

# Long-term unemployment in Greece: developments, incidence and composition\*

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## 1. Introduction

The reduction of the persistently high unemployment rate ranks high on the political agenda in Greece.<sup>1</sup> Unemployment is a serious economic and social predicament, both for those who experience it and for the economy as a whole.<sup>2</sup>

The unemployment rate itself is not, however, a sufficient indicator of the extent of flux in the labour market. A high unemployment rate may reflect either a labour market in which a large number of participants experience brief unemployment spells or a labour market in which a smaller number of individuals remain unemployed over longer periods.<sup>3</sup> The nature of unemployment is, however, different in the two instances. Evidence on the duration of unemployment spells is therefore needed, both to identify the causes of unemployment and to design the appropriate policy measures especially given that the adverse effects of unemployment worsen as spells become longer.<sup>4</sup>

The data show that in Greece there is limited mobility between employment and unemploy-

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<sup>1</sup> The average unemployment rate during the decade 1996-2005 stood at 10.6% (see Chart 1).

<sup>2</sup> There is by now an extensive literature, both in economics and in social psychology, regarding the effects of unemployment and its duration on the physical and mental health of the unemployed (for the economics literature see, *inter alia*, Clark, 2002; Layard, 2005 and Panagiotopoulos, 2005).

<sup>3</sup> Time-series and cross-sectional analysis, however, suggest that in most countries there is a positive correlation between the unemployment rate and its duration (for the magnitude of this correlation in the OECD see Machin and Manning, 1999, while for the strength of this correlation in Greece see next section).

<sup>4</sup> See, *inter alia*, Pissarides (1992).

ment. Specifically, a high percentage of labour force participants experience unemployment spells of rather long duration. In fact, the duration of unemployment is amongst the longest in the European Union of 15 member states (EU-15) as evidenced by, *inter alia*, the high percentage of long-term unemployed (unemployed who have been looking for a job for a year or over). In the second quarter of 2005 the percentage of long-term unemployed stood at 53.6% in Greece versus 41.8% in the EU-15.<sup>5</sup>

The present study is an initial investigation of trends in the long-term unemployment rate and the incidence and composition of long-term unemployment. In particular, this is an attempt to provide evidence on unemployment duration in the Greek labour market, to identify the features of those most likely to be long-term unemployed and to associate the differences in unemployment duration with the characteristics of the unemployed.

The evidence indicates that in the last two decades the upward trend in the unemployment rate has been accompanied by a prolongation of unemployment spells. The analysis suggests that women, elderly individuals and individuals in regions with a high overall unemployment rate are more vulnerable to longer unemployment spells. Factors that are potentially subject to the influence of economic policy such as the use of active labour market policies, so that the unemployed have an opportunity to gain work experience or to be educated and retrained in the skills in demand, might succeed in shortening unemployment spells.

In addition, cross-country comparisons suggest that certain institutional features of the product

and labour markets (e.g. administrative burdens faced by businesses), which prevent prompt reaction to ongoing developments (e.g. technological progress, globalisation) and hinder the creation of new enterprises and jobs, may impact on unemployment duration.

It should be stressed at the outset that this is not an investigation into the increase of the overall unemployment rate and its divergence from the corresponding EU-15 rate. Such a study would require extensive macroeconomic analysis.

This study makes use mostly of the Greek Labour Force Survey (LFS). The Greek LFS follows the definitions of the European Union Labour Force Survey which closely adhere to those adopted by the 13th International Conference of Labour Statisticians. According to these definitions individuals between 15 and 74 years old are classified as unemployed if they:(a) did no work (in paid employment or self-employment) for even an hour during the week of the survey (reference week) and (b) were actively seeking work by having taken specific steps in this direction during the 4 weeks ending with the survey reference week. Long-term unemployment refers to unemployment of twelve months and over following the practices adopted by the International Labour Office (ILO) and the Organisation for Economic Cooperation and Development (OECD).<sup>6</sup>

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<sup>5</sup> Data from Eurostat (New Cronos). The Eurostat data for Greece differ slightly from those published by the National Statistical Service of Greece (NSSG). According to the latter the percentage of long-term unemployed stood at 56.0% in the second quarter of 2005.

<sup>6</sup> At the beginning of the 1980s, and before unemployment started increasing significantly in OECD countries, long-term unemployment was defined on the basis of individuals who were unemployed for 6 months or longer. The reasons for which a twelve-month limit is now used are best explained in OECD (1983).



An alternative potential source of data on unemployment duration is the European Community Household Panel (ECHP).<sup>7</sup> The LFS was preferred here over the ECHP owing to the more detailed information available in the former on location of residence and the education level of individuals. The ECHP data, however, will be used in a follow-up study to investigate further the issue of unemployment duration dependence since, compared with the LFS, the ECHP has the advantage of tracking individuals for a longer time period (8 years versus 18 months for the LFS).

The rest of the paper is organised as follows: the next section presents some facts regarding changes over time in unemployment duration and compares the duration of unemployment in Greece with that in the EU-15, while the third section offers a more complete picture of unemployment duration in Greece today. The fourth section attempts to identify the features of the long-term unemployed and to

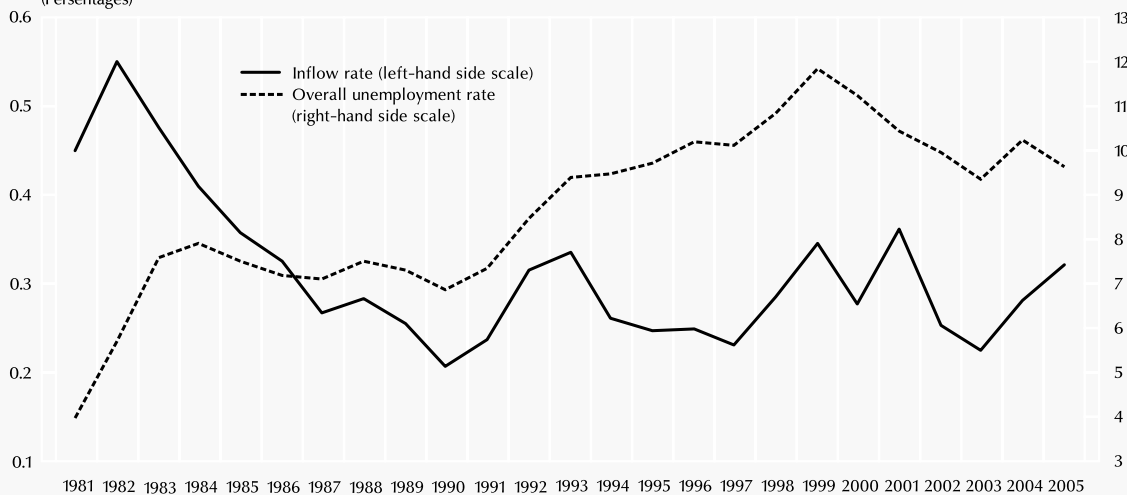
associate the differences in unemployment duration with the characteristics of the unemployed. Finally, the fifth section summarises the findings.

## 2. Unemployment duration: developments and comparisons with the European Union

The unemployment rate in Greece nearly doubled between 1981 and 1985 (from around 4% in 1981 to around 8% in 1985, see Chart 1). This development is partly attributed to a significant rise in the real unit

<sup>7</sup> The European Community Household Panel (ECHP) is a cross-national longitudinal household survey conducted, under the supervision of Eurostat, in most EU-15 countries in every year of the period 1994-2001 using a more or less harmonized questionnaire. The survey contains information on household and individual income, employment and living conditions, education and training, health conditions and other social welfare indicators. Due to panel attrition Eurostat decided in 2003 to replace the ECHP with the European Union Statistics on Income and Living Conditions (EU-SILC) and to provide for the replacement of the households that drop out of the sample. For Greece, the ECHP and the EU-SILC surveys are administered by the NSSG.

Chart 2  
Inflow rate into unemployment and unemployment rate, 1981 - 2005<sup>1</sup>  
(Percentages)



<sup>1</sup> Refers to the second quarter of each year.

Source: NSSG, Labour Force Surveys.

labour cost (see Alogoskoufis, 1995). Between 1986 and the beginning of the 1990s the unemployment rate fluctuated around 7%, while from the start of the 1990s the number of unemployed increased again substantially and the unemployment rate reached 12% in 1999. Since then there has been a mild slow-down and in 2005 the unemployment rate stood at 10%, while in the first quarter of 2006 it decreased further to 9.7%. Comparisons of developments in Greece with those in other EU-15 countries suggest that the increase in the unemployment rate started later in Greece and remained at a high level for longer, despite the robust growth rates of the last decade. The persistently high unemployment rate in Greece is attributed to *inter alia* the continuing contraction of the agricultural sector, the rapid and continuing expansion of the labour force due to the increased participation of women and immigrants, the lack of competition in product markets, and to labour market rigidities (see Demekas and Kontolemis, 1998 and Lyberaki, 2005).

There is evidence that since the beginning of the 1980s the rise in the unemployment rate was accompanied by longer unemployment spells. This section first presents evidence on unemployment duration in Greece and then draws comparisons with the European Union.

### 2.1 Changes in unemployment duration over time

In a steady state, when the inflow and outflow from unemployment are equal, the unemployment rate in any one month can be decomposed into the product of the inflow rate into unemployment in that month and the average duration of unemployment (in months).<sup>8</sup> In

<sup>8</sup> This decomposition can be illustrated as follows: in an economy with a labour force equal to 100, an unemployment rate of 10% in one year might be consistent either with 10 people remaining unemployed over the whole year or with the entire labour force remaining unemployed for 1.2 months or with some other combination of inflow and duration that would result in 120 total person unemployment months.

**Table 1**  
 Transition into long-term unemployment<sup>1</sup>, 1984-2005  
 (Percentages)

	Total	Men	Women
1984-1989	41.3	–	–
1990-1994	48.2	–	–
1995-1999 <sup>2</sup>	55.3	41.0	68.7
2000-2005	55.2	44.1	64.1

1 Probability of going from short-term unemployment (under one year) to long-term unemployment (over one year) calculated as the ratio of the number of persons unemployed for 12 to 23 months in year *t* over the number of persons unemployed for less than 12 months in year *t*-1. The figures are annual averages of the respective 5-year periods.

2 The average for this period excludes 1998 due to the break in the LFS series in that year.

Sources: OECD (2002), Chart 4.3 p. 193 for the period 1984-94 and NSSG, Labour Force Surveys for the period 1995-2005.

Greece, the monthly inflow rate<sup>9</sup> declined in the 1980s and has since fluctuated around the level reached at the end of that decade (see Chart 2). The combination of a relatively constant inflow rate with a rising overall unemployment rate suggests that unemployment spells have become longer.

Additional indications of the prolongation of unemployment spells is the increased transition from short-term to long-term unemployment and the resulting increase in the percentage of long-term unemployed. Data on the former are presented in Table 1. The data presented there indicate that while in the period 1984-89 around 41% of short-term unemployed in year *t* continued to be unemployed in year (*t*+1), this percentage increased to 55% during the period 2000-2005. In other words, in the period 2000-2005 around 55 out of the 100 short-term unemployed became long-term unemployed. The difficulty in finding a job appears to be more pronounced for women for whom this percentage stood at 64.1% compared with 44.1% for men.

