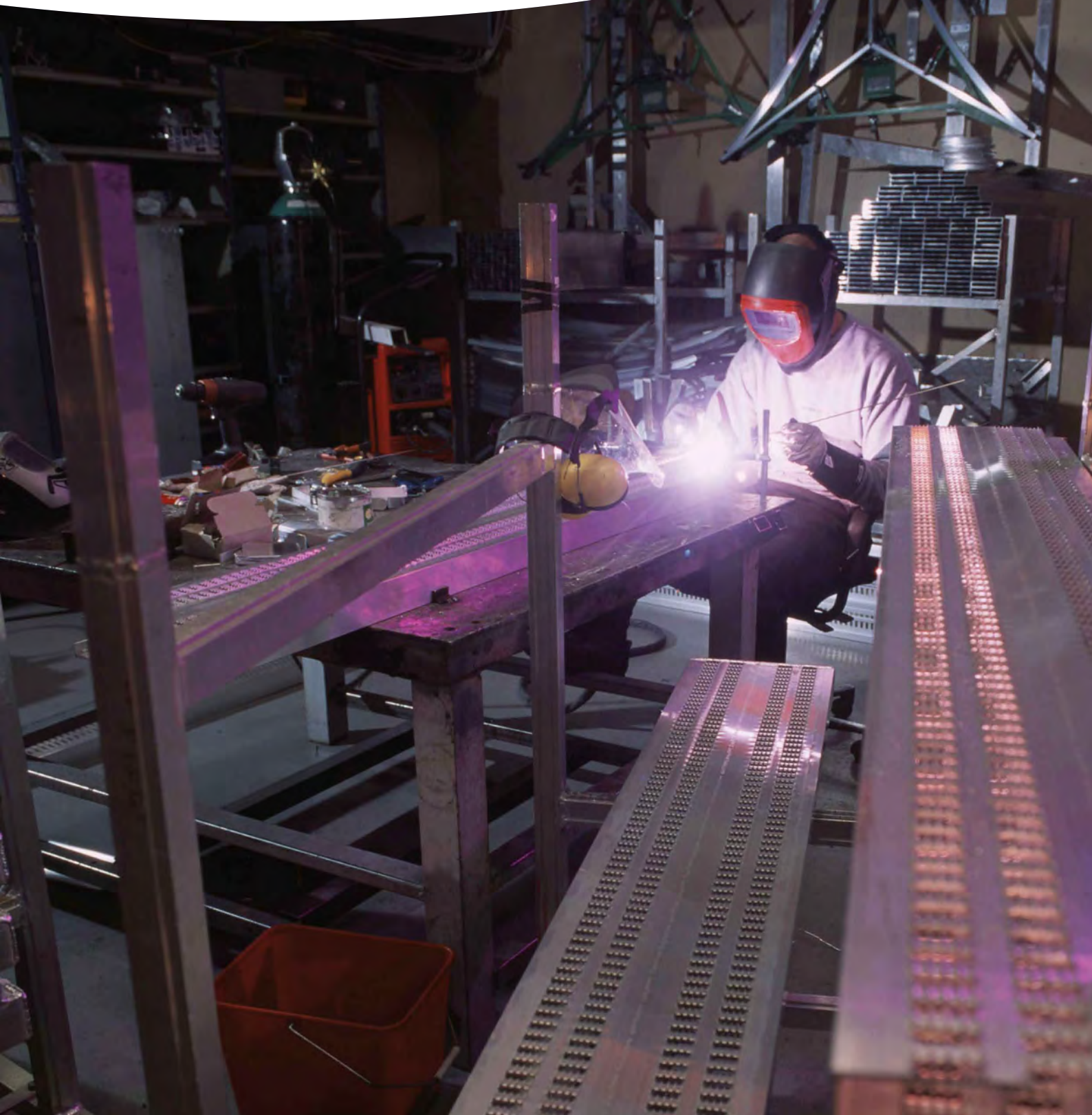# Labour market

3

Introduction

This chapter looks at two very different aspects of the regional labour market. The first part describes the recent changes in employment and unemployment at regional level, and carries out a cluster analysis based on the predominant economic sectors, using the latest results from the Labour Force Survey.

The second part presents some of the results of the Structure of Earnings Survey, for which the most recent reference year available is 2006. This part will focus mainly on hourly earnings, annual earnings and bonuses.

Regional sector specialisation

A period of several years of economic growth and job creation has been followed by the biggest economic downturn since World War II. The EU has responded by adopting the European economic recovery plan, along with other measures to moderate the effects of this unprecedented crisis. Securing existing jobs and putting people back into employment as quickly as possible was and remains a priority.

Although all of the measures taken have helped to reduce the negative impact of this crisis, they have been unable to halt job losses or rising unemployment entirely. At the time of writing, unemployment is currently 10 % in the euro area and only slightly lower in the EU-27.

Regions now have to face the huge challenge of picking themselves up and getting back on track, which will certainly present them with a whole range of difficulties. Regions have been affected in different ways and they display different characteristics.

Understanding that some regions are in fact different from others, and that they are therefore likely to be confronted by different challenges, is a first step towards becoming more policy efficient, by taking measures that are tailored to the different needs.

This text takes a closer look at employment and unemployment. Regions will be clustered into different groups according to the main sector of activity and we will show that taking this factor into account is a useful and meaningful way to complement the analysis of the regional labour market.

Brief overview of 2008

The EU-27 employment rate rose from an average of 65.4 % in 2007 to 65.9 % in 2008. The Lisbon employment target is set to 70 %, to be achieved in 2010. The full impact of the economic recession on employment levels has not yet been reflected in 2008 because labour markets usually take some time to respond to economic recession. In addition, regional labour market data are based on yearly averages and the recent crisis did not begin until late 2008.

Map 3.1 shows the regional employment rates for the 15–64 age group, by NUTS 2 regions in 2008.

In 2008, only 94 of the 271 NUTS 2 regions in the EU-27 had already achieved the Lisbon target for 2010, while 50 regions were still 10 percentage points below the overall employment target.

Relatively low employment rates were recorded in the south of Spain, the south of Italy, Greece, Poland, Slovakia, Hungary, Bulgaria and Romania, whereas in the northern EU regions, including regions in the Netherlands, the United Kingdom, Denmark, Sweden and Finland recorded relatively high employment rates.

A significant margin of 40.0 percentage points separated the lowest and highest regional employment rates in 2008, with Campania (Italy) on 42.5 % at one extreme, and Åland (Finland) on 82.5 % at the other.
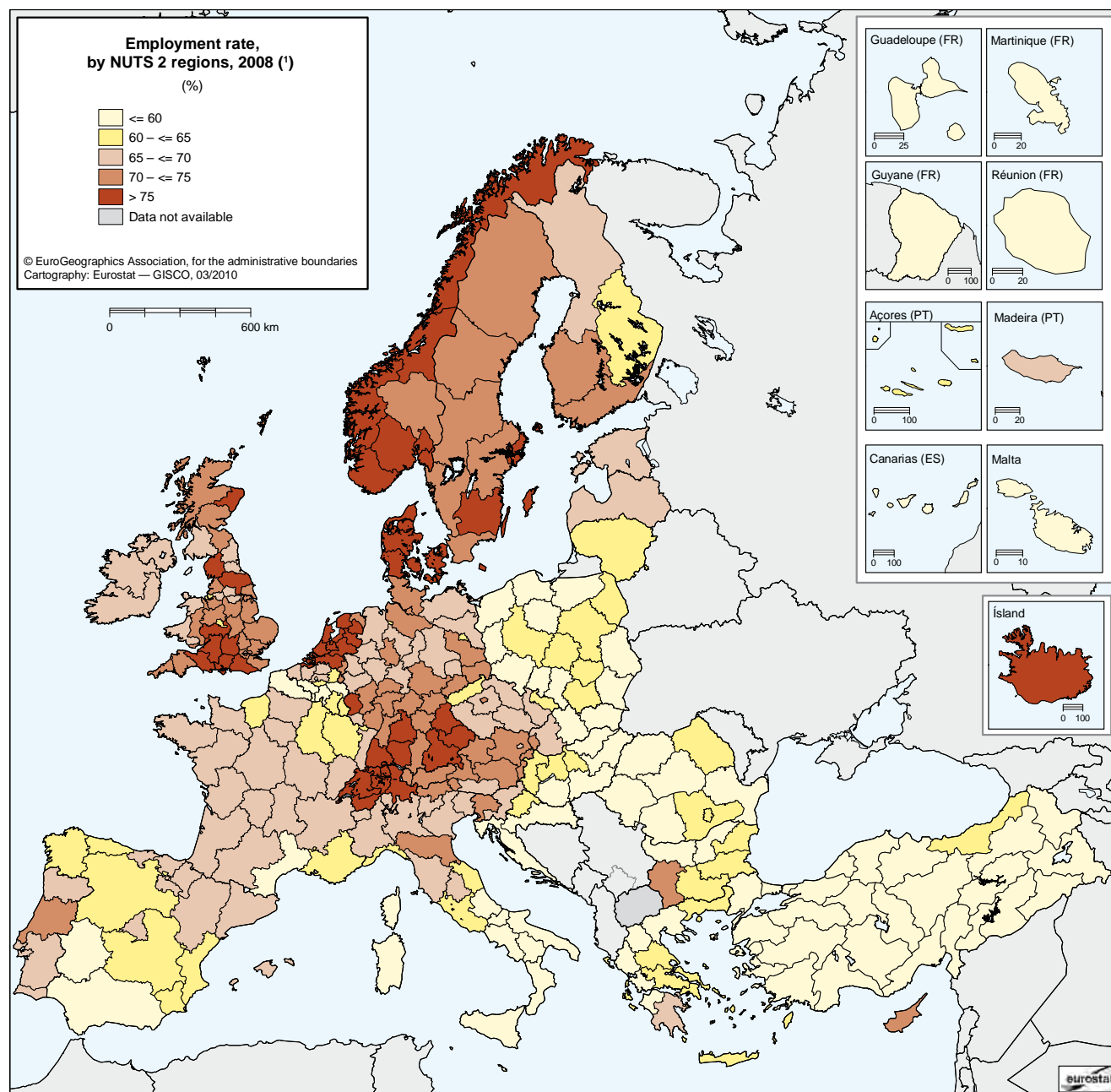
The degrees of rise or fall in employment levels between 2007 and 2008 in most of the regions more or less reflected those in the respective country as a whole. However, there are some exceptions. For example, in Spain, where the employment rate fell by 1.3 percentage points, there were regions where employment showed relatively bigger falls, such as Canarias which fell 4.8 percentage points, while other regions, such as Ciudad Autónoma de Ceuta or Principado de Asturias, recorded significant increases of 5.1 and 2.5 percentage points respectively.

