementation processes may explain the difference in outcomes of LMPs in various countries or regions. Implementation variables, such as budget allocation, the number of staff in local employment agencies, strategies of employment agencies, and the intensity of cooperation between employment agencies and municipalities, may give useful information about the conditions under which LMP management would be most effective. As government intervention in the labour market is based on the problems related to market failure, similar policy failure could be found in implementation processes, which may lead to worse effects of programmes on individual

participants. In this context, implementation or process evaluation can complement the deficits of experimental or non-experimental evaluation methods.

Concerning aggregate impact analysis, Koning and Mosley (2001) combine the existing models of impact analysis with the measurement of the efficiency of programme implementation. Their basic idea is that efficient implementation in a given local employment agency may increase the effectiveness of programmes. Various implementation variables can be included directly in models, or other econometric methods can be used.

### Cost-benefit analysis

Cost-benefit analysis provides a further methodological tool contributing to the evaluation of labour market policy. The aim of cost-benefit analysis is to provide a basis for choices between alternative measures. All visible and invisible costs and benefits of programmes should be taken into account. Even though the economic effects of programmes on individual participants are positive, the aggregate net effects of programmes based on cost-benefit analysis might be negative. In this context, cost-benefit analysis can be used as an alternative to experimental or non-experimental evaluation, or can be used alongside with them.

On the other hand, cost-benefit analysis can be used for analysing the distributional effects of programmes. While most programmes bring about gains for some individuals and losses for others, the winners are not expected to compensate the losers voluntarily. If the benefits (or costs) of individuals can be weighted according to distributional goals (or, the relative importance for the individuals affected), the net effect of a programme as a 'weighted' sum of all the individual gains and losses can also be calculated (Delander and Niklasson, 1996).

As Schmid (1997) noted, there is no single method of evaluation research, and there is always a need for applying a mixture of evaluation methods, which has to be related to the purposes of the evaluation.

## 4.4 Analytical frameworks

Based on the target-oriented evaluation approach, our evaluation target is the impact of policies on ‘reducing disadvantages in the labour market’. In this context, it will first be useful to see the relationship between disadvantaged groups and several evaluation issues. We will then present our analytical framework for evaluating Korea’s LMPs.

### 4.4.1 Disadvantaged groups and evaluation issues

As we have seen, the issues or problems in LMP evaluation mainly concern the selection bias, deadweight, and the substitution effect. All these issues are very often regarded as factors which ‘overestimate’ the programme effects on individual participants and aggregate macro-economic outcomes. However, concerning the programmes targeted at the ‘disadvantaged group’, the evaluation issues may have a little different meaning. Some types of programmes, for example, wage subsidy programmes for the most disadvantaged people (such as the long-term unemployed), are somewhat resigned to some type of inevitable substitution or deadweight. While various evaluation methods have difficulties in attacking these evaluation issues, the issues are closely related to the characteristics of programme participants or to the programme distribution.

In order to simplify the explanation for these relationships between disadvantaged groups and evaluation issues, we assume a case where a programme is composed with the most disadvantaged group with highest probability of unemployment and lowest probability of re-employment in the labour market.

In this case, if the selection bias is not adequately controlled, the effects of programmes on disadvantaged participants can be ‘underestimated’, because participants may have more observed or unobserved characteristics for less employability.

Measures targeted at disadvantaged groups are believed to cause relatively less deadweight losses than general measures, for the following four reasons (Nicaise et al., 1995a, p111): “1) the measures will automatically concern the more labour-intensive sectors of the economy, where more low-qualified workers are employed, 2) the effect of the measures on the average wage cost will be relatively stronger, since wages of these groups are lower, 3) the consumption propensity of low-wage earners is relatively higher, which may induce stronger multiplier effects, and 4) employers are relatively less inclined to recruit disadvantaged workers without extra incentives, as compared to highly productive workers.” In the case,

where programme participants are composed with most disadvantaged people, deadweight effect will naturally be comparatively small.

In the case where disadvantaged participants weaken the employability of the non-participant average workers, the redistributive goal can be obtained and little reverse substitution can be generated. Beside the aggregate impacts of programmes, disadvantages for participants will at least decrease.

Therefore, one can expect that the conventional evaluation problems may be lessened if the programme distribution is favourable to disadvantaged groups. For this reason, many evaluators, especially the OECD, recommend more specific targeting on disadvantaged groups.

Most importantly, many evaluation studies revealed the negligible effects of LMPs, both on the prospective of individual participants and on aggregate macro-economic outcomes. These disappointments also relate to the distributional structure of programmes.

We can expect better labour market outcomes for the more disadvantaged groups than for the less disadvantaged groups. In reality, many evaluators found that labour market programmes work better for the disadvantaged group and obtain redistributive goals, as we have already found. Here, we quote from Haveman and Hollister (1991, p59):

“In general, employment and training programmes have had their greatest impacts and largest social returns for those who have had the least previous labour market experience and are most disadvantaged. Most evaluation found that programmes work better for women than for men, for those less educated and poorer than for those better-educated and with higher incomes. Even where programmes have had statistically significant effects, the effects have been small relative to the size of the problem, but though small they are often still socially significant”.

We have no doubt that it should be a starting point of programme evaluation to analyse the accessibility to programmes for disadvantaged groups. The effects of programme participation should also be analysed separately by groups. In particular, the Korean LMP evaluation study may require more consideration on the distributional effects of LMPs. During the crisis, many urgent unemployment countermeasures were hurriedly constructed or expanded without good implementation infrastructure, which can create delivery or distributional problems of LMPs.

#### 4.4.2 Analytical framework of the following Chapters

In the following two Chapters, we focus on two subjects: participation in programmes and programme effects on participants. The distribution of programmes and programme effects for disadvantaged participants are main target areas evaluated.

Chapter 5 empirically analyses the participation probability of various groups. It corresponds to the second step of our analytical framework based on the target-oriented evaluation approach. We use the same data set used in Chapter 3. Our Logit models for participation likelihood are set based on the theories addressed in Subsection 4.1.1 of this Chapter. The barriers to programme participation are analysed by using variables related to personal characteristics and programme implementation. By adding implementation variables - such as budget allocation and the number of staff in local employment agencies - directly to the models, we take the implementation aspects into account. One of our basic assumptions is that disadvantaged groups in the labour market may have more difficulty in programme participation because they may face more barriers to participation, as was discussed in Subsection 4.1.1 (livelihood problems, information deficiency, etc.).

Chapter 6 empirically analyses the effects of several programmes on the employment perspective of individual participants. This corresponds to the third step of our analytical framework presented in the Introduction. We use a data set from the special survey for the participants and non-participants in the “Re-employment Training for the Unemployed” (RETU survey), and a renewed data set that is the RETU survey merged with the EIS database. Though we mainly evaluate the effects of the RETU, the effects of other programmes, such as public works, job placement, and unemployment benefits, are also analysed additionally. We use a non-experimental method that is presented in Subsection 4.2.1 of this Chapter. We use two types of basic models for programme evaluations: Cox’s proportional hazard models and probit models. Models are also set separately by workers’ groups, in order to evaluate different programme effects by groups. Our main assumption is that labour market outcomes of programme participation may be greater for disadvantaged groups than for average workers’ groups. Lastly, we will briefly address the possible selection bias problem in our evaluation results



## Chapter 5. PARTICIPATION IN LABOUR MARKET PROGRAMMES

This Chapter measures programme participation probability of various types of unemployed persons. Our analysis is targeted at the unemployment countermeasures enacted against the crisis. To achieve this, we use the same micro data set as we used in Chapter 3. It means that unemployed people identified in Chapter 3 are the main object of analysis in this Chapter. As we have seen in Chapter 3, unemployment is not equally distributed to various worker groups. The factors leading to disadvantages in the labour market, such as irregular-job experience and low educational attainment, may play some negative role in participating in government programmes due to legal barriers to programme participation of irregular workers or insufficient information on programmes of the less educated. In this context, it is natural that we doubt whether more disadvantaged groups in the labour market have benefited more from public programmes.

This Chapter comprises three main Sections and Conclusion Section. The first Section presents the research design of the Chapter. The second Section analyses participation probabilities of disadvantaged groups in total labour market programmes. The third Section analyse in detail the participation likelihood by programmes and the reasons of non-participation.

### 5.1 Research design

#### 5.1.1 Questions

Our main question in this Chapter is that: could more disadvantaged groups have a higher probability of programme participation than less disadvantaged groups? If not, what were the main reasons for it?

Based on the theoretical backgrounds of the previous Chapter, we can develop several detailed questions about the programme distribution as follows:

- 1) Was there any legal or administrative barrier to participation of disadvantaged unemployed people?
- 2) Was there any evidence of creaming-off in the procedure of programme participation?
- 3) Was there any inconsistency between measures which might cause reverse substitution

of employment probability?

4) Which results were produced from the insufficient supply of programmes?

5) Did disadvantaged workers suffer limited information on programmes or livelihood problems leading to non-participation even if they wanted to participate in programmes?

6) What types of roles did the local labour market situation and implementation agencies play in the process of programme distribution among workers?

### 5.1.2 Data and categories of programmes

This Chapter uses the data from the “Unemployment Reality Survey” (URS) which was used in Chapter 3 (see Subsection 3.1.1 for details).

Among the data sets of the RETU, the data set for unemployed people (unemployment data set) is mainly used for analysing participation likelihood. The unemployed comprise discouraged workers (the hidden-unemployed) and the open-unemployed: they are composed of persons who experienced (hidden- or open-) unemployment more than one month between January 1998 and July 1999. As the URS gives a lot of information on programme participation and non-participation, we can also extract additional useful data sets related to non-participants from the main unemployment data set. Table 5.1 shows the main data sets used in this Chapter.

Using the unemployment data set, we can first analyse the programme participation likelihood of different types of worker groups. We can also analyse the application likelihood of public works programmes with the unemployment data set. Secondly, by constructing a data set for the applicants of public works, we can analyse their probability of being selected. Thirdly, by creating a data set for non-participants in training programmes, we can analyse the necessity of training and the reasons for non-participation in training.

We sometimes use programme-related data containing missing values on household income or property information because the number of programme participants is not large. All data are weighted according to different sampling rates among enumeration districts (EDs).

Table 5.1 Composition of data sets and models used in Chapter 5 (non-weighted)

<i>Data sets</i>	<i>No.</i>	<i>Dependent variables</i>	<i>No.</i>	<i>No. of Model</i>	<i>Section Number</i>
The unemployed (during the crisis)	1585	Participation in any programme	430	A1-A4	2
		Participation in programmes except simple registration in PES	325	A5	
	1069	Participation in any programme	347	B1-B2	
		Participation in programmes except simple registration in PES	267	B3	
	702	Participation in any programme	194	C1	
	577		138	C2	
	306		98	C3	
The unemployed (during the crisis)	1585	Participation in public works	161	D1	3
		Training programmes	67	D2	
		Registration in PES	239	D3	
		Job placement services	41	D4	
		Unemployment benefits	78	D5	
The unemployed (during the crisis)	1585	Application in public works	281	D1-1	
Applicants in public works	281	Selected in public works	153	D1-2	
Non-participants in training among unemployed people	1352	Persons who feel the need for training	740	D2-1	
Persons who feel the need for training	740	Insufficient information on training programmes	316	D2-2	
The unemployed at the survey date	737	Having intention of participating in training programmes in the future	248	D2-3	

Note) All the models are Logit regression models.

Programme participants can be divided into several categories: 1) 'Total participants (TPROGRAM)' include any person who has participated in more than one of the labour market programmes during the period between January 1998 and the survey date of 1999 (September or October 1999). The labour market programmes include all programmes, that is to say, public works, job training, simple registration in PES, job placement, subsidies for business start-ups, unemployment benefits, loans for the unemployed, temporary livelihood

protection and other programmes. 2) ‘Participants (PROGRAM)’ exclude the persons who only registered in PES from the ‘total participants (TPROGRAM)’. 3) Participants by individual programme are also analysed in several main programmes, such as ‘participants in public works (PW)’, ‘training participants (TRAIN)’, ‘registrants in PES (PES)’, ‘beneficiaries of job placement services (JOBP)’, and ‘beneficiaries of unemployment benefits (UNBE).

### 5.1.3 Models and variables related to LMPs

This Chapter uses Logit models for analysing participation likelihood and non-participation likelihood among the unemployed. Various types of Logit models are estimated in order to determine the reasons of participation and non-participation.

Dependent variables are shown in Tables 5.1 and 5.2. All dependent variables are binary variables with the value of one or zero.

We use TPROGRAM (participant in any programme), PROGRAM (participants in programmes except simple registrants in PES), PW (public works), TRAIN (training), PES (registrants in PES), JOBP (job placement services) and UNBE (unemployment benefits) as dependent variables for ‘participation equations’.

In the equation for APPLIcation of Public Works, we use the dependent variable APPLY\_PW (applicants in public works). We also estimate an equation for ‘selection of applicants in public works’ and the dependent variable SEL\_PW (being SElected for Public Works) is used for this.

In order to analyse the consistency between workers’ training needs and the participation probability of training, we estimate an equation for training needs, on which information is based on self-reported answers of unemployed people. The dependent variable NEED\_TR takes the value of one if non-participants in training are aware of the NEED of TRaining, and zero if not. The dependent variable INFO\_TR relates to non-participants in training due to insufficient INFOrmation on TRaining programmes, and we use the dependent variable for estimating the reasons for non-participation in training. In order to analyse the latent (or potential) demand for training in the future, we estimate an equation for the ‘intention of participation in training programmes’. For this the dependent variable YES\_TR (persons who intend to participate in training in the future) is used.

Most of the independent variables in this Chapter are the same as in Chapter 3 (see Subsection 3.1.1 and Table 3.2 of Chapter 3 for detailed definitions on variables). Independent variables are composed of four types of categories: 1) workers' personal or social characteristics (YOUTH – the youth, ELDLY – older workers, WOMEN – prime-age women, MIDDLE – middle school educated, HIGH – high school educated, POVERTY – the poor, HEAD – household head), 2) living area or regional labour market situation (URATE – regional unemployment rate, URBAN – urban area, variable related to PES areas – from PESAREA1 to PESAREA5), 3) job experience or employer characteristics (ENTRANT – new entrant into the labour market, SPELL\_W – the number of unemployment spells, DISCOURA – discouraged workers, LOEARN – low-wage workers, MANUAL – manual workers, MANU – manufacturing sector, PTEMP –temporary workers, PPART – part-timers, SIZE – firm size, DISPLACE – displaced workers) and 4) variables related to the labour market institution or programme implementation.

Here, we only present additional independent variables related to labour market programmes. Table 5.2 reports the additional variables.

The most important variable may be the institutional variable related to Employment Insurance System (EIS). Since the 'Re-employment Training for the Unemployed' and unemployment benefits are limited to persons covered by the EIS, and the coverage of the EIS is not very comprehensive, many unemployed persons may have a lower probability of programme participation because of the 'EIS non-coverage'. So we should add the independent variable EIS (persons who are covered by EIS) in our models.

Budget allocation is also an important determinant of programme participation. As the number of participants in programmes based on the EIS (such as unemployment benefits or the RETU) is not determined by allocated budgets to local governments, we consider only the budgets of general accounts. We create two variables related to budgets for public works and the Employment Promotion Training. In order to do this, we use the administrative data from the Ministry of Labour on central government budget allocation to 16 local governments, and we use the data from the Economically Active Population Survey of the National Statistical Office concerning the number of unemployed people in terms of the ILO definition in the same 16 local administrative areas. We then calculate the allocated budgets per unemployed person by dividing the budgets by the number of unemployed people in each area. Following that, we readjust the budget per unemployed person on the basis of Seoul area, the capital

(Seoul=1). PW\_BUDG indicates the budget allocation for public works and TR\_BUDG represents that of the Employment Promotion Training.

Table 5.2 Additional variables for programme participation analysis

<i>Variables</i>	<i>Description</i>	<i>Reference</i>
<b>Dependent variables</b>		
TPROGRAM	Participation in any labour market programme including simple registration in PES between Jan. 1998 and the survey date	Non-participants
PROGRAM	Participation in any labour market programme excluding simple registration in PES	Non-participants
PW	Participants in public works	Non-participants
TRAIN	Participation in training programmes	Non-participants
PES	Registration in PES	Non-participants
JOBP	Beneficiaries of Job Placement services	Non-participants
UNBE	Beneficiaries of unemployment benefits	Non-participants
APPLY_PW	The unemployed who applied for public works	Non-applicants
SEL_PW	Selected persons for public works among applicants	The rejected
NEED_TR	Persons who feel need of training among non-participants in training	No need of training
INFO_TR	Non-participants in training because of insufficient information on training programmes	Other reasons
YES_TR	Persons who intend to participate in training in the future	No intention of training
<b>Independent variables</b>		
EIS	Unemployed persons covered by the Employment Insurance System	Not covered
PW_BUDG	Budgets for public works per unemployed person by 16 local areas (Seoul = 1)	
TR_BUDG	Budgets for the Employment Promotion Training per unemployed person by 16 local areas (Seoul = 1)	
STAFFS	The number of staff in PES per unemployed person by 16 local areas (Seoul = 1)	

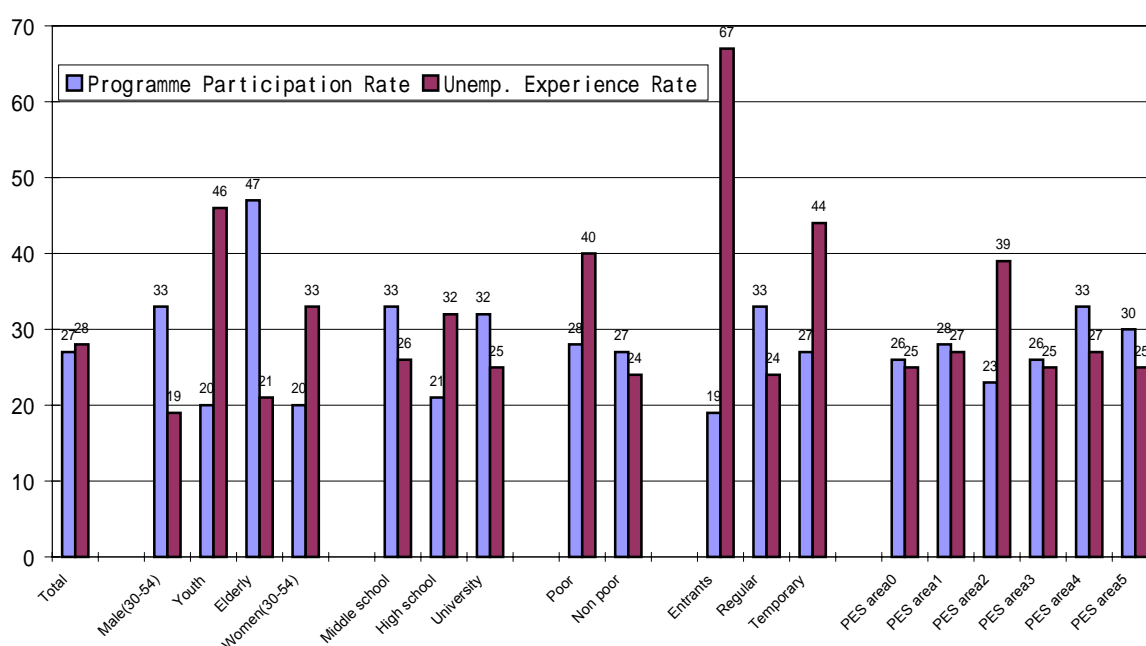
Lastly, we add an implementation variable by taking the number of staff in local employment agencies into account. The variable STAFFS is calculated by dividing the number of staff in 16 local areas by the number of unemployed persons in terms of the ILO definition. Thus, the variable STAFFS indicates the extent of the caseloads in each PES area (Seoul=1).

## 5.2 Programme participation likelihood of the unemployed

### 5.2.1 Overview: programme participation rates

We start with presenting the programme participation rates of the unemployed. The programme participation rate means the proportion of the unemployed who have participated in more than one programme between Jan. 1998 and the date of survey (Sep. - Oct. 1999). Chart 5.1 shows the participation rates by workers' groups, and Annex Table 5.1 presents more detailed data about the composition of participants and non-participants. In order to compare workers' chances of programme participation with their unemployment probability, we once again present the unemployment experience rates of the labour force, which were already presented in Chart 3.1 in Chapter 3 and Annex Table 3.1.

Chart 5.1 Programme participation rates of the unemployed and unemployment experience rates of the total labour force



About 27% of unemployed persons (the experienced of unemployment) participated in any of labour market programmes during the crisis. The proportion of participants to unemployed people (27%) is accidentally very similar to the proportion of unemployed people to the

labour force (28%).

The youth and prime-age women have low programme participation rates (20%), while older workers (46%) and prime-age males (33%) have higher programme participation rates. Youths and prime-age women suffer higher unemployment experience rates, but lower programme participation rates.

By educational groups, the differences in programme participation rates are not as significant as in the case of unemployment experience rates. Here too, however, the high school educated group has a comparatively low programme participation rate (21%) and higher unemployment experience rate (32%) relative to the middle school educated group or the university graduates.

The poor (28%) have a similar programme participation opportunity as the non-poor (27%). In spite of their higher unemployment experience rate, the poor have no priority in programme participation.

By employment status, regular workers have the highest programme participation rate (33%) and, at the same time, the lowest unemployment experience rate (24%). New entrants and temporary workers are more excluded from government programmes relative to regular workers, though they frequently experience unemployment.

By living areas according to PES areas, persons living in PES area2 (Busan Chung) have lowest programme participation rate (23%) among six compared PES areas. Here again, they have the highest unemployment experience rate.

All these results show that worker groups with higher unemployment experience rates tend to be excluded from the government programmes. It suggests a negative correlation between the extent of disadvantages in the labour market and the extent of programme participation.

Using our Logit models, we see the marginal effects of each variable on programme participation likelihood. Annex Tables 5.2 and 5.3 present means of variables that will be used in the following models and their correlations.

### 5.2.2 Programme participation likelihood for the total unemployed (Table 5.3)

#### *With basic variables (model 5.A1)*

Table 5.3 reports the results of Logit analysis for programme participation likelihood of the



unemployed. In model 5.A1, we start with only several variables, such as YOUTH (the youth), ELDLY (older workers), WOMEN (prime-age women), MIDDLE (middle school educated), HIGH (high school educated), POVERTY (the poor), ENTRANT (new entrants into the labour market), SPELL\_W (the number of months in unemployment spells), and DISCOURA (discouraged workers). The dependent variable is programme participation in any of the programmes including simple registration in PES (TPROGRAM).

Table 5.3 Programme participation likelihood (total programmes)

	Model 5.A1	Model 5.A2	Model 5.A3	Model 5.A4	Model 5.A5
Sample	The unemployed (No. of Obs: 1586)				
Dependent variable	TPROGRAM (Participants: 425)				PROGRAM (319)
YOUTH	-0.477 (0.171)***	-0.457 (0.173)***	-0.379 (0.178)**	-0.162 (0.211)	-0.347 (0.231)
ELDLY	0.575 (0.197)***	0.580 (0.199)***	0.554 (0.204)***	0.573 (0.205)***	0.444 (0.215)**
WOMEN	-0.579 (0.173)***	-0.523 (0.176)***	-0.449 (0.180)**	-0.215 (0.218)	-0.169 (0.236)
MIDDLE	-0.312 (0.182)*	-0.337 (0.185)*	-0.181 (0.192)	-0.195 (0.192)	-0.356 (0.206)*
HIGH	-0.599 (0.156)***	-0.608 (0.158)***	-0.521 (0.163)***	-0.531 (0.163)***	-0.685 (0.178)***
POVERTY	0.028 (0.130)	0.008 (0.133)	0.135 (0.137)	0.117 (0.138)	0.220 (0.150)
ENTRANT	-0.189 (0.160)	-0.234 (0.162)	-0.052 (0.167)	-0.021 (0.168)	-0.023 (0.192)
SPELL_W	0.027 (0.010)***	0.027 (0.010)***	0.041 (0.011)***	0.043 (0.011)***	0.017 (0.012)
DISCOURA	-0.800 (0.170)***	-0.841 (0.174)***	-0.811 (0.178)***	-0.788 (0.178)***	-0.527 (0.195)***
URATE		0.192 (0.049)***	0.474 (0.109)***	0.473 (0.109)***	0.337 (0.114)***
URBAN		-0.189 (0.223)	-0.282 (0.237)	-0.306 (0.237)	-0.161 (0.260)
PESAREA1		-0.019 (0.188)	-0.095 (0.203)	-0.117 (0.204)	-0.033 (0.226)
PESAREA2		-0.226 (0.171)	-0.883 (0.305)***	-0.890 (0.304)***	-0.357 (0.327)
PESAREA3		0.133 (0.243)	-0.433 (0.329)	-0.426 (0.329)	-0.002 (0.350)
PESAREA4		0.505 (0.221)**	-0.467 (0.455)	-0.478 (0.455)	0.092 (0.483)
PESAREA5		0.704 (0.244)***	0.051 (0.436)	0.053 (0.436)	0.874 (0.468)***
EIS			1.132 (0.165)***	1.134 (0.166)***	1.047 (0.171)***
PW_BUDG			0.103 (0.525)	0.128 (0.527)	-0.609 (0.616)
TR_BUDG			0.298 (0.143)**	0.293 (0.142)**	0.250 (0.149)*
STAFFS			0.620 (0.291)**	0.626 (0.292)**	0.597 (0.329)*
HEAD				0.338 (0.177)*	0.501 (0.190)***
INTERCPT	-0.570 (0.196)***	-1.806 (0.400)***	-5.412 (1.271)***	-5.706 (1.282)***	-4.172 (1.380)***
-2 Log L	1722.0	1694.1	1635.1	1631.5	1420.5
Chi-square	121.5	149.4	208.3	212.0	170.4
Concordant	67.0%	69.1%	73.1%	73.2%	72.7%

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

The youth, prime-age women, low-educated persons, new entrants, and discouraged workers are clearly less likely to participate in government programmes in relation to prime-

age male, university graduates, workers with previous job career, and the open-unemployed, respectively. Older workers and persons with longer unemployment spells are more likely to participate in programmes. On the other hand, poverty and new entrance into the labour market have no significant effect on programme participation likelihood.

All these results are not much different from the results shown in Chart 5.1, except the cases for the middle school educated people and for new entrants. Though Chart 5.1 - which features aggregate data - shows that the least educated did not have a lower programme participation rate than the university graduates, our Logit model 5.A1 indicates that the least educated (MIDDLE) are less likely to participate relative to the highest educated. For the new entrants, it is the opposite case. Though they showed a low programme participation rate with aggregate data (in Chart 5.1), they do not have a statistically significant coefficient in Logit models when other variables are controlled. This may be due mainly to the fact that “low education” correlates positively to the elderly and “new entrants” correlate negatively to the elderly.

*With additional variables (model 5.A2-model 5.A4)*

In model 5.A2, we add several additional variables to model 5.A1. Regional labour market variables, such as regional unemployment rate (URATE) and living areas (URBAN and PES areas), are added in model 5.A2. In model 5.A3, we also add institutional variable (EIS: covered by Employment Insurance System) and implementation variables, such as PW\_BUDG (budget allocation for public works), TR\_BUDG (budget allocation for the Employment Promotion Training) and STAFFS (the distribution of PES staff). The variables related to budget allocations and PES staffs have a strong negative correlation to regional unemployment rates (see Annex Table 1.3), which demands cautious interpretation of regression results. Lastly, we add the variable HEAD (household heads) in model 5.A4, which also correlates negatively to youths and prime-age women (see Annex Table 5.3).

Persons living in a region with higher unemployment rates (URATE) are more likely to participate in programmes in models 5.A2, 5.A3 and 5.A4, which suggests some desirable distribution of programmes. In model 5.A3 and in model 5.A4, the coefficient of URATE becomes larger, but it may be overestimated due to the strong correlation between UREAE and other implementation variables (PW\_BUDG, TR\_BUDG and STAFFS).

Concerning the PES areas, persons living in PES areas 4 and 5 are more likely to

participate in programmes in model 5.A2, compared with persons living in the reference PES area (SEOUL-CHUNG). When institutional and implementation variables are controlled, however, the positive coefficients for PESAREA4 and PESAREA5 disappear in models 5.A3 and 5.A4. It suggests that the budget allocations and the distribution of PES staff among PES areas are favourable to PES area4 and PES area5 - may contribute to their better performances in terms of programme participation probability. On the other hand, persons living in PES area2 - who have shown the highest probability of being unemployed in chapter 3 (see Table 3.3) - have a significantly lower probability of programme participation in models 5.A3 and 5.A4. The poorer performance of PES area2, in terms of programme participation, cannot be explained by the budget allocation or the number of PES staff. Other unobservable factors may bring about implementation problems in PES area2.

We can examine *institutional effects* on programme distribution in model 5.A3. The unemployed who have worked in firms covered by the EIS are much more likely to participate in government programmes. This reflects the result that persons leaving jobs in workplaces covered by the EIS could receive unemployment benefits and could have a higher probability of participation in job training programmes supported by the EIS. This result could be interpreted by two different explanations. One is that the EIS played a great role in coping with the unexpected unemployment problems, and the other is that persons who were not covered by the EIS had less chances of benefiting from government programmes. We should here note that many of persons excluded from the EIS - such as daily or temporary workers, workers in small sized firms, or part-timers - have a higher probability of being unemployed, relative to persons covered by the EIS.

On the other hand, the effect on programme participation likelihood on the central government's budget allocation to local government is not significant for the budgets of local governmental public works (PW\_BUDG), but it is significantly positive for the Employment Promotion Training budgets (TR\_BUDG). Though these two variables are not enough to represent the whole structure of budget allocation in total government programmes, we can see the importance of budget allocation criteria.

Another important and interesting factor is that persons living in the areas having more staff in the PES are more likely to participate in government programmes (models 5.A3 and 5.A4). This result suggests that increased staff in the PES play an important role in enhancing programme participation likelihood of the unemployed, so the arrangement of PES staff in local agencies is also important.

After controlling institutional and implementation variables, the effects of other variables on programme participation do not change much, but several changes in coefficients are meaningful. Comparing model 5.A3 with model 5.A2, we can see that the negative effect of MIDDLE (the least educated) on programme participation likelihood decreases and becomes statistically insignificant after the institutional variables are controlled. And the negative effects of YOUTH, WOMEN and HIGH become weaker in model 5.A3. All these results show that the low probabilities of programme participation of the low-educated, the youth, and prime-age women are partially based on institutional factors - such as EIS coverage.

Household heads (HEAD) are more likely to participate in programmes (model 5.A4). When the variable HEAD is controlled, the negative coefficients of YOUTH and WOMEN become smaller and statistically insignificant. This pattern was seen in Chapter 3, due to a strong negative correlation between YOUTH or WOMEN and HEAD. Therefore, the regression results need to be interpreted cautiously.

#### *Programmes excluding simple registration in PES (model 5.A5)*

In the last model of Table 5.3, we use the programme participants excluding simple registrants in PES (PROGRAM) as the dependent variable. If the registrants in PES cannot receive additional services, such as job placement services, unemployment benefits, or public works, they may not be included in the ‘programme participants in strict terms’. Thus, model 5.A5 may be useful in verifying the ‘real’ beneficiaries of programmes.

The differences between regression results of model 5.A5 and those of model 5.A4 may be summarized by the following three points: Firstly, low-educated persons have a lower participation probability in model 5.A5 than in model 5.A4. Secondly, persons with longer unemployment spells are not more likely to participate in programmes in model 5.A5 than in model 5.A4. Lastly, household heads are more likely to participate in programmes in model 5.A5 than in model 5.A4.

These results suggest that programme distribution among workers is more unequal when we exclude the simple PES registrants from programme participants. Low-educated people and non-household-heads (for example, the youth) are more easily excluded from the ‘main’ programmes than the ‘total’ programmes.

#### 5.2.3 Programme participation likelihood of paid-workers (Table 5.4)

We will now look at the effect of previous job characteristics on programme participation probability. We can verify this with a sample for the unemployed who used to be paid workers. Table 5.4 shows the results of Logit analysis for programme participation likelihood of the unemployed who were wage-workers. Model 5.B2 and model 5.B3 feature several independent variables related to the previous job: such as level of monthly earnings (LOWEARN), occupation (MANUAL), industry (MANU), employment status (PTEMP), part-timers (PPART), establishment size (SIZE), and reason of leaving the recent job (DISPLACE). We classify the five variables of the PES areas (from PESAREA1 to PESAREA5) into two variables (PES\_SW and PES\_SW). We exclude several variables, such as POVERTY, URBAN, PW\_BUDG and TR\_BUDG, in order to enhance model fitness.

Table 5.4 Previous job characteristics and programme participation likelihood

	Model 5.B1	Model 5.B2	Model 5.B3
Sample	The unemployed who were former paid-workers (No. of Obs.: 1063)		
Dependent var.	TPROGRAM (Participants: 343)		PROGRAM (262)
YOUTH	-0.011 (0.220)	0.237 (0.227)	-0.176 (0.245)
ELDLY	0.301 (0.225)	0.340 (0.231)	0.107 (0.237)
WOMEN	-0.306 (0.254)	-0.116 (0.261)	-0.319 (0.282)
MIDDLE	0.049 (0.219)	-0.116 (0.241)	-0.111 (0.256)
HIGH	-0.477 (0.188)**	-0.585 (0.198)***	-0.640 (0.215)***
LOWEARN	0.101 (0.167)	0.149 (0.177)	0.142 (0.193)
SPELL_W	0.033 (0.012)***	0.026 (0.013)**	0.009 (0.014)
DISCOURA	-0.481 (0.216)**	-0.384 (0.219)*	-0.134 (0.234)
URATE	0.151 (0.064)**	0.155 (0.065)**	0.103 (0.069)
PES_SE	-0.274 (0.164)*	-0.222 (0.170)	-0.070 (0.183)
PES_SW	0.372 (0.209)*	0.374 (0.213)*	0.422 (0.227)*
EIS	1.058 (0.161)***	0.921 (0.178)***	0.876 (0.186)***
STAFFS	0.345 (0.278)	0.287 (0.285)	0.333 (0.303)
HEAD	0.491 (0.193)**	0.376 (0.196)*	0.622 (0.211)***
MANUAL		0.356 (0.173)**	0.040 (0.187)
MANU		-0.212 (0.170)	0.113 (0.180)
PTEMP		0.098 (0.186)	0.257 (0.203)
PPART		-0.407 (0.239)*	-0.313 (0.262)
SIZE		0.094 (0.029)***	0.105 (0.031)***
DISPLACE		0.611 (0.158)***	0.329 (0.170)*
INTERCPT	-2.831 (0.751)***	-3.447 (0.779)***	-3.259 (0.825)***
-2 Log L	1211.3	1181.3	1053.9
Chi-square	125.1	155.2	134.1
Concordant	70.8%	72.4%	72.5%

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Model 5.B1 starts with several basic independent variables, and features TPROGRAM (total programmes) as a dependent variable. So model 5.B1 is similar to model 5.A3 of Table 5.3 which used the sample of total unemployed people. With the new sample for wage-workers, we cannot see significant effects of sex and age on programme participation likelihood, which may be partly due to the smaller sample size. Though most of the coefficients are smaller in model 5.B1 than in model 5.A3, we can see that the effects of HIGH, SPELL\_W, DISCOURA, URATE, EIS and HEAD on programme participation likelihood are fundamentally similar to those in the previous models in Table 5.3. The effect of low earnings (LOWEARN) on programme participation probability is positive, but not statistically significant, which is similar to the effect of POVERTY in Table 5.3.

Model 5.B2 has additional variables related to the characteristics of the previous job. Manual workers (MANUAL), full-time workers (PPART: part-timers), persons who worked in larger enterprise (SIZE), and displaced workers (DISPLACE) are more likely to participate in programmes compared with non-manual workers, part-timers, persons in smaller enterprises and voluntary quitters. However, the variables related to the manufacturing sector (MANU) and temporary employment (TEMP) do not have significant effects on participation likelihood.

By comparing model 5.B3 with model 5.B2, we can see that the effects of other variables (except variables related to educational attainment) are reduced when job-related variables are controlled, though they do not change much. The effects of variables related to previous work on programme participation likelihood are stronger and more significant than those of other variables, such as YOUTH, ELDLY, WOMEN and MIDDLE.

Among these results, we pay particular attention to the effects of PPART and SIZE. The fact that part-timers and workers in smaller size firms have a low probability of programme participation brings about policy concerns in terms of programme distribution.

The last model of Table 5.4 (model 5.B3) has PROGRAM (programme participants excluding simple PES registrants) as the dependent variable. We can compare model 5.B3 with model 5.B2, as we compared model 5.A4 with model 5.A5 in Table 5.3. The results of the comparison are similar to those of Table 5.3. Non-household-heads and high school educated people (HIGH) have more difficulty in ‘main’ programmes than in total programmes, and unemployment spells (SPELL\_W) has no significant effect on participation in ‘main’ programmes.

#### 5.2.4 Programme participation likelihood by PES areas (Table 5.5)

In the previous models, we discovered the effects of PES areas on programme participation likelihood. As the sample size is not large enough to compare all six PES areas, we study three PES areas: Central PES (PESAREA0 and PESAREA1), South-East PES (PESAREA2 and PESAREA3), and South-West PES (PESAREA4 and PESAREA5). Among the previous seven models, from model 5.A2 to model 5.B3, three models (model 5.A3, 5.A4 and 5.B1) indicate that persons living in the South-East PES area are significantly less likely to participate in programmes, and five models (model 5.A2, 5.A5, 5.B1, 5.B2, and 5.B3) show that persons living in the South-West PES area are significantly more likely to participate in programmes. Though these models take a little different dependent and independent variables, on the basis of our regression results, we may consider the South-West PES as the best performer in terms of programme participation, the South-East PES as the worst performer, and the Central PES as a medium performer. However, even though our model 5.A3 in Table 5.3 suggests that better performance of South-West PES is based on a more favourable situation in budget allocation and the number of PES staff, we cannot verify additional reasons for different performances among PES areas.

In any case, we can surmise that the programme distribution among workers' groups may also be different by PES areas. We have already seen that a higher overall programme participation rate tends to be associated with more equal programme distributions among worker groups (see 4.1.2 of Chapter 4). If this rule can be applied to Korean LMPs, we can assume that programme distributions are likely to be more equal in PES areas with high programme participation probability (South-West PES) than in PES areas with low programme participation probability.

In Table 5.5, we can verify whether programme distribution is more equal in better PES areas than in worse PES areas. We separate the total unemployed sample into three sub-samples by PES areas. Because the sample size is different among PES areas, and the sizes are relatively small, regression results should be interpreted cautiously. A smaller sample size leads to a larger standard error. We then restrict independent variables to several basic variables, and exclude the variable HEAD (household heads) to better identify the effect of sex and age on programme participation. Using these reduced variables, we can focus on programme distribution among sex & age, educational and poverty groups.

Table 5.5 Programme participation likelihood by PES areas

	Model 5.C1	Model 5.C2	Model 5.C3
Sample	Central PES (Obs: 698)	South-East PES (Obs: 583)	South-West PES (Obs: 305)
Dependent var.	TPROGRAM (189)	TPROGRAM (139)	TPROGRAM (97)
YOUTH	-0.666 (0.276)**	-0.484 (0.299)	0.074 (0.387)
ELDLY	0.798 (0.305)***	0.139 (0.349)	0.637 (0.452)
WOMEN	-0.015 (0.254)	-1.292 (0.331)***	-0.514 (0.423)
MIDDLE	-0.050 (0.286)	-0.310 (0.335)	-0.087 (0.416)
HIGH	-0.534 (0.248)**	-0.511 (0.279)*	-0.390 (0.348)
POVERTY	0.060 (0.199)	-0.068 (0.248)	0.472 (0.289)
ENTRANT	-0.061 (0.255)	-0.060 (0.302)	0.088 (0.329)
SPELL_W	0.038 (0.016)**	0.070 (0.019)***	0.024 (0.022)
DISCOURA	-1.226 (0.287)***	-0.461 (0.317)	-0.605 (0.317)*
URBAN	-0.020 (0.447)	0.330 (0.400)	0.047 (0.293)
EIS	0.885 (0.253)***	1.422 (0.276)***	1.348 (0.375)***
INTERCPT	-1.072 (0.556)*	-1.786 (0.544)***	-1.162 (0.543)**
-2 Log L	720.3	558.6	350.4
Chi-square	94.3	82.7	30.9
Concordant	73.1%	74.8%	70.0%

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Comparing the three models of Table 5.5 (from model 5.C1 to model 5.C3), we can obtain the following significant results regarding programme distribution effects of YOUTH, WOMEN, MIDDLE, HIGH and POVERTY:

1) For the youth (YOUTH), Central PES has a significantly negative coefficient, and South-East PES also has a negative value but it is not statistically significant. However, the youth in South-West PES are not less likely to participate in programmes relative to prime-age males.

2) For prime-age women (WOMEN), South-East PES has a strong negative coefficient, while Central PES and South-West PES do not have significant values.

3) For low-educated people (MIDDLE and HIGH), only South-West PES does not have significant coefficients in MIDDLE and HIGH. Low-educated people are not less likely to participate in programmes relative to highly educated people in South-West PES.

4) For the poor (POVERTY), the coefficient in South-West PES is comparatively larger than in the other two PES areas. Though the coefficient for POVERTY in South-West PES is not statistically significant at the significance level 0.10, we must consider that the standard error is relatively small (standard error=0.289, p=0.1019).

When we compare only two PES areas, South-West PES (model 5.C3 - best performer)



with South-East PES (model 5.C2 - worst performer), it is clear that more equal programme distribution is found in South-West PES. The negative effects of YOUTH, WOMEN, MIDDLE and HIGH on programme participation likelihood are much stronger in South-East PES (the worst performer) than in South-West PES (the best performer). The poor are more likely to get access to programmes in South-West PES than in South-East PES.

From our models, we can conclude that higher participation probabilities are associated with more equal programme distributions.

### 5.3 Programme participation and non-participation by programme types

This Section addresses the probability of participation in individual programmes in detail. We also analyse several barriers to programme participation with the data from the URS. Programmes are divided into four categories: public works, training, PES and job placement, and unemployment benefits.

#### 5.3.1 Overview: comparison between programmes (Table 5.6)

Table 5.6 shows the results of Logit analysis for programme participation likelihood by programmes. Since the number of participants in individual programmes is relatively small, we only briefly review the participation likelihood by programmes. We review the participation likelihood by worker groups, comparing the coefficients of variables among different programmes.

Table 5.6 Programme participation likelihood by programmes

	Model 5.D1	Model 5.D2	Model 5.D3	Model 5.D4	Model 5.D5
Sample	The unemployed (No. of Obs.: 1586)				
Dependent variable	PW (Participants: 161)	TRAIN (Participants: 66)	PES (Participants: 240)	JOBP (Participants: 42)	UNBE (Participants: 75)
YOUTH	-0.809 (0.335)**	0.679 (0.420)	0.030 (0.260)	0.606 (0.554)	-1.180 (0.426)***
ELDLY	0.791 (0.252)***	-0.405 (0.636)	0.600 (0.237)**	-0.181 (0.631)	-0.243 (0.377)
WOMEN	-0.269 (0.307)	0.050 (0.490)	-0.449 (0.276)	-0.817 (0.748)	-0.696 (0.534)***
MIDDLE	0.107 (0.271)	-1.752 (0.533)***	0.096 (0.236)	-0.453 (0.552)	-1.215 (0.365)***
HIGH	-0.746 (0.263)***	-0.389 (0.288)	-0.415 (0.200)**	-0.360 (0.381)	-0.931 (0.303)***
POVERTY	0.237 (0.187)	0.016 (0.300)	-0.061 (0.167)	0.116 (0.378)	-0.809 (0.313)**
ENTRANT	0.099 (0.247)	-0.416 (0.349)	0.092 (0.203)	0.682 (0.421)	
SPELL_W	0.006 (0.015)	0.067 (0.024)***	0.067 (0.014)***	0.045 (0.029)	-0.044 (0.021)**
DISCOURA	-0.504 (0.253)**	-0.657 (0.405)	-1.093 (0.249)***	-1.493 (0.709)**	-0.996 (0.497)**
URATE	0.267 (0.109)**	-0.058 (0.180)	0.577 (0.143)***	0.591 (0.293)**	0.121 (0.097)
URBAN	-0.180 (0.330)	-0.165 (0.467)	-0.428 (0.296)	-1.081 (0.567)*	0.179 (0.533)
PES_SE	-0.088 (0.297)	-0.299 (0.459)	-1.171 (0.349)***	-0.104 (0.786)	0.244 (0.288)
PES_SW	0.094 (0.465)	0.146 (0.597)	-1.001 (0.540)*	0.848 (1.148)	0.946 (0.354)***
EIS	-0.502 (0.277)*	0.982 (0.313)***	1.084 (0.193)***	1.457 (0.400)***	
PW_BUDG	0.675 (0.649)		0.855 (0.590)	-0.458 (1.615)	
TR_BUDG		-0.076 (0.233)	0.285 (0.190)	-0.003 (0.345)	
STAFFS	0.659 (0.357)*	0.443 (0.519)	0.636 (0.329)*	2.041 (0.708)***	
HEAD	0.159 (0.245)	0.318 (0.391)	-0.070 (0.216)	0.171 (0.483)	1.536 (0.400)***
INTERCPT	-5.256 (1.567)***	-3.594 (1.795)**	-8.044 (1.624)***	-9.742 (3.576)***	-3.182 (0.882)***
_2 Log L	930.9	492.0	1187.1	329.5	489.2
Chi-square	110.2	53.9	159.7	55.9	114.6
Concordant	74.3%	75.4%	73.8%	79.7%	82.9%

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

The unemployed youth (YOUTH) have the most difficulty in receiving unemployment benefits (coefficient -1.180), and they are less likely to participate in public works (-0.809) relative to prime-age males. In training and job placement services, the coefficients of YOUTH are positive but statistically insignificant.

For the unemployed elderly (ELDLY), they seem to get easier access to public works (0.791) and to registration in PES (0.600) relative to prime-age males. In spite of their frequent registration in PES, they do not have more benefits from job placement services.

For unemployed prime-age women (WOMEN), they have a lot of difficulty in receiving unemployment benefits (-0.696). They also have a strong negative coefficient concerning job placement, though it is not statistically significant.

For the least educated people (MIDDLE), they have a particular difficulty in participating in training (-1.752) and in receiving unemployment benefits (-1.215) relative to the university graduates.

For the high school educated (HIGH), they have a strong negative coefficient in every programme. Among the programmes, unemployment benefits (-0.931), public works (-0.746) and registration in PES (-0.415) are especially unfavourable to them.

For the unemployed poor (POVERTY), they are significantly less likely to receive unemployment benefits (-0.809) relative to the non-poor. This serious problem may come from the fact that the poor are not familiar with regular jobs, which are a condition for being covered by the EIS.

For the unemployed with longer unemployment spells (SPELL\_W), they are less likely to receive unemployment benefits (-0.044) but they are more likely to participate in training (0.067) and registration in PES (0.067).

For the unemployed living in areas with higher unemployment rates (URATE), they are more likely to register in PES (0.577), to receive job placement services (0.591), and to participate in public works (0.267). This suggests that local governments and regional employment agencies with higher unemployment rates coped actively with soaring unemployment during the crisis.

The unemployed covered by the EIS (EIS) are much more likely to participate in training (0.982), to register in PES (1.084) and to receive job placement services (1.475). This may reflect the fact that a large scale RETU (Re-employment Training for the Unemployed) was

enacted by the EIS, and that beneficiaries of unemployment benefits are obliged to register in PES. However, the unemployed covered by the EIS are less likely to participate in public works (-0.502), which is due to the fact that most public work programmes exclude the beneficiaries of unemployment benefits by their application criteria in which the EIS workers are weighted negatively in a scored screening rule.

For the unemployed living in the areas with more PES staff (compared with the number of unemployed people) (STAFFS), they are much more likely to receive job placement services (2.014). As Korea has a weak PES system, the additional number of staff may create a great marginal effect in terms of job placement. The variable STAFFS also has a positive value in public works and PES registration.

Lastly, for household heads (HEAD), they are much more likely to receive unemployment benefits (1.536).

Generally, the most unequal distribution of programmes is seen in unemployment benefits. This due to the fact that the narrow coverage of the EIS causes serious distributional problems.

### 5.3.2 Public works (Table 5.7 and Table 5.8)

#### *The selection rate and creaming-off (Table 5.7)*

By dividing the unemployed into applicants and non-applicants of public works, we can analyse the reasons for the low participation in public works. The URS provides information on applicants of public works. We can calculate *the application rates* by dividing the number of applicants by the number of the unemployed. We then calculate *the selection rates* by dividing the number of participants by the number of applicants. The participation rate (participants/the unemployed) can be obtained by multiplying the application rate by the selection rate. A lower participation rate in a group comes from a lower application rate, a lower selection rate, or both. Above all, we focus on the selection rates, which may reflect the creaming-off effects among applicants.

Table 5.7 shows the separate information on applicants, participants and their rates by worker groups. The sample comprises the data with missing values in household incomes and properties.

Table 5.7 Composition of participants and non-participants in public works

(persons, percent)

		Persons				Percent			Miss- ing values
		The unemployed				Appli cation Rate (A/U)	Select ion Rate (S/A)	Partici pation Rate (S/U)	
		Applied(A)		Non Appli ed					
Select ed(S)	Reject ed								
Total		1799	176	150	1473	18.1	54.1	9.8	
Age & Gender	Prime-age male (30-54)	486	60	37	389	20.0	62.1	12.4	
	The youth (17-29)	641	28	12	601	6.2	70.2	4.4	
	The elderly (55-66)	221	53	44	124	44.1	54.6	24.1	
	Women (30-54)	451	35	57	360	20.2	38.0	7.7	
Household Head	Dependent	1124	78	74	973	13.5	51.2	6.9	
	Head	674	99	76	500	25.8	56.6	14.6	
Education	Middle & under	558	100	91	366	34.4	52.4	18.0	
	High school	864	48	45	771	10.7	51.5	5.5	
	College & over	377	28	13	335	11.0	67.7	7.4	
Poverty	Non-poverty	1051	88	69	894	14.9	55.9	8.3	213
	Poverty	535	65	60	411	23.3	51.9	12.1	
Place of Living	Rural area	216	24	18	174	19.5	56.7	11.1	
	Urban area	1582	152	131	1299	17.9	53.7	9.6	
New Entrants	Worked before	1293	139	126	1028	20.5	52.3	10.7	
	New Entrants	506	38	23	445	12.0	61.8	7.4	
Unemployment Spells	Less than 12 months	753	61	26	666	11.5	70.3	8.1	
	12-19 months	1046	115	124	807	22.9	48.2	11.0	
Discouraged Workers	Open unemployed	1378	148	131	1099	20.3	53.0	10.7	
	Hidden unemployed	420	28	18	374	11.0	60.5	6.7	
PES area	Central	780	71	62	647	17.1	53.4	9.1	
	Southeast	676	66	60	550	18.6	52.7	9.8	
	Southwest	342	39	28	276	19.4	58.0	11.3	
Covered by EIS	Not covered	1521	159	125	1238	18.6	56.0	10.4	
	Covered	277	17	25	235	15.2	41.2	6.3	
Monthly Earning (won)	More than 0.7 million	722	59	44	620	14.2	57.3	8.1	445
	Less than 0.69 million	632	80	79	474	25.0	50.3	12.6	
Occupation	Non Manual workers	656	43	42	570	13.1	50.6	6.6	533
	Manual workers	610	86	73	450	26.1	54.2	14.2	
Industry	Non manufacturing	922	94	86	742	19.5	52.1	10.2	530
	Manufacturing	347	37	29	281	18.9	55.8	10.5	
Employment Status	Non-regular	607	79	81	448	26.2	49.4	13.0	521
	Regular	670	52	35	583	13.0	60.2	7.8	
Part-timers	Full-timers	931	101	79	751	19.4	56.3	10.9	691
	Part-timers	177	13	15	149	15.9	47.2	7.5	
Firm Size	10 persons and more	637	69	52	517	18.9	56.8	10.8	546
	1-9 persons	615	55	60	500	18.7	47.7	8.9	
Reason of Leaving	Voluntary reasons	578	40	35	504	12.9	53.5	6.9	526
	Involuntary	695	91	81	522	24.8	53.1	13.2	
* Correlation between application rates and selection rates (Obs.: 38 groups): -0.334 (p= 0.040).									

18.1% of the total unemployed people applied to public works, and 54.1% of the applicants were selected into programmes. As a result, 9.8% of the unemployed participated in programmes (see the first line in Table 5.7). The low participation rate of the youth is due to their lowest application rate (6.2%), but for the prime-age women, it is due to their lowest selection rate (38.0%). We are mainly concerned about low selection rates, especially for the disadvantaged groups.

Which groups experienced lower selection rates? We can see that usually disadvantaged groups have higher application rates, but they very often experience lower selection rates. The least educated persons record the highest application rates (34.4%). But they are selected less (52.4%) than the university graduates (67.7%). This serious case is seen in many disadvantaged groups: the poor, persons with longer unemployment spells, low-wage workers, and irregular workers. All these disadvantaged groups record higher application rates than their counterparts, but without any exception they suffer lower selection rates.

We calculate the Pearson's correlation between the application rates and the selection rates among 38 sub-groups. We find the strong negative correlation between them: -0.334. A higher application rate is associated with lower selection rates. There may be strong competition for programme participation among groups and within disadvantaged groups. In this process, disadvantaged persons may be easily excluded. Other reasonable reasons for exclusions cannot be found in our data. It is possible that the participation criteria related to the limitation in 'the times of programme participation' may bring about these reverse substitutions. Those who participated in three consecutive stages were excluded from participating in the next stage (usually one stage continues for three months).

#### *Participation and selection likelihood (Table 5.8)*

Table 5.8 shows the results of Logit analysis for application (dependent variable: APPLY\_PW) and selection likelihood (dependent variable: SEL\_PW) for public works. Participation likelihood is seen in the last column.

The elderly, the poor, persons with longer unemployment spells and persons living in areas with higher unemployment rates, with greater budgets, and with more PES staff are more likely to apply for public works, other things being equal (model 5.D1-1). On the contrary, the youth, the high school educated and discouraged workers are less likely to apply for public works.

Table 5.8 Application and selection likelihood for public works

	Model 5.D1-1	Model 5.D1-2	Model 5.D1
Sample	The unemployed (No. of Obs: 1586)	Applicants for public works (No. of Obs: 281)	The unemployed (No. of Obs: 1586)
Dependent var.	APPLY PW (281)	SEL PW (152)	PW (161)
YOUTH	-0.681 (0.282)**	-0.598 (0.598)	-0.809 (0.335)**
ELDLY	0.994 (0.220)***	-0.381 (0.379)	0.791 (0.252)***
WOMEN	0.323 (0.247)	-1.685 (0.475)***	-0.269 (0.307)
MIDDLE	0.348 (0.229)	-0.239 (0.489)	0.107 (0.271)
HIGH	-0.505 (0.220)**	-0.385 (0.475)	-0.746 (0.263)***
POVERTY	0.448 (0.153)***	0.018 (0.285)	0.237 (0.187)
ENTRANT	-0.050 (0.201)	0.484 (0.381)	0.099 (0.247)
SPELL_W	0.052 (0.013)***	-0.139 (0.032)***	0.006 (0.015)
DISCOURA	-0.637 (0.207)***	0.055 (0.423)	-0.504 (0.253)**
URATE	0.381 (0.091)***	0.066 (0.169)	0.267 (0.109)**
URBAN	-0.301 (0.277)	0.328 (0.579)	-0.180 (0.330)
PES_SE	-0.252 (0.249)	0.177 (0.448)	-0.088 (0.297)
PES_SW	-0.168 (0.394)	0.171 (0.717)	0.094 (0.465)
EIS	-0.232 (0.221)	-1.417 (0.442)***	-0.502 (0.277)*
PW_BUDG	1.000 (0.548)*	-0.033 (1.029)	0.675 (0.649)
STAFFS	0.918 (0.302)***	-0.137 (0.530)	0.659 (0.357)*
HEAD	0.320 (0.208)	-0.754 (0.392)*	0.159 (0.245)
INTERCPT	-7.051 (1.313)***	2.951 (2.366)	-5.256 (1.567)***
-2 Log L	1244.8	341.7	930.9
Chi-square	237.3	46.1	110.2
Concordant	77.8%	71.9%	74.3%

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Regarding the selection likelihood for public works (model 5.D1-2), prime-age women, persons with longer unemployment spells, persons non-covered by the EIS, and household heads are less likely to be selected for programme participation, other things being equal. Among these results, the negative effect of household heads (HEAD) on selection likelihood was not expected, because the scored screening rule of participation criteria gave a weighted score for them.