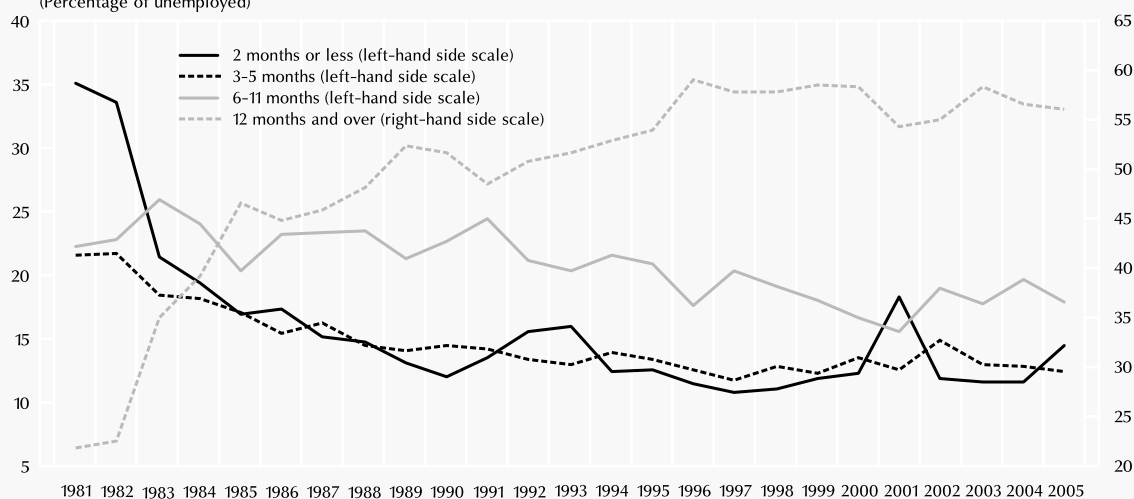
As a result of the increased difficulty in finding a job, the percentage of long-term unemployed

amongst the unemployed increased significantly over time. Specifically this figure increased during the 1980s from 39.0% in 1984 to 52.2% in 1989.<sup>10</sup> This upward trend continued, albeit at a slower pace, until the mid-1990s when the percentage of long-term unemployed was over 59% (1996). Since then this percentage has been exhibiting narrow fluctuations around this level (see Chart 3). In 2005 on average, approximately

<sup>9</sup> The inflow rate into unemployment in one month is here defined as the ratio of the number of unemployed who will either now start seeking work or who have been unemployed for less than a month, over the size of the population 15-64 years old (see OECD,1995).

<sup>10</sup> Data on unemployment duration are also available from administrative sources namely from the Greek Manpower Employment Organisation (OAED). These data are, however, only available from 2004 onwards and paint a different picture to that provided from the LFS. More specifically, according to OAED data the percentage of long-term unemployed amongst those registered unemployed was around 29% in 2005 (compared with around 56.0% according to the LFS). The difference may be due to the absence of incentives to register with OAED for those who have been unemployed for longer than 12 months since the maximum length of time for which the unemployment benefit is paid is in general a year. The conditions, the level and the length of payment of the unemployment benefit are presented in Section 4 of the Appendix. Indicative of either the lack of incentives to register with OAED or of the difference in defining the unemployed is the fact that of the LFS unemployed in the second quarter of 2005 only 58% are registered with OAED, and from those only about a quarter are unemployment benefit recipients. These percentages were even lower at the beginning of the 1990s but the legislative changes that took place may have also contributed to these developments.

Chart 3  
Distribution of unemployed by duration, 1981 - 2005<sup>1</sup>  
(Percentage of unemployed)



<sup>1</sup> Refers to the second quarter of each year.

Source: NSSG, Labour Force Surveys.

55% of the unemployed were long-term unemployed.<sup>11</sup> The increase in the percentage of long-term unemployed during the period 1981-2005 reflects increases in this rate for both genders and for all age groups (see Table 2).

From the above it appears that in Greece, as in most OECD countries, there is a positive correlation between the overall unemployment rate and the percentage of long-term unemployed.<sup>12</sup> The main reason for this correlation is that as the unemployment rate increases there are continuously fewer vacancies and the first to leave the unemployment queue are those with the skills in demand (see, *inter alia*, Blanchard and Diamond, 1994). As the number of long-term unemployed continues to rise those lacking these skills have increasingly fewer chances to find a job. In addition, even when demand picks up employers are often reluctant to hire people who have been unemployed for a long time, since they fear that

these individuals have already been rejected by other employers. Furthermore, they might also suspect that these persons are not as productive as others with the same formal qualifications, who have not, however, been unemployed for as long (see, for example, Pissarides, 1992). In other words, a prolonged stay in unemployment is due not only to insufficient demand but also to negative unemployment duration dependence.

The increase in the percentage of long-term unemployed in Greece has led to the introduction of income support measures. More specifically, Law 1545/1985 exceptionally provides for the payment of regular benefits for a period of 5

<sup>11</sup> The percentage of long-term unemployed in the first quarter of 2006 (53.6%) is unchanged compared with that in the corresponding quarter of 2005.

<sup>12</sup> For the period 1981-2005 the correlation coefficient between the overall unemployment rate in Greece and the percentage of long-term unemployed is 0.85.

Table 2

 Percentage of long-term unemployed<sup>1</sup> by gender and age group, 1981-2005

(Second quarter of each year)

	Men	Women	Men			Women		
			15-29 years old	30-44 years old	45-64 years old	15-29 years old	30-44 years old	45-64 years old
1981-84	20.8	38.4	21.1	20.1	20.8	38.5	37.5	39.7
1985-89	37.0	55.1	37.0	36.4	37.9	54.7	57.5	51.2
1990-94	41.2	57.4	40.8	42.0	40.8	56.3	60.8	54.7
1995-99	48.8	63.0	47.4	49.3	52.3	61.8	64.9	63.3
2000	51.7	62.7	50.0	53.8	54.4	61.1	64.4	65.6
2001	48.3	58.2	46.5	48.1	54.8	54.8	62.8	58.9
2002	49.9	58.2	49.6	47.6	53.7	53.5	63.8	60.8
2003	51.9	62.4	51.5	52.0	52.8	58.0	68.1	62.1
2004	48.7	61.0	48.8	48.5	48.5	55.3	65.6	66.1
2005	46.4	61.4	45.2	44.8	51.5	55.3	64.3	70.0

1 The figures represent the percentage of the unemployed who have been in this state for 12 months or longer; for example in 2005 45.2% of unemployed men between 15 and 29 years old had been unemployed for 12 months or longer.

Source: NSSG, Labour Force Surveys.

months to young persons (between 20 and 29 years old) with no previous work experience, who have registered as unemployed for over a year. Law 3016/2002 provides for the payment of a special benefit (for a period up to a year) to long-term unemployed between 45 and 64 years old after regular benefit payments have been exhausted. Special provisions have also been introduced to cover those fired from the textiles industry (Law 3460/2006, article 13), while the intention to create a social cohesion fund to provide income support to unemployed older than 50 was recently announced.<sup>13</sup> The conditions for the receipt of benefit payments, the level of the benefit and the duration of benefit payments are presented in Section 4 of the Appendix. In addition, measures to assist the long-term unemployed in finding a part-time job in the public sector have been introduced in the form of, for example, quotas for hiring long-term unemployed in such positions (Law 3250/2004).

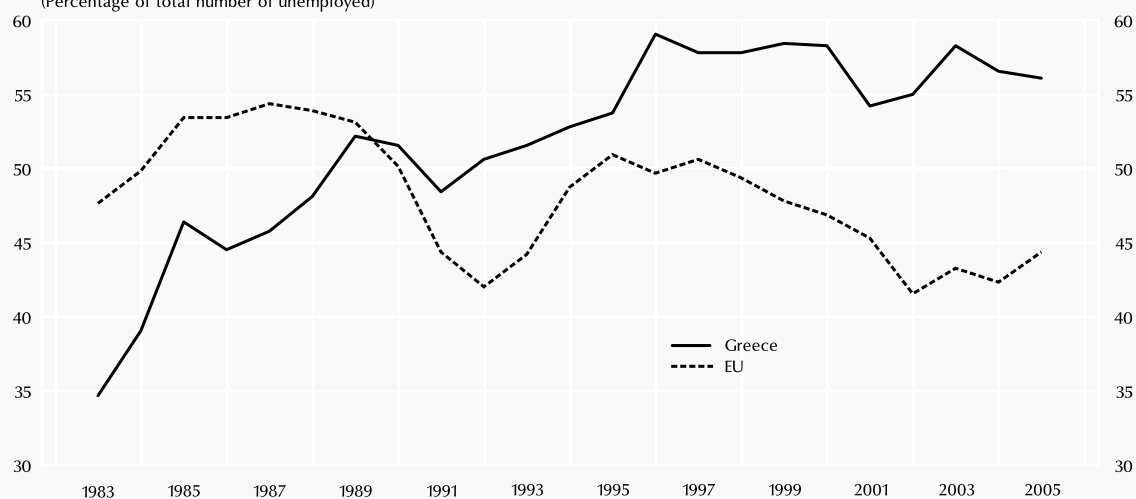
## 2.2 Cross-country comparisons

Since 1990 the percentage of long-term unemployed in Greece has been higher than in the EU-15 (see Graph 4). This gap reflects mainly the much longer unemployment spells of women in Greece. In fact, until 1998 the percentage of long-term unemployed men in Greece was lower than that in the EU-15.<sup>14</sup> Since then, however, the percentage of long-term unemployed for both genders is higher in Greece than in the EU-15. During the period 1998-2005 the percentage of long-term unemployed men in Greece was on average 47% compared with 43.9% in the EU-15, while the

<sup>13</sup> See the speech (in Greek) of the Minister of Employment and Social Protection on the 27th June 2006 at the deliberations of the National Employment Committee (<http://www.ypakp.gr/downloads/texts/2190.pdf>).

<sup>14</sup> See the Statistical Annex to various issues of the OECD *Employment Outlook*.

Chart 4  
Long-term unemployment in Greece and the EU<sup>1</sup>, 1983 - 2005  
(Percentage of total number of unemployed)



<sup>1</sup> EU includes the EU-15 except for Austria, Finland, Greece and Luxembourg.

Sources: OECD (2005, 2006), and NSSG, Labour Force Surveys.

corresponding figures for women were 59.3% and 46.3%, respectively.<sup>15</sup>

This positive correlation between the unemployment rate and unemployment duration could go some way towards explaining the difference between Greece and the EU-15 regarding the higher percentage of long-term unemployed.