In the EFTA regions, all employment rates were above 70 %. In the candidate countries, employment rates ranged from 27.1 % in Mardin (Turkey) to 62.4 % in Sjeverozapadna Hrvatska (Croatia).

The female employment rate in the EU-27 rose in 2008 by 0.7 percentage points to 59.0 %. More

Map 3.1: Employment rate, by NUTS 2 regions, 2008 ([1])
(%)

Employment rate,
by NUTS 2 regions, 2008 ([1])
(%)

- <= 60
- 60 – <= 65
- 65 – <= 70
- 70 – <= 75
- > 75
- Data not available

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Cartography: Eurostat — GISCO, 03/2010

0   600 km

Guadeloupe (FR)   Martinique (FR)

0   25   0   20

Guyane (FR)   Réunion (FR)

0   100   0   20

Açores (PT)   Madeira (PT)

0   100   0   20

Canarias (ES)   Malta

0   100   0   10

Ísland

0   100

([1]) Croatia, Iceland and Switzerland, 2007.

Source: Eurostat (tgs00007).

than half of the regions have already achieved the Lisbon target for female employment, which is set at 60 %.

There is a strong correlation between the level of female employment and the level of overall employment, with the result that the geographical distribution of female employment is similar to that shown in Map 3.1. Regional female employment rates covered a wide range in 2008, from a minimum of 27.3 % in Campania (Italy) to a maximum of 78.6 % in Åland (Finland).

Regional male employment rates were higher than female employment rates in all EU regions. Over the last five years, female employment rates have been rising faster than male employment rates, thereby closing the gender gap. However, in 2008 this gap was still 13.7 percentage points.

Older workers, i.e. employed persons aged from 55 to 64, had an employment rate in 2008 of 45.6 %, which is 1 percentage point higher than in 2007. The Lisbon employment target for this age group was set at 50 %, and 113 regions have already achieved this target.

Relatively higher old-age employment rates were to be found mainly in northern regions — the United Kingdom, the Netherlands and Germany. At a regional level, employment rates of older workers ranged from a minimum of 21.9 % in Dél-Dunántúl (Hungary) to a maximum of 75.9 % in Åland (Finland).

Map 3.2 also shows that levels of old-age employment are relatively similar within each country. The levels of old-age employment at regional level are strongly influenced by the national level, which may be due to the different legislation governing retirement age in the various Member States. Romania and Slovakia differ somewhat from the main trend, owing to the substantial regional differences within these countries. The difference between the highest and lowest old-age employment rates was 26.2 percentage points in Slovakia and 24.3 percentage points in Romania.

Unemployment rates continued to fall in 2008, but to a lesser extent than in 2007. Due to the economic crisis in late 2008 and the customary time lag between economic contraction and the rise in unemployment, the impact on the yearly averages is still not significant. Consequently, unemployment levels are expected to worsen

next year. However, some regions have already experienced significant rises in unemployment. Map 3.3 shows the distribution of unemployment rates by NUTS 2 regions in 2008.

The regional unemployment rates in 2008 range from 1.9 % in Praha (Czech Republic) to 24.8 % in Réunion (France). The highest unemployment rates were recorded in the French overseas departments, the south of Spain and the region of Canarias and Spain's two autonomous cities, Ceuta and Melilla, plus the regions of Berlin and Brussels (Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest), all of which had unemployment rates above 15 %. The lowest unemployment rates were to be found mainly in the Netherlands, Austria and the Praha region of the Czech Republic.

Most of the Spanish regions recorded big changes in their unemployment rate. The region of Canarias — an outermost region — recorded the highest annual change in unemployment, with an increase of 7 percentage points in a single year. Significant increases were also recorded in the Border, Midland and Western regions (Ireland) and in Sardegna (Italy).

In Germany, there seem to be three distinct levels of unemployment: it is highest in the north-east regions, at an intermediate level in the north-west regions and relatively low in the southern regions. Italy showed a marked difference between north and south.
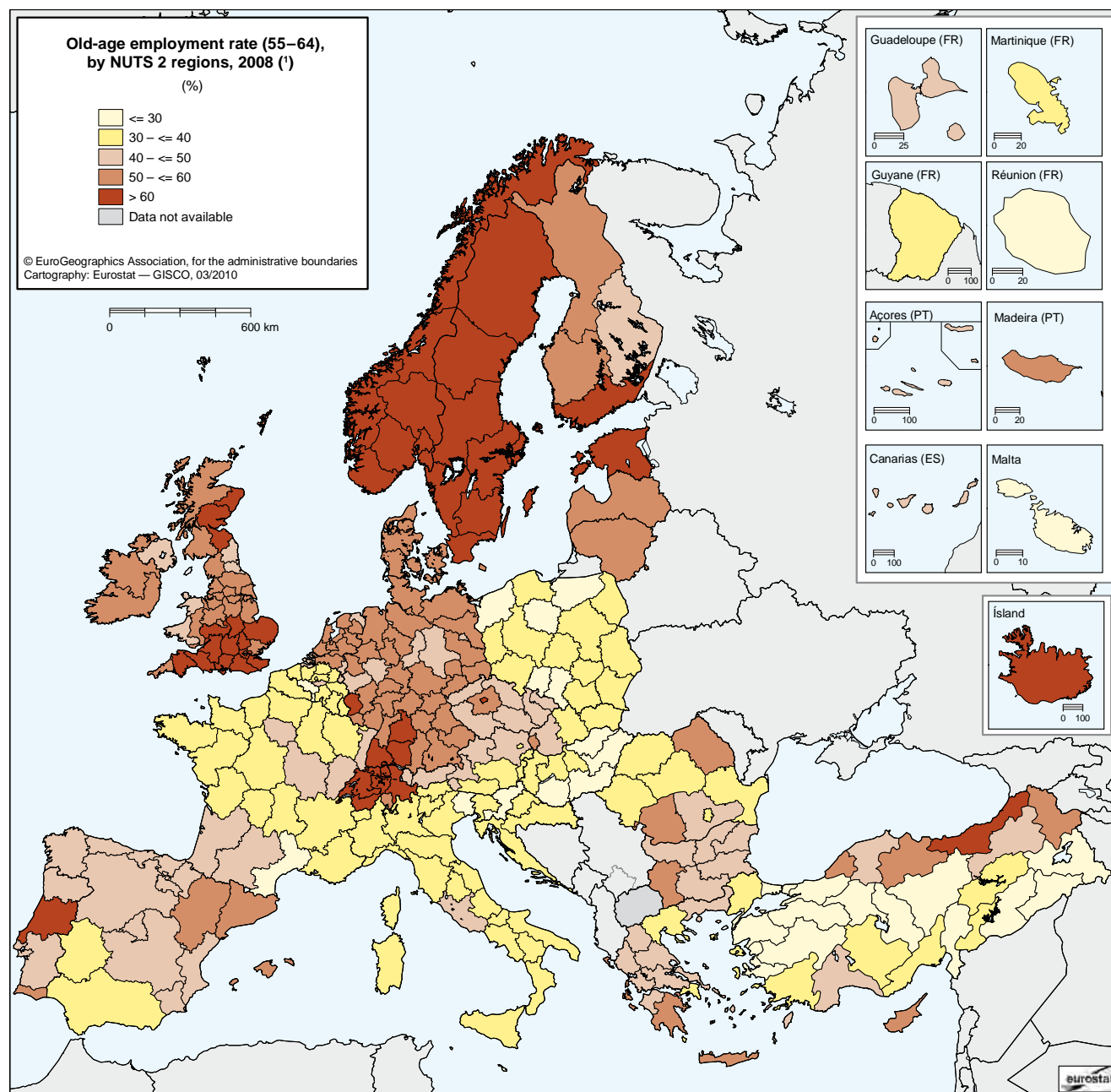
The share of long-term unemployment stood at 37.2 %, which was a significant fall of 5.8 percentage points from the 2007 level.

In the EFTA regions, all unemployment rates were below 5 %. In the candidate countries, unemployment rates ranged from 4.9 % in Kastamonu (Turkey) to 15.8 % in Mardin (also in Turkey).

To close this very short review of regional labour market performance in 2008, a brief word on the cohesion of labour markets is called for. Although the dispersion of employment and unemployment rates — which measures the regional differences in employment and unemployment levels — has been decreasing over time (Tables 3.1 and 3.2), the impact of the economic crisis on labour market cohesion has yet to make itself felt. It is possible that cohesion will not be too seriously affected, since the impact of the crisis is generalised

Map 3.2: Old-age employment rate (55–64), by NUTS 2 regions, 2008 ([1])
(%)

Old-age employment rate (55–64),
by NUTS 2 regions, 2008 ([1])
(%)

- <= 30
- 30 – <= 40
- 40 – <= 50
- 50 – <= 60
- > 60
- Data not available

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Cartography: Eurostat — GISCO, 03/2010

Guadeloupe (FR)
Martinique (FR)
Guyane (FR)
Réunion (FR)
Açores (PT)
Madeira (PT)
Canarias (ES)
Malta
Ísland

([1]) Croatia, Iceland and Switzerland, 2007.

Source: Eurostat (tgs00054).