All these results are reflected in the last column of Table 5.8: the participation likelihood in public works.

### 5.3.3 Job training (Table 5.9 and 5.10)

#### *Reasons of non-participation in training (Table 5.9)*

Table 5.9 Reasons of non-participation in training programmes

(persons, percent)

		No need for training	Information deficiency	Lack of training chance	Livelihood problems	No good contents of training	Statistics
Total: 1533* (100.0%)		698 (45.6)	361 (23.5)	170 (11.1)	170 (11.1)	134 (8.7)	
Sex and Gender	Prime-age male	204 (46.7)	69 (15.7)	38 (8.7)	84 (19.1)	43 (9.8)	X <sup>2</sup> =104.1 P=0.001
	The youth (17-29)	271 (50.8)	116 (21.8)	64 (12.1)	20 (3.8)	62 (11.5)	
	Elderly (55-66)	68 (39.0)	54 (31.0)	18 (10.4)	25 (14.0)	10 (5.6)	
	Women (30-54)	155 (40.0)	122 (31.4)	50 (12.8)	42 (10.7)	20 (5.1)	
Household Head	Head	261 (45.3)	117 (20.3)	45 (7.8)	103 (17.9)	51 (8.8)	X <sup>2</sup> =52.4 P=0.001
	Dependent	437 (45.7)	244 (25.5)	126 (13.1)	67 (7.0)	83 (8.7)	
Education	Middle & under	186 (37.9)	154 (31.4)	44 (9.0)	80 (16.4)	26 (5.4)	X <sup>2</sup> =95.5 P=0.001
	High school	331 (45.2)	167 (22.7)	104 (14.2)	68 (9.3)	63 (8.6)	
	College & over	181 (58.6)	40 (12.9)	22 (7.2)	21 (6.8)	45 (14.5)	
Poverty* (179)	Poverty	183 (39.6)	116 (25.0)	50 (10.8)	82 (17.7)	31 (6.7)	X <sup>2</sup> =33.1 P=0.001
	Others	431 (48.3)	204 (22.9)	94 (10.5)	74 (8.3)	90 (10.0)	
Place of Living	Urban area	607 (45.5)	323 (24.3)	143 (10.7)	150 (11.2)	110 (8.3)	X <sup>2</sup> =6.1 P=0.188
	Rural area	92 (45.8)	38 (18.8)	27 (13.5)	20 (10.0)	24 (11.8)	
Job Experience	New entrants	215 (52.0)	95 (23.1)	43 (10.5)	22 (5.4)	38 (9.1)	X <sup>2</sup> =22.1 P=0.006
	Worked before	483 (43.2)	266 (23.7)	127 (11.3)	148 (13.2)	96 (8.6)	
Unemp. spells	Less than 12 Ms	339 (52.0)	119 (18.3)	55 (8.4)	87 (13.4)	51 (7.9)	X <sup>2</sup> =37.4 P=0.001
	12-19 months	360 (40.8)	241 (27.4)	115 (13.1)	82 (9.4)	82 (9.4)	
Discouraged workers	Hidden unemp.	175 (50.2)	84 (24.1)	43 (12.3)	22 (6.2)	25 (7.3)	X <sup>2</sup> =13.5 P=0.009
	Open unemp.	523 (44.2)	277 (23.4)	127 (10.8)	148 (12.5)	108 (9.2)	
PES Areas	Central	312 (47.2)	163 (24.6)	59 (8.9)	75 (11.4)	53 (8.0)	X <sup>2</sup> =9.4 P=0.307
	Southeast	268 (46.0)	126 (21.7)	73 (12.5)	62 (10.6)	54 (9.3)	
	Southwest	118 (40.9)	72 (25.0)	39 (13.5)	33 (11.3)	27 (9.3)	
Covered by EIS	Covered by EIS	102 (44.3)	47 (20.4)	25 (10.9)	24 (10.6)	32 (13.8)	X <sup>2</sup> =9.1 P=0.060
	Not covered	597 (45.8)	314 (24.1)	145 (11.1)	146 (11.2)	102 (7.9)	
Monthly Earning* (367)	Less than 0.69	236 (43.4)	142 (26.2)	59 (10.9)	65 (11.9)	41 (7.6)	X <sup>2</sup> =6.0 P=0.196
	More than 0.7	278 (44.6)	131 (21.0)	69 (11.1)	82 (13.1)	64 (10.3)	
Occupation *(447)	Manual workers	190 (35.9)	133 (25.2)	60 (11.4)	105 (19.9)	40 (7.6)	X <sup>2</sup> =59.6 P=0.001
	Non-manual	300 (53.8)	106 (19.0)	56 (10.1)	40 (7.1)	56 (10.0)	
Industry* (451)	Manufacturing	117 (38.7)	87 (28.8)	30 (9.9)	46 (15.0)	23 (7.6)	X <sup>2</sup> =14.4 P=0.006
	Non manu.	372 (47.5)	152 (19.4)	86 (11.0)	100 (12.7)	73 (9.4)	
Employment Status*(442)	Regular	257 (45.7)	136 (24.1)	52 (9.2)	60 (10.7)	58 (10.2)	X <sup>2</sup> =13.3 P=0.010
	Non-regular	238 (44.7)	105 (19.7)	66 (12.3)	85 (15.9)	39 (7.3)	
Firm size* (465)	1-9 persons	246 (46.1)	109 (20.5)	53 (9.9)	75 (14.2)	50 (9.3)	X <sup>2</sup> =2.9 P=0.568
	10 & over	240 (44.5)	128 (23.7)	61 (11.2)	65 (12.1)	46 (8.6)	
Reason of leaving* (461)	Involuntary	255 (41.8)	143 (23.4)	57 (9.4)	103 (16.8)	52 (8.6)	X <sup>2</sup> =19.4 P=0.001
	Voluntary	240 (49.8)	97 (20.2)	57 (11.9)	43 (8.9)	44 (9.2)	

Note : \* Numbers of missing values are given in parentheses.



The URS provides rich information on the reasons of non-participation in government-supported training programmes. The questionnaires were given to the unemployed who did not participate in training. The reasons of non-participation are separated into five categories: no need for training, information deficiency on training programmes, lack of training opportunity, livelihood problems in the period of training, and deficiency in contents of training.

Table 5.9 reports the reasons of non-participation in training by worker groups. Our main interests are in the training needs and information deficiency on training programmes. Our data show that disadvantaged workers are aware of more training necessity, but they suffer more difficulties in getting access to training information. The third (no need for training) and the fourth column (information deficiency) show the opposite trends from each other. Those who are aware of training necessity (low values in the third column) suffer from insufficient training information (high values in the fourth column): the elderly, prime-age women, the least educated, the poor, persons with longer unemployment spells, manual workers and workers in the manufacturing sector.

Among the persons who are aware of training needs, information deficiency is the most important reason for non-participation. The information problem is the most serious for prime-age women and low-educated persons.

The lack of training opportunity is an important reason of non-participation for prime-age women, the high school educated, persons with longer unemployment spells, and irregular workers.

The problem of livelihood is also important for prime-age men, household heads, the least educated, the poor, manual workers, and irregular workers.

#### Logit analysis of the reasons of non-participation in training (Table 5.10)

We estimate three equations related to non-participation in training. Every model is a Logit model.

The first equation is the ‘training needs equation’. The sample is composed of the non-participants in training among the unemployed. The dependent variable is NEED\_TR. It has the value of one if the worker is aware of the training necessity, and zero if not.

The second equation is the ‘information deficiency equation’. Those who are aware of training necessity constitute this sample. The dependent variable is INFO\_TR: it has the value

of one if the worker could not participate in training due to information deficiency, and zero if she/he did not participate in training due to other reasons.

The last equation is the ‘training intention equation’, which may reflect the latent demand for training. The sample is composed of the unemployed at the date of the survey. The dependent variable is YES\_TR: it is equal to one if the worker has an intention to participate in training in the future, and zero if not.

In these three models, we use the same independent variables as we used in the previous models.

Table 5.10 Logit analysis for the reasons of non-participation in job training

	Model 5.D2-1	Model 5.D2-2	Model 5.D2-3	Model 5.D2
Sample	Non-participants in training (Obs.: 1354)	Persons who feel the need of training (Obs.: 740)	The unemployed at the survey date (Obs.: 742)	The unemployed (Obs.: 1586)
Dependent var.	NEED_TR(740)	INFO_TR (321)	YES_TR (245)	TRAIN (66)
YOUTH	0.149 (0.195)	0.697 (0.279)**	0.710 (0.309)**	0.679 (0.420)
ELDLY	0.256 (0.215)	0.516 (0.283)*	0.072 (0.311)	-0.405 (0.636)
WOMEN	0.262 (0.199)	0.613 (0.276)**	1.126 (0.304)***	0.050 (0.490)
MIDDLE	0.721 (0.184)***	0.953 (0.284)***	-0.373 (0.278)	-1.752 (0.533)***
HIGH	0.565 (0.155)***	0.569 (0.250)**	-0.011 (0.236)	-0.389 (0.288)
POVERTY	0.274 (0.126)**	-0.161 (0.168)	0.166 (0.186)	0.016 (0.300)
ENTRANT	-0.318 (0.148)**	0.188 (0.205)	-0.366 (0.217)*	-0.416 (0.349)
SPELL_W	0.028 (0.009)***	0.032 (0.014)**	0.048 (0.016)***	0.067 (0.024)***
DISCOURA	-0.311 (0.143)**	0.052 (0.201)	-0.127 (0.212)	-0.657 (0.405)
URATE	0.140 (0.081)*	-0.329 (0.119)***	0.036 (0.119)	-0.058 (0.180)
URBAN	0.153 (0.202)	0.617 (0.298)**	-0.006 (0.311)	-0.165 (0.467)
PES_SE	-0.287 (0.199)	0.259 (0.291)	0.326 (0.297)	-0.299 (0.459)
PES_SW	-0.049 (0.272)	0.531 (0.396)	0.287 (0.399)	0.146 (0.597)
EIS	0.089 (0.169)	0.010 (0.237)	0.573 (0.229)**	0.982 (0.313)***
TR_BUDG	0.208 (0.106)*	-0.313 (0.161)**	0.061 (0.158)	-0.076 (0.233)
STAFFS	0.000 (0.255)	-0.867 (0.357)**	-0.144 (0.370)	0.443 (0.519)
HEAD	-0.035 (0.168)	0.043 (0.234)	-0.209 (0.270)	0.318 (0.391)
INTERCPT	-2.196 (0.821)***	1.462 (1.186)	-2.271 (1.222)*	-3.594 (1.795)**
-2 Log L	1793.6	955.8	872.7	492.0
Chi-square	71.6	57.4	69.4	53.9
Concordant	62.7%	65.4%	68.0%	74.3%

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

The second column of Table 5.10 (model 5.D2-1) reports the results of Logit analysis for training needs. The low-educated, the poor, workers with previous job career, persons with longer unemployment spells, the open-unemployed, and persons living in the areas with

higher unemployment rates are more likely to be aware of the training necessity, other things being equal. It is interesting to see that persons living in the areas with more training budgets (relative to the number of unemployed people) are more likely to be aware of the training necessity.

The third column of Table 5.10 (model 5.D2-2) shows the information-deficiency likelihood of the unemployed who are aware of the training necessity. Most of the disadvantaged groups have positive coefficients on information deficiency likelihood: the youth, the elderly, prime-age women, the low-educated, and persons with longer unemployment spells. People living in urban areas are less likely to get access to training information (the positive effect on information deficiency), but persons living in the areas with higher unemployment rates are more likely to get access to training information (the negative effect on information deficiency).

It is interesting and important to note that persons living in the areas with more training budgets and more PES staff (relative to the number of unemployed people) are more likely to get access to training information (the negative effect on information deficiency). This suggests that the policy implementation process is an important factor in determining the accessibility to programmes.

The fourth column of Table 5.10 (model 5.D2-3) shows the intention of participation in training. The youth, prime-age women, persons with longer unemployment spells and persons covered by the EIS are more likely to have the intention to participate in training in the future.

As the intention of training participation may indicate the latent demand for training, it will be useful to compare the latent demand in model 5.D2-3 with the ‘realized’ participation likelihood of training in model 5.D2 (it is the same model with Table 5.6). Comparing the coefficients in model 5.D2-3 with those of model 5.D2, we can see that the coefficients for many variables in two models have similar values. However, for prime-age women (WOMEN) and the least educated (MIDDLE) the coefficients of model 5.D2-3 are much larger than those of model 5.D2. This suggests that ‘the realized participation’ cannot reflect ‘the latent training demand’ for these groups. It means that prime-age women and the least educated could not participate in training even though they wanted to. One of the reasons may of course be the insufficient information on training programmes, as the left model (model 5.D2-2) indicates.

The opposite case is seen in the EIS coefficient. Workers covered by the EIS have a larger coefficient in model 5.D2 (realized participation) than in model 5.D2-3 (latent training demand). One of the reasons for this may be based on the fact that training participants are often given the extended unemployment benefits for training periods, which is not permitted for persons who are not covered by the EIS.

#### 5.3.4 PES and job placement services (Table 5.11)

During the crisis, about 15% of the unemployed registered for PES. Among the registrants, only 18% received job placement services, which amounts to only 3% of the total unemployed (see Table 5.11). These disappointing results may be largely based on the worsened labour market situation. However, our model 5.D4 has already shown that the number of PES staff is a very important factor for increasing job placement (see Table 5.6).

In considering the low performance of PES in terms of job placement services, we investigate the distributional effects of public employment services. Table 5.11 reports the distribution of public employment services.

Though many of the elderly and the low-educated register in PES, they cannot succeed in getting new job by the PES. The matching rate (job finders/registrants) is very low for them. On the contrary, it is relatively high for the youth and the highly educated. Though the sample size is small, we can see that the gaps of matching rates between these groups are significant.

Persons with longer unemployment spells also have a high registration rate, but they have more difficulty in finding job by the PES.

Persons covered by the EIS and persons who worked in larger firms are the main beneficiaries of the PES.

Even though job matching for disadvantaged workers is more difficult than for average workers, these results are not reasonable. Our previous analyses suggest that a poor PES system results in less effective distribution of programmes.

Table 5.11 Composition of participants and non-participants in PES

(persons, percent)

		The unemployed (U)				Percent			Missing values
		Registration (R)	Not		Registration rate (R/U)	Match- ing Rate (M/R)	Benefi- ciary rate (M/U)		
			Matched (M)	Registered (U)					
Total		1799	279	50	1519	15.5	17.9	2.8	
Age & Gender	Prime-age male (30-54)	486	78	15	408	16.0	19.6	3.1	
	The youth (17-29)	641	84	26	557	13.1	31.2	4.1	
	The elderly (55-66)	221	70	5	151	31.8	7.7	2.5	
	Women (30-54)	451	47	3	404	10.5	6.8	0.7	
Household Head	Dependent	1124	147	30	977	13.1	20.3	2.7	
	Head	674	132	20	542	19.6	15.3	3.0	
Education	Middle & under	558	121	12	437	21.7	9.8	2.1	
	High school	864	95	20	769	11.0	21.4	2.4	
	College & over	377	63	18	314	16.7	28.2	4.7	
Poverty	Non-poverty	1051	163	28	888	15.5	17.5	2.7	213
	Poverty	535	77	13	458	14.4	17.1	2.5	
Place of Living	Rural area	216	36	7	180	16.7	19.3	3.2	
	Urban area	1582	243	43	1339	15.4	17.7	2.7	
New Entrants	Worked before	1293	218	33	1075	16.8	15.0	2.5	
	New Entrants	506	62	17	444	12.2	28.1	3.4	
Unemployment Spells	Less than 12 months	753	89	19	664	11.8	21.0	2.5	
	12-19 months	1046	191	31	855	18.2	16.5	3.0	
Discouraged Workers	Open unemployed	1378	254	47	1124	18.4	18.4	3.4	
	Hidden unemployed	420	26	3	395	6.1	12.7	0.8	
PES areas	Central	780	138	19	642	17.7	13.6	2.4	
	Southeast	676	91	18	585	13.4	20.3	2.7	
	Southwest	342	50	13	292	14.7	25.5	3.8	
Covered by EIS	Not covered	1521	202	33	1319	13.3	16.1	2.1	
	Covered	277	77	17	201	27.7	22.7	6.3	
Monthly Earning (won)	More than 0.7 million	722	127	22	595	17.6	17.1	3.0	445
	Less than 0.69 million	632	100	13	532	15.9	12.9	2.1	
Occupation	Non Manual workers	656	98	17	558	15.0	16.9	2.5	533
	Manual workers	610	116	17	494	19.0	14.7	2.8	
Industry	Non manufacturing	922	160	24	762	17.4	14.9	2.6	530
	Manufacturing	347	55	10	292	15.9	17.7	2.8	
Employment Status	Non-regular	607	89	14	518	14.6	15.6	2.3	521
	Regular	670	126	20	544	18.8	15.7	3.0	
Part-timers	Full-timers	931	174	27	757	18.7	15.6	2.9	691
	Part-timers	177	22	4	155	12.6	18.2	2.3	
Firm Size	10 persons and more	637	130	24	507	20.4	18.4	3.8	546
	1-9 persons	615	84	10	531	13.7	11.6	1.6	
Reason of Leaving	Voluntary reasons	578	67	11	512	11.5	16.2	1.9	526
	Involuntary	695	148	23	546	21.4	15.4	3.3	

### 5.3.5 Unemployment benefits (Table 5.12)

We have already seen that the distribution of unemployment benefits is the worst when compared to all other labour market programmes in Korea. Since the main reason for this undesirable result is the narrow coverage of the EIS, we must analyse the coverage of the EIS. And it will be useful to investigate the composition of beneficiaries within the wagedworker groups, since unemployment benefits are confined to them.

Table 5.12 shows the coverage of the EIS and the composition of beneficiaries with different samples. About 5% of the total unemployed received unemployment benefits during the crisis. The higher beneficiary rates correspond to the least disadvantaged groups: prime-age males (9.9%), household heads (9.7%), the higher-wage group (10.8%), regular workers (11.3%), and persons who worked at firms with more than 10 workers (11.5%). Moreover, those who received retirement allocations have the highest beneficiary rate (18.5%).

The coverage of the EIS is also similar to the beneficiary rates of the total unemployed. The highly educated, the non-poor and persons with shorter unemployment spells are largely covered by the EIS.

Among wagedworkers, about 10% received unemployment benefits (see the last column). Those who received retirement allocations (37.7%), the highly educated (14.2%), and regular workers (17.1%) have higher beneficiary rates of unemployment benefits.

Table 5.12 Composition of beneficiaries and non-beneficiaries of unemployment benefits

(persons, percent)

		The unemployed			Wage workers previously who quitted job after					
		(U)	Beneficiary		Jan.1998	Covered by EIS		Beneficiary		
			(B)	(B/U)	(W)	(E)	(E/W)	(B)	(B/E)	(B/W)
Total		1799	84	(4.7)	779	262	(33.6)	75	(28.4)	(9.6)
Age & Gender	Prime-age male(30-54)	486	48	(9.9)	277	119	(43.0)	44	(37.1)	(16.0)
	The youth (17-29)	641	13	(2.0)	273	74	(27.0)	11	(15.5)	(4.2)
	The elderly (55-66)	221	15	(6.8)	88	35	(40.1)	13	(36.4)	(14.6)
	Women (30-54)	451	8	(1.8)	142	34	(24.1)	6	(17.5)	(4.2)
Household Head	Dependent	1124	19	(1.7)	399	104	(26.2)	14	(13.4)	(3.5)
	Head	674	65	(9.7)	381	158	(41.5)	61	(38.3)	(15.9)
Education	Middle & under	558	23	(4.2)	217	66	(30.3)	19	(29.3)	(8.9)
	High school	864	32	(3.8)	389	112	(28.8)	31	(27.3)	(7.9)
	College & over	377	28	(7.5)	173	84	(48.7)	25	(29.2)	(14.2)
Poverty	Non-poverty	1051	59	(5.6)	551	209	(37.8)	63	(30.1)	(11.4)
	Poverty	535	16	(3.0)	228	54	(23.5)	12	(21.8)	(5.1)
Place of Living	Rural area	216	10	(4.6)	75	22	(29.4)	5	(23.2)	(6.8)
	Urban area	1582	74	(4.7)	704	240	(34.1)	69	(28.9)	(9.9)
Unemployment Spells	Less than 12 months	753	49	(6.5)	522	195	(37.4)	51	(26.1)	(9.8)
	12-19 months	1046	35	(3.4)	258	67	(26.1)	24	(35.1)	(9.2)
Discouraged Workers	Open unemployed	1378	77	(5.6)	683	241	(35.2)	71	(29.4)	(10.4)
	Hidden unemployed	420	7	(1.6)	96	22	(22.4)	4	(17.4)	(3.9)
PES area	Central	780	36	(4.6)	370	116	(31.4)	31	(26.8)	(8.4)
	Southeast	676	28	(4.1)	249	94	(38.0)	26	(27.1)	(10.3)
	Southwest	342	20	(5.8)	161	51	(32.0)	18	(34.5)	(11.0)
Monthly Earning (won)	More than 0.7 million	722	78	(10.8)	460	202	(44.0)	70	(34.6)	(15.2)
	Less than 0.69 million	632	5	(0.7)	287	56	(19.4)	5	(8.1)	(1.6)
Occupation	Non Manual workers	656	45	(6.9)	401	137	(34.1)	41	(30.0)	(10.2)
	Manual workers	610	36	(5.9)	350	119	(33.9)	31	(26.2)	(8.9)
Industry	Non manufacturing	922	53	(5.7)	561	165	(29.4)	46	(27.9)	(8.2)
	Manufacturing	347	30	(8.7)	193	93	(48.1)	28	(30.6)	(14.7)
Employment Status	Non-regular	607	7	(1.1)	364	43	(11.9)	7	(16.0)	(1.9)
	Regular	670	76	(11.3)	395	218	(55.1)	68	(31.0)	(17.1)
Part-timers	Full-timers	931	79	(8.5)	588	247	(42.1)	72	(29.1)	(12.3)
	Part-timers	177	3	(1.4)	113	12	(10.3)	2	(13.1)	(1.3)
Firm Size	10 persons and more	637	73	(11.5)	399	222	(55.6)	64	(28.6)	(15.9)
	1-9 persons	615	9	(1.5)	348	38	(10.9)	11	(28.8)	(3.1)
Retirement Allocation	Received	127	24	(18.5)	67	58	(86.1)	25	(43.8)	(37.7)
	Not received	331	12	(3.5)	202	48	(23.9)	13	(27.2)	(6.5)

## 5.4 Chapter conclusion

The main question of this Chapter was: Could more disadvantaged groups have a higher probability of participation in LMPs than less disadvantaged groups? (see Subsection 5.1.1).

In order to answer to the question we summarize our main regression results on programme participation likelihood in Table 5.13. In Table 5.13, ‘L’ indicates that the related worker group has a ‘lower probability of programme participation’ relative to the reference group. We arrange our regression results in order of disadvantaged groups presented in Table 3.12 of Chapter 3.

Table 5.13 Summary: the results of various regressions for programme participation

Type of programmes	Total programmes	Public works	Job training	PES or Job placement	Unemployment benefits
Tables	5.3	5.6			
Models	5.A3 - 5.A5	5.D1	5.D2	5.D3 & 5.D4	5.D5
Youths	<b>L</b>	<b>L</b>	-	-	<b>L</b>
Older workers	<b>H</b>	<b>H</b>	-	?	-
Prime-age women	<b>L</b>	-	-	-	<b>L</b>
Middle school & under	<b>(L)</b>	-	<b>L</b>	-	<b>L</b>
High school	<b>L</b>	<b>L</b>	-	<b>L</b>	<b>L</b>
The poor	-	-	-	-	<b>L</b>
Non-EIS workers	<b>L</b>	<b>H</b>	<b>L</b>	<b>L</b>	<b>L</b>

Notes: 1) ‘L’ indicates a lower probability of programme participation, ‘H’ means a higher probability of programme participation and ‘-’ indicates that the related coefficient is not significant in significance level of 0.10.

2) Reference groups are prime-age men, university graduates, the non-poor, and workers in the EIS, respectively.

The findings from this Chapter are as follows:

(1) Generally, more disadvantaged groups (see Table 3.12 of Chapter 3) tend to be more easily excluded from the government programmes. The youth, prime-age women, lower educated persons, and non-EIS workers (workers who are not covered by the EIS, such as irregular workers, part-timers, workers who quit jobs in small-sized firms or new entrants to



the labour market) are less likely to participate in LMPs relative to prime-age men, higher educated persons, and EIS-workers (such as regular workers, full-timers, workers who quit jobs in larger-sized firms or workers with previous job experience) (the second column of Table 5.13). The older worker group, who have a higher probability of programme participation than prime-age males, is exceptional. The poor do not have a significant coefficient of participation likelihood in LMPs.

(2) The youth and the high school educated are less likely to participate in public works, while older workers and non-EIS workers are more likely to participate in them (the third column of Table 5.13). As the non-EIS workers are usually more disadvantaged workers, we can say that the public work programmes show more equal distribution than other programmes.

(3) The most unequal distribution of programmes is seen in unemployment benefits, due to the narrow coverage of the EIS. Almost all disadvantaged groups defined in Chapter 3 have a lower probability of programme participation (the last column of Table 5.13). The poor are more likely to be excluded from unemployment benefits.

The barriers to programme participation found in this Chapter can be also summarized as follows:

(4) Legal or administrative barriers: Low coverage of the EIS is the main barrier to programme participation for the disadvantaged groups. Other than the public works programme, every programme seems to be much more favourable to the EIS workers (the last line of Table 5.13).

(5) Creaming-off and insufficient supply of programmes: We could find some creaming-off effects in the procedure of participation in public works. Many disadvantaged groups, such as prime-age women, the low-educated, the poor, persons with longer unemployment spells, low-wage workers, and irregular workers, suffer lower selection rates relative to their counterparts, while most of them record higher application rates (see Table 5.7 and Table 5.8). This suggests that there is strong competition for programme participation among groups and within disadvantaged groups. The creaming-off seems to be stronger in the case on insufficient programme supply.

(6) Inconsistency between measures: Our analyses show that there is inconsistency between passive and active programmes in terms of programme distribution. The passive programme (unemployment benefits) is more unequally distributed among groups than active programmes (public works, training, and job placement services) (Table 5.13).

(7) Training needs, information deficiency and the livelihood problem: Our analyses on the reasons for non-participation in government-supported training programmes show that disadvantaged workers are generally aware of a greater training need, but they suffer more difficulties in getting access to training information, and for them, the livelihood problem is an important reason not to participate in training (see Table 5.9 and Table 5.10).

(8) The roles of policy implementation: The number of PES staff and the budget allocation of the central government seem to play some roles in increasing the probability of programme participation of the unemployed (see Table 5.3) or the probability of application to programmes (see Table 5.8). Moreover, persons living in the PES areas with the highest unemployment experience rate (PES area2) are less likely to participate in programmes (see Table 5.3), and PES areas with higher participation probabilities are associated with more equal programme distribution among groups (see Table 5.5).

Lastly, in order to verify our most important results on programme participation, we analyse the cross-correlation between participation probability of the unemployed, and their extent of disadvantages in the labour market. We use ‘the unemployment-spell length of the labour force’ as an indicator of the extent of disadvantages of some groups in the labour market (disadvantage indicator ‘D’ of Chapter 3). In order to do this, we calculate the average months of unemployment spells among groups in the labour force which, are based on the total labour force divided into 36 subgroups according to sex (2 groups), age groups (3 groups), educational groups (3 groups) and poverty groups (2 groups). The second column of Table 5.14 shows the Pearson’s correlation coefficients between the length of unemployment spells of the 36 groups and their probability of programme participation.

As the disadvantaged groups tend to be aware of a greater training need (see Table 5.9 and Table 5.10), it may be useful to analyse the relationship between the probability of programme participation among worker groups and the extent of their training needs. In order to do this, we calculate the means of training necessity (1=with training needs, 0=without training needs) among groups of unemployed, which are based on the total unemployed divided into 18 subgroups according to sex, age groups and educational groups ( $2 \times 3 \times 3 = 18$  groups). The third column of Table 5.14 shows the correlation coefficients between the extent of training need of the 18 groups and their probability of programme participation.

Table 5.14 Correlation between programme participation and unemployment spell, information deficiency and necessity of training

	<b>Unemployment spells of labour force:</b> Means of unemployment spells of 36 groups (sex, age, education and poverty group)	<b>Being aware of the necessity of job training:</b> Means of NEED_TR of 18 groups (sex, age, and education group)	<b>Deficiency of information on training programmes:</b> Means of INFO_TR of 18 groups (sex, age, and education group)
TPROGRAM	-0.124***	-0.162***	-0.088***
PROGRAM	-0.130***	-0.148***	-0.103***
PW	-0.074***	-0.061**	-0.052**
TRAIN	-0.014	-0.023	-0.005
PES	-0.076***	-0.124***	-0.019
JOBP	-0.021	-0.054**	0.026
UNBE	-0.184***	-0.172***	-0.136***
NEED_T	0.308***	-	-
INFO_TR	0.338***	0.350***	-

Notes: 1) No. of observations: 1585 (the unemployed)

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

It will also be useful to compare the extent of information deficiency of the same 18 subgroups with their participation likelihood, as disadvantaged workers tend to suffer more information deficiency (see Table 5.9 and Table 5.10). The fourth column of Table 5.14 shows the Pearson's correlation between the extent of information deficiency on training programmes and their probability of programme participation.

(9) Table 5.14 reports the negative correlation between unemployment spells and programme participation (TPROGRAM and PROGRAM). The same relationships are found between training needs and programme participation, and between information deficiency and programme participation (see the third and fourth column of Table 5.14). Unemployment benefits (UNBE) have the strongest negative coefficients, which means that unemployment benefit are the most unfavourable to disadvantaged workers. The last two lines of Table 5.14 show the strong positive correlation among unemployment spells, training needs and information deficiency.

All these results clearly indicate that programme distribution is seriously distorted against disadvantaged groups and the disadvantages in the labour market are associated with higher programme needs and more serious information deficiency on programmes. This suggests that disadvantage *in the labour market* may create another disadvantage *in the policy sector*, at least in terms of programme participation. Labour market segmentation between the regular (or advantaged) and irregular (or disadvantaged) sectors (see Chapter 3) could not be lessened

by the government intervention. The reverse redistribution of employability among worker groups may become more accentuated in that case.

## Chapter 6. PROGRAMME EFFECTS ON RE-EMPLOYMENT

This Chapter evaluates programme effects on re-employment of programme participants during the crisis. We deal with the main five programmes – the RETU (Re-Employment Training for the Unemployed), public works, job placement services, unemployment benefits and the loan programme for the unemployed. Every evaluation focuses on the different effects of programmes by worker groups – and to the disadvantaged groups in particular. Our main concern is to determine whether the programme effects are stronger for more disadvantaged groups than for the less disadvantaged groups in the labour market.

In order to evaluate the effects of programmes, we use the data set from a special survey for the participants and non-participants in the RETU, which was conducted by the Korea Labour Institute in October 1999, and were already used by the Kang and Lee (2001). The data provides information on programme participation not only for the RETU but also for public works, job placement, unemployment benefits and the loan programme for the unemployed. Using the basic data set, we make a follow-up survey continuing up to June 2002, based on the administrative database of the Employment Insurance System (EIS database). Using these two data sets, we can evaluate the programme effects in the short- and longer-term.

This Chapter is composed of the five main sections and a summary section. The first Section presents our evaluation design. The evaluation result of Kang and Lee (2001) and their data set are discussed as a starting point of our evaluation. This Section also explains our evaluation framework and renewed data set. Before evaluating programme effects, we first analyse the programme participation probability of various groups in Section two. This may give supplementary information to Chapter 5, and information on sample composition which may create selection bias. The third Section deals with short-term effects of programme participation on re-employment probabilities within the basic data set. The fourth Section evaluates the programme effects in the mid-term and in the longer-term with the renewed data set. The fifth Section briefly addresses the possible problems of selection bias in our models.

## 6.1 Evaluation design

### 6.1.1 Questions

This entire Chapter is interested in the programme effects on the re-employment of the programme participants. Basic questions are as follows:

1) Among active programmes, which programme had the more favourable outcome: the RETU, public works, or job placement services? Were there any negative effects of passive programmes, such as unemployment benefits and loan programmes for the unemployed, on re-employment probability?

2) After participating in government programmes, which group had better outcomes, the more disadvantaged group or the less disadvantaged group? Which programme was more useful for the disadvantaged groups?

3) How long did the effects of programme participation continue? Which programme was more effective for the disadvantaged groups in the longer-term?

### 6.1.2 The basic data set and the evaluation of Kang and Lee

As we have already seen, systematic evaluation studies of LMPs have been very rare in Korea. Nevertheless, recently, one systematic evaluation study of the RETU was enacted by Kang and Lee (2001) with the title of “Evaluating the Training for the Unemployed in Korea”. It compared the re-employment possibility of the RETU participants with that of non-participants.

The RETU was the largest training programme during the crisis in Korea. As we have seen in the Introduction, almost 330,000 persons participated in government supported training programmes during each year of the crisis. Among them, about 170,000 in 1998, and 200,000 in 1999, participated in the RETU, which is financed by the EIS.

#### A. Data and methods of Kang and Lee

##### The basic data (RETU data)

Kang and Lee used the data from the special survey for the participants and non-participants in the RETU (hereafter RETU data). The survey was conducted by the Korea Labour Institute in October 1999. In order to have a non-experimental evaluation, the survey composed two main samples: a participant sample and non-participant sample.

The participant sample for this survey was extracted from the participants of the RETU. Since anyone who had worked at an establishment *covered by the EIS* is eligible for RETU<sup>61</sup>, all participants of RETU are obliged to register in the EIS database. In other words, the participant sample is selected from the EIS database. Among the RETU participants, the sample was limited to the unemployed participants who participated in a RETU course *in 1998* and who had separated from employment *between late 1997 and the end of 1998*. Out of this group of participants, 1,000 participants were randomly selected according to their job separation date, and a follow-up survey was conducted.

A non-participant sample was also extracted from the same EIS database. The non-participant group was composed of the unemployed who had separated from a job (at an establishment covered by the EIS) between late 1997 and the end of 1998, who were not displaying job-to-job movement, and who did not participate in training during 1998. In order to identify a matched pair for the comparison group, this survey considered the so-called ‘duration dependence effect’: the longer the period of unemployment, the lower the possibility of re-employment. In this perspective, the comparison group comprised *persons who became unemployed around the same month as the participants*<sup>62</sup>, *and those who remained non-employed while the participants started being trained*. 1,000 non-participants were then systematically (or proportionally) selected by the matching method according to their job separation date and the duration of non-employment. Finally, a follow-up survey was conducted for them.

These participant and comparison groups were asked systematic questions on personal and social characteristics, vocational training, employment history before being unemployed, and employment opportunities after training and/or after unemployment. Additional information on other programme participation was also surveyed: participation in public works, job placement services, unemployment benefits, and the loan programme for the unemployed.

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<sup>61</sup> The eligibility for the RETU is very simple. Anyone who has worked at the establishment covered by the EIS is eligible for the RETU. No additional condition is demanded for participation in the RETU.

<sup>62</sup> Most of the sample members (among the participant and non-participant sample) left their employment just after the crisis. 78.4% of them were separated from employment within seven months after the crisis (between December 1997 and June 1998). Only 9.3% left their jobs before the crisis (between July and November 1997). The remaining 12.3% of sample members left their jobs between July and December 1998.

We need to note that the composition of RETU data set is very different from that of URS data set used in chapters 3 and 5. First of all, workers in the RETU data set are more homogeneous than those of the URS data set, because all of them had worked at firms covered by the EIS. Most of the sample members in the RETU data set were regular workers (about 95%) because the coverage of the EIS was largely limited to regular workers. The homogeneity between samples - with matching by similar leaving date and the similar unemployment duration (between RETU participants and non-participants) - means that they are 'comparable groups' which enables us to evaluate the effects of programme participation. However, other characteristics such as sex, age, education, and living areas were not considered in the matching process, which requires correction in regression analysis.

We must also consider that the RETU samples cannot compromise most disadvantaged groups. Compared with the average unemployed person, the workers under the EIS coverage have a lower probability of being unemployed and higher probability of programme participation in the Korean labour market, as we saw in Chapter 5. The RETU data set excludes most of the daily or temporary workers, the self-employed, new entrants into the labour market and workers at firms with fewer than 10 workers (before January 1998). The EIS covered only a quarter of the labour force in early 1998, when most of the workers in the RETU data set left their employment. In these contexts, we may not expect much from the RETU data set in terms of programme effects related to 'disadvantaged workers'. On the contrary, we may see that workers covered by the EIS had easier access to many programmes, which may indicate the extent of reverse substitution in employment probability.

#### The evaluation method of Kang and Lee

Kang and Lee (2001) focused on an employment-related outcome of the RETU using a non-experimental method. The research compared the transition rates from non-employment to employment up until September 1999 between the participant and comparison groups. Since most of the sample members separated from their employment in early 1998, and most of the training was carried out from mid-1998 to early 1999, the study followed up the short-term effects of the RETU participation. In order to analyse the re-employment effect of the RETU, the study used a Cox's proportional hazard model that can analyse a movement from non-employment to re-employment as hazard.

In a proportional hazard model, the hazard at the period of the observation with an



independent variable  $x$  is expressed as follows:

$$h(t) = h_0(t) \exp(X'\beta)$$

Here  $h_0(t)$  represents a baseline hazard at  $t$ . Therefore, in a proportional hazard model, hazard change at every period is determined by the baseline hazard, and it is supposed that the independent variable ( $x$ ) plays a role of scaling up or down the baseline hazard depending on its size and/or the value of  $\beta$ . A hazard model can control the right censoring factor due to the fact that the spell-length of non-employment duration of the non-employed at the time of the survey (October 1998) is an incomplete spell.

With this model, the study had ‘the number of months being non-employed’, that is, the spell-length of non-employment, as a dependent variable. For the participants, the non-employment duration *does not include the training period*. In other words, the spell-length of non-employment duration of the participants is the sum of non-employment duration before and after training.

On the other hand, as the participant and comparison groups differed in sex, age, education and location, those differences were controlled statistically. The following independent variables were taken in the model in addition to the main independent variable, or training participation: sex, age, marital status, education, household head, employment length in previous job, industry, occupation, firm size, employment status, reason of job separation, and regional unemployment rate.

## B. The evaluation results of Kang and Lee

### Empirical results (Table 6.1)

The evaluation results of Kang and Lee are shown in Table 6.1. Total 1,814 observations were used in regression analysis due to the fact that there were several missing values. 49% of them had complete non-employment spells and the rest had censored value in non-employment spells. The evaluation results show that the training participation factor seems to increase re-employment possibility by 28%. This estimation differs by sex. For men, training participation does not seem to exert a significant influence on increasing re-employment possibility. However, for women, training participation increases re-employment possibility

by 63% compared to non-participants under the same conditions.

Table 6.1 Estimation of re-employment hazard in Kang and Lee

	<i>Total</i>		<i>Male</i>		<i>Female</i>	
	Coefficient	Relative Risk	Coefficient	Relative Risk	Coefficient	Relative Risk
Dependent Var.	The spell length of non-employment (months)					
<b>Participant in training (non-participant=0)</b>	<b>0.249***</b>	<b>1.283</b>	<b>0.056</b>	<b>1.058</b>	<b>0.490***</b>	<b>1.633</b>
Age	0.019	1.019	-0.023	0.977	0.100**	1.106
Age square	-0.000	0.999	-0.000	1.000	-0.001**	0.999
Male (female=0)	0.546***	1.727	-	-	-	-
Married (non-married=0)	-0.499***	0.607	-0.014	0.986	-1.113***	0.328
Years of schooling	-0.004	0.996	0.009	1.010	-0.004	0.995
Household heads (non-heads=0)	0.347***	1.416	0.295	1.344	-0.434***	0.648
Job tenure in the previous job (months)	-0.001***	0.998	-0.000	1.000	-0.005**	0.995
Manufacturing sector (others=0)	0.003	1.003	0.007	1.008	-0.159	0.852
Production workers (others=0)	0.181*	1.199	0.235**	1.265	0.204	1.227
Firms with 300 or more workers (others=0)	-0.199**	0.820	-0.315***	0.729	-0.035	0.965
Regular workers (non-regular=0)	0.135	1.145	0.190	1.210	0.044	1.046
Involuntary separation (voluntary=0)	0.068	1.071	0.196	1.217	-0.051	0.950
Regional unemployment rate	-0.053***	0.948	-0.043	0.957	-0.067**	0.934
-2 LOG L	7021.331		3882.054		2958.384	
Chi-Square	273.832***		121.347***		146.539***	
N	1814		893		921	

Note: \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

Source: Kang and Lee (2001)

As for personal characteristics, age seems to only be significant for women; especially at the age of 41, their re-employment possibility is the highest. Men, the unmarried, and household heads are more likely to be re-employed than women, married persons, and non-

household-heads. However, education level does not seem to influence re-employment possibility. As for the nature of previous employment, persons having shorter tenure, persons who worked in production jobs, and persons who worked at small-and-medium-size firms are more likely to have higher re-employment probability than are persons having longer tenure, persons who worked at non-production job, and persons worked at large scale firms. On the other hand, Table 6.1 shows that the higher the regional unemployment rate is, the lower the re-employment probability is.

### The advantages and limitations of the study of Kang and Lee

The study of Kang and Lee may be the first formal evaluation of the Korean labour market programme. The comparison group was systematically constructed according to job separation date and the follow-up survey was relatively successful. More than 1,800 observations have the complete information required for regression analysis.

Several limitations of this study, however, were indicated by Ryan (2001, pp. 290-291): 1) The load upon regression analysis in correcting the large differences in measured attributes of the participant and comparison groups is increased by the absence of any close matching on those attributes. 2) The study also excludes such potentially important ones as ability and motivation, around which selection into training may well have occurred. 3) The study did not take account of the time that trainees spent in training. If the trainees searched for a job during the training period, the non-employment duration is underestimated for trainees relative to non-trainees. 4) It is not known how many of those workers received other services, including non-RETU training and job creation; the benefits of RETU training are underestimated to the extent that some did (contamination bias).

### 6.1.3 Evaluation framework of this study

#### Expansion of study area and the renewed data set

This Chapter expands the study area of Kang and Lee (2001) by the following three points. Firstly, we try to analyse the effects of additional programmes, such as public works, job placement services, unemployment benefits and loan programmes for the unemployed, as well as RETU. The RETU data set provides information on such programme participation, which was not used by Kang and Lee. Only six observations have missing values on participation in other programmes, thus we can use a total 1,808 (1,814 minus 6) observations

in regression analysis. The participation information is related to the period between January 1998 and September 1999. In the process of analysing other programmes' effects, the contamination bias, which was noted by Ryan (2001), may be alleviated by controlling other services given to the comparison group.

Secondly, we evaluate longer-term effects of programmes by constructing a renewed data set based on the RETU data. With the individual IDs and names provided by the RETU data, we checked whether the worker re-entered into the EIS workplace or not after the leaving date of RETU data (between late 1997 and Dec. 1998). To do this, we used the EIS database of June 2002. We could successfully identify the 97.7% of the RETU sample (1,776 observations) in the June 2002 EIS database, while 42 workers were not identified due to incorrect IDs or names. So, in the end, we use 1,766 observations (1,808 minus 42) in regression analysis for longer-term programme effects. The EIS database provides two types of information: the "latest date of EIS entrance" (entrance date) and the "latest date of EIS withdrawal" (withdrawal date). This means that if a worker re-entered into the EIS workplace several times after the leaving date in the RETU data set, only the last entrance information can be provided. According to the EIS database, 875 workers among 1,776 in the RETU sample (49.5%) had re-entered into the EIS between the leaving date in the RETU data and June 2002, and 520 workers stayed within the EIS in June 2002 (29.4% of the total RETU sample). In other words, about five of ten workers re-entered into the EIS, and two out of five re-entrants left the EIS again. Using this information, we can evaluate programme effects on re-employment in mid- or longer-terms, that is to say, about three or four years after programme participation.

Lastly, this Chapter analyses the different training effects on re-employment possibility by worker groups related to gender, age, educational attainment, previous wage level, household income level, etc., using the RETU data set and the renewed data set.

### Models and variables in this Chapter

Table 6.2 reports the samples and models used in this Chapter and Table 6.3 shows the definition of variables. Various sub-samples are used by worker groups.

Table 6.2 Samples and models used in Chapter 6

<i>Samples</i>	<i>No.</i>	<i>Dependent variables</i>	<i>No.</i>	<i>No. of Model</i>	<i>Type of Model</i>
The unemployed	1808	Participants in RETU	904	A1	Probit
		Participants in public works	186	A2	
		Participants in job placement services	277	A3	
		Beneficiaries of unemployment benefits	1417	A4	
		Beneficiaries of loan programme for the unemployed	94	A5	
The unemployed	1808	Non-employment duration (DUR_00)		B1	Hazard
		Non-employment duration (DUR_10)		B2	
		Non-employment duration (DUR_20)		B3	
		Non-employment duration (DUR_30)		B4	
		Non-employment duration (DUR_ALL)		B5	
	By workers' Groups*	Non-employment duration (DUR_10)			
The unemployed	1766	The re-entered to the EIS between the leaving date and June 2002 (RE_EIS)	875	C1-C2	Probit
By workers' Groups*					
The unemployed	1766	Stayers in the EIS June 2002 (EIS)	520	C3-C4	
By workers' Groups*					
The unemployed	1766	RE_EIS (by gender)	875	D1-D3	Bivariate Probit

Note) \* workers' groups are categorized by RETU participation, age, sex, education, wages, household income, firm size, occupation, and industry.

Before analysing the programme effects, using the Probit models we estimate the programme participation probabilities related to the RETU (TRAIN), public works (PW), job placement services (JOBP), unemployment benefits (UNBE), and the loan programmes for the unemployed (LOAN). The basic participation equation is as follows:

$$P_i = c_1 + \alpha_1 X_i + \varepsilon_i \text{ ----- (1)}$$

where  $P_i$  is a binary variable with one indicating that the worker  $i$  participated in programme, and with zero indicating that the worker did not participate in programme.  $X_i$  is the vector of the independent variables related to worker characteristics or regional labour market situation.  $\varepsilon_i$  is the error term and  $c_1$  is a constant.  $\alpha_1$  is the regression coefficient.

Table 6.3 Variables related to LMP evaluation

<i>Variables</i>	<i>Description</i>	<i>Reference</i>
<b>Dependent variables</b>		
DUR_00	Non-employment duration without training period (months)	
DUR_10	Non-employment duration with 10% of training period	
DUR_20	Non-employment duration with 20% of training period	
DUR_30	Non-employment duration with 30% of training period	
DUR_ALL	Non-employment duration with all training period	
RE_EIS	The re-entered to the EIS between the leaving date and June 2002 (including those who left the EIS again during the same period)	Others
EIS	Stayers in the EIS June 2002 (excluding those who left the EIS)	Others
<b>Independent variables</b>		
TRAIN	Participants in RETU	Others
TRAIN_S	Participants in RETU less than 6 months	Others
TRAIN_L	Participants in RETU more than 6 months	Others
PW	Participants in public works	Others
JOBP	Participants in job placement services	Others
UNBE	Beneficiaries of unemployment benefits	Others
LOAN	Beneficiaries of loan programme for the unemployed	Others
FEMALE	Female	male
AGE	Age in years (from 19 to 63)	
AGESQ	Age square	
MIDDLE	middle school educated and less	University graduated
HIGH	high school educated	
COLLEGE	Junior college educated	
HEAD	household head	non-heads
MARRIED	married	others
SPOUSE_J	Workers whose spouse has paid job	others
NUMB	number of household members	
LOWEARN	less than 850,000 Won of monthly earnings in recent job	others
LWAGE	logarithm of monthly earnings in recent job	
MANUAL	production workers in recent job	others
MANU	engaged in manufacturing sector in recent job	others
FIRMSIZE	proxy for number of employees in recent workplace(from 1 to 10)	
DISPLACE	involuntary reasons in leaving recent job	Voluntary
LTENURE	logarithm of job tenure in recent job (months)	
URATE	average regional unemployment rate (Jan. 1998 - Oct. 1999: 16 regions)	
EMP_R	Increase rate of regional employment (between 1999 Q1 and 2002 Q1)	
BIGCITY	persons living in big city	Others
PESAREA1	persons living in area of public employment service Kyeong-In	PES Seoul
PESAREA2	persons living in area of public employment service Busan	
PESAREA3	persons living in area of public employment service Daegu	
PESAREA4	persons living in area of public employment service Kwang-Ju	
PESAREA5	persons living in area of public employment service Dae-Jeon	
PES_SE	living in PES area Busan or Daegu	PES Seoul or Kyeong-In
PES_SW	living in PES area Kwang-Ju or Dae-Jeon	

In order to analyse the programme effects, we use two types of models: Cox's proportional hazard model and the probit model.

Firstly, with the same Cox's proportional hazard model that Kang and Lee (2001) already used, we analyse the short-term effects of programmes *by groups*. For the analysis of separate groups, we divide the sample into 26 subsamples according to RETU participation, age groups, sex, age, educational group, wage level, level of household incomes<sup>63</sup>, firm size, occupation, and industry. Several variables, however, will be changed in our models. To consider the possible searching activity during training, we divide the non-employment duration, that is, the dependent variable, into five types of duration according to the assumption on the proportion of the job-searching period during the training period: duration excluding the whole training period from the non-employment duration (DUR\_00), duration including 10% of the training period in non-employment duration (DUR\_10), duration including 20% of the training period (DUR\_20), duration including 30% of the training period (DUR\_30), and duration including the whole training period (DUR\_ALL). While Kang and Lee (2001) considered the DUR\_00 (excluding all training period) as the dependent variable, with these different definitions of non-employment duration our analysis is expected to better evaluate the training effects by taking account of the searching effects during the training period. We also add several explanatory variables to the model of Kang and Lee. Except for the training participation (TRAIN), we add variables related to other programme participation: public works (PW), job placement services (JOBP), unemployment benefits (UNBE), and the loan programmes for the unemployed (LOAN). These additional variables will enable us to evaluate the effects of additional programmes on non-employment duration, and to control the contamination bias mentioned above. Other independent variables, such as the number of household members (NUMB), workers whose spouse has a paid job

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<sup>63</sup> The information on household income relates to the incomes at the survey date of RETU data, that is, October 1999. Thus, the variable of household incomes cannot be used as an independent variable in our models because the income levels *at the survey date* are largely dependent on whether the worker is re-employed or not, which is related to the dependent variables. Household incomes also need to be adjusted for family size due to economies of scale: The needs of a family for resources grow with each additional member, but not in a proportional way. We adjusted household incomes according to Förster (1994), and Keum and Kim (2001). With the equivalence scales, each family type in the population is assigned a value in proportion to its needs. We adjusted household incomes by following equivalence scales according to the number of family members: one member 1.000, two members 1.414, three members 1.732, four members 2.000, five members 2.236, six members 2.449, and seven members and more 2.646. There are also several missing values in household income data (142 observations among total 1,808 observations have missing values).

(SPOUSE\_J) and workers' living areas (BIGCITY or PES area), will be added, but the employment status variable (regular workers) is excluded because most of the sample members (about 95%) are regular workers. The other independent variables are similar to those of Kang and Lee's model: sex, age, education, status in household, wages, occupation, industry, firm size, the reason for leaving job, job tenure, regional unemployment rates, etc..

We then estimate the longer-term effects of programmes using various probit models. Two types of dependent variables are used: the re-entered into the EIS between the leaving date in the RETU data and June 2002 (RE\_EIS) and those who remained within the EIS June 2002 (EIS). We may define that the former relates to 'mid-term' effects of programmes and the latter relates to 'longer-term' effects. We should note that all these dependent variables do not represent the re-employed in any job, but the re-entered to the EIS. They usually represent the re-employed to regular jobs. With each dependent variable, we estimate re-employment equations using the similar independent variables, as in hazard models for short-term effects of programmes. Average increase rates of regional employment between the first quarter of 1999 and the first quarter of 2002 (EMP\_R) replace the regional unemployment rates (URATE). The basic programme evaluation equation is as follows:

$$RE\_EIS_i = c_2 + \alpha_2 X_i + \beta_2 P_i + \varepsilon_2 \text{ -----} \quad (2)$$

where  $RE\_EIS_i$  is a binary variable with one indicating that the worker  $i$  had re-entered into the EIS between the leaving date in the RETU data and June 2002, and with zero indicating that the worker had not re-entered into the EIS for the period.  $X_i$  is the vector of the same independent variables as in equation (1).  $P_i$  is the vector of dummy variables related to programme participation.  $\varepsilon_2$  is the error term and  $c_2$  is a constant.  $\alpha_2$  and  $\beta_2$  are the regression coefficients. We are interested in the coefficient  $\beta_2$ , which indicates the effects of the programme participation.

Lastly, we address the possible selection bias problem in our models by using the bivariate probit estimation (Green, 1998). In equation (2) we implicitly assume that programme participation is exogenous. However, if the decision to participate is correlated with unobserved characteristics which also affect the probability of re-employment, estimates of  $\beta_2$  will be biased. The unobserved characteristics may reflect the possible omitted variables which influence (positively) the two dependent variables ( $P_i$  and  $RE\_EIS_i$ ) in equation (1) and



(2) simultaneously. These omitted variables can be, for example, ‘intelligence’ or ‘motivation’. In this case, the conventional selection bias problem may occur in programme evaluation. It can be in principal dealt with by estimating a bivariate probit model for participation and re-employment. To do this, we reform the equation (2) as follows:

$$RE\_EIS_i = c_3 + \alpha_3 X_i + \varepsilon_3 \text{ -----} \quad (3)$$

where we simply exclude the programme participation term ( $\beta_2 P_i$ ) from the equation (2). The bivariate probit model estimates the correlation coefficient  $\rho$ , which measures the correlation between the disturbances in equation (1) and (3)<sup>64</sup>. We will estimate the disturbance correlation ( $\rho$ ) between  $\varepsilon_1$  and  $\varepsilon_3$  in Section 6.5 and will examine the changes in other coefficients to verify the stability of our evaluation models.

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<sup>64</sup> In the bivariate probit model, unlike the linear simultaneous equations model, if the two dependent variables are jointly determined, we put each on the right-hand side of the other equation and proceed as if there were no simultaneity problem (Green, 1998, p. 295). The bivariate probit estimation assumes the bivariate normal distribution with correlation  $\rho$ , while the univariate probit model assumes the normal cumulative distribution function. As the bivariate probit model uses the maximum likelihood method, it is different from the least square method, for example, in the Heckman’s Two-Stage Procedure.

## 6.2 Programme participation probability and sample composition

As the previous Chapter analysed the behaviour of programme participation in detail, this Section briefly estimates the programme participation likelihood of the RETU data set. We use the probit model instead of the Logit model, which may enable us to more easily compare the programme participation probability with the bivariate probit estimation for selection bias. Table 6.4 reports the results of probit analysis for programme participation, and Annex Tables 6.1 and 6.2 present the means and correlation coefficients among variables. Although the regression results mean the sample selection of the RETU data among the EIS-workers, we can find some similar or different patterns of programme participation in Table 6.4 compared to those of Chapter 5 (see Table 5.6).

The second column of the Table (model 6.A1) shows the participation likelihood of the RETU. The beneficiaries of job placement services (JOBP) and unemployment benefits (UNBE) are more likely to participate in the RETU. The youth and the elderly seem to be less likely to participate in the RETU. The least educated persons (MIDDLE), the married, and the manual workers are less likely to participate in the RETU, while displaced workers and persons with longer job tenure are more likely to participate. Regional unemployment rate (URATE) negatively influences the participation probability. The unemployed living in PES area1, PES area2 and PES area3 are more likely to be selected into the participant sample relative to persons living in the reference PES area (Seoul CHUNG). Among these results, we should note that the least educated (MIDDLE) have negative coefficient in training participation, which was verified in Chapter 5 (see Table 5.6).

