Mapping evolutions in Public Services in Europe: towards increased knowledge of industrial relations

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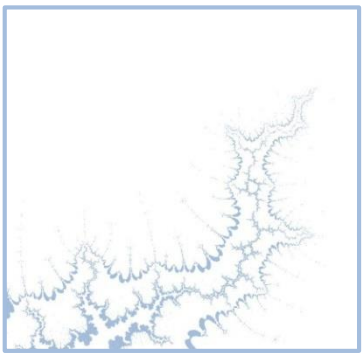

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Abbreviations and conventions

CE	Cambridge Econometrics
CEEP	The European Centre of Employers and Enterprises providing Public services
EU12	The bloc of 12 Member States that made up the EU prior to the accession of Austria, Finland and Sweden in 1995
EU15	The bloc of 15 Member States that made up the EU prior to the accession of the New Member States after May 2004
EU27	European Union of 27 Member States
ISCED	International Standard Classification of Education (developed and maintained by UNESCO)
ISCO	International Standard Classification of Occupations
NACE	Nomenclature statistique des activités économiques dans la Communauté européenne (the statistical classification of economic activities in the European Community)
New Member States (NMS)	The twelve Member States that have joined the EU since May 2004 (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania,Malta, Poland,Romania, Slovakia,Slovenia)
NESGI	Non-economic services of general interest (such as Public administration& defence, Education, Health & social work, Compulsory social protection)
PAD	Public administration and defence (NACE Rev. 2 84)
Public services	Equivalent to and used interchangeably with SGI
SGEI	Services of general economic interest
SGI	Services of general interest

bn	billion
m	million
pa	per annum
pp	percentage point

Executive summary

About this study

In 2010 CEEP (European Centre of Employers and Enterprises providing Public services) published the first Mapping of Public Services study[1]. The report presented a set of key statistics for public services providers in 2006.

This report updates and extends the coverage of indicators of the 2010 study, and provides case study evidence on how some public services providers have adapted to the financial and economic crisis and the austerity measures imposed by governments across Europe.

The definition of public services used for this project is similar to that used in the 2010 report. That is, whether the entity or the enterprise responsible for the production or provision of the service is fully or partially publicly-owned, private, mixed, an association or a not for profit entity, the decisive factor in its classification is the nature of the mission for which it is responsible (that is, a functional definition). The precise sectoral definition of public services used in this study has been modified slightly from that used in the 2010 report. For example, in the 2010 report, the whole of the Post and telecommunication sector was presented as public services. In this study only some Post and telecommunications sub-sectors have been included as public services. Whereas the previous study presented sectoral indicators on the NACE Rev.1.1 classification, this study presents sectoral indicators on the NACE Rev.2 classification. More information on changes from the 2010 study and on the methodology, definitions and classifications used in this report can be found in Chapter 2.

Public services in the EU27 in 2010

In 2010 public services generated some €2,926bn of value added across the EU27, accounting for just over a quarter of all value added in the EU27, as shown in the table below. At the same time, public services employed around 30% of the EU27 workforce.

Summary indicators for EU27 public services, 2010

	2010	
	level	share of total economy %
Value added (€m)	2,930,057	26.7
Employment ('000s)	65,698	29.5
Investment (€m)[1]	501,521	22.1

Notes:
1 Excludes sectors not covered by the Structural Business Statistics (2.10, 2.40, 87, 88, 91, 96.03, Q), except that investment in sectors 84-86 and Health is included (drawing on national accounts sources).

Sources:
Eurostat, OECD (Structural Business Statistics and National Accounts), various national statistical authorities.

[11] Bauby P and Similie S (2010) *Mapping of the Public Services*, Brussels: CEEP.

Across the individual Member States, public services' share of whole-economy value added and employment ranged from just under 20% to just over 30% in the case of value added, and to nearly 40% in the case of employment. Other than the relatively high shares seen in the Scandinavian countries, there are no strong patterns according to geography.

Across the EU27, health accounted for over a quarter of public services value added in 2010, while public administration and network activities each accounted for just under a quarter and education accounted for around a fifth.