Institutional factors could also potentially explain the divergence in the long-term unemployment rate between Greece and the EU-15. Certain institutional factors as, for example, product-market regulation could be preventing the prompt reaction of markets to ongoing developments (e.g. technological progress, globalisation).<sup>16</sup> For example, product market regulations that prevent the functioning of competition might be restricting the establishment of new firms and, hence, job creation. In addition, the reluctance of employers to create new jobs, owing to the size of non-wage

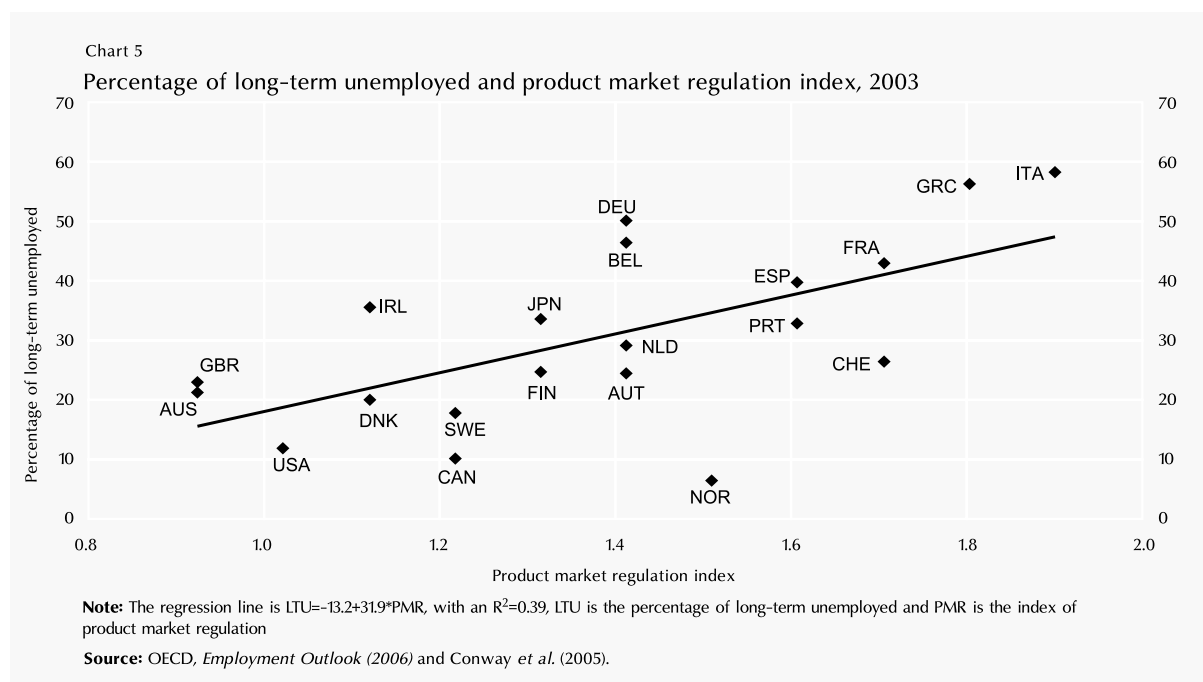
costs and the difficulties in creating and destroying these jobs, might also be prolonging unemployment duration.

The OECD has constructed a number of indices to capture certain institutional aspects of product and labour markets. As Chart 5 suggests there is a positive correlation between the extent of product market regulation and the percentage of long-term unemployed. Greece and Italy which have the least business-friendly regulation also have the highest percentage of long-term unemployed. Denmark, on the other hand, with a more busi-

<sup>15</sup> It should be mentioned, however, that in 2005 in Greece the percentage of long-term unemployed men is marginally lower than the respective figure for the EU-15 (43.1% compared with 43.9%) while the percentage of long-term unemployed women continues to be much higher (59.6% compared with 44.8% in the EU-15).

<sup>16</sup> See Blanchard and Portugal (1998) for similar arguments for Portugal, and Blanchard (2005) for the role of institutional factors in explaining the unemployment rate in Europe.





ness-friendly climate has a considerably lower percentage of long-term unemployed.<sup>17</sup>

A positive correlation has also been found between the Employment Protection Legislation Index (EPL)<sup>18</sup> and the percentage of long-term unemployed (Chart 6). It should, however, be mentioned at this point that the EPL index ignores cross-country differences in the extent of self-employment or undeclared work which, in turn, however, could arise as a result of product and labour market restrictions.

A further potential explanation for the longer unemployment duration in Greece is the limited implementation of active labour market programmes (ALMPs). According to Eurostat data the percentage of GDP spent on ALMPs in Greece is much lower than in the EU-15.<sup>19</sup> More importantly, in a recent evaluation of ALMPs the OECD notes that, rather than increasing spending, there

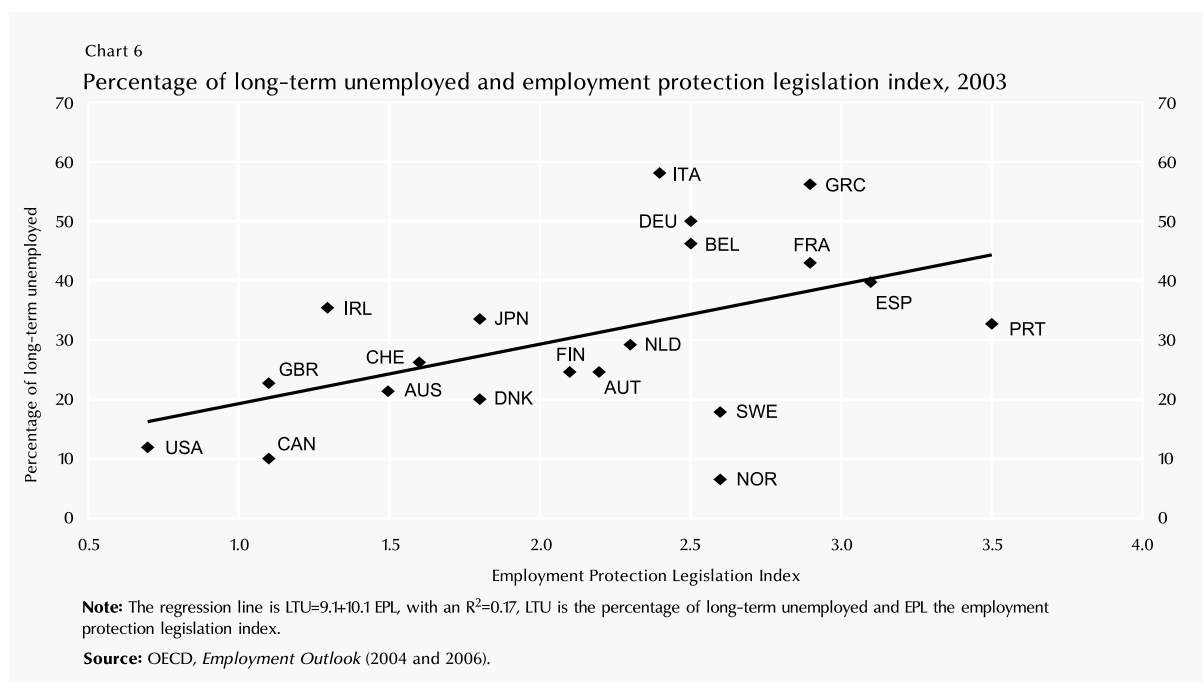
is need to improve the effectiveness of ALMPs through, *inter alia*, the early intervention of employment services and active job search support (see OECD, 2006).

The foregoing paragraphs presented some evidence on developments regarding the length of

<sup>17</sup> The product-market regulation index reflects aspects of the quality of the business environment in each country (e.g. state control; barriers to entrepreneurship such as administrative burdens, regulatory and administrative opacity and barriers to competition; barriers to trade and investment). The index takes values between 0 and 6 from least to most restrictive. The index is available from the OECD for 1998 and 2003 and its construction is described in detail in Conway *et al.* (2005). For Greece, despite a significant improvement in the index from 2.8 in 1998 to 1.8 in 2003, regulation is still more restrictive than in all other OECD countries presented, with the exception of Italy (see Chart 5).

<sup>18</sup> The index summarises a set of rules governing hiring and firing policies (mostly those provided through legislative measures) regarding both regular employment and temporary work. The index takes values between 0 and 6 from least to most restrictive. Details of the precise definition and construction of the index can be found in OECD (2004).

<sup>19</sup> In 2004 expenditure on ALMPs in the EU-15 amounted to 0.64% of EU-15 GDP compared with only 0.17% in Greece.



unemployment spells and changes in the percentage of long-term unemployed over time, while the next section presents a more complete picture of unemployment duration in Greece today.

### 3. Unemployment duration: characteristics of its distribution

The above focused on the percentage of long-term unemployed without presenting a complete picture of the distribution of unemployment duration. The data, however, suggest that there is substantial variation in the length of unemployment spells. Table 3 presents information on the length of time individuals have been unemployed in the period 1993-2005. Despite the fact that duration is grouped in relatively wide intervals,<sup>20</sup> the data suggest that there is a considerable dispersion of values and the percentage of

those who have remained unemployed for 4 years or over is quite high.

Using these data one could proxy average unemployment duration. Complications arise, however, because durations are grouped in relatively wide intervals and furthermore the first and last intervals are unbounded. As is usual in these cases (see *inter alia* Meghir *et al.*, 1989; Kanellopoulos, 2005), the average length is proxied by the mid-point of the interval, while two assumptions are made regarding the unbounded intervals: (a) individuals that are about to start looking for a job are grouped together with those who have spent less than one month looking for a job and the assumption is made that they have all

<sup>20</sup> The LFS records the replies to the question "How long have you been looking for a job?" in the following 9 intervals: (i) will start looking for a job now, (ii) less than a month, (iii) 1-2 months, (iv) 3-5 months, (v) 6-11 months, (vi) 12-17 months, (vii) 18-23 months, (viii) 24-47 months and (ix) 4 years or over.

Table 3

 Percentage distribution of unemployed by duration of unemployment spell<sup>1</sup>, 1993-2005

(Second quarter of each year)

Year	Less or equal to one month <sup>2</sup>	Over 1 month and up to 2 months	Over 2 months and up to 5 months	Over 5 months and up to 11 months	Over 11 months and up to 17 months	Over 17 months and up to 23 months	Over 23 months and up to 47 months <sup>3</sup>	Over 47 months	Total
1993	6.9	9.8	12.6	19.6	14.5	8.0	28.6	–	100.0
1994	5.0	7.8	13.7	21.2	13.5	8.2	30.6	–	100.0
1995	4.5	8.6	13.2	20.8	14.7	8.5	29.7	–	100.0
1996	4.1	7.5	12.5	17.4	14.2	8.9	35.4	–	100.0
1997	3.9	7.0	11.4	20.2	14.4	7.7	35.4	–	100.0
1998	4.3	6.5	12.5	19.0	11.8	7.8	38.1	–	100.0
1999	4.8	6.8	12.1	17.8	13.9	9.9	19.3	15.4	100.0
2000	3.9	8.2	13.3	16.4	14.7	9.9	16.5	17.1	100.0
2001	5.8	12.4	12.3	15.3	13.7	9.1	15.3	16.1	100.0
2002	3.9	7.7	14.6	18.8	12.6	9.5	16.1	16.8	100.0
2003	3.6	7.8	12.7	17.6	15.7	11.4	15.4	15.8	100.0
2004	4.2	7.2	12.6	19.5	13.4	10.4	15.2	17.5	100.0
2005	5.3	8.9	12.1	17.7	14.0	9.3	15.4	17.3	100.0

1 In completed months.

2 The figures in this column include those who have not started looking for a job.

3 Up to 1998 the figures in this column represent all those who have been unemployed for 2 years or over.

Source: NSSG, Labour Force Surveys.

spent a month unemployed (b) individuals unemployed for 4 years or more are assumed to have been unemployed for 5 years (60 months).<sup>21</sup>

Under these assumptions the average length of an incomplete unemployment spell in the second quarter of 2005, is around 22 months (around 18 months for men and approximately 24 months for women) while the median length of unemployment is one year; 9 months for men and 14 months for women.<sup>22</sup> This estimate, however, is only a proxy since most intervals are 5 months long and thus there is a sizeable range from which this estimate can deviate.

Besides the “technical” issues mentioned above, it is possible that the estimator arising from data such as that used here, which depict the time

those *currently* unemployed have spent seeking work, might not accurately measure the average length of time these people spend unemployed for three reasons. First, because those who are currently unemployed will continue searching for a job until they find one (assuming they do not withdraw from the labour market).<sup>23</sup> Secondly,

<sup>21</sup> The Greek Manpower Employment Organisation (OAED) data cannot suggest a maximum value for unemployment duration. The value used here appears reasonable, however, given that those unemployed for over 5 years are likely to withdraw from the labour force. Furthermore, only 12.5% of the unemployed with previous work experience who declared (in the 2005 survey) the year in which they worked last, indicated that this was before 2000.