The third column of Table 6.4 (model 6.A2) indicates the participation probability in public works. The participants in RETU and the beneficiaries of job placement services are more likely to participate in public works. The low-educated persons and low-wage workers (LOWEARN), have positive coefficients, while persons whose spouse has a paid job (SPOUSE\_J) and persons with longer job tenure have negative coefficients. This again suggests that the distribution of public works is relatively equal, which was already seen in Chapter 5.

Table 6.4 Probit estimations of programme participation

	Model 6.A1	Model 6.A2	Model 6.A3	Model 6.A4	Model 6.A5
Sample	The RETU sample (No. of Obs.: 1,808)				
Dep. Var.	TRAIN (904)	PW (186)	JOBP (277)	UNBE (1,417)	LOAN (94)
TRAIN		0.188 (0.100)*	0.293 (0.083)***	0.536 (0.088)***	0.129 (0.116)
PW	0.168 (0.111)		0.207 (0.121)*	0.113 (0.139)	0.195 (0.165)
JOBP	0.320 (0.091)***	0.221 (0.116)*		0.461 (0.128)***	0.438 (0.128)***
UNBE	0.568 (0.096)***	0.108 (0.127)	0.518 (0.124)***		0.364 (0.189)*
LOAN	0.153 (0.145)	0.158 (0.183)	0.482 (0.148)***	0.277 (0.215)	
FEMALE	0.017 (0.099)	-0.089 (0.126)	-0.359 (0.112)***	0.421 (0.122)***	-0.263 (0.179)
AGE	0.120 (0.029)***	0.097 (0.038)**	-0.039 (0.035)	0.134 (0.035)***	0.149 (0.054)***
AGESQ	-0.002 (0.000)***	-0.001 (0.000)**	0.000 (0.000)	-0.001 (0.000)***	-0.002 (0.001)***
MIDDLE	-0.818 (0.143)***	0.741 (0.193)***	0.385 (0.174)**	-0.219 (0.182)	-0.301 (0.236)
HIGH	-0.131 (0.089)	0.278 (0.141)**	0.024 (0.107)	-0.031 (0.123)	-0.221 (0.140)
COLLEGE	-0.152 (0.115)	0.562 (0.167)***	0.167 (0.130)	0.014 (0.153)	0.100 (0.173)
HEAD	-0.062 (0.102)	0.058 (0.128)	0.034 (0.118)	0.067 (0.124)	0.133 (0.177)
MARRIED	-0.350 (0.105)***	-0.139 (0.130)	-0.219 (0.125)*	-0.013 (0.128)	0.174 (0.174)
SPOUSE_J	0.085 (0.093)	-0.768 (0.134)***	0.045 (0.115)	-0.114 (0.115)	0.042 (0.146)
NUMB	0.021 (0.024)	-0.002 (0.033)	0.038 (0.028)	-0.025 (0.029)	-0.100 (0.047)**
LOWEARN	0.017 (0.087)	0.278 (0.117)**	0.050 (0.102)	-0.184 (0.101)*	-0.041 (0.160)
MANUAL	-0.235 (0.087)***	-0.065 (0.119)	-0.114 (0.106)	-0.159 (0.109)	-0.271 (0.151)*
MANU	0.003 (0.070)	-0.033 (0.096)	0.160 (0.083)*	0.035 (0.088)	0.215 (0.115)*
FIRMSIZE	-0.003 (0.014)	0.020 (0.020)	-0.009 (0.017)	0.082 (0.017)***	-0.013 (0.024)
DISPLACE	0.253 (0.087)***	0.013 (0.119)	-0.127 (0.105)	1.253 (0.087)***	-0.164 (0.149)
LTENURE	0.073 (0.037)**	-0.096 (0.048)**	0.012 (0.045)	0.152 (0.043)***	-0.028 (0.061)
URATE	-0.089 (0.028)***	-0.008 (0.037)	0.089 (0.035)**	0.146 (0.033)***	0.021 (0.047)
BIGCITY	0.102 (0.097)	0.083 (0.125)	-0.098 (0.121)	-0.193 (0.113)*	0.058 (0.163)
PESAREA1	0.254 (0.123)**	0.225 (0.163)	-0.182 (0.153)	-0.490 (0.148)***	0.225 (0.216)
PESAREA2	0.305 (0.102)***	0.110 (0.141)	-0.143 (0.125)	-0.091 (0.130)	0.286 (0.179)
PESAREA3	0.260 (0.123)**	-0.114 (0.178)	0.107 (0.141)	0.418 (0.180)**	0.304 (0.204)
PESAREA4	0.082 (0.131)	-0.077 (0.190)	0.198 (0.151)	-0.448 (0.155)***	0.518 (0.216)**
PESAREA5	-0.015 (0.136)	0.205 (0.182)	0.252 (0.157)	-0.015 (0.172)	0.303 (0.232)
INTERCPT	-2.093 (0.585)***	-3.720 (0.813)***	-0.975 (0.710)	-4.941 (0.719)***	-4.797 (1.106)***
-2 LOG L	2130.6	1043.7	1409.1	1265.5	652.3
Chi-Square	375.8	154.5	139.4	622.6	86.6

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

The fourth column of Table 6.4 (model 6.A3) presents the participation likelihood of job placement services. Participation in the RETU, public works, unemployment benefits or loans for the unemployed positively affects the probability of receiving job placement services. The coefficients of FEMALE and MARRIED show negative values, while those of MIDDLE (the least educated), MANU (manufacturing workers) and URATE have positive values. The positive coefficient of URATE was also seen in Chapter 5.

The fifth column of Table 6.4 (model 6.A4) is related to the probability of receiving unemployment benefits. Participation in RETU or job placement services is likely to increase the probability of receiving unemployment benefits. Female and prime-age workers are more likely to receiving unemployment benefits. The coefficients of FIRMSIZE, DISPLACE

(displaced workers), LTENURE (log of tenure) and URATE show positive effects on getting access to unemployment benefits. It is interesting to compare the results of Table 6.4 with those of Table 5.6 in Chapter 5. FEMALE has a positive coefficient in the EIS-workers sample (Table 6.4), while it did not have a significant coefficient in the total unemployed sample (Table 5.6). On the contrary, the strong negative coefficients of low education (MIDDLE and HIGH) and strong positive coefficient of HEAD (household heads) in Chapter 5 are not seen in EIS-workers sample (Table 6.4). These different results may be based not only on the fact that the sample is restricted to EIS-workers, but also on the fact that other variables related to employer characteristics (such as FIRMSIZE, DISPLACE, and LTENURE) are controlled in Table 6.4. But the poor (POVERTY) in Chapter 5, and the low-wage workers (LOWEARN) in this Chapter, show the same negative coefficients, which still indicates the reverse distribution of unemployment benefits.

The last column of Table 6.4 (model 6.A5) shows the probability of receiving loans for the unemployed. Beneficiaries of job placement services and unemployment benefits are more likely to receive loans for the unemployed.

Among all these results, we should note that participation in each programme is closely correlated. Beneficiaries of unemployment benefits (coefficient 0.536), job placement services (coefficient 0.293) and public works (coefficient 0.188) are much more likely to participate in the RETU. This suggests that the evaluation results of Kang and Lee (2001) may contain the contamination bias (see Subsection 6.1.2 of this Chapter). Participation in any programme positively affects the probability of receiving job placement services. Beneficiaries of unemployment benefits are more likely to receive the loans for the unemployed. This suggests that the passive measures are concentrated on some groups, rather than distributed equally among groups. Only the participation in public works does not show significant effects on participation in other programmes (except job placement services), though it has also positive values. This may relate to the relatively equal distribution of public works.

### 6.3 Short-term employment effects of programme participation

This Section develops the study of Kang and Lee (2001) with the proportional hazard model in three ways. Firstly, we take into account the possible contamination bias of the RETU evaluation by including the additional variables related to participation in other programmes (PW, JOBP, UNBE, and LOAN). In this process, we can also evaluate the effects of other programmes on re-employment. Secondly, we consider the possible searching activity of the unemployed during the training period. Lastly, we analyse the programme effects by worker groups.

#### 6.3.1 Re-employment hazard with different non-employment durations (Table 6.5)

Table 6.5 presents the estimates of the proportional hazard model for the exit into employment (see also Annex Tables 6.1 and 6.2 for means and correlation coefficients of variables). We use five types of non-employment durations as dependent variables in different models.

Model 6.B1 of the Table takes the DUR\_00, that is, non-employment duration excluding all training period, as the dependent variable. The variable DUR\_00 is the same used by Kang and Lee (2001).

(1) The effect of RETU participation on re-employment hazard is positive, as Kang and Lee found. But the coefficient becomes smaller from 0.249 in the study of Kang and Lee (see Table 6.1) to 0.227 in our study. Most of the gap between these two studies may indicate the portion of the contamination bias<sup>65</sup>.

(2) The effect of participation in public works (PW) and job placement services (JOBP) on re-employment hazard are significantly positive. The largest short-term effect is the participation on public works, and the coefficient of JOBP is the second largest. The great effect of PW may not be surprising, because public works are aimed at direct job creation in the short-term.

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<sup>65</sup> Since our model is a little different from the model of Kang and Lee in terms of sample size and different independent variables, we re-estimated our model 6.B1 without other participation variables except TRAIN (PW, JOBP, UNBE, LOAN). The re-estimated coefficient of TRAIN was 0.244, which is 0.005 smaller than the coefficient of Kang and Lee (0.249). Thus, we may more precisely say that the contamination bias amounts to the gap between 0.244 and 0.227.

Table 6.5 Estimation of re-employment hazard: basic models

	Model 6.B1		Model 6.B2		Model 6.B3		Model 6.B4		Model 6.B5	
Sample	The RETU sample (No. of Obs.: 1,808)									
Dep. Var.	DUR_00		DUR_10		DUR_20		DUR_30		DUR_all	
TRAIN	0.227	(0.079)***	0.197	(0.077)**	0.152	(0.078)*	0.120	(0.077)	-0.284	(0.078)***
PW	0.361	(0.103)***	0.350	(0.101)***	0.355	(0.101)***	0.356	(0.101)***	0.402	(0.103)***
JOBP	0.265	(0.092)***	0.255	(0.089)***	0.255	(0.090)***	0.249	(0.089)***	0.238	(0.092)**
UNBE	-0.231	(0.102)**	-0.220	(0.100)**	-0.225	(0.101)**	-0.222	(0.100)**	-0.225	(0.103)**
LOAN	0.076	(0.152)	0.064	(0.148)	0.060	(0.149)	0.048	(0.148)	-0.006	(0.151)
FEMALE	-0.443	(0.099)***	-0.434	(0.097)***	-0.437	(0.097)***	-0.435	(0.097)***	-0.451	(0.098)***
AGE	0.023	(0.032)	0.021	(0.031)	0.020	(0.032)	0.019	(0.031)	0.015	(0.032)
AGESQ	-0.001	(0.000)*	-0.001	(0.000)*	-0.001	(0.000)*	-0.001	(0.000)*	-0.001	(0.000)
MIDDLE	0.104	(0.151)	0.099	(0.148)	0.097	(0.148)	0.098	(0.148)	0.082	(0.150)
HIGH	-0.122	(0.100)	-0.120	(0.098)	-0.125	(0.098)	-0.124	(0.098)	-0.145	(0.099)
COLLEGE	-0.044	(0.124)	-0.047	(0.121)	-0.052	(0.121)	-0.056	(0.121)	-0.090	(0.123)
HEAD	0.308	(0.105)***	0.307	(0.103)***	0.312	(0.103)***	0.314	(0.103)***	0.331	(0.105)***
MARRIED	-0.320	(0.108)***	-0.308	(0.106)***	-0.304	(0.106)***	-0.298	(0.106)***	-0.271	(0.108)**
SPOUSE_J	-0.277	(0.108)**	-0.272	(0.106)**	-0.276	(0.107)**	-0.279	(0.106)***	-0.299	(0.108)***
NUMB	0.064	(0.025)**	0.063	(0.025)**	0.064	(0.025)**	0.064	(0.025)***	0.069	(0.025)***
LOWEARN	0.003	(0.093)	0.000	(0.091)	-0.002	(0.091)	-0.004	(0.091)	-0.013	(0.093)
MANUAL	0.225	(0.095)**	0.219	(0.093)**	0.220	(0.094)**	0.217	(0.093)**	0.215	(0.094)**
MANU	-0.016	(0.077)	-0.014	(0.075)	-0.013	(0.075)	-0.010	(0.075)	0.003	(0.077)
FIRMSIZE	-0.037	(0.016)**	-0.036	(0.015)**	-0.036	(0.015)**	-0.036	(0.015)**	-0.038	(0.016)**
DISPLACE	0.198	(0.099)**	0.196	(0.097)**	0.195	(0.098)**	0.194	(0.097)**	0.197	(0.100)**
LTENURE	-0.068	(0.039)*	-0.065	(0.038)*	-0.064	(0.038)*	-0.064	(0.038)*	-0.062	(0.039)
URATE	-0.093	(0.035)***	-0.084	(0.035)**	-0.078	(0.035)**	-0.069	(0.035)**	-0.022	(0.036)
BIGCITY	0.140	(0.109)	0.119	(0.107)	0.105	(0.107)	0.085	(0.107)	-0.025	(0.109)
PESAREA1	0.181	(0.134)	0.161	(0.131)	0.147	(0.132)	0.126	(0.131)	0.014	(0.135)
PESAREA2	-0.379	(0.119)***	-0.374	(0.117)***	-0.378	(0.117)***	-0.381	(0.117)***	-0.414	(0.119)***
PESAREA3	-0.026	(0.133)	-0.027	(0.130)	-0.026	(0.131)	-0.029	(0.130)	-0.031	(0.132)
PESAREA4	-0.134	(0.139)	-0.138	(0.137)	-0.150	(0.137)	-0.153	(0.137)	-0.207	(0.140)
PESAREA5	-0.063	(0.145)	-0.057	(0.142)	-0.059	(0.143)	-0.057	(0.142)	-0.059	(0.145)
-2 LOG L	6942.9		9213.6		8623.8		9238.2		7181.0	
Chi-Square	354.3		339.9		335.4		330.9		322.1	

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

(3) As expected, the effect of unemployment benefits (UNBE) on re-employment hazard is significantly negative in the short-term. But the effect of loan programmes for the unemployed is not statistically significant.

(4) The coefficients of other variables are very similar to those of Kang and Lee. Among the additional variables in our model, four coefficients are significant. Persons whose spouse has a paid job (SPOUSE\_J) are less likely to exit from non-employment. This effect is similar to the negative effect of household income and property (positive effect of POVERTY) in Chapter 3 (see Table 3.4). The number of household members (NUMB) has a positive coefficient, which is also verified in Table 3.4 of Chapter 3. Displaced workers (DISPLACE) are more likely to exit from non-employment in this RETU sample, while they had a negative coefficient in chapter 3 (see Table 3.5). This different result may be partly based on the fact

that displaced workers are closely correlated to beneficiaries of unemployment benefits (correlation coefficient  $-0.456$ : see Annex Table 6.2) and the fact that the variable UNBE was not controlled in Chapter 3. Lastly, persons living in PES area2 are less likely to exit from non-employment, which was also verified in Chapter 3 (see Table 3.4). Many models in this study suggest that PES area2 is the most disadvantaged area in terms of unemployment likelihood and re-employment probability.

From model 6.B2 to model 6.B5 we take different dependent variables, that is DUR\_10 (non-employment duration including 10% of the training period), DUR\_20 (non-employment duration including 20% of the training period), DUR\_30 (non-employment duration including 30% of the training period) and DUR\_ALL (non-employment duration including the whole training period).

(5) The coefficient of RETU participation (TRAIN) is very sensitive to the different durations of non-employment. It becomes smaller when we consider the possible searching activity during the training period. But the effect of RETU participation is still significantly positive on re-employment until when we consider 20% of the training period as a searching period. This suggests that though we may underestimate the non-employment duration of trainees without taking account of the trainees' searching activity during the training period, the RETU effect is strong enough to supplement at least 20% of the training period.

The coefficients of other variables do not change much when the dependent variables related to non-employment duration change. These slight changes in coefficients of other variables suggest that our models are relatively stable.

When we analyse the programme effects by groups in the next Section, we will take the variable DUR\_10 as that dependent variable, with the assumption that the trainees search for a job during 10% of training period.

### 6.3.2 Re-employment hazard by worker groups (Table 6.6)

Table 6.6 presents the estimates of re-employment hazard by worker groups. As our main interests are in the effects of programme participation, in Table 6.6 we only summarize the

coefficients related to programme effects. Full information on these models is reported in Annex Table 6.3<sup>66</sup>.

To estimate different programme effects by groups, we need to separate the full sample into several subsamples. This may require cautious interpretation of the results of programme evaluation due to the decreased sample size. As the standard error will become larger due to the smaller sample size, we need to take a broad and comprehensive approach in the interpretation of the evaluation results. But our general results in Table 6.6 show relatively stable coefficients for many programmes even in those with smaller subsamples. For every group, all coefficients of TRAIN, PW and JOBP are positive, while every coefficient of UNBE is negative. The effect of LOAN is not significant for most groups.

Table 6.6 Summaries: Estimation of re-employment hazard: with subsamples  
(Full information is given in Annex Table 6.3)

Dependent. Var.	DUR_10 (spell length of non-employment)				
Independent. Var.	TRAIN	PW	JOBP	UNBE	LOAN
Full sample	0.197 (0.077)**	0.350 (0.101)***	0.255 (0.089)***	-0.220 (0.100)**	0.064 (0.148)
<b>Subsamples</b>					
Non-trainees		0.388 (0.151)**	0.292 (0.153)*	-0.432 (0.134)***	0.040 (0.262)
Trainees		0.292 (0.147)**	0.278 (0.118)**	-0.006 (0.163)	0.110 (0.019)
Age 19-29	0.091 (0.130)	0.346 (0.205)*	0.322 (0.141)**	-0.415 (0.166)**	0.399 (0.320)
Age 30-44	0.224 (0.119)*	0.132 (0.174)	0.134 (0.146)	-0.020 (0.189)	0.008 (0.209)
Age 45-63	0.257 (0.171)	0.545 (0.172)***	0.230 (0.221)	-0.286 (0.188)	-0.137 (0.331)
Male	-0.023 (0.098)	0.293 (0.134)**	0.310 (0.113)***	-0.240 (0.129)*	0.142 (0.168)
Female	0.532 (0.128)***	0.403 (0.159)**	0.120 (0.154)	-0.213 (0.158)	0.186 (0.338)
Middle school	0.319 (0.210)	0.609 (0.189)***	0.576 (0.247)**	-0.420 (0.194)**	-0.217 (0.446)
High school	0.207 (0.114)*	0.214 (0.172)	0.220 (0.138)	-0.027 (0.159)	0.389 (0.245)
College & univ.	0.194 (0.126)	0.273 (0.180)	0.235 (0.139)*	-0.370 (0.182)**	0.056 (0.207)
Low-wages	0.374 (0.142)***	0.474 (0.167)***	0.353 (0.161)**	-0.160 (0.159)	-0.171 (0.359)
Mid-wages	0.327 (0.134)**	0.402 (0.197)**	0.245 (0.156)	-0.377 (0.166)**	-0.073 (0.293)
High wages	0.060 (0.134)	0.253 (0.189)	0.209 (0.160)	-0.131 (0.220)	0.125 (0.210)
Higher incomes	0.288 (0.118)**	0.383 (0.213)*	0.062 (0.141)	-0.514 (0.149)***	0.004 (0.257)
Lower incomes	0.365 (0.119)***	0.488 (0.128)***	0.326 (0.123)**	-0.057 (0.153)	0.093 (0.209)
Firm size>300	0.161 (0.126)	0.286 (0.171)*	0.128 (0.145)	-0.531 (0.191)***	0.592 (0.228)***
Firm size<=300	0.279 (0.098)***	0.421 (0.127)***	0.330 (0.115)***	-0.151 (0.119)	-0.204 (0.198)
Non-manual	0.223 (0.100)**	0.310 (0.140)**	0.192 (0.113)*	-0.412 (0.141)***	0.167 (0.174)
Manual workers	0.215 (0.126)*	0.399 (0.150)***	0.343 (0.150)**	-0.093 (0.144)	-0.140 (0.296)
Non-manufacturing	0.341 (0.113)***	0.513 (0.153)***	0.181 (0.138)	-0.465 (0.150)***	-0.043 (0.224)
Manufacturing	0.082 (0.108)	0.237 (0.138)*	0.328 (0.120)***	-0.061 (0.137)	0.229 (0.200)

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

<sup>66</sup> In models with separate samples by groups, we replace the five dummy variables related to PES areas for two dummy variables (PES\_SE and PES\_SW) because the variables related to PES areas are not statistically significant except PESAREA2.



(1) For the RETU, the positive effects of programme participation are generally larger for disadvantaged groups relative to non-disadvantaged groups. Training effects are especially strong for females (coefficient 0.532), low-wage workers (0.374), and persons with lower household incomes (0.365). On the contrary, the RETU effects are negligible for males, high-wage workers, manufacturing workers and the youth. Training effects seem to be larger for lower-educated persons though the results are a little unstable.

(2) The effects of participation in public works are relatively strong for many types of worker groups. Among them, the effects also tend to be stronger for disadvantaged workers. The strongest effects of public works are found in the least educated workers (coefficient 0.609), older workers (0.545), non-manufacturing workers (0.513), the low household income group (0.488), low-wage workers (0.474), workers from smaller-sized firms (0.412), and females (0.403).

(3) Concerning the job placement services, we can find similar results to those we found in the RETU and public works. Disadvantaged workers tend to get better outcomes from participation in job placement services. Here too, the programme effect is the strongest for the least educated persons (coefficient 0.576). The effects are also strong for low-wage workers (0.353), manual workers (0.343), workers from smaller-sized firms (0.330), manufacturing workers (0.328), workers with low household incomes (0.326), and the youth (0.322). For workers with high household incomes, however, the effect of JOBP is most negligible.

(4) Concerning the effect of unemployment benefits, the results appear to be a little complicated. But the negative impacts of unemployment benefits are likely to be smaller for the disadvantaged workers. The most strongly negative effects are found in the groups of workers from larger-sized firms (coefficient -0.531) and workers with high household incomes (-0.514). The negative effects are also strong for non-manufacturing workers (-0.465), non-trainees (-0.432), the least educated workers (-0.420) and the youth (-0.415). The strong negative impact of unemployment benefits for the least educated workers seems to be an exceptional case in our model. It is interesting to note that workers with a mid-wage level have a stronger negative coefficient of UNBE relative to high-wage workers. This may relate to the benefits system that has a ceiling of benefits for the high-wage workers. On the other hand, the effect of UNBE is the most negligible for the trainees. This may suggest that the negative effect of passive programmes can be lessened when they are provided along with active programmes (the importance of activation).

All these results clearly show that at least in the short-term, the positive effects of participation in active programmes are stronger for more disadvantaged workers, while the negative effects of passive programmes tend to be smaller for them, in relation to less disadvantaged workers. Though disadvantaged workers tend to be easily excluded from government supports, once they participate in programmes, the benefits will be great for them. Our results suggest that programmes targeted at disadvantaged workers may more easily obtain not only the equity objective but also the efficiency objective.

## 6.4 Mid- and longer-term employment effects of programme participation

This Section analyses the mid- and longer-term employment effects of programme participation with a renewed data set. Since the renewed data set consists of the RETU data set merged with the 2002 EIS data set, the employment effects of participants are related to mid- or longer-term effects; that is to say, about three or four years after programme participation. The employment effects are mainly related to the effects of re-employment ‘in a regular job’, as mentioned above.

Previous evaluations show that programmes that appear successful over the short-term may turn out to be less so over the longer-term (Fay, 1996). Moreover, if the non-participants participated in other programmes after the survey date of the RETU data (September 1999), the so-called contamination bias will arise. Therefore, we may expect that the strong positive effects of active programmes analysed in the previous Section may diminish in this Section.

On the other hand, as ‘re-employment to the EIS-workplace’ does not cover ‘re-employment to an irregular or self-employed job’, the programme effects in this Section have a different meaning from those of the previous Section. As disadvantaged workers usually have more difficulties in entering to regular sector jobs (see Table 3.4 of Chapter 3), programme effects on ‘re-employment in a regular job’ will be more important, especially for the disadvantaged workers. If the programme effect on ‘re-employment in a regular job’ is not significant for disadvantaged groups, employment policy may have a limitation in reducing labour market segmentation between the regular and irregular sectors (though it plays an important role in enhancing employability of disadvantaged workers in the short-term).

### 6.4.1 Re-employment probability of the full sample (Table 6.7)

Table 6.7 presents the results of probit estimation for re-employment to the EIS-workplace.

Model 6.C1 and 6.C2 use the variable RE\_EIS as the dependent variable, which indicates whether the worker had re-entered into the EIS *between the leaving date in RETU data and June 2002*. In other words, the binary variable RE\_EIS has a value of one if the worker *experienced* re-employment to the EIS workplace (or, in a regular job) during the period. Thus, model 6.C1 and model 6.C2 are related to *mid-term* programme effects on re-employment in a *regular job* according to our definition.

On the other hand, model 6.C3 and 6.C4 use the variable EIS as the dependent variable, which indicates whether the worker *stayed* in the EIS-workplace *in June 2002* (stayers). In

other words, those who left the EIS workplace before June 2002 are excluded from all re-entrants to the EIS. Therefore, the variable EIS is related to *longer-term* programme effects on re-employment in a *regular job* according to our definition.

Table 6.7 Probit estimation of re-employment to EIS-workplace: with full sample

	Model 6.C1	Model 6.C2	Model 6.C3	Model 6.C4
Sample	The RETU sample merged with the June 2002 EIS database (No. of Obs.: 1,766)			
Dep. Var.	RE_EIS (The re-employed: 875)		EIS (The re-employed: 520)	
TRAIN	0.175 (0.070)**		0.099 (0.073)	
TRAIN_S		0.170 (0.074)**		0.057 (0.077)
TRAIN_L		0.140 (0.106)		0.172 (0.109)
PW	0.412 (0.110)**	0.412 (0.110)**	0.000 (0.108)	0.002 (0.108)
JOBP	0.218 (0.091)**	0.220 (0.091)**	0.198 (0.091)**	0.200 (0.091)**
UNBE	-0.113 (0.094)	-0.109 (0.093)	0.056 (0.098)	0.060 (0.098)
LOAN	-0.156 (0.145)	-0.153 (0.145)	-0.184 (0.150)	-0.186 (0.150)
FEMALE	-0.496 (0.099)**	-0.497 (0.099)**	-0.432 (0.100)**	-0.433 (0.100)**
AGE	0.078 (0.028)**	0.079 (0.028)**	0.112 (0.030)**	0.112 (0.030)**
AGESQ	-0.001 (0.000)**	-0.001 (0.000)**	-0.002 (0.000)**	-0.002 (0.000)**
MIDDLE	0.393 (0.144)**	0.389 (0.144)**	0.504 (0.148)**	0.500 (0.148)**
HIGH	-0.009 (0.090)	-0.009 (0.090)	-0.012 (0.094)	-0.017 (0.094)
COLLEGE	0.196 (0.118)*	0.194 (0.118)*	0.085 (0.120)	0.087 (0.120)
HEAD	0.046 (0.101)	0.046 (0.101)	0.088 (0.103)	0.088 (0.103)
MARRIED	-0.170 (0.103)*	-0.171 (0.103)*	0.048 (0.106)	0.046 (0.106)
SPOUSE_J	-0.354 (0.091)**	-0.353 (0.091)**	-0.439 (0.096)**	-0.436 (0.096)**
NUMB	0.063 (0.024)**	0.063 (0.024)**	0.030 (0.025)	0.030 (0.025)
LOWEARN	-0.161 (0.087)*	-0.160 (0.087)*	-0.121 (0.090)	-0.126 (0.090)
MANUAL	0.131 (0.089)	0.130 (0.089)	-0.017 (0.092)	-0.020 (0.092)
MANU	-0.019 (0.070)	-0.019 (0.070)	0.039 (0.073)	0.042 (0.073)
FIRMSIZE	-0.039 (0.014)**	-0.039 (0.014)**	-0.002 (0.015)	-0.002 (0.015)
DISPLACE	0.054 (0.086)	0.055 (0.087)	0.075 (0.091)	0.073 (0.091)
LTENURE	-0.085 (0.036)**	-0.085 (0.036)**	-0.090 (0.038)**	-0.090 (0.038)**
EMP_R	0.005 (0.014)	0.005 (0.014)	0.005 (0.014)	0.006 (0.014)
BIGCITY	-0.022 (0.095)	-0.021 (0.095)	0.038 (0.099)	0.032 (0.099)
PESAREA1	-0.073 (0.203)	-0.069 (0.203)	-0.130 (0.211)	-0.135 (0.211)
PESAREA2	-0.028 (0.124)	-0.026 (0.124)	0.009 (0.128)	0.002 (0.129)
PESAREA3	-0.211 (0.137)	-0.207 (0.137)	-0.111 (0.142)	-0.120 (0.142)
PESAREA4	-0.257 (0.142)*	-0.255 (0.142)*	-0.095 (0.147)	-0.108 (0.148)
PESAREA5	-0.102 (0.167)	-0.099 (0.168)	-0.180 (0.176)	-0.194 (0.177)
INTERCPT	-0.354 (0.557)	-0.365 (0.557)	-1.986 (0.595)**	-1.978 (0.595)**
-2 LOG L	2151.5	2152.3	1953.3	1952.7
Chi-Square	296.5	295.8	187.4	188.0

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

#### Mid-term effects (model 6.C1 and model 6.C2)

(1) Model 6.C1 shows positive programme effects in the RETU, public works and job placement services. Moreover, the coefficients of TRAIN, PW and JOBP show very similar

patterns to those of our previous hazard models (see especially model 6.B2 of Table 6.5). Here also, the largest programme effect is seen in public works. This suggests that public works during the crisis were not restricted to temporary work. In fact, several types of public works, especially in central government projects, are enacted for permanent jobs. In this case, public works are similar to wages subsidies for employers. Model 6.C1 also shows that the effect of job placement services is greater than that of the RETU, which is also the same pattern as seen in the duration model.

(2) In model 6.C2, we replace the independent variable TRAIN for TRAIN\_S (short-term training less than 6 months) and TRAIN\_L (longer-term training more than 6 months). The longer-term training effect is not statistically significant, though the scales of coefficients are similar between them. This expected result may be partly based on the smaller portion of longer-term trainees. Therefore, when we analyse the mid-term programme effects by groups in the next Subsection, we will use the variable TRAIN instead of TRAIN\_S and TRAIN\_L, that is to say, based on model 6.C1 instead of model 6.C2.

(3) The coefficient of unemployment benefits is not statistically significant in model 6.C1, though it is still negative. This is a different result from the duration model. It suggests that though unemployment benefits tend to lengthen workers' searching duration, the lengthened searching period may play a positive role in finding a decent regular job. This result may also be linked to Korea's benefits system, which has a short duration of benefits. The result is also supported by the new theories of the labour market, which recognize the positive role of unemployment benefits in reducing workers' searching costs (for a stable job) (Redor, 1999, p.300).

(4) Other coefficients are also very similar to those of duration models. The effect of loan programmes for the unemployed is not statistically significant, but it indicates a negative value. The negative effects of FEMALE, MARRIED, SPOUSE\_J (persons whose spouse has a paid job), FIRMSIZE, and LTENURE (log of job tenure) are also seen in this model. However, the effects of age and low-wage workers on re-employment likelihood become stronger in this model relative to the duration models. In particular, low-wage workers are less likely to be re-employed in a regular job, which was not seen in our duration models. This result corresponds to our previous analysis in Chapter 3 (see Table 3.5). On the other hand, education effects on re-employment in a regular job are a little unstable. The least educated persons (MIDDLE) are more likely to be re-employed relative to university graduates. This result is different from that of Chapter 3.

### Longer-term effects (model 6.C3 and model 6.C4)

(1) Model 6.C3 reports the longer-term programme effects. In the longer-term, only the coefficient of job placement services is statistically significant among the coefficients related to programme effects. The coefficient of JOBP does not become much smaller over time, while the coefficients of TRAIN and PW decrease a lot. The strong and stable positive effect of job placement services corresponds to the results of previous evaluations in other countries (see Subsection 4.2.2 of Chapter 4).

(2) Regarding the training effect, model 6.C4 shows that the positive effect of longer-term training (TRAIN\_L) tends to increase though it is not statistically significant, while the positive effect of short-term training disappears over time. Although the coefficient of TRAIN\_L is not statistically significant at the 10% significance level, we must note that the standard error is relatively small ( $p > \chi^2$  indicates 0.1151). Thus, when we analyse the programme effects by groups, we will analyse the separate effects of short- and longer-term training.

(3) The most surprising change in the longer-term effect is the effect of public works. The coefficient of PW is zero in model 6.C3, while our previous models (model 6.C1 and model 6.B2) the PW coefficient was the largest among coefficients related to programme effects. This result also corresponds to the previous evaluations in other countries (see Subsection 4.2.2 of Chapter 4). We may find a dilemma between the equal distribution of programmes and their efficiency since public works show the most equal distribution among groups as analysed in Chapter 5 and Section 6.2 of this Chapter.

(4) The negative effect of unemployment benefits disappears in the longer-term model. On the contrary, the UNBE coefficient has a positive value though it is not statistically significant. On the other hand, the negative effect of LOAN becomes stronger over time, though is still not statistically significant.

### 6.4.2 Re-employment probability by worker groups (Table 6.8 and Table 6.9)

#### Mid-term effects (Table 6.8)

Concerning the programme effects by groups, the pattern of mid-term effects of programme participation on re-employment in regular a job is very different from those in short-term duration models. Table 6.8 shows that the better outcomes for disadvantaged groups generally disappear in the mid-term (regular-)employment effects.

(1) Regarding the training effects (the second column of Table 6.8), the effects of RETU participation tend to be stronger for less disadvantaged groups. Workers who left larger-sized firms (coefficient 0.342) and workers with high household income (0.337) have largest coefficients of TRAIN. Moreover, the effects of the RETU are stronger for high-wage workers (0.287), high school graduates (0.257) and college or university graduates (0.214), and males (0.167) relative to their counterparts. All these results show the opposite trends of the results in our duration models (compare Table 6.8 with Table 6.6). This suggests that in terms of *re-employment to a regular job*, the RETU may be less efficient for disadvantaged groups relative to less disadvantaged groups, while it is more efficient for disadvantaged workers in terms of *employment to any job*. Although our models cannot show these reasons, it may be based on the disadvantaged workers' lower opportunity of re-employment in a regular job<sup>67</sup>. In any case, government-supported training programmes seem to have a lot of difficulty in reducing labour market segmentation between the regular and irregular sectors. The accumulated disadvantaged structure may not easily change by simple assistance from government. More sophisticated approaches to programmes for disadvantaged groups may be required.

(2) Concerning the effects of public works (the third column of Table 6.8), we find that the effects are positive for most of the groups, as we found in duration models. Here too, however, more positive effects for several less disadvantaged groups are found in relation to disadvantaged groups. High-wage workers (coefficient 0.690), prime-age workers (0.664), and workers in larger-sized firms (0.650) have larger coefficients of PW. For other disadvantaged groups, such as the least educated group (0.607), women (0.563) and workers with lower household incomes (0.494), the effects of participation in public works are more successful relative to their counterparts. This suggests that in terms of re-employment probability in a regular job, public works are more successful for disadvantaged workers than training programmes.

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<sup>67</sup> If this is the case, it may be similar to the case where training effects tend to be stronger when the labour market is tightening than when unemployment rates increase.

Table 6.8 Summaries: Probit estimation of re-employment to EIS-workplace(RE\_EIS): with subsamples

(Full information is given in Annex Table 6.4)

Dependent. Var.	RE EIS				
Independent. Var.	TRAIN	PW	JOBP	UNBE	LOAN
Full sample	0.175 (0.070)**	0.412 (0.110)***	0.218 (0.091)**	-0.113 (0.094)	-0.156 (0.145)
<b>Subsamples</b>					
Non-trainees		0.388 (0.155)**	0.078 (0.150)	-0.154 (0.119)	-0.265 (0.241)
Trainees		0.416 (0.159)***	0.275 (0.116)**	0.045 (0.156)	-0.091 (0.184)
Age 19-29	0.201 (0.126)	0.269 (0.245)	0.159 (0.149)	-0.085 (0.161)	-0.787 (0.336)**
Age 30-44	0.127 (0.112)	0.664 (0.205)***	0.203 (0.147)	0.042 (0.170)	0.044 (0.205)
Age 45-63	0.070 (0.141)	0.363 (0.164)**	0.175 (0.203)	-0.278 (0.172)	-0.162 (0.301)
Male	0.167 (0.098)*	0.311 (0.148)**	0.298 (0.127)**	-0.178 (0.132)	-0.170 (0.172)
Female	0.152 (0.102)	0.563 (0.166)***	0.067 (0.136)	-0.015 (0.133)	-0.077 (0.281)
Middle school	-0.229 (0.190)	0.607 (0.188)***	0.184 (0.245)	-0.284 (0.186)	0.168 (0.450)
High school	0.257 (0.102)**	0.268 (0.183)	0.178 (0.136)	0.087 (0.144)	-0.632 (0.252)**
College & univ.	0.214 (0.119)*	0.473 (0.227)**	0.286 (0.148)*	-0.281 (0.177)	0.114 (0.207)
Low-wages	0.069 (0.131)	0.327 (0.169)*	0.219 (0.162)	0.036 (0.145)	-0.815 (0.378)**
Mid-wages	0.089 (0.134)	0.385 (0.243)	0.148 (0.165)	-0.347 (0.173)**	-0.177 (0.289)
High wages	0.287 (0.114)**	0.690 (0.198)***	0.247 (0.155)	-0.075 (0.195)	0.016 (0.199)
Higher incomes	0.337 (0.112)***	0.355 (0.266)	-0.027 (0.145)	-0.050 (0.150)	-0.175 (0.261)
Lower incomes	0.140 (0.100)	0.494 (0.130)***	0.293 (0.130)**	-0.005 (0.133)	-0.094 (0.192)
Firm size>300	0.342 (0.107)***	0.650 (0.178)***	0.331 (0.140)**	-0.171 (0.165)	0.167 (0.228)
Firm size<=300	0.049 (0.095)	0.278 (0.143)*	0.077 (0.121)	-0.036 (0.115)	-0.397 (0.189)**
Non-manual	0.139 (0.088)	0.547 (0.162)***	0.275 (0.113)**	-0.282 (0.130)**	-0.154 (0.170)
Manual workers	0.225 (0.120)*	0.344 (0.155)**	0.059 (0.160)	0.028 (0.137)	-0.201 (0.293)
Non-manufacturing	0.209 (0.100)**	0.404 (0.175)**	0.285 (0.138)**	-0.142 (0.137)	0.093 (0.218)
Manufacturing	0.176 (0.099)*	0.461 (0.145)***	0.130 (0.123)	-0.063 (0.130)	-0.407 (0.200)**

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

(3) The effects of job placement services (the fourth column of Table 6.8) show a similar trend to that of training effects (compare the second column with the fourth column of Table 6.8). It means that workers in larger-sized firms (coefficient 0.331), males (0.298), college or university graduates (0.286) and non-manufacturing workers (0.285) enjoy larger effects of participation in job placement services relative to their counterparts. Workers with lower household incomes (0.293), however, enjoy better outcomes from job placement services relative to workers with higher household incomes, which is a different result from that of “training effect”. It suggests that the RETU is least successful for disadvantaged groups in terms of enhancing the probability of re-employment in a regular job, while public works and job placement services is partially successful.



On the other hand, we should note that the coefficient of JOBP is larger for trainees (0.275) than for non-trainees. This suggests that training programmes tend to be successful when they are associated with job placement services, and vice versa.

(4) The (negative) effects of unemployment benefits on the probability of re-employment in a regular job are not statistically significant for most of groups (the fifth column of Table 6.8). Only mid-wage workers and non-manual workers have significant coefficients of UNBE. On the other hand, the coefficients of LOAN show significantly positive value for several groups (the youth, the high school educated, low-wage workers, workers in smaller-sized firms, and non-manufacturing workers) (the last column of Table 6.8). This result may relate to the fact that a part of the beneficiaries of loan programmes for the unemployed may change their employment status with their borrowed money, from dependent employment to self-employed status.

#### Longer-term effects (Table 6.9)

Table 6.9 shows the longer-term effects of re-employment in a regular job by worker groups. Longer-term programme effects are a little unstable, except longer-term training and job placement services.

(1) The effects of longer-term training (TRAIN\_L: the third column of Table 6.9) are significantly positive in five groups, such as the youth, women, low-wage workers, workers with higher household incomes, and non-manufacturing workers. However, the effects of shorter-term training (TRAIN\_S: the second column of Table 6.9) are significantly positive for only two worker groups (women and high school graduates), and the coefficients are relatively small. Among these results, the most interesting result may be the training effect for the youth. For the youth, the training effect seems to become stronger over time, as it was not significant in short-term duration models. For women, however, training effects seem to continue in the short- and longer-terms.

(2) The longer-term effects of public works are not significantly positive for every group (the fourth column of table 6.9). For prime-age workers, the effect is even significantly negative. In the long-term perspective, public works seem to be the least successful in increasing workers' employability as many evaluations have indicated.

(3) The effects of job search assistance are significantly positive for eight groups (the fifth column of Table 6.9). The effects tend to be stronger for the less-disadvantaged groups.

(4) The effects of unemployment benefits show the opposite trend to those of public works (the last column of Table 6.9). For every group, the longer-term effects of UNBE are not significantly negative on re-employment in a regular job. For prime-age workers and high school graduates, the effects are even significantly positive.

Table 6.9 Summaries: Probit estimation of re-employment to EIS-workplace (EIS): with subsamples

(Full information is given in Annex Table 6.5)

(Full information is given in Annex Table 6.5)

Dependent. Var.	EIS									
Independent. Var.	TRAIN_S		TRAIN_L		PW		JOBP		UNBE	
Full sample	0.057	(0.077)	0.172	(0.109)	0.002	(0.108)	0.200	(0.091)**	0.060	(0.098)
<b>Subsamples</b>										
Non-trainees					0.047	(0.157)	0.147	(0.152)	0.057	(0.127)
Trainees					-0.053	(0.152)	0.202	(0.114)*	0.106	(0.158)
Age 19-29	0.165	(0.137)	0.334	(0.186)*	0.179	(0.223)	0.115	(0.148)	-0.181	(0.163)
Age 30-44	0.058	(0.122)	-0.021	(0.177)	-0.351	(0.194)*	0.352	(0.145)**	0.406	(0.176)**
Age 45-63	-0.186	(0.168)	0.255	(0.231)	0.141	(0.173)	0.011	(0.215)	-0.026	(0.192)
Male	-0.037	(0.102)	0.045	(0.153)	0.027	(0.141)	0.336	(0.118)***	0.053	(0.130)
Female	0.211	(0.122)*	0.274	(0.158)*	-0.020	(0.174)	-0.053	(0.150)	0.094	(0.148)
Middle school	-0.141	(0.223)	0.051	(0.341)	0.128	(0.192)	0.333	(0.243)	-0.112	(0.194)
High school	0.226	(0.116)*	0.203	(0.154)	0.122	(0.181)	-0.007	(0.142)	0.330	(0.156)**
College & univ.	-0.020	(0.126)	0.231	(0.186)	-0.202	(0.207)	0.354	(0.143)**	-0.172	(0.175)
Low-wages	0.036	(0.155)	0.368	(0.192)*	-0.082	(0.181)	0.121	(0.171)	0.007	(0.157)
Mid-wages	0.035	(0.142)	-0.023	(0.201)	-0.038	(0.219)	0.369	(0.159)**	0.078	(0.165)
High wages	0.072	(0.123)	0.076	(0.185)	0.200	(0.187)	0.147	(0.156)	0.102	(0.206)
Higher incomes	0.058	(0.122)	0.391	(0.179)**	0.110	(0.240)	0.150	(0.141)	0.031	(0.153)
Lower incomes	0.103	(0.111)	0.132	(0.150)	0.006	(0.130)	0.179	(0.129)	0.080	(0.140)
Firm size>300	0.187	(0.118)	0.108	(0.170)	0.231	(0.173)	0.232	(0.140)*	0.004	(0.176)
Firm size<=300	-0.052	(0.104)	0.197	(0.145)	-0.179	(0.142)	0.145	(0.121)	0.109	(0.119)
Non-manual	0.077	(0.096)	0.221	(0.135)	-0.025	(0.153)	0.238	(0.122)**	-0.046	(0.135)
Manual workers	0.018	(0.134)	0.038	(0.188)	0.072	(0.156)	0.143	(0.158)	0.162	(0.143)
Non-manufacturing	0.023	(0.111)	0.351	(0.151)**	0.038	(0.169)	0.133	(0.139)	0.036	(0.146)
Manufacturing	0.126	(0.109)	0.003	(0.160)	0.008	(0.144)	0.232	(0.122)*	0.077	(0.134)

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

## 6.5 Possible selection bias problems in our models

This Section tests whether our previous models have serious selection bias problems using the bivariate probit models as presented in the first Section of this Chapter (see Subsection 6.1.3).

For the bivariate probit estimations, we first need to estimate participation equations and re-employment equations. For the participation estimations, we take the same four univariate probit models as in Table 6.4, that is, equations of participation in the RETU, public works, job placement services and unemployment benefits (except loan programmes for the unemployed). And as the re-employment equations, we estimate four univariate probit models based on model 6.C1 of Table 6.7. For the new re-employment equations, we simply exclude the related participation variables from model 6.C1. For example, for the univariate estimation for training effect, we estimate with model 6.A1 of Table 6.4 and model 6.C1 excluding the variable TRAIN.

Table 6.10 presents maximum likelihood estimates of the parameters of the bivariate probit models. In order to compare the results of bivariate probit estimations and our previous univariate estimates, we rewrite the results of model 6.C1 of Table 6.7 in the second column of Table 6.10. From the third column of Table 6.10, the results of bivariate probit estimations for the RETU, public works, job placement services and unemployment benefits are shown. We are interested in the correlation between the two structural disturbances,  $\rho$ , and the changes in coefficients of other variables when we allow the disturbance correlation term ( $\rho$ ) to vary freely. If the value of  $\rho$  is great and the coefficients of other variables change a lot, our univariate probit estimation of programme evaluation may have serious selection bias problems. If not, our previous model for programme estimation may be stable and reliable.

The last line of Table 6.10 shows the disturbance correlations,  $\rho$ , between participation models and re-employment models. The values of  $\rho$  are positive in training, public works and job placement services, but in unemployment benefits  $\rho$  is negative and not statistically significant. All these values of  $\rho$  present the same patterns as the estimates of univariate probit estimates in the second column show: TRAIN 0.175→ 0.111, PW 0.412→ 0.237, JOBP 0.218→ 0.113 and UNBE -0.113→ -0.082. This suggests that programme effects in our univariate probit model (the second column) may not change much when we take into account unobserved factors affecting programme participation.

On the other hand, coefficients of other variables do not change much in bivariate probit models relative to univariate probit models. Every coefficient related to personal and employer characteristics shows very stable patterns in the two types of models. It also suggests that the results of our univariate probit models may be stable and reliable.

Table 6.10 Bivariate probit estimations of re-employment in a regular job

Related participation models	Model 6.C1	Model 6.D1	Model 6.D2	Model 6.D3	Model 6.D4
		TRAIN (Model 6.A1)	PW (Model 6.A2)	JOBP (Model 6.A3)	UNBE (Model 6.A4)
Intercept	-0.354 (0.557)	-0.412 (0.582)	-0.430 (0.586)	-0.279 (0.585)	-0.313 (0.586)
FEMALE	-0.496 (0.099)***	-0.493 (0.098)***	-0.490 (0.098)***	-0.511 (0.099)***	-0.506 (0.098)***
AGE	0.078 (0.028)***	0.085 (0.029)***	0.083 (0.030)***	0.075 (0.030)**	0.075 (0.029)**
AGESQ	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***
MIDDLE	0.393 (0.144)***	0.345 (0.143)**	0.442 (0.143)***	0.409 (0.144)***	0.395 (0.144)***
HIGH	-0.009 (0.090)	-0.018 (0.090)	0.005 (0.089)	-0.009 (0.090)	-0.008 (0.090)
COLLEGE	0.196 (0.118)*	0.186 (0.125)	0.224 (0.125)*	0.204 (0.126)	0.194 (0.125)
HEAD	0.046 (0.101)	0.042 (0.101)	0.053 (0.101)	0.046 (0.102)	0.044 (0.102)
MARRIED	-0.170 (0.103)*	-0.188 (0.103)*	-0.175 (0.103)*	-0.179 (0.104)*	-0.167 (0.103)
SPOUSE_J	-0.354 (0.091)***	-0.349 (0.092)***	-0.394 (0.092)***	-0.352 (0.092)***	-0.352 (0.093)***
NUMB	0.063 (0.024)***	0.064 (0.024)***	0.060 (0.024)**	0.065 (0.024)***	0.063 (0.024)***
LOWEARN	-0.161 (0.087)*	-0.159 (0.087)*	-0.145 (0.087)*	-0.159 (0.088)*	-0.156 (0.087)*
MANUAL	0.131 (0.089)	0.114 (0.090)	0.124 (0.090)	0.125 (0.090)	0.135 (0.091)
MANU	-0.019 (0.070)	-0.019 (0.071)	-0.022 (0.071)	-0.011 (0.071)	-0.019 (0.071)
FIRMSIZE	-0.039 (0.014)***	-0.038 (0.014)***	-0.037 (0.014)***	-0.040 (0.014)***	-0.041 (0.014)***
DISPLACE	0.054 (0.086)	0.069 (0.087)	0.055 (0.087)	0.049 (0.087)	0.013 (0.080)
LTENURE	-0.085 (0.036)**	-0.081 (0.036)**	-0.090 (0.035)**	-0.084 (0.036)**	-0.089 (0.036)**
EMP_R	0.005 (0.014)	0.005 (0.013)	0.005 (0.013)	0.006 (0.013)	0.005 (0.013)
BIGCITY	-0.022 (0.095)	-0.026 (0.095)	-0.018 (0.095)	-0.019 (0.095)	-0.023 (0.095)
PESAREA1	-0.073 (0.203)	-0.060 (0.201)	-0.053 (0.200)	-0.082 (0.200)	-0.065 (0.200)
PESAREA2	-0.028 (0.124)	-0.011 (0.123)	-0.017 (0.124)	-0.036 (0.123)	-0.027 (0.123)
PESAREA3	-0.211 (0.137)	-0.193 (0.138)	-0.215 (0.139)	-0.212 (0.139)	-0.218 (0.140)
PESAREA4	-0.257 (0.142)*	-0.250 (0.141)*	-0.257 (0.141)*	-0.249 (0.140)*	-0.245 (0.140)*
PESAREA5	-0.102 (0.167)	-0.097 (0.164)	-0.083 (0.163)	-0.096 (0.163)	-0.097 (0.163)
TRAIN	0.175 (0.070)**		0.182 (0.071)**	0.188 (0.071)***	0.162 (0.070)**
PW	0.412 (0.110)***	0.421 (0.108)***		0.421 (0.109)***	0.410 (0.108)***
JOBP	0.218 (0.091)**	0.236 (0.093)**	0.229 (0.093)**		0.207 (0.093)**
UNBE	-0.113 (0.094)	-0.079 (0.093)	-0.108 (0.094)	-0.091 (0.094)	
LOAN	-0.156 (0.145)	-0.146 (0.147)	-0.140 (0.146)	-0.125 (0.149)	-0.162 (0.146)
RHO(1,2)		0.111 (0.042)***	0.237 (0.058)***	0.113 (0.053)**	-0.082 (0.056)

## 6.6 Summaries

The main findings of our empirical evaluation of the effects of programme participation on re-employment probability are given in Table 6.11.

Table 6.11 Summary: programme effects by worker groups

Type of programmes	The RETU			Public works			Job placement services			Unemployment benefits		
Term*	S	M	L	S	M	L	S	M	L	S	M	L
Total workers	P	P	-	PP	PP	-	PP	P	P	N	-	-
Non-trainees				P	P	-	P	-	-	NN	-	-
Trainees				P	PP	-	P	P	P	-	-	-
Age 19-29	-	(P)	P	P	-	-	P	-	-	N	-	-
Age 30-44	P	-	-	-	PP	N	-	(P)	P	-	-	P
Age 45-63	(P)	-	-	PP	P	-	-	-	-	-	-	-
Male	-	P	-	P	P	-	PP	P	PP	N	-	-
Female	PP	(P)	P	P	PP	-	-	-	-	-	-	-
Middle school	(P)	-	-	PP	PP	-	P	-	(P)	N	-	-
High school	P	P	P	-	-	-	-	-	-	-	-	P
College & univ.	-	P	-	-	P	-	P	P	P	N	-	-
Low-wages	PP	-	P	PP	P	-	P	(P)	-	-	-	-
Mid-wages	P	-	-	P	-	-	-	-	P	N	-	-
High wages	-	P	-	-	PP	-	-	(P)	-	-	N	-
Higher incomes	P	PP	P	P	-	-	-	-	-	NN	-	-
Lower incomes	PP	-	-	PP	PP	-	P	P	-	-	-	-
Firm size>300	-	PP	-	P	PP	-	-	P	P	NN	-	-
Firm size<=300	PP	-	-	PP	P	-	PP	-	-	-	-	-
Non-manual	P	-	-	P	PP	-	P	P	P	NN	N	-
Manual workers	P	P	-	PP	P	-	P	-	-	-	-	-
Non-manufacturing	PP	P	P	PP	P	-	-	P	-	NN	-	-
Manufacturing	-	P	-	P	PP	-	PP	-	P	-	-	-

Notes: 1) \* 'S' means short-term employment effect, 'M' means negative mid-term effect of re-employment in a regular job, and 'L' indicates longer-term effect of re-employment in a regular job.

2) 'P' means positive effect of programme participation, 'N' means negative effect of programme participation 'PP' or 'NN' mean that related coefficient is very significant (significance level 0.01) and '-' indicates that related coefficient is not significant in significance level of 0.10.

Programme effects are different between short-term and longer-term, and between re-employment to any job and re-employment to a regular job.

(1) In the short-term, active labour market programmes enacted during the crisis, such as the RETU, public works, and the job placement services, seem to be successful in terms of reducing the non-employment duration of participants. Unemployment benefits, however, seem to lengthen non-employment duration of beneficiaries.

(2) Concerning the (mid-term) effects of programmes on re-employment in a regular job, unemployment benefits do not seem to significantly influence re-employment probability, while the positive effects of active programmes remain strong.

(3) In the longer-term, only job placement services and longer-term training seem to enhance the probability of re-employment in a regular job.

Programme effects are also very different for different worker groups.

(4) Generally, the short-term positive effects of active programmes tend to be stronger for disadvantaged workers, such as women, low-wage workers, workers in poor households and low-educated workers. The negative effect of passive measures is weak for them.

(5) Programme effects on re-employment in a regular job tend to be weaker for disadvantaged workers, but this pattern is slightly erratic.

(6) The positive effects of public works and job placement services seem to increase when these programmes are given with job training programmes. And the negative effect of unemployment benefits tends to be smaller for trainees.

(7) For the youth, the effect of training programmes on re-employment in a regular job tends to increase over time, though it is not significant in the short-term. The opposite case can be applied to prime-age and older workers.

(8) Job placement services seem to be more helpful for men, while the training effect tends to be stronger for women.

(9) Training and public works seem to be more helpful for the low-educated or low-wage workers, while job placement services are more useful for highly-educated persons.

(10) Active measures seem to be helpful for workers in larger-sized firms to re-enter the EIS workplace, or a regular job, while for workers in smaller-sized firms the effects seem to be positive only in short-term.

Although, our study found a lot of important results about programme effects on re-employment, it has still some limitations: 1) As the sample was restricted to regular workers (EIS workers), our results have limitation to explain the real facts of programme effects for disadvantaged workers. 2) We could not evaluate the effects of programme participation on earnings gain due to the absence of information on workers' post-earnings. 3) Our policy evaluations could not address the possible side effects of programmes, such as dead-weight or substitution effects.