Map 3.3: Unemployment rate, by NUTS 2 regions, 2008 (¹)
(%)

Unemployment rate, by NUTS 2 regions, 2008 (¹)
(%)

- <= 4.0
- 4.0 – <= 6.5
- 6.5 – <= 10.0
- > 10.0
- Data not available

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Cartography: Eurostat — GISCO, 03/2010
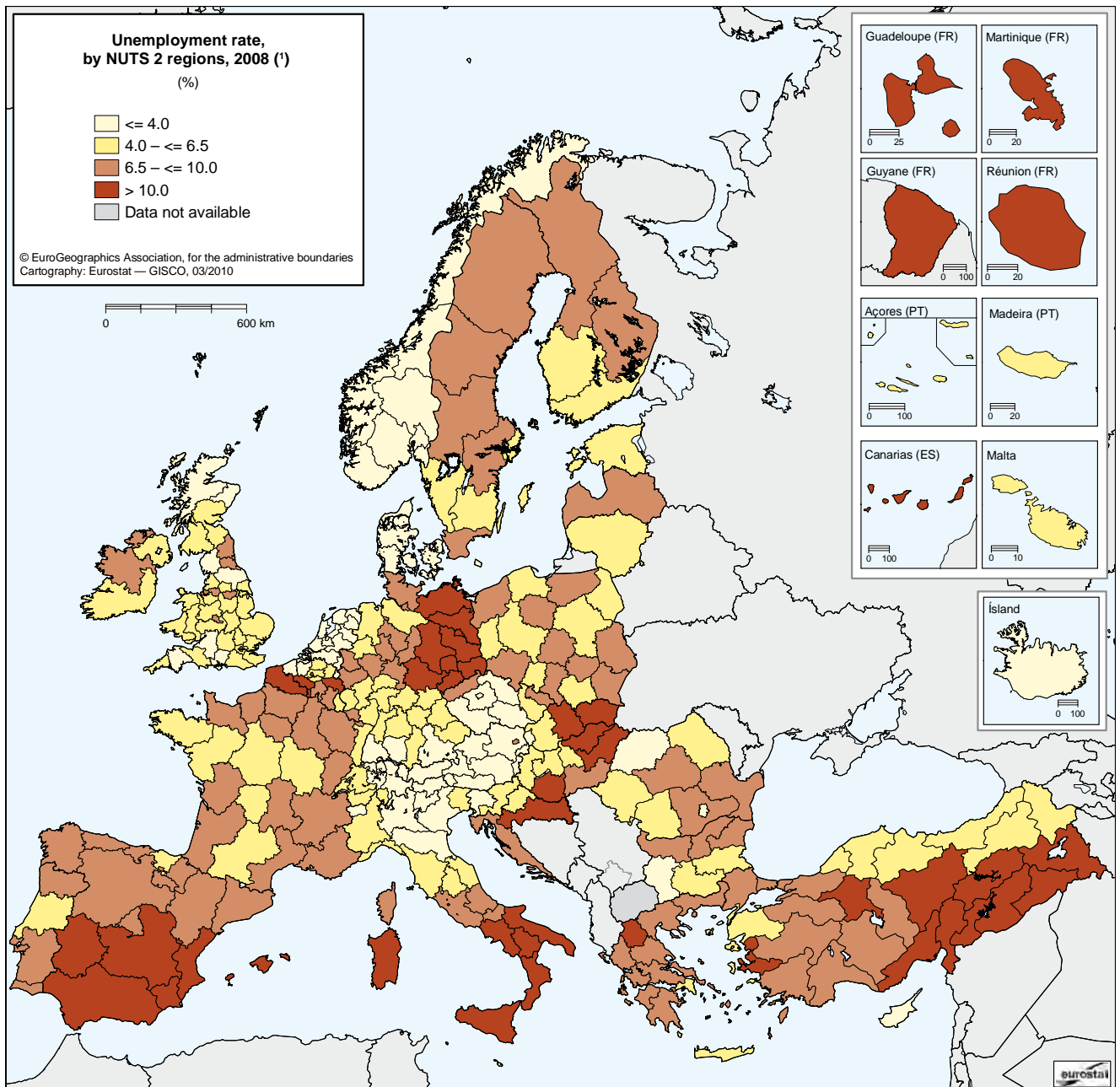
(¹) Croatia, Iceland and Switzerland, 2007.

Source: Eurostat (tgs00010).

Table 3.1: Dispersion of regional employment rates by NUTS 2 regions ([1])
(coefficient of variation)

	Total			Male			Female		
	1999	2003	2008	1999	2003	2008	1999	2003	2008
EU-27	12.9	12.9	11.3	9.1	10.7	8.6	20.4	18.5	15.9
Belgium	8.0	7.7	8.4	6.6	6.9	6.6	10.5	9.1	10.5
Bulgaria	:	6.6	7.2	:	6.0	6.3	:	8.1	8.9
Czech Republic	5.6	5.8	4.0	4.3	4.9	2.9	7.8	7.4	5.7
Denmark	:	:	1.6	:	:	1.1	:	:	2.7
Germany	5.4	5.9	4.8	5.3	6.9	5.4	6.9	5.7	5.2
Estonia	—	—	—	—	—	—	—	—	—
Ireland	—	—	—	—	—	—	—	—	—
Greece	5.2	3.2	3.6	3.4	2.1	2.3	8.9	6.5	7.8
Spain	10.8	9.0	8.2	7.8	6.1	5.6	17.6	14.5	12.3
France	7.1	7.2	6.8	5.0	6.1	5.6	10.0	9.0	8.4
Italy	17.4	17.0	17.0	9.9	9.1	10.4	30.2	29.7	26.7
Cyprus	—	—	—	—	—	—	—	—	—
Latvia	—	—	—	—	—	—	—	—	—
Lithuania	—	—	—	—	—	—	—	—	—
Luxembourg	—	—	—	—	—	—	—	—	—
Hungary	9.1	8.5	10.0	8.8	8.1	9.9	10.0	9.2	10.4
Malta	—	—	—	—	—	—	—	—	—
Netherlands	2.3	2.3	2.3	2.5	2.0	2.3	3.4	3.2	2.5
Austria	2.3	3.0	3.8	2.2	3.6	4.1	4.2	3.8	3.6
Poland	4.8	7.2	5.1	4.1	6.4	4.6	6.5	8.7	6.6
Portugal	3.6	3.9	3.3	3.0	3.2	3.2	7.3	6.3	5.2
Romania	4.2	3.5	4.3	3.3	2.6	4.8	5.8	6.1	6.8
Slovenia	—	—	—	—	—	—	—	—	—
Slovakia	8.1	7.6	8.1	6.9	6.7	5.7	10.1	9.0	11.5
Finland	6.7	6.1	5.2	6.5	5.7	5.7	7.4	6.7	4.8
Sweden	4.8	4.3	2.7	5.2	4.1	2.5	5.6	4.8	3.1
United Kingdom	7.5	6.1	5.6	7.8	5.8	5.5	7.3	6.7	6.2
Croatia	:	:	7.5	:	:	4.8	:	:	11.4
Turkey	:	:	16.0	:	:	7.8	:	:	39.5
Norway	2.4	1.6	2.3	1.9	1.8	2.1	3.0	2.3	3.1
Switzerland	:	3.3	3.5	:	2.5	2.7	:	4.4	4.4

([1]) Dispersion of regional employment rates for the age group 15–64 at NUTS 2 level.
Croatia and Switzerland, 2007.

Source: Eurostat (tsisc050).

Table 3.2: Dispersion of regional unemployment rates by NUTS 2 regions ([1])
(coefficient of variation)

	Total			Male			Female		
	1999	2003	2008	1999	2003	2008	1999	2003	2008
EU-27	54.6	58.7	47.4	51.6	59.6	48.0	66.0	64.4	51.9
Belgium	51.7	43.5	59.9	56.9	48.0	60.4	49.6	39.2	60.3
Bulgaria	:	22.0	38.6	:	17.0	37.6	:	28.8	41.9
Czech Republic	33.1	41.9	44.2	34.6	44.6	47.9	33.0	40.5	44.0
Denmark	:	:	5.4	:	:	14.8	:	:	6.1
Germany	42.0	45.8	45.0	40.7	44.7	48.5	46.2	49.2	42.4
Estonia	—	—	—	—	—	—	—	—	—
Ireland	—	—	—	—	—	—	—	—	—
Greece	13.4	15.9	18.5	15.8	16.1	15.6	15.5	18.3	24.4
Spain	35.9	32.3	33.3	41.7	33.7	32.6	33.6	33.9	37.0
France	24.1	37.1	37.4	28.0	42.9	38.0	23.9	34.6	39.6
Italy	68.9	78.0	55.3	77.3	83.2	60.9	66.8	79.1	54.1
Cyprus	—	—	—	—	—	—	—	—	—
Latvia	—	—	—	—	—	—	—	—	—
Lithuania	—	—	—	—	—	—	—	—	—
Luxembourg	—	—	—	—	—	—	—	—	—
Hungary	34.8	32.6	42.5	36.2	35.0	49.5	32.7	30.3	35.3
Malta	—	—	—	—	—	—	—	—	—
Netherlands	30.7	10.7	16.1	43.3	10.8	18.3	33.5	13.3	16.8
Austria	28.5	42.3	39.6	42.9	52.0	48.9	14.4	32.3	31.0
Poland	22.5	15.8	17.9	24.1	15.9	22.2	23.4	17.2	16.1
Portugal	31.0	29.6	18.2	37.9	33.7	25.2	32.6	27.9	16.1
Romania	13.0	13.9	28.3	13.4	13.7	25.6	14.2	15.6	34.1
Slovenia	—	—	—	—	—	—	—	—	—
Slovakia	27.4	26.7	40.7	30.1	28.5	45.4	24.7	24.8	38.1
Finland	23.8	22.0	21.6	25.2	20.4	23.2	25.6	24.9	20.7
Sweden	29.6	15.8	13.4	31.8	17.6	12.4	33.1	16.0	17.7
United Kingdom	33.9	30.5	28.8	39.3	34.2	29.7	29.1	27.5	30.5
Croatia	:	:	35.2	:	:	21.0	:	:	49.6
Turkey	:	:	28.6	:	:	29.9	:	:	40.4
Norway	20.5	6.7	17.4	22.0	11.7	18.9	32.2	9.0	20.8
Switzerland	:	16.3	21.7	:	22.9	25.6	:	12.1	20.2

([1]) Dispersion of regional unemployment rates for the age group 15–74 at NUTS 2 level.
Croatia and Switzerland, 2007.

Source: Eurostat (reg_lmdur).

and also because it is still the country's actual performance that mainly determines the levels of employment and unemployment. Ultimately, however, the outcome will depend on the ability of the regions to respond to the crisis and on their ability to take advantage, at a local level, of the various measures already put in place to curb the economic downturn.