Public services were responsible for just over 22% (€501bn) of all investment undertaken in the EU27 in 2010. Across Member States the share of public services in the whole economy varies more widely for investment than it does in the case of value added and employment, and these shares vary from year to year. In a few countries it was around or over 40% in 2010 and in one case it was over 50%. In contrast, in four Member States public services accounted for less than 10% of whole-economy investment in 2010.

More detailed analyses by Member State and sector are presented in Chapters 6 and 7.

Public services in countries outside the EU27

This study included public services in other countries outside the EU27 for which comparable data were available. The data for these countries show that the share or contribution of public services is comparable to that in the EU27.

In 2010, public services in the EU27 accounted for just over 26% of total value added, around 30% of whole-economy employment and around 22% of all investment.By comparison, if we apply broadly the same definition and take data from the same sectors for the US, Norway and FYR Macedonia, public services accounted for 26-27% of whole-economy value added in 2010. In Iceland it was closer to 30% and in Switzerland public services accounted for 22% of whole-economy value added.

Public services in the US and Iceland accounted for around 35% of total employment. In Norway the share was even higher, at close to 40% of total employment. In FYR Macedonia and Switzerland, 27-28% of total employment was in public services.

Public services accounted for around 23% of whole-economy investment in Norway in 2010, similar to the share in the EU27. In the US and Iceland the shares were higher: 31% and 38% respectively. In Switzerland, public services were responsible for just 14% of all investment in the economy in 2010.

The shares of public services in the EU27 taken as a whole are broadly in the middle of the ranges of shares seen in the other countries (although particular Member States have shares that differ markedly from the EU27 average).

Employment in detail

This study also extended its coverage to present more detail on employment other labour market and industrial relations indicators. These data show that at the EU27 level and compared to the rest of the economy, a higher proportion of employees in public services are women while a larger share of employees are aged 25-64. Young people account for a smaller share of the workforce compared to the rest of the economy.

With regard to the distribution of employment by qualification and occupation, employees in public services are more likely to have a high-level qualification and less likely to hold a qualification classed as low. There are some similarities between public services and the rest of the economy in the distribution of employment by occupation. But notable differences are that the share of managers and senior officials in the workforce in the rest of the economy is twice that for public services; and that markedly higher shares of employees in public services are occupied in professional or associate professional positions.

How things have changed since 2006

In 2006 public services in the EU27 accounted for just under 25% (€2,545bn) of whole-economy value added, 28% (62.4m) of total employment and 20% (€485bn) of all investment in the economy.

Between 2006 and 2010 public services value added increased by 15%[2], public services employment increased by just over 5% and investment by public services increased by just over 3%. In each case, the increase was slightly higher than in the rest of the economy. While neither value added nor employment in public services fell between 2006 and 2010, value added and employment in the rest of the economy experienced a sharp fall in 2009, with employment falling further in 2010.

This reflects the fact that public services tend to be less sensitive to the economic cycle than other parts of the economy: because public services held up better while the rest of the economy faltered, public services shares of whole-economy value added, employment (and investment) in the EU27 were a little higher in 2010 than in 2006, thereby demonstrating the counter-cyclical role of the public sector in periods of economic downturn.

Responses to austerity

The data presented in this report are published with a time lag of at least two years, and that timing is unfortunate given that responses to the government finance squeeze precipitated by the crisis have particularly taken effect in the period since 2010. In this study we have drawn on published reports and case studies to present an account of the pressures on public services in different Member States.

The responses of Member States to the global economic crisis have been influenced by:

- the external pressures to reduce fiscal deficits and/or levels of government debt
- the levels of fiscal deficit and/or government debt as proportions of GDP, and
- the presence or absence of reforms to public services employment and work practices prior to the global crisis

In light of the first two factors, countries can be classified into the following groups:

1. those subject to programmes of financial assistance because of their high levels of fiscal deficit and government debt

[2] The figures for value added are in nominal terms, i.e. not adjusted for inflation.

2. those under distinct bond market pressure because of their high levels of fiscal deficit and/or government debt
3. those with substantial deficits or debts but under less market pressure, and
4. those with no need (or little need) for fiscal consolidation

The relevance of the third factor is that countries that were already engaged in or had largely completed public service reforms have, for the most part, been able to respond to austerity through further reforms rather than additional operational measures, such as wage cuts or job cuts.