## CONCLUSION



The Conclusion Chapter summarizes the main empirical results of this study and presents policy suggestions for reducing disadvantages in the labour market. We also briefly comment on the limitations of the study and the desirable subjects for further studies in the future.

## 7.1 Summaries of our analyses

The main object of this study was to evaluate the extent to which Korea's post-crisis employment policy was helpful to the particularly disadvantaged groups in the labour market. We had four sub-objects: analysing the dynamics of the labour market, identifying disadvantaged groups, evaluating the distributional effects of LMPs among different groups, and evaluating the labour market outcomes for programme participants.

These analyses were based on the main analytical framework of this study: the target-oriented evaluation approach (Schmid, 1997). Three steps of the policy evaluation cycle are presented: target formation based on the analysis of market failure (step 1), assessing policy formation and implementation (step 2), and assessing policy impacts (step 3). Part I (from Chapter 1 to Chapter 3) of this study corresponds to step 1 of our analytical framework, in which various possible market failures were analysed in order to identify the key area of government intervention. Part II of this study corresponds to step 2 and step 3, where policy evaluations were enacted.

### 7.1.1 Chapter 1: Labour market problems and unemployment theories

Chapter 1 surveyed various theories related to unemployment and government intervention, from the (neo-)classical view to the institutional approaches. Each theory is based on different assumptions, and indicates different ideas related to government intervention. We stressed that in order to address different labour market problems in different countries, we need to first identify the labour market problems of each country. Korea's labour market performances stand out among the 30 OECD countries in four ways: the lowest unemployment rate before the crisis, the longest working hours, serious wage inequality, and the exceptional rapid increase in unemployment followed by a dramatic decrease after the

crisis. The labour market problems of Korea must not be restricted to the unemployment rate. Poor working conditions and inequality among workers are more important.

On the other hand, the terminology of ‘flexibility’ in the labour market has been very popular in many developed countries since the 1980s (the so-called flexibility theory). In this theory, employment or numerical flexibility tends to be considered as the most important factor among different types of flexibility: employment, wage and hour adjustment, especially in Korea. However, we argued that it is very important to recognise which type of labour flexibility should be improved in order to cope with different labour market problems – such as inequality and labour market segmentation - in different countries, and which type of workers are more vulnerable to the open labour market. We also noted that employment relationship is determined not only by the market system but also by other social systems or institutional settings. Therefore, we suggested a very broad approach to the Korean labour market problems, the concept of the employment systems approach (Schmid et al, 1999) as a starting point for macro-economic analysis.

We then stressed that in order to cope with the serious labour market problems, we should combine the macro- and micro-economic analyses together. In analysing micro-economic aspects of labour market problems, the labour market segmentation theory was presented as an important analytical tool in this context.

#### 7.1.2 Chapter 2: Macro-analysis of the labour market

Chapter 2 addressed the performance of the Korean labour market at the macro-level and tried to determine the desirable role of government. Various methods were used in this Chapter: the employment system approach, business cycle models and the error correction model. Main findings of this Chapter are as follows:

(1) Based on the favourable institutional settings to labour market flexibility, most of the Korean labour market indicators were very sensitive to the business cycle. This trend was increasing even before the crisis. During the crisis, the adjustment of wages and employment was especially strong. Working hour adjustment, however, was not strong in the period.

(2) Wages tend to be more sensitive to the GDP rate in a recession relative to expansion periods. Our error correction model indicated that long-term adjustment of nominal wages was also significant. In particular, nominal wages decreased a lot for the first four quarters of the economic crisis, which may have contributed to the rapid decrease in unemployment.

(3) Although total employment was very flexible, male regular employment was not sensitive to the business cycle. The different patterns of employment adjustment between the (male) regular sector and the irregular sector suggest that the Korean labour market is segmented between them.

(4) Though the unemployment rate rapidly decreased after the crisis, the speed of its adjustment to the equilibrium is not very significant relative to wage adjustment. Moreover, unemployment changes more quickly in a recession than in a period of expansion. This reflects the strong employment adjustment in irregular and female employment in recession.

(5) Low labour force participation rates - for women and youth in particular - may correlate to the existence of the longest working hours in Korea. Korean women seem to be most vulnerable to business recession compared with those in other OECD countries.

With regard to disadvantaged workers, the most important suggestion of this Chapter may be that the increasing flexibility of the labour market may be associated with the increasing vulnerability of (disadvantaged) workers. This situation could easily be expected if we consider that a high level of employment protection for regular workers and an extremely low level of protection for temporary workers in Korea may induce the labour market to be segmented into the regular and irregular sectors, and thus may reinforce the disadvantages of temporary workers in the case of a business recession. Different workers react to the business cycle in a different way under the segmented labour market. For disadvantaged groups, the flexibility of employment may simply mean vulnerability.

### 7.1.3 Chapter 3: Micro-analysis of the disadvantaged groups

In Chapter 3, we analysed the causes of disadvantages in the labour market with micro individual data. We used four key indicators to describe workers' disadvantages in the labour market: experiencing unemployment, failure in being (re-)employed, quality of the new job or earnings loss after unemployment, and the length of unemployment spells.

(1) We found that the determinants of the four indicators of disadvantages are closely correlated to each other. Thus, we may say that a chain of disadvantages exists. The chain of disadvantages tends to be reinforced by the segmented labour market between the regular and irregular sectors. We discovered evidence of segmentation. Empirical results indicated the limited mobility between the regular and irregular sectors, and the different mechanisms of

wage and unemployment determination. Education was not considered of importance in the irregular sector. Those in the irregular sector were exposed to the open labour market. Their representative status among all disadvantaged groups often made variables related to the other determinants of disadvantages insignificant in regression models.

(2) Regarding the poor, they were often unemployed, but had a relatively higher probability of (re-)employment. Their livelihood problems obliged them to get any job. As a result, for the poor, most of the (re-)employed (re-)entered the irregular sector, and then suffered recurrent unemployment. A similar trend was seen among the unemployed with a higher proportion of unemployed persons to total household members.

(3) For low-educated people, their disadvantages can easily be underestimated for various reasons. As low education was closely correlated to the irregular sector - where returns to education were negligible – a high proportion of the irregular sector in Korea tends to underestimate the educational effect on disadvantages. Their high probability of being unemployed can also be underestimated because school-leavers with a higher educational attainment have a high probability of unemployment, and because many low-educated persons were underemployed in rural areas. Their low probability of (re-)employment also can be underestimated unless we control living areas.

(4) Our Logit estimations reported that the youth, older workers, and prime-age women were generally more disadvantaged than prime-age males. For the youths, their disadvantages mainly come from a high probability of being unemployed. But they had a relatively high probability of (re-)employment. Mobility between the regular and irregular sectors was also strong for them. For older workers, the main cause of disadvantages was based on their low probability of (re-)employment. They were also easily unemployed because of their higher proportion of temporary workers. Mobility between the regular and irregular sectors was very limited for them. Prime-age women were easily discouraged in the labour market. Their high probability of unemployment come from their higher proportion of temporary workers. Their inflow into the irregular sector was great, but their escape from the irregular sector is not easy.

(5) For the long-spells unemployed, they had a low probability of (re-)employment and experienced greater earnings loss in newly employed jobs. However, their longer unemployment spells did not hinder them from finding a regular job, because regular jobs may require a longer period to find.

These microanalyses can partially explain the reasons for different labour adjustment patterns among worker groups. Disadvantaged workers are more vulnerable to the business

recession due to the segmented labour market. They are exposed to the open labour market, while male regular workers enjoy the strong employment protection.

#### 7.1.4 Chapter 4: Evaluation types and evaluation methods

In Chapter 4, we surveyed various types of programme evaluation and related methods.

Evaluation types are divided into three groups: distributional effects of programmes among groups, programme effects on individual participants, and aggregate impacts of LMPs. Among them, we focused on the distributional effects of programmes which have not been given much attention by previous evaluation studies. We also reviewed theoretical backgrounds on the barriers to programme participation in detail: legal and administrative barriers, creaming-off, reverse substitution of employment opportunities, workers' limited information on programmes and livelihood problems during programme participation, and regional labour market situation and implementation capability. Based on these theoretical backgrounds, we made an international comparison of the distribution of LMPs. For the international comparison, we used the participant database from EUROSTAT (2001). In terms of participation stocks, the participation rate in Korea was very low, in passive measures in particular. This suggests that Korea may have a less equal distribution of programmes because a lower overall programme participation rate tends to be associated with a less equal distribution of programmes among different worker groups. And the international comparison found that a high proportion of unemployment or high unemployment in a group was likely to lead a lower participation probability for the group.

Chapter 4 also discussed the evaluation problems and methods related to programme effects on individual participants and the aggregate impacts of LMPs. A brief review of evaluation results was given in this Chapter.

#### 7.1.5 Chapter 5: Participation in labour market programmes

In Chapter 5 we analysed the distributional effects of LMPs during the Korean financial crisis. Our empirical analysis found many important results.

The most significant finding is that the more disadvantaged groups, which were identified in Chapter 3, tend to be more easily excluded from the government programmes. These groups were the youth, prime-age women, lower-educated persons, and non-EIS workers

(irregular workers, part-timers, workers who left small-sized firms, etc.). The group of older workers was an exception.

The most unequal distribution of programmes was seen in unemployment benefits. This result is supported by the result of international comparison in Chapter 4, which suggested that Korea's low participation rate in passive measures may be associated with more unequal programme distribution. On the contrary, public work programmes showed more equal distribution, which may be based on the fact that public works were enacted on a large scale.

The barriers to programme participation for disadvantaged workers were also identified. Low coverage of the EIS was the main barrier in most programmes, except public works (legal or administrative barriers). In public works, a higher application rate of a group was correlated negatively to a lower selection rate, while disadvantaged workers showed higher application rates (creaming-off and insufficient supply of programmes). Regarding training programmes, although disadvantaged workers showed more training needs, they suffered more difficulties in getting access to training information and in livelihood problems (worker needs and information deficiency). The number of PES staff and budget allocations were also important factors in determining programme participation, and persons living in the PES area with the highest unemployment experience rate were more easily excluded from programmes.

The last part of Chapter 5 reported that programme participation probability of a group was negatively correlated to unemployment spells, the extent of information deficiency, and training needs. It clearly showed that programme distribution was seriously biased against disadvantaged groups. Disadvantaged workers excluded from government measures, as well as from the labour market. Only the secondary and precarious jobs are familiar with them. In this way, poverty and inequality increase.

#### 7.1.6 Chapter 6: The impacts of programme participation on re-employment probability

In chapter 6, we evaluated the effects of programme participation on re-employment probability. Main five programmes – the RETU (Re-employment training for the Unemployed), public works, job placement services, unemployment benefits and loan programmes for the unemployed – were evaluated according to worker groups. We also separated the programme effects into the short-term effect of re-employment to any job, mid-

term effects of re-employment to a regular job and longer-term effects of re-employment to a regular job. Our sample comprised only the EIS-workers, which means that our analysis was mainly restricted to regular workers.

In the short-term, active labour market programmes, such as the RETU, public works, and job placement services, were generally successful in terms of reducing non-employment duration of participants. Unemployment benefits, however, seem to lengthen the non-employment duration of beneficiaries. The (mid-term) effects of programmes on re-employment in a regular job were more successful because the positive effects of active programmes continued, and the negative impact of unemployment benefits diminished. The longer-term effects on re-employment in a regular job, however, were small. Only job placement services were successful, and longer-term training was only slightly successful for several groups.

Programme effects were also very different in different worker groups. The short-term positive effects of active programmes were stronger for disadvantaged workers, such as women, low-wage workers, workers in poor households and low-educated workers. And the negative effects of passive measures were weak for them. Programme effects on re-employment in a regular job, however, were weaker for disadvantaged workers, but the pattern was a little unstable.

The positive effects of public works and job placement services increased when these programmes were given along with job training programmes, and the negative effects of unemployment benefits were smaller for trainees. For the youth, the effect of training programmes on re-employment in a regular job increased over time, though it was not significant in the short-term. Job placement services were more helpful for men, while training effects were stronger for women. Training and public works were more helpful for low-educated or low-wage workers, while job placement services were more useful for highly educated persons.

Our evaluations of labour market programmes in Part II suggest that there are a lot of ways to improve the situation of disadvantaged workers. However, policies have difficulties in reducing the labour market segmentation because programme effects were not large in terms of re-employment in a regular job.

## 7.2 Policy implications

Though our study has found many weak points of labour market programmes enacted during the Korean financial crisis, we believe that better policy can improve the situation of disadvantaged workers. We have no intention of suggesting that labour market measures should be abolished if they seem to be inefficient. Instead, they should be improved. As the market system is not perfect, government policy also has its disadvantages. A better situation for disadvantaged workers can be obtained by an optimal combination of a well-functioning market and appropriate government intervention. The most important thing is to determine the optimal point of the combination.

### 7.2.1 The area of government intervention

Based on the results of Part I, we present the following two main areas of government intervention in the labour market, which will enable us to detect the optimal combination for a flexible labour market with appropriate institutional settings.

(1) Reducing labour market segmentation: The extremely low protection for irregular workers must be reinforced, with the mitigation of strong employment protection for the regular workers. The coverage of the EIS must be enlarged to all workers. These measures could be successful when the decentralized bargaining system becomes more coordinated.

(2) Enhancing hour adjustment: Working hours, in particular, hours of regular workers should be more flexible in times of recession with the reduction of total working hours. Government subsidies for hour reduction must be expanded. The reduction of legal working hours appears urgent. The measures for hour reduction and flexibilization can be successful when combined with measures for increasing labour force participation. We can expect that hour reduction may improve labour productivity and reduce the labour market segmentation.

### 7.2.2 Policies for equal distribution of programmes

Based on the evaluation results of Chapter 4 and Chapter 5, we can present many useful policy suggestions to improve programme distribution for disadvantaged groups.

(1) The legal and administrative barriers can be diminished by enlarging the coverage of the EIS. Parts of the EIS funds may be transferred to non-EIS workers. Eligibility conditions



for several measures, for example the RETU (Re-employment Training for the Unemployed), should not be restricted to the EIS-workers.

(2) The overall supply of programmes should be increased because “creaming-off” tends to be stronger in the case of an insufficient supply of programmes. International comparisons indicate that the overall programme participation rate is very low in Korea.

(3) The government should respond adequately to the need for programme participation. Disadvantaged workers usually have a higher need for programme participation, but they do not have access to programmes easily, due to their information deficiency and livelihood problems. Information problems can be mitigated by reinforcing public employment services for them. Special financial assistance is required for the poor during programme participation.

(4) The role of implementation agencies is also important for improving the distributional effects of programmes. A lower case load of PES staff is associated with a higher probability of programme participation. PES staff and budget allocations of the central government should be concentrated on the areas with higher unemployment rates. A higher regional unemployment rate tends to lead a lower programme participation rate.

### 7.2.3 Policies for efficient LMPs

Based on the evaluation results in Chapter 6, we present the following policy suggestions for enhancing the efficiency of labour market programmes.

(1) In the short-term, the positive effects of active measures are stronger for disadvantaged workers, and the negative effects of passive measures are weaker for them. Government programmes are needed to focus on the disadvantaged groups. However, the effects on re-employment in a regular job tend to be smaller for disadvantaged groups. The barrier of the segmented labour market may be strong enough to nullify the programme effects for them. More intensive assistance for disadvantaged workers will be required in order to reduce the labour market segmentation between the regular and irregular sectors. Some type of programme packages will be useful for them because the effects of public works or job placement services are stronger for trainees.

(2) The government needs to reinforce public employment service. Job placement services have strong positive effects on re-employment probability. While the costs of public job assistance are relatively small, its effects tend to continue over time, and seem to be helpful for many worker groups.

(3) Job training programmes (the RETU) are also helpful for reducing non-employment duration. However, the effects on re-employment in a regular job are not strong. The contents and quality of training programmes must be improved.

(4) The effects of public works disappear over time. Public works need to be restricted to very disadvantaged groups, and to the short-term in a period of business recession.

(5) The effects of unemployment benefits do not seem to be negative on re-employment in a regular job. When the benefits are provided with training programmes, the negative effects are absent, even in the short-term. Passive measures need to be provided with active measures.

### 7.3 The limitations of this study and suggestions for further studies

Although our study broadly analysed the labour market and the policy sector focusing on disadvantages in the labour market, there are several limitations. We expect that these limitations can be the subjects for future further studies.

(1) The results of our programme evaluation of Chapter 6 were restricted to the regular worker sample. In order to analyse the real facts of programme effects for disadvantaged workers, the sample of disadvantaged workers is required.

(2) We were not able to address an important labour market programme: wage subsidy programmes. Unfortunately, our data did not provide information on these programmes.

(3) Our policy evaluations could not address the possible side effects of programmes, such as dead-weight or substitution effects. Intensive aggregate impact analyses and cost-benefit analyses will be required in the future.

## Annex Tables

Annex Table 0.1 Main official surveys used in this study

	<b>The Economically Active Population Survey (EAPS)</b>	<b>The Household Income and Expenditure Survey (HIES)</b>	<b>The Monthly Labour Statistics Survey (MLSS)</b>
Establishment	Korea National Statistical Office	Korea National Statistical Office	Korea Ministry of Labour
First survey	1963	1963	1968
Periodicity	Monthly (quarterly prior to July 1982)	Monthly (quarterly for release)	Monthly
Sample size	<b>30,000 households</b>	<b>5,200 households</b>	<b>3,400 establishments</b>
Scope & coverage	<ul style="list-style-type: none"> <li>* All persons aged 15 years old and over</li> <li>* The armed forces, prisoners and foreigners are excluded</li> </ul>	<ul style="list-style-type: none"> <li>* The households residing in seventy-two nine cities.</li> <li>*The following households are excluded : <ul style="list-style-type: none"> <li>- farmers' households</li> <li>- fishermen's households</li> <li>- one-person households</li> <li>- foreigners' households</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>* Establishments with 5 or more permanent workers (with an employment contract over 3 months)</li> <li>- Establishments with 10 or more permanent workers prior to 1999.</li> </ul>
Survey items	Name, Relationship to household head, Sex, Age, Educational attainment, Marital status, Major activity during last week, Whether worked for pay or profit during last week, Temporary absence from work and its reason, Looking for work during last week, Looking for work during last month, Hours worked, Usual working hours less than 36 hours, Whether wish to have additional work or to change a job, Available to increase work time in the present job, When available to start additional work, Looking for additional work during last week, Available for work during last week, Ways of looking for work, Duration of looking for work, Employment Status of desired, Type of work desired, Willingness to work last week, Available for work during last week, Reason for not looking for work during last week, Whether looking for work during the last 12 months or not, The number of times to looking for work during the last 12 months, When worked last before, Main reason for leaving the work, Industry, Occupation, Employment Status, Number of workers in the establishment	<ul style="list-style-type: none"> <li>* household type, household size, number of earners,</li> <li>* items concerning household heads and his/her spouse: sex, age, educational attainment, industry, occupation,</li> <li>* items concerning other household members (relationship to household head, sex, age, activity status),</li> <li>* incomes, expenditures, yearly current income, type of living quarters, number of automobile</li> </ul>	<ul style="list-style-type: none"> <li>* establishment information: size, industry</li> <li>* worker information by sex: wages, hours and days worked, employment, labour turn-over</li> </ul>
Data collection	Direct interview	keeping an account book method	self-reporting

Annex Table 1.1 Trends of unemployment rates: OECD countries

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average 85-2000
<b>Korea</b> (Korea's ranking)	<b><u>4.0</u></b> 9/25	<b><u>3.8</u></b> 7/25	<b><u>3.1</u></b> 7/26	<b><u>2.5</u></b> 6/26	<b><u>2.6</u></b> 6/26	<b><u>2.4</u></b> 6/26	<b><u>2.3</u></b> 5/26	<b><u>2.4</u></b> 3/26	<b><u>2.8</u></b> 3/29	<b><u>2.4</u></b> 1/30	<b><u>2.0</u></b> 1/30	<b><u>2.0</u></b> 1/30	<b><u>2.6</u></b> 1/30	<b><u>6.8</u></b> 16/30	<b><u>6.3</u></b> 15/30	<b><u>4.1</u></b> 9/30	<b><u>3.3</u></b> 5/30
Australia	8.2	7.9	7.9	6.9	5.9	6.8	9.2	10.4	10.6	9.4	8.2	8.1	8.2	7.7	6.9	6.3	8,0
Austria	3.7	4.0	4.3	4.1	3.8	4.1	4.5	4.7	5.4	5.3	5.6	5.7	5.7	5.7	5.3	4.7	4,8
Belgium	10.4	10.3	10.0	9.0	7.5	6.7	6.6	7.2	8.8	10.0	9.9	9.7	9.4	9.5	8.8	7.0	8,8
Canada	10.5	9.6	8.8	7.8	7.5	8.1	10.3	11.2	11.4	10.3	9.4	9.6	9.1	8.3	7.6	6.8	9,1
Czech Republic	..	..	..	..	..	..	..	..	4.3	4.4	4.1	3.9	4.8	6.5	8.8	8.9	5,7
Denmark	7.1	5.4	5.4	6.1	7.3	7.7	8.4	9.2	10.2	8.3	7.3	6.8	5.6	5.2	5.2	4.7	6,9
Finland	5.0	5.4	5.1	4.6	3.1	3.1	6.7	11.8	16.4	16.7	15.5	14.6	12.7	11.4	10.2	9.8	9,5
France	10.2	10.4	10.5	10.0	9.3	8.9	9.4	10.4	11.7	12.1	11.4	12.1	12.2	11.6	10.9	9.5	10,7
Germany	8.0	7.7	7.6	7.6	6.9	6.2	5.4	6.4	7.6	8.1	7.9	8.5	9.4	8.9	8.2	7.5	7,6
Greece	7.8	7.4	7.4	7.7	7.5	7.0	7.7	8.7	9.7	9.6	10.0	9.8	9.8	11.1	12.0	11.4	9,0
Hungary	..	..	..	..	..	..	..	..	12.1	11.0	10.4	10.1	8.9	8.0	7.1	6.5	9,3
Iceland	0.9	0.7	0.4	0.6	1.7	1.8	1.5	3.0	4.4	4.8	5.0	4.4	3.9	2.8	1.9	1.4	2,5
Ireland	16.5	17.0	16.7	16.2	14.9	12.8	14.4	15.1	15.7	14.7	12.2	11.7	10.4	7.6	5.6	4.3	12,9
Italy	8.6	9.9	10.2	10.5	10.2	9.1	8.6	8.8	10.2	11.2	11.7	11.7	11.8	11.9	11.5	10.7	10,4
Japan	2.6	2.8	2.8	2.5	2.3	2.1	2.1	2.2	2.5	2.9	3.1	3.4	3.4	4.1	4.7	4.7	3,0
Luxembourg	1.7	1.5	1.7	1.6	1.4	1.3	1.4	1.6	2.1	2.7	3.0	3.3	3.6	3.1	2.9	2.6	2,2
Mexico	..	..	3.8	3.4	2.9	2.7	2.6	2.9	3.5	3.7	6.4	5.7	3.7	3.2	2.6	2.2	3,5
Netherlands	9.2	8.4	8.0	7.7	6.9	6.0	5.4	5.4	6.6	7.6	7.1	6.6	5.5	4.2	3.2	2.6	6,3
New Zealand	3.5	4.0	4.1	5.6	7.1	7.8	10.3	10.3	9.5	8.1	6.3	6.1	6.6	7.5	6.8	6.0	6,9
Norway	2.6	2.0	2.1	3.2	4.9	5.2	5.5	5.9	6.0	5.4	4.9	4.8	4.0	3.2	3.2	3.4	4,1
Poland	..	..	..	..	..	..	..	..	14.0	14.4	13.3	12.3	11.2	10.6	13.9	16.1	13,2
Portugal	8.8	8.8	7.3	6.0	5.2	4.9	4.3	4.1	5.5	6.9	7.2	7.3	6.8	5.0	4.4	4.0	6,0
Slovak Republic	..	..	..	..	..	..	..	..	..	13.7	13.1	11.4	11.9	12.8	16.4	18.8	14,0
Spain	20.9	20.5	20.0	19.0	16.7	15.7	15.8	17.9	22.2	23.7	22.7	22.2	20.8	18.8	15.9	14.1	19,2
Sweden	2.8	2.5	2.1	1.7	1.5	1.7	3.0	5.3	8.2	8.0	7.7	8.0	8.0	6.5	5.6	4.7	4,8
Switzerland	1.0	0.8	0.8	0.7	0.6	0.5	1.1	2.5	4.5	4.7	4.2	4.7	5.2	3.9	2.7	2.0	2,5
Turkey	6.9	7.7	8.1	8.2	8.4	7.8	7.9	8.1	8.5	8.2	7.3	6.4	6.6	6.7	7.5	6.4	7,5
United Kingdom	11.6	11.8	10.2	7.8	6.1	5.9	8.2	10.2	10.3	9.4	8.5	7.9	6.5	5.9	6.0	5.5	8,2
United States	7.2	7.0	6.2	5.5	5.3	5.6	6.8	7.5	6.9	6.1	5.6	5.4	4.9	4.5	4.2	4.0	5,8
Euro area	10.2	10.3	10.3	10.0	9.2	8.4	8.1	9.0	10.7	11.4	11.1	11.4	11.4	10.8	9.9	8.9	10,1
European Union	10.2	10.3	10.0	9.3	8.3	7.8	8.0	9.1	10.6	10.9	10.5	10.6	10.4	9.7	9.0	8.1	9,6
Total OECD	7.6	7.5	7.1	6.4	5.9	5.8	6.4	7.1	7.9	7.7	7.4	7.3	7.0	6.9	6.7	6.2	6,9

Source: OECD Economic Outlook; 2001, "Annex Table 21. Unemployment rates: commonly used definitions".

Annex Table 1.2 Trends of labour force participation rates: OECD countries

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average 85-2000
<b>Korea</b>	<b>58.3</b>	<b>58.9</b>	<b>60.3</b>	<b>60.5</b>	<b>61.9</b>	<b>62.4</b>	<b>63.4</b>	<b>63.7</b>	<b>64.1</b>	<b>64.9</b>	<b>65.4</b>	<b>65.6</b>	<b>66.1</b>	<b>64.7</b>	<b>64.7</b>	<b>65.2</b>	<b>63.5</b>
(Korea's ranking)	22/25	24/25	24/26	23/26	23/26	18/26	17/26	17/26	19/29	19/30	19/30	21/30	19/30	21/30	21/30	23/30	21/30
Australia	70.6	71.7	71.9	72.5	73.8	74.4	74.0	73.7	73.5	74.0	75.2	75.2	74.8	74.7	74.7	75.4	74.0
Austria	76.2	76.6	76.7	76.9	77.5	78.0	78.5	78.4	77.1	76.6	76.5	76.3	76.5	77.0	77.4	77.4	77.2
Belgium	60.7	60.9	61.0	61.2	60.9	60.9	60.9	61.0	61.5	61.9	62.3	62.5	62.7	63.5	63.8	63.6	61.9
Canada	75.1	75.8	76.5	77.3	77.8	77.7	77.2	76.4	76.1	76.0	75.8	75.6	75.9	76.3	76.9	77.4	76.6
Czech Republic	..	..	..	..	..	..	..	..	72.3	72.6	72.6	72.4	72.4	72.5	72.3	71.6	72.3
Denmark	80.9	81.7	81.4	82.7	82.5	82.9	82.8	82.8	81.5	79.2	79.6	79.7	79.9	79.7	80.3	80.4	81.1
Finland	76.6	76.6	76.1	75.9	77.0	76.8	75.3	73.6	72.7	72.1	72.5	72.6	72.3	72.6	73.7	74.5	74.3
France	66.4	66.5	66.5	66.4	66.6	66.6	66.8	66.9	66.9	67.1	67.0	67.5	67.7	68.0	68.5	68.7	67.2
Germany	67.4	67.9	68.3	68.6	68.5	69.1	73.9	73.1	72.7	72.9	72.8	72.9	73.4	73.8	74.1	74.8	71.8
Greece	62.0	61.5	61.0	61.9	61.5	61.5	59.6	60.5	61.2	61.9	62.5	62.0	61.7	63.9	64.2	64.0	61.9
Hungary	..	..	..	..	..	..	..	..	61.8	59.0	57.6	57.2	56.7	57.1	58.7	59.1	58.4
Iceland	79.4	81.0	84.2	80.2	78.9	77.5	76.2	75.5	75.4	75.4	75.7	76.3	76.6	77.1	77.3	77.0	77.6
Ireland	62.7	62.5	62.4	61.8	61.1	62.0	62.2	62.0	62.7	63.0	63.1	64.1	64.2	67.2	68.6	69.6	63.8
Italy	59.2	60.2	60.0	60.3	59.9	59.6	59.5	59.0	57.9	57.4	57.4	57.7	58.0	58.8	59.3	60.1	59.0
Japan	72.3	72.2	72.3	72.5	73.1	74.1	75.2	75.7	76.0	76.4	76.5	77.0	78.0	78.2	78.1	78.1	75.6
Luxembourg	60.2	60.4	60.9	61.3	61.7	61.7	62.1	61.8	61.4	61.7	61.8	62.2	62.5	62.8	63.6	64.3	62.0
Mexico	..	..	51.1	51.6	51.8	51.8	53.3	53.8	55.2	54.7	55.3	55.3	56.2	56.5	55.7	56.9	54.2
Netherlands	56.0	56.4	56.5	57.2	57.4	58.2	59.0	59.6	60.5	60.8	61.7	62.5	63.7	64.5	65.4	66.2	60.6
New Zealand	66.5	66.2	66.1	64.6	63.5	63.8	63.8	63.3	63.3	64.2	64.9	65.8	65.6	65.2	65.3	65.4	64.7
Norway	77.5	79.2	80.2	80.1	78.7	78.0	77.1	76.9	76.5	76.8	77.7	79.2	80.4	81.1	80.7	80.7	78.9
Poland	..	..	..	..	..	..	..	..	68.8	67.6	66.9	66.5	66.1	65.8	65.1	65.3	66.5
Portugal	68.1	67.9	68.4	69.0	69.9	71.0	72.4	72.0	71.3	71.4	71.1	71.9	73.4	73.3	73.9	74.7	71.4
Slovak Republic	..	..	..	..	..	..	..	..	..	69.0	69.2	69.5	68.6	67.8	69.0	69.9	69.0
Spain	60.2	60.3	61.2	61.8	61.8	62.2	62.2	62.1	62.3	62.6	62.4	62.2	62.7	63.3	64.2	65.6	62.5
Sweden	81.0	81.2	81.5	82.0	82.5	82.9	82.0	80.1	77.6	76.3	76.9	76.5	75.5	75.2	75.7	76.4	78.8
Switzerland	76.2	77.3	78.5	79.7	80.6	82.5	83.9	83.2	83.8	82.0	81.9	82.3	82.3	82.2	81.4	81.1	81.5
Turkey	63.4	63.2	63.0	62.1	62.0	60.7	60.6	59.3	54.9	57.2	56.7	56.1	54.9	55.1	55.8	51.9	58.2
United Kingdom	74.8	74.8	75.2	76.3	76.6	76.5	76.0	76.0	75.7	75.4	75.3	75.3	75.3	75.3	75.8	75.9	75.7
United States	64.8	65.3	65.6	65.9	66.4	66.5	66.2	66.4	66.3	66.6	66.6	66.8	67.1	67.1	67.1	67.2	66.5
Euro area	63.9	64.2	64.4	64.7	64.6	64.9	66.5	66.2	65.9	66.0	66.0	66.2	66.6	67.2	67.8	68.4	66.0
European Union	66.3	66.6	66.8	67.2	67.3	67.5	68.5	68.3	67.9	67.9	67.9	68.0	68.4	68.8	69.4	69.9	68.0
Total OECD	66.7	67.0	66.6	66.8	67.2	67.4	67.9	67.8	67.6	67.7	67.7	67.8	68.0	68.2	68.3	68.4	67.6

Source: OECD Economic Outlook; 2001, "Annex Table 19. Labour force participation rate".

Annex Table 2.1 ADF-test statistics for labour market indicators (increase rate over the previous quarters)

	Without constant	Constant	Trend & constant
Period between 1982 Q4 and 2002 Q1 : Obs. 78 quarters			
RGDP	-2.9114	-6.1597	-6.6779
INPUT	-5.5997	-6.2793	-6.2209
INPUT_A	-4.4385	-5.7317	-6.3290
INPUT_P	-4.1428	-4.9451	-5.8777
EMP	-4.0032	-5.7375	-5.7757
EMP_N	-3.0421	-5.2269	-6.0432
DEP	-3.8849	-5.7690	-6.6230
DEP_M	-3.8313	-5.3497	-6.3380
DEP_N	-3.4321	-5.2199	-6.2869
DEP_F	-4.4847	-6.4969	-7.2303
PER	-3.5305	-4.7776	-5.6902
PER_M	-3.5987	-4.6167	-5.9571
PER_F	-3.7776	-5.1783	-5.6210
PER_N	-3.2020	-4.3476	-5.3357
DAILY	-6.8036	-7.6739	-7.6246
DAILY_M	-7.5270	-8.0441	-8.0075
DAILY_F	-6.3446	-7.1213	-7.1945
UN	-6.2198	-6.1912	-6.1790
UN_N	-6.1902	-6.1634	-6.1516
LF	-3.1355	-5.9319	-6.2844
LF_N	-1.9948	-4.4525	-6.5007
HOUR_A	-6.5996	-8.4427	-8.6263
HOUR_P	-7.2405	-7.8684	-7.8117
WAGE_A	-2.9548	-3.6468	-4.2830
WAGE_P	-4.0624	-6.7103	-6.8637
PROD	-3.3255	-8.0339	-9.2598
<b>MacKinnon Critical value: 1%</b>	<b>-2.5933</b>	<b>-3.5176</b>	<b>-4.0819</b>
<b>: 5%</b>	<b>-1.9445</b>	<b>-2.8996</b>	<b>-3.4688</b>
<b>: 10%</b>	<b>-1.6180</b>	<b>-2.5868</b>	<b>-3.1610</b>
Period between 1989 Q2 and 2002 Q1 : Obs. 52 quarters			
REGU	-2.3984	-2.4533	-2.6740
REGU_M	-2.9844	-3.0388	-3.6198
REGU_F	-2.4405	-2.4897	-2.4146
TEMP	-5.1610	-6.9793	-6.9242
TEMP_M	-6.0747	-7.1198	-7.3780
TEMP_F	-4.4781	-6.4055	-6.3852
<b>MacKinnon Critical value: 1%</b>	<b>-2.6090</b>	<b>-3.5653</b>	<b>-4.1498</b>
<b>: 5%</b>	<b>-1.9473</b>	<b>-2.9202</b>	<b>-3.5005</b>
<b>: 10%</b>	<b>-1.6192</b>	<b>-2.5977</b>	<b>-3.1793</b>

Note: 1) The test statistics have been computed with one lagged difference term.

2) The shaded figures indicate that the test results are not statistically significant at the 0.05 level.

Annex Table 2.2 Correlation between growth rate of GDP and labour market indicators  
(increase rate over the same quarter of the last year)

	Mean	Std. Dev.	-3	-2	-1	0	1	2	3	4
<b>Whole Period (1983 3/4- 2001 4/4): Obs. 74 quarters</b>										
INPUT	1,6	3,6	0,27	0,44	0,57	0,69	0,53	0,37	0,13	-0,19
EMP	2,2	2,5	0,16	0,40	0,61	0,74	0,71	0,61	0,42	0,18
UN	6,8	44,5	0,00	-0,29	-0,62	-0,82	-0,81	-0,65	-0,40	-0,18
DEP	4,1	4,0	0,23	0,44	0,62	0,77	0,77	0,67	0,49	0,28
PER	3,9	4,0	0,12	0,29	0,48	0,68	0,78	0,79	0,70	0,54
DAILY	5,3	10,4	0,33	0,51	0,56	0,50	0,24	-0,08	-0,33	-0,49
HOUR_A	-0,9	1,2	0,14	0,29	0,42	0,47	0,39	0,16	-0,08	-0,30
HOUR_P	-0,6	2,3	0,23	0,25	0,21	0,26	0,04	-0,10	-0,25	-0,47
WAGE_PA	6,1	6,5	-0,02	0,10	0,28	0,29	0,44	0,48	0,47	0,51
WAGE_P	6,9	6,3	0,17	0,32	0,53	0,46	0,40	0,32	0,15	0,11
<b>The 1980s (1983 3/4- 1990 2/4): Obs. 28 quarters</b>										
INPUT	2,2	3,1	0,44	0,27	0,09	0,16	0,01	0,14	0,16	-0,09
EMP	3,2	2,1	0,43	0,35	0,24	0,11	-0,10	-0,09	-0,02	-0,07
UN	-4,0	12,8	0,17	-0,10	-0,39	-0,55	-0,63	-0,56	-0,51	-0,34
DEP	7,2	2,0	-0,09	-0,08	-0,18	-0,05	-0,01	0,17	0,38	0,43
PER	0,7	0,2	-0,15	-0,10	-0,10	0,13	0,33	0,50	0,64	0,58
DAILY	9,4	7,8	0,06	0,04	-0,15	-0,26	-0,50	-0,42	-0,24	-0,09
HOUR_A	-1,0	1,1	0,23	0,37	0,43	0,50	0,40	0,12	0,11	-0,11
HOUR_P	-0,9	2,4	0,18	0,04	-0,10	0,11	0,09	0,25	0,22	-0,05
WAGE_PA	8,8	5,6	-0,38	-0,32	-0,07	-0,20	-0,02	0,14	0,17	0,28
WAGE_P	9,2	5,7	-0,14	-0,16	0,07	-0,29	-0,37	-0,19	-0,25	-0,01
<b>The pre-crisis 1990s (1990 3/4- 1997 2/4): Obs. 28 quarters</b>										
INPUT	1,8	1,9	0,12	0,15	0,32	0,61	0,20	0,13	-0,04	-0,21
EMP	2,4	0,9	0,18	0,35	0,59	0,71	0,55	0,47	0,24	-0,09
UN	2,5	15,2	-0,49	-0,51	-0,56	-0,65	-0,61	-0,54	-0,41	-0,18
DEP	3,3	1,5	0,53	0,70	0,71	0,71	0,59	0,42	0,04	-0,29
PER	3,7	1,5	0,66	0,70	0,68	0,70	0,62	0,48	0,17	-0,12
DAILY	1,1	4,0	-0,08	0,25	0,32	0,30	0,18	0,02	-0,30	-0,50
HOUR_A	-0,9	1,0	0,26	0,33	0,35	0,17	-0,06	-0,35	-0,38	-0,32
HOUR_P	-0,6	1,5	0,05	0,00	0,07	0,36	-0,05	-0,10	-0,18	-0,21
WAGE_PA	7,0	5,0	-0,14	-0,24	-0,26	-0,25	0,10	0,17	0,47	0,63
WAGE_P	7,8	5,0	0,19	0,21	0,13	-0,10	-0,19	-0,29	-0,18	-0,15
<b>The 1990s including the period of crisis (1990 3/4- 2001 4/4): Obs. 46 quarters</b>										
INPUT	1,3	3,8	0,19	0,47	0,69	0,85	0,67	0,40	0,08	-0,29
EMP	1,6	2,6	-0,02	0,33	0,65	0,88	0,89	0,74	0,46	0,13
UN	13,4	54,8	0,06	-0,26	-0,63	-0,86	-0,85	-0,65	-0,37	-0,11
DEP	2,2	3,7	0,05	0,38	0,68	0,90	0,90	0,71	0,40	0,06
PER	2,2	3,9	-0,08	0,17	0,44	0,71	0,84	0,83	0,68	0,43
DAILY	2,8	11,1	0,30	0,55	0,67	0,60	0,30	-0,14	-0,53	-0,78
HOUR_A	-0,8	1,3	0,17	0,34	0,50	0,55	0,46	0,22	-0,11	-0,36
HOUR_P	-0,4	2,3	0,34	0,41	0,40	0,41	0,09	-0,18	-0,39	-0,63
WAGE_PA	4,4	6,5	-0,10	0,08	0,26	0,33	0,49	0,52	0,49	0,51
WAGE_P	5,5	6,4	0,14	0,38	0,61	0,62	0,55	0,39	0,17	0,03

Notes: The figures in shaded areas indicate that the results are statistically significant at 0,10 level.

Sources: See Table 2.7.

Annex Table 2.3 Residual analysis of error correction models

## 2.3.1 Equation of nominal wage of permanent workers (with unemployment variable)

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2 -1 0 1 2	Cook's D
19824	0.039							
19831	0.018	0.016	0.016	0.002	0.031	0.065		0.000
19832	0.033	0.016	0.017	0.017	0.030	0.575	*	0.016
19833	0.012	0.011	0.010	0.000	0.033	0.005		0.000
19834	0.014	0.018	0.008	-0.004	0.034	-0.112		0.000
19841	0.029	0.029	0.012	-0.001	0.032	-0.029		0.000
19842	0.017	0.037	0.008	-0.021	0.033	-0.615	*	0.003
19843	0.032	0.031	0.009	0.001	0.033	0.017		0.000
19844	0.020	0.027	0.006	-0.006	0.034	-0.190		0.000
19851	0.031	0.033	0.005	-0.002	0.034	-0.055		0.000
19852	0.018	0.015	0.010	0.003	0.033	0.099		0.000
19853	0.022	0.020	0.008	0.002	0.033	0.047		0.000
19854	0.024	0.027	0.004	-0.002	0.034	-0.063		0.000
19861	0.015	0.027	0.004	-0.012	0.034	-0.355		0.000
19862	0.032	0.035	0.007	-0.003	0.034	-0.082		0.000
19863	-0.007	0.035	0.007	-0.042	0.034	-1.232	**	0.008
19864	0.016	0.045	0.008	-0.028	0.034	-0.841	*	0.006
19871	0.027	0.030	0.010	-0.003	0.033	-0.098		0.000
19872	0.012	0.031	0.008	-0.019	0.034	-0.577	*	0.003
19873	0.027	0.061	0.011	-0.034	0.033	-1.054	**	0.019
19874	0.164	0.064	0.011	0.100	0.033	3.063	*****	0.154
19881	-0.025	0.026	0.016	-0.052	0.030	-1.702	***	0.121
19882	0.048	0.065	0.013	-0.017	0.032	-0.540	*	0.007
19883	0.038	0.036	0.009	0.002	0.033	0.058		0.000
19884	0.016	0.042	0.011	-0.026	0.033	-0.782	*	0.009
19891	0.044	0.054	0.009	-0.010	0.033	-0.306		0.001
19892	0.093	0.035	0.008	0.058	0.033	1.738	***	0.028
19893	0.091	0.024	0.009	0.067	0.033	2.016	****	0.044
19894	0.014	0.016	0.009	-0.002	0.033	-0.058		0.000
19901	0.085	0.037	0.008	0.048	0.033	1.438	**	0.018
19902	0.045	0.032	0.010	0.013	0.033	0.402		0.002
19903	0.034	0.032	0.009	0.001	0.033	0.043		0.000
19904	0.062	0.029	0.006	0.033	0.034	0.972	*	0.005
19911	0.021	0.023	0.007	-0.002	0.034	-0.067		0.000
19912	0.064	0.054	0.014	0.010	0.031	0.322		0.003
19913	0.050	0.026	0.006	0.024	0.034	0.715	*	0.003
19914	0.009	0.029	0.008	-0.020	0.034	-0.592	*	0.003
19921	0.072	0.033	0.007	0.038	0.034	1.137	**	0.007
19922	-0.101	0.014	0.007	-0.114	0.034	-3.404	*****	0.082
19923	0.075	0.063	0.016	0.012	0.031	0.406		0.006
19924	0.120	0.030	0.008	0.090	0.033	2.697	*****	0.063
19931	0.054	0.001	0.013	0.053	0.032	1.659	***	0.061
19932	0.006	0.000	0.010	0.006	0.033	0.173		0.000
19933	0.024	0.019	0.010	0.005	0.033	0.164		0.000
19934	0.016	0.017	0.010	-0.001	0.033	-0.030		0.000
19941	0.046	0.028	0.008	0.019	0.033	0.557	*	0.003
19942	0.044	0.029	0.008	0.015	0.033	0.462		0.002
19943	0.019	0.017	0.007	0.002	0.034	0.048		0.000
19944	0.024	0.033	0.011	-0.009	0.033	-0.288		0.001
19951	0.004	0.023	0.007	-0.019	0.034	-0.556	*	0.002
19952	0.053	0.033	0.006	0.020	0.034	0.580	*	0.002
19953	0.033	0.021	0.007	0.012	0.034	0.357		0.001



19954	0.023	0.023	0.005	0.000	0.034	0.003				0.000
19961	0.021	0.025	0.006	-0.004	0.034	-0.127				0.000
19962	0.029	0.030	0.006	0.000	0.034	-0.014				0.000
19963	0.059	0.027	0.005	0.032	0.034	0.940		*		0.002
19964	0.011	0.013	0.007	-0.003	0.034	-0.084				0.000
19971	0.032	0.008	0.009	0.023	0.033	0.697		*		0.005
19972	0.003	0.012	0.011	-0.009	0.033	-0.278				0.001
19973	0.035	0.033	0.007	0.003	0.034	0.081				0.000
19974	-0.050	0.019	0.011	-0.069	0.033	-2.119		****		0.077
19981	0.048	0.015	0.026	0.034	0.023	1.477		**		0.402
19982	-0.028	0.005	0.026	-0.033	0.022	-1.504		***		0.470
19983	-0.055	-0.007	0.017	-0.048	0.030	-1.623		***		0.130
19984	0.069	0.022	0.014	0.047	0.031	1.517		***		0.071
19991	0.031	0.013	0.009	0.018	0.033	0.548		*		0.003
19992	0.013	0.018	0.010	-0.005	0.033	-0.147				0.000
19993	0.015	0.031	0.006	-0.016	0.034	-0.474				0.001
19994	0.027	0.033	0.011	-0.006	0.033	-0.189				0.001
20001	-0.005	0.048	0.008	-0.053	0.034	-1.579		***		0.019
20002	0.070	0.051	0.009	0.019	0.033	0.585		*		0.004
20003	0.020	0.029	0.011	-0.009	0.033	-0.274				0.001
20004	0.002	0.044	0.007	-0.043	0.034	-1.266		**		0.010
20011	0.025	0.039	0.008	-0.013	0.034	-0.394				0.001
20012	-0.002	0.047	0.008	-0.049	0.033	-1.454		**		0.018
20013	0.010	0.055	0.011	-0.045	0.033	-1.373		**		0.029
20014	0.043	0.049	0.009	-0.006	0.033	-0.177				0.000
20021	0.062	0.032	0.012	0.030	0.032	0.928		*		0.016

### 2.3.2 Equation of nominal wage of all dependent workers (with unemployment variable)

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2-1-0 1 2	Cook's D
19824	0.022							
19831	0.048	0.038	0.012	0.010	0.024	0.408		0.006
19832	0.054	0.009	0.012	0.044	0.024	1.886		0.123
19833	-0.006	0.020	0.008	-0.026	0.025	-1.036		0.016
19834	0.046	0.020	0.006	0.027	0.026	1.044		0.008
19841	0.047	0.030	0.010	0.016	0.024	0.670		0.010
19842	0.013	0.030	0.006	-0.017	0.025	-0.675		0.004
19843	0.026	0.013	0.007	0.013	0.025	0.513		0.003
19844	0.016	0.016	0.004	-0.001	0.026	-0.032		0.000
19851	0.000	0.023	0.004	-0.023	0.026	-0.891		0.002
19852	0.012	0.010	0.008	0.003	0.025	0.101		0.000
19853	0.014	0.016	0.007	-0.002	0.025	-0.077		0.000
19854	0.007	0.025	0.004	-0.019	0.026	-0.720		0.001
19861	0.015	0.028	0.004	-0.013	0.026	-0.512		0.001
19862	0.029	0.028	0.006	0.001	0.025	0.040		0.000
19863	0.012	0.028	0.005	-0.016	0.026	-0.606		0.002
19864	0.017	0.026	0.006	-0.009	0.026	-0.367		0.001
19871	0.034	0.010	0.008	0.024	0.025	0.949		0.012
19872	0.027	0.016	0.006	0.011	0.025	0.441		0.002
19873	0.014	0.048	0.007	-0.034	0.025	-1.364		0.023
19874	0.098	0.045	0.008	0.053	0.025	2.118		0.064
19881	-0.007	0.038	0.010	-0.045	0.024	-1.861		0.084
19882	0.041	0.056	0.011	-0.015	0.024	-0.646		0.012
19883	0.058	0.027	0.008	0.031	0.025	1.246		0.022
19884	0.087	0.036	0.009	0.050	0.025	2.047		0.082
19891	0.052	0.036	0.009	0.016	0.025	0.642		0.007
19892	0.060	0.017	0.006	0.042	0.026	1.659		0.022
19893	0.058	0.026	0.005	0.033	0.026	1.267		0.009
19894	0.017	0.028	0.006	-0.012	0.026	-0.447		0.001

19901	0.052	0.042	0.007	0.010	0.025	0.381				0.001
19902	0.037	0.047	0.007	-0.010	0.025	-0.398				0.002
19903	0.028	0.043	0.007	-0.015	0.025	-0.586		*		0.004
19904	0.063	0.037	0.005	0.026	0.026	1.011		***		0.005
19911	0.033	0.032	0.005	0.001	0.026	0.028				0.000
19912	0.071	0.064	0.011	0.008	0.024	0.329				0.003
19913	0.061	0.031	0.006	0.030	0.025	1.164		***		0.011
19914	0.011	0.036	0.006	-0.026	0.025	-1.003		***		0.008
19921	0.079	0.033	0.005	0.046	0.026	1.797		***		0.020
19922	0.067	0.023	0.008	0.044	0.025	1.742		***		0.041
19923	0.037	0.022	0.007	0.015	0.025	0.584		*		0.003
19924	0.043	0.021	0.006	0.022	0.026	0.867		*		0.005
19931	0.019	0.011	0.007	0.007	0.025	0.291				0.001
19932	-0.022	0.010	0.008	-0.032	0.025	-1.272		***		0.022
19933	0.022	0.024	0.010	-0.002	0.024	-0.067				0.000
19934	0.020	0.020	0.007	0.000	0.025	0.003				0.000
19941	0.026	0.032	0.006	-0.006	0.025	-0.236				0.001
19942	0.055	0.039	0.007	0.015	0.025	0.594		*		0.004
19943	0.011	0.020	0.006	-0.009	0.026	-0.360				0.001
19944	0.045	0.036	0.009	0.009	0.025	0.347				0.002
19951	0.020	0.023	0.006	-0.003	0.026	-0.104				0.000
19952	0.017	0.024	0.005	-0.007	0.026	-0.276				0.000
19953	0.025	0.025	0.005	0.000	0.026	0.004				0.000
19954	0.022	0.025	0.004	-0.003	0.026	-0.131				0.000
19961	0.031	0.022	0.004	0.010	0.026	0.369				0.001
19962	0.025	0.029	0.005	-0.004	0.026	-0.141				0.000
19963	0.053	0.026	0.004	0.027	0.026	1.042		***		0.003
19964	-0.013	0.022	0.006	-0.035	0.026	-1.359		***		0.014
19971	0.028	0.014	0.007	0.014	0.025	0.544		*		0.003
19972	0.017	0.016	0.008	0.001	0.025	0.050				0.000
19973	0.024	0.030	0.005	-0.006	0.026	-0.215				0.000
19974	-0.039	0.024	0.008	-0.063	0.025	-2.535		*****		0.106
19981	0.051	0.016	0.020	0.035	0.017	2.039		****		0.780
19982	-0.019	0.022	0.020	-0.041	0.017	-2.443		****		1.256
19983	-0.022	-0.004	0.013	-0.019	0.023	-0.816		*		0.032
19984	0.021	0.012	0.011	0.009	0.024	0.391				0.004
19991	-0.001	0.017	0.007	-0.018	0.025	-0.713		*		0.006
19992	0.003	0.016	0.008	-0.013	0.025	-0.528		*		0.004
19993	0.021	0.022	0.005	-0.001	0.026	-0.054				0.000
19994	0.005	0.016	0.008	-0.011	0.025	-0.425				0.003
20001	0.003	0.040	0.007	-0.037	0.025	-1.469		***		0.025
20002	0.066	0.030	0.007	0.036	0.025	1.433		***		0.023
20003	-0.023	0.020	0.009	-0.043	0.024	-1.759		***		0.066
20004	0.017	0.037	0.009	-0.020	0.024	-0.806		*		0.014
20011	0.039	0.022	0.007	0.017	0.025	0.680		*		0.005
20012	0.021	0.035	0.007	-0.013	0.025	-0.527		*		0.003
20013	0.028	0.033	0.007	-0.005	0.025	-0.196				0.000
20014	0.008	0.030	0.006	-0.022	0.026	-0.845		*		0.006
20021	-0.048	0.014	0.009	-0.062	0.025	-2.506		*****		0.117

### 2.3.3 Equation of nominal wage of permanent workers (with employment variable)

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2-1-0 1 2	Cook's D
19824	0.039							
19831	0.018	0.021	0.016	-0.003	0.031	-0.103		0.000
19832	0.033	0.011	0.017	0.022	0.030	0.733		0.025
19833	0.012	0.008	0.012	0.004	0.032	0.115		0.000
19834	0.014	0.026	0.010	-0.012	0.033	-0.356		0.002
19841	0.029	0.029	0.013	-0.001	0.032	-0.029		0.000

19842	0.017	0.031	0.010	-0.014	0.033	-0.424				0.002
19843	0.032	0.036	0.009	-0.004	0.033	-0.121				0.000
19844	0.020	0.032	0.006	-0.011	0.034	-0.338				0.001
19851	0.031	0.039	0.008	-0.008	0.033	-0.236				0.000
19852	0.018	0.031	0.009	-0.013	0.033	-0.393				0.002
19853	0.022	0.028	0.006	-0.006	0.034	-0.173				0.000
19854	0.024	0.027	0.006	-0.002	0.034	-0.065				0.000
19861	0.015	0.033	0.007	-0.018	0.034	-0.536		*		0.002
19862	0.032	0.026	0.011	0.005	0.033	0.162				0.000
19863	-0.007	0.042	0.008	-0.049	0.033	-1.453		**		0.019
19864	0.016	0.051	0.009	-0.034	0.033	-1.029		**		0.010
19871	0.027	0.034	0.010	-0.007	0.033	-0.209				0.001
19872	0.012	0.037	0.008	-0.025	0.033	-0.757		*		0.005
19873	0.027	0.066	0.011	-0.039	0.033	-1.203		**		0.026
19874	0.164	0.061	0.010	0.103	0.033	3.127		*****		0.138
19881	-0.025	0.023	0.016	-0.048	0.030	-1.599		***		0.108
19882	0.048	0.065	0.013	-0.018	0.032	-0.551		*		0.007
19883	0.038	0.037	0.010	0.001	0.033	0.032				0.000
19884	0.016	0.040	0.016	-0.024	0.031	-0.784		*		0.023
19891	0.044	0.068	0.013	-0.024	0.032	-0.742		*		0.012
19892	0.093	0.039	0.008	0.054	0.033	1.617		***		0.024
19893	0.091	0.025	0.008	0.066	0.033	1.964		***		0.035
19894	0.014	0.019	0.008	-0.005	0.033	-0.148				0.000
19901	0.085	0.039	0.008	0.046	0.033	1.389		***		0.018
19902	0.045	0.031	0.010	0.014	0.033	0.427				0.003
19903	0.034	0.035	0.009	-0.002	0.033	-0.054				0.000
19904	0.062	0.033	0.007	0.029	0.034	0.851		*		0.004
19911	0.021	0.021	0.008	0.000	0.034	-0.002				0.000
19912	0.064	0.053	0.014	0.011	0.031	0.353				0.004
19913	0.050	0.024	0.006	0.026	0.034	0.778		*		0.003
19914	0.009	0.032	0.008	-0.022	0.034	-0.666		*		0.004
19921	0.072	0.033	0.007	0.038	0.034	1.132		**		0.008
19922	-0.101	0.013	0.008	-0.113	0.033	-3.392		*****		0.105
19923	0.075	0.056	0.016	0.019	0.031	0.632		*		0.015
19924	0.120	0.028	0.009	0.092	0.033	2.769		*****		0.077
19931	0.054	0.005	0.013	0.049	0.032	1.525		***		0.053
19932	0.006	0.006	0.009	0.000	0.033	-0.007				0.000
19933	0.024	0.023	0.010	0.001	0.033	0.041				0.000
19934	0.016	0.017	0.010	-0.001	0.033	-0.041				0.000
19941	0.046	0.023	0.008	0.023	0.033	0.686		*		0.004
19942	0.044	0.027	0.008	0.018	0.033	0.522		*		0.002
19943	0.019	0.012	0.007	0.007	0.034	0.220				0.000
19944	0.024	0.023	0.008	0.001	0.033	0.023				0.000
19951	0.004	0.018	0.008	-0.013	0.033	-0.401				0.001
19952	0.053	0.036	0.007	0.017	0.034	0.512		*		0.002
19953	0.033	0.022	0.005	0.011	0.034	0.332				0.000
19954	0.023	0.022	0.005	0.001	0.034	0.039				0.000
19961	0.021	0.019	0.006	0.002	0.034	0.051				0.000
19962	0.029	0.027	0.005	0.002	0.034	0.060				0.000
19963	0.059	0.027	0.004	0.032	0.034	0.941		*		0.002
19964	0.011	0.017	0.006	-0.006	0.034	-0.177				0.000
19971	0.032	0.016	0.007	0.016	0.034	0.471				0.001
19972	0.003	0.015	0.007	-0.012	0.034	-0.353				0.001
19973	0.035	0.024	0.007	0.012	0.034	0.344				0.001
19974	-0.050	0.018	0.008	-0.068	0.034	-2.021		****		0.031
19981	0.048	0.032	0.021	0.016	0.027	0.585		*		0.028
19982	-0.028	0.005	0.025	-0.032	0.024	-1.373		**		0.305
19983	-0.055	-0.009	0.016	-0.046	0.030	-1.531		***		0.098
19984	0.069	0.016	0.014	0.053	0.031	1.681		***		0.083