<sup>22</sup> Even though these grouped data permit only an approximate calculation of the median this is more representative than the mean, as a measure of the length of the average unemployment spell, given the wide dispersion of the unemployment duration distribution.

<sup>23</sup> The distinction between the average length of unemployment and the average length of time to find a job is analogous to the difference between the average age of the population and the expected life time (see Akerlof and Main, 1980).

because the probability of an unemployed person being in the sample is higher the longer the unemployment spell the individual is experiencing.<sup>24</sup> Finally, because most individuals have only limited ability to accurately recall past events (see *inter alia* Torelli and Trivellato, 1993). The first two of the above shortcomings affect unemployment duration in opposite directions. In particular, ignoring the fact that the length of the unemployment spell is incomplete will lead to a reduced estimate of average unemployment duration, while not taking into account the short-term unemployed leads to an overestimate of unemployment duration.

In order to estimate the average length of a completed unemployment spell, i.e. the time needed to *find* a job, we exploit the longitudinal nature of the LFS. More specifically, the LFS tracks a number of individuals over 6 consecutive quarters. From this information one can calculate the length of time it takes to find a job for those who were successful in doing so. In our sample 198 individuals, *unemployed* in the first quarter of 2004, found a job at some point in time during the subsequent five quarters (until the second quarter of 2005). From these data one can calculate the overall median unemployment duration at about 9 months (the median duration in this sample is higher for men than women). The data thus show that in 2005 the incomplete length of the *unemployment spell* is longer than the complete length of unemployment; an indication of negative duration dependence (see Salant, 1977).

The estimated average length of an unemployment spell on the basis of data on the most recent such spell ignores the fact that some individuals experience repeated unemployment spells. The

LFS is not, however, designed to study repeat incidences of unemployment, since the length of time over which it tracks the same individuals is short (only 6 quarters). The European Community Household Panel (ECHP) data, on the other hand, which tracks the same individuals over a much longer time period (8 years) shows that in Greece over 33% of individuals with at least one unemployment spell (none of which was longer than a year) in the period 1994-1997, had 4 discrete unemployment spells (OECD, 2002). The percentage of unemployed with repeat unemployment spells appears in fact to be higher in Greece than in the other EU-15 countries, possibly because of the seasonal nature of a significant part of economic activity (e.g. agriculture, tourism).

From the above it appears that the persistence of unemployment in Greece reflects both the lengthening of unemployment spells for some individuals – the length of which for some unemployed (around 17%) exceeds 4 years – as well as the recurrence of shorter unemployment spells interspersed with intermittent periods of employment for other individuals.

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#### 4. Differences of unemployment duration

The differences by gender in the incidence of long-term unemployment and in unemployment

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<sup>24</sup> For example the seasonally unemployed, the inclusion of whom in the calculation of unemployment duration would reduce the average length of unemployment, have a lower probability of being included in the sample since the chance of someone registering as unemployed in the survey is directly related to the time he/she has been unemployed. Unemployment is seasonal in Greece as indicated by, *inter alia*, the fact that the proportion of the unemployed who have been unemployed for 2 months or less is higher in the last quarter of each year.

duration have already been mentioned. The incidence of long-term unemployment and the length of unemployment spells also differ by age, region, previous work experience etc. Job search theory provides a useful framework in which to consider these differences.

#### 4.1. Job search theory: a brief exposition

According to job search theory the probability of exiting from an unemployment spell depends on the joint probability of receiving a job offer and accepting this (see, *inter alia*, McKenna, 1990, and Mortensen, 1986, for a presentation of the theoretical framework and Nickell, 1979, Arulampalam and Stewart, 1995, and Layard *et al.*, 2005, for empirical applications).

In general, the probability of receiving a job offer depends on both the prevailing macroeconomic conditions and the skills of the unemployed. Macroeconomic conditions are proxied either by the local unemployment rate or the number of vacancies. Skills, and more generally the productive features of the unemployed, are proxied through their demographic features (age, marital status), their education, their previous working experience etc. The probability of finding a job also depends on the intensity of job search (e.g. search through work agencies, direct applications to employers etc.).

The probability of accepting a job offer depends on: (a) the wage offered relative to the reservation wage (the reservation wage is the minimum wage for which the unemployed would agree to work), (b) the cost of searching for a job, (c) income from alternative sources, and (d) the size of the unemployment benefit. The job search cost includes

both direct costs (e.g. application costs, costs for participating in competitions etc.), as well as the present value of forgone income.

The reservation wage, which in certain instances is observable by the researcher,<sup>25</sup> depends on the person's skills and the opportunity cost of the time spent searching or working (e.g. child care). The reservation wage is not necessarily time invariant and in fact is probably a negative function of time as the cost of being jobless increases over time (since over time both the psychological cost of being jobless increases and the probability that the savings/liquidity constraints become binding rises). At the same time, the expectations of the unemployed (or in general of the person seeking work) regarding the probability of finding a job become more realistic. The reduction in the reservation wage increases the probability of finding a job. This change does not, however, necessarily imply that the probability of leaving unemployment increases over time since this probability is also influenced by other factors already mentioned in earlier sections (e.g. negative stance of employers to long-term unemployed, obsolescence of skills etc.).

Economic theory has proposed a number of job search models depending on (a) whether individuals can search while on the job and (b) the method of job search followed. Regarding the method of job search, some models assume that the unemployed have a predetermined number of firms that they visit and choose the best

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<sup>25</sup> The ECHP asks individuals looking for a job to report their reservation wage. The Greek LFS, on the other hand, asks only those who have rejected a job offer to report the reason for doing so. In the second quarter of 2005 13% of all unemployed rejected a job offer and amongst them 16.3% did so because the remuneration offered was not considered adequate.

amongst the offers received (*fixed search models*). Other models, however, assume that individuals search sequentially and stop when the wage offered is higher than the reservation wage (*sequential search models*). These two categories of models have different implications regarding the level of the reservation wage and the rate at which this varies, which are, however, difficult to distinguish empirically.

The main ideas outlined above are applied in what follows in trying to identify the characteristics that influence the probability of long-term unemployment (Section 4.2) and the length of unemployment spells (Section 4.3).

#### 4.2. Features of the long-term unemployed: *estimates from a probability model*

In trying to understand long-term unemployment and to make the appropriate policy decisions it is useful to know the features of the long-term unemployed, both features that are thought to influence the probability of receiving a job offer (e.g. education level of the individual, local labour market conditions, family status, work experience) as well as features that influence the probability of accepting this offer (e.g. education level, unemployment benefit, alternative uses of time).

The features of the long-term unemployed in Greece have already been investigated by Dedousopoulos, Labrinides, Serafetinides (1991) and Kostaki and Ioakimoglou (1998). The first of these studies presents the features of the long-term unemployed in 1988, compares these with those of the long-term unemployed in 1983 and tries to identify what distinguishes the long-term unemployed from those who are employed. The second

study looks at the characteristics of the long-term unemployed in a more recent time period (1994) and looks at the features associated with the probability of being long-term versus short-term unemployed. Kostaki and Ioakimoglou (1998) define as long-term unemployed those who have been looking for a job for a period of 2 years or more and estimate a logit regression. Their estimates show that the probability of long-term unemployment is associated with gender (women are more likely to be long-term unemployed), with age (the probability of long-term unemployment increases with age), with marital status (married men are less likely to be long-term unemployed), but find no association between the level of education and the probability of long-term unemployment.

The association of long-term unemployment with gender appears to hold for the entire period 1981-2005 and for all age groups (see Tables 2 and 4). As an indication, note that in the period 2000-2005 the percentage of long-term unemployed women exceeds the corresponding figure for men by 10 percentage points on average. The probability of becoming long-term unemployed also differs by age, a variation which is more prominent amongst women. The percentage of long-term unemployed women is higher for women aged between 30 and 44 years old (see Table 2).

The percentage of long-term unemployed also varies significantly by region (see Table A1). The ranking of regions according to this rate appears relatively stable with only minor variations from year to year; the Ionian islands, the South Aegean and Crete have the lowest long-term unemployment rates for both genders, while West Macedonia and Western Greece show the highest rates.

Table 4

 Distribution of unemployed by duration of unemployment spell<sup>1</sup>, by gender and age group

(Second quarter of 2005)

	Less or equal to one month <sup>2</sup>	Over 1 month and up to 2 months	Over 2 months and up to 5 months	Over 5 months and up to 11 months	Over 11 months and up to 17 months	Over 17 months and up to 23 months	Over 23 months and up to 47 months	Over 47 months	Total
Total									
15-19	7.3	16.4	18.7	27.9	10.5	9.3	8.8	1.1	100.0
20-24	5.9	10.1	12.1	19.9	18.7	12.0	14.6	6.7	100.0
25-29	4.2	9.8	12.3	18.5	14.0	9.4	18.6	13.2	100.0
30-44	5.1	8.1	11.7	16.9	12.0	8.7	15.7	21.8	100.0
45-64	5.9	6.9	11.3	13.7	14.4	7.1	13.5	27.2	100.0
Total	5.3	8.9	12.1	17.7	14.0	9.3	15.4	17.3	100.0
Men									
15-19	14.1	6.4	24.1	25.7	8.0	9.7	9.3	2.7	100.0
20-24	4.9	13.6	12.7	19.9	20.9	9.4	10.7	7.9	100.0
25-29	5.1	10.3	19.3	20.0	10.5	7.8	18.0	9.0	100.0
30-44	7.3	11.3	16.5	20.0	10.1	9.2	13.1	12.5	100.0
45-64	6.1	10.0	13.8	18.6	14.1	6.4	12.0	19.0	100.0
Total	6.5	10.9	16.2	20.0	12.9	8.4	13.3	11.8	100.0
Women									
15-19	2.3	23.7	14.8	29.5	12.2	9.1	8.4	0.0	100.0
20-24	6.4	8.0	11.8	19.9	17.5	13.5	16.9	6.0	100.0
25-29	3.7	9.5	8.3	17.7	16.0	10.4	18.9	15.5	100.0
30-44	4.1	6.6	9.6	15.5	12.8	8.4	16.9	26.1	100.0
45-64	5.9	4.7	9.4	10.0	14.6	7.6	14.5	33.3	100.0
Total	4.6	7.8	9.9	16.4	14.6	9.7	16.6	20.4	100.0

1 In completed months.

2 Includes those who have not started looking for a job.

Source: NSSG, Labour Force Surveys.

The probability of becoming long-term unemployed also varies depending on previous work experience and on the job search tactic followed. More specifically, the incidence of long-term unemployed is higher amongst those with no previous work experience. Especially amongst women the majority (around 51% in the second quarter of 2005) of the long-term unemployed have no previous work experience. Amongst those with previous work experience the reason for which they lost their job does not appear to be related to the length of time for which they

are unemployed. From those long-term unemployed who became unemployed because they were made redundant most men were previously working in the construction sector, while a high percentage of the women were working in the retail trade sector and in hotels and restaurants.<sup>26</sup> Finally, the long-term unemployed appear, paradoxically, to use more alternative search methods.

<sup>26</sup> The concentration of long-term unemployed women in these sectors is higher than for employed women.