Regional sector specialisation

Regional sector specialisation is broadly understood to be the extent to which particular economic sectors attract larger shares of employment or output in one region as compared with another.

The sectoral composition of the regional economy affects employment patterns in several ways. For example, sectors have different rates of growth in production and demand, different employment intensities, different regulations and policies, different capital intensity or different patterns of technological change. All of these factors will influence employment in each sector differently.

Two regions belonging to the same country with similar macroeconomic conditions can have different employment patterns which can be partly explained by their degree of specialisation in the different sectors.

Regions have differing degrees of sector specialisation and, therefore, a comparison of regional labour markets which takes into account their sector composition can shed some light on the analysis.

In order to take into account the degree of sector specialisation, the first question to answer is about how this factor can be measured in a given region.

Several approaches are found in the literature, but probably the most widely used is the location quotient approach, which compares the local economy with a reference economy, in an attempt to identify specialisations in the former. The location quotient is defined as the ratio between the share of regional employment in one sector and the share of employment in that same sector in the reference economy.

The reference economy could be either the EU as a whole or the national economy of which that region is part. In this text, each region is compared with its respective country, since there are different levels of technology in the various Member States, which entail different employment intensities for the same sector in different countries. As such, comparing regions with the EU average would take precedence over the different levels of technology. This choice between EU economy and national economy inevitably gave rise to a new problem, namely that it is impossible to compute the location quotients for Member States with a single NUTS 2 region, like Luxembourg or Malta. Further on in the text, we will postulate a different approach to deal with these Member States.

The location quotient for a specific sector and a specific region is greater than 1.0 when employment in that sector tends to be over-represented in that region, and is therefore regarded as being specialised in that sector. If the location quotient is less than 1.0, local employment is less than is expected for that given sector. Therefore, that sector is not even meeting the local demands for the particular goods or services.

The underlying data used to cluster regions according the degree of specialisation are data on employment by economic activity, at NUTS levels 1 and 2 according to NACE Rev. 1.1. This is not the most recent version of NACE (the statistical classification of economic activities in the European Community), but since only three sectors were used (agriculture and fisheries, industry and services) there are no significant changes to the most recent version. In addition, longer time series are available in the old NACE classification at regional level.

The Labour Force Survey measures resident employment. For regions with high levels of commuters, i.e. employed persons who work in a different region from where they live, the location quotient based on resident employment may be quite different from the one obtained using domestic employment. Nevertheless, three things attenuate this difference in the analysis that is being carried out. First, there is, in general, a very high share of persons who work in the same NUTS 2 region as that in which they live. Second, only three sectors are taken into account (a more detailed analysis would be more exposed to the fact that resident employment is being used instead of domestic employment). Third, the purpose of the exercise is to create only a rough and approximate classification that should not be taken as a definitive indicator of sector specialisation.

Given the share of employed persons working in agriculture and fisheries, industry and services, location quotients for each of these sectors were computed for each NUTS 2 region.

Several model-based statistical clustering techniques were used and the number of clusters was chosen according to the Bayesian Information Criteria. Five clusters were identified as the best choice for this data set. Each of the five clusters was characterised according to its main characteristics and this classification has been used as the starting point for grouping the NUTS 2 regions in different clusters.

Another alternative approach was to look at each region's location quotients for agriculture, industry and services, and to decide on the minimum threshold at which a region was to be considered as specialised in a particular sector. The chosen threshold was 1.1, which means that if a region has, for example, a location quotient in agriculture of 1.1 or higher, it is labelled as being specialised in agriculture, since the relative share of employment in agriculture is at least 10 % higher than the country average. If that location quotient was less than 0.9, the region was considered as being under-represented in agriculture, while regions with location quotients between 0.9 and 1.1 were considered to be 'balanced'.

Since the most suitable number of clusters identified for this data set was five, regions have been classified into one of the following five categories:

- **specialised in services**: location quotient of services greater than 1.1 and location quotients of agriculture and industry below 0.9;
- **specialised in industry**: location quotient of industry greater than 1.1 and location quotients in agriculture and services below 1.1;
- **specialised in agriculture and industry**: location quotients of agriculture and industry greater than 1.1 and location quotient of services below 1.1;
- **specialised in agriculture**: location quotient of agriculture greater than 1.1 and location quotients of industry and services below 1.1;
- **balanced**: all the remaining regions, i.e. no location quotients on agriculture, industry or services below 1.1.

The classification described above bears some similarity to the classification obtained using the model-based clustering technique described above.

Since this latter approach for clustering gives similar results to the clusters obtained using the more complex model-based cluster techniques, the first approach was chosen. The classification rules are easy to understand and the results are similar to those obtained using more advanced cluster techniques.

Finally, countries with only one or two NUTS 2 regions, such as Luxembourg or Ireland, were included in the most similar cluster, i.e. the one which has the closest distance between the region's location quotients to be classified and the cluster average.

The classification resulting from this method is presented in Map 3.4.

As expected, the majority of the NUTS 2 regions in which the capital city of the respective country is located were classified as specialised in services. A closer examination of how sector specialisation is distributed geographically enables us to identify a well-defined distribution of sectors in some Member States. Hungary is divided in half, with the south-east regions specialising in agriculture and the north-west regions specialising in industry; the exception is the region of Közép-Magyarország, which includes the capital city of Budapest and specialises in services.

Italy also shows a well-defined distribution of sector specialisation, with the southern regions specialised in agriculture, and the northern regions mainly dominated by industry. Eastern Germany is basically dominated by agriculture, except for the region of Berlin, which is specialised in services; western Germany, on the other hand, is mainly dominated by services and industry.
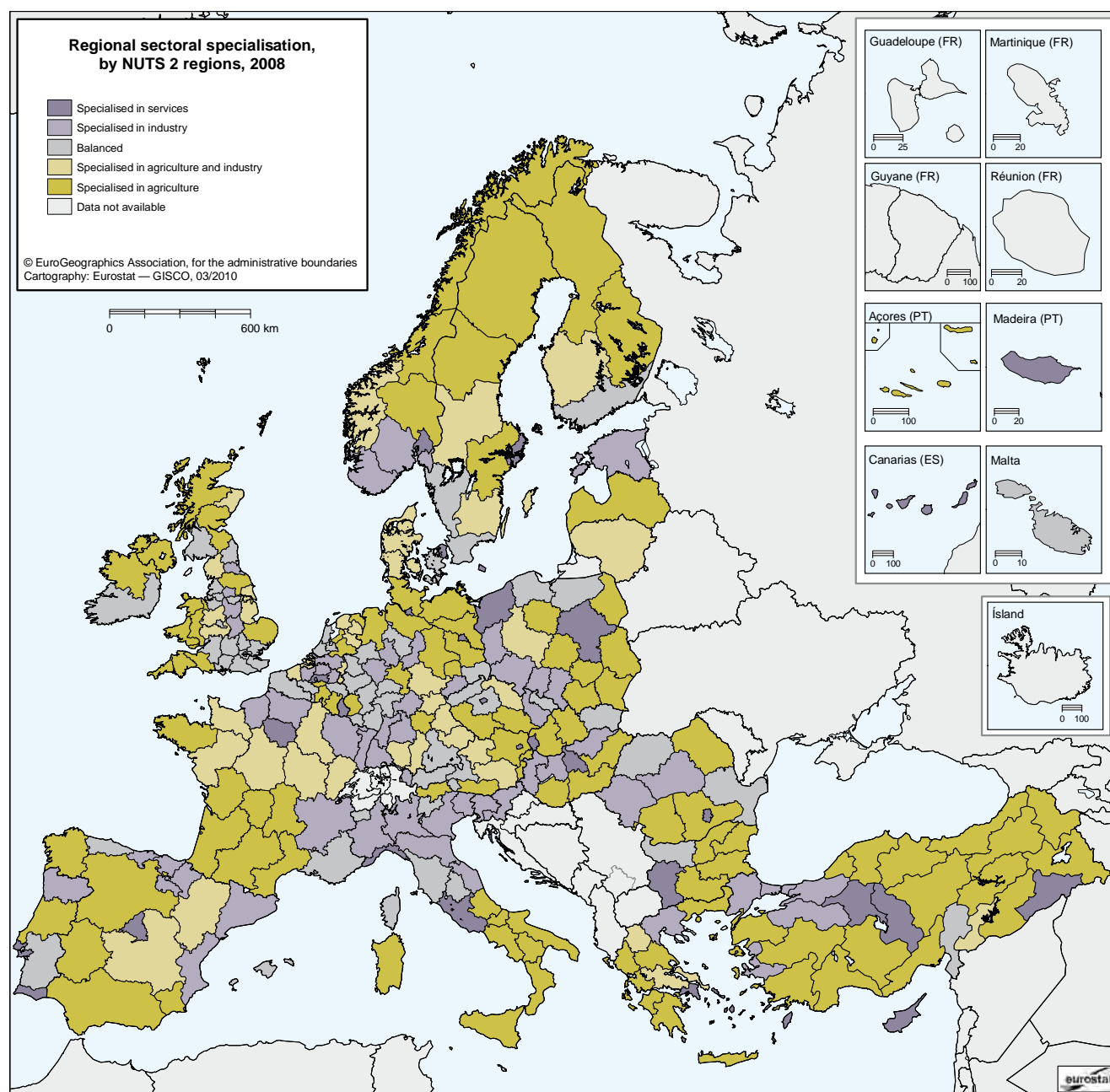
Clustering regions according to the type of sector specialisation can now be used in regional labour market analysis. As mentioned previously, the composition of the sector can have a significant influence on regional employment patterns, and taking this factor into account will provide an additional perspective for the analysis.

High education levels in the regional labour market

To demonstrate more clearly the usefulness and relevance of taking account of sector specialisation in regional labour markets, this section will look

Map 3.4: Regional sectoral specialisation by NUTS 2 regions, 2008 (^{1})
(%)

**Regional sectoral specialisation,
by NUTS 2 regions, 2008**

Specialised in services
Specialised in industry
Balanced
Specialised in agriculture and industry
Specialised in agriculture
Data not available

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Cartography: Eurostat — GISCO, 03/2010

0   600 km

Guadeloupe (FR)   Martinique (FR)
0   25   0   20

Guyane (FR)   Réunion (FR)
0   100   0   20

Açores (PT)   Madeira (PT)
0   100   0   20

Canarias (ES)   Malta
0   100   0   10

Ísland
0   100

eurostat

(^{1}) Sectors classified according to NACE Rev. 1.1; Bulgaria, Slovenia and Sweden, 2007.