19991	0.031	0.007	0.009	0.024	0.033	0.731		*		0.006
19992	0.013	0.009	0.011	0.004	0.033	0.128				0.000
19993	0.015	0.032	0.007	-0.017	0.034	-0.490				0.001
19994	0.027	0.028	0.010	-0.002	0.033	-0.045				0.000
20001	-0.005	0.043	0.006	-0.048	0.034	-1.418		**		0.009
20002	0.070	0.045	0.009	0.025	0.033	0.755		*		0.006
20003	0.020	0.025	0.013	-0.005	0.032	-0.160				0.001
20004	0.002	0.040	0.008	-0.038	0.034	-1.132		**		0.009
20011	0.025	0.033	0.009	-0.008	0.033	-0.240				0.001
20012	-0.002	0.040	0.009	-0.042	0.033	-1.250		**		0.018
20013	0.010	0.052	0.010	-0.042	0.033	-1.268		**		0.023
20014	0.043	0.042	0.010	0.001	0.033	0.042				0.000
20021	0.062	0.026	0.012	0.036	0.032	1.118		**		0.026

### 2.3.4 Equation of nominal wage of all dependent workers (with employment variable)

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2-1-0 1 2	Cook's D
19824	0.022							
19831	0.048	0.042	0.011	0.006	0.023	0.266		0.002
19832	0.054	0.015	0.012	0.039	0.023	1.721	***	0.110
19833	-0.006	0.012	0.009	-0.018	0.024	-0.743	*	0.011
19834	0.046	0.032	0.007	0.014	0.024	0.594	*	0.005
19841	0.047	0.037	0.011	0.010	0.023	0.432		0.006
19842	0.013	0.020	0.007	-0.007	0.024	-0.292		0.001
19843	0.026	0.016	0.007	0.010	0.024	0.398		0.002
19844	0.016	0.019	0.005	-0.003	0.025	-0.139		0.000
19851	0.000	0.024	0.006	-0.024	0.025	-0.993	*	0.009
19852	0.012	0.024	0.007	-0.012	0.024	-0.490		0.003
19853	0.014	0.025	0.004	-0.011	0.025	-0.443		0.001
19854	0.007	0.020	0.005	-0.013	0.025	-0.538	*	0.001
19861	0.015	0.037	0.005	-0.022	0.025	-0.890	*	0.005
19862	0.029	0.013	0.008	0.017	0.024	0.693	*	0.009
19863	0.012	0.035	0.006	-0.023	0.025	-0.936	*	0.008
19864	0.017	0.034	0.006	-0.017	0.025	-0.689	*	0.004
19871	0.034	0.011	0.007	0.024	0.024	0.978	*	0.013
19872	0.027	0.019	0.006	0.008	0.025	0.336		0.001
19873	0.014	0.053	0.007	-0.039	0.024	-1.617	***	0.036
19874	0.098	0.045	0.007	0.054	0.024	2.201	****	0.053
19881	-0.007	0.036	0.009	-0.043	0.024	-1.819	***	0.073
19882	0.041	0.055	0.010	-0.014	0.023	-0.622	*	0.011
19883	0.058	0.028	0.008	0.030	0.024	1.250	**	0.024
19884	0.087	0.022	0.012	0.065	0.023	2.886	*****	0.319
19891	0.052	0.059	0.011	-0.006	0.023	-0.282		0.003
19892	0.060	0.022	0.006	0.038	0.025	1.535	***	0.018
19893	0.058	0.026	0.005	0.032	0.025	1.300	**	0.009
19894	0.017	0.031	0.005	-0.014	0.025	-0.569	*	0.002
19901	0.052	0.044	0.006	0.008	0.025	0.308		0.001
19902	0.037	0.045	0.007	-0.008	0.024	-0.324		0.001
19903	0.028	0.044	0.006	-0.016	0.025	-0.651	*	0.004
19904	0.063	0.042	0.005	0.021	0.025	0.840	*	0.004
19911	0.033	0.029	0.006	0.003	0.025	0.137		0.000
19912	0.071	0.066	0.011	0.005	0.023	0.225		0.002
19913	0.061	0.029	0.006	0.032	0.025	1.299	**	0.013
19914	0.011	0.040	0.006	-0.030	0.025	-1.204	**	0.013
19921	0.079	0.035	0.005	0.044	0.025	1.789	***	0.020
19922	0.067	0.026	0.008	0.041	0.024	1.693	***	0.046
19923	0.037	0.023	0.007	0.014	0.024	0.572	*	0.004
19924	0.043	0.017	0.005	0.026	0.025	1.045	**	0.007
19931	0.019	0.015	0.007	0.004	0.024	0.149		0.000

19932	-0.022	0.011	0.007	-0.032	0.024	-1.332	***	0.022
19933	0.022	0.025	0.010	-0.003	0.023	-0.116		0.000
19934	0.020	0.025	0.007	-0.005	0.024	-0.195		0.000
19941	0.026	0.028	0.006	-0.002	0.025	-0.065		0.000
19942	0.055	0.041	0.006	0.013	0.025	0.538	*	0.002
19943	0.011	0.020	0.006	-0.008	0.025	-0.340		0.001
19944	0.045	0.028	0.006	0.017	0.025	0.679	*	0.004
19951	0.020	0.016	0.007	0.004	0.024	0.174		0.000
19952	0.017	0.032	0.006	-0.015	0.025	-0.597	*	0.003
19953	0.025	0.025	0.004	0.000	0.025	0.011		0.000
19954	0.022	0.025	0.003	-0.003	0.025	-0.126		0.000
19961	0.031	0.019	0.004	0.012	0.025	0.492		0.001
19962	0.025	0.027	0.004	-0.002	0.025	-0.069		0.000
19963	0.053	0.025	0.003	0.027	0.025	1.089	**	0.003
19964	-0.013	0.025	0.005	-0.038	0.025	-1.541	***	0.013
19971	0.028	0.015	0.006	0.013	0.025	0.509	*	0.002
19972	0.017	0.023	0.004	-0.006	0.025	-0.225		0.000
19973	0.024	0.025	0.005	-0.001	0.025	-0.035		0.000
19974	-0.039	0.024	0.005	-0.063	0.025	-2.542	*****	0.045
19981	0.051	0.035	0.016	0.017	0.020	0.828	*	0.061
19982	-0.019	0.011	0.018	-0.030	0.017	-1.716	***	0.478
19983	-0.022	-0.010	0.012	-0.012	0.022	-0.532	*	0.011
19984	0.021	0.002	0.010	0.019	0.023	0.833	*	0.018
19991	-0.001	0.012	0.006	-0.013	0.025	-0.542	*	0.002
19992	0.003	0.005	0.008	-0.002	0.024	-0.076		0.000
19993	0.021	0.024	0.005	-0.003	0.025	-0.119		0.000
19994	0.005	0.013	0.007	-0.008	0.024	-0.309		0.001
20001	0.003	0.037	0.005	-0.034	0.025	-1.369	**	0.013
20002	0.066	0.029	0.007	0.037	0.024	1.511	***	0.028
20003	-0.023	0.018	0.010	-0.041	0.023	-1.786	***	0.092
20004	0.017	0.029	0.009	-0.012	0.024	-0.506	*	0.006
20011	0.039	0.017	0.008	0.022	0.024	0.928	*	0.013
20012	0.021	0.023	0.008	-0.002	0.024	-0.072		0.000
20013	0.028	0.036	0.007	-0.008	0.024	-0.325		0.001
20014	0.008	0.022	0.007	-0.014	0.024	-0.575	*	0.004
20021	-0.048	0.001	0.010	-0.049	0.023	-2.096	****	0.103

### 2.3.5 Equation of total employment

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2-1-0 1 2	Cook's D
19824	0.003							
19831	0.008	-0.004	0.004	0.012	0.007	1.883	***	0.228
19832	0.011	0.005	0.002	0.006	0.007	0.903	*	0.018
19833	0.006	0.008	0.002	-0.002	0.007	-0.252		0.001
19834	-0.012	0.007	0.002	-0.019	0.007	-2.603	*****	0.070
19841	-0.030	0.006	0.002	-0.035	0.007	-4.978	*****	0.575
19842	0.031	0.011	0.005	0.020	0.006	3.343	*****	1.459
19843	0.006	0.012	0.003	-0.006	0.007	-0.880	*	0.038
19844	0.010	0.010	0.001	-0.001	0.007	-0.083		0.000
19851	0.003	0.008	0.001	-0.005	0.007	-0.644	*	0.003
19852	0.017	0.010	0.002	0.007	0.007	0.997	*	0.010
19853	0.002	0.007	0.002	-0.005	0.007	-0.660	*	0.004
19854	0.011	0.010	0.001	0.001	0.007	0.125		0.000
19861	-0.005	0.009	0.001	-0.014	0.007	-1.913	***	0.016
19862	0.020	0.012	0.002	0.007	0.007	1.020	**	0.017
19863	0.017	0.017	0.002	0.001	0.007	0.076		0.000
19864	0.014	0.009	0.002	0.005	0.007	0.733	*	0.006
19871	0.018	0.012	0.002	0.006	0.007	0.842	*	0.006
19872	0.007	0.012	0.002	-0.005	0.007	-0.675	*	0.004

19873	0.009	0.007	0.001	0.002	0.007	0.274				0.000
19874	0.009	0.004	0.001	0.004	0.007	0.576		*		0.001
19881	0.012	0.021	0.003	-0.008	0.007	-1.216		**		0.048
19882	-0.003	0.004	0.003	-0.007	0.007	-0.952		*		0.037
19883	0.011	0.011	0.002	0.001	0.007	0.113				0.000
19884	0.012	0.010	0.001	0.002	0.007	0.241				0.000
19891	0.010	0.003	0.001	0.006	0.007	0.880		*		0.006
19892	0.012	0.003	0.002	0.009	0.007	1.258		**		0.013
19893	0.010	0.005	0.001	0.004	0.007	0.571		*		0.003
19894	0.011	0.009	0.001	0.001	0.007	0.182				0.000
19901	0.002	0.005	0.001	-0.003	0.007	-0.351				0.001
19902	0.007	0.003	0.001	0.004	0.007	0.504		*		0.001
19903	0.010	0.007	0.001	0.003	0.007	0.446				0.001
19904	0.007	0.003	0.001	0.003	0.007	0.463				0.001
19911	0.008	0.008	0.001	0.000	0.007	-0.041				0.000
19912	0.008	0.006	0.001	0.001	0.007	0.188				0.000
19913	0.010	0.004	0.001	0.006	0.007	0.813		*		0.002
19914	0.008	0.004	0.001	0.004	0.007	0.549		*		0.002
19921	0.005	0.003	0.001	0.002	0.007	0.215				0.000
19922	0.000	0.000	0.001	0.000	0.007	-0.005				0.000
19923	0.001	-0.003	0.001	0.004	0.007	0.486				0.002
19924	0.004	0.002	0.001	0.002	0.007	0.235				0.000
19931	0.000	0.002	0.001	-0.002	0.007	-0.283				0.000
19932	0.007	0.003	0.001	0.004	0.007	0.487				0.001
19933	0.011	0.003	0.001	0.007	0.007	0.956		*		0.004
19934	0.008	0.002	0.001	0.006	0.007	0.811		*		0.004
19941	0.014	0.006	0.001	0.008	0.007	1.081		**		0.009
19942	-0.002	0.001	0.002	-0.003	0.007	-0.349				0.002
19943	0.006	0.002	0.001	0.004	0.007	0.501		*		0.001
19944	0.005	0.008	0.001	-0.003	0.007	-0.353				0.001
19951	0.015	0.009	0.001	0.006	0.007	0.797		*		0.004
19952	0.001	0.005	0.001	-0.004	0.007	-0.604		*		0.002
19953	0.006	0.005	0.001	0.001	0.007	0.175				0.000
19954	0.006	0.003	0.001	0.002	0.007	0.318				0.000
19961	0.005	0.007	0.001	-0.002	0.007	-0.285				0.000
19962	0.003	0.006	0.001	-0.003	0.007	-0.366				0.000
19963	0.006	0.005	0.001	0.001	0.007	0.126				0.000
19964	0.006	0.005	0.001	0.001	0.007	0.152				0.000
19971	0.010	0.002	0.001	0.008	0.007	1.110		**		0.005
19972	-0.002	0.005	0.001	-0.007	0.007	-0.932		*		0.007
19973	-0.002	0.001	0.001	-0.003	0.007	-0.365				0.001
19974	-0.008	0.000	0.001	-0.008	0.007	-1.014		**		0.007
19981	-0.025	-0.023	0.005	-0.002	0.006	-0.292				0.012
19982	-0.020	-0.015	0.005	-0.005	0.006	-0.929		*		0.116
19983	-0.012	-0.008	0.003	-0.004	0.007	-0.540		*		0.011
19984	-0.002	0.000	0.003	-0.003	0.007	-0.407				0.004
19991	0.002	0.007	0.002	-0.005	0.007	-0.626		*		0.007
19992	0.018	0.011	0.002	0.006	0.007	0.864		*		0.011
19993	0.014	0.010	0.002	0.005	0.007	0.655		*		0.004
19994	0.017	0.013	0.001	0.005	0.007	0.654		*		0.003
20001	0.012	0.013	0.002	-0.001	0.007	-0.078				0.000
20002	-0.001	0.010	0.001	-0.010	0.007	-1.406		**		0.014
20003	0.004	0.011	0.002	-0.007	0.007	-0.955		*		0.014
20004	-0.001	0.004	0.002	-0.005	0.007	-0.649		*		0.007
20011	0.001	0.007	0.002	-0.006	0.007	-0.834		*		0.012
20012	0.014	0.009	0.002	0.005	0.007	0.682		*		0.006
20013	-0.001	0.008	0.002	-0.008	0.007	-1.174		**		0.023
20014	0.006	0.009	0.002	-0.003	0.007	-0.411				0.002
20021	0.020	0.013	0.002	0.007	0.007	0.979		*		0.011

### 2.3.6 Equation of employment in the non-agricultural sector

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2-1-0 1 2	Cook's D
19824	0.013							
19831	0.015	0.011	0.003	0.005	0.006	0.856	*	0.041
19832	0.003	0.009	0.002	-0.006	0.006	-1.056	**	0.032
19833	0.023	0.020	0.002	0.004	0.006	0.597	*	0.009
19834	0.008	0.020	0.001	-0.012	0.006	-2.020	****	0.049
19841	0.001	0.013	0.001	-0.013	0.006	-2.081	****	0.048
19842	0.017	0.009	0.002	0.008	0.006	1.361	**	0.030
19843	0.015	0.010	0.002	0.005	0.006	0.766	*	0.009
19844	0.018	0.012	0.001	0.006	0.006	1.062	**	0.011
19851	0.024	0.010	0.001	0.015	0.006	2.396	****	0.049
19852	0.014	0.009	0.002	0.005	0.006	0.814	*	0.012
19853	0.006	0.008	0.001	-0.002	0.006	-0.338		0.001
19854	0.015	0.013	0.001	0.002	0.006	0.376		0.001
19861	0.002	0.013	0.001	-0.011	0.006	-1.821	***	0.017
19862	0.026	0.014	0.001	0.012	0.006	1.909	***	0.038
19863	0.022	0.021	0.002	0.001	0.006	0.090		0.000
19864	0.012	0.013	0.001	-0.001	0.006	-0.130		0.000
19871	0.017	0.014	0.001	0.003	0.006	0.479		0.001
19872	0.022	0.019	0.001	0.004	0.006	0.579	*	0.002
19873	0.018	0.013	0.001	0.005	0.006	0.800	*	0.006
19874	0.011	0.007	0.001	0.004	0.006	0.681	*	0.004
19881	0.012	0.024	0.002	-0.013	0.006	-2.205	****	0.154
19882	0.006	0.010	0.003	-0.005	0.006	-0.807	*	0.030
19883	-0.001	0.009	0.002	-0.009	0.006	-1.556	***	0.040
19884	0.031	0.014	0.002	0.018	0.006	2.973	*****	0.163
19891	0.012	0.007	0.002	0.005	0.006	0.827	*	0.025
19892	0.009	0.003	0.001	0.006	0.006	0.924	*	0.008
19893	0.013	0.009	0.001	0.003	0.006	0.564	*	0.002
19894	0.013	0.017	0.001	-0.003	0.006	-0.527	*	0.002
19901	0.011	0.013	0.001	-0.002	0.006	-0.322		0.001
19902	0.014	0.008	0.001	0.007	0.006	1.076	**	0.004
19903	0.014	0.011	0.001	0.003	0.006	0.531	*	0.002
19904	0.010	0.009	0.001	0.001	0.006	0.113		0.000
19911	0.017	0.013	0.001	0.003	0.006	0.548	*	0.002
19912	0.007	0.013	0.001	-0.006	0.006	-0.994	*	0.007
19913	0.013	0.008	0.001	0.005	0.006	0.790	*	0.002
19914	0.011	0.008	0.001	0.002	0.006	0.327		0.001
19921	0.005	0.008	0.001	-0.004	0.006	-0.627	*	0.002
19922	0.004	0.005	0.001	-0.001	0.006	-0.187		0.000
19923	0.002	0.000	0.001	0.003	0.006	0.445		0.001
19924	0.006	0.004	0.001	0.003	0.006	0.426		0.001
19931	0.006	0.006	0.001	0.000	0.006	-0.036		0.000
19932	0.013	0.007	0.001	0.007	0.006	1.068	**	0.005
19933	0.016	0.008	0.001	0.008	0.006	1.338	**	0.014
19934	0.009	0.007	0.001	0.002	0.006	0.269		0.001
19941	0.014	0.011	0.001	0.003	0.006	0.456		0.002
19942	0.007	0.008	0.001	-0.001	0.006	-0.181		0.000
19943	0.006	0.006	0.001	0.000	0.006	-0.035		0.000
19944	0.006	0.013	0.001	-0.007	0.006	-1.175	**	0.010
19951	0.019	0.015	0.001	0.004	0.006	0.694	*	0.005
19952	0.009	0.011	0.001	-0.002	0.006	-0.387		0.001
19953	0.007	0.008	0.001	-0.001	0.006	-0.144		0.000
19954	0.007	0.006	0.001	0.001	0.006	0.220		0.000
19961	0.006	0.010	0.001	-0.004	0.006	-0.593	*	0.001
19962	0.007	0.010	0.001	-0.003	0.006	-0.455		0.001

19963	0.006	0.007	0.001	-0.001	0.006	-0.094				0.000
19964	0.005	0.007	0.001	-0.002	0.006	-0.368				0.000
19971	0.009	0.005	0.001	0.004	0.006	0.662		*		0.002
19972	0.004	0.009	0.001	-0.006	0.006	-0.922		*		0.004
19973	0.001	0.006	0.001	-0.005	0.006	-0.803		*		0.004
19974	-0.006	0.000	0.001	-0.007	0.006	-1.075		**		0.008
19981	-0.038	-0.027	0.004	-0.011	0.005	-2.270		****		0.735
19982	-0.022	-0.025	0.004	0.003	0.005	0.707		*		0.076
19983	-0.010	-0.008	0.003	-0.003	0.006	-0.474				0.010
19984	0.003	0.005	0.002	-0.001	0.006	-0.197				0.001
19991	0.005	0.014	0.002	-0.009	0.006	-1.450		**		0.041
19992	0.018	0.018	0.002	0.000	0.006	-0.008				0.000
19993	0.016	0.015	0.001	0.001	0.006	0.182				0.000
19994	0.018	0.016	0.001	0.002	0.006	0.292				0.001
20001	0.014	0.019	0.001	-0.004	0.006	-0.696		*		0.004
20002	0.004	0.014	0.001	-0.010	0.006	-1.582		***		0.022
20003	0.004	0.011	0.002	-0.007	0.006	-1.251		**		0.027
20004	0.002	0.003	0.002	-0.002	0.006	-0.261				0.001
20011	0.002	0.004	0.002	-0.002	0.006	-0.312				0.002
20012	0.016	0.008	0.002	0.008	0.006	1.364		**		0.032
20013	0.001	0.007	0.002	-0.006	0.006	-1.045		**		0.019
20014	0.004	0.008	0.002	-0.003	0.006	-0.561		*		0.006
20021	0.021	0.014	0.002	0.006	0.006	1.063		**		0.023

### 2.3.7 Equation of total unemployment

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2-1-0 1 2	Cook's D
19824	-0.011							
19831	-0.008	0.021	0.034	-0.028	0.061	-0.463		0.013
19832	-0.041	-0.008	0.022	-0.034	0.067	-0.509		0.006
19833	-0.039	-0.114	0.016	0.076	0.068	1.111		0.015
19834	0.004	-0.097	0.016	0.101	0.068	1.476		0.023
19841	-0.019	-0.013	0.011	-0.006	0.069	-0.085		0.000
19842	-0.040	0.032	0.010	-0.073	0.069	-1.047		0.005
19843	0.014	0.020	0.012	-0.005	0.069	-0.078		0.000
19844	-0.017	0.007	0.008	-0.024	0.069	-0.347		0.000
19851	0.003	0.020	0.009	-0.017	0.069	-0.246		0.000
19852	0.158	0.019	0.009	0.139	0.069	2.000		0.014
19853	-0.005	0.035	0.018	-0.040	0.068	-0.595		0.005
19854	0.029	-0.056	0.012	0.085	0.069	1.232		0.009
19861	0.029	-0.040	0.015	0.068	0.068	1.000		0.009
19862	-0.109	-0.063	0.014	-0.046	0.069	-0.677		0.004
19863	-0.074	-0.139	0.016	0.065	0.068	0.955		0.010
19864	-0.006	-0.042	0.014	0.036	0.069	0.525		0.002
19871	0.010	-0.056	0.013	0.066	0.069	0.956		0.006
19872	-0.018	-0.099	0.018	0.081	0.068	1.192		0.021
19873	-0.102	-0.039	0.013	-0.064	0.069	-0.929		0.007
19874	-0.137	0.011	0.015	-0.148	0.068	-2.162		0.047
19881	-0.043	-0.194	0.027	0.151	0.065	2.335		0.189
19882	0.025	0.033	0.030	-0.009	0.063	-0.140		0.001
19883	0.091	0.021	0.021	0.070	0.067	1.046		0.021
19884	-0.026	-0.010	0.017	-0.016	0.068	-0.238		0.001
19891	0.014	0.059	0.013	-0.045	0.069	-0.648		0.003
19892	0.038	0.070	0.014	-0.033	0.069	-0.474		0.002
19893	-0.036	-0.002	0.010	-0.034	0.069	-0.490		0.001
19894	0.024	-0.089	0.013	0.113	0.069	1.639		0.018
19901	-0.028	-0.033	0.015	0.005	0.068	0.070		0.000
19902	-0.037	0.019	0.010	-0.055	0.069	-0.800		0.003
19903	0.056	-0.022	0.012	0.079	0.069	1.139		0.008



19904	0.008	0.017	0.012	-0.009	0.069	-0.124				0.000
19911	-0.036	-0.053	0.012	0.017	0.069	0.243				0.000
19912	-0.045	-0.041	0.012	-0.004	0.069	-0.063				0.000
19913	0.008	0.012	0.012	-0.004	0.069	-0.061				0.000
19914	0.029	0.016	0.010	0.013	0.069	0.187				0.000
19921	0.033	0.017	0.009	0.016	0.069	0.233				0.000
19922	0.008	0.051	0.010	-0.043	0.069	-0.615		*		0.001
19923	0.015	0.102	0.015	-0.087	0.068	-1.269		**		0.017
19924	0.026	0.046	0.014	-0.020	0.069	-0.295				0.001
19931	0.077	0.030	0.008	0.047	0.069	0.675		*		0.001
19932	0.135	0.025	0.010	0.110	0.069	1.586		***		0.011
19933	-0.057	0.019	0.018	-0.076	0.068	-1.115		**		0.017
19934	0.004	-0.011	0.011	0.016	0.069	0.227				0.000
19941	-0.058	-0.049	0.013	-0.008	0.069	-0.120				0.000
19942	-0.039	-0.011	0.011	-0.028	0.069	-0.408				0.001
19943	-0.047	0.007	0.011	-0.054	0.069	-0.781		*		0.003
19944	-0.064	-0.066	0.011	0.002	0.069	0.029				0.000
19951	-0.050	-0.070	0.012	0.020	0.069	0.293				0.001
19952	-0.046	-0.002	0.014	-0.044	0.069	-0.640		*		0.003
19953	0.057	0.025	0.018	0.032	0.068	0.473				0.003
19954	-0.024	0.061	0.013	-0.085	0.069	-1.233		**		0.012
19961	-0.050	-0.001	0.016	-0.049	0.068	-0.716		*		0.005
19962	0.021	0.020	0.019	0.001	0.067	0.015				0.000
19963	0.048	0.061	0.018	-0.013	0.068	-0.185				0.000
19964	0.124	0.053	0.014	0.072	0.068	1.047		**		0.010
19971	0.173	0.078	0.013	0.095	0.069	1.375		**		0.014
19972	-0.055	0.023	0.019	-0.078	0.067	-1.154		**		0.021
19973	-0.034	0.026	0.012	-0.059	0.069	-0.862		*		0.005
19974	0.200	0.087	0.018	0.113	0.068	1.668		***		0.038
19981	0.673	0.425	0.045	0.247	0.054	4.609		*****		2.975
19982	0.399	0.409	0.051	-0.011	0.048	-0.221				0.011
19983	0.198	0.206	0.030	-0.009	0.063	-0.135				0.001
19984	0.005	0.074	0.029	-0.070	0.064	-1.095		**		0.051
19991	-0.119	-0.041	0.027	-0.078	0.065	-1.207		**		0.050
19992	-0.067	-0.123	0.017	0.056	0.068	0.821		*		0.009
19993	-0.086	-0.052	0.013	-0.034	0.069	-0.492				0.002
19994	-0.160	-0.086	0.013	-0.075	0.069	-1.082		**		0.008
20001	-0.132	-0.125	0.019	-0.007	0.067	-0.109				0.000
20002	-0.102	-0.063	0.019	-0.039	0.067	-0.582		*		0.005
20003	0.007	-0.034	0.018	0.041	0.068	0.605		*		0.005
20004	0.019	0.083	0.018	-0.064	0.068	-0.951		*		0.013
20011	0.018	0.061	0.020	-0.043	0.067	-0.640		*		0.007
20012	-0.087	0.029	0.015	-0.116	0.068	-1.698		***		0.029
20013	-0.044	0.021	0.020	-0.065	0.067	-0.968		*		0.017
20014	-0.009	0.013	0.017	-0.021	0.068	-0.316				0.001
20021	-0.106	-0.045	0.016	-0.062	0.068	-0.907		*		0.009

### 2.3.8 Equation of unemployment in the non-agricultural sector

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2-1-0 1 2	Cook's D
19824	-0.021							
19831	-0.007	0.030	0.033	-0.037	0.063	-0.595	*	0.020
19832	-0.038	0.009	0.022	-0.047	0.067	-0.705	*	0.011
19833	-0.040	-0.097	0.014	0.057	0.069	0.827	*	0.006
19834	0.001	-0.085	0.014	0.086	0.069	1.242	**	0.012
19841	-0.016	-0.007	0.011	-0.009	0.070	-0.134		0.000
19842	-0.034	0.032	0.010	-0.067	0.070	-0.950	*	0.004
19843	0.013	0.024	0.012	-0.011	0.070	-0.160		0.000
19844	-0.017	0.009	0.008	-0.026	0.070	-0.367		0.000

19851	-0.006	0.020	0.009	-0.026	0.070	-0.370				0.000
19852	0.147	0.013	0.010	0.135	0.070	1.925		***		0.016
19853	-0.005	0.033	0.017	-0.037	0.069	-0.543		*		0.004
19854	0.033	-0.055	0.012	0.087	0.070	1.252		**		0.010
19861	0.037	-0.039	0.015	0.077	0.069	1.109		**		0.012
19862	-0.102	-0.061	0.015	-0.041	0.069	-0.594		*		0.003
19863	-0.073	-0.139	0.017	0.066	0.069	0.963		*		0.011
19864	-0.001	-0.046	0.015	0.045	0.069	0.645		*		0.004
19871	0.007	-0.056	0.014	0.063	0.069	0.905		*		0.006
19872	-0.020	-0.101	0.019	0.081	0.068	1.189		**		0.023
19873	-0.097	-0.043	0.015	-0.054	0.069	-0.782		*		0.006
19874	-0.137	0.006	0.015	-0.143	0.069	-2.073		****		0.043
19881	-0.042	-0.197	0.027	0.155	0.065	2.374		****		0.193
19882	0.021	0.023	0.030	-0.001	0.064	-0.022				0.000
19883	0.095	0.017	0.020	0.078	0.068	1.155		**		0.024
19884	-0.034	-0.012	0.018	-0.021	0.068	-0.313				0.001
19891	0.012	0.050	0.013	-0.039	0.070	-0.557		*		0.002
19892	0.037	0.066	0.013	-0.029	0.069	-0.420				0.001
19893	-0.029	-0.004	0.010	-0.025	0.070	-0.354				0.001
19894	0.027	-0.090	0.013	0.117	0.070	1.676		***		0.020
19901	-0.024	-0.036	0.016	0.012	0.069	0.177				0.000
19902	-0.043	0.015	0.009	-0.058	0.070	-0.821		*		0.002
19903	0.061	-0.026	0.011	0.087	0.070	1.249		**		0.008
19904	-0.004	0.013	0.012	-0.016	0.070	-0.236				0.000
19911	-0.043	-0.057	0.012	0.013	0.070	0.190				0.000
19912	-0.049	-0.045	0.011	-0.004	0.070	-0.050				0.000
19913	0.009	0.010	0.012	-0.002	0.070	-0.023				0.000
19914	0.035	0.016	0.011	0.020	0.070	0.278				0.000
19921	0.028	0.017	0.010	0.011	0.070	0.161				0.000
19922	0.013	0.050	0.010	-0.037	0.070	-0.535		*		0.001
19923	0.017	0.102	0.015	-0.085	0.069	-1.223		**		0.015
19924	0.034	0.047	0.014	-0.014	0.069	-0.195				0.000
19931	0.069	0.031	0.009	0.038	0.070	0.544		*		0.001
19932	0.146	0.024	0.010	0.122	0.070	1.736		***		0.012
19933	-0.050	0.020	0.020	-0.070	0.068	-1.026		**		0.018
19934	-0.006	-0.012	0.013	0.007	0.070	0.094				0.000
19941	-0.052	-0.051	0.013	-0.001	0.070	-0.014				0.000
19942	-0.040	-0.011	0.012	-0.029	0.070	-0.411				0.001
19943	-0.045	0.007	0.011	-0.052	0.070	-0.740		*		0.003
19944	-0.062	-0.064	0.012	0.002	0.070	0.032				0.000
19951	-0.049	-0.068	0.013	0.019	0.070	0.273				0.001
19952	-0.046	-0.001	0.015	-0.046	0.069	-0.662		*		0.004
19953	0.065	0.027	0.020	0.038	0.068	0.564		*		0.005
19954	-0.019	0.063	0.015	-0.082	0.069	-1.190		**		0.013
19961	-0.051	0.002	0.017	-0.053	0.069	-0.777		*		0.007
19962	0.026	0.021	0.021	0.005	0.068	0.081				0.000
19963	0.046	0.063	0.019	-0.017	0.068	-0.250				0.001
19964	0.118	0.055	0.017	0.063	0.069	0.917		*		0.010
19971	0.181	0.080	0.014	0.101	0.069	1.451		**		0.016
19972	-0.062	0.029	0.019	-0.091	0.068	-1.334		**		0.027
19973	-0.038	0.026	0.013	-0.064	0.070	-0.921		*		0.006
19974	0.206	0.089	0.019	0.117	0.068	1.710		***		0.045
19981	0.672	0.423	0.045	0.250	0.054	4.594		*****		2.933
19982	0.401	0.412	0.051	-0.011	0.049	-0.234				0.012
19983	0.203	0.204	0.030	-0.001	0.064	-0.021				0.000
19984	0.003	0.072	0.030	-0.070	0.064	-1.085		**		0.051
19991	-0.118	-0.047	0.026	-0.071	0.066	-1.083		**		0.036
19992	-0.066	-0.126	0.017	0.060	0.069	0.874		*		0.009
19993	-0.088	-0.055	0.013	-0.033	0.070	-0.473				0.002

19994	-0.162	-0.085	0.013	-0.077	0.070	-1.104	**	0.009
20001	-0.131	-0.123	0.019	-0.008	0.068	-0.120		0.000
20002	-0.100	-0.060	0.019	-0.041	0.068	-0.594	*	0.005
20003	0.010	-0.029	0.017	0.039	0.069	0.562	*	0.004
20004	0.016	0.087	0.018	-0.072	0.068	-1.050	**	0.015
20011	0.019	0.066	0.019	-0.048	0.068	-0.699	*	0.008
20012	-0.086	0.034	0.014	-0.120	0.069	-1.726	***	0.026
20013	-0.049	0.026	0.020	-0.075	0.068	-1.101	**	0.020
20014	-0.008	0.018	0.017	-0.025	0.069	-0.367		0.002
20021	-0.102	-0.037	0.014	-0.066	0.069	-0.946	*	0.007

### 2.3.9 Equation of working hours of permanent workers

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2-1-0 1 2	Cook's D
19824	-0.018							
19831	0.004	-0.004	0.007	0.008	0.010	0.757	*	0.048
19832	0.004	0.007	0.004	-0.003	0.012	-0.266		0.001
19833	0.002	0.006	0.003	-0.003	0.012	-0.279		0.001
19834	0.003	0.002	0.002	0.000	0.012	0.019		0.000
19841	0.008	-0.004	0.002	0.012	0.012	0.933	*	0.004
19842	-0.013	-0.008	0.002	-0.005	0.012	-0.441		0.001
19843	-0.011	-0.001	0.002	-0.010	0.012	-0.786	*	0.003
19844	0.010	0.003	0.002	0.008	0.012	0.614	*	0.001
19851	-0.012	-0.006	0.002	-0.006	0.012	-0.521	*	0.001
19852	0.005	0.002	0.002	0.004	0.012	0.292		0.000
19853	0.008	-0.002	0.002	0.010	0.012	0.780	*	0.002
19854	-0.006	-0.001	0.002	-0.005	0.012	-0.404		0.001
19861	0.000	-0.001	0.002	0.001	0.012	0.066		0.000
19862	0.001	0.001	0.002	0.000	0.012	0.015		0.000
19863	0.009	0.001	0.003	0.008	0.012	0.673	*	0.004
19864	0.004	-0.011	0.003	0.016	0.012	1.288	**	0.016
19871	-0.009	-0.006	0.003	-0.002	0.012	-0.187		0.000
19872	0.012	-0.003	0.003	0.015	0.012	1.204	**	0.019
19873	-0.020	-0.015	0.003	-0.005	0.012	-0.429		0.003
19874	-0.029	-0.008	0.003	-0.021	0.012	-1.754	***	0.052
19881	0.018	0.018	0.005	0.000	0.011	0.035		0.000
19882	-0.017	-0.019	0.005	0.002	0.011	0.141		0.001
19883	0.016	0.004	0.003	0.012	0.012	0.989	*	0.016
19884	0.002	-0.009	0.003	0.011	0.012	0.896	*	0.007
19891	0.006	-0.014	0.003	0.020	0.012	1.620	***	0.025
19892	-0.006	-0.013	0.003	0.008	0.012	0.635	*	0.006
19893	-0.033	-0.006	0.003	-0.026	0.012	-2.176	****	0.056
19894	0.004	0.009	0.004	-0.005	0.012	-0.441		0.004
19901	-0.028	-0.003	0.002	-0.025	0.012	-2.027	****	0.023
19902	-0.007	0.006	0.003	-0.013	0.012	-1.085	**	0.018
19903	0.024	0.009	0.002	0.015	0.012	1.204	**	0.012
19904	-0.046	-0.006	0.003	-0.040	0.012	-3.286	*****	0.132
19911	0.016	0.022	0.005	-0.006	0.011	-0.513	*	0.011
19912	-0.001	0.004	0.004	-0.005	0.012	-0.406		0.003
19913	0.008	0.004	0.002	0.003	0.012	0.284		0.001
19914	0.000	0.002	0.002	-0.002	0.012	-0.143		0.000
19921	-0.008	0.002	0.002	-0.010	0.012	-0.799	*	0.003
19922	0.004	0.002	0.002	0.002	0.012	0.177		0.000
19923	-0.018	-0.004	0.003	-0.014	0.012	-1.115	**	0.011
19924	0.009	0.010	0.003	-0.001	0.012	-0.074		0.000
19931	-0.012	0.002	0.003	-0.014	0.012	-1.114	**	0.012
19932	0.013	0.009	0.003	0.005	0.012	0.376		0.001
19933	0.009	0.002	0.003	0.007	0.012	0.576	*	0.003
19934	-0.013	-0.001	0.002	-0.011	0.012	-0.896	*	0.004

19941	-0.002	0.009	0.002	-0.011	0.012	-0.855		*		0.005
19942	-0.002	0.001	0.002	-0.003	0.012	-0.276				0.001
19943	0.011	0.004	0.002	0.008	0.012	0.627		*		0.002
19944	0.005	0.003	0.003	0.002	0.012	0.153				0.000
19951	0.001	0.000	0.002	0.001	0.012	0.093				0.000
19952	-0.004	-0.005	0.002	0.001	0.012	0.048				0.000
19953	-0.005	-0.003	0.002	-0.002	0.012	-0.146				0.000
19954	-0.002	-0.003	0.002	0.002	0.012	0.142				0.000
19961	0.008	0.000	0.002	0.008	0.012	0.610		*		0.001
19962	-0.009	-0.007	0.002	-0.002	0.012	-0.168				0.000
19963	-0.006	-0.003	0.002	-0.003	0.012	-0.265				0.000
19964	0.000	-0.001	0.002	0.002	0.012	0.121				0.000
19971	-0.006	-0.005	0.002	-0.001	0.012	-0.085				0.000
19972	0.000	0.002	0.002	-0.003	0.012	-0.220				0.000
19973	-0.005	-0.005	0.002	0.000	0.012	0.000				0.000
19974	0.005	-0.004	0.002	0.009	0.012	0.725		*		0.003
19981	-0.035	-0.028	0.008	-0.006	0.010	-0.641		*		0.056
19982	0.019	0.009	0.008	0.011	0.010	1.095		***		0.158
19983	0.019	0.001	0.005	0.018	0.012	1.575		***		0.080
19984	-0.032	0.003	0.004	-0.035	0.012	-2.953		*****		0.165
19991	0.034	0.020	0.005	0.014	0.012	1.249		**		0.052
19992	0.026	0.002	0.005	0.024	0.012	2.086		****		0.152
19993	-0.003	-0.011	0.003	0.008	0.012	0.669		*		0.007
19994	0.011	-0.003	0.003	0.014	0.012	1.119		**		0.012
20001	0.002	-0.011	0.003	0.013	0.012	1.052		**		0.016
20002	-0.032	-0.015	0.004	-0.017	0.012	-1.395		**		0.034
20003	-0.003	-0.002	0.004	-0.001	0.012	-0.116				0.000
20004	0.008	-0.012	0.003	0.020	0.012	1.643		***		0.030
20011	-0.006	-0.010	0.003	0.005	0.012	0.388				0.002
20012	0.001	-0.007	0.002	0.009	0.012	0.692		*		0.003
20013	0.008	-0.010	0.002	0.018	0.012	1.482		**		0.016
20014	-0.028	-0.011	0.003	-0.017	0.012	-1.383		**		0.023
20021	-0.010	0.005	0.003	-0.015	0.012	-1.218		**		0.020

### 2.3.10 Equation of working hours of all dependent workers

QUARTER	Dep Var	Predict Value	Std Err Predict	Residual	Std Err Residual	Student's Residual	-2-1-0 1 2	Cook's D
19824	-0.007							
19831	0.003	0.002	0.003	0.001	0.006	0.246		0.003
19832	-0.010	-0.005	0.002	-0.005	0.006	-0.794		0.012
19833	0.012	0.004	0.002	0.008	0.006	1.315		0.024
19834	-0.015	-0.003	0.002	-0.013	0.006	-2.114		0.072
19841	-0.007	0.002	0.002	-0.009	0.006	-1.435		0.033
19842	0.000	-0.001	0.001	0.000	0.006	0.072		0.000
19843	0.000	-0.002	0.001	0.002	0.006	0.352		0.001
19844	-0.001	-0.002	0.001	0.000	0.006	0.075		0.000
19851	-0.008	-0.002	0.001	-0.006	0.006	-1.007		0.004
19852	0.002	0.000	0.001	0.001	0.006	0.179		0.000
19853	0.000	-0.002	0.001	0.002	0.006	0.297		0.000
19854	0.002	-0.001	0.001	0.003	0.006	0.407		0.001
19861	-0.001	-0.001	0.001	0.000	0.006	0.020		0.000
19862	-0.006	-0.001	0.001	-0.005	0.006	-0.794		0.004
19863	0.004	0.002	0.001	0.002	0.006	0.305		0.001
19864	0.002	-0.003	0.001	0.005	0.006	0.786		0.005
19871	-0.003	-0.004	0.001	0.002	0.006	0.268		0.001
19872	0.002	-0.001	0.001	0.003	0.006	0.541		0.003
19873	-0.010	-0.005	0.002	-0.006	0.006	-0.905		0.011
19874	0.002	-0.004	0.002	0.005	0.006	0.851		0.009
19881	0.009	-0.001	0.002	0.009	0.006	1.608		0.088

19882	0.004	-0.006	0.003	0.010	0.006	1.746		***		0.173
19883	-0.010	-0.011	0.003	0.001	0.006	0.103				0.001
19884	-0.012	-0.004	0.002	-0.008	0.006	-1.407		**		0.066
19891	-0.008	-0.005	0.002	-0.004	0.006	-0.595		*		0.008
19892	-0.010	-0.005	0.001	-0.005	0.006	-0.873		*		0.008
19893	0.003	-0.001	0.001	0.004	0.006	0.643		*		0.003
19894	-0.006	-0.001	0.001	-0.005	0.006	-0.847		*		0.005
19901	-0.005	0.000	0.001	-0.006	0.006	-0.908		*		0.006
19902	-0.008	-0.002	0.001	-0.006	0.006	-0.988		*		0.003
19903	-0.004	0.001	0.001	-0.004	0.006	-0.724		*		0.003
19904	0.001	0.000	0.001	0.000	0.006	0.050				0.000
19911	-0.005	0.000	0.001	-0.005	0.006	-0.833		*		0.005
19912	-0.004	0.002	0.001	-0.006	0.006	-0.917		*		0.006
19913	-0.006	0.000	0.001	-0.006	0.006	-0.985		*		0.004
19914	0.006	0.001	0.001	0.005	0.006	0.884		*		0.005
19921	-0.013	-0.003	0.001	-0.010	0.006	-1.657		***		0.023
19922	-0.003	0.001	0.001	-0.005	0.006	-0.740		*		0.006
19923	-0.013	-0.002	0.001	-0.011	0.006	-1.858		***		0.041
19924	-0.001	0.003	0.002	-0.004	0.006	-0.594		*		0.009
19931	0.010	0.003	0.002	0.007	0.006	1.244		**		0.040
19932	0.002	-0.002	0.002	0.004	0.006	0.605		*		0.009
19933	0.004	-0.001	0.001	0.005	0.006	0.805		*		0.004
19934	-0.010	-0.003	0.001	-0.008	0.006	-1.225		**		0.008
19941	-0.005	0.002	0.001	-0.007	0.006	-1.072		**		0.011
19942	-0.001	0.001	0.001	-0.003	0.006	-0.457				0.002
19943	0.009	0.000	0.001	0.009	0.006	1.455		**		0.015
19944	-0.003	-0.002	0.002	-0.001	0.006	-0.239				0.001
19951	0.000	0.001	0.001	-0.001	0.006	-0.164				0.000
19952	-0.001	-0.002	0.001	0.000	0.006	0.068				0.000
19953	-0.005	-0.003	0.001	-0.002	0.006	-0.345				0.000
19954	0.000	-0.002	0.001	0.002	0.006	0.310				0.000
19961	-0.001	-0.002	0.001	0.002	0.006	0.292				0.000
19962	0.001	-0.002	0.001	0.004	0.006	0.565		*		0.001
19963	-0.004	-0.005	0.001	0.001	0.006	0.136				0.000
19964	-0.003	-0.004	0.001	0.000	0.006	0.059				0.000
19971	-0.011	-0.004	0.001	-0.007	0.006	-1.175		**		0.006
19972	-0.001	0.000	0.001	-0.001	0.006	-0.139				0.000
19973	-0.002	-0.002	0.001	0.000	0.006	0.064				0.000
19974	-0.003	-0.004	0.001	0.001	0.006	0.193				0.000
19981	-0.006	-0.012	0.004	0.006	0.005	1.231		**		0.211
19982	-0.010	-0.013	0.004	0.003	0.005	0.668		*		0.056
19983	-0.019	-0.004	0.002	-0.016	0.006	-2.546		*****		0.083
19984	0.014	0.004	0.002	0.010	0.006	1.694		***		0.080
19991	0.003	-0.001	0.002	0.004	0.006	0.676		*		0.012
19992	0.003	0.001	0.001	0.001	0.006	0.230				0.001
19993	0.012	-0.001	0.001	0.013	0.006	2.104		****		0.033
19994	-0.004	-0.006	0.002	0.001	0.006	0.214				0.001
20001	0.001	-0.001	0.001	0.002	0.006	0.321				0.001
20002	-0.011	-0.004	0.001	-0.007	0.006	-1.096		**		0.008
20003	0.014	-0.001	0.001	0.015	0.006	2.465		****		0.045
20004	-0.010	-0.010	0.002	0.000	0.006	0.084				0.000
20011	0.001	-0.006	0.002	0.007	0.006	1.089		**		0.019
20012	0.003	-0.006	0.001	0.009	0.006	1.491		**		0.014
20013	-0.014	-0.007	0.001	-0.007	0.006	-1.153		**		0.013
20014	0.009	-0.001	0.001	0.010	0.006	1.642		***		0.032
20021	0.000	-0.005	0.001	0.005	0.006	0.829		*		0.007

Annex Table 2.4 ADF-test statistics for the cointegration test  
(Period between 1982 Q4 and 2002 Q1 : Obs. 78 quarters)

Error Terms in integrating regressions	$t ( =\tau )$ statistics without constant
<b>e<sub>1</sub></b> (WAGE_P with unemployment)	-2.8709***
<b>e<sub>2</sub></b> (WAGE_A with unemployment)	-1.7548*
<b>e<sub>3</sub></b> (WAGE_PA with unemployment)	-1.7516*
<b>e<sub>4</sub></b> (WAGE_P with employment)	-2.9682***
<b>e<sub>5</sub></b> (WAGE_A with employment)	-1.7556*
<b>e<sub>6</sub></b> (WAGE_PA with employment)	-1.7951*
<b>e<sub>7</sub></b> (EMP)	-3.0278***
<b>e<sub>8</sub></b> (EMP_N)	-1.7022*
<b>e<sub>9</sub></b> (UN)	-4.3838***
<b>e<sub>10</sub></b> (UN_N)	-4.3505***
<b>e<sub>11</sub></b> (HOUR_P)	-2.7477***
<b>e<sub>12</sub></b> (HOUR_A)	-2.5249**
<b>Engle-Granger Critical value: 1%</b>	<b>-2.5899</b>
<b>: 5%</b>	<b>-1.9439</b>
<b>: 10%</b>	<b>-1.6177</b>

Note: 1) The test statistics have been computed with one lagged difference term.  
2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 3.1 Composition of sample used in Model 3.A5 for unemployment likelihood  
(persons, percent)

		Employed		Unemployed		Statistics
Age & Gender	Prime-age male (30-54)	1,772	81.0	416	19.2	$X^2=309.2$ $P=0.001$
	The youth (17-29)	630	54.1	533	45.9	
	The elderly (55-66)	672	79.5	174	20.5	
	Women (30-54)	742	66.9	367	33.1	
Education	Middle & under	1,332	72.2	463	25.8	$X^2=24.1$ $P=0.001$
	High school	1,548	68.4	714	31.6	
	College & over	937	74.9	313	25.1	
Incomes & Estates (Household, 1998)	Poverty	767	59.8	515	40.2	$X^2=122.4$ $P=0.001$
	Others	3,050	75.8	975	24.2	
Place of Living	Urban area	3,000	69.4	1,321	30.6	$X^2=71.8$ $P=0.001$
	Rural area	817	82.9	169	17.1	
PES Areas	PES area 0	1,096	75.1	364	24.9	$X^2=73.7$ $P=0.001$
	PES area 1	852	73.5	308	26.5	
	PES area 2	631	61.3	399	38.8	
	PES area 3	391	75.3	128	24.7	
	PES area 4	409	73.2	149	26.8	
	PES area 5	438	75.5	142	24.5	
Household Head	Head	2,267	80.1	563	19.9	$X^2=200.8$ $P=0.001$
	Dependent	1,550	62.6	927	37.4	
School-leavers	School-leavers	99	33.4	198	66.6	$X^2=231.8$ $P=0.001$
	Others	3,717	74.2	1,392	25.8	
Employment Status in recent (or present) job	New entrants	104	18.8	448	81.2	$X^2=1210.9$ $P=0.001$
	Regular workers	1,711	75.9	545	24.2	
	Temporary workers	442	55.9	349	44.1	
	Self-employed workers	1,560	91.3	148	8.7	
Total: 5,307 (100.0)		3,817	71.9	1,490	28.1	

Annex Table 3.2 Means of variables and Results of T-test in Model 3.A5

----- UNEMPW7=0 -----					
Vari abl e	Mean	Std Dev	N	T	Prob> T
YOUTH	0. 16	0. 37	3790	27. 36	0. 0001
ELDLY	0. 18	0. 38	3790	28. 46	0. 0001
WOMEN	0. 19	0. 40	3790	30. 25	0. 0001
MI DDLE	0. 35	0. 48	3790	45. 07	0. 0001
HI GH	0. 41	0. 49	3790	50. 85	0. 0001
POVERTY	0. 20	0. 40	3790	30. 87	0. 0001
URBAN	0. 79	0. 41	3790	117. 94	0. 0001
PESAREA1	0. 22	0. 42	3790	33. 01	0. 0001
PESAREA2	0. 17	0. 37	3790	27. 39	0. 0001
PESAREA3	0. 10	0. 30	3790	20. 79	0. 0001
PESAREA4	0. 11	0. 31	3790	21. 33	0. 0001
PESAREA5	0. 11	0. 32	3790	22. 15	0. 0001
ERATE98	-5. 95	9. 76	3790	-37. 68	0. 0001
URATE	6. 76	1. 61	3790	258. 88	0. 0001
HEAD	0. 59	0. 49	3790	74. 44	0. 0001
S_LEAVE	0. 03	0. 16	3790	10. 06	0. 0001
ENTER	0. 03	0. 16	3790	10. 28	0. 0001
TEMP	0. 12	0. 32	3790	22. 29	0. 0001
SELF	0. 41	0. 49	3790	51. 18	0. 0001
----- UNEMPW7=1 -----					
Vari abl e	Mean	Std Dev	N	T	Prob> T
YOUTH	0. 36	0. 48	1493	28. 84	0. 0001
ELDLY	0. 12	0. 32	1493	14. 03	0. 0001
WOMEN	0. 25	0. 43	1493	22. 09	0. 0001
MI DDLE	0. 31	0. 46	1493	25. 92	0. 0001
HI GH	0. 48	0. 50	1493	37. 06	0. 0001
POVERTY	0. 35	0. 48	1493	28. 07	0. 0001
URBAN	0. 89	0. 32	1493	108. 00	0. 0001
PESAREA1	0. 21	0. 40	1493	19. 70	0. 0001
PESAREA2	0. 27	0. 44	1493	23. 36	0. 0001
PESAREA3	0. 09	0. 28	1493	11. 84	0. 0001
PESAREA4	0. 10	0. 30	1493	12. 90	0. 0001
PESAREA5	0. 10	0. 29	1493	12. 55	0. 0001
ERATE98	-9. 18	8. 86	1493	-39. 99	0. 0001
URATE	6. 97	1. 58	1493	170. 66	0. 0001
HEAD	0. 38	0. 48	1493	30. 11	0. 0001
S_LEAVE	0. 13	0. 34	1493	15. 13	0. 0001
ENTER	0. 30	0. 46	1493	25. 34	0. 0001
TEMP	0. 23	0. 42	1493	21. 35	0. 0001
SELF	0. 10	0. 30	1493	12. 84	0. 0001



Annex Table 3.3 Correlation Analysis of the Variables in Model 3.A5

21 'VAR' Variables: UNEMPW7 YOUTH ELDLY WOMEN MI DDLE HI GH POVERTY  
 URBAN PESAREA1 PESAREA2 PESAREA3 PESAREA4 PESAREA5 ERATE98  
 URATE HEAD S\_LEAVER ENTER TEMP SELF SPELL\_W  
 Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 5283/ WEIGHT Var = WEIGHT