The partial correlations presented above between certain variables and the percentage of long-term unemployed cannot provide for a *ceteris paribus* estimate of the influence of each feature on the probability of long-term unemployment. To this effect a model of long-term unemployment should be estimated to investigate the contemporaneous impact of all these factors and to find out whether the conditions in the local labour market are correlated with the probability of long-term unemployment conditional on age, gender and level of education.

The estimated model is of the following form:

$$P(ltu=1) = \Phi(z_i, g_i, q_i)$$

where  $P(ltu)$ , the dependent variable, is the probability that the unemployed has remained without employment for a period of 12 months or longer and takes the value 1 when this is the case and the value 0 otherwise. Amongst the independent variables  $z_i$  includes demographic features (age, marital status, location of residence, number of children),  $g_i$  includes variables measuring the level of education, while  $q_i$  represents variables which proxy other productive features of the unemployed (e.g. previous work experience). Subscript  $i$  denotes the individual. The model has been estimated by maximum likelihood using the cumulative normal density function as the  $\Phi$  function (Probit model) and the estimates are presented in Table 5.

The model is estimated with data from the second quarter of the 2005 LFS sample which includes 1,100 unemployed men between 15 and 64 years old and 2,079 women between 15 and 59 years old.<sup>27</sup> The percentage of long-term unemployed men

in this sample is 46.7% and the percentage of long-term unemployed women is 61.2%. Descriptives of the variables used are presented in Table A2 in the Appendix.

The estimates suggest that the probability of long-term unemployment increases with age for both men and women. Married men are less likely to be long-term unemployed but *marriage* does not affect the probability of long-term unemployment for women. The *number of children* does not appear to have an impact on the probability of long-term unemployment and this result holds true even if we restrict the sample to include only married women. Regarding the influence or otherwise of *education* it appears that men who are higher-education graduates and are younger than 45 years old have little chance of becoming long-term unemployed. For younger women the level of education does not appear to be related to the probability of becoming long-term unemployed, while for women over 45 years old it appears that the probability of long-term unemployment is lower amongst those with a lower education level. This result could reflect the low long-term unemployment rate of women in rural areas. Local labour market conditions, as proxied here by the *unemployment rate in the region of residence*, influence the probability of long-term unemployment in the expected direction but the correlation is much higher for men than for women. Finally, there is a negative correlation between the probability of becoming long-term unemployed and *previous work experience*.

Following the identification of certain factors associated with the probability of one becoming

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<sup>27</sup> Individuals with long-term illness have been excluded from the sample.



Table 5

 Marginal effects from the estimation of the probability of long-term unemployment (probit model)  
 Dependent variable: probability of long-term unemployment, second quarter 2005<sup>1,2</sup>

Variables	Unemployed men		Unemployed women	
<i>Demographic features</i>				
Age	0.020	(0.0032)**	0.014	(0.0019)**
Marital status	-0.22	(0.048)**	0.0083	(0.032)
Presence of children aged between 0–6	–		0.028	(0.037)
Presence of children aged between 7–10	–		-0.0074	(0.038)
Presence of children aged between 11–15	–		-0.016	(0.033)
Semi-urban	-0.025	(0.050)	-0.014	(0.034)
Rural areas	-0.031	(0.041)	0.0045	(0.030)
<i>Highest education level</i>				
Compulsory education * Age ≤ 45 years old	0.021	(0.044)	-0.025	(0.034)
Compulsory education * Age > 45 years old	-0.23	(0.066)**	-0.13	(0.060)*
Tertiary education graduates * Age ≤ 45 years old	-0.11	(0.046)*	-0.024	(0.029)
Tertiary education graduates * Age > 45 years old	-0.10	(0.11)	-0.036	(0.10)
<i>Local labor market conditions</i>				
Local unemployment rate	0.023	(0.0092)**	0.0064	(0.0031)*
<i>Other</i>				
Previous employment experience	-0.36	(0.041)**	-0.27	(0.025)**
Long-term unemployment rate in the sample (%)	46.7		61.2	
Predicted long-term unemployment rate (%)	46.5		62.1	
Log likelihood	-697.5		-1.295.2	
Likelihood Ratio	$\chi^2(10)=95.6$		$\chi^2(13)=140.9$	
Pseudo-R <sup>2</sup>	8.2		6.7	
Sample size	1,100		2,079	

1 The dependent variable is binary and takes the value 1 when the individual has been unemployed for a year or longer and the value 0 when the individual has been unemployed for a shorter time period. All independent variables with the exception of age and the local unemployment rate are dummy variables which take the value 1 when the individual possesses the feature in question otherwise take the value 0.

2 The table presents marginal effects which measure the impact of the change of an independent variable on the deviation of the probability of becoming long-term unemployed from the same probability for the reference group. Standard errors are presented in parentheses below the marginal effects. The statistical significance at 1% and 5% is denoted by \*\* or \* respectively. Unemployed high-school graduates who are not married, live in urban areas and have no previous work experience constitute the reference group.

long-term unemployed, the next section estimates models of the probability of exiting from unemployment at various points in time given that it is clear from the previous sections (see, for example, Table 3) that there is considerable variation, from a few weeks to over 4 years, in the length of unemployment spells. From the previous results it is clear that the probability of exiting from unemployment differs by gender. In what follows this probability is only modelled for men. The probability for women will be modelled in a follow-up

study since it requires more elaborate analysis to deal with the probability of transition both from unemployment to employment as well as with the transition from unemployment to inactivity, which is most common among women.<sup>28</sup>

<sup>28</sup> The use of a dummy to discriminate between genders would not assist in identifying the differences in unemployment duration of the two genders since it would not allow for differences in the slope of the estimated function. Furthermore, for women there is need to study more variables that reflect their alternative or additional activities (e.g. number of children, childcare availability etc.).

#### 4.3 Characteristics of unemployment duration

The estimation methods used for modelling variables that measure the time elapsed until a certain event occurs have their origins in the area of medical research and industrial engineering. A brief presentation of these is contained in the Appendix. This section first discusses the data used in the analysis and then presents the estimates found. In the economics literature there are only two well-known studies that deal with the estimation of unemployment duration models for Greece using individual-level data. The first, that of Meghir *et al.* (1989), makes use of the 1981 LFS to identify factors that have an impact on the unemployment duration of men. From the results it appears that *ceteris paribus* there is a positive correlation between unemployment duration and education level. This result is taken as an indication that an improvement in the education level increases the reservation wage and thus prolongs unemployment duration. From the analysis there are no indications of duration dependence. The second relevant study, that of Kanellopoulos (2005), estimates the probability of exiting from unemployment in the period 1998-99 for both men and women and reaches the conclusion that tertiary education graduates have, *ceteris paribus*, a higher probability of exiting from unemployment. Furthermore, the estimates suggest that vocational training also shortens the length of unemployment spells.

The analysis that follows uses two samples. The first sample is the same as that used in estimating the probability of long-term unemployment in the previous section and includes 1,100 unemployed men between 15 and 64 years old. The second sample includes information on 343 men who were unemployed in the second quarter of 2004 and were still

present in the LFS sample until the second quarter of 2005. By the second quarter of 2005, 63.8% of these men continued being unemployed, while the remainder had found a job in this interval.<sup>29</sup>

In terms of the statistical methodology followed, all observations of the first sample are censored in that the total length of time these individuals will remain unemployed is not known.<sup>30</sup> The second sample, on the other hand, includes both uncensored and censored observations. The uncensored observations include those individuals who exited from unemployment at some point in time between the second quarter of 2004 and the first quarter of 2005 and are employed in the second quarter of 2005. The censored observations include those individuals who are still unemployed in the second quarter of 2005.

In the analysis that follows unemployment duration is determined by the replies given to the LFS question on the length of time the interviewee has spent looking for a job.<sup>31</sup> Since, as already mentioned, the replies are recorded in intervals<sup>32</sup> rather than in exact number of months or weeks,

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<sup>29</sup> The sample does not include 10 individuals who were unemployed in the second quarter of 2004 but had withdrawn from the labour force by the second quarter of 2005.

<sup>30</sup> The available LFS observations are both right (since all individuals have not yet found a job) and left censored (since all individuals were unemployed when the survey started). The fact that observations are left censored does not influence the estimates under the assumption that the probability of becoming unemployed has not changed significantly in the last few years.

<sup>31</sup> The relevant question is addressed to all individuals, independently of whether they are unemployed or employed (in which case they might be looking for an alternative or an additional job). Here, however, only the replies of those who according to the LFS are unemployed are used.

<sup>32</sup> The LFS includes an additional question on the year in which those who are not currently working worked for the last time. The replies to this question cannot be used, however, to determine with greater precision the length of the unemployment spell, since it is not clear that these individuals were looking for a job during the entire intervening period.

**Table 6**  
 Distribution of the length of unemployment spells<sup>1</sup> in the two samples  
 (Percentages)

	First sample (1,100 individuals)	Second sample (343 individuals)
Up to 2 months	17.7	3.4
Over 2 months and up to 11 months	35.8	29.7
Over 11 months and up to 23 months	21.4	30.2
Over 23 months and up to 47 months	13.3	18.5
Over 47 months	11.8	18.2
Total	100.0	100.0

<sup>1</sup> In completed months.

unemployment duration is proxied by the midpoint of the interval and with values of one month and 60 months for the open intervals.

As in the model of the probability of long-term unemployment the explanatory variables used are demographic features (age, marital status, number of children, area of residence), the level of education, past activity of the individual, the receipt of unemployment benefit and local labour market conditions. The means of these variables for both samples as well as for the entire male labour force are presented in Table A3 of the Appendix, while the distribution of unemployment duration in both samples is tabulated in Table 6. The results from the estimation of the models are presented in Tables 7 and 8.

As far as the explanatory variables used, as Table A3 suggests, the two samples differ only regarding the degree of urbanization. In the first sample a larger share of the unemployed lives in urban areas compared with the second sample.

As for the distribution of unemployment duration as it appears from Table 6 there is quite a

large variation in the length of unemployment spells in both samples. In the second sample, however, the average unemployment spell is longer since there are fewer people with short unemployment spells given that, by construction, this sample does not include people who have been unemployed for a month or less. More specifically, in the second sample around 67% of the unemployed are long-term unemployed compared with approximately 47% in the first sample. Furthermore 18.2% of the unemployed in the second sample have been unemployed for over 4 years compared with 11.8% in the first sample.