Source: Eurostat (reg_lfe2enace).

more closely at the number of employed persons with higher education (ISCED 5 and 6) as a percentage of total employment.

As expected, higher levels of education tend to be located in regions that are specialised in services, while in regions specialised in agriculture the share of higher-educated employment tends to be below the EU average. Figure 3.1 shows the average share of higher education levels in employment according to the sector specialisation.

By ranking all regions according to the share of employed persons with higher education in the regional labour market, we can see that the top three regions in terms of higher shares of employed persons with higher education are Inner London (United Kingdom) with 55.0 %, Prov. Brabant Wallon (Belgium) with 51.0 % and Brussels (Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest, also in Belgium) with 49.1 %. The three regions having the lowest shares are Região Autónoma dos Açores (Portugal) with 8.0 %, Severozápad (Czech Republic) also with 8.0 % and Sud - Muntenia (Romania) with 9.5 %.

While two out of the top three regions are specialised in services (Inner London and Brussels), two out of the bottom three regions are specialised in agriculture (Região Autónoma dos Açores and Sud - Muntenia).

As Figure 3.1 shows, there are different levels of higher education depending on the sector of specialisation, and therefore the fact that Inner London is highly specialised in services also contributes to that high level.

To take into account the effect of both the sector of specialisation and the country in which the region is located, a linear model with two explanatory variables will be used ([1]). The linear model is significant and explains 70 % of the variability. This means that a large amount of the information available concerning the employment of persons with a higher level of education in the regional labour markets can be explained by reference to the sector of specialisation and the country to which a region belongs. In other words, it is possible to make a fair estimate of the share of higher education in one region simply by knowing that country's share of higher education and the sector(s) in which that region is specialised.

Having a closer look at the difference between the share of higher education in employment and

the estimate based on the country's share and the sector in which that region is specialised is to put any comparison among different regions into perspective, since the influences of sector and country have been removed from the analysis. In short, this approach treats the country and sector influences separately and focuses on other regional aspects.

Table 3.3 shows the top 10 and bottom 10 regions in absolute terms and after subtracting the effect of country and sector of specialisation.

In absolute terms, Região Autónoma dos Açores (Portugal) has the lowest share of employed persons with higher education in the EU. However, if we take into consideration the generally low share of persons with a high level of education that is characteristic of the Portuguese labour market (the lowest in the EU) and also the fact that this region specialises in agriculture, which tends to have lower shares of people with higher education, a different scenario is revealed. If we abstract the country and sector effects on specialisation, it is the Greek region of Notio Aigaio which now ranks the lowest. The figure of 14.8 % of employed persons with a high level of education in that region stands in marked contrast to the country's average of 25.8 % and also to the 30.3 % of all EU regions that are specialised in services.

The approach adopted in this section shows that by taking regional sector specialisation into account we can gain a different view of employment patterns. Its purpose is not to substitute or lower the absolute values published, but rather to show that there is in fact a lot of information that can be extracted from the regional labour market data available, thus allowing a more thorough regional analysis to be performed.

Conclusion

The results presented in the first part of this chapter show that in 2008 we were still seeing rising employment and falling unemployment, but to a lesser extent than in previous years. Since the labour market began to be affected by the economic crisis in late 2008, the annual averages are still in positive territory.

The regions' success in dealing with the crisis will determine the degree of cohesion of the regional labour market in the future. The dispersion of employment and unemployment rates has already

([1]) See methodological notes for details.

3

Figure 3.1: Employed persons with higher education, as a percentage of total employment, by cluster, EU-27, 2008 (¹)
(ISCED levels 5 and 6)

—— **EU-27 average**

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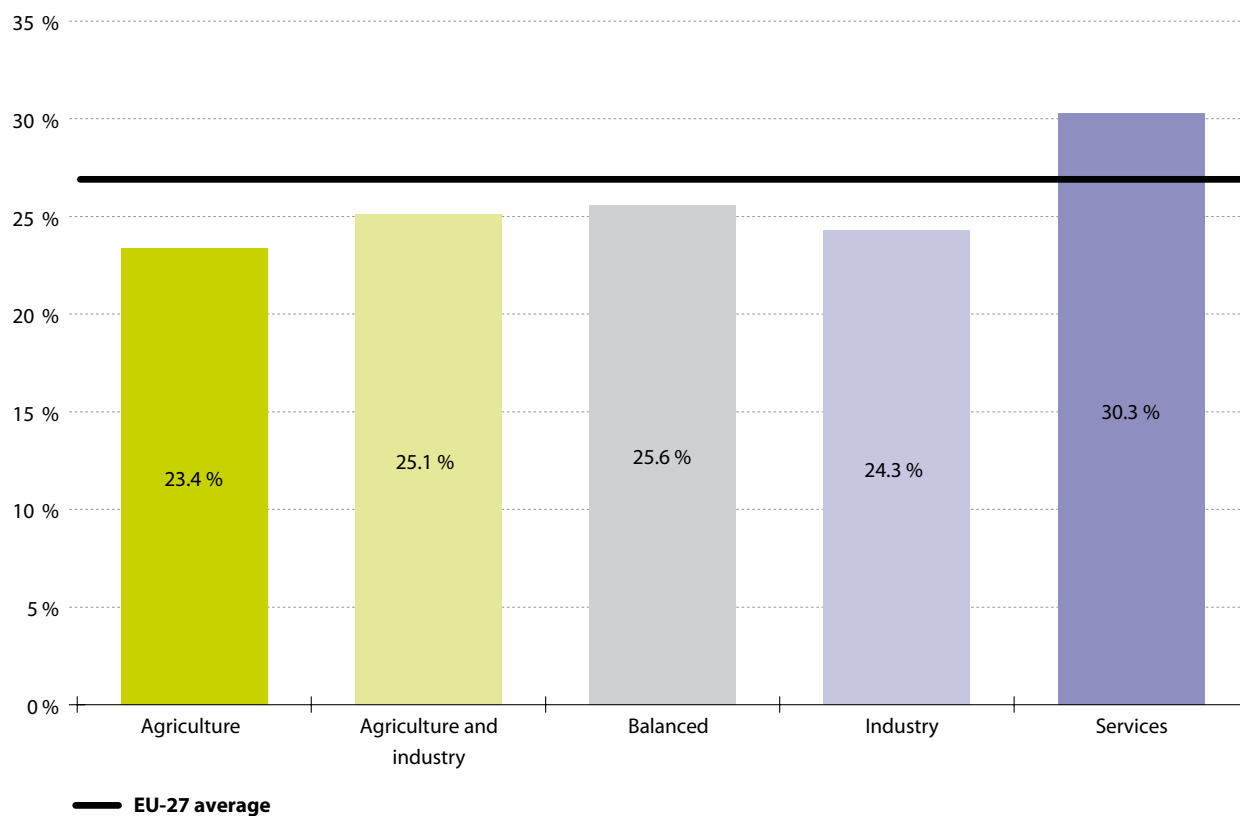
(¹) Bulgaria, Slovenia and Sweden, 2007.

Source: Eurostat (reg_lfe2enace and reg_lfe2eedu).

Table 3.3: Top 10 and bottom 10 shares of higher education in employment

Top 10 and bottom 10			Top 10 and bottom 10, taking into account country and sectoral specialisation		
Ranking	Share of higher education in employment	Sector of specialisation	Ranking	Difference to country average	Difference to cluster average
Inner London (UKI1)	55.0	Services	Inner London (UKI1)	22.5	23.5
Prov. Brabant Wallon (BE31)	51.0	Agriculture	País Vasco (ES21)	16.4	23.0
Région de Bruxelles-Capitale/ Brussels Hoofdstedelijk Gewest (BE10)	49.1	Services	Prov. Brabant Wallon (BE31)	14.5	26.8
País Vasco (ES21)	48.1	Industry	Bucureşti - Ilfov (RO32)	18.9	1.7
Prov. Vlaams-Brabant (BE24)	45.2	Services	Utrecht (NL31)	10.7	14.7
Comunidad de Madrid (ES30)	41.8	Services	Leipzig (DED3)	9.0	9.9
Île de France (FR10)	41.8	Services	Dresden (DED2)	9.1	7.8
Hovedstaden (DK01)	41.6	Services	Praha (CZ01)	17.0	0.8
Utrecht (NL31)	41.1	Balanced	North Eastern Scotland (UKM5)	5.4	12.2
Eastern Scotland (UKM2)	40.7	Agriculture	Eastern Scotland (UKM2)	8.2	16.5
Norte (PT11)	12.7	Industry	Haute-Normandie (FR23)	-8.3	-3.2
Severovýchod (CZ05)	12.5	Agriculture and industry	Canarias (ES70)	-3.7	-3.5
Algarve (PT15)	12.5	Services	Ciudad Autónoma de Ceuta (ES63)	-4.4	-4.2
Nord-Est (RO21)	11.3	Agriculture	Illes Balears (ES53)	-9.5	-4.2
Sud-Est (RO22)	11.3	Balanced	Ionia Nisia (GR22)	-11.0	-9.4
Provincia Autonoma Bolzano/ Bozen (ITD1)	11.0	Agriculture	Região Autónoma da Madeira (PT30)	-1.8	-18.5
Centro (P) (PT16)	10.7	Agriculture	Algarve (PT15)	-2.3	-19.0
Sud - Muntenia (RO31)	9.5	Agriculture	Åland (FI20)	-7.2	-3.4
Severozápad (CZ04)	8.0	Balanced	Corse (FR83)	-15.2	-11.4
Região Autónoma dos Açores (PT20)	8.0	Agriculture	Notio Aigaio (GR42)	-10.9	-16.6

Source: Eurostat (reg_lfe2eedu).

started to show small increases, breaking with the pattern of the last six years. In the years to come we are likely to see a deterioration not just in the labour markets themselves, but possibly also in regional labour market cohesion.