	UNEMPW7	YOUTH	ELDLY	WOMEN	MI DDLE	HI GH	POVERTY
UNEMPW7	1.00000 0.0	0.20968 0.0001	-0.07315 0.0001	0.05738 0.0001	-0.03667 0.0077	0.06707 0.0001	0.15184 0.0001
YOUTH	0.20968 0.0001	1.00000 0.0	-0.23073 0.0001	-0.27244 0.0001	-0.31166 0.0001	0.16790 0.0001	-0.03217 0.0194
ELDLY	-0.07315 0.0001	-0.23073 0.0001	1.00000 0.0	-0.22393 0.0001	0.38752 0.0001	-0.21720 0.0001	-0.01860 0.1764
WOMEN	0.05738 0.0001	-0.27244 0.0001	-0.22393 0.0001	1.00000 0.0	0.16890 0.0001	-0.05125 0.0002	0.04109 0.0028
MI DDLE	-0.03667 0.0077	-0.31166 0.0001	0.38752 0.0001	0.16890 0.0001	1.00000 0.0	-0.61619 0.0001	0.11835 0.0001
HI GH	0.06707 0.0001	0.16790 0.0001	-0.21720 0.0001	-0.05125 0.0002	-0.61619 0.0001	1.00000 0.0	0.01169 0.3955
POVERTY	0.15184 0.0001	-0.03217 0.0194	-0.01860 0.1764	0.04109 0.0028	0.11835 0.0001	0.01169 0.3955	1.00000 0.0
URBAN	0.11632 0.0001	0.07338 0.0001	-0.22486 0.0001	-0.00273 0.8429	-0.26635 0.0001	0.13668 0.0001	-0.10112 0.0001
PESAREA1	-0.01843 0.1806	0.01983 0.1496	-0.06350 0.0001	-0.01259 0.3603	-0.07125 0.0001	0.05999 0.0001	0.23326 0.0001
PESAREA2	0.11648 0.0001	0.02849 0.0384	-0.01135 0.4093	-0.00274 0.8420	0.00296 0.8296	0.02162 0.1162	-0.04430 0.0013
PESAREA3	-0.02483 0.0711	-0.05227 0.0001	0.04599 0.0008	0.00738 0.5915	0.06109 0.0001	-0.03337 0.0153	-0.03975 0.0039
PESAREA4	-0.01010 0.4631	-0.02120 0.1233	0.09313 0.0001	0.01574 0.2526	0.11001 0.0001	-0.06925 0.0001	0.01231 0.3711
PESAREA5	-0.02763 0.0446	-0.00889 0.5183	0.06797 0.0001	-0.00298 0.8287	0.09618 0.0001	-0.05782 0.0001	-0.00072 0.9581
ERATE98	-0.15094 0.0001	-0.05128 0.0002	0.09519 0.0001	-0.00487 0.7233	0.10666 0.0001	-0.06059 0.0001	0.06680 0.0001
URATE	0.06108 0.0001	0.05950 0.0001	-0.14624 0.0001	-0.02004 0.1452	-0.18620 0.0001	0.11054 0.0001	0.01481 0.2818
HEAD	-0.19452 0.0001	-0.38078 0.0001	0.12957 0.0001	-0.44845 0.0001	-0.00887 0.5193	0.00327 0.8124	0.01081 0.4321
	UNEMPW7	YOUTH	ELDLY	WOMEN	MI DDLE	HI GH	POVERTY
S_LEAVER	0.20897 0.0001	0.46001 0.0001	-0.10614 0.0001	-0.12532 0.0001	-0.13765 0.0001	0.03824 0.0054	-0.02465 0.0732
ENTER	0.40299 0.0001	0.39819 0.0001	-0.11466 0.0001	0.01650 0.2306	-0.09747 0.0001	0.04229 0.0021	0.02453 0.0746
TEMP	0.14898 0.0001	-0.04774 0.0005	0.04818 0.0005	0.10762 0.0001	0.17732 0.0001	-0.04609 0.0008	0.13533 0.0001
SELF	-0.29738 0.0001	-0.29598 0.0001	0.22557 0.0001	0.07886 0.0001	0.22739 0.0001	-0.07663 0.0001	-0.01561 0.2567
SPELL_W	0.84915 0.0001	0.12052 0.0001	-0.03992 0.0037	0.10513 0.0001	0.00019 0.9887	0.03852 0.0051	0.16583 0.0001
	URBAN	PESAREA1	PESAREA2	PESAREA3	PESAREA4	PESAREA5	ERATE98
UNEMPW7	0.11632 0.0001	-0.01843 0.1806	0.11648 0.0001	-0.02483 0.0711	-0.01010 0.4631	-0.02763 0.0446	-0.15094 0.0001

YOUTH	0.07338 0.0001	0.01983 0.1496	0.02849 0.0384	-0.05227 0.0001	-0.02120 0.1233	-0.00889 0.5183	-0.05128 0.0002
ELDLY	-0.22486 0.0001	-0.06350 0.0001	-0.01135 0.4093	0.04599 0.0008	0.09313 0.0001	0.06797 0.0001	0.09519 0.0001
WOMEN	-0.00273 0.8429	-0.01259 0.3603	-0.00274 0.8420	0.00738 0.5915	0.01574 0.2526	-0.00298 0.8287	-0.00487 0.7233
MI DDLE	-0.26635 0.0001	-0.07125 0.0001	0.00296 0.8296	0.06109 0.0001	0.11001 0.0001	0.09618 0.0001	0.10666 0.0001
HI GH	0.13668 0.0001	0.05999 0.0001	0.02162 0.1162	-0.03337 0.0153	-0.06925 0.0001	-0.05782 0.0001	-0.06059 0.0001
POVERTY	-0.10112 0.0001	0.23326 0.0001	-0.04430 0.0013	-0.03975 0.0039	0.01231 0.3711	-0.00072 0.9581	0.06680 0.0001
URBAN	1.00000 0.0	0.08390 0.0001	0.04483 0.0011	-0.07888 0.0001	-0.17923 0.0001	-0.26411 0.0001	-0.34037 0.0001
PESAREA1	0.08390 0.0001	1.00000 0.0	-0.25950 0.0001	-0.17409 0.0001	-0.18142 0.0001	-0.18526 0.0001	0.16281 0.0001
PESAREA2	0.04483 0.0011	-0.25950 0.0001	1.00000 0.0	-0.16150 0.0001	-0.16829 0.0001	-0.17185 0.0001	-0.28910 0.0001
PESAREA3	-0.07888 0.0001	-0.17409 0.0001	-0.16150 0.0001	1.00000 0.0	-0.11290 0.0001	-0.11529 0.0001	0.14120 0.0001
PESAREA4	-0.17923 0.0001	-0.18142 0.0001	-0.16829 0.0001	-0.11290 0.0001	1.00000 0.0	-0.12014 0.0001	0.09430 0.0001
PESAREA5	-0.26411 0.0001	-0.18526 0.0001	-0.17185 0.0001	-0.11529 0.0001	-0.12014 0.0001	1.00000 0.0	0.11305 0.0001
ERATE98	-0.34037 0.0001	0.16281 0.0001	-0.28910 0.0001	0.14120 0.0001	0.09430 0.0001	0.11305 0.0001	1.00000 0.0
	<b>URBAN</b>	<b>PESAREA1</b>	<b>PESAREA2</b>	<b>PESAREA3</b>	<b>PESAREA4</b>	<b>PESAREA5</b>	<b>ERATE98</b>
URATE	0.53733 0.0001	0.37572 0.0001	0.11841 0.0001	-0.21669 0.0001	-0.23395 0.0001	-0.38657 0.0001	-0.02384 0.0831
HEAD	0.06515 0.0001	0.05512 0.0001	-0.02367 0.0853	-0.00111 0.9357	-0.03176 0.0210	-0.04336 0.0016	0.01756 0.2019
S_LEAVER	0.02074 0.1317	-0.03091 0.0247	0.03656 0.0079	-0.03140 0.0225	0.01486 0.2803	0.01874 0.1732	-0.04426 0.0013
ENTER	0.04489 0.0011	-0.01734 0.2075	0.03366 0.0144	-0.01971 0.1521	0.01322 0.3366	0.01201 0.3826	-0.05341 0.0001
TEMP	0.03697 0.0072	-0.01148 0.4043	-0.01045 0.4477	-0.03265 0.0176	-0.00396 0.7735	0.02927 0.0334	-0.02455 0.0744
SELF	-0.26650 0.0001	-0.09481 0.0001	-0.06089 0.0001	0.08233 0.0001	0.09107 0.0001	0.07200 0.0001	0.13807 0.0001
SPELL_W	0.10602 0.0001	-0.01430 0.2986	0.08164 0.0001	-0.00495 0.7192	-0.01176 0.3927	-0.02693 0.0503	-0.10773 0.0001
	<b>URATE</b>	<b>HEAD</b>	<b>S_LEAVER</b>	<b>ENTER</b>	<b>TEMP</b>	<b>SELF</b>	<b>SPELL_W</b>
UNEMPW7	0.06108 0.0001	-0.19452 0.0001	0.20897 0.0001	0.40299 0.0001	0.14898 0.0001	-0.29738 0.0001	0.84915 0.0001
YOUTH	0.05950 0.0001	-0.38078 0.0001	0.46001 0.0001	0.39819 0.0001	-0.04774 0.0005	-0.29598 0.0001	0.12052 0.0001
ELDLY	-0.14624 0.0001	0.12957 0.0001	-0.10614 0.0001	-0.11466 0.0001	0.04818 0.0005	0.22557 0.0001	-0.03992 0.0037
WOMEN	-0.02004 0.1452	-0.44845 0.0001	-0.12532 0.0001	0.01650 0.2306	0.10762 0.0001	0.07886 0.0001	0.10513 0.0001
MI DDLE	-0.18620 0.0001	-0.00887 0.5193	-0.13765 0.0001	-0.09747 0.0001	0.17732 0.0001	0.22739 0.0001	0.00019 0.9887
HI GH	0.11054 0.0001	0.00327 0.8124	0.03824 0.0054	0.04229 0.0021	-0.04609 0.0008	-0.07663 0.0001	0.03852 0.0051
POVERTY	0.01481 0.2818	0.01081 0.4321	-0.02465 0.0732	0.02453 0.0746	0.13533 0.0001	-0.01561 0.2567	0.16583 0.0001
URBAN	0.53733	0.06515	0.02074	0.04489	0.03697	-0.26650	0.10602

	0.0001	0.0001	0.1317	0.0011	0.0072	0.0001	0.0001
PESAREA1	0.37572 0.0001	0.05512 0.0001	-0.03091 0.0247	-0.01734 0.2075	-0.01148 0.4043	-0.09481 0.0001	-0.01430 0.2986
PESAREA2	0.11841 0.0001	-0.02367 0.0853	0.03656 0.0079	0.03366 0.0144	-0.01045 0.4477	-0.06089 0.0001	0.08164 0.0001
PESAREA3	-0.21669 0.0001	-0.00111 0.9357	-0.03140 0.0225	-0.01971 0.1521	-0.03265 0.0176	0.08233 0.0001	-0.00495 0.7192
PESAREA4	-0.23395 0.0001 <b>URATE</b>	-0.03176 0.0210 <b>HEAD</b>	0.01486 0.2803 <b>S_LEAVER</b>	0.01322 0.3366 <b>ENTER</b>	-0.00396 0.7735 <b>TEMP</b>	0.09107 0.0001 <b>SELF</b>	-0.01176 0.3927 <b>SPELL_W</b>
PESAREA5	-0.38657 0.0001	-0.04336 0.0016	0.01874 0.1732	0.01201 0.3826	0.02927 0.0334	0.07200 0.0001	-0.02693 0.0503
ERATE98	-0.02384 0.0831	0.01756 0.2019	-0.04426 0.0013	-0.05341 0.0001	-0.02455 0.0744	0.13807 0.0001	-0.10773 0.0001
URATE	1.00000 0.0	0.05355 0.0001	-0.00054 0.9688	0.01330 0.3339	-0.00860 0.5320	-0.17923 0.0001	0.06384 0.0001
HEAD	0.05355 0.0001	1.00000 0.0	-0.22453 0.0001	-0.29181 0.0001	-0.05485 0.0001	0.08714 0.0001	-0.19056 0.0001
S_LEAVER	-0.00054 0.9688	-0.22453 0.0001	1.00000 0.0	0.71544 0.0001	-0.10201 0.0001	-0.16794 0.0001	0.07785 0.0001
ENTER	0.01330 0.3339	-0.29181 0.0001	0.71544 0.0001	1.00000 0.0	-0.14258 0.0001	-0.23473 0.0001	0.34485 0.0001
TEMP	-0.00860 0.5320	-0.05485 0.0001	-0.10201 0.0001	-0.14258 0.0001	1.00000 0.0	-0.28839 0.0001	0.15051 0.0001
SELF	-0.17923 0.0001	0.08714 0.0001	-0.16794 0.0001	-0.23473 0.0001	-0.28839 0.0001	1.00000 0.0	-0.24594 0.0001
SPELL_W	0.06384 0.0001	-0.19056 0.0001	0.07785 0.0001	0.34485 0.0001	0.15051 0.0001	-0.24594 0.0001	1.00000 0.0

Annex Table 3.4 Composition of sample used in Model 3.B5 for employment likelihood

		(persons, percent)				
		(Re-)Employed		Not (Re-)Employed		Statistics
Age & Gender	Prime-age male (30-54)	229	53.6	198	46.2	X <sup>2</sup> =37.0 P=0.001
	The youth (17-29)	316	57.1	238	42.9	
	The elderly (55-66)	66	34.3	126	65.7	
	Women (30-54)	184	44.6	229	55.4	
Education	Middle & under	223	45.1	272	54.9	X <sup>2</sup> =12.1 P=0.002
	High school	385	50.3	380	49.7	
	College & over	187	57.5	138	42.5	
Incomes & Estates (Household, 1998)	Poverty	284	53.0	252	47.0	X <sup>2</sup> =2.6 P=0.104
	Others	511	48.7	539	51.3	
Place of Living	Urban area	697	49.5	711	50.5	X <sup>2</sup> =1.9 P=0.164
	Rural area	98	55.1	80	45.0	
PES Areas	PES area 0	199	51.5	188	48.5	X <sup>2</sup> =9.0 P=0.110
	PES area 1	174	55.9	137	44.1	
	PES area 2	211	46.9	239	53.1	
	PES area 3	69	51.7	64	48.3	
	PES area 4	69	43.7	89	56.3	
	PES area 5	73	49.8	74	50.2	
Household Head	Head	309	52.4	281	47.7	X <sup>2</sup> =1.9 P=0.173
	Dependent	486	48.8	509	51.2	
School-leavers	School-leavers	126	63.7	72	36.3	X <sup>2</sup> =16.6 P=0.001
	Others	669	48.2	719	51.8	
Employment Status in recent (or present) job	New entrants	251	67.2	123	32.8	X <sup>2</sup> =147.4 P=0.001 Missing=96
	Regular workers	292	51.0	280	49.0	
	Temporary workers	172	43.6	223	56.4	
	Self-employed workers	80	53.6	69	46.4	
Discouraged workers	Hidden unemployed	214	58.2	154	41.8	X <sup>2</sup> =12.4 P=0.001
	Open unemployed	581	47.7	637	52.3	
Spells of Unemployment (Jan. 98-July 99)	Less than 6 months	225	68.4	104	31.6	X <sup>2</sup> =99.0 P=0.001
	6-12 months	200	61.0	128	39.0	
	12-19 months	370	39.8	559	60.2	
Total: 1,586 (100.0)		795	50.1	791	49.9	

Annex Table 3.5 Means of variables and Results of T-test in Model 3.B5

----- REEMP=0 -----					
Vari abl e	Mean	Std Dev	N	T	Prob> T
YOUTH	0.30	0.46	785	18.37	0.0001
ELDLY	0.16	0.37	785	12.18	0.0001
WOMEN	0.29	0.46	785	17.86	0.0001
MI DDLE	0.34	0.48	785	20.27	0.0001
HI GH	0.48	0.50	785	26.96	0.0001
POVERTY	0.32	0.47	785	19.12	0.0001
URBAN	0.90	0.30	785	83.48	0.0001
PESAREA1	0.17	0.38	785	12.83	0.0001
PESAREA2	0.30	0.46	785	18.43	0.0001
PESAREA3	0.08	0.27	785	8.33	0.0001
PESAREA4	0.11	0.32	785	9.95	0.0001
PESAREA5	0.09	0.29	785	8.99	0.0001
DEMANDO	5.64	7.10	785	22.36	0.0001
HEAD	0.36	0.48	785	20.81	0.0001
NUMBER	3.80	1.23	785	86.69	0.0001
UNUMB	0.56	0.26	785	61.81	0.0001
ENTRANT	0.21	0.41	785	14.40	0.0001
DI SCOURA	0.19	0.40	785	13.77	0.0001
SPELL_W	14.19	5.88	785	67.89	0.0001
----- REEMP=1 -----					
Vari abl e	Mean	Std Dev	N	T	Prob> T
YOUTH	0.40	0.49	800	22.97	0.0001
ELDLY	0.08	0.27	800	8.48	0.0001
WOMEN	0.23	0.42	800	15.53	0.0001
MI DDLE	0.28	0.45	800	17.65	0.0001
HI GH	0.48	0.50	800	27.39	0.0001
POVERTY	0.36	0.48	800	21.05	0.0001
URBAN	0.88	0.33	800	75.40	0.0001
PESAREA1	0.22	0.41	800	14.95	0.0001
PESAREA2	0.27	0.44	800	16.99	0.0001
PESAREA3	0.09	0.28	800	8.70	0.0001
PESAREA4	0.09	0.28	800	8.70	0.0001
PESAREA5	0.09	0.29	800	9.01	0.0001
DEMANDO	6.61	8.56	800	21.78	0.0001
HEAD	0.39	0.49	800	22.55	0.0001
NUMBER	3.87	1.26	800	86.31	0.0001
UNUMB	0.57	0.26	800	61.94	0.0001
ENTRANT	0.36	0.48	800	21.01	0.0001
DI SCOURA	0.27	0.44	800	17.17	0.0001
SPELL_W	10.49	6.23	800	47.47	0.0001

Annex Table 3.6 Correlation Analysis of the Variables in MODEL 3.B5

26 'VAR' Variables: REEMP POVERTY DEMANDO REGULAR URBAN HEAD YOUTH PESAREA1 NUMBER ELDLY PESAREA2 UNUMB WOMEN PESAREA3 ENTRANT MIDDLE PESAREA4 DI SCOURA HIGH PESAREA5 SPELL\_W  
 Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1585/ WEIGHT Var = WEIGHT

	REEMP	REGULAR	YOUTH	ELDLY	WOMEN	MIDDLE	HIGH
REEMP	1.00000 0.0	0.50042 0.0001	0.10156 0.0001	-0.11766 0.0001	-0.06524 0.0094	-0.06825 0.0066	0.00309 0.9022
REGULAR	0.50042 0.0001	1.00000 0.0	0.17137 0.0001	-0.09203 0.0002	-0.15971 0.0001	-0.12809 0.0001	-0.02720 0.2791
YOUTH	0.10156 0.0001	0.17137 0.0001	1.00000 0.0	-0.27167 0.0001	-0.43495 0.0001	-0.37271 0.0001	0.16142 0.0001
ELDLY	-0.11766 0.0001	-0.09203 0.0002	-0.27167 0.0001	1.00000 0.0	-0.21992 0.0001	0.36428 0.0001	-0.20749 0.0001
WOMEN	-0.06524 0.0094	-0.15971 0.0001	-0.43495 0.0001	-0.21992 0.0001	1.00000 0.0	0.13096 0.0001	-0.00346 0.8904
MIDDLE	-0.06825 0.0066	-0.12809 0.0001	-0.37271 0.0001	0.36428 0.0001	0.13096 0.0001	1.00000 0.0	-0.65078 0.0001
HIGH	0.00309 0.9022	-0.02720 0.2791	0.16142 0.0001	-0.20749 0.0001	-0.00346 0.8904	-0.65078 0.0001	1.00000 0.0
POVERTY	0.04085 0.1040	-0.04171 0.0969	-0.11372 0.0001	-0.05834 0.0202	0.00163 0.9482	0.12704 0.0001	-0.01089 0.6648
URBAN	-0.03498 0.1639	0.03203 0.2025	-0.07077 0.0048	0.00464 0.8536	0.05861 0.0196	-0.04152 0.0985	0.00474 0.8506
PESAREA1	0.05652 0.0244	0.10655 0.0001	-0.03790 0.1314	-0.02214 0.3783	0.03651 0.1463	0.01753 0.4855	0.00467 0.8528
PESAREA2	-0.04078 0.1046	-0.01751 0.4861	0.03082 0.2201	0.00003 0.9989	0.00027 0.9915	-0.02351 0.3496	0.04407 0.0794
PESAREA3	0.00945 0.7070	-0.03721 0.1386	-0.04671 0.0630	-0.01203 0.6323	0.00164 0.9479	0.04261 0.0899	-0.04195 0.0950
PESAREA4	-0.04264 0.0897	-0.00932 0.7109	0.05297 0.0350	0.04390 0.0806	-0.03426 0.1728	0.01610 0.5220	-0.04018 0.1098
PESAREA5	-0.00214 0.9322	-0.05747 0.0221	0.03336 0.1844	-0.01943 0.4396	-0.00235 0.9255	0.03096 0.2179	-0.02340 0.3519
DEMANDO	0.06153 0.0143	-0.11089 0.0001	-0.25763 0.0001	0.18904 0.0001	0.07710 0.0021	0.35964 0.0001	-0.10792 0.0001
HEAD	0.03420 0.1736	0.04018 0.1098	-0.39346 0.0001	0.28677 0.0001	-0.35524 0.0001	0.17256 0.0001	-0.09441 0.0002
	REEMP	REGULAR	YOUTH	ELDLY	WOMEN	MIDDLE	HIGH
NUMBER	0.02763 0.2717	0.02930 0.2437	0.05490 0.0289	-0.17522 0.0001	0.04894 0.0514	-0.10952 0.0001	0.08115 0.0012
UNUMB	0.01189 0.6362	-0.09091 0.0003	-0.20599 0.0001	0.02935 0.2429	0.06326 0.0118	0.10365 0.0001	-0.01294 0.6066
ENTRANT	0.16284 0.0001	0.08942 0.0004	0.38410 0.0001	-0.14679 0.0001	0.02011 0.4237	-0.11449 0.0001	0.00408 0.8712
DI SCOURA	0.08857 0.0004	-0.02781 0.2684	0.07795 0.0019	-0.05101 0.0423	0.12076 0.0001	-0.00916 0.7156	0.03078 0.2206
SPELL_W	-0.29218 0.0001	-0.22741 0.0001	-0.18152 0.0001	0.09629 0.0001	0.20517 0.0001	0.11312 0.0001	-0.05824 0.0204
	POVERTY	URBAN	PESAREA1	PESAREA2	PESAREA3	PESAREA4	PESAREA5
REEMP	0.04085 0.1040	-0.03498 0.1639	0.05652 0.0244	-0.04078 0.1046	0.00945 0.7070	-0.04264 0.0897	-0.00214 0.9322

REGULAR	-0.04171 0.0969	0.03203 0.2025	0.10655 0.0001	-0.01751 0.4861	-0.03721 0.1386	-0.00932 0.7109	-0.05747 0.0221
YOUTH	-0.11372 0.0001	-0.07077 0.0048	-0.03790 0.1314	0.03082 0.2201	-0.04671 0.0630	0.05297 0.0350	0.03336 0.1844
ELDLY	-0.05834 0.0202	0.00464 0.8536	-0.02214 0.3783	0.00003 0.9989	-0.01203 0.6323	0.04390 0.0806	-0.01943 0.4396
WOMEN	0.00163 0.9482	0.05861 0.0196	0.03651 0.1463	0.00027 0.9915	0.00164 0.9479	-0.03426 0.1728	-0.00235 0.9255
MI DDLE	0.12704 0.0001	-0.04152 0.0985	0.01753 0.4855	-0.02351 0.3496	0.04261 0.0899	0.01610 0.5220	0.03096 0.2179
HI GH	-0.01089 0.6648	0.00474 0.8506	0.00467 0.8528	0.04407 0.0794	-0.04195 0.0950	-0.04018 0.1098	-0.02340 0.3519
POVERTY	1.00000 0.0	-0.06290 0.0123	0.17923 0.0001	-0.01487 0.5542	-0.05840 0.0201	0.01732 0.4907	-0.00532 0.8324
URBAN	-0.06290 0.0123	1.00000 0.0	0.05683 0.0237	0.04359 0.0828	0.00148 0.9531	-0.11038 0.0001	-0.29024 0.0001
PESAREA1	0.17923 0.0001	0.05683 0.0237	1.00000 0.0	-0.31091 0.0001	-0.14945 0.0001	-0.16397 0.0001	-0.15809 0.0001
PESAREA2	-0.01487 0.5542	0.04359 0.0828	-0.31091 0.0001	1.00000 0.0	-0.19047 0.0001	-0.20897 0.0001	-0.20148 0.0001
PESAREA3	-0.05840 0.0201	0.00148 0.9531	-0.14945 0.0001	-0.19047 0.0001	1.00000 0.0	-0.10045 0.0001	-0.09684 0.0001
PESAREA4	0.01732 0.4907	-0.11038 0.0001	-0.16397 0.0001	-0.20897 0.0001	-0.10045 0.0001	1.00000 0.0	-0.10625 0.0001
PESAREA5	-0.00532 0.8324	-0.29024 0.0001	-0.15809 0.0001	-0.20148 0.0001	-0.09684 0.0001	-0.10625 0.0001	1.00000 0.0
	<b>POVERTY</b>	<b>URBAN</b>	<b>PESAREA1</b>	<b>PESAREA2</b>	<b>PESAREA3</b>	<b>PESAREA4</b>	<b>PESAREA5</b>
DEMANDO	0.15343 0.0001	-0.02557 0.3090	0.03041 0.2263	-0.04966 0.0481	0.08653 0.0006	0.01318 0.6002	0.03313 0.1873
HEAD	0.13210 0.0001	0.05527 0.0278	0.06233 0.0131	-0.01655 0.5102	0.00905 0.7188	-0.02176 0.3865	-0.05924 0.0183
NUMBER	-0.03542 0.1587	-0.07910 0.0016	-0.03953 0.1157	0.00872 0.7287	-0.01160 0.6444	0.07852 0.0018	0.05247 0.0367
UNUMB	0.18494 0.0001	0.05686 0.0236	-0.03203 0.2025	0.06776 0.0070	0.00301 0.9045	0.00096 0.9697	-0.04598 0.0673
ENTRANT	-0.05189 0.0389	-0.03386 0.1779	0.01514 0.5469	-0.03314 0.1872	-0.00285 0.9096	0.04788 0.0567	0.03825 0.1280
DI SCOURA	0.00164 0.9480	-0.06707 0.0076	0.00875 0.7277	-0.11687 0.0001	0.08743 0.0005	-0.00822 0.7436	0.10515 0.0001
SPELL_W	0.09644 0.0001	0.03198 0.2032	-0.01987 0.4292	-0.01347 0.5920	0.05151 0.0403	-0.01654 0.5106	-0.02174 0.3872
	<b>DEMANDO</b>	<b>HEAD</b>	<b>NUMBER</b>	<b>UNUMB</b>	<b>ENTRANT</b>	<b>DI SCOURA</b>	<b>SPELL_W</b>
REEMP	0.06153 0.0143	0.03420 0.1736	0.02763 0.2717	0.01189 0.6362	0.16284 0.0001	0.08857 0.0004	-0.29218 0.0001
REGULAR	-0.11089 0.0001	0.04018 0.1098	0.02930 0.2437	-0.09091 0.0003	0.08942 0.0004	-0.02781 0.2684	-0.22741 0.0001
YOUTH	-0.25763 0.0001	-0.39346 0.0001	0.05490 0.0289	-0.20599 0.0001	0.38410 0.0001	0.07795 0.0019	-0.18152 0.0001
ELDLY	0.18904 0.0001	0.28677 0.0001	-0.17522 0.0001	0.02935 0.2429	-0.14679 0.0001	-0.05101 0.0423	0.09629 0.0001
WOMEN	0.07710 0.0021	-0.35524 0.0001	0.04894 0.0514	0.06326 0.0118	0.02011 0.4237	0.12076 0.0001	0.20517 0.0001
MI DDLE	0.35964 0.0001	0.17256 0.0001	-0.10952 0.0001	0.10365 0.0001	-0.11449 0.0001	-0.00916 0.7156	0.11312 0.0001
HI GH	-0.10792 0.0001	-0.09441 0.0002	0.08115 0.0012	-0.01294 0.6066	0.00408 0.8712	0.03078 0.2206	-0.05824 0.0204
POVERTY	0.15343	0.13210	-0.03542	0.18494	-0.05189	0.00164	0.09644

	0.0001	0.0001	0.1587	0.0001	0.0389	0.9480	0.0001
URBAN	-0.02557 0.3090	0.05527 0.0278	-0.07910 0.0016	0.05686 0.0236	-0.03386 0.1779	-0.06707 0.0076	0.03198 0.2032
PESAREA1	0.03041 0.2263	0.06233 0.0131	-0.03953 0.1157	-0.03203 0.2025	0.01514 0.5469	0.00875 0.7277	-0.01987 0.4292
PESAREA2	-0.04966 0.0481	-0.01655 0.5102	0.00872 0.7287	0.06776 0.0070	-0.03314 0.1872	-0.11687 0.0001	-0.01347 0.5920
PESAREA3	0.08653 0.0006	0.00905 0.7188	-0.01160 0.6444	0.00301 0.9045	-0.00285 0.9096	0.08743 0.0005	0.05151 0.0403
	<b>DEMANDO</b>	<b>HEAD</b>	<b>NUMBER</b>	<b>UNUMB</b>	<b>ENTRANT</b>	<b>DI SCOURA</b>	<b>SPELL_W</b>
PESAREA4	0.01318 0.6002	-0.02176 0.3865	0.07852 0.0018	0.00096 0.9697	0.04788 0.0567	-0.00822 0.7436	-0.01654 0.5106
PESAREA5	0.03313 0.1873	-0.05924 0.0183	0.05247 0.0367	-0.04598 0.0673	0.03825 0.1280	0.10515 0.0001	-0.02174 0.3872
DEMANDO	1.00000 0.0	0.15772 0.0001	-0.06815 0.0066	0.09229 0.0002	-0.15396 0.0001	0.00684 0.7856	0.06003 0.0168
HEAD	0.15772 0.0001	1.00000 0.0	-0.25242 0.0001	0.20178 0.0001	-0.35244 0.0001	-0.20268 0.0001	-0.09749 0.0001
NUMBER	-0.06815 0.0066	-0.25242 0.0001	1.00000 0.0	-0.35055 0.0001	0.07795 0.0019	0.01155 0.6459	0.03661 0.1452
UNUMB	0.09229 0.0002	0.20178 0.0001	-0.35055 0.0001	1.00000 0.0	-0.09454 0.0002	-0.01685 0.5027	0.04026 0.1091
ENTRANT	-0.15396 0.0001	-0.35244 0.0001	0.07795 0.0019	-0.09454 0.0002	1.00000 0.0	0.27323 0.0001	-0.03301 0.1891
DI SCOURA	0.00684 0.7856	-0.20268 0.0001	0.01155 0.6459	-0.01685 0.5027	0.27323 0.0001	1.00000 0.0	-0.02902 0.2481
SPELL_W	0.06003 0.0168	-0.09749 0.0001	0.03661 0.1452	0.04026 0.1091	-0.03301 0.1891	-0.02902 0.2481	1.00000 0.0



Annex Table 5.1 Composition of samples used in Logit model for programme participation likelihood

		(persons, percent)				
		Total	Participant	(Participation Rate)	Non participant	Missing values
Total		1586	425	(26.8)	1161	
Age & Gender	Prime-age male (30-54)	427	142	(33.2)	286	
	The youth (17-29)	554	113	(20.3)	442	
	The elderly (55-66)	192	90	(46.9)	102	
	Women (30-54)	413	81	(19.6)	332	
Household Head	Dependent	995	209	(21.0)	786	
	Head	591	216	(36.5)	375	
Education	Middle & under	495	162	(32.7)	333	
	High school	766	160	(21.0)	605	
	College & over	325	102	(31.5)	223	
Poverty	Non-poverty	1051	277	(26.4)	774	
	Poverty	535	148	(27.6)	388	
Place of Living	Rural area	178	45	(25.3)	133	
	Urban area	1408	380	(27.0)	1028	
New Entrants	Worked before	1138	340	(29.9)	798	
	New Entrants	448	85	(19.0)	363	
Unemployment Spells	Less than 12 months	657	151	(23.1)	505	
	12-19 months	929	273	(29.4)	656	
Discouraged Workers	Open unemployed	1218	372	(30.6)	845	
	Hidden unemployed	368	52	(14.2)	316	
PES area	PES area 0	387	102	(26.3)	285	
	PES area 1	311	87	(27.9)	224	
	PES area 2	450	105	(23.3)	345	
	PES area 3	133	35	(26.0)	98	
	PES area 4	157	52	(33.2)	105	
	PES area 5	147	45	(30.3)	103	
Covered by EIS	Not covered	1349	309	(22.9)	1040	
	Covered	237	116	(48.9)	121	
Monthly Earning (won)	More than 0.7 million	626	200	(32.0)	426	398
	Less than 0.69 million	562	150	(26.7)	412	
Occupation	Non Manual workers	569	149	(26.3)	419	480
	Manual workers	537	182	(33.8)	356	
Industry	Non manufacturing	798	236	(29.6)	562	477
	Manufacturing	311	97	(31.1)	215	
Employment Status	Non-regular	544	149	(27.4)	395	470
	Regular	572	186	(32.5)	386	
Part-timers	Full-timers	814	277	(34.0)	537	620
	Part-timers	153	28	(18.3)	125	
Firm Size	10 persons and more	539	122	(22.6)	417	489
	1-9 persons	558	205	(36.8)	353	
Reason of Leaving	Voluntary reasons	502	111	(22.2)	390	474
	Involuntary	611	223	(36.5)	388	

Annex Table 5.2 Means of variables and Results of T-test in Model 5.A4

----- TPROGRAM=0 -----							
Vari able	Mean	Std Dev	Mini mum	Maxi mum	N	T	Prob> T
YOUTH	0.38	0.49	0.00	1.00	1155	26.62	0.0001
ELDLY	0.09	0.28	0.00	1.00	1155	10.53	0.0001
WOMEN	0.29	0.45	0.00	1.00	1155	21.50	0.0001
HEAD	0.32	0.47	0.00	1.00	1155	23.47	0.0001
MIDDLE	0.29	0.45	0.00	1.00	1155	21.54	0.0001
HIGH	0.52	0.50	0.00	1.00	1155	35.44	0.0001
POVERTY	0.33	0.47	0.00	1.00	1155	24.04	0.0001
ENTRANT	0.31	0.47	0.00	1.00	1155	22.92	0.0001
SPELL_W	12.04	6.52	1.00	19.00	1155	62.94	0.0001
DISCOURA	0.27	0.45	0.00	1.00	1155	20.77	0.0001
URATE	6.87	1.59	3.90	9.24	1155	147.23	0.0001
URBAN	0.89	0.32	0.00	1.00	1155	94.46	0.0001
PESAREA1	0.19	0.40	0.00	1.00	1155	16.63	0.0001
PESAREA2	0.30	0.46	0.00	1.00	1155	22.10	0.0001
PESAREA3	0.08	0.28	0.00	1.00	1155	10.34	0.0001
PESAREA4	0.09	0.29	0.00	1.00	1155	10.72	0.0001
PESAREA5	0.09	0.28	0.00	1.00	1155	10.58	0.0001
EIS	0.10	0.31	0.00	1.00	1155	11.60	0.0001
PW_BUDG	1.31	0.36	0.93	2.48	1155	125.27	0.0001
TR_BUDG	2.33	1.61	0.88	6.04	1155	49.25	0.0001
STAFFS	1.14	0.32	0.77	2.59	1155	120.66	0.0001
----- TPROGRAM=1 -----							
Vari able	Mean	Std Dev	Mini mum	Maxi mum	N	T	Prob> T
YOUTH	0.26	0.44	0.00	1.00	430	12.43	0.0001
ELDLY	0.21	0.41	0.00	1.00	430	10.72	0.0001
WOMEN	0.19	0.39	0.00	1.00	430	10.05	0.0001
HEAD	0.51	0.50	0.00	1.00	430	21.02	0.0001
MIDDLE	0.38	0.48	0.00	1.00	430	16.26	0.0001
HIGH	0.38	0.48	0.00	1.00	430	16.14	0.0001
POVERTY	0.35	0.47	0.00	1.00	430	15.12	0.0001
ENTRANT	0.20	0.40	0.00	1.00	430	10.36	0.0001
SPELL_W	13.13	5.74	1.00	19.00	430	47.19	0.0001
DISCOURA	0.12	0.33	0.00	1.00	430	7.78	0.0001
URATE	7.18	1.54	3.90	9.24	430	95.92	0.0001
URBAN	0.89	0.31	0.00	1.00	430	60.20	0.0001
PESAREA1	0.20	0.40	0.00	1.00	430	10.48	0.0001
PESAREA2	0.25	0.43	0.00	1.00	430	11.85	0.0001
PESAREA3	0.08	0.27	0.00	1.00	430	6.17	0.0001
PESAREA4	0.12	0.33	0.00	1.00	430	7.76	0.0001
PESAREA5	0.11	0.31	0.00	1.00	430	7.10	0.0001
EIS	0.27	0.44	0.00	1.00	430	12.69	0.0001
PW_BUDG	1.29	0.34	0.93	2.48	430	79.33	0.0001
TR_BUDG	2.22	1.59	0.88	6.04	430	28.78	0.0001
STAFFS	1.14	0.35	0.77	2.59	430	67.30	0.0001

**Annex Table 5.3 Correlation Analysis of the Variables in models for Programme Participation Likelihood**

28 'VAR' Variables:	TPROGRAM	PROGRAM	PW	TRAIN	PES	JOBP	UNBE	YOUTH
ELDLY	WOMEN	HEAD	MIDDLE	HIGH	POVERTY	ENTRANT	SPELL_W	DISCOURA
URBAN	PESAREA1	PESAREA2	PESAREA3	PESAREA4	PESAREA5	EIS	PW_BUDG	TR_BUDG
Pearson	Correlation	Coefficients	/ Prob >  R	under Ho: Rho=0	/ N = 1585	/ WEIGHT	Var = WEIGHT	
	TPROGRAM	PROGRAM	PW	TRAIN	PES	JOBP	UNBE	
TPROGRAM	1.00000 0.0	0.82870 0.0001	0.55539 0.0001	0.34317 0.0001	0.69738 0.0001	0.27146 0.0001	0.36817 0.0001	
PROGRAM	0.82870 0.0001	1.00000 0.0	0.67020 0.0001	0.41411 0.0001	0.37406 0.0001	0.32757 0.0001	0.44428 0.0001	
PW	0.55539 0.0001	0.67020 0.0001	1.00000 0.0	-0.00301 0.9046	0.26065 0.0001	0.13819 0.0001	0.02067 0.4109	
TRAIN	0.34317 0.0001	0.41411 0.0001	-0.00301 0.9046	1.00000 0.0	0.12654 0.0001	0.13978 0.0001	0.11232 0.0001	
PES	0.69738 0.0001	0.37406 0.0001	0.26065 0.0001	0.12654 0.0001	1.00000 0.0	0.38925 0.0001	0.15780 0.0001	
JOBP	0.27146 0.0001	0.32757 0.0001	0.13819 0.0001	0.13978 0.0001	0.38925 0.0001	1.00000 0.0	0.11145 0.0001	
UNBE	0.36817 0.0001	0.44428 0.0001	0.02067 0.4109	0.11232 0.0001	0.15780 0.0001	0.11145 0.0001	1.00000 0.0	
YOUTH	-0.10731 0.0001	-0.12019 0.0001	-0.13435 0.0001	0.06462 0.0101	-0.04118 0.1012	0.06733 0.0073	-0.09662 0.0001	
ELDLY	0.16800 0.0001	0.13737 0.0001	0.20314 0.0001	-0.04355 0.0831	0.15411 0.0001	-0.00944 0.7072	0.03340 0.1839	
WOMEN	-0.09640 0.0001	-0.08604 0.0006	-0.03975 0.1136	-0.04273 0.0890	-0.08513 0.0007	-0.06843 0.0064	-0.09340 0.0002	
HEAD	0.16882 0.0001	0.18811 0.0001	0.12170 0.0001	-0.00440 0.8611	0.07796 0.0019	0.00731 0.7713	0.20189 0.0001	
MIDDLE	0.09040 0.0003	0.07727 0.0021	0.18289 0.0001	-0.10334 0.0001	0.08282 0.0010	-0.04068 0.1055	-0.02883 0.2513	
HIGH	-0.12715 0.0001	-0.12388 0.0001	-0.15313 0.0001	0.02232 0.3746	-0.10534 0.0001	-0.01552 0.5370	-0.04122 0.1009	
POVERTY	0.01309 0.6025	0.02648 0.2921	0.05049 0.0444	-0.01605 0.5232	-0.01500 0.5506	-0.00743 0.7674	-0.05756 0.0219	
ENTRANT	-0.11076 0.0001	-0.11147 0.0001	-0.05759 0.0219	-0.02894 0.2495	-0.05158 0.0400	0.02995 0.2334	-0.12334 0.0001	
SPELL_W	0.07626 0.0024	0.01488 0.5538	0.05393 0.0318	0.04166 0.0973	0.10388 0.0001	0.01024 0.6837	-0.08677 0.0005	
DISCOURA	-0.15579 0.0001	-0.11428 0.0001	-0.06806 0.0067	-0.05624 0.0252	-0.14294 0.0001	-0.06921 0.0058	-0.08913 0.0004	
	TPROGRAM	PROGRAM	PW	TRAIN	PES	JOBP	UNBE	
URATE	0.08624 0.0006	0.05865 0.0195	0.03330 0.1852	-0.01593 0.5262	0.10405 0.0001	0.03586 0.1536	0.03435 0.1716	
URBAN	0.01219 0.6278	0.01620 0.5191	-0.00227 0.9279	-0.00253 0.9199	0.01480 0.5561	-0.01410 0.5748	0.03070 0.2219	
PESAREA1	0.01186 0.6372	0.00211 0.9333	-0.05254 0.0365	0.01821 0.4689	0.01734 0.4904	-0.01778 0.4792	0.00719 0.7747	
PESAREA2	-0.04998 0.0466	-0.03440 0.1710	-0.00593 0.8136	-0.01069 0.6705	-0.02931 0.2435	0.00263 0.9166	-0.01422 0.5717	
PESAREA3	-0.00529 0.8334	0.00528 0.8335	0.02322 0.3556	-0.03300 0.1891	-0.03191 0.2041	-0.02390 0.3416	0.01812 0.4710	
PESAREA4	0.04797 0.0562	0.03583 0.1539	0.00591 0.8142	0.00392 0.8762	0.02832 0.2599	0.04972 0.0478	0.02359 0.3479	
PESAREA5	0.02539 0.3124	0.04931 0.0497	0.04207 0.0941	0.02209 0.3795	-0.02105 0.4022	0.01449 0.5644	0.01982 0.4305	
EIS	0.20939	0.20804	-0.02856	0.09074	0.15210	0.09675	0.45266	

	0.0001	0.0001	0.2558	0.0003	0.0001	0.0001	0.0001
PW_BUDG	-0.01710 0.4963	-0.00394 0.8754	0.02645 0.2926	-0.00620 0.8053	-0.04067 0.1055	0.00895 0.7219	-0.00936 0.7096
TR_BUDG	-0.03086 0.2195	-0.00800 0.7503	0.00594 0.8131	0.00641 0.7988	-0.06475 0.0099	0.00436 0.8622	-0.00296 0.9064
STAFFS	-0.00843 0.7374	0.00673 0.7889	0.01884 0.4535	0.02287 0.3628	-0.03189 0.2045	0.03360 0.1812	0.00549 0.8271

	YOUTH	ELDLY	WOMEN	HEAD	MI DDLE	HI GH	POVERTY
TPROGRAM	-0.10731 0.0001	0.16800 0.0001	-0.09640 0.0001	0.16882 0.0001	0.09040 0.0003	-0.12715 0.0001	0.01309 0.6025
PROGRAM	-0.12019 0.0001	0.13737 0.0001	-0.08604 0.0006	0.18811 0.0001	0.07727 0.0021	-0.12388 0.0001	0.02648 0.2921
PW	-0.13435 0.0001	0.20314 0.0001	-0.03975 0.1136	0.12170 0.0001	0.18289 0.0001	-0.15313 0.0001	0.05049 0.0444
TRAI N	0.06462 0.0101	-0.04355 0.0831	-0.04273 0.0890	-0.00440 0.8611	-0.10334 0.0001	0.02232 0.3746	-0.01605 0.5232
PES	-0.04118 0.1012	0.15411 0.0001	-0.08513 0.0007	0.07796 0.0019	0.08282 0.0010	-0.10534 0.0001	-0.01500 0.5506
JOBP	0.06733 0.0073	-0.00944 0.7072	-0.06843 0.0064	0.00731 0.7713	-0.04068 0.1055	-0.01552 0.5370	-0.00743 0.7674
UNBE	-0.09662 0.0001	0.03340 0.1839	-0.09340 0.0002	0.20189 0.0001	-0.02883 0.2513	-0.04122 0.1009	-0.05756 0.0219
YOUTH	1.00000 0.0	-0.27167 0.0001	-0.43495 0.0001	-0.39346 0.0001	-0.37271 0.0001	0.16142 0.0001	-0.11372 0.0001

	YOUTH	ELDLY	WOMEN	HEAD	MI DDLE	HI GH	POVERTY
ELDLY	-0.27167 0.0001	1.00000 0.0	-0.21992 0.0001	0.28677 0.0001	0.36428 0.0001	-0.20749 0.0001	-0.05834 0.0202
WOMEN	-0.43495 0.0001	-0.21992 0.0001	1.00000 0.0	-0.35524 0.0001	0.13096 0.0001	-0.00346 0.8904	0.00163 0.9482
HEAD	-0.39346 0.0001	0.28677 0.0001	-0.35524 0.0001	1.00000 0.0	0.17256 0.0001	-0.09441 0.0002	0.13210 0.0001
MI DDLE	-0.37271 0.0001	0.36428 0.0001	0.13096 0.0001	0.17256 0.0001	1.00000 0.0	-0.65078 0.0001	0.12704 0.0001
HI GH	0.16142 0.0001	-0.20749 0.0001	-0.00346 0.8904	-0.09441 0.0002	-0.65078 0.0001	1.00000 0.0	-0.01089 0.6648
POVERTY	-0.11372 0.0001	-0.05834 0.0202	0.00163 0.9482	0.13210 0.0001	0.12704 0.0001	-0.01089 0.6648	1.00000 0.0
ENTRANT	0.38410 0.0001	-0.14679 0.0001	0.02011 0.4237	-0.35244 0.0001	-0.11449 0.0001	0.00408 0.8712	-0.05189 0.0389
SPELL_W	-0.18152 0.0001	0.09629 0.0001	0.20517 0.0001	-0.09749 0.0001	0.11312 0.0001	-0.05824 0.0204	0.09644 0.0001
DI SCOURA	0.07795 0.0019	-0.05101 0.0423	0.12076 0.0001	-0.20268 0.0001	-0.00916 0.7156	0.03078 0.2206	0.00164 0.9480
URATE	-0.05148 0.0404	0.03818 0.1286	-0.03208 0.2018	0.09541 0.0001	-0.00534 0.8319	0.01625 0.5180	0.03295 0.1898
URBAN	-0.07077 0.0048	0.00464 0.8536	0.05861 0.0196	0.05527 0.0278	-0.04152 0.0985	0.00474 0.8506	-0.06290 0.0123
PESAREA1	-0.03790 0.1314	-0.02214 0.3783	0.03651 0.1463	0.06233 0.0131	0.01753 0.4855	0.00467 0.8528	0.17923 0.0001
PESAREA2	0.03082 0.2201	0.00003 0.9989	0.00027 0.9915	-0.01655 0.5102	-0.02351 0.3496	0.04407 0.0794	-0.01487 0.5542
PESAREA3	-0.04671 0.0630	-0.01203 0.6323	0.00164 0.9479	0.00905 0.7188	0.04261 0.0899	-0.04195 0.0950	-0.05840 0.0201
PESAREA4	0.05297 0.0350	0.04390 0.0806	-0.03426 0.1728	-0.02176 0.3865	0.01610 0.5220	-0.04018 0.1098	0.01732 0.4907
PESAREA5	0.03336 0.1844	-0.01943 0.4396	-0.00235 0.9255	-0.05924 0.0183	0.03096 0.2179	-0.02340 0.3519	-0.00532 0.8324

EI S	-0. 07284 0. 0037	0. 05222 0. 0376	-0. 09127 0. 0003	0. 14247 0. 0001	-0. 05291 0. 0352	-0. 04021 0. 1096	-0. 09490 0. 0002
PW_BUDG	0. 07440 0. 0030	0. 01391 0. 5799	-0. 01283 0. 6099	-0. 09681 0. 0001	0. 03788 0. 1317	-0. 03990 0. 1123	-0. 01979 0. 4311
TR_BUDG	0. 07714 0. 0021	-0. 00897 0. 7212	-0. 01121 0. 6555	-0. 08869 0. 0004	0. 01007 0. 6888	-0. 02213 0. 3786	-0. 04466 0. 0755
STAFFS	0. 04988 0. 0471	0. 00972 0. 6989	-0. 00816 0. 7454	-0. 05988 0. 0171	0. 01852 0. 4613	-0. 01780 0. 4789	-0. 08252 0. 0010
	<b>ENTRANT</b>	<b>SPELL_W</b>	<b>DI SCOURA</b>	<b>URATE</b>	<b>URBAN</b>	<b>PESAREA1</b>	<b>PESAREA2</b>
TPROGRAM	-0. 11076 0. 0001	0. 07626 0. 0024	-0. 15579 0. 0001	0. 08624 0. 0006	0. 01219 0. 6278	0. 01186 0. 6372	-0. 04998 0. 0466
PROGRAM	-0. 11147 0. 0001	0. 01488 0. 5538	-0. 11428 0. 0001	0. 05865 0. 0195	0. 01620 0. 5191	0. 00211 0. 9333	-0. 03440 0. 1710
PW	-0. 05759 0. 0219	0. 05393 0. 0318	-0. 06806 0. 0067	0. 03330 0. 1852	-0. 00227 0. 9279	-0. 05254 0. 0365	-0. 00593 0. 8136
TRAI N	-0. 02894 0. 2495	0. 04166 0. 0973	-0. 05624 0. 0252	-0. 01593 0. 5262	-0. 00253 0. 9199	0. 01821 0. 4689	-0. 01069 0. 6705
PES	-0. 05158 0. 0400	0. 10388 0. 0001	-0. 14294 0. 0001	0. 10405 0. 0001	0. 01480 0. 5561	0. 01734 0. 4904	-0. 02931 0. 2435
JOBP	0. 02995 0. 2334	0. 01024 0. 6837	-0. 06921 0. 0058	0. 03586 0. 1536	-0. 01410 0. 5748	-0. 01778 0. 4792	0. 00263 0. 9166
UNBE	-0. 12334 0. 0001	-0. 08677 0. 0005	-0. 08913 0. 0004	0. 03435 0. 1716	0. 03070 0. 2219	0. 00719 0. 7747	-0. 01422 0. 5717
YOUTH	0. 38410 0. 0001	-0. 18152 0. 0001	0. 07795 0. 0019	-0. 05148 0. 0404	-0. 07077 0. 0048	-0. 03790 0. 1314	0. 03082 0. 2201
ELDLY	-0. 14679 0. 0001	0. 09629 0. 0001	-0. 05101 0. 0423	0. 03818 0. 1286	0. 00464 0. 8536	-0. 02214 0. 3783	0. 00003 0. 9989
WOMEN	0. 02011 0. 4237	0. 20517 0. 0001	0. 12076 0. 0001	-0. 03208 0. 2018	0. 05861 0. 0196	0. 03651 0. 1463	0. 00027 0. 9915
HEAD	-0. 35244 0. 0001	-0. 09749 0. 0001	-0. 20268 0. 0001	0. 09541 0. 0001	0. 05527 0. 0278	0. 06233 0. 0131	-0. 01655 0. 5102
MI DDLE	-0. 11449 0. 0001	0. 11312 0. 0001	-0. 00916 0. 7156	-0. 00534 0. 8319	-0. 04152 0. 0985	0. 01753 0. 4855	-0. 02351 0. 3496
HI GH	0. 00408 0. 8712	-0. 05824 0. 0204	0. 03078 0. 2206	0. 01625 0. 5180	0. 00474 0. 8506	0. 00467 0. 8528	0. 04407 0. 0794
POVERTY	-0. 05189 0. 0389	0. 09644 0. 0001	0. 00164 0. 9480	0. 03295 0. 1898	-0. 06290 0. 0123	0. 17923 0. 0001	-0. 01487 0. 5542
ENTRANT	1. 00000 0. 0	-0. 03301 0. 1891	0. 27323 0. 0001	-0. 02295 0. 3611	-0. 03386 0. 1779	0. 01514 0. 5469	-0. 03314 0. 1872
SPELL_W	-0. 03301 0. 1891	1. 00000 0. 0	-0. 02902 0. 2481	0. 03074 0. 2212	0. 03198 0. 2032	-0. 01987 0. 4292	-0. 01347 0. 5920
DI SCOURA	0. 27323 0. 0001	-0. 02902 0. 2481	1. 00000 0. 0	-0. 07772 0. 0020	-0. 06707 0. 0076	0. 00875 0. 7277	-0. 11687 0. 0001
URATE	-0. 02295 0. 3611	0. 03074 0. 2212	-0. 07772 0. 0020	1. 00000 0. 0	0. 43249 0. 0001	0. 31489 0. 0001	0. 06476 0. 0099
URBAN	-0. 03386 0. 1779	0. 03198 0. 2032	-0. 06707 0. 0076	0. 43249 0. 0001	1. 00000 0. 0	0. 05683 0. 0237	0. 04359 0. 0828
PESAREA1	0. 01514 0. 5469	-0. 01987 0. 4292	0. 00875 0. 7277	0. 31489 0. 0001	0. 05683 0. 0237	1. 00000 0. 0	-0. 31091 0. 0001
	<b>ENTRANT</b>	<b>SPELL_W</b>	<b>DI SCOURA</b>	<b>URATE</b>	<b>URBAN</b>	<b>PESAREA1</b>	<b>PESAREA2</b>
PESAREA2	-0. 03314 0. 1872	-0. 01347 0. 5920	-0. 11687 0. 0001	0. 06476 0. 0099	0. 04359 0. 0828	-0. 31091 0. 0001	1. 00000 0. 0
PESAREA3	-0. 00285 0. 9096	0. 05151 0. 0403	0. 08743 0. 0005	-0. 10099 0. 0001	0. 00148 0. 9531	-0. 14945 0. 0001	-0. 19047 0. 0001
PESAREA4	0. 04788 0. 0567	-0. 01654 0. 5106	-0. 00822 0. 7436	-0. 16571 0. 0001	-0. 11038 0. 0001	-0. 16397 0. 0001	-0. 20897 0. 0001
PESAREA5	0. 03825	-0. 02174	0. 10515	-0. 35433	-0. 29024	-0. 15809	-0. 20148