Results from the estimation of unemployment duration models

Table 7 presents the estimates on the basis of the first sample in which, as already mentioned, all observations are censored. The estimation method followed assumes that all observations are uncensored and as a result might overestimate the probability of exiting from unemployment (see, *inter alia*, Kiefer, 1988). Nevertheless, the results are useful as indications of the factors

Table 7

Estimates of duration models (first sample)<sup>1,2</sup>

	Ordinary least squares estimates <sup>3</sup>		Maximum likelihood estimates (Weibull baseline hazard) <sup>3</sup>			
	(1) Basic specification	(2) Add technological variable	(3) Add rejection of offer variable	(4) Basic specification	(5) Add technological variable	(6) Add rejection of offer variable
Constant term	-1.14 (0.22)**	-1.13 (0.22)**	-1.099 (0.21)**	-	-	-
Demographic features						
Age (in years)	-0.049 (0.0066)**	-0.050 (0.0066)**	-0.048 (0.0065)**	0.95 (0.0055)**	0.95 (0.0055)**	0.96 (0.0056)**
Marital status <sup>4</sup>	0.58 (0.11)**	0.57 (0.11)**	0.56 (0.11)**	1.67 (0.17)**	1.65 (0.17)**	1.66 (0.17)**
Semi-urban areas <sup>4</sup>	0.19 (0.12)	0.19 (0.12)	0.17 (0.12)	1.071 (0.13)	1.072 (0.13)	1.050 (0.13)
Rural areas <sup>4</sup>	0.020 (0.094)	0.017 (0.094)	-0.012 (0.095)	1.025 (0.079)	1.025 (0.079)	1.0026 (0.078)
Highest education level						
Compulsory education * Age ≤ 45 years old <sup>4</sup>	-0.22 (0.097)*	-0.22 (0.097)*	-0.24 (0.098)*	0.86 (0.074)	0.86 (0.074)	0.84 (0.073)*
Compulsory education * Age > 45 years old <sup>4</sup>	0.44 (0.18)*	0.46 (0.18)**	0.39 (0.17)*	1.59 (0.23)**	1.64 (0.24)**	1.52 (0.22)**
Tertiary education graduates * Age ≤ 45 years old <sup>4</sup>	0.25 (0.11)**	0.083 (0.12)	0.22 (0.10)*	1.37 (0.12)**	1.20 (0.11)*	1.33 (0.11)**
Tertiary education graduates * Age > 45 years old <sup>4</sup>	0.43 (0.26)	0.31 (0.25)	0.43 (0.25)	1.56 (0.29)**	1.42 (0.27)	1.55 (0.29)*
"Technological" education <sup>4</sup>	-	0.46 (0.16)**	-	-	1.53 (0.19)**	-
Local labour market conditions						
Local unemployment rate	-0.051 (0.019)**	-0.049 (0.019)**	-0.051 (0.019)**	0.97 (0.016)	0.97 (0.016)	0.97 (0.016)
Other						
Previous work experience <sup>4</sup>	0.82 (0.097)**	0.83 (0.097)**	0.81 (0.096)**	1.93 (0.16)**	1.98 (0.16)**	1.92 (0.16)**
Rejection of job offer <sup>4</sup>	-	-	-0.42 (0.11)**	-	-	0.78 (0.067)**
Sample size	1,100	1,100	1,100	1,100	1,100	1,100
R <sup>2</sup>	11.3	12.1	12.5	-	-	-
Log-likelihood	-	-	-	-1,729.6	-1,723.3	-1,727
Likelihood Ratio	-	-	-	$\chi^2(10)=119.9$	$\chi^2(11)=133.6$	$\chi^2(11)=124.5$
$\alpha^5$	-	-	-	1.00 (0.021)	1.00 (0.021)	1.00 (0.021)

1 This sample includes 1,100 men aged between 15 and 64 who were all unemployed in the second quarter of 2005. All observations are censored.

2 Robust for heteroscedasticity standard errors are presented in brackets below the coefficient estimates. The statistical significance of the variables at 1% and 5% is denoted by \*\* and \* respectively.

3 In the OLS estimates the dependent variable is the negative of unemployment duration, therefore a positive (negative) sign on the coefficients therefore indicates a reduction (increase) of duration. For maximum likelihood estimates the hazard ratios instead of the actual coefficients are presented. The standard errors presented in brackets, however, refer to the coefficient estimates and not to the hazard ratios. For example, the coefficient on the unemployment variable in column 4 is -0.0287 (= ln(0.97)) with a standard error of 0.016 and therefore is only marginally significant at 7% level of statistical significance.

4 These are dummy variables which take the value 1 when the individual possesses the feature in question and the value 0 otherwise. Unemployed high-school graduates who are not married with no previous work experience, who have not rejected a job offer are the reference group.

5 The hypothesis that  $\alpha$  is equal to one and thus that there is no duration dependence cannot be rejected.

that have an impact on the length of time searching for a job. The first 3 columns of the table present the results from the estimation of the model by Ordinary Least Squares (OLS), where the dependent variable is the logarithm of unemployment duration (in months). The columns differ only with respect to the addition of one independent variable every time. OLS is not usually followed for the estimation of duration models for two reasons (see, *inter alia*, Jenkins, 2005): first, because OLS cannot handle censored observations and secondly, because it does not permit the use of time-varying explanatory variables. Given, however, that on the one hand we are here assuming that all observations are uncensored and on the other hand that time-varying explanatory variables are not being used, the results from the OLS estimation are an alternative way of investigating the factors that influence the length of the job search. A negative coefficient on any variable in the first 3 columns suggests that this variable leads to a prolongation of unemployment duration (or, in other words, to a decrease in the probability of exiting from unemployment), while a positive coefficient leads to a decrease in unemployment duration (or, in other words, to an increase in the probability of exiting from unemployment).

The last 3 columns of this table present the results from estimating the model by maximum likelihood on the assumption that the baseline hazard follows a Weibull distribution. These columns present the exponent of the coefficients and measure the impact of the independent variables on the probability of exit.<sup>33</sup> Coefficients (or more precisely the exponents of the coefficients) with values lower than one suggest that the probability of

exiting from unemployment decreases as the value of the independent variable increases. The conclusions reached by the two methods of estimation do not differ although the statistical significance of the variables is lower with maximum likelihood estimation.

In particular, the estimates presented in Table 7 show that older men have *ceteris paribus* a lower probability of exiting from unemployment. The probability of finding a job is higher for married men. The presence of children, their total number or the number of children in three distinct age brackets (0-6 years old, 7-10 years old, 11-15 years old) have not been found to be related with the probability of exiting from unemployment. In addition, the data do not show that unemployment duration differs depending on the presence or otherwise of an employed spouse. The negative correlation between unemployment duration and age, which is also found by Meghir *et al.* (1989), conditional on all other variables included in their analysis, could be due either to a higher reservation wage or to the fact that employers are reluctant to hire older people.

As expected, the location of residence, used to capture differences in the local labour market conditions, has an impact on the probability of exiting from unemployment. In the maximum likelihood estimates (columns 4-6), the local unemployment rate has a negative impact on the probability of exiting from unemployment, even though this variable is only marginally significant (statistical significance at 7%). In the

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<sup>33</sup> See footnotes to Table 7 regarding the standard errors.

estimates presented in Table 7 the probability of exiting from unemployment does not appear to differ significantly between semi-urban areas on the one hand and urban areas (reference group) on the other.<sup>34</sup> In specifications which do not include the overall unemployment rate, however, there is some indication of a higher probability of exiting from unemployment in semi-urban areas compared with urban areas. The probability of exiting from unemployment does not appear to differ, however, between rural and urban areas. Estimates, which are however not presented here, using the dummy variables for the 13 standard regions show that the probability of exiting from unemployment is higher in touristic areas of the country. It appears therefore that the conditions in the local labour market are associated to some extent with the length of the unemployment spell and could constitute an explanation of the variation of unemployment duration by region confirming the positive correlation between the total unemployment rate and unemployment duration observed over time (see Section 2).

A higher education level is expected to lead to an increase in the reservation wage, thus having a negative impact on the probability of accepting a job offer. On the other hand, however, more educated individuals receive more job offers. The final outcome will thus depend on the relative “strength” of these influences. The estimates presented here show that for individuals younger than 45 years old a high education level (tertiary education graduate) improves the chances of exiting from unemployment while a low education level (compulsory education graduate) lessens this chance. For older individuals, tertiary education again has a negative impact on duration but a

low level of education does not appear to be a disadvantage in terms of unemployment duration. Another distinction which appears to be important is between those with “technological education” and the rest. More specifically, the results suggest that those who have graduated from Technological Education Institutes (TEI/KATEE) and certain higher education schools (science, engineering, architecture and medical) have a better chance of exiting from unemployment compared with the remainder. Other variables that were investigated were the length of studies and the different definitions of technological education (e.g. defined as to include only TEI graduates) but these variables were not significant. As already mentioned, the above results are consistent with those of Kanellopoulos (2005) but not with those of Meghir *et al.* (1989). This difference may be due to the fact that Meghir *et al.* do not allow for an age-education interaction, while their results refer to a completely different period (1981) during which significant changes, that could impact on the demand for certain skills/professions and on the unemployment rate, were taking place.

Previous work experience appears to have an impact on the probability of exiting from unemployment. More specifically, unemployed with previous work experience have a significantly higher chance of exiting from unemployment compared with the remainder.

Another variable which is being investigated is the rejection of a job offer. The question asked in the context of the LFS is whether the unem-

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<sup>34</sup> The Meghir *et al.* (1989) estimates suggest that unemployment duration is longer in rural areas.

ployed during the time he has been looking for a job has rejected any job offers and why. In the sample under investigation around 12% of the unemployed rejected some job offer. Amongst those who rejected a job offer approximately 23% did so because the remuneration offered was not adequate, 20% rejected the offer because the workplace was not located in an accessible location, 23% because the job offered no career prospects and 9% because the job did not match their formal qualifications. This variable is, however, potentially endogenous since the rejection of a job offer leads by definition to a reduction of the probability of exiting from unemployment.<sup>35</sup> The coefficient on this variable has the expected sign but its addition does not alter either the coefficients or the significance of the rest of the independent variables.

A further variable that we looked at, although estimates are not presented in Tables 7 or 8, is the receipt of unemployment benefit. We find that the receipt of unemployment benefit is associated with a shorter unemployment spell, a result also found by Meghir *et al.* (1989) and Kanellopoulos (2005). It is possible, however, that this result is due to the fact that the maximum duration of regular benefit entitlement is one year and the possibilities for extending this are rather limited. At the same time, among those who receive unemployment benefit (17% of all unemployed in the sample) there is a large number of seasonally unemployed (see Appendix for the conditions of receipt of the unemployment benefit and the duration of benefit entitlement).<sup>36</sup> In no way, however, should this result be considered to imply that a potential increase in the unemployment benefit will lead to a reduction in the duration of unemployment. The unemployment benefit and the disincentives that

this might create when this (or better the replacement rate) is high or when it is granted without pre-conditions and for an unlimited period of time has been the subject of the investigation of researchers in other countries (see, for example, OECD, 2006).

As for the existence of duration dependence, the results indicate that there is no duration dependence; the parameter of the Weibull distribution does not differ significantly from one.

Since the estimates presented in Table 7 are from a sample where all observations are censored and might overestimate the probability of exiting from unemployment (see, *inter alia*, Kiefer, 1988) the robustness of the results has been checked using a smaller sample of 343 individuals, the characteristics of which have already been mentioned. The estimates from this sample are presented in Table 8 which shows the results from maximum likelihood estimation assuming that the baseline hazard follows a Weibull distribution (Column 1) or allowing for a more flexible form of the baseline hazard and estimating either a Cox proportional hazard model (Column 2) or following the Prentice-Gloeckler-Meyer methodology (Column 3).<sup>37</sup>

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<sup>35</sup> Since 2002 when this information first became available the percentage of unemployed men who have rejected a job offer shows some decline from 19% in 2002 to 12% in the second quarter of 2005.

<sup>36</sup> LFS data, however, show a significant increase in the percentage of unemployed men who are registered with OAED and receive unemployment benefit. This percentage was only 7% at the beginning of the 1990s but has doubled by 2005.

<sup>37</sup> The Cox and Prentice-Gloeckler-Meyer (PGM) methods do not enforce some specific assumption as to how the probability of exiting from unemployment changes as the spell lengthens but leave the data decide. Furthermore, the PGM method tests for the possible heterogeneity that remains even after conditioning on the explanatory variables.