In the countries in the first two groups listed above, expenditure was cut largely through cuts in programmes and, to a lesser extent, by operational measures, including an increase in the use of temporary employment contracts. Generally, these were made relatively swiftly under strong external pressure and without much consultation; and as a result led to widespread protests and industrial action.

In those countries that fall under the third category, reductions in operational expenditure are playing a more important role than cuts in programmes in helping to reduce expenditure. The main measures adopted were wage cuts and pay freezes, along with policies of reducing staff numbers by not replacing some or all of those who had retired or left. At the same time, however, several of these countries had already introduced some reform of working practices in public services and these were pursued further following the onset of the financial crisis, with less emphasis on wage or staff cuts.

The countries in the fourth group were those that took action early and swiftly to prevent any substantial build-up of pressure. In most cases this involved wage cuts or pay freezes and, in a few cases, reductions in employment.

How public services have responded and adapted to austerity

While the scale of expenditure cuts varies across countries, virtually every Member State has had to cut government expenditure to some degree, although as already noted employment levels in the public services have on average increased between 2006 and 2010, contrary to the private sector experience. As a result public services across the EU27 that depend on government spending are coming under strong pressure to deliver the same level of service with fewer resources, forcing many public services organisations to adapt and innovate.

The case studies in the report present examples of how sectors or organisations in public services have responded and what lessons might be learned for other leaders and organisations in future.

1 Introduction

In November 2011 Cambridge Econometrics (CE) was commissioned by the European Centre of Employers and Enterprises providing Public services (CEEP) to update and extend its 2010 study 'Mapping Public Services' and provide evidence on developments in industrial relations in SGIs (sectors of general interest) across Europe.

This report presents the headline evidence on SGIs in the EU27 and selected countries outside the EU27 using the data collected. The report provides evidence on trends in the original set of indicators covered in the original Mapping study (value added, employment, investment) between 2006 and 2010, and on an extended set of indicators that give a more detailed picture on the structure of employment in SGIs.

Chapter 2outlines the methodology used to derive the statistics presented in this report and highlights the reasons for any differences with the previous Mapping report published in 2010. Chapter 3provides an overview of SGIs and their share of economic activity in the EU27 and selected countries outside the EU27 in 2010. Chapter 4builds on this and provides an analysis of SGIs and how their share of economic activity has changed over 2006-10. Chapter 5presents a collection of case studies to highlight how some SGI enterprises or organisations have responded in the wake of the global economic crisis. These are preceded by a summary of how Member State governments have responded to the crisis. Chapter 6presents an analysis by broad sector. Chapter 7 presents an analysis of headline indicators for each Member State. Appendix A:provides detail on the classifications and definitions used in the collection and presentation of the data.Appendix B: examines, for one country, the differences in estimates that have arisen through the change in classification from NACE 1.1 to NACE 2. Appendix C: presents the definitions of occupations used in the report.

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Responsibility for any errors or omissions remains with Cambridge Econometrics.

2 Methodological points and terminology

2.1 Public Services concept and approach

The definition of public services used for this project is the same one as adopted under the first edition of "Mapping of Public Services"[3].

In this report, written in English, we have therefore chosen to use as equivalent terms "Services of General Interest (SGIs)" and "Public Services" in the broadest sense and to retain the functional definition adopted before.

Therefore, whether the entity or the enterprise responsible for the production or provision of the service is fully or partially publicly-owned, private, mixed, an association or a not for profit entity[4], the decisive factor in its classification is the mission which it is responsible for. It is the functional conception that constitutes the common basis at Community level.

Terminological differences, semantic confusion and different traditions in the Member States have led to many misunderstandings in the discussion at European level. In the Member States different terms and definitions are used in the context of services of general interest, thus reflecting different historical, economic, cultural and political developments. Community terminology tries to take account of these differences.The term "services of general interest" is used in Protocol 26 of the Lisbon Treaty, while the term "services of general economic interest" is used in Articles 14 and 106(2) of the Treaty.The following definitions are taken from *A Quality Framework for Services of General Interest in Europe*[5].