	0.1280	0.3872	0.0001	0.0001	0.0001	0.0001	0.0001
EI S	-0.21267 0.0001	-0.17028 0.0001	-0.11480 0.0001	0.07245 0.0039	0.04602 0.0670	0.02378 0.3442	0.02397 0.3403
PW_BUDG	0.05468 0.0295	-0.02151 0.3921	0.06470 0.0100	-0.67165 0.0001	-0.43411 0.0001	-0.44187 0.0001	0.16883 0.0001
TR_BUDG	0.03639 0.1476	-0.03541 0.1588	0.07185 0.0042	-0.80370 0.0001	-0.40892 0.0001	-0.43491 0.0001	0.17115 0.0001
STAFFS	0.01978 0.4312	-0.00174 0.9447	-0.03957 0.1153	-0.67426 0.0001	-0.15582 0.0001	-0.45836 0.0001	0.15644 0.0001
	<b>PESAREA3</b>	<b>PESAREA4</b>	<b>PESAREA5</b>	<b>EI S</b>	<b>PW_BUDG</b>	<b>TR_BUDG</b>	<b>STAFFS</b>
TPROGRAM	-0.00529 0.8334	0.04797 0.0562	0.02539 0.3124	0.20939 0.0001	-0.01710 0.4963	-0.03086 0.2195	-0.00843 0.7374
PROGRAM	0.00528 0.8335	0.03583 0.1539	0.04931 0.0497	0.20804 0.0001	-0.00394 0.8754	-0.00800 0.7503	0.00673 0.7889
PW	0.02322 0.3556	0.00591 0.8142	0.04207 0.0941	-0.02856 0.2558	0.02645 0.2926	0.00594 0.8131	0.01884 0.4535
TRAI N	-0.03300 0.1891	0.00392 0.8762	0.02209 0.3795	0.09074 0.0003	-0.00620 0.8053	0.00641 0.7988	0.02287 0.3628
PES	-0.03191 0.2041	0.02832 0.2599	-0.02105 0.4022	0.15210 0.0001	-0.04067 0.1055	-0.06475 0.0099	-0.03189 0.2045
JOBP	-0.02390 0.3416	0.04972 0.0478	0.01449 0.5644	0.09675 0.0001	0.00895 0.7219	0.00436 0.8622	0.03360 0.1812
UNBE	0.01812 0.4710	0.02359 0.3479	0.01982 0.4305	0.45266 0.0001	-0.00936 0.7096	-0.00296 0.9064	0.00549 0.8271
YOUTH	-0.04671 0.0630	0.05297 0.0350	0.03336 0.1844	-0.07284 0.0037	0.07440 0.0030	0.07714 0.0021	0.04988 0.0471
ELDLY	-0.01203 0.6323	0.04390 0.0806	-0.01943 0.4396	0.05222 0.0376	0.01391 0.5799	-0.00897 0.7212	0.00972 0.6989
WOMEN	0.00164 0.9479	-0.03426 0.1728	-0.00235 0.9255	-0.09127 0.0003	-0.01283 0.6099	-0.01121 0.6555	-0.00816 0.7454
HEAD	0.00905 0.7188	-0.02176 0.3865	-0.05924 0.0183	0.14247 0.0001	-0.09681 0.0001	-0.08869 0.0004	-0.05988 0.0171
	<b>PESAREA3</b>	<b>PESAREA4</b>	<b>PESAREA5</b>	<b>EI S</b>	<b>PW_BUDG</b>	<b>TR_BUDG</b>	<b>STAFFS</b>
MI DDLE	0.04261 0.0899	0.01610 0.5220	0.03096 0.2179	-0.05291 0.0352	0.03788 0.1317	0.01007 0.6888	0.01852 0.4613
HI GH	-0.04195 0.0950	-0.04018 0.1098	-0.02340 0.3519	-0.04021 0.1096	-0.03990 0.1123	-0.02213 0.3786	-0.01780 0.4789
POVERTY	-0.05840 0.0201	0.01732 0.4907	-0.00532 0.8324	-0.09490 0.0002	-0.01979 0.4311	-0.04466 0.0755	-0.08252 0.0010
ENTRANT	-0.00285 0.9096	0.04788 0.0567	0.03825 0.1280	-0.21267 0.0001	0.05468 0.0295	0.03639 0.1476	0.01978 0.4312
SPELL_W	0.05151 0.0403	-0.01654 0.5106	-0.02174 0.3872	-0.17028 0.0001	-0.02151 0.3921	-0.03541 0.1588	-0.00174 0.9447
DI SCOURA	0.08743 0.0005	-0.00822 0.7436	0.10515 0.0001	-0.11480 0.0001	0.06470 0.0100	0.07185 0.0042	-0.03957 0.1153
URATE	-0.10099 0.0001	-0.16571 0.0001	-0.35433 0.0001	0.07245 0.0039	-0.67165 0.0001	-0.80370 0.0001	-0.67426 0.0001
URBAN	0.00148 0.9531	-0.11038 0.0001	-0.29024 0.0001	0.04602 0.0670	-0.43411 0.0001	-0.40892 0.0001	-0.15582 0.0001
PESAREA1	-0.14945 0.0001	-0.16397 0.0001	-0.15809 0.0001	0.02378 0.3442	-0.44187 0.0001	-0.43491 0.0001	-0.45836 0.0001
PESAREA2	-0.19047 0.0001	-0.20897 0.0001	-0.20148 0.0001	0.02397 0.3403	0.16883 0.0001	0.17115 0.0001	0.15644 0.0001
PESAREA3	1.00000 0.0	-0.10045 0.0001	-0.09684 0.0001	-0.00555 0.8251	0.03721 0.1387	0.15722 0.0001	0.05923 0.0184
PESAREA4	-0.10045 0.0001	1.00000 0.0	-0.10625 0.0001	-0.01084 0.6662	0.42727 0.0001	0.42007 0.0001	0.21811 0.0001

PESAREA5	-0.09684 0.0001	-0.10625 0.0001	1.00000 0.0	-0.00037 0.9881	0.51636 0.0001	0.34508 0.0001	0.15018 0.0001
EI S	-0.00555 0.8251	-0.01084 0.6662	-0.00037 0.9881	1.00000 0.0	-0.04181 0.0961	-0.03832 0.1273	-0.04003 0.1112
PW_BUDG	0.03721 0.1387	0.42727 0.0001	0.51636 0.0001	-0.04181 0.0961	1.00000 0.0	0.87479 0.0001	0.47966 0.0001
TR_BUDG	0.15722 0.0001	0.42007 0.0001	0.34508 0.0001	-0.03832 0.1273	0.87479 0.0001	1.00000 0.0	0.66513 0.0001
STAFFS	0.05923 0.0184	0.21811 0.0001	0.15018 0.0001	-0.04003 0.1112	0.47966 0.0001	0.66513 0.0001	1.00000 0.0

Annex Table 6.1 Means of variables and Results of T-test in Chapter 6

Variabl e	Mean	Std Dev	N	T	Prob> T
DUR_10	12.286	5.892	1808	88.663	0.0001
RE_EI S	0.495	0.500	1766	41.633	0.0001
EI S	0.294	0.456	1766	27.140	0.0001
TRAI N	0.500	0.500	1808	42.509	0.0001
TRAI N_S	0.374	0.484	1808	32.850	0.0001
TRAI N_L	0.120	0.325	1808	15.699	0.0001
PW	0.103	0.304	1808	14.395	0.0001
JOBP	0.153	0.360	1808	18.081	0.0001
UNBE	0.784	0.412	1808	80.924	0.0001
LOAN	0.052	0.222	1808	9.955	0.0001
FEMALE	0.507	0.500	1808	43.077	0.0001
AGE	37.511	11.088	1808	143.852	0.0001
AGESQ	1529.904	894.970	1808	72.687	0.0001
MI DDLE	0.203	0.402	1808	21.453	0.0001
HI GH	0.460	0.499	1808	39.248	0.0001
COLLEGE	0.131	0.337	1808	16.471	0.0001
HEAD	0.450	0.498	1808	38.425	0.0001
MARRI ED	0.698	0.459	1808	64.627	0.0001
SPOUSE_J	0.367	0.482	1808	32.347	0.0001
NUMB	3.867	1.360	1808	120.912	0.0001
LWAGE	4.783	0.577	1808	352.429	0.0001
MANUAL	0.381	0.486	1808	33.356	0.0001
MANU	0.507	0.500	1808	43.077	0.0001
FI RMSI ZE	6.968	2.545	1808	116.416	0.0001
DI SPLACE	0.774	0.418	1808	78.619	0.0001
LTENURE	3.940	1.169	1808	143.344	0.0001
URATE	6.926	1.765	1808	166.889	0.0001
EMP_R	9.193	4.798	1808	81.459	0.0001
BI GCI TY	0.533	0.499	1808	45.380	0.0001
PESAREA1	0.251	0.434	1808	24.615	0.0001
PESAREA2	0.211	0.408	1808	22.001	0.0001
PESAREA3	0.103	0.304	1808	14.395	0.0001
PESAREA4	0.100	0.300	1808	14.178	0.0001
PESAREA5	0.089	0.285	1808	13.291	0.0001



Annex Table 6.2 Correlation Analysis of the Variables in Chapter 6

34 'VAR' Variables: DUR\_10 RE\_EIS EIS TRAIN TRAIN\_S TRAIN\_L PW JOB  
UNBE LOAN FEMALE AGE AGESQ MI DDLE HI GH COLLEGE  
HEAD MARRIED SPOUSE\_J NUMB LOWEARN MANUAL FI RMSI ZE  
DI SPLACE LTENURE URATE EMP\_R BI GCITY PESAREA1 PESAREA2 PESAREA3  
PESAREA4 PESAREA5

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1766

	DUR_10	RE_EIS	EIS	TRAIN	TRAIN_S	TRAIN_L	PW
DUR_10	1.00000 0.0	-0.23664 0.0001	-0.18629 0.0001	-0.21156 0.0001	-0.11599 0.0001	-0.14638 0.0001	-0.02353 0.3230
RE_EIS	-0.23664 0.0001	1.00000 0.0	0.64941 0.0001	0.07139 0.0027	0.06081 0.0106	0.01380 0.5622	0.12486 0.0001
EIS	-0.18629 0.0001	0.64941 0.0001	1.00000 0.0	0.04925 0.0385	0.02433 0.3069	0.03278 0.1685	0.03736 0.1165
TRAIN	-0.21156 0.0001	0.07139 0.0027	0.04925 0.0385	1.00000 0.0	0.77273 0.0001	0.36768 0.0001	-0.00893 0.7076
TRAIN_S	-0.11599 0.0001	0.06081 0.0106	0.02433 0.3069	0.77273 0.0001	1.00000 0.0	-0.28671 0.0001	0.00025 0.9916
TRAIN_L	-0.14638 0.0001	0.01380 0.5622	0.03278 0.1685	0.36768 0.0001	-0.28671 0.0001	1.00000 0.0	-0.01322 0.5789
PW	-0.02353 0.3230	0.12486 0.0001	0.03736 0.1165	-0.00893 0.7076	0.00025 0.9916	-0.01322 0.5789	1.00000 0.0
JOB	-0.09824 0.0001	0.10740 0.0001	0.09261 0.0001	0.12984 0.0001	0.10276 0.0001	0.04029 0.0905	0.04779 0.0446
UNBE	0.06381 0.0073	-0.05160 0.0301	0.02083 0.3816	0.22560 0.0001	0.17602 0.0001	0.07469 0.0017	0.02255 0.3437
LOAN	-0.02252 0.3443	0.00467 0.8445	0.00899 0.7058	0.06231 0.0088	0.04204 0.0773	0.02212 0.3529	0.03473 0.1446
FEMALE	0.15352 0.0001	-0.20940 0.0001	-0.20407 0.0001	0.01012 0.6708	-0.00997 0.6754	0.03596 0.1309	-0.05341 0.0248
AGE	0.18744 0.0001	-0.11476 0.0001	-0.04856 0.0413	-0.22461 0.0001	-0.16615 0.0001	-0.10697 0.0001	0.12331 0.0001
AGESQ	0.19132 0.0001	-0.12189 0.0001	-0.06116 0.0101	-0.24119 0.0001	-0.17961 0.0001	-0.11131 0.0001	0.12480 0.0001
MI DDLE	0.14078 0.0001	-0.02360 0.3215	0.00490 0.8369	-0.29807 0.0001	-0.23729 0.0001	-0.10824 0.0001	0.15736 0.0001
HI GH	-0.02308 0.3323	-0.03931 0.0987	-0.05550 0.0197	0.07758 0.0011	0.01921 0.4199	0.09101 0.0001	-0.08489 0.0004
	DUR_10	RE_EIS	EIS	TRAIN	TRAIN_S	TRAIN_L	PW
COLLEGE	-0.06304 0.0080	0.07598 0.0014	0.03539 0.1371	0.08084 0.0007	0.09360 0.0001	-0.00773 0.7455	0.02680 0.2603
HEAD	-0.03721 0.1181	0.08446 0.0004	0.12114 0.0001	-0.06215 0.0090	-0.02623 0.2706	-0.06023 0.0114	0.07966 0.0008
MARRIED	0.17521 0.0001	-0.18024 0.0001	-0.07116 0.0028	-0.09964 0.0001	-0.06406 0.0071	-0.06274 0.0084	-0.06558 0.0058
SPOUSE_J	0.15831 0.0001	-0.24092 0.0001	-0.18578 0.0001	0.00712 0.7650	0.00966 0.6851	-0.00690 0.7720	-0.17736 0.0001
NUMB	-0.03739 0.1163	0.06726 0.0047	0.03367 0.1572	0.01205 0.6129	-0.00238 0.9203	0.01391 0.5590	-0.01679 0.4809
LOWEARN	0.03233 0.1745	-0.03819 0.1086	-0.07573 0.0014	-0.13443 0.0001	-0.14469 0.0001	0.01116 0.6392	0.08079 0.0007
MANUAL	0.02338 0.3262	0.04792 0.0441	0.02004 0.3999	-0.25657 0.0001	-0.22637 0.0001	-0.06023 0.0113	0.09161 0.0001

MANU	-0.00253 0.9153	0.03638 0.1265	0.03770 0.1132	-0.08841 0.0002	-0.06989 0.0033	-0.04029 0.0906	0.05767 0.0154
FI RMSI ZE	0.04646 0.0509	-0.10917 0.0001	-0.02648 0.2660	0.08905 0.0002	0.07871 0.0009	0.02021 0.3960	-0.01970 0.4081
DI SPLACE	-0.00923 0.6982	-0.01031 0.6651	0.03328 0.1622	0.12984 0.0001	0.08854 0.0002	0.06996 0.0033	0.02613 0.2724
LTENURE	0.13918 0.0001	-0.15770 0.0001	-0.07795 0.0010	0.04211 0.0768	0.05403 0.0232	-0.01806 0.4482	-0.03511 0.1402
URATE	0.11038 0.0001	0.02654 0.2650	0.03833 0.1073	0.00605 0.7996	0.03823 0.1083	-0.04903 0.0394	0.00875 0.7133
EMP_R	-0.03137 0.1876	0.02291 0.3360	0.00548 0.8181	0.00875 0.7134	0.02312 0.3314	-0.01716 0.4711	0.06576 0.0057
BI GCI TY	0.05821 0.0144	-0.02659 0.2641	0.00713 0.7647	0.01556 0.5133	0.00600 0.8010	0.01466 0.5380	-0.01793 0.4515
PESAREA1	-0.03964 0.0958	0.02225 0.3500	-0.00770 0.7464	-0.01178 0.6207	0.02626 0.2701	-0.06242 0.0087	0.04264 0.0733
PESAREA2	0.06111 0.0102	0.02545 0.2851	0.02120 0.3733	0.01008 0.6722	0.00357 0.8808	0.02017 0.3970	0.01933 0.4170
PESAREA3	-0.01390 0.5595	-0.02657 0.2645	0.00334 0.8885	0.04665 0.0500	0.00313 0.8955	0.06223 0.0089	-0.02040 0.3915
PESAREA4	-0.01595 0.5030	-0.01941 0.4150	-0.00000 0.9998	-0.03522 0.1391	-0.05672 0.0171	0.03681 0.1221	-0.02413 0.3108
PESAREA5	-0.04052 0.0887	0.01078 0.6509	-0.01534 0.5196	-0.01729 0.4677	-0.04262 0.0733	0.04293 0.0713	0.02817 0.2367

	JOBP	UNBE	LOAN	FEMALE	AGE	AGESQ	MI DDLE
DUR_10	-0.09824 0.0001	0.06381 0.0073	-0.02252 0.3443	0.15352 0.0001	0.18744 0.0001	0.19132 0.0001	0.14078 0.0001
RE_EI S	0.10740 0.0001	-0.05160 0.0301	0.00467 0.8445	-0.20940 0.0001	-0.11476 0.0001	-0.12189 0.0001	-0.02360 0.3215
EI S	0.09261 0.0001	0.02083 0.3816	0.00899 0.7058	-0.20407 0.0001	-0.04856 0.0413	-0.06116 0.0101	0.00490 0.8369
TRAI N	0.12984 0.0001	0.22560 0.0001	0.06231 0.0088	0.01012 0.6708	-0.22461 0.0001	-0.24119 0.0001	-0.29807 0.0001
TRAI N_S	0.10276 0.0001	0.17602 0.0001	0.04204 0.0773	-0.00997 0.6754	-0.16615 0.0001	-0.17961 0.0001	-0.23729 0.0001
TRAI N_L	0.04029 0.0905	0.07469 0.0017	0.02212 0.3529	0.03596 0.1309	-0.10697 0.0001	-0.11131 0.0001	-0.10824 0.0001
PW	0.04779 0.0446	0.02255 0.3437	0.03473 0.1446	-0.05341 0.0248	0.12331 0.0001	0.12480 0.0001	0.15736 0.0001
JOBP	1.00000 0.0	0.09363 0.0001	0.10307 0.0001	-0.05383 0.0237	-0.12474 0.0001	-0.12329 0.0001	-0.05517 0.0204
UNBE	0.09363 0.0001	1.00000 0.0	0.06793 0.0043	-0.00823 0.7295	0.14587 0.0001	0.12637 0.0001	-0.02731 0.2514
LOAN	0.10307 0.0001	0.06793 0.0043	1.00000 0.0	-0.10262 0.0001	0.01829 0.4425	0.00606 0.7992	-0.04321 0.0694
FEMALE	-0.05383 0.0237	-0.00823 0.7295	-0.10262 0.0001	1.00000 0.0	-0.23684 0.0001	-0.21891 0.0001	0.12442 0.0001
AGE	-0.12474 0.0001	0.14587 0.0001	0.01829 0.4425	-0.23684 0.0001	1.00000 0.0	0.99283 0.0001	0.55319 0.0001
AGESQ	-0.12329 0.0001	0.12637 0.0001	0.00606 0.7992	-0.21891 0.0001	0.99283 0.0001	1.00000 0.0	0.56006 0.0001
MI DDLE	-0.05517 0.0204	-0.02731 0.2514	-0.04321 0.0694	0.12442 0.0001	0.55319 0.0001	0.56006 0.0001	1.00000 0.0
HI GH	-0.02102 0.3773	-0.05090 0.0324	-0.05579 0.0190	0.00575 0.8092	-0.23217 0.0001	-0.22814 0.0001	-0.46733 0.0001

COLLEGE	0.08279 0.0005	0.00113 0.9622	0.03728 0.1173	0.06300 0.0081	-0.26894 0.0001	-0.25884 0.0001	-0.19464 0.0001
HEAD	-0.01620 0.4962	0.09872 0.0001	0.10316 0.0001	-0.67127 0.0001	0.46245 0.0001	0.43811 0.0001	0.04034 0.0901
MARRIED	-0.12166 0.0001	0.09678 0.0001	0.04903 0.0394	-0.06752 0.0045	0.43238 0.0001	0.39399 0.0001	0.15140 0.0001

	JOBP	UNBE	LOAN	FEMALE	AGE	AGESQ	MIDDLE
SPOUSE_J	-0.07470 0.0017	0.03044 0.2011	-0.01671 0.4829	0.38142 0.0001	-0.03273 0.1692	-0.05417 0.0228	0.00712 0.7650
NUMB	0.03394 0.1540	-0.01334 0.5754	-0.03199 0.1791	-0.05584 0.0189	0.02830 0.2346	0.02727 0.2521	-0.02024 0.3954
LOWEARN	-0.01266 0.5951	-0.21552 0.0001	-0.07387 0.0019	0.34895 0.0001	-0.03533 0.1377	-0.00205 0.9315	0.29597 0.0001
MANUAL	-0.05380 0.0238	-0.13672 0.0001	-0.06494 0.0063	-0.09057 0.0001	0.33440 0.0001	0.34041 0.0001	0.52659 0.0001
MANU	0.04706 0.0480	-0.05568 0.0193	0.01428 0.5488	-0.02515 0.2907	0.07265 0.0023	0.07818 0.0010	0.25740 0.0001
FIRMSIZE	-0.00328 0.8906	0.21716 0.0001	0.01293 0.5870	-0.05096 0.0322	0.05612 0.0183	0.04935 0.0381	-0.13290 0.0001
DISPLACE	0.01614 0.4978	0.45629 0.0001	0.01796 0.4508	-0.09175 0.0001	0.19782 0.0001	0.18605 0.0001	0.04275 0.0725
LTENURE	-0.05429 0.0225	0.28106 0.0001	0.02320 0.3299	-0.07953 0.0008	0.41758 0.0001	0.39341 0.0001	0.04262 0.0734
URATE	0.04319 0.0696	0.15580 0.0001	0.02951 0.2152	0.00736 0.7573	0.05399 0.0233	0.05530 0.0201	-0.05883 0.0134
EMP_R	0.02034 0.3931	0.05372 0.0240	0.04412 0.0638	-0.02746 0.2487	0.03327 0.1622	0.03114 0.1908	0.01215 0.6099
BIGCITY	0.02199 0.3558	0.11326 0.0001	0.00548 0.8181	0.04880 0.0403	0.02133 0.3704	0.02413 0.3108	-0.06547 0.0059
PESAREA1	-0.01929 0.4178	-0.03822 0.1084	0.01167 0.6240	-0.03403 0.1529	0.04448 0.0617	0.04034 0.0902	0.01114 0.6400
PESAREA2	-0.02705 0.2559	-0.00968 0.6843	-0.00528 0.8245	0.04564 0.0552	-0.01637 0.4917	-0.01020 0.6684	0.06041 0.0111
PESAREA3	0.01879 0.4299	0.08386 0.0004	0.01087 0.6479	0.00942 0.6923	-0.00713 0.7646	-0.01297 0.5861	0.03089 0.1945
PESAREA4	0.03254 0.1716	-0.11053 0.0001	0.02112 0.3750	-0.06150 0.0097	-0.03008 0.2064	-0.02237 0.3475	0.01634 0.4925
PESAREA5	0.03113 0.1909	-0.00967 0.6848	0.00604 0.7999	-0.00100 0.9664	-0.01446 0.5437	-0.01577 0.5079	0.01959 0.4106

	HIGH	COLLEGE	HEAD	MARRIED	SPOUSE_J	NUMB	LOWEARN
DUR_10	-0.02308 0.3323	-0.06304 0.0080	-0.03721 0.1181	0.17521 0.0001	0.15831 0.0001	-0.03739 0.1163	0.03233 0.1745
REELS	-0.03931 0.0987	0.07598 0.0014	0.08446 0.0004	-0.18024 0.0001	-0.24092 0.0001	0.06726 0.0047	-0.03819 0.1086

EI S	-0. 05550 0. 0197	0. 03539 0. 1371	0. 12114 0. 0001	-0. 07116 0. 0028	-0. 18578 0. 0001	0. 03367 0. 1572	-0. 07573 0. 0014
TRAI N	0. 07758 0. 0011	0. 08084 0. 0007	-0. 06215 0. 0090	-0. 09964 0. 0001	0. 00712 0. 7650	0. 01205 0. 6129	-0. 13443 0. 0001
TRAI N_S	0. 01921 0. 4199	0. 09360 0. 0001	-0. 02623 0. 2706	-0. 06406 0. 0071	0. 00966 0. 6851	-0. 00238 0. 9203	-0. 14469 0. 0001
TRAI N_L	0. 09101 0. 0001	-0. 00773 0. 7455	-0. 06023 0. 0114	-0. 06274 0. 0084	-0. 00690 0. 7720	0. 01391 0. 5590	0. 01116 0. 6392
PW	-0. 08489 0. 0004	0. 02680 0. 2603	0. 07966 0. 0008	-0. 06558 0. 0058	-0. 17736 0. 0001	-0. 01679 0. 4809	0. 08079 0. 0007
JOBP	-0. 02102 0. 3773	0. 08279 0. 0005	-0. 01620 0. 4962	-0. 12166 0. 0001	-0. 07470 0. 0017	0. 03394 0. 1540	-0. 01266 0. 5951
UNBE	-0. 05090 0. 0324	0. 00113 0. 9622	0. 09872 0. 0001	0. 09678 0. 0001	0. 03044 0. 2011	-0. 01334 0. 5754	-0. 21552 0. 0001
LOAN	-0. 05579 0. 0190	0. 03728 0. 1173	0. 10316 0. 0001	0. 04903 0. 0394	-0. 01671 0. 4829	-0. 03199 0. 1791	-0. 07387 0. 0019
FEMALE	0. 00575 0. 8092	0. 06300 0. 0081	-0. 67127 0. 0001	-0. 06752 0. 0045	0. 38142 0. 0001	-0. 05584 0. 0189	0. 34895 0. 0001
AGE	-0. 23217 0. 0001	-0. 26894 0. 0001	0. 46245 0. 0001	0. 43238 0. 0001	-0. 03273 0. 1692	0. 02830 0. 2346	-0. 03533 0. 1377
AGESQ	-0. 22814 0. 0001	-0. 25884 0. 0001	0. 43811 0. 0001	0. 39399 0. 0001	-0. 05417 0. 0228	0. 02727 0. 2521	-0. 00205 0. 9315
MI DDLE	-0. 46733 0. 0001	-0. 19464 0. 0001	0. 04034 0. 0901	0. 15140 0. 0001	0. 00712 0. 7650	-0. 02024 0. 3954	0. 29597 0. 0001
HI GH	1. 00000 0. 0	-0. 35774 0. 0001	-0. 06488 0. 0064	-0. 04109 0. 0843	0. 05212 0. 0285	0. 03790 0. 1113	-0. 04198 0. 0778
COLLEGE	-0. 35774 0. 0001	1. 00000 0. 0	-0. 11464 0. 0001	-0. 18180 0. 0001	-0. 04600 0. 0533	0. 00747 0. 7536	-0. 02365 0. 3205
HEAD	-0. 06488 0. 0064	-0. 11464 0. 0001	1. 00000 0. 0	0. 26976 0. 0001	-0. 26547 0. 0001	-0. 05294 0. 0261	-0. 30936 0. 0001

	HI GH	COLLEGE	HEAD	MARRI ED	SPOUSE_J	NUMB	LOWEARN
MARRI ED	-0. 04109 0. 0843	-0. 18180 0. 0001	0. 26976 0. 0001	1. 00000 0. 0	0. 49847 0. 0001	0. 03617 0. 1286	-0. 19286 0. 0001
SPOUSE_J	0. 05212 0. 0285	-0. 04600 0. 0533	-0. 26547 0. 0001	0. 49847 0. 0001	1. 00000 0. 0	-0. 06433 0. 0068	-0. 00812 0. 7331
NUMB	0. 03790 0. 1113	0. 00747 0. 7536	-0. 05294 0. 0261	0. 03617 0. 1286	-0. 06433 0. 0068	1. 00000 0. 0	-0. 03360 0. 1581
LOWEARN	-0. 04198 0. 0778	-0. 02365 0. 3205	-0. 30936 0. 0001	-0. 19286 0. 0001	-0. 00812 0. 7331	-0. 03360 0. 1581	1. 00000 0. 0
MANUAL	-0. 02331 0. 3276	-0. 19182 0. 0001	0. 07923 0. 0009	0. 03461 0. 1460	-0. 07092 0. 0029	0. 03708 0. 1193	0. 28966 0. 0001
MANU	-0. 04318 0. 0697	-0. 04108 0. 0843	0. 00606 0. 7990	-0. 06579 0. 0057	-0. 08522 0. 0003	0. 04041 0. 0896	0. 21245 0. 0001
FI RMSI ZE	0. 03181 0. 1815	0. 00584 0. 8062	0. 07832 0. 0010	0. 09493 0. 0001	0. 02480 0. 2976	0. 02917 0. 2205	-0. 27504 0. 0001
DI SPLACE	-0. 05736 0. 0159	-0. 03788 0. 1115	0. 12184 0. 0001	0. 09107 0. 0001	0. 00074 0. 9752	0. 00449 0. 8504	-0. 17756 0. 0001
LTENURE	0. 01777 0. 4555	-0. 14041 0. 0001	0. 26337 0. 0001	0. 36484 0. 0001	0. 12045 0. 0001	0. 05424 0. 0226	-0. 37923 0. 0001
URATE	-0. 02726 0. 2523	0. 02107 0. 3763	0. 04551 0. 0559	-0. 01712 0. 4723	-0. 00277 0. 9074	-0. 02115 0. 3744	-0. 06252 0. 0086

EMP_R	-0.04166 0.0801	0.03286 0.1675	0.03060 0.1987	0.01683 0.4796	-0.00616 0.7957	-0.02590 0.2766	-0.01262 0.5961
BI GCI TY	-0.02513 0.2912	0.02052 0.3887	0.01213 0.6105	-0.01991 0.4031	0.01322 0.5788	-0.01645 0.4896	-0.07959 0.0008
PESAREA1	0.00284 0.9050	-0.01042 0.6618	0.04160 0.0805	0.03410 0.1521	-0.00979 0.6810	-0.01787 0.4529	0.00763 0.7485
PESAREA2	0.01608 0.4994	0.02104 0.3770	-0.05636 0.0178	-0.03038 0.2019	-0.00443 0.8523	-0.02552 0.2838	0.06331 0.0078
PESAREA3	-0.04097 0.0852	0.06146 0.0098	-0.02095 0.3789	0.02070 0.3846	0.01300 0.5852	0.00590 0.8044	0.02466 0.3003
PESAREA4	-0.01190 0.6171	0.00924 0.6979	-0.00311 0.8961	-0.00033 0.9888	-0.01611 0.4987	0.06153 0.0097	0.03812 0.1093
PESAREA5	-0.00002 0.9992	-0.02060 0.3870	-0.00378 0.8738	-0.01157 0.6270	-0.00438 0.8540	0.00588 0.8050	0.02464 0.3007

	MANUAL	MANU	FI RMSI ZE	DI SPLACE	LTENURE	URATE	EMP_R
DUR_10	0.02338 0.3262	-0.00253 0.9153	0.04646 0.0509	-0.00923 0.6982	0.13918 0.0001	0.11038 0.0001	-0.03137 0.1876
RE_EI S	0.04792 0.0441	0.03638 0.1265	-0.10917 0.0001	-0.01031 0.6651	-0.15770 0.0001	0.02654 0.2650	0.02291 0.3360
EI S	0.02004 0.3999	0.03770 0.1132	-0.02648 0.2660	0.03328 0.1622	-0.07795 0.0010	0.03833 0.1073	0.00548 0.8181
TRAI N	-0.25657 0.0001	-0.08841 0.0002	0.08905 0.0002	0.12984 0.0001	0.04211 0.0768	0.00605 0.7996	0.00875 0.7134
TRAI N_S	-0.22637 0.0001	-0.06989 0.0033	0.07871 0.0009	0.08854 0.0002	0.05403 0.0232	0.03823 0.1083	0.02312 0.3314
TRAI N_L	-0.06023 0.0113	-0.04029 0.0906	0.02021 0.3960	0.06996 0.0033	-0.01806 0.4482	-0.04903 0.0394	-0.01716 0.4711
PW	0.09161 0.0001	0.05767 0.0154	-0.01970 0.4081	0.02613 0.2724	-0.03511 0.1402	0.00875 0.7133	0.06576 0.0057
JOBP	-0.05380 0.0238	0.04706 0.0480	-0.00328 0.8906	0.01614 0.4978	-0.05429 0.0225	0.04319 0.0696	0.02034 0.3931
UNBE	-0.13672 0.0001	-0.05568 0.0193	0.21716 0.0001	0.45629 0.0001	0.28106 0.0001	0.15580 0.0001	0.05372 0.0240
LOAN	-0.06494 0.0063	0.01428 0.5488	0.01293 0.5870	0.01796 0.4508	0.02320 0.3299	0.02951 0.2152	0.04412 0.0638
FEMALE	-0.09057 0.0001	-0.02515 0.2907	-0.05096 0.0322	-0.09175 0.0001	-0.07953 0.0008	0.00736 0.7573	-0.02746 0.2487
AGE	0.33440 0.0001	0.07265 0.0023	0.05612 0.0183	0.19782 0.0001	0.41758 0.0001	0.05399 0.0233	0.03327 0.1622
AGESQ	0.34041 0.0001	0.07818 0.0010	0.04935 0.0381	0.18605 0.0001	0.39341 0.0001	0.05530 0.0201	0.03114 0.1908
MI DDLE	0.52659 0.0001	0.25740 0.0001	-0.13290 0.0001	0.04275 0.0725	0.04262 0.0734	-0.05883 0.0134	0.01215 0.6099
HI GH	-0.02331 0.3276	-0.04318 0.0697	0.03181 0.1815	-0.05736 0.0159	0.01777 0.4555	-0.02726 0.2523	-0.04166 0.0801
COLLEGE	-0.19182 0.0001	-0.04108 0.0843	0.00584 0.8062	-0.03788 0.1115	-0.14041 0.0001	0.02107 0.3763	0.03286 0.1675
HEAD	0.07923 0.0009	0.00606 0.7990	0.07832 0.0010	0.12184 0.0001	0.26337 0.0001	0.04551 0.0559	0.03060 0.1987

	MANUAL	MANU	FI RMSI ZE	DI SPLACE	LTENURE	URATE	EMP_R
MARRI ED	0.03461 0.1460	-0.06579 0.0057	0.09493 0.0001	0.09107 0.0001	0.36484 0.0001	-0.01712 0.4723	0.01683 0.4796
SPOUSE_J	-0.07092 0.0029	-0.08522 0.0003	0.02480 0.2976	0.00074 0.9752	0.12045 0.0001	-0.00277 0.9074	-0.00616 0.7957
NUMB	0.03708 0.1193	0.04041 0.0896	0.02917 0.2205	0.00449 0.8504	0.05424 0.0226	-0.02115 0.3744	-0.02590 0.2766
LOWEARN	0.28966 0.0001	0.21245 0.0001	-0.27504 0.0001	-0.17756 0.0001	-0.37923 0.0001	-0.06252 0.0086	-0.01262 0.5961
MANUAL	1.00000 0.0	0.35576 0.0001	-0.13225 0.0001	-0.03161 0.1843	-0.10570 0.0001	-0.13400 0.0001	0.00148 0.9505
MANU	0.35576 0.0001	1.00000 0.0	0.02444 0.3047	-0.02188 0.3582	-0.09655 0.0001	-0.08339 0.0005	0.05366 0.0241
FI RMSI ZE	-0.13225 0.0001	0.02444 0.3047	1.00000 0.0	0.11408 0.0001	0.37748 0.0001	-0.00779 0.7435	-0.00216 0.9277
DI SPLACE	-0.03161 0.1843	-0.02188 0.3582	0.11408 0.0001	1.00000 0.0	0.19334 0.0001	0.10236 0.0001	0.04181 0.0790
LTENURE	-0.10570 0.0001	-0.09655 0.0001	0.37748 0.0001	0.19334 0.0001	1.00000 0.0	0.09488 0.0001	0.01944 0.4143
URATE	-0.13400 0.0001	-0.08339 0.0005	-0.00779 0.7435	0.10236 0.0001	0.09488 0.0001	1.00000 0.0	0.52624 0.0001
EMP_R	0.00148 0.9505	0.05366 0.0241	-0.00216 0.9277	0.04181 0.0790	0.01944 0.4143	0.52624 0.0001	1.00000 0.0
BI GCI TY	-0.14560 0.0001	-0.10444 0.0001	0.04826 0.0426	0.06699 0.0049	0.09127 0.0001	0.49772 0.0001	0.04197 0.0779
PESAREA1	0.00936 0.6942	0.07686 0.0012	-0.00664 0.7804	-0.00790 0.7402	-0.00735 0.7576	0.33909 0.0001	0.69976 0.0001
PESAREA2	0.07777 0.0011	0.04070 0.0873	-0.13017 0.0001	-0.03981 0.0944	-0.01996 0.4018	0.08804 0.0002	-0.00196 0.9343
PESAREA3	0.03771 0.1132	0.00239 0.9199	0.05393 0.0234	0.01982 0.4052	-0.01795 0.4508	-0.14952 0.0001	-0.09678 0.0001
PESAREA4	0.06707 0.0048	-0.00122 0.9592	0.00647 0.7859	-0.01986 0.4042	-0.04481 0.0598	-0.21185 0.0001	-0.20494 0.0001
PESAREA5	0.05633 0.0179	0.06285 0.0082	0.01900 0.4249	0.03613 0.1291	-0.05649 0.0176	-0.33293 0.0001	0.01235 0.6040

	BI GCI TY	PESAREA1	PESAREA2	PESAREA3	PESAREA4	PESAREA5
DUR_10	0.05821 0.0144	-0.03964 0.0958	0.06111 0.0102	-0.01390 0.5595	-0.01595 0.5030	-0.04052 0.0887
RE_EI S	-0.02659 0.2641	0.02225 0.3500	0.02545 0.2851	-0.02657 0.2645	-0.01941 0.4150	0.01078 0.6509
EI S	0.00713 0.7647	-0.00770 0.7464	0.02120 0.3733	0.00334 0.8885	-0.00000 0.9998	-0.01534 0.5196
TRAI N	0.01556 0.5133	-0.01178 0.6207	0.01008 0.6722	0.04665 0.0500	-0.03522 0.1391	-0.01729 0.4677
TRAI N_S	0.00600 0.8010	0.02626 0.2701	0.00357 0.8808	0.00313 0.8955	-0.05672 0.0171	-0.04262 0.0733
TRAI N_L	0.01466 0.5380	-0.06242 0.0087	0.02017 0.3970	0.06223 0.0089	0.03681 0.1221	0.04293 0.0713

PW	-0.01793 0.4515	0.04264 0.0733	0.01933 0.4170	-0.02040 0.3915	-0.02413 0.3108	0.02817 0.2367
JOBP	0.02199 0.3558	-0.01929 0.4178	-0.02705 0.2559	0.01879 0.4299	0.03254 0.1716	0.03113 0.1909
UNBE	0.11326 0.0001	-0.03822 0.1084	-0.00968 0.6843	0.08386 0.0004	-0.11053 0.0001	-0.00967 0.6848
LOAN	0.00548 0.8181	0.01167 0.6240	-0.00528 0.8245	0.01087 0.6479	0.02112 0.3750	0.00604 0.7999
FEMALE	0.04880 0.0403	-0.03403 0.1529	0.04564 0.0552	0.00942 0.6923	-0.06150 0.0097	-0.00100 0.9664
AGE	0.02133 0.3704	0.04448 0.0617	-0.01637 0.4917	-0.00713 0.7646	-0.03008 0.2064	-0.01446 0.5437
AGESQ	0.02413 0.3108	0.04034 0.0902	-0.01020 0.6684	-0.01297 0.5861	-0.02237 0.3475	-0.01577 0.5079
MI DDLE	-0.06547 0.0059	0.01114 0.6400	0.06041 0.0111	0.03089 0.1945	0.01634 0.4925	0.01959 0.4106
HI GH	-0.02513 0.2912	0.00284 0.9050	0.01608 0.4994	-0.04097 0.0852	-0.01190 0.6171	-0.00002 0.9992
COLLEGE	0.02052 0.3887	-0.01042 0.6618	0.02104 0.3770	0.06146 0.0098	0.00924 0.6979	-0.02060 0.3870
HEAD	0.01213 0.6105	0.04160 0.0805	-0.05636 0.0178	-0.02095 0.3789	-0.00311 0.8961	-0.00378 0.8738

	<b>BI GCI TY</b>	<b>PESAREA1</b>	<b>PESAREA2</b>	<b>PESAREA3</b>	<b>PESAREA4</b>	<b>PESAREA5</b>
MARRI ED	-0.01991 0.4031	0.03410 0.1521	-0.03038 0.2019	0.02070 0.3846	-0.00033 0.9888	-0.01157 0.6270
SPOUSE_J	0.01322 0.5788	-0.00979 0.6810	-0.00443 0.8523	0.01300 0.5852	-0.01611 0.4987	-0.00438 0.8540
NUMB	-0.01645 0.4896	-0.01787 0.4529	-0.02552 0.2838	0.00590 0.8044	0.06153 0.0097	0.00588 0.8050
LOWEARN	-0.07959 0.0008	0.00763 0.7485	0.06331 0.0078	0.02466 0.3003	0.03812 0.1093	0.02464 0.3007
MANUAL	-0.14560 0.0001	0.00936 0.6942	0.07777 0.0011	0.03771 0.1132	0.06707 0.0048	0.05633 0.0179
MANU	-0.10444 0.0001	0.07686 0.0012	0.04070 0.0873	0.00239 0.9199	-0.00122 0.9592	0.06285 0.0082
FI RMSI ZE	0.04826 0.0426	-0.00664 0.7804	-0.13017 0.0001	0.05393 0.0234	0.00647 0.7859	0.01900 0.4249
DI SPLACE	0.06699 0.0049	-0.00790 0.7402	-0.03981 0.0944	0.01982 0.4052	-0.01986 0.4042	0.03613 0.1291
LTENURE	0.09127 0.0001	-0.00735 0.7576	-0.01996 0.4018	-0.01795 0.4508	-0.04481 0.0598	-0.05649 0.0176
URATE	0.49772 0.0001	0.33909 0.0001	0.08804 0.0002	-0.14952 0.0001	-0.21185 0.0001	-0.33293 0.0001
EMP_R	0.04197 0.0779	0.69976 0.0001	-0.00196 0.9343	-0.09678 0.0001	-0.20494 0.0001	0.01235 0.6040
BI GCI TY	1.00000 0.0	-0.29627 0.0001	0.10150 0.0001	0.00828 0.7280	-0.17125 0.0001	-0.17831 0.0001
PESAREA1	-0.29627 0.0001	1.00000 0.0	-0.29874 0.0001	-0.19556 0.0001	-0.19318 0.0001	-0.17975 0.0001
PESAREA2	0.10150 0.0001	-0.29874 0.0001	1.00000 0.0	-0.17767 0.0001	-0.17551 0.0001	-0.16331 0.0001
PESAREA3	0.00828	-0.19556	-0.17767	1.00000	-0.11489	-0.10690

	0.7280	0.0001	0.0001	0.0	0.0001	0.0001
PESAREA4	-0.17125 0.0001	-0.19318 0.0001	-0.17551 0.0001	-0.11489 0.0001	1.00000 0.0	-0.10560 0.0001
PESAREA5	-0.17831 0.0001	-0.17975 0.0001	-0.16331 0.0001	-0.10690 0.0001	-0.10560 0.0001	1.00000 0.0



Annex Table 6.3 Estimation of re-employment hazard by worker groups (related to Table 6.6)

Annex Table 6.3.1 By RETU participation and age groups

Subsamples	Non-trainees (904)	Trainees (904)	Age 19-29 (609)	Age 30-44 (666)	Age 45-63 (533)
Dep. Var.	DUR_10 (spell length of non-employment)				
TRAIN			0.091 (0.130)	0.224 (0.119)*	0.257 (0.171)
PW	0.388 (0.151)**	0.292 (0.147)**	0.346 (0.205)*	0.132 (0.174)	0.545 (0.172)***
JOBP	0.292 (0.153)*	0.278 (0.117)**	0.322 (0.141)**	0.134 (0.146)	0.230 (0.221)
UNBE	-0.432 (0.134)***	-0.006 (0.163)	-0.415 (0.166)**	-0.020 (0.189)	-0.286 (0.188)
LOAN	0.040 (0.262)	0.110 (0.191)	0.399 (0.320)	0.008 (0.209)	-0.137 (0.331)
FEMALE	-0.582 (0.143)***	-0.298 (0.142)**	-0.184 (0.154)	-0.619 (0.197)***	-0.780 (0.341)**
AGE	0.045 (0.043)	0.002 (0.052)	-0.979 (0.479)**	-0.057 (0.238)	0.138 (0.393)
AGESQ	-0.001 (0.001)*	0.000 (0.001)	0.019 (0.009)**	0.000 (0.003)	-0.002 (0.004)
MIDDLE	0.118 (0.211)	-0.008 (0.242)	0.261 (0.496)	-0.132 (0.236)	-0.063 (0.292)
HIGH	-0.159 (0.161)	-0.087 (0.131)	-0.036 (0.174)	-0.050 (0.144)	-0.191 (0.250)
COLLEGE	-0.141 (0.205)	0.047 (0.157)	0.064 (0.185)	-0.077 (0.199)	-0.194 (0.567)
HEAD	0.361 (0.150)**	0.309 (0.154)**	0.521 (0.190)***	0.347 (0.185)*	-0.261 (0.334)
MARRIED	-0.205 (0.146)	-0.429 (0.165)**	-0.356 (0.248)	-0.092 (0.178)	-0.284 (0.328)
SPOUSE_J	-0.378 (0.146)**	-0.137 (0.164)	-1.065 (0.303)***	-0.121 (0.158)	0.000 (0.166)
NUMB	0.088 (0.035)**	0.039 (0.036)	0.009 (0.041)	0.073 (0.044)	0.041 (0.063)
LOWEARN	0.089 (0.131)	-0.029 (0.135)	-0.166 (0.128)	0.115 (0.179)	0.220 (0.217)
MANUAL	0.147 (0.137)	0.290 (0.139)**	0.060 (0.158)	0.345 (0.152)**	0.264 (0.208)
MANU	0.098 (0.112)	-0.110 (0.108)	-0.032 (0.128)	-0.032 (0.121)	0.003 (0.162)
FIRMSIZE	0.003 (0.023)	-0.059 (0.022)***	-0.016 (0.025)	-0.030 (0.026)	-0.073 (0.032)**
DISPLACE	0.350 (0.135)**	0.055 (0.144)	0.115 (0.151)	0.432 (0.171)**	-0.274 (0.206)
LTENURE	-0.075 (0.054)	-0.108 (0.058)*	-0.128 (0.074)*	-0.112 (0.068)*	0.071 (0.073)
URATE	-0.150 (0.037)***	0.003 (0.040)	-0.081 (0.045)	-0.092 (0.047)*	-0.074 (0.053)
BIGCITY	0.095 (0.123)	-0.019 (0.120)	0.000 (0.153)	0.068 (0.132)	0.116 (0.166)
PES_SE	-0.330 (0.124)***	-0.376 (0.122)***	-0.187 (0.146)	-0.493 (0.145)***	-0.322 (0.170)*
PES_SW	-0.393 (0.147)***	0.010 (0.152)	-0.207 (0.172)	-0.178 (0.175)	-0.117 (0.217)
-2 LOG L	3450.0	3318.6	3006.3	3367.9	2090.5
Chi-Square	201.6	145.3	188.2	124.0	65.4

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.3.2 By sex and education groups

Subsamples	Males (892)	Females (916)	Middle school (367)	High school (832)	College &univ. (609)
Dep. Var.	DUR_10 (spell length of non-employment)				
TRAIN	-0.023 (0.098)	0.532 (0.128)***	0.319 (0.210)	0.207 (0.114)*	0.194 (0.126)
PW	0.293 (0.134)**	0.403 (0.159)**	0.609 (0.189)***	0.214 (0.172)	0.273 (0.180)
JOBP	0.310 (0.113)***	0.120 (0.154)	0.576 (0.247)**	0.220 (0.138)	0.235 (0.139)*
UNBE	-0.240 (0.129)*	-0.213 (0.158)	-0.420 (0.194)**	-0.027 (0.159)	-0.370 (0.182)**
LOAN	0.142 (0.168)	0.186 (0.338)	-0.217 (0.446)	0.389 (0.245)	0.056 (0.207)
FEMALE			-0.437 (0.309)	-0.469 (0.157)***	-0.363 (0.166)**
AGE	-0.011 (0.047)	0.081 (0.048)*	0.058 (0.096)	0.052 (0.048)	-0.024 (0.069)
AGESQ	0.000 (0.001)	-0.001 (0.001)**	-0.001 (0.001)	-0.001 (0.001)*	0.000 (0.001)
MIDDLE	-0.023 (0.180)	0.268 (0.288)			
HIGH	-0.067 (0.124)	-0.142 (0.175)			
COLLEGE	-0.027 (0.160)	0.021 (0.198)			
HEAD	0.363 (0.207)*	-0.283 (0.197)	0.043 (0.298)	0.422 (0.168)**	0.714 (0.181)***
MARRIED	-0.094 (0.190)	-0.648 (0.215)***	0.083 (0.294)	-0.400 (0.173)**	-0.520 (0.193)***
SPOUSE_J	0.041 (0.127)	-0.388 (0.197)**	0.094 (0.188)	-0.407 (0.182)**	-0.249 (0.191)
NUMB	0.042 (0.037)	0.043 (0.040)	0.087 (0.073)	0.064 (0.036)*	0.033 (0.042)
LOWEARN	-0.006 (0.132)	0.051 (0.140)	0.109 (0.230)	-0.008 (0.134)	-0.155 (0.166)
MANUAL	0.266 (0.113)**	0.199 (0.180)	0.528 (0.300)*	0.217 (0.124)*	-0.034 (0.202)
MANU	0.009 (0.095)	-0.166 (0.132)	-0.188 (0.202)	-0.023 (0.111)	-0.065 (0.123)
FIRMSIZE	-0.040 (0.020)**	-0.006 (0.024)	-0.055 (0.038)	-0.030 (0.022)	-0.022 (0.027)
DISPLACE	0.340 (0.133)**	0.069 (0.141)	-0.002 (0.209)	0.062 (0.148)	0.457 (0.172)***
LTENURE	-0.005 (0.052)	-0.165 (0.057)***	0.044 (0.081)	-0.137 (0.058)**	-0.023 (0.070)
URATE	-0.087 (0.034)**	-0.076 (0.045)*	-0.148 (0.061)**	-0.049 (0.040)	-0.086 (0.047)*
BIGCITY	0.122 (0.108)	0.029 (0.136)	0.355 (0.198)*	-0.013 (0.129)	-0.041 (0.136)
PES_SE	-0.485 (0.114)***	-0.235 (0.132)*	-0.349 (0.199)*	-0.443 (0.127)***	-0.208 (0.147)
PES_SW	-0.250 (0.130)*	-0.110 (0.171)	-0.176 (0.235)	-0.401 (0.161)**	0.006 (0.172)
-2 LOG L	5067.2	3703.0	1482.6	3890.2	3130.1
Chi-Square	150.1	163.1	64.1	182.9	125.7

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.3.3 By wage and household income groups

Subsamples	Low-wages (596)	Mid-wages (534)	High wages (678)	Higher incomes (719)	Lower incomes (908)
Dep. Var.	DUR_10 (spell length of non-employment)				
TRAIN	0.374 (0.142)***	0.327 (0.134)**	0.060 (0.134)	0.288 (0.118)**	0.365 (0.119)***
PW	0.474 (0.167)***	0.402 (0.197)**	0.253 (0.189)	0.383 (0.213)*	0.488 (0.128)***
JOBP	0.353 (0.161)**	0.245 (0.156)	0.209 (0.160)	0.062 (0.141)	0.326 (0.133)**
UNBE	-0.160 (0.159)	-0.377 (0.166)**	-0.131 (0.220)	-0.514 (0.149)***	-0.057 (0.153)
LOAN	-0.171 (0.359)	-0.073 (0.293)	0.125 (0.210)	0.004 (0.257)	0.093 (0.209)
FEMALE	-0.456 (0.160)***	-0.340 (0.168)**	-0.970 (0.247)***	-0.574 (0.159)***	-0.395 (0.149)***
AGE	0.022 (0.048)	0.017 (0.062)	0.032 (0.075)	0.152 (0.053)***	0.025 (0.047)
AGESQ	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)***	-0.001 (0.001)
MIDDLE	0.495 (0.309)	-0.005 (0.274)	-0.341 (0.282)	0.331 (0.258)	0.043 (0.216)
HIGH	0.217 (0.230)	-0.354 (0.184)*	-0.170 (0.152)	-0.254 (0.145)*	-0.146 (0.161)
COLLEGE	0.334 (0.266)	-0.393 (0.204)*	0.134 (0.206)	-0.219 (0.171)	0.097 (0.201)
HEAD	0.095 (0.166)	0.609 (0.186)***	0.140 (0.242)	0.559 (0.166)***	0.156 (0.148)
MARRIED	-0.080 (0.177)	-0.310 (0.202)	-0.650 (0.208)***	-0.068 (0.182)	-0.203 (0.145)
SPOUSE_J	-0.431 (0.189)**	-0.421 (0.202)**	-0.031 (0.167)	-0.643 (0.180)***	-0.312 (0.148)**
NUMB	0.024 (0.040)	0.113 (0.043)***	0.093 (0.048)*	0.013 (0.041)	0.119 (0.037)***
LOWEARN				-0.104 (0.145)	0.240 (0.139)*
LWAGE	-0.313 (0.275)	0.816 (0.473)*	-0.171 (0.230)		
MANUAL	0.020 (0.168)	0.258 (0.160)	0.351 (0.173)**	0.017 (0.151)	0.348 (0.139)**
MANU	-0.044 (0.141)	-0.029 (0.127)	-0.071 (0.136)	0.231 (0.117)**	-0.099 (0.111)
FIRMSIZE	-0.009 (0.026)	-0.015 (0.029)	-0.057 (0.028)**	0.017 (0.024)	-0.093 (0.023)***
DISPLACE	0.071 (0.154)	0.122 (0.168)	0.407 (0.209)*	0.061 (0.143)	0.189 (0.149)
LTENURE	-0.085 (0.064)	0.010 (0.073)	-0.010 (0.078)	-0.141 (0.063)**	0.028 (0.057)
URATE	-0.104 (0.049)**	-0.066 (0.045)	-0.094 (0.050)*	-0.097 (0.043)**	-0.087 (0.042)**
BIGCITY	0.170 (0.151)	-0.034 (0.155)	0.024 (0.137)	0.193 (0.127)	0.003 (0.128)
PES_SE	-0.366 (0.150)**	-0.239 (0.149)	-0.480 (0.153)***	-0.192 (0.128)	-0.520 (0.131)***
PES_SW	-0.213 (0.183)	-0.208 (0.177)	-0.205 (0.192)	-0.264 (0.167)	-0.122 (0.153)
-2 LOG L	2820.8	2691.2	2941.8	3589.6	4091.3
Chi-Square	95.5	142.5	131.8	233.9	169.5

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.3.4 By firm size, occupation and industry

Subsamples (Obs.)	Firm size>300 (778)	Firm size<=300 (1030)	Non-manual (1119)	Manual workers (689)	Non-manufacturing (892)	Manufacturing (916)
Dep. Var.	DUR_10 (spell length of non-employment)					
TRAIN	0.161 (0.126)	0.279 (0.098)***	0.223 (0.100)**	0.215 (0.126)*	0.341 (0.113)***	0.082 (0.108)
PW	0.286 (0.171)*	0.421 (0.127)***	0.310 (0.140)**	0.399 (0.150)***	0.513 (0.153)***	0.237 (0.138)*
JOBP	0.128 (0.145)	0.330 (0.115)***	0.192 (0.113)*	0.343 (0.150)**	0.181 (0.138)	0.328 (0.120)***
UNBE	-0.531 (0.191)***	-0.151 (0.119)	-0.412 (0.141)***	-0.093 (0.144)	-0.465 (0.150)***	-0.061 (0.137)
LOAN	0.592 (0.228)***	-0.204 (0.198)	0.167 (0.174)	-0.140 (0.296)	-0.043 (0.224)	0.229 (0.200)
FEMALE	-0.342 (0.170)**	-0.483 (0.121)***	-0.383 (0.128)***	-0.520 (0.164)***	-0.319 (0.148)**	-0.493 (0.133)***
AGE	0.047 (0.055)	0.003 (0.040)	0.042 (0.048)	0.014 (0.047)	0.043 (0.050)	0.000 (0.041)
AGESQ	-0.001 (0.001)	0.000 (0.000)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)*	0.000 (0.000)
MIDDLE	0.107 (0.261)	0.053 (0.186)	-0.185 (0.306)	0.438 (0.320)	0.089 (0.233)	0.070 (0.207)
HIGH	-0.233 (0.154)	-0.064 (0.129)	-0.161 (0.110)	0.266 (0.302)	-0.205 (0.130)	-0.086 (0.154)
COLLEGE	-0.240 (0.198)	0.043 (0.156)	-0.100 (0.133)	0.407 (0.368)	-0.084 (0.162)	0.002 (0.186)
HEAD	0.196 (0.179)	0.380 (0.129)***	0.431 (0.142)***	0.214 (0.161)	0.412 (0.163)**	0.263 (0.137)*
MARRIED	-0.110 (0.199)	-0.317 (0.125)**	-0.510 (0.147)***	-0.036 (0.163)	-0.353 (0.155)**	-0.281 (0.148)*
SPOUSE_J	-0.364 (0.196)*	-0.282 (0.129)**	-0.391 (0.155)**	0.006 (0.147)	-0.412 (0.163)**	-0.173 (0.142)
NUMB	0.053 (0.041)	0.068 (0.031)**	0.073 (0.032)**	0.026 (0.040)	0.030 (0.039)	0.088 (0.032)***
LOWEARN	0.051 (0.160)	-0.003 (0.111)	-0.004 (0.125)	-0.031 (0.141)	0.074 (0.139)	-0.053 (0.125)
MANUAL	0.160 (0.161)	0.269 (0.117)**			0.272 (0.149)*	0.187 (0.123)
MANU	-0.117 (0.124)	0.053 (0.096)	-0.049 (0.095)	-0.001 (0.126)		
FIRMSIZE	-0.024 (0.074)	0.000 (0.027)	-0.015 (0.020)	-0.057 (0.025)**	0.006 (0.021)	-0.071 (0.023)***
DISPLACE	0.253 (0.178)	0.214 (0.118)*	0.289 (0.131)**	0.141 (0.149)	0.352 (0.146)**	0.091 (0.134)
LTENURE	-0.126 (0.069)*	-0.043 (0.047)	-0.073 (0.054)	-0.067 (0.057)	-0.031 (0.061)	-0.091 (0.050)*
URATE	-0.043 (0.046)	-0.104 (0.033)***	-0.064 (0.037)*	-0.120 (0.041)***	-0.106 (0.042)**	-0.068 (0.036)*
BIGCITY	-0.106 (0.130)	0.174 (0.109)	-0.045 (0.106)	0.280 (0.139)**	0.097 (0.125)	0.043 (0.115)
PES_SE	-0.226 (0.147)	-0.370 (0.106)***	-0.217 (0.112)*	-0.489 (0.133)***	-0.282 (0.125)**	-0.367 (0.117)***
PES_SW	-0.202 (0.173)	-0.218 (0.131)*	-0.070 (0.141)	-0.351 (0.155)**	-0.168 (0.152)	-0.242 (0.142)*
-2 LOG L	3359.0	5437.7	5370.2	3412.5	4166.9	4643.5
Chi-Square	117.6	225.4	232.9	128.0	195.2	157.7