This chapter also shows that taking into account the type of region in terms of its main sector of activity gives a different and complementary view of the regional labour market. The share of employment of persons with higher education has been analysed as a way to measure the importance of the region's own characteristics. The number of highly educated people in a region is to a very large extent determined by the country in which that region is situated, since all regions in that country are likely to share the same education system and facilities. On the other hand, a region that specialises in agriculture is less likely to have a large share of employed people with higher education, compared to a region that is specialised in services. Therefore, it is important to take these two factors into account when making regional comparisons.

The exercise of clustering regions according to their sector of specialisation is an additional tool for producing better and more detailed regional analyses. Although it has certain intrinsic limitations due to the level of detail of the data available, clustering definitely helps to increase our knowledge of regional labour markets.

Structure of Earnings Survey

This second part of the labour market chapter deals with the Structure of Earnings Survey (SES), one of the cornerstones of the European system of structural surveys in the business sector. This sample survey, conducted every four years, delivers anonymised microdata linking information on businesses with the individual characteristics of their employees.

Although Eurostat has been collecting regional data in this domain at NUTS 1 level for several years, most online tables break down the data only by country. A systematic breakdown by region of the already-detailed data would result in huge tables with a high percentage of cells marked as confidential for reasons of statistical secrecy.

Wages and salaries are a major part of the production costs for goods and services and largely correspond to the costs borne by the employer for employing staff. From the employee's point

of view they are usually the main component of disposable income. The amount of the earnings depends not only on business-related factors (such as the branch of the economy, the size of the business and the existence of a collective agreement) but also on employee-related characteristics (gender, age, level of education, occupational group, length of service and working hours). The cost of living in a country or region is a further factor influencing the actual amount of earnings. Regional hourly and annual earnings are set out below in euros. In the online database the data are available in national currency; they are also given in purchasing-power standards, but only at national level.
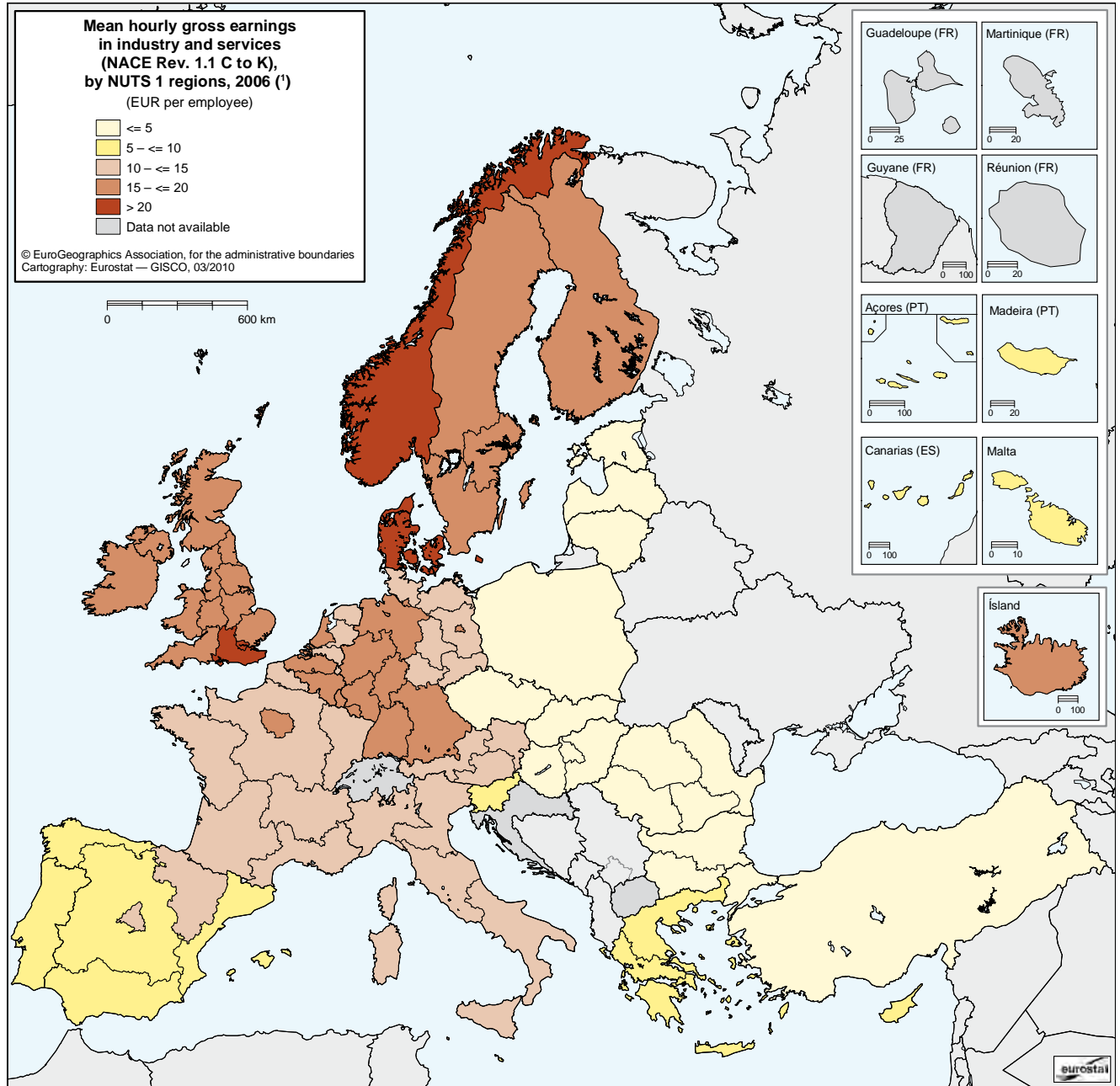
In 2006 the average gross hourly earnings across the EU-27 in businesses with 10 or more employees in manufacturing and market services (i.e. Sections C to K of NACE Rev. 1.1) amounted to EUR 9.90 per hour worked. There are considerable differences between the regions of Europe, however.

Gross hourly earnings

Map 3.5 clearly shows the substantial regional differences in earnings per hour worked in industry. At EUR 28.70 per hour worked, the London region shows the highest average earnings in the EU. They are 28 times the average earnings in Severna I Iztochna (BG), at EUR 1.00 the region with the lowest earnings per hour worked. The figures for the 10 regions with the highest average earnings per hour worked are as follows: Norway at EUR 23.90, Denmark at EUR 23.10, the South-East region (UK) at EUR 21.00 and Île de France (FR) at EUR 19.70, followed by the Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (BE) at EUR 19.50, Hamburg (DE) at EUR 19.1, Hessen (DE) at EUR 19.00, East of England (UK) at EUR 18.90, and lastly Ireland and Luxembourg at EUR 18.80 and 18.60 respectively per hour worked.

The lowest average gross earnings, averaging less than EUR 4 per hour worked, are found in the following 10 regions or countries: Dunántúl (HU), Turkey, Alföld és Észak (HU), Lithuania, Latvia, all four major regions of Romania and the Bulgarian regions of Yugozapadna I Yuzhna Tsentralna and Severna I Iztochna. These are regions of Member States which recently joined the European Union and of one candidate country.

Map 3.5: Mean hourly gross earnings in industry and services (NACE Rev. 1.1 C to K), by NUTS 1 regions, 2006 (¹)
(EUR per employee)

Mean hourly gross earnings
in industry and services
(NACE Rev. 1.1 C to K),
by NUTS 1 regions, 2006 (¹)
(EUR per employee)

- <= 5
- 5 – <= 10
- 10 – <= 15
- 15 – <= 20
- > 20
- Data not available

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Cartography: Eurostat — GISCO, 03/2010

(¹) Poland and Turkey, national level; Iceland, only NACE sections D, F, G, I and J; départements d'outre-mer (FR9), not available.

Source: Eurostat (earn_ses06_hr).

Gross annual earnings

In 2006 the average gross annual earnings across the EU-27 amounted to EUR 29 400, but there were significant regional differences. Map 3.6 shows the regional differences in average gross annual earnings per employee in manufacturing and market services within the European Union. It should be noted that gross annual earnings include extraordinary payments, which are not included in the hourly earnings described above. Annual earnings include, for example, 13th and 14th month wages and salaries, productivity bonuses, profit shares and payments in kind. The regions or countries with the highest hourly earnings, in descending order, are London, Iceland, Norway and Région de Bruxelles-Capitale/ Brussels Hoofdstedelijk Gewest (BE), whereas those with the highest annual earnings are London, Norway, Denmark and the South East (UK). A comparison of Maps 3.5 and 3.6 clearly illustrates this difference where certain regions are concerned. In 2006 the London region (UK) was the absolute leader with an average gross annual earnings rate of EUR 72 000, followed by the Belgian regions of Bruxelles-Capitale/ Brussels Hoofdstedelijk Gewest and Vlaams Gewest, Luxembourg, the three German *Länder* Baden-Württemberg, Hessen and Hamburg, Denmark, the regions of Île de France (FR), West-Nederland (NL) and East of England (UK) and Ireland, all showing figures of over EUR 40 000. Average gross annual earnings in the Nordic countries of Iceland and Norway amount to more than EUR 47 000.

At the other end of the scale, average earnings are less than EUR 10 000 per year in the Bulgarian regions of Severna I Iztochna and Yugozapadna I Yuzhna Tsentralna, in all regions of Romania, in Lithuania and Latvia, in the Hungarian regions of Alföld és Észak and Dunántúl, and in Estonia, Poland, the Czech Republic and Turkey.

Living costs, national legislation and national and regional customs concerning working time, which can also vary from one sector of activity (hotels and restaurants, transport, construction) to another, are disregarded here, as are the average annual hours worked, which are also affected by the prevailing economic situation (full order books on the one hand, or short-time working and plant closures on the other).