Table 8

Estimated models of unemployment duration with uncensored and censored observations<sup>1</sup>  
(second sample)

	Maximum likelihood estimates					
	Weibull		Cox		PGM <sup>2</sup>	
Demographic features						
Age	0.94	(0.015)**	0.94	(0.014)**	0.93	(0.019)**
Married	2.056	(0.57)**	1.76	(0.47)*	3.33	(1.24)**
Semi-urban area	2.20	(0.55)**	1.76	(0.41)*	2.32	(0.72)**
Rural area	1.27	(0.28)	1.045	(0.22)	1.31	(0.37)
Highest education level						
Compulsory education graduates * Age ≤ 45 years old	1.43	(0.32)	1.28	(0.25)	1.30	(0.35)
Compulsory education graduates * Age > 45 years old	1.15	(0.59)	1.11	(0.52)	0.56	(0.31)
Tertiary education graduates * Age ≤ 45 years old	1.57	(0.41)	1.30	(0.32)	1.35	(0.45)
Tertiary education graduates * Age > 45 years old	1.096	(0.88)	1.34	(1.01)	1.67	(1.44)
Local labour market conditions						
Local unemployment rate	0.97	(0.062)	0.95	(0.061)	0.93	(0.066)
Other						
Previous work experience	2.12	(0.47)**	2.45	(0.52)**	2.68	(0.84)**
Likelihood Ratio	$\chi^2(10)=42.43$		$\chi^2(10)=43.33$		-	
Log-likelihood	-291.22		-575.62		-471.11	
$\alpha$	1.26	(0.089)	-	-	-	-
Sample size (in the case of the PGM model individuals * length of unemployment in months)	343		343		8,564 (343 individuals* 25 months average duration per individual)	

<sup>1</sup> Also see footnotes 2-4 to Table 7.

<sup>2</sup> The PGM estimation also includes dummy variables to capture time duration dependence.

The results do not differ, in general, from those presented in Table 7 but it is worth making the following points: use of Cox's proportional hazard model makes clear that the baseline hazard is not monotonic as the Weibull model assumes. On the contrary, the probability of escaping unemployment increases for approximately the first year and a half and then decreases until around the third year when it starts increasing again. This pattern might reflect the increased probability of exiting from unemployment of those who are seasonally employed and thus have limited unemployment duration and high (and known *ex ante*) probability of exiting from unemployment. It also reveals that remaining

unemployed after a certain point in time has a negative impact on the probability of finding a job. The estimates of the time variation of the probability of exiting from unemployment as the length of the spell is prolonged is, however, also influenced by the specific time intervals used by the LFS to record unemployment duration, which are very wide for spells longer than 2 years. It should also be mentioned that, owing to the limited size of the sample and especially to the short time period that the sample covers, it is difficult to reach statistically significant results.

The significance of age and family status in predicting the probability of exiting from unemploy-



ment continue to hold. A difference is also observed between urban and semi-urban areas. These results together with the impact from previous work experience are in fact those results that continue to hold independently of the specification estimated. The coefficients on the remaining variables, however, are dependent on the specification estimated. More specifically, the education level no longer appears to be statistically significant in the second sample.

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## 5. Conclusions

This study is an initial attempt to investigate developments and features of unemployment duration. In addition to presenting evidence on the duration of unemployment spells in the Greek labour market this study has attempted to identify, on the basis of the LFS sample, explanatory factors of the probability of long-term unemployment and of variations in the length of unemployment spells. The study does not try to explain the increase in the overall unemployment rate, a task which would necessitate extensive macroeconomic analysis.

The analysis suggests that in the last 2 decades unemployment duration has lengthened. In 2005, around 55% of the unemployed are long-term unemployed. At the same time there are other individuals who experience repeated unemployment spells and who within a period of a few years have in total remained unemployed for over a year. The lengthening of the unemployment spells reflects the increase in the overall unemployment rate and the increased probability of transition from short-term to long-term unemployment. The limited number of new jobs due to

the stringent regulatory environment in product and labour markets could perhaps explain the differences in the percentage of long-term unemployment between Greece and the EU.

The estimates presented suggest certain factors that differentiate the probability of long-term unemployment and the length of unemployment spells. In particular, older individuals with no previous work experience in regions with high unemployment rates are more likely to remain unemployed for longer periods. For younger individuals a high level of education is associated with a lower probability of becoming long-term unemployed and in general with shorter unemployment spells. As for duration dependence there is some evidence of positive duration dependence in the first few months of the unemployment spell, which, however, turns negative as the unemployment spell continues. This result should, however, be investigated further since the estimates presented herein are influenced greatly by the specific width of the intervals in which unemployment duration is recorded in the LFS, by the significant number of individuals who are seasonally unemployed and by the fact that during the specific period under investigation unemployment was decreasing. Use of ECHP data might help to clarify some of these issues.

The results presented above suggest therefore that policy measures which increase the effectiveness of active labour market policies so that the unemployed gain labour market experience and are trained in skills that are in demand will lead to a shortening of unemployment spells. Furthermore, measures that enhance demand through improvement of the business climate could lead to job creation and a decrease in the percentage of long-term unemployed.



## Appendix

### 1. Geographical distribution of the long-term unemployed

**Table A1**  
Percentage of long-term unemployed<sup>1</sup> by region, 1993-2005

	1993-99	2000	2001	2002	2003	2004	2005
Men							
Eastern Macedonia & Thrace	39.2	44.1	37.8	51.3	45.7	50.5	42.8
Central Macedonia	43.8	51.3	43.2	47.3	56.9	52.2	46.4
West Macedonia	49.1	57.1	54.5	64.0	51.7	63.3	65.2
Epirus	53.3	62.8	65.3	54.6	56.7	61.4	46.9
Thessaly	55.1	59.8	48.2	54.2	50.3	58.0	38.7
Ionian islands	42.2	36.4	45.1	33.4	41.7	16.4	21.0
Western Greece	61.3	57.2	66.4	66.6	71.7	58.7	54.0
Stereia Ellada (except for Attica) and Evia	53.4	58.6	44.5	63.2	56.0	53.5	41.1
Attica	44.6	51.4	50.0	51.2	51.8	44.0	45.7
Peloponnese	49.6	51.8	55.5	51.8	48.8	61.6	62.7
North Aegean islands	40.6	58.0	45.4	48.9	56.6	40.1	43.6
South Aegean islands	26.6	18.0	14.9	15.2	11.6	17.0	28.8
Crete	41.2	45.8	39.0	32.0	44.0	31.6	34.6
Women							
Eastern Macedonia & Thrace	55.6	50.8	47.4	66.7	56.7	64.4	68.8
Central Macedonia	54.2	60.1	53.5	53.9	63.2	59.3	57.0
West Macedonia	63.5	70.8	71.1	73.5	70.3	75.9	73.8
Epirus	67.2	78.1	75.1	54.0	69.0	68.4	73.0
Thessaly	70.2	72.5	63.8	65.5	70.2	76.6	70.1
Ionian islands	54.4	38.8	34.8	35.1	37.7	25.6	26.4
Western Greece	71.9	71.6	66.3	71.8	64.7	66.9	63.9
Stereia Ellada (except for Attica) and Evia	67.4	78.8	70.3	77.1	75.9	66.6	68.1
Attica	59.5	61.6	60.3	57.5	62.9	58.5	60.7
Peloponnese	66.5	62.6	60.1	47.6	60.9	66.0	61.6
North Aegean islands	66.1	59.0	52.8	50.9	72.6	53.1	69.7
South Aegean islands	38.2	23.0	9.7	25.3	24.6	33.5	35.6
Crete	55.2	49.3	37.3	49.0	52.5	39.1	50.2

<sup>1</sup> The data refer to the percentage of individuals who have remained unemployed for 12 months or longer amongst all unemployed in each region.

Source: NSSG, Labour Force Surveys.

## 2. Descriptive statistics of the samples used in the estimation of the probit and duration models

**Table A2**  
 Means of the variables used in the probit long-term unemployment model<sup>1</sup>  
 (Percentages)

	Unemployed men	Unemployed women
Demographic features		
Age (in years)	33.7	33.1
Marital status	29.9	48.2
Presence of children aged between 0 – 6	–	15.2
Presence of children aged between 7 – 10	–	13.5
Presence of children aged between 11 – 15	–	18.2
Urban areas	70.2	70.9
Semi-urban areas	11.6	12.1
Rural areas	18.2	17.0
Education level		
Compulsory education graduates	37.1	27.2
High education graduates	36.0	37.5
Tertiary education graduates	26.9	35.3
Local labour market conditions		
Local unemployment rate	6.1	16.0
Other		
Previous work experience	71.3	55.9
Percentage of long-term unemployed in the sample	46.7	61.2

<sup>1</sup> The means presented refer to the population means. For all variables except for age and the unemployment rate the figures presented refer to the percentage in the population which possesses the feature in question. Small discrepancies between the percentages presented in the above table and those in the text are due to inconsequential changes in sample composition (e.g. different age groups etc.).



Table A3

Descriptives of the two samples used in the estimation of the duration models and of the male labour force (second quarter 2005)<sup>1</sup>

(Percentages)

	First sample		Second sample		Male labour force (15-64 years old, second quarter 2005)
	Complete sample	Long-term unem- ployed	Complete sample	Long-term unem- ployed	
<i>Demographic features</i>					
Age					
Average age (in years)	33.7	34.3	33.9	34.2	40.0
Under 25	24.3	23.5	22.7	21.9	8.1
25-29	21.4	20.9	23.6	23.4	13.2
30-44	33.9	33.0	33.2	33.4	42.6
45-54	13.7	14.4	12.8	12.1	23.6
55-64	6.7	8.2	7.7	9.2	12.5
Marital status					
Married	29.9	25.6	27.6	29.3	63.2
Degree of urbanisation					
Urban	70.2	70.6	65.5	63.5	66.7
Semi-urban	11.6	10.4	14.4	14.9	13.1
Rural	18.2	19.0	20.1	21.6	20.2
Education level					
Compulsory education	37.1	36.8	37.3	36.5	37.1
High-school education	36.0	37.6	38.4	41.0	33.9
Tertiary education	26.9	25.6	24.3	22.5	29.0
Technological education <sup>2</sup>	9.4	6.9	9.0	9.5	11.2
<i>Labour market related features</i>					
Labour force status					
Unemployed	100.0	100.0	63.8	69.5	5.8
Employed	–	–	36.2	30.5	94.2
Previous employment	71.3	61.9	67.6	62.6	71.3
Rejection of job offer					
Rejection of job offer	12.0	16.3	–	–	12.0
Local labour market conditions					
Average unemployment rate in the region of residence	6.1	6.3	6.2	6.3	5.8
Sample size	1.100	515	343	230	19.343 individuals

1 The averages presented refer to the values for the population using the LFS imputation coefficients.

2 Technological education graduates refers to TEI/KATEE graduates and graduates of the following schools: engineering, science, architecture and medical.

### 3. Estimation methods of unemployment duration models

The estimation methods used for modelling variables that measure the time elapsed until a certain event occurs have their origins in the area of medical research and industrial engineering. In these sciences such models (also known as survival models)<sup>38</sup> are used to test, for example, the impact of drugs on the probability of survival or differences in the time of uninterrupted operation of machines.<sup>39</sup> An idiosyncratic feature of these models which complicates their estimation is that observed durations are often censored in that they do not reflect the full record of the patient, the unemployed or the machine given that at the time of recording the phenomenon under investigation is still in progress. Observations are thus classified as uncensored or censored. In the case of unemployment duration, observations for which the complete length of the unemployment spell is known are *uncensored*. On the other hand, observations, for those that are still unemployed at time  $t$ , and for which the total length of time they will remain unemployed is unknown are *censored*.