Services of general interest

SGI are services that public authorities of the Member States classify as being of general interest and, therefore, subject to specific public service obligations (PSO). The term covers both economic activities (see the definition of SGEI below) and non-economic services. The latter are not subject to specific EU legislation and are not covered by the internal market and competition rules of the Treaty. Some aspects of how these services are organised may be subject to other general Treaty rules, such as the principle of non-discrimination.

Services of general economic interest

SGEI are economic activities which deliver outcomes in the overall public good that would not be supplied (or would be supplied under different conditions in terms of quality, safety, affordability, equal treatment or universal access) by the market without public intervention. The PSO is imposed on the provider by way of an entrustment and on the basis of a general interest criterion which ensures that the service is provided under conditions allowing it to fulfil its mission.

[3] Bauby P and Similie S (2010) *Mapping of the Public Services*, Brussels: CEEP.

[4] Cf. article 345 TFUE (ex-295TCE) "The Treaties shall in no way prejudice the rules in Member States governing the system of property ownership."

[5] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2011) 900 final, Brussels, 20.12.2011.

2.2 Classifications and breakdowns

Our selection of sectors to count as public services are now defined under the NACE 2 classification[6].

Some Eurostat sources change classifications from NACE 1.1 to NACE 2 in 2008 (with an overlap in 2008). In cases such as this, we construct the best mapping that we can from NACE 1.1 sectors to the corresponding NACE 2 sectors to the extent that the available data permit, and convert the earlier data to a NACE 2 basis. Alternative sources do not use the NACE sector classification; so we again map the sector classifications used by these sources to the NACE 2 classification. OECD data use the ISIC classification, to which NACE is closely related. ISIC changes from revision 3 to revision 4 after 2008. CEDEFOP (European Centre for the Development of Vocational Training) data use a sector classification covering 41 sectors defined on the same kind of codes that are used in ISIC and NACE. A list of the classifications used and the relevant mappings for SGIs can be found in Appendix A:.

We break down employment on various dimensions. This includes a breakdown by qualification in line with the ISCED classification and a breakdown by occupation in line with ISCO-08. Tables explaining these two classifications can be found in the annex. Employment in the EU is also broken down by NUTS 2 region.

2.3 Data processing method

The data are built up to the required sectors, countries, and years using multiple sources. Prior to processing, a data scoping task was undertaken for each indicator to establish the order of suitability of each of the potential data sources. The primary preferred data source for each indicator was used to generate as complete a dataset as possible. The secondary source was then used to try to fill gaps left by the primary source. This process continues until all sources listed for that indicator have been used. For the majority of indicators Eurostat Structural Business Statistics (SBS) is the primary source used. Eurostat National Accounts (NA) is used as a secondary source for the core indicators (value added, employment and investment), followed by OECD STAN (Structural Analysis). Some of the detailed employment indicators rely on Eurostat LFS or CEDEFOP.

Limitations

However, there may still be gaps in the dataset for some countries even after drawing on every listed data source. Some SGI sectors are not covered in any of the data sources (e.g. Support services to forestry or Silviculture and other forestry activities). Since the total across all SGIs for each indicator is generated by summing across all of the SGI sectors, this total will is a conservative one (missing data are treated as zero in this summation). The number of sectors available varies depending on the indicator.

[6] There is not normally a simple correspondence between the definitions of sectors under NACE and the criteria used to define SGIs. Consequently the selection of NACE sectors should be understood as an approximation that is used to gather data from sources organised according to NACE so as to measure (the legal definition of) SGIs.

There can be small differences in the definitions of an indicator between different data sources. Value added is only available at factor cost from Eurostat SBS (this was also used in the previous report). It is the primary data source as it has a high level of sector detail over the time period, but in the concept differs somewhat from value added in basic prices which is what is used in Eurostat National Accounts and OECD STAN. Investment data are only available from Eurostat SBS as gross investment in tangible goods, whereas the somewhat broader concept of gross fixed capital formation is available from Eurostat National Accounts and OECD STAN.

2.4 Differences compared with the previous study

The definition of public services

The list of sectors that we count as SGIs has changed a little since the 2010 study, for two reasons.