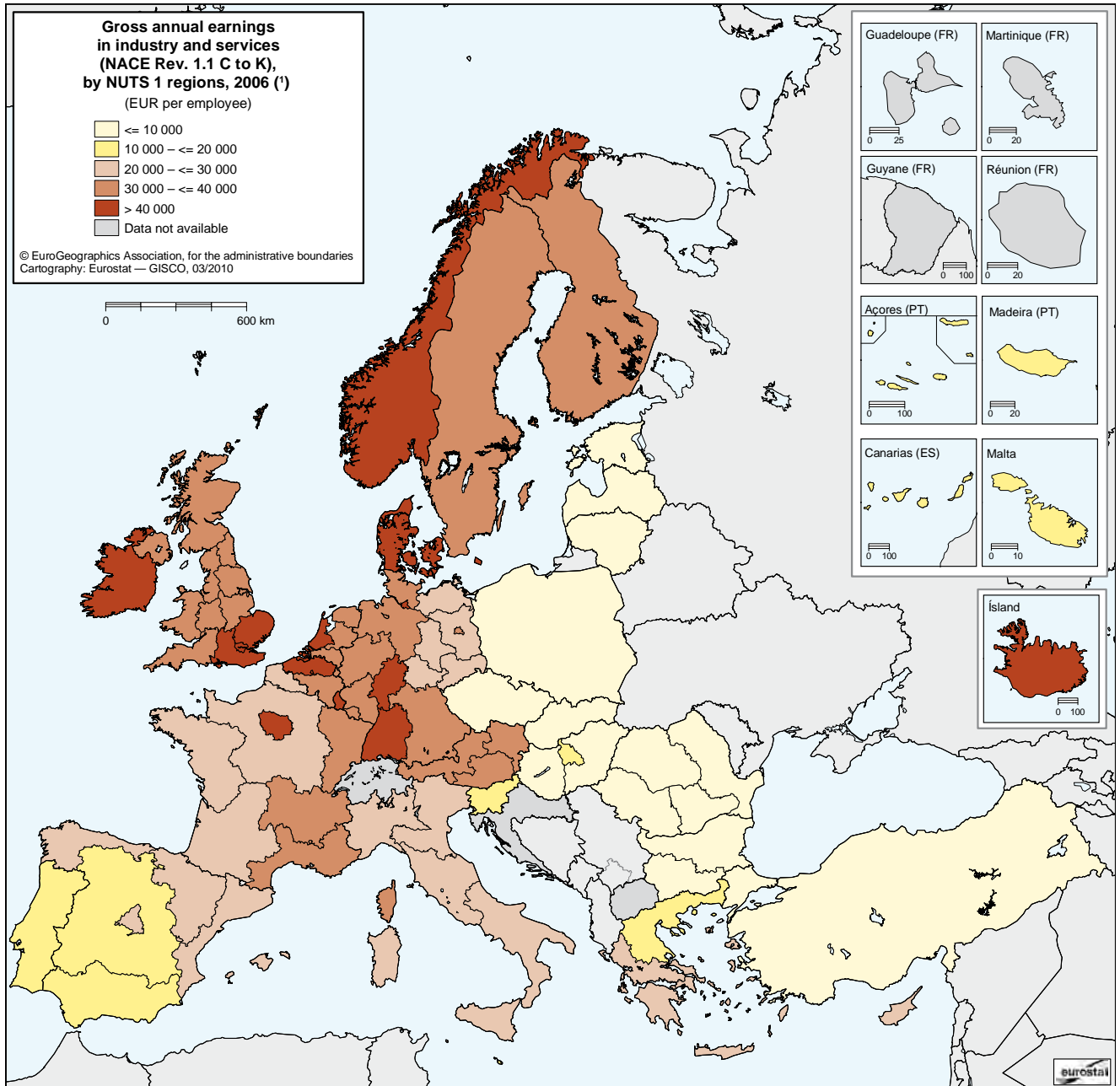## Annual bonuses as a percentage of annual earnings

Map 3.7 gives an idea of the shares of bonuses and extraordinary allowances in gross annual earnings in industry and services in the various regions in 2006. This comparison too must be seen against the background of the specific economic, social and cultural circumstances. There is a fairly obvious north–south divide. The average shares of bonuses in annual earnings are relatively low in the northern Member States, at 7.5 %, for example in Scandinavia (Sweden, Denmark, Norway and the Åland region of Finland) and in Iceland, Mecklenburg-Vorpommern (DE), Poland and Estonia. In the south, only Malta and the Macroregiunea doi region of Romania show relatively low average bonus percentages.

The 10 regions with the highest shares of bonuses and extraordinary allowances (over 15.0 %) in gross annual earnings within the EU include all seven regions of Spain, above all the Comunidad de Madrid (17.9 %), the Portuguese region of Continente, the Greek region of Attiki and all three regions of Austria.

Figure 3.1 allows a more differentiated view of regional shares of bonuses in gross annual earnings by economic activity. Here, for example, the energy and water supply sector, mining and quarrying and specialist service companies in the financial sector, with relatively high bonus and allowance shares, and economic activities such as construction and hotels and restaurants, which are known to have relatively low bonus and allowance shares, are shown separately. Most of the 10 highest bonus share percentages (between 21 % and 29 %) are found in the financial intermediation branch and in the southern European regions (all seven regions of Spain and the Continente (PT), Alföld és Észak (HU) and London (UK) regions). When expressed in absolute values, however, the highest annual bonuses in this branch tend to be awarded in regions and countries which also have significant financial centres (all at more than EUR 13 000 per year). This is especially true of London (UK) at an average of over EUR 60 000, Hessen (DE), Ostösterreich (AT), Luxembourg and Iceland and the Comunidad de Madrid region (ES3).

The online database also shows multidimensional tables on earnings at national level (hourly and annual earnings, overtime payments, bonuses and
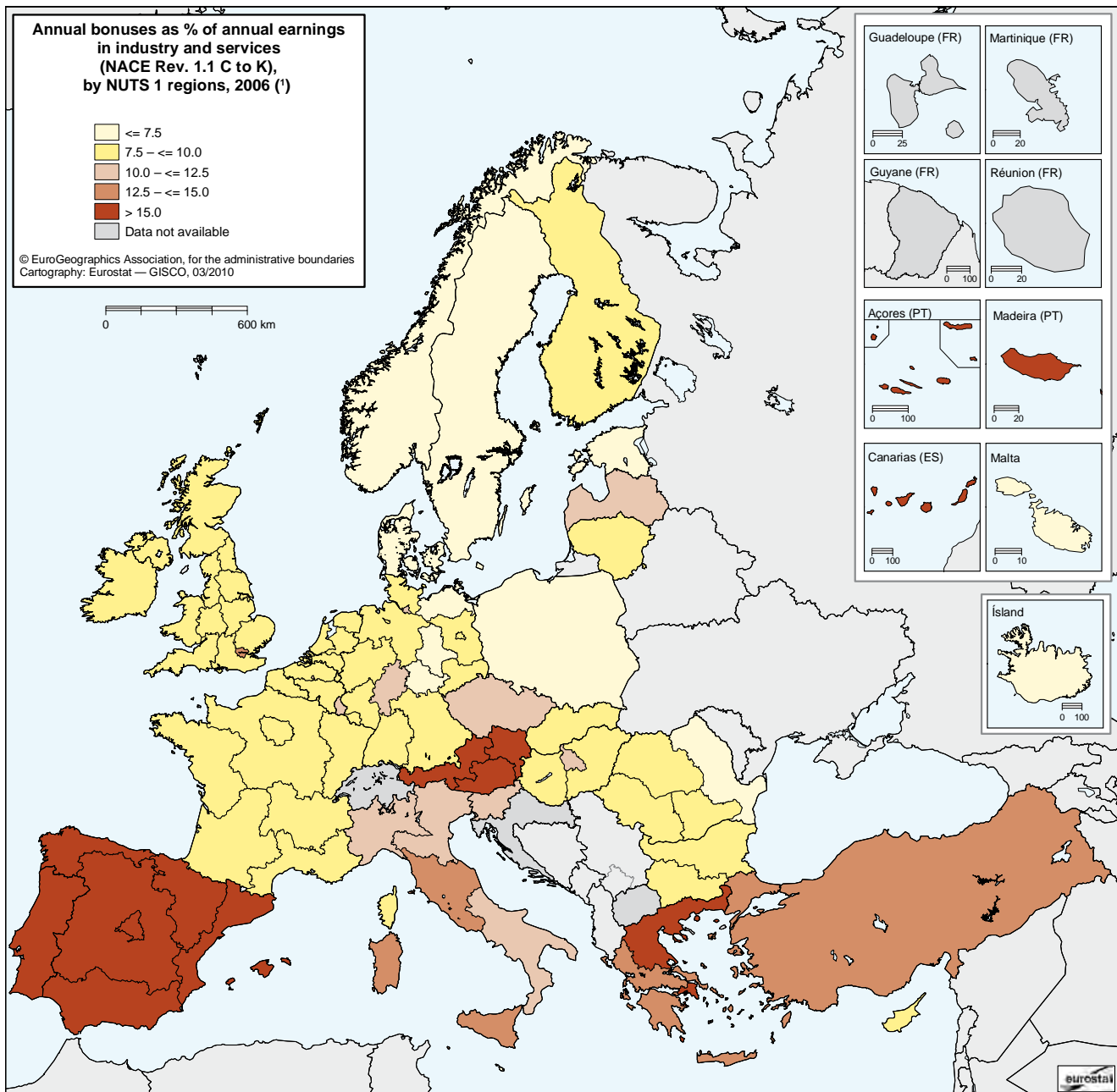
Map 3.6: Gross annual earnings in industry and services (NACE Rev. 1.1 C to K),
by NUTS 1 regions, 2006 (^{1})
(EUR per employee)

Gross annual earnings
in industry and services
(NACE Rev. 1.1 C to K),
by NUTS 1 regions, 2006 (^{1})
(EUR per employee)

- <= 10 000
- 10 000 – <= 20 000
- 20 000 – <= 30 000
- 30 000 – <= 40 000
- > 40 000
- Data not available

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Cartography: Eurostat — GISCO, 03/2010

(^{1}) Poland, Sweden Turkey and Norway, national level; Iceland, only NACE sections D, F, G, I and J; départements d'outre-mer (FR9), not available.

Source: Eurostat (earn_ses06_26).

3

Map 3.7: Annual bonuses as % of annual earnings in industry and services (NACE Rev. 1.1 C to K), by NUTS 1 regions, 2006 (¹)

Annual bonuses as % of annual earnings in industry and services (NACE Rev. 1.1 C to K), by NUTS 1 regions, 2006 (¹)

- <= 7.5
- 7.5 – <= 10.0
- 10.0 – <= 12.5
- 12.5 – <= 15.0
- > 15.0
- Data not available

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Cartography: Eurostat — GISCO, 03/2010

(¹) Poland, Sweden, Turkey and Norway, national level; Iceland, only NACE sections D, F, G, I and J; départements d'outre-mer (FR9), not available.