Survival models are characterised by three related functions: (a) the *distribution function*  $F(t) = Pr(T < t)$ , which depicts the probability that the random variable (e.g. unemployment duration) takes a value less than  $t$  (i.e. shows the percentage of unemployed who have found a job by point  $t$ ) (b) the *survivor function*  $S(t) = 1 - F(t) = Pr(T \geq t)$ , which shows the probability that the random variable  $T$  takes a value equal to or greater than  $t$  (e.g. shows the probability that the length of the unemployment spell exceeds  $t$ ) and (c) the *hazard function*  $h(t)$  defined as the ratio of the density function  $f(t)$ <sup>40</sup> over the survivor function  $S(t)$  i.e.  $h(t) = f(t)/S(t)$ . This function shows the probability of transition from one state to another (e.g. finding a job, death, machine

breakdown) given the time that the person (or the machine) has already spent in the initial state. For the issue under investigation, the hazard function  $h(t)$  shows the probability of exiting from unemployment (or alternatively of finding a job if we assume that there are only two states). This function usually depends on the length of time the individual has spent unemployed ( $t$ ) as well as on other factors, some of which might also be time varying (e.g. macro-economic conditions, family status etc.). On the basis of the assumptions made about the time-varying nature of  $h(t)$ , we distinguish between the *proportional hazard models* and the *accelerated failure time models*. In the former class of models the probability of exiting from unemployment is represented as the product of the so-called *baseline hazard*  $\lambda(t)$  which is itself a function of time, and the explanatory factors  $x$  which in these models change the position but not the slope of the hazard function. To estimate this model we need to add an error term i.e. a random variable  $v$ , which captures unobservable influences, and is taken to be orthogonal to the independent variables  $x$ . The hazard function to be estimated could be succinctly presented as follows:

$$h(t;x) = v * \lambda(t) * \exp\{G(x;\beta)\} \quad (1)$$

Usually it is further assumed that the impact of the explanatory variables is multiplicative so that equation (1) becomes:

$$h(t;x) = v * \lambda(t) * \exp(\beta'x) \quad (2)$$

<sup>38</sup> These models are also referred to as hazard models, transition models or failure models. A detailed presentation of these models and the techniques used for their estimation can be found in, *inter alia*, Kiefer (1988) and McCullagh and Nelder (1995).

<sup>39</sup> Other applications in economics include the investigation of the determining factors of the length of time some firms survive until they are taken over (see Dickerson *et al.*, 2001) or the length of time until exchange rate realignment occurs (see Gibson, 2003).

<sup>40</sup> Where  $f(t) = dF(t)/dt$ .

Two important distinctions can be made in estimating these models depending on: (a) the adoption or otherwise of a specific statistical distribution for the baseline hazard and (b) the distribution assumed for the random variable  $v$ . Depending on the distribution function adopted for the baseline hazard, the models can be distinguished into *parametric*, *non-parametric* and *semi-parametric*. In parametric models, the baseline hazard is assumed to follow a specific statistical distribution and the most commonly used distribution for modelling the exit from unemployment is the Weibull which includes the exponential as a special case.

The adoption of the Weibull implies that the probability of exiting from unemployment changes monotonically; in other words, as the unemployment spell lengthens the probability of exiting from unemployment continuously moves in the same direction. Specifically if  $\alpha > 1$  ( $\alpha < 1$ ) the probability of exiting from unemployment increases (decreases) as the spell lengthens. If  $\alpha = 1$  we have a special case where the probability of exiting from unemployment does not change over time. In this last case, the Weibull distribution coincides with the exponential.

Survival models are estimated by maximum likelihood and the likelihood function which is being maximised is the following:

$$L = \sum_{i=1}^{n+m} \{w_i \ln f(t_i) + (1 - w_i) \ln S(t_i)\} \quad (3)$$

Where  $n$  is the number of uncensored observations which contribute by  $f(t)$  to the likelihood function and  $m$  is the number of censored observations which contribute by  $S(t)$  to the likelihood function. The weight  $w$  takes the value 1 for uncensored observations and the value 0 for the remainder.

When a specific distribution function for the baseline hazard has not been selected then semi-parametric or

non-parametric models are being estimated. The most popular estimation method in the economics literature is the semi-parametric method known as *Cox's proportional hazards* method,<sup>41</sup> where no specific function is adopted for  $\lambda(t)$ . Section 4.3 presents the results from estimating unemployment duration models by Weibull, Cox and the Prentice-Gloeckler-Meyer methods (see Prentice-Gloeckler, 1978 and Meyer, 1990). The latter constitutes a more flexible variant of the Cox model when durations are grouped.<sup>42</sup>

#### 4. Unemployment benefits: conditions, level and length of payment

The conditions for the receipt of unemployment benefit together with the level and the length of time over which this is paid are related to previous work experience of the unemployed.<sup>43</sup> In general, unemployment benefit is paid to individuals insured against unemployment either whose contract has expired or who were made redundant.

##### *Employment conditions*

First-time claimants need to have worked for: (a) at least 80 days in each of the last two years before application and (b) for at least 125 days in the year ending 2 months prior to application. For second-time claimants, it suffices to have worked 125 days in

<sup>41</sup> See Cox (1972).

<sup>42</sup> See Meyer (1990) for a detailed presentation of all the above models.

<sup>43</sup> Law 2961/1954 (article 11), Law 1545/1985, Law 1836/1989 (article 15) and Law 1892/1990 (article 37) provide for the payment of regular unemployment benefit and a benefit to young long-term unemployed. Furthermore, Law 3016/2002 (article 27) specifies the terms and conditions for the payment of unemployment benefit to the long-term unemployed, while Law 3460/2006 (article 13) provides for special provisions for those made redundant from the textiles industry.

the year ending 2 months prior to application. For certain occupations (e.g. employees in the tourism sector) these conditions are more flexible and the unemployment benefit can be granted even if the individual only worked for 100 days during the last year. Law 1545/1985 provided, exceptionally, for the payment of unemployment benefit to young individuals (aged between 20 and 29) *without* previous work experience who after their studies, or after serving their military service, have been registered unemployed for a year.

#### *Benefit duration*

The period over which unemployment benefit is paid varies according to the individual's employment record in the year ending 2 months prior to the application for benefit. The maximum length of time for which regular unemployment benefit is paid is 12 months. Since 2002, however, after the termination of the payment of the regular benefit, a special benefit is paid (for a maximum of an additional year) to long-term unemployed between 45 and 65 years old.

#### *Size of the benefit*

According to article 12 of Law 2224/1994 ('Regulation of employment issues, trade union rights, worker health and safety and organisation of the Ministry of Labour and the legal persons supervised thereby'), the regular unemployment benefit is equal to 40% of the daily wage of blue-collar workers or 50% of the monthly salary of white-collar workers under the restriction that this benefit will not be less than 2/3 of the daily wage of an unskilled worker or higher than a ceiling specified by ministerial decision. Article 12 of law 2224/1994, however, stipulates that if "the contributions-benefits balance in (OAED's) Unemployment Budget does not allow the above ratios to be imple-

mented, the Minister of Employment may, after a considered opinion by OAED's Board of Directors, may adjust these limits accordingly". For 2006, the minimum daily unemployment benefit is set at €12.45 (€311.25 per month) and the maximum daily unemployment benefit is set at €13.17 (€329.25 per month). The benefit is increased by 10% for each family member. The above suggest that for 2006, the minimum unemployment benefit corresponds to 45.3% of the minimum daily wage and the maximum to 48% and thus is significantly lower than the average daily wage or salary. The special benefit for the long-term unemployed amounts to €200 per month. The monthly unemployment benefit for young people between 20 and 29 years old without work experience amounts to €73.37 per month for single individuals and €79.24 for married individuals and is increased by €5.87 for each child.

Recently the Ministry of Employment and Social Protection announced its intention to create a *social cohesion fund* to provide income support to unemployed older than 50 who were made redundant from declining sectors of economic activity and for whom all other active and passive labour market measures have been exhausted.<sup>44</sup> The support can reach up to 80% of the previous wage or some limit set by the Ministry of Employment and will be paid under the condition that the recipient will continue to look for a job or to participate in education programmes.

Compared with other OECD countries the minimum contribution period is longer in Greece while the benefit replacement rate is lower (see Table A4). In

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<sup>44</sup> See the speech (in Greek) of the Minister of Employment and Social Protection on the 27th June 2006 at the deliberations of the National Employment Committee (<http://www.ypakp.gr/downloads/texts/2190.pdf>).



Table A4

Unemployment benefit: minimum unemployment insurance contribution periods, duration of entitlement to unemployment benefit and benefit replacement ratios in OECD countries, 2004

	Minimum contribution period <sup>1</sup>	Minimum benefit entitlement period <sup>2</sup>	Duration of benefit entitlement over contribution period	Net replacement rates at initial phase of unemployment <sup>3</sup>	Net replacement rate for long-term unemployed
	(1)	(2)	(3)	(4)	(5)
Austria	28 weeks	20 weeks	0.7	82	71
Belgium	468 days (78 weeks)	indefinite	-	74	68
France	4 months	4 months	1.0	84	48
Germany	12 months	6 months	0.5	91	58
Denmark	6 months or 1 year	4 years	4 or 8	77	58
Switzerland	12 months	2 years	2.0	87	48
Greece	125 days (25 weeks)	5 months	1.0	60	41
UK	c. 10 weeks	182 days (6 months)	2.6	65	62
USA	2 quarters	6 months	1.0	80	54
Japan	6 months	90 days (3 months)	0.5	79	51
Ireland	13 weeks	390 days (65 weeks)	5.0	65	65
Spain	360 days (12 months)	120 days (4 months)	0.3	87	44
Italy	78 days (3 months)	78 days (3 months)	1.0	79	56
Canada	420 hours (11 weeks)	45 weeks	4.1	83	57
Norway	c. 10 weeks	3 years	15.6	83	47
Netherlands	26 weeks	6 months	1.0	83	47
Portugal	540 days (18 months)	18 months	1.0	88	59
Sweden	6 months	300 days (60 weeks)	2.3	88	49
Finland	10 months	500 days (100 weeks)	2.3	79	63

1 The figures in this column refer to the duration of entitlement for a 40-year old unemployed individuals who receives unemployment benefit for the second time. The data refer to 2002 for all countries except for Greece for which they refer to 2006. More details on certain countries can be found in OECD (2002).

2 This is the time period that corresponds to the minimum contribution period presented in the first column.

3 For Greece the initial phase covers the period when regular benefits are paid (i.e. up to one year). The replacement rates in columns 4 and 5 have been calculated as net (of taxes) and include all allowances (e.g. family, housing etc). The data refer to an unemployed individual with a four-member family who while in employment earned the average production worker wage while the spouse earns 2/3 of that wage.

Sources: OECD (2002), Table 4.10, p. 219 and OECD, Tax-Benefit Models ([www.oecd.org/els/social/workincentives](http://www.oecd.org/els/social/workincentives)).

particular, while for those who have only a few years of work experience there is reciprocity in the system (since the length of time over which the unemployment benefit is paid is equal to the minimum period over which contributions must be paid - see column 3 of Table A4), the replacement rate is in general lower than in most OECD countries. Table A4 presents the replacement rate for an unemployed indi-

vidual with a four-member family with previous income equal to that of the average production worker while the spouse earns 2/3 of that. As it appears from the Table the replacement rate is the lowest among all OECD members both regarding regular unemployment benefit (column 4) and regarding the benefits to long-term unemployed (column 5).



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