Firstly, that study used NACE 1.1 definitions, whereas the present study uses NACE 2 and we have revised the data back to 2006 with our best estimate of the mapping of the data for the pre-NACE 2 period from NACE 1.1 to NACE 2.

Secondly, the project Steering Group decided to make some small changes to the choice of sectors. Typically this has been in the direction of being more conservative about what counts as an SGI: there are cases where the 2010 study included a broad sector in its entirety, whereas in the present study we include only a part of the broad sector. The key cases are as follows.

- Where data permit, the present study excludes from NACE 2 sector 49 Land transport and transport via pipelines the subsectors: 49.39 (Other passenger land transport n.e.c.), 49.42 (Removal services) and 49.32 (Taxi operation). The treatment in the 2010 report was to exclude Freight transport via road and Transport via pipelines in the employment estimates. For value added and investment data in the 2010 report took 45% of NACE 1.1 sector 49as the SGI estimate.
- The 2010 report included all of Water transport whereas the present report includes only the subsector NACE 2 sector 50.3 (Inland passenger water transport).
- The 2010 report included the whole of the Telecommunications sector whereas the present report includes only the subsectors NACE 2 sector 61.1 (Wired telecommunications activities) and NACE 2 sector 61.3 (Satellite telecommunications activities).
- Where data permit, the present report excludes from NACE 2 sector 53 (Postal and courier activities) the subsector NACE 2 sector 53.2 (Other postal and courier activities), whereas the 2010 report included the whole sector.
- The present report includes only the subsector NACE 2 sector 78.1 (Activities of employment placement agencies) and not the other elements of the broader Employment activities sector (78). The previous report included Labour recruitment and provision of personnel (NACE 1.1 sector 74.5); this included temporary and other human resources provision which we no longer include.

There are a small number of cases the definition of public services in the present report has been extended to include some additional subsectors. In principle[7], the new subsectors (in the NACE 2 classification) are:

- 02.10 Silviculture and other forestry activities
- 02.40 Support services to forestry
- 52 Warehousing and support activities for transportation (a similar sector is listed in the old table of the previous report but it was not taken into account as an SGI)
- 64.11 Central banking
- 75 Veterinary activities

There are also cases where the project Steering Group decided on a particular proportion of a sector as an estimate of the SGI content, and in some cases this proportion has changed since the 2010 report.

- In the present report 40% of NACE 2 sector 60.2 (Programming and broadcasting activities) was included. No such share is applied to the closest equivalent sector (NACE 1.1 sector 92.2) in the 2010 report.
- The 2010 report applied a 90% share to Road passenger transport (NACE 1.1; 60.21, 60.22, 60.23). No share was applied to any part of Land transport in the present report.

Sources In common with the 2010 study, a key source has been Eurostat's Structural Business Statistics (SBS), but we supplement this with data from Eurostat's National Accounts (notably for sectors that the SBS does not cover). In order to extend the coverage to other sectors and countries outside of the EU, the present study also draws on Eurostat Labour Force Survey (LFS), OECD STAN, CEDEFOP and ILO Laborsta.

Value added The definition of the value added indicator differs between the previous study and the new study for Public Administration and Defence, Education and Health (which are not covered by the SBS). In the 2010 study the estimates were based on government expenditure data for the three sectors. The present study uses the value added data for these sectors from Eurostat National Accounts.

Measuring value added in non-economic services of general interest (NSGI)

The output of the non-economic services of general interest (Public Administration, Health, Education, Compulsory social protection) is oftendelivered free at the point of delivery and not through a market. In that case there are no market prices for these services and, as such, it is not possible to value the output of these sectors as we might other market-based sectors.

Instead, output of these SGIs was conventionally estimated by assuming their output is equal to whatever was spent on them by government and government-sponsored

[7] Data were not available in every case for every country.

bodies, the so called 'output=input' approach.

In the 2010 study, expenditure data based on this approach were presented for these three SGIs as estimates of output. While a reasonable proxy for a measure of activity, government expenditure on these SGIs is not the same as value added as some of that expenditure will be spent on inputs required to deliver services. As such,government expenditure is larger than value added.