Source: Eurostat (earn_ses06_26).

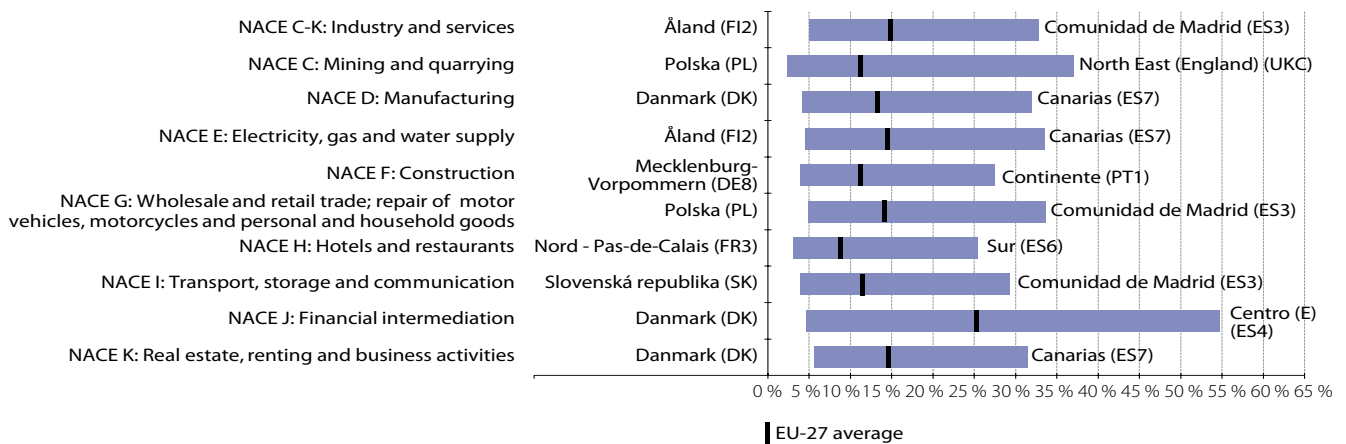**Figure 3.2:** Regional divergences of annual bonuses as % of annual earnings, EU-27, 2006 (¹)

NACE C-K: Industry and services	Åland (FI2)	Comunidad de Madrid (ES3)
NACE C: Mining and quarrying	Polska (PL)	North East (England) (UKC)
NACE D: Manufacturing	Danmark (DK)	Canarias (ES7)
NACE E: Electricity, gas and water supply	Åland (FI2)	Canarias (ES7)
NACE F: Construction	Mecklenburg-Vorpommern (DE8)	Continente (PT1)
NACE G: Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	Polska (PL)	Comunidad de Madrid (ES3)
NACE H: Hotels and restaurants	Nord - Pas-de-Calais (FR3)	Sur (ES6)
NACE I: Transport, storage and communication	Slovenská republika (SK)	Comunidad de Madrid (ES3)
NACE J: Financial intermediation	Danmark (DK)	Centro (E) (ES4)
NACE K: Real estate, renting and business activities	Danmark (DK)	Canarias (ES7)

0 % 5 %10 %15 % 20 % 25 % 30 % 35 % 40 % 45 % 50 % 55 % 60 % 65 %

▮ EU-27 average

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(¹) The graph shows the NUTS 1 region with the lowest and the highest annual bonuses (as % of annual earnings) by economic activity. Poland and Sweden, national level; départements d'outre-mer (FR9), not available.

Source: Eurostat (earn_ses06_rbns).

allowances) broken down by further employee-related characteristics (e.g. occupational group, age group, gender, length of service, contractual working hours, employment contract, collective agreement) and by economic branch, size of company and economic control over the business.

Conclusion

The above description gives no more than an initial insight into the Structure of Earnings Survey. No attempt is made here to interpret the data using the many explanatory variables in the Eurostat online database. Interested readers may, however, wish to search through Eurostat's extensive database according to their field of interest.

Methodological notes

Labour Force Survey

The source for regional labour market information down to NUTS level 2 is the EU Labour Force Survey (LFS). This is a quarterly household sample survey conducted in the Member States of the European Union.

The LFS target population is made up of all members of private households aged 15 or over. The survey follows the definitions and recommendations of the International Labour Organisation (ILO). To achieve further harmonisation, the Member States also adhere to common principles on the construction of questionnaires.

All regional results presented here concern NUTS 2 regions and all regional figures are annual averages of the quarterly surveys.

For further information about regional labour market statistics, see the metadata on the Eurostat website (http://ec.europa.eu/eurostat).

Cluster analysis was conducted using model-based clustering techniques based on the Bayesian Information Criterion (BIC) in comprehensive strategies for clustering, density estimation and discriminant analysis.

A linear regression was used to check the amount of variability in regional higher education in the labour markets that is due to the country which that region belongs to and the predominant sector of activity. The dependent variable is the regional share of higher education and the independent variables are the country's share of higher education and the cluster to which that region was assigned. The regression is significant with an adjusted R-squared of 70 %.

Structure of Earnings Survey

The source of information on regional earnings down to NUTS Level 1 is the EU Structure of Earnings Survey (SES). This survey is conducted every four years on the basis of Council Regulation (EC) No 530/1999 and Commission Regulation (EC) No 1738/2005.

The aim of this legislation is to make exact and comparable data on earnings in the EU Member States, the EFTA countries and the candidate countries available for policy and scientific purposes. The SES is a large-scale sample survey of businesses yielding detailed information on the relationships between the level of earnings (hourly and annual earnings, overtime payments, annual bonuses), the individual characteristics of employees (gender, age, length of service, occupation, level of education, contractual working hours, etc.) and the employer (branch of the economy, size and location of the business, etc.).

The survey's population comprises all enterprises with 10 or more employees. Although in 2002 the scope of the survey was extended for the first time to the sectors M (Education), N (Health and social work) and O (Other community, social and personal service activities), we have confined ourselves here to sectors C to K, i.e. manufacturing and 'market' services, in the statistical classification of economic activities in the European Community (NACE Rev. 1.1).

It should be noted that earnings data are available only at national level for Poland, Sweden (data on annual earnings and bonuses only), Turkey and Norway. The same goes for a number of smaller Member States, where the NUTS 1 level corresponds to the whole country: Cyprus, the Czech Republic, Denmark, Estonia, Ireland, Latvia, Lithuania, Luxembourg, Malta, Slovakia and Slovenia. No earnings data are reported for France's overseas departments. Data for Iceland and Norway are also available (here, too, the statistical region at NUTS 1 Level corresponds to the whole country).

Eurostat publishes the most important data from the 2006 Structure of Earnings Survey in tabular form on the Eurostat website in the Labour Market Statistics section

http://epp.eurostat.ec.europa.eu/portal/page/portal/labour_market/earnings

under the Structure of Earnings Survey 2006 (earn_ses06) heading http://epp.eurostat.ec.europa.eu/portal/page/portal/labour_market/earnings/database. Eurostat also provides anonymised microdata sets from the Structure of Earnings Survey in its 'Safe Centre':

http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/ses

It should be stressed here that the current legal framework allows access to the anonymised SES microdata available at Eurostat only for scientific purposes under special conditions and with due regard for statistical secrecy (cf: 'Access to microdata' http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/introduction).

Definitions

Labour Force Survey

Population covers persons aged 15 and over, living in private households (persons living in collective households, such as residential homes, boarding houses, hospitals, religious institutions and workers' hostels, are therefore not included). This category comprises all persons living in the households surveyed during the reference week. The definition also includes persons who are absent from the households for short periods due to studies, holidays, illness, business trips, etc. (but who have maintained a link with the private household). Persons on compulsory military service are not included.

Employed persons are persons aged 15 years and over (16 years and over in Spain, United Kingdom and Sweden (1995–2001); 15–74 years in Denmark, Estonia, Hungary, Latvia, Finland, Sweden and Norway (from 2001 onwards); 16–74 years in Iceland) who during the reference week performed work, even for just one hour a week, for pay, profit or family gain or were not at work but had a job or business from which they were temporarily absent for example due to illness, holidays, industrial dispute and education and training.

Unemployed persons are persons aged 15–74 (in Spain, Sweden and Norway 1995–2000), and aged 16–74 in the United Kingdom and Iceland, who were without work during the reference week, were currently available for work and were either actively seeking work in the past four weeks or had already found a job to start within the next three months.

Employment rate represents employed persons as a percentage of the population.

Old-age employment rate represents employed persons aged 55–64 as a percentage of the population aged 55–64.

Unemployment rate represents unemployed persons as a percentage of the economically active population. The unemployment rate can be broken down further by age and sex. The youth unemployment rate relates to persons aged 15–24.

Dispersion of employment (unemployment) rates is the coefficient of variation of regional employment (unemployment) rates in a country, weighted by the absolute population (active population) of each region.

Location quotient expresses the relationship between an area's share of a particular industry or sector and the national share.

Structure of Earnings Survey

Average gross hourly earnings are equivalent to the gross earnings recorded in the reporting month divided by the corresponding number of paid working hours. Gross monthly earnings cover remuneration in cash paid by the employer in the reporting month before tax deductions and social security contributions payable by wage earners and retained by the employer. The following elements are included: all payments relating to this period (even if actually paid outside the representative month), including any overtime pay, shift premiums, overtime bonuses, allowances for teamwork, night work and weekend work, commissions, etc., bonuses and allowances paid regularly in each pay period, even if the amount varies from month to month, payments for periods of absence and work stoppages paid for entirely by the employer, family allowances and other gratuities in cash fixed by collective agreements or voluntarily agreed, and payments to employees' saving schemes.

Gross annual earnings: Annual and monthly earnings differ primarily in that annual earnings are more than the sum of the direct remuneration, bonuses and allowances paid at every pay period. Thus they are usually more than the monthly standard pay package multiplied by 12. Annual earnings also include bonuses and allowances not paid at every pay period and payments in kind.

Annual bonuses and allowances: These are cash contributions not paid at every pay period, such as 13th or 14th month pay, holiday bonuses, quarterly or annual premiums, productivity bonuses linked to established targets, employee recognition awards, recruitment incentives, leaving or retirement bonuses and backdated arrears.