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.4 Probit estimation for the RE\_EIS (related to Table 6.8)

Annex Table 6.4.1 By RETU participation and age groups

Subsamples	Non-trainees (879)	Trainees (887)	Age 19-29 (590)	Age 30-44 (654)	Age 45-63 (522)
Dep. Var.	RE_EIS (the re-entered to EIS workplace between leaving date in RETU data and June 2002)				
INTERCPT	-0.736 (0.767)	0.596 (0.881)	6.975 (6.525)	3.727 (4.105)	-16.552 (8.748) *
TRAIN			0.201 (0.126)	0.127 (0.112)	0.070 (0.141)
PW	0.388 (0.155)**	0.416 (0.159)***	0.269 (0.245)	0.664 (0.205)***	0.363 (0.164)**
JOBP	0.078 (0.150)	0.275 (0.116)**	0.159 (0.149)	0.203 (0.147)	0.175 (0.203)
UNBE	-0.154 (0.119)	0.045 (0.156)	-0.085 (0.161)	0.042 (0.170)	-0.278 (0.172)
LOAN	-0.265 (0.241)	-0.091 (0.184)	-0.787 (0.336)**	0.044 (0.205)	-0.162 (0.301)
FEMALE	-0.492 (0.140)***	-0.541 (0.141)***	-0.524 (0.166)***	-0.481 (0.186)**	-0.447 (0.281)
AGE	0.110 (0.039)***	0.016 (0.045)	-0.441 (0.514)	-0.155 (0.227)	0.725 (0.336)**
AGESQ	-0.002 (0.000)***	0.000 (0.001)	0.008 (0.010)	0.002 (0.003)	-0.008 (0.003)**
MIDDLE	0.584 (0.200)***	0.020 (0.224)	1.097 (0.679)	0.218 (0.247)	0.115 (0.239)
HIGH	0.003 (0.145)	0.009 (0.116)	0.083 (0.170)	-0.085 (0.133)	-0.087 (0.196)
COLLEGE	0.092 (0.187)	0.284 (0.152)*	0.218 (0.187)	0.100 (0.185)	0.781 (0.533)
HEAD	0.079 (0.140)	-0.002 (0.150)	0.408 (0.208)**	0.056 (0.176)	-0.147 (0.276)
MARRIED	-0.194 (0.139)	-0.152 (0.155)	-0.245 (0.276)	0.083 (0.178)	0.029 (0.278)
SPOUSE_J	-0.359 (0.123)***	-0.328 (0.138)**	-0.736 (0.293)**	-0.174 (0.145)	-0.265 (0.140)*
NUMB	0.060 (0.034)*	0.055 (0.035)	-0.003 (0.041)	0.029 (0.045)	0.006 (0.054)
LOWEARN	-0.220 (0.121)*	-0.134 (0.128)	-0.266 (0.131)**	-0.065 (0.172)	-0.323 (0.186)*
MANUAL	-0.026 (0.123)	0.273 (0.129)**	-0.004 (0.161)	0.078 (0.146)	0.291 (0.169)*
MANU	0.039 (0.100)	-0.094 (0.099)	-0.257 (0.126)**	0.137 (0.118)	0.007 (0.136)
FIRMSIZE	-0.068 (0.020)***	-0.020 (0.019)	-0.010 (0.025)	-0.090 (0.023)***	-0.028 (0.028)
DISPLACE	0.143 (0.116)	-0.074 (0.132)	0.060 (0.142)	-0.085 (0.147)	0.183 (0.187)
LTENURE	-0.098 (0.050)**	-0.089 (0.054)	-0.047 (0.073)	-0.097 (0.063)	-0.045 (0.062)
EMP_R	0.009 (0.009)	0.003 (0.009)	0.009 (0.013)	-0.004 (0.011)	0.011 (0.013)
BIGCITY	-0.048 (0.093)	0.090 (0.092)	-0.023 (0.120)	0.017 (0.108)	0.101 (0.121)
-2 LOG L	1051.4	1085.8	651.7	795.7	634.3
Chi-Square	161.4	140.4	162.3	110.5	77.1

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.4.2 By sex and education groups

Subsamples	Males (869)	Females (897)	Middle school (358)	High school (816)	College &univ. (592)
Dep. Var.	RE EIS (the re-entered to EIS workplace between leaving date in RETU data and June 2002)				
INTERCPT	0.064 (0.935)	-1.071 (0.754)	-0.097 (2.072)	0.560 (0.778)	0.232 (1.167)
TRAIN	0.167 (0.098)*	0.152 (0.102)	-0.229 (0.190)	0.257 (0.102)**	0.214 (0.119)*
PW	0.311 (0.148)**	0.563 (0.166)***	0.607 (0.188)***	0.268 (0.183)	0.473 (0.227)**
JOBP	0.298 (0.127)**	0.067 (0.136)	0.184 (0.245)	0.178 (0.136)	0.286 (0.148)*
UNBE	-0.178 (0.132)	-0.015 (0.133)	-0.284 (0.186)	0.087 (0.144)	-0.281 (0.177)
LOAN	-0.170 (0.172)	-0.077 (0.281)	0.168 (0.450)	-0.632 (0.252)**	0.114 (0.207)
FEMALE			-0.307 (0.287)	-0.427 (0.155)***	-0.532 (0.172)***
AGE	0.048 (0.048)	0.115 (0.041)***	0.094 (0.092)	0.019 (0.041)	0.048 (0.061)
AGESQ	-0.001 (0.001)*	-0.002 (0.001)***	-0.002 (0.001)*	-0.001 (0.001)	-0.001 (0.001)
MIDDLE	0.274 (0.180)	0.596 (0.251)**			
HIGH	0.042 (0.120)	-0.007 (0.145)			
COLLEGE	0.466 (0.180)**	-0.004 (0.172)			
HEAD	0.050 (0.218)	-0.362 (0.165)**	-0.127 (0.264)	0.205 (0.162)	0.195 (0.187)
MARRIED	0.029 (0.200)	-0.511 (0.180)***	-0.014 (0.273)	-0.059 (0.162)	-0.513 (0.196)***
SPOUSE_J	-0.194 (0.122)	-0.331 (0.156)**	-0.071 (0.169)	-0.427 (0.151)***	-0.303 (0.172)*
NUMB	0.016 (0.038)	0.043 (0.034)	-0.030 (0.066)	0.062 (0.034)*	0.052 (0.043)
LOWEARN	-0.270 (0.140)*	-0.129 (0.118)	-0.517 (0.208)**	-0.254 (0.127)**	-0.067 (0.169)
MANUAL	0.085 (0.114)	0.219 (0.151)	0.838 (0.260)***	0.012 (0.112)	-0.014 (0.201)
MANU	0.031 (0.095)	-0.173 (0.109)	-0.155 (0.185)	0.130 (0.102)	-0.206 (0.120)*
FIRMSIZE	-0.061 (0.021)***	-0.027 (0.020)	-0.041 (0.035)	-0.033 (0.020)	-0.055 (0.025)**
DISPLACE	0.109 (0.131)	-0.031 (0.118)	0.213 (0.194)	-0.161 (0.131)	0.254 (0.155)
LTENURE	-0.018 (0.053)	-0.134 (0.051)***	-0.066 (0.076)	-0.118 (0.054)**	-0.037 (0.069)
EMP_R	0.003 (0.009)	0.004 (0.010)	0.005 (0.017)	0.007 (0.010)	0.005 (0.011)
BIGCITY	0.099 (0.093)	-0.015 (0.094)	0.075 (0.149)	0.024 (0.098)	-0.006 (0.114)
-2 LOG L	1061.1	1060.2	414.7	989.0	701.3
Chi-Square	107.3	141.5	80.5	140.1	115.8

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.4.3 By wage and household income groups

Subsamples	Low-wages (583)	Mid-wages (519)	High wages (664)	Higher incomes (719)	Lower incomes (908)
Dep. Var.	RE EIS (the re-entered to EIS workplace between leaving date in RETU data and June 2002)				
INTERCPT	-3.151 (1.366)**	-2.522 (2.332)	0.650 (1.445)	0.562 (0.933)	-2.083 (0.783)***
TRAIN	0.069 (0.131)	0.089 (0.134)	0.287 (0.114)**	0.337 (0.112)***	0.140 (0.100)
PW	0.327 (0.169)*	0.385 (0.243)	0.690 (0.198)***	0.355 (0.266)	0.494 (0.130)***
JOBP	0.219 (0.162)	0.148 (0.165)	0.247 (0.155)	-0.027 (0.145)	0.293 (0.130)**
UNBE	0.036 (0.145)	-0.347 (0.173)**	-0.075 (0.195)	-0.050 (0.150)	-0.005 (0.133)
LOAN	-0.815 (0.378)**	-0.177 (0.289)	0.016 (0.199)	-0.175 (0.261)	-0.094 (0.192)
FEMALE	-0.261 (0.161)	-0.518 (0.177)***	-0.534 (0.223)**	-0.529 (0.173)***	-0.419 (0.138)***
AGE	0.114 (0.044)**	0.109 (0.058)*	0.024 (0.061)	0.067 (0.049)	0.137 (0.039)***
AGESQ	-0.002 (0.001)***	-0.002 (0.001)**	0.000 (0.001)	-0.001 (0.001)**	-0.002 (0.000)***
MIDDLE	0.452 (0.299)	0.764 (0.294)***	-0.048 (0.245)	0.641 (0.272)**	0.330 (0.189)*
HIGH	-0.062 (0.222)	0.224 (0.185)	-0.090 (0.126)	-0.049 (0.137)	0.065 (0.135)
COLLEGE	0.191 (0.260)	0.127 (0.208)	0.284 (0.194)	-0.001 (0.169)	0.433 (0.189)**
HEAD	-0.003 (0.161)	0.076 (0.188)	0.186 (0.224)	0.154 (0.181)	0.017 (0.135)
MARRIED	-0.188 (0.173)	-0.143 (0.204)	-0.120 (0.197)	-0.218 (0.207)	-0.050 (0.133)
SPOUSE_J	-0.355 (0.167)**	-0.547 (0.189)***	-0.207 (0.143)	-0.602 (0.185)***	-0.241 (0.115)**
NUMB	0.043 (0.038)	0.041 (0.044)	0.072 (0.047)	0.040 (0.041)	0.070 (0.035)**
LWAGE	0.411 (0.256)	0.430 (0.478)	-0.110 (0.192)		
LOWEARN				-0.260 (0.143)*	-0.144 (0.123)
MANUAL	0.129 (0.159)	-0.007 (0.164)	0.153 (0.154)	0.181 (0.155)	0.160 (0.117)
MANU	0.065 (0.131)	-0.139 (0.131)	-0.067 (0.121)	-0.111 (0.117)	0.058 (0.096)
FIRMSIZE	-0.020 (0.024)	-0.039 (0.028)	-0.047 (0.023)**	-0.049 (0.023)**	-0.052 (0.020)***
DISPLACE	-0.013 (0.138)	0.240 (0.165)	0.017 (0.165)	-0.094 (0.138)	0.074 (0.124)
LTENURE	-0.061 (0.061)	-0.189 (0.071)***	-0.037 (0.068)	-0.148 (0.064)**	-0.062 (0.048)
EMP_R	0.011 (0.012)	0.018 (0.013)	-0.008 (0.011)	0.004 (0.011)	0.001 (0.009)
BIGCITY	-0.105 (0.117)	0.151 (0.128)	0.051 (0.108)	0.074 (0.107)	-0.028 (0.091)
-2 LOG L	711.7	582.5	812.4	805.5	1125.3
Chi-Square	94.2	122.3	101.5	191.2	133.4

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.4.4 By firm size, occupation and industry

Subsamples (Obs.)	Firm size>300 (761)	Firm size≤300 (1005)	Non-manual (1093)	Manual workers (673)	Non-manufacturing (870)	Manufacturing (896)
Dep. Var.	RE EIS (the re-entered to EIS workplace between leaving date in RETU data and June 2002)					
INTERCPT	1.186 (1.060)	-1.204 (0.730)*	0.203 (0.778)	-0.428 (0.924)	0.776 (0.823)	-1.033 (0.787)
TRAIN	0.342 (0.107)***	0.049 (0.095)	0.139 (0.088)	0.225 (0.120)*	0.209 (0.100)**	0.176 (0.099)*
PW	0.650 (0.178)***	0.278 (0.143)*	0.547 (0.162)***	0.344 (0.155)**	0.404 (0.175)**	0.461 (0.145)***
JOBP	0.331 (0.140)**	0.077 (0.121)	0.275 (0.113)**	0.059 (0.160)	0.285 (0.138)**	0.130 (0.123)
UNBE	-0.171 (0.165)	-0.036 (0.115)	-0.282 (0.130)**	0.028 (0.137)	-0.142 (0.137)	-0.063 (0.130)
LOAN	0.167 (0.228)	-0.397 (0.189)**	-0.154 (0.170)	-0.201 (0.293)	0.093 (0.218)	-0.407 (0.200)**
FEMALE	-0.647 (0.167)***	-0.429 (0.126)***	-0.521 (0.134)***	-0.510 (0.160)***	-0.433 (0.149)***	-0.539 (0.136)***
AGE	0.014 (0.045)	0.107 (0.037)***	0.048 (0.041)	0.079 (0.044)*	0.013 (0.043)	0.107 (0.039)***
AGESQ	0.000 (0.001)	-0.002 (0.000)***	-0.001 (0.000)*	-0.001 (0.001)***	0.000 (0.001)	-0.002 (0.000)***
MIDDLE	0.359 (0.227)	0.349 (0.190)*	-0.278 (0.261)	0.714 (0.313)**	0.471 (0.222)**	0.341 (0.204)*
HIGH	0.041 (0.132)	-0.040 (0.125)	0.026 (0.098)	0.256 (0.292)	-0.087 (0.115)	0.123 (0.148)
COLLEGE	0.020 (0.179)	0.265 (0.159)*	0.158 (0.128)	0.490 (0.373)	0.141 (0.156)	0.266 (0.185)
HEAD	-0.196 (0.170)	0.157 (0.129)	0.162 (0.141)	-0.045 (0.152)	0.138 (0.157)	0.043 (0.135)
MARRIED	-0.001 (0.177)	-0.248 (0.129)*	-0.386 (0.143)***	0.140 (0.161)	-0.309 (0.150)**	-0.061 (0.144)
SPOUSE_J	-0.414 (0.154)***	-0.326 (0.116)***	-0.380 (0.129)***	-0.231 (0.133)*	-0.418 (0.136)***	-0.305 (0.125)**
NUMB	0.058 (0.038)	0.070 (0.032)**	0.072 (0.031)**	0.006 (0.038)	0.062 (0.036)*	0.066 (0.032)**
LOWEARN	0.004 (0.148)	-0.245 (0.110)**	-0.202 (0.120)*	-0.286 (0.137)**	-0.277 (0.132)**	-0.103 (0.121)
MANUAL	-0.003 (0.137)	0.181 (0.119)			0.004 (0.141)	0.178 (0.115)
MANU	-0.116 (0.108)	0.026 (0.095)	-0.149 (0.088)*	0.172 (0.124)		
FIRMSIZE	-0.096 (0.066)	0.001 (0.027)	-0.022 (0.017)	-0.080 (0.024)***	-0.016 (0.018)	-0.072 (0.022)***
DISPLACE	-0.066 (0.142)	0.118 (0.110)	0.057 (0.113)	0.030 (0.137)	0.136 (0.127)	-0.060 (0.120)
LTENURE	-0.044 (0.063)	-0.082 (0.046)*	-0.071 (0.050)	-0.074 (0.055)	-0.075 (0.055)	-0.078 (0.050)
EMP_R	0.002 (0.010)	0.008 (0.009)	0.003 (0.009)	0.006 (0.011)	-0.005 (0.009)	0.014 (0.010)
BIGCITY	0.112 (0.101)	-0.047 (0.087)	0.050 (0.084)	-0.017 (0.109)	0.049 (0.095)	0.007 (0.091)
-2 LOG L	911.4	1209.8	1295.8	819.5	1037.1	1092.5
Chi-Square	126.2	173.7	217.1	111.6	167.2	149.1

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.



Annex Table 6.5 Probit estimation for the EIS (related to Table 6.9)

Annex Table 6.5.1 By RETU participation and age groups

Subsamples	Non-trainees (879)		Trainees (887)		Age 19-29 (590)		Age 30-44 (654)		Age 45-63 (522)	
Dep. Var.	EIS (the stayers in EIS workplace in June 2002)									
INTERCPT	-1.980	(0.831)**	-1.316	(0.920)	5.965	(6.437)	3.996	(4.244)	-20.70	(10.05)**
TRAIN_S					0.165	(0.137)	0.058	(0.122)	-0.186	(0.168)
TRAIN_L					0.334	(0.186)*	-0.021	(0.177)	0.255	(0.231)
PW	0.047	(0.157)	-0.053	(0.152)	0.179	(0.223)	-0.351	(0.194)*	0.141	(0.173)
JOBP	0.147	(0.152)	0.202	(0.114)*	0.115	(0.148)	0.352	(0.145)**	0.011	(0.215)
UNBE	0.057	(0.127)	0.106	(0.158)	-0.181	(0.163)	0.406	(0.176)**	-0.026	(0.192)
LOAN	-0.229	(0.253)	-0.161	(0.187)	-0.395	(0.349)	-0.224	(0.207)	0.063	(0.316)
FEMALE	-0.520	(0.146)***	-0.406	(0.139)***	-0.411	(0.162)**	-0.606	(0.199)***	-0.391	(0.302)
AGE	0.123	(0.042)***	0.074	(0.047)	-0.452	(0.508)	-0.233	(0.234)	0.847	(0.388)**
AGESQ	-0.002	(0.000)***	-0.001	(0.001)*	0.008	(0.010)	0.003	(0.003)	-0.009	(0.004)**
MIDDLE	0.389	(0.208)*	0.478	(0.228)**	0.274	(0.547)	0.381	(0.246)	0.445	(0.257)*
HIGH	-0.229	(0.153)	0.133	(0.120)	-0.049	(0.177)	-0.065	(0.138)	0.028	(0.211)
COLLEGE	-0.117	(0.195)	0.211	(0.152)	-0.008	(0.190)	0.065	(0.190)	0.727	(0.512)
HEAD	0.073	(0.146)	0.096	(0.150)	0.502	(0.200)**	-0.117	(0.188)	0.204	(0.301)
MARRIED	0.030	(0.145)	0.054	(0.157)	-0.178	(0.267)	0.274	(0.183)	0.425	(0.305)
SPOUSE_J	-0.459	(0.132)***	-0.380	(0.143)***	-0.547	(0.294)*	-0.367	(0.148)**	-0.367	(0.154)**
NUMB	0.020	(0.036)	0.039	(0.035)	-0.012	(0.042)	0.021	(0.045)	-0.044	(0.060)
LOWEARN	-0.068	(0.128)	-0.181	(0.130)	-0.432	(0.135)***	0.064	(0.176)	0.096	(0.204)
MANUAL	0.014	(0.132)	-0.035	(0.129)	0.066	(0.163)	-0.034	(0.150)	-0.133	(0.184)
MANU	0.014	(0.107)	0.039	(0.100)	-0.140	(0.129)	0.144	(0.120)	0.021	(0.147)
FIRMSIZE	-0.023	(0.022)	0.005	(0.020)	0.009	(0.025)	-0.031	(0.024)	0.000	(0.030)
DISPLACE	0.180	(0.124)	-0.068	(0.135)	0.117	(0.147)	-0.089	(0.151)	0.260	(0.210)
LTENURE	-0.050	(0.054)	-0.133	(0.055)**	-0.019	(0.077)	-0.117	(0.064)*	-0.025	(0.068)
EMP_R	0.002	(0.010)	-0.003	(0.010)	0.005	(0.013)	-0.006	(0.011)	-0.002	(0.014)
BIGCITY	-0.006	(0.099)	0.191	(0.094)**	0.192	(0.125)	-0.007	(0.112)	0.207	(0.132)
-2 LOG L	915.4		1027.2		614.9		740.6		524.8	
Chi-Square	113.2		80.5		97.2		87.8		67.7	

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.5.2 By sex and education groups

Subsamples	Males (869)	Females (897)	Middle school (358)	High school (816)	College &univ. (592)
Dep. Var.	EIS (the stayers in EIS workplace in June 2002)				
INTERCPT	-1.729 (0.924)*	-2.134 (0.849)**	-2.836 (2.011)	-0.748 (0.845)	-0.844 (1.219)
TRAIN_S	-0.037 (0.102)	0.211 (0.122)*	-0.141 (0.223)	0.226 (0.116)*	-0.020 (0.126)
TRAIN_L	0.045 (0.153)	0.274 (0.158)*	0.051 (0.341)	0.203 (0.154)	0.231 (0.186)
PW	0.027 (0.141)	-0.020 (0.174)	0.128 (0.192)	0.122 (0.181)	-0.202 (0.207)
JOBP	0.336 (0.118)***	-0.053 (0.150)	0.333 (0.243)	-0.007 (0.142)	0.354 (0.143)**
UNBE	0.053 (0.130)	0.094 (0.148)	-0.112 (0.194)	0.330 (0.156)**	-0.172 (0.175)
LOAN	-0.151 (0.170)	-0.185 (0.344)	0.325 (0.427)	-0.657 (0.292)**	-0.051 (0.205)
			-0.104 (0.288)	-0.531 (0.162)***	-0.437 (0.168)***
AGE	0.096 (0.048)**	0.117 (0.046)**	0.152 (0.091)*	0.037 (0.045)	0.072 (0.064)
AGESQ	-0.001 (0.001)***	-0.002 (0.001)***	-0.002 (0.001)**	-0.001 (0.001)	-0.001 (0.001)
MIDDLE	0.432 (0.180)**	0.674 (0.271)**			
HIGH	0.080 (0.121)	-0.103 (0.157)			
COLLEGE	0.305 (0.164)*	-0.128 (0.188)			
HEAD	-0.003 (0.208)	-0.087 (0.177)	0.249 (0.268)	0.134 (0.170)	0.068 (0.187)
MARRIED	0.213 (0.193)	-0.152 (0.193)	0.186 (0.282)	0.140 (0.171)	-0.011 (0.196)
SPOUSE_J	-0.307 (0.126)**	-0.440 (0.169)***	-0.197 (0.176)	-0.506 (0.164)***	-0.532 (0.179)***
NUMB	-0.001 (0.037)	0.027 (0.037)	-0.017 (0.069)	0.037 (0.036)	-0.002 (0.043)
LOWEARN	-0.064 (0.137)	-0.222 (0.130)*	-0.083 (0.215)	-0.102 (0.135)	-0.389 (0.173)**
MANUAL	-0.140 (0.112)	0.223 (0.168)	0.465 (0.275)*	-0.102 (0.118)	-0.118 (0.201)
MANU	0.067 (0.094)	-0.102 (0.121)	-0.183 (0.192)	0.111 (0.108)	0.023 (0.120)
FIRMSIZE	-0.015 (0.020)	0.002 (0.022)	-0.002 (0.037)	0.010 (0.021)	-0.035 (0.026)
DISPLACE	0.067 (0.128)	0.049 (0.130)	0.387 (0.209)*	-0.059 (0.139)	0.074 (0.156)
LTENURE	-0.033 (0.052)	-0.131 (0.056)**	-0.042 (0.081)	-0.122 (0.057)**	-0.027 (0.070)
EMP_R	-0.005 (0.009)	0.000 (0.011)	0.006 (0.017)	-0.004 (0.011)	-0.001 (0.011)
BIGCITY	0.130 (0.092)	0.095 (0.104)	0.196 (0.157)	0.081 (0.104)	0.095 (0.117)
-2 LOG L	1094.3	873.1	377.3	853.7	681.0
Chi-Square	67.2	67.7	59.4	93.5	69.4

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.5.3 By wage and household income groups

Subsamples	Low-wages (583)	Mid-wages (519)	High wages (664)	Higher incomes (719)	Lower incomes (908)
Dep. Var.	EIS (the stayers in EIS workplace in June 2002)				
INTERCPT	-3.047 (1.479)**	-1.704 (2.305)	-1.281 (1.559)	-2.330 (1.019)**	-2.723 (0.842)***
TRAIN_S	0.036 (0.155)	0.035 (0.142)	0.072 (0.123)	0.058 (0.122)	0.103 (0.111)
TRAIN_L	0.368 (0.192)*	-0.023 (0.201)	0.076 (0.185)	0.391 (0.178)**	0.132 (0.150)
PW	-0.082 (0.181)	-0.038 (0.219)	0.200 (0.187)	0.110 (0.240)	0.006 (0.130)
JOBP	0.121 (0.171)	0.369 (0.159)**	0.147 (0.156)	0.150 (0.143)	0.179 (0.129)
UNBE	0.007 (0.157)	0.078 (0.165)	0.102 (0.206)	0.031 (0.153)	0.080 (0.140)
LOAN	-0.258 (0.394)	-0.286 (0.282)	-0.147 (0.205)	-0.290 (0.283)	-0.029 (0.192)
FEMALE	-0.458 (0.167)***	-0.402 (0.172)**	-0.570 (0.237)**	-0.263 (0.166)	-0.508 (0.144)***
AGE	0.142 (0.049)***	0.058 (0.059)	0.135 (0.067)**	0.167 (0.054)***	0.132 (0.042)***
AGESQ	-0.002 (0.001)***	-0.001 (0.001)	-0.002 (0.001)**	-0.003 (0.001)***	-0.002 (0.000)***
MIDDLE	0.762 (0.323)**	0.688 (0.291)**	0.158 (0.254)	0.954 (0.281)***	0.360 (0.193)*
HIGH	0.155 (0.245)	-0.009 (0.185)	-0.014 (0.133)	-0.087 (0.144)	0.058 (0.139)
COLLEGE	0.185 (0.284)	-0.018 (0.205)	0.195 (0.198)	0.027 (0.170)	0.116 (0.190)
HEAD	0.197 (0.168)	0.154 (0.186)	0.068 (0.236)	0.239 (0.179)	0.045 (0.141)
MARRIED	0.059 (0.185)	-0.047 (0.199)	0.263 (0.206)	0.035 (0.207)	0.090 (0.138)
SPOUSE_J	-0.348 (0.179)*	-0.582 (0.192)***	-0.378 (0.151)**	-0.717 (0.195)***	-0.319 (0.122)***
NUMB	0.030 (0.042)	0.028 (0.043)	0.026 (0.048)	0.021 (0.041)	0.048 (0.036)
LWAGE	-0.055 (0.271)	0.186 (0.473)	-0.225 (0.203)		
LOWEARN				-0.268 (0.145)*	-0.051 (0.129)
MANUAL	0.150 (0.171)	-0.059 (0.162)	-0.204 (0.160)	0.030 (0.156)	-0.025 (0.121)
MANU	0.068 (0.145)	-0.083 (0.130)	0.000 (0.125)	-0.035 (0.120)	0.094 (0.100)
FIRMSIZE	0.034 (0.026)	-0.016 (0.028)	-0.019 (0.025)	-0.015 (0.024)	-0.003 (0.021)
DISPLACE	0.177 (0.151)	0.093 (0.163)	-0.002 (0.173)	-0.083 (0.140)	0.070 (0.131)
LTENURE	-0.033 (0.066)	-0.084 (0.072)	-0.093 (0.070)	-0.134 (0.066)**	-0.089 (0.050)*
EMP_R	0.009 (0.013)	0.012 (0.013)	-0.018 (0.011)	0.002 (0.011)	-0.009 (0.010)
BIGCITY	-0.096 (0.127)	0.304 (0.127)**	0.077 (0.113)	0.203 (0.111)*	0.035 (0.095)
-2 LOG L	588.4	596.0	726.2	747.8	1022.9
Chi-Square	61.1	78.9	74.3	132.9	87.4

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

Annex Table 6.5.4 By firm size, occupation and industry

Subsamples (Obs.)	Firm size>300 (761)	Firm size≤300 (1005)	Non-manual (1093)	Manual workers (673)	Non-manufacturing (870)	Manufacturing (896)
Dep. Var.	EIS (the stayers in EIS workplace in June 2002)					
INTERCPT	-1.615 (1.122)	-2.527 (0.779)***	-1.064 (0.828)	-1.921 (0.974)**	-0.312 (0.887)	-3.382 (0.835)***
TRAIN_S	0.187 (0.118)	-0.052 (0.104)	0.077 (0.096)	0.018 (0.136)	0.023 (0.111)	0.126 (0.109)
TRAIN_L	0.108 (0.170)	0.197 (0.145)	0.221 (0.135)	0.038 (0.188)	0.351 (0.151)**	0.003 (0.160)
PW	0.231 (0.173)	-0.179 (0.142)	-0.025 (0.153)	0.072 (0.156)	0.038 (0.169)	0.008 (0.144)
JOBP	0.232 (0.140)*	0.145 (0.121)	0.238 (0.112)**	0.143 (0.158)	0.133 (0.139)	0.232 (0.122)*
UNBE	0.004 (0.176)	0.109 (0.119)	-0.046 (0.135)	0.162 (0.143)	0.036 (0.146)	0.077 (0.134)
LOAN	-0.056 (0.236)	-0.295 (0.198)	-0.141 (0.174)	-0.311 (0.302)	0.096 (0.216)	-0.429 (0.214)**
FEMALE	-0.566 (0.168)***	-0.398 (0.127)***	-0.427 (0.131)***	-0.492 (0.168)***	-0.390 (0.150)***	-0.487 (0.138)***
AGE	0.076 (0.048)	0.135 (0.040)***	0.063 (0.043)	0.102 (0.046)**	0.035 (0.046)	0.167 (0.041)***
AGESQ	-0.001 (0.001)**	-0.002 (0.000)***	-0.001 (0.001)*	-0.002 (0.001)***	-0.001 (0.001)	-0.002 (0.000)***
MIDDLE	0.514 (0.237)**	0.434 (0.193)**	0.000 (0.271)	0.785 (0.328)**	0.653 (0.231)***	0.448 (0.208)**
HIGH	0.194 (0.141)	-0.153 (0.129)	0.031 (0.103)	0.175 (0.309)	-0.070 (0.122)	0.056 (0.152)
COLLEGE	0.114 (0.186)	0.049 (0.158)	0.117 (0.130)	0.236 (0.379)	0.062 (0.158)	0.206 (0.188)
HEAD	0.115 (0.173)	0.045 (0.130)	0.187 (0.142)	-0.002 (0.157)	0.110 (0.161)	0.090 (0.138)
MARRIED	0.053 (0.185)	0.027 (0.130)	-0.030 (0.146)	0.178 (0.166)	0.125 (0.154)	-0.021 (0.148)
SPOUSE_J	-0.314 (0.162)*	-0.495 (0.121)***	-0.517 (0.136)***	-0.294 (0.140)**	-0.559 (0.146)***	-0.356 (0.130)***
NUMB	0.011 (0.040)	0.043 (0.032)	0.023 (0.032)	0.010 (0.040)	0.004 (0.038)	0.054 (0.033)*
LOWEARN	0.062 (0.156)	-0.186 (0.113)*	-0.352 (0.127)***	0.019 (0.141)	-0.339 (0.140)**	0.036 (0.125)
MANUAL	-0.142 (0.142)	0.035 (0.121)			-0.093 (0.147)	0.020 (0.120)
MANU	0.139 (0.113)	-0.068 (0.097)	-0.015 (0.091)	0.077 (0.128)		
FIRMSIZE	0.005 (0.069)	0.036 (0.028)	0.002 (0.018)	-0.016 (0.025)	-0.020 (0.020)	0.019 (0.023)
DISPLACE	0.068 (0.151)	0.079 (0.115)	0.090 (0.119)	0.072 (0.143)	0.146 (0.135)	-0.035 (0.125)
LTENURE	-0.105 (0.065)	-0.061 (0.047)	-0.083 (0.052)	-0.072 (0.057)	-0.063 (0.058)	-0.101 (0.051)**
EMP_R	-0.001 (0.011)	0.000 (0.009)	-0.002 (0.009)	-0.002 (0.012)	-0.009 (0.010)	0.007 (0.010)
BIGCITY	0.213 (0.107)**	0.026 (0.090)	0.129 (0.088)	0.074 (0.114)	0.116 (0.100)	0.075 (0.095)
-2 LOG L	801.3	1128.1	1174.7	756.6	920.9	1011.4
Chi-Square	81.4	124.9	136.3	72.5	105.9	100.0

Notes: 1) Standard errors are indicated in parentheses.

2) \*\*\*, \*\* and \* stand for the significance level of 0.01, 0.05 and 0.10 respectively.

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## RESUME DE THESE

La Corée a vécu une hausse du chômage soudaine et sans précédent, durant la crise financière qui a commencé à la fin de 1997. L'objet de cette étude est d'évaluer dans quelle mesure la politique publique d'emploi de l'après crise coréenne a été utile aux groupes particulièrement défavorisés sur le marché du travail, pour leur réinsertion dans l'emploi.

Premièrement, les échecs possibles du marché sont analysés avec des macro-données afin d'identifier le domaine principal de l'intervention de gouvernement sur le marché du travail. Différentes études économétriques d'équations d'emploi et de salaire montrent que, en liaison avec le choc macroéconomique de la crise financière, l'ajustement des salaires et de l'emploi fut particulièrement fort, alors que l'ajustement du temps de travail ne le fut pas. La flexibilité des salaires a contribué à la diminution rapide du chômage. Bien que l'emploi total ait été très flexible, l'emploi régulier masculin ne fut pas sensible à la conjoncture économique.

Deuxièmement, nous analysons les causes des désavantages des salariés sur le marché, en exploitant des micro-données, et en nous appuyant sur quatre indicateurs principaux : la probabilité de chômage, l'échec du retour à l'emploi des chômeurs, la qualité du nouvel emploi ou la perte de revenus après le chômage, et la longueur du chômage. Les déterminants de ces quatre indicateurs sont étroitement corrélés. Nous prouvons que les ouvriers ayant un emploi précaire, les personnes pauvres et peu éduquées, les jeunes, les salariés les plus âgés, et les femmes d'âge moyen sont généralement plus défavorisés que les autres groupes sociaux. Nous montrons que le marché du travail coréen est segmenté : la mobilité entre le secteur primaire (emplois stables bien rémunérés) et le secteur secondaire (emplois précaires et bas salaires) est limitée, et les mécanismes de détermination du salaire et de l'emploi sont différents selon ces secteurs.

Troisièmement, nous nous concentrons sur la répartition des programmes gouvernementaux sur lesquels peu d'attention a été portée dans les études d'évaluation précédentes. Notre comparaison internationale indique qu'un niveau de chômage élevé dans un groupe est susceptible de mener à une fréquence inférieure de participation du groupe aux programmes. De la même façon, dans les programmes coréens de politique d'emploi, les groupes les plus défavorisés tendent à être exclus plus facilement des programmes gouvernementaux. Ces groupes sont les jeunes, les femmes d'âge moyen, les personnes de bas niveaux d'éducation, et les salariés d'emploi précaire. Nous présentons les divers obstacles à la participation de salariés à ces programmes: obstacles administratifs, insuffisance de l'information, problèmes de niveau de vie, et concurrence pour la participation au programme.

Enfin, nous évaluons les effets de la participation aux programmes sur la probabilité de réinsertion dans l'emploi. Les cinq programmes principaux – les formations professionnelles pour les chômeurs, certains emplois publics réservés, les services publics de l'emploi, les allocations de chômage, et les programmes de prêt pour les chômeurs - sont évalués selon les groupes de salariés. Nous montrons qu'à court terme, les formations professionnelles, les emplois publics et les services publics de l'emploi ont des effets positifs sur la réduction de la durée de chômage, et l'accroissement de la probabilité de réinsertion dans un emploi stable. Les impacts de ces programmes sont également très différents au sein des divers groupes de salariés : notamment, à court terme, les impacts positifs sont plus forts pour les salariés défavorisés. Néanmoins, à plus long terme, les effets sur l'emploi stable sont assez faibles. C'est particulièrement le cas pour les salariés défavorisés.



Table 3.3 Unemployment likelihood of labour force

	<i>Model 3.A1</i>	<i>Model 3.A2</i>	<i>Model 3.A3</i>	<i>Model 3.A4</i>	<i>Model 3.A5</i>	<i>Model 3.A6</i>	<i>Model 3.A7</i>	<i>Model 3.A8</i>
Sample	Total labour force (No. of Obs.: 5307)					LF: wage-workers only (No.:3047)		LF minus discouraged workers (No.: 4953)
Dependent var.	UNEMPW7 (The unemployed: 1,490)					UNEMPW7 (895)		UNEMPN7 (1,137)
YOUTH	1.348(.08) ***	1.394(.09) ***	1.021(.11) ***	.761(.11) ***	.162(.12)	.395(.13) ***	.391(.13) ***	.193(.13)
ELDLY	.111(.11)	.267(.11) **	.169(.12)	.185(.16)	.279(.12) **	.648(.14) ***	.574(.15) ***	.285(.13) **
WOMEN	.725(.09) ***	.748(.09) ***	.335(.11) ***	.375(.12) ***	.225(.13) *	.334(.15) **	.253(.15) *	.061(.14)
MIDDLE	.161(.10)	.253(.10) **	.259(.10) **	.295(.11) ***	.255(.12) **	.614(.13) ***	.416(.14) ***	.265(.13) **
HIGH	.247(.08) ***	.247(.09) ***	.266(.09) ***	.314(.09) ***	.374(.10) ***	.496(.11) ***	.433(.11) ***	.306(.10) ***
POVERTY	.789(.07) ***	.966(.08) ***	.981(.08) ***	.992(.08) ***	.933(.09) ***	.980(.10) ***	.893(.10) ***	.921(.09) ***
URBAN		.680(.12) ***	.741(.12) ***	.749(.13) ***	.402(.14) ***	.096(.17)	.098(.17)	.379(.16) **
PESAREA1		-.119(.10)	-.102(.10)	-.089(.10)	-.145(.11)	-.233(.13) *	-.162(.13)	-.167(.12)
PESAREA2		.486(.10) ***	.481(.10) ***	.475(.10) ***	.493(.11) ***	.504(.13) ***	.564(.13) ***	.565(.11) ***
PESAREA3		.402(.13) ***	.385(.13) ***	.391(.13) ***	.481(.14) ***	.527(.17) ***	.584(.17) ***	.300(.16) *
PESAREA4		.406(.13) ***	.397(.13) ***	.373(.13) ***	.398(.14) ***	.530(.17) ***	.552(.17) ***	.498(.15) ***
PESAREA5		.451(.14) ***	.429(.14) ***	.405(.14) ***	.352(.15) **	.533(.18) ***	.515(.18) ***	.188(.17)
ERATE98		-.037(.00) ***	-.037(.00) ***	-.037(.00) ***	-.036(.01) ***	-.030(.01) ***	-.030(.01) ***	-.038(.01) ***
URARE		.065(.03) **	.062(.03) **	.065(.03) **	.078(.03) **	.053(.04)	.062(.04)	.099(.04) ***
HEAD			-.530(.09) ***	-.477(.09) ***	-.332(.10) ***	-.472(.12) ***	-.431(.12) ***	-.252(.11) **
S_LEAVE				1.195(.15) ***				
ENTER					2.461(.13) ***			2.090(.14) ***
TEMP					.686(.10) ***		.580(.10) ***	.676(.11) ***
SELF					-1.213(.11) ***			-1.245(.12) ***
INTERCPT	-1.839(.08) ***	-3.463(.23) ***	-3.047(.24) ***	-3.152(.24) ***	-2.891(.26) ***	-2.427(.30) ***	-2.587(.31) ***	-3.181(.28) ***
-2Log L	5861.4	5619.7	5586.9	5519.3	4806.4	3363.0	3330.3	4252.0
Chi-square	440.0 (p=0.001)	681.7(p=0.001)	714.5(p=0.001)	782.2(p=0.0001)	1495.1(p=0.0001)	327.7(p=0.0001)	356.4(p=0.0001)	1083.8(p=0.0001)
Concordant	65.0%	71.3%	71.7%	72.5	81.0%	69.0%	70.2%	79.3%

Note: 1) Standard errors are indicated in parentheses. 2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

Table 3.4 (Re-)Employment likelihood of the unemployed : total

	<i>Model 3.B1</i>	<i>Model 3.B2</i>	<i>Model 3.B3</i>	<i>Model 3.B4</i>	<i>Model 3.B5</i>	<i>Model 3.B6</i>
Sample	The unemployed (No. of Obs.: 1586)					
Dependent Var.	REEMP (The re-employed: 795)					REGULAR (319)
YOUTH	.161(.13)	.251(.14) *	.642(.18) ***	.330(.19) *	.189(.19)	.390(.23) *
ELDLY	-.729(.19) ***	-.757(.20) ***	-.655(.20) ***	-.721(.20) ***	-.486(.21) **	-.607(.29) **
WOMEN	-.313(.14) **	-.296(.14) **	.082(.19)	-.081(.19)	.082(.20)	-.472(.27) *
MIDDLE	-.200(.16)	-.446(.17) **	-.468(.17) ***	-.489(.18) ***	-.530(.18) ***	-.736(.22) ***
HIGH	-.230(.14) *	-.347(.14) **	-.375(.14) ***	-.348(.14) **	-.408(.15) ***	-.689(.16) ***
POVERTY	.189(.11) *	.116(.12)	.079(.12)	.061(.12)	.239(.12) *	-.082(.16)
URBAN		-.282(.18)	-.311(.18) *	-.308(.18) *	-.285(.19)	.215(.24)
PESAREA1		.109(.16)	.088(.16)	.046(.16)	-.046(.17)	.613(.20) ***
PESAREA2		-.230(.14)	-.261(.14) *	-.227(.15)	-.312(.15) **	-.007(.19)
PESAREA3		-.105(.21)	-.101(.21)	-.183(.21)	-.127(.22)	-.182(.29)
PESAREA4		-.446(.20) **	-.500(.20) **	-.543(.20) ***	-.660(.21) ***	-.135(.27)
PESAREA5		-.266(.21)	-.271(.21)	-.346(.22)	-.447(.22) **	-.500(.30)
DEMANDO		.033(.01) ***	.033(.01) ***	.036(.01) ***	.039(.01) ***	-.011(.01)
HEAD			.509(.16) ***	.663(.16) ***	.472(.17) ***	.553(.21) ***
NUMBER			.092(.05) *	.088(.05) *	.115(.05) **	.062(.06)
UNUMB			.322(.22)	.289(.23)	.378(.24)	-.617(.31) **
ENTRANT				.785(.14) ***	.848(.14) ***	.341(.17) **
DISCOURA				.320(.13) **	.259(.14) *	-.181(.18)
SPELL_W					-.100(.01) ***	-.074(.01) ***
INTERCPT	.227(.15)	.520(.25) **	-.370(.38)	-.539(.39)	.596(.42)	-.391(.52)
-2Log L	2156.2	2123.7	2110.5	2061.7	1940.5	1392.7
Chi-square	42.6(p=0.0001)	75.1(p=0.0001)	88.3(p=0.0001)	137.1(p=0.0001)	258.3(p=0.0001)	199.7(p=0.0001)
Concordant	55.4%	61.3%	62.4%	65.8%	72.2%	73.7%

Note: 1) Standard errors are indicated in parentheses. 2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

Table 3.6 Mobility between the regular and irregular sectors (the re-employed with previous job)

(persons, percent)

		Total	Flows between the regular and irregular sectors				Proportion of irregular workers		Inflow and outflow rates	
			(Regular → Regular)	(Regular → Irregular)	(Irregular → Regular)	(Irregular → Irregular)	Recent job (C+D)/T	Current job (B+D)/T	Inflow rates to irregular job B/(A+B)	Outflow rates from irregular C/(C+D)
Column		T	A	B	C	D	E	F	G	H
Total the re-employed		764 (100.0)	232 (30,4)	201 (26,3)	70 (9,2)	261 (34,2)	43,3	60,5	46,4	21,1
Sex and Age	Prime-age men(30-54)	316 (100.0)	102 (32,3)	88 (27,8)	21 (6,6)	105 (33,2)	39,9	61,1	46,3	16,7
	The youth (17-29)	229 (100.0)	85 (37,1)	60 (26,2)	27 (11,8)	57 (24,9)	36,7	51,1	41,4	32,1
	The elderly (55-66)	71 (100.0)	18 (25,4)	13 (18,3)	5 (7,0)	35 (49,3)	56,3	67,6	41,9	12,5
	Women (30-54)	148 (100.0)	27 (18,2)	40 (27,0)	17 (11,5)	64 (43,2)	54,7	70,3	59,7	21,0
Education	Middle & under	212 (100.0)	40 (18,9)	50 (23,6)	18 (8,5)	104 (49,1)	57,5	72,6	55,6	14,8
	High school	382 (100.0)	122 (31,9)	106 (27,7)	34 (8,9)	120 (31,4)	40,3	59,2	46,5	22,1
	College & over	170 (100.0)	70 (41,2)	45 (26,5)	18 (10,6)	37 (21,8)	32,4	48,2	39,1	32,7
Poverty (87)*	Non-poverty	437 (100.0)	145 (33,2)	112 (25,6)	46 (10,5)	134 (30,7)	41,2	56,3	43,6	25,6
	Poverty	240 (100.0)	62 (25,8)	57 (23,8)	19 (7,9)	102 (42,5)	50,4	66,3	47,9	15,7
Unemployment spells (Jan. 98-July 99)	Less than 1 month	145 (100.0)	48 (33,1)	36 (24,8)	16 (11,0)	45 (31,0)	42,1	55,9	42,9	26,2
	1 - 6 months	179 (100.0)	71 (39,7)	43 (24,0)	17 (9,5)	48 (26,8)	36,3	50,8	37,7	26,2
	7-12 months	166 (100.0)	48 (28,9)	46 (27,7)	17 (10,2)	55 (33,1)	43,4	60,8	48,9	23,6
	13-19 months	274 (100.0)	65 (23,7)	76 (27,7)	20 (7,3)	113 (41,2)	48,5	69,0	53,9	15,0
Monthly earning in recent job (23)*	Low earning	273 (100.0)	49 (17,9)	54 (19,8)	34 (12,5)	136 (49,8)	62,3	69,6	52,4	20,0
	Others	468 (100.0)	181 (38,7)	145 (31,0)	31 (6,6)	111 (23,7)	30,3	54,7	44,5	21,8
Reason of Leaving	Displaced Workers	357 (100.0)	93 (26,1)	72 (20,2)	32 (9,0)	160 (44,8)	53,8	65,0	43,6	16,7
	Quitting voluntarily	407 (100.0)	139 (34,2)	129 (31,7)	38 (9,3)	101 (24,8)	34,2	56,5	48,1	27,3
Occupation In current job (5)*	Professional	119 (100.0)	50 (42,0)	28 (23,5)	10 (8,4)	31 (26,1)	34,5	49,6	35,9	24,4
	Non-manual	251 (100.0)	81 (32,3)	68 (27,1)	27 (10,8)	75 (29,9)	40,6	57,0	45,6	26,5
	Manual	389 (100.0)	100 (25,7)	103 (26,5)	33 (8,5)	153 (39,3)	47,8	65,8	50,7	17,7
Industry In current job (3)*	Manufacturing	171 (100.0)	78 (45,6)	38 (22,2)	15 (8,8)	40 (23,4)	32,2	45,6	32,8	27,3
	Others	590 (100.0)	153 (25,9)	162 (27,5)	55 (9,3)	220 (37,3)	46,6	64,7	51,4	20,0
Firm size In current job (43)*	1-9 workers	393 (100.0)	85 (21,6)	125 (31,8)	26 (6,6)	157 (39,9)	46,6	71,8	59,5	14,2
	10-99 workers	225 (100.0)	98 (43,6)	39 (17,3)	31 (13,8)	57 (25,3)	39,1	42,7	28,5	35,2
	Over 100 workers	103 (100.0)	46 (44,7)	22 (21,4)	13 (12,6)	23 (22,3)	35,0	43,7	32,4	36,1

Notes: 1) \* The numbers in parentheses indicate the number of missing values. 2) Small size Italics indicate that the number of observations is less than twenty.

Source: Author's calculations based on the Unemployment Reality Survey (URS).



Table 3.8 OLS results on earnings loss and monthly earnings of the re-employed

	With a control of LEARN (log of earning in the recent job)				Without control for LEARN		
	<i>Model 3.C6</i>	<i>Model 3.C7</i>	<i>Model 3.C8</i>	<i>Model 3.C9</i>	<i>Model 3.C10</i>	<i>Model 3.C11</i>	<i>Model 3.C12</i>
Sample	Total		Regular workers	Temporary Workers	Total	Regular workers	Temporary workers
Dependent Var.	DNEARN (log of monthly earning in the current job)						
YOUTH	-.075(.053)	-.078(.051)	-.067(.052)	-.102(.095)	-.221(.053) ***	-.198(.056) ***	-.257(.098) ***
ELDLY	-.271(.067) ***	-.239(.065) ***	-.344(.076) ***	-.182(.103) *	-.343(.070) ***	-.420(.086) ***	-.303(.109) ***
WOMEN	-.248(.062) ***	-.173(.060) ***	-.174(.071) **	-.147(.100)	-.338(.063) ***	-.311(.079) ***	-.321(.103) ***
MIDDLE	.005(.063)	-.008(.061)	-.089(.061)	.146(.118)	-.087(.066)	-.183(.069) ***	.080(.126)
HIGH	-.044(.048)	-.030(.046)	-.085(.041) **	.114(.100)	-.028(.050)	-.094(.047) **	.129(.108)
DEMANDO	-.004(.003) *	-.005(.002) **	-.000(.002)	-.011(.005) **	-.007(.003) ***	-.002(.003)	-.014(.005) ***
DEMANDI	-.003(.004)	-.010(.005) **	-.007(.006)	-.014(.008) *	-.010(.005) *	-.004(.006)	-.016(.009) *
HEAD	.155(.046) ***	.152(.044) ***	.099(.049) **	.193(.074) **	.236(.047) ***	.225(.053) ***	.250(.079) ***
SPELL_W	-.008(.003) ***	-.007(.003) ***	-.007(.003) **	-.008(.004) *	-.009(.003) ***	-.007(.003) **	-.011(.005) **
DISPLACE	-.052(.038)	-.052(.037)	-.036(.039)	-.099(.066)	-.029(.040)	-.014(.044)	-.076(.071)
NMANU		.049(.046)	.039(.048)	.061(.084)	.028(.050)	.014(.055)	.041(.090)
NSIZE		.017(.007) **	.021(.007) ***	.012(.012)	.022(.007) ***	.028(.008) ***	.017(.012)
NPARTT		-.310(.051) ***	-.289(.082) ***	-.332(.073) ***	-.358(.055) ***	-.302(.093) ***	-.389(.077) ***
NTEMP		-.120(.039) ***			-.176(.042) ***		
R_TEMP	-.226(.048) ***						
TEMP_R	.081(.070)						
TEMP_T	-.138(.047) ***						
LEARN	.409(.039) ***	.360(.037) ***	.406(.047) ***	.336(.056) ***			
INTERCPT	2.700(.196) ***	2.881(.184) ***	2.686(.223) ***	2.832(.286) ***	4.545(.075) ***	4.506(.083) ***	4.375(.139) ***
Adj. R-square	0.4841	0.5232	0.5432	0.3950	0.4336	0.4092	0.3048
No. of Obs.	518	518	265	253	518	265	252

Notes: 1) Standard errors are indicated in parentheses. 2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.

Table 3.11 Results of Tobit analysis on unemployment spells: by poor groups and employment status

	<i>Model 3.D9</i>	<i>Model 3.D10</i>	<i>Model 3.D11</i>	<i>Model 3.D12</i>	<i>Model 3.D13</i>	<i>Model 3.D14</i>
Sample	Labour force: The non-poor	Labour force: The poor	Labour force: Regular workers	Labour force: Temporary workers	Labour force: The self-employed	Labour force: New entrants
Dependent var.	SPELL_W		SPELL_W			
<b>MIDDLE</b>	<b>1.848(0.99)</b> *	<b>-0.219(1.53)</b>	<b>5.115(1.36)</b> ***	<b>-1.297(2.16)</b>	<b>-1.818(3.12)</b>	<b>-1.141(1.20)</b>
<b>HIGH</b>	<b>2.977(0.78)</b> ***	<b>-0.291(1.39)</b>	<b>3.967(1.04)</b> ***	<b>-0.094(2.06)</b>	<b>-0.812(2.85)</b>	<b>-0.426(0.82)</b>
YOUTH	.703(1.06)	-1.338(1.55)	.561(1.32)	5.646(2.00) ***	1.309(4.58)	-11.524(2.10) ***
<b>ELDLY</b>	<b>5.022(1.08)</b> ***	<b>-2.372(1.62)</b>	<b>7.601(1.59)</b> ***	<b>2.917(1.70)</b> *	<b>-4.037(3.07)</b>	<b>-1.864(2.69)</b>
<b>WOMEN</b>	<b>2.277(1.11)</b> ***	<b>-0.785(1.53)</b>	<b>3.937(1.56)</b> **	<b>.229(1.78)</b>	<b>-4.276(3.54)</b>	<b>-2.813(2.16)</b>
POVERTY			10.463(1.14) ***	4.128(1.17) ***	15.499(2.46) ***	1.186(0.81)
URBAN	3.623(1.22) ***	3.332(1.49) **	-.300(1.80)	3.903(1.97) **	11.467(4.06) ***	1.022(1.23)
PESAREA1	-.042(0.99)	-5.798(1.39) ***	-3.989(1.32) ***	1.274(1.71)	-5.250(3.12) *	1.808(1.10)
PESAREA2	2.828(0.90) ***	.203(1.57)	1.354(1.29)	7.702(1.73) ***	-.398(3.01)	3.076(1.08) ***
PESAREA3	3.897(1.19) ***	.368(2.03)	3.598(1.74) **	6.787(2.34) ***	.634(3.65)	3.578(1.50) **
PESAREA4	1.556(1.22)	1.105(1.78)	1.892(1.89)	7.424(2.09) ***	-6.046(4.11)	2.886(1.27) **
PESAREA5	1.873(1.28)	1.000(1.92)	3.382(1.99) *	5.024(2.08) **	-2.950(4.37)	.767(1.46)
ERATE98	-.143(0.04) ***	-.346(0.06) ***	-.303(0.06) ***	-.118(0.08)	-.729(0.17) ***	.021(0.05)
URARE	.508(0.27) *	.944(0.40) **	.872(0.41) **	-.115(0.46)	1.711(0.96) *	.236(0.30)
HEAD	-4.438(0.89) ***	-1.223(1.29)	-6.525(1.22) ***	-1.173(1.48)	-1.611(3.00)	-3.073(1.24) **
ENTER	15.962(1.00) ***	10.644(1.46) ***				
TEMP	6.849(0.93) ***	2.130(1.19) *				
SELF	-9.952(0.94) ***	-8.710(1.30) ***				
INTERCPT	-20.708(2.30) ***	-9.554(3.36) ***	-21.681(3.32) ***	-9.936(4.06) **	-54.332(8.54) ***	13.971(3.13) ***
SCALE	14.228(0.38)	13.044(0.46)	15.405(0.55)	13.562(0.59)	22.133(1.60)	7.900(0.28)
Log L	-5000.918	-2435.026	-2927.349	-1679.335	-946.246	-1664.173
No. of Obs.	3,920	1,363	2,272	782	1,684	545
(Censored)	(2,965)	(825)	(1,718)	(433)	(1,540)	(99)

Note: 1) Standard errors are indicated in parentheses. 2) \*\*\*, \*\* and \* stand for the significance levels of 0.01, 0.05 and 0.10, respectively.