Direct measures of value added do exist, based on estimates of output using measures of activities added together by cost. In the present report, value added for Public Administration, Education and Health are presented using data from National Accounts sources. Data for these NSGIs is available at the 2-digit NACE level, but not in any greater detail.

The use of value added data rather than government expenditure data has the effect of reducing the values presented in this update for total SGI value added (or total SGI share of whole-economy value added) in the EU or a Member Statecompared with the method adopted in the 2010 report.

Impact of the changes

Table 2.1 presents the estimates of the value of key indicators for EU27 SGIs in 2006 made in the 2010 report and in this report.

Table 2.1: Comparison of key indicators for SGIs, EU27 in 2006, between the two reports

	2010 study	2013 study	2010 study	2013 study
	level		share of total economy %	
Value added (€m)	3,077,935	2,545,401	26.4%	24.4%
Employment ('000s)	64,727,577	62,378,810	30.1%	28.1%
Investment (€m)	153,482	485,409	6.4%	20.1%

Sources: Bauby P and Similie S (2010); this report.

The main reason for the substantial reduction in the size of value added between the two reports is the use of value added at basic prices rather than government expenditure for Public Administration and Defence, Education and Health. The figures for 'share of total economy' do not show such a large reduction because in this report we measure the 'total economy' as 'gross value added' (the sum of value added across all sectors), whereas the 2006 report used GDP (which is larger than gross value added).

The estimates of employment in SGIs are slightly lower in this report than in the 2010 study, reflecting the somewhat narrower definition of what counts as an SGI. The share of total economy is therefore also lower, but this figure is also affected by an increase in the estimate of total economy employment: in the present report we use Eurostat National Accounts for the estimate of total economy employment, whereas the 2010 report used ILO Laborsta as the source. The ILO estimates are broadly lower than the Eurostat National Accounts estimates by around 3% reflecting some methodological differences between the two sources.

The estimates of investment are much larger in the present report than in the 2006 study because we now include estimates of investment by Public Administration and Defence, Education and Health; these sectors were excluded from the investment estimates in the 2006 study.

2.5 Special treatment

Investment for France

At the time when the data were gathered, the availability of investment data for France for the sectors of interest for forming SGI estimates was rather limited. There were data for some broad sectors in Eurostat SBS and OECD STAN up to 2008 but nothing after that year, and so we have constructed estimates chiefly for the purpose of avoiding an obvious downward bias in our estimate of the EU27 total. The data available for investment in Public Administration and Defence, Education and Health were extended using growth rates of gross fixed capital formation by general government available from Eurostat. The other sectors use data from INSEE on 'gross capital expenditure excluding contributions' at sector detail up to the 4-digit level. We calculate the proportion of that source's total accounted for by each relevant sector and apply this to the Eurostat National Accounts estimate for whole-economy investment in France.

R&D in Sweden

We have excluded data for Scientific research and development (sector 72 in NACE 2) from the estimates for value added and employment in Sweden because the data show implausible changes over time. For value added there are data available for 2006-08 from Eurostat National Accounts (in NACE 1.1) and 2009-10 data are available from Eurostat SBS (in NACE 2). The data suggest a very large fall between 2008 and 2009, even though it seems unlikely that the change from NACE 1.1. to NACE 2 could account for this (the definitions under the two versions are very similar). It is also the case that R&D employment data for Sweden from Eurostat LFS differ substantially from the levels in Eurostat SBS and National Accounts, so that the LFS source did not help to understand the break in the time series.

EU27 figures

Figures for the EU27 are calculated by summing the data obtained in this study for all 27 Member States. We did not adopt the alternative strategy of using the published EU27 total in the relevant data sources because that approach produces many missing values. The approach we have adopted ensures that the EU27 totals are consistent with the data for the Member States.

Health and social care

A broad category covering NACE 2 sectors 86 (Human health activities), 87 (Residential care activities) and 88 (Social work activities without accommodation) has been included in the dataset. For some countries, data are missing for this grouping for a particular year. In these cases the following method is used to generate an estimate. If NACE 2 sector 86 are available in the year of interest where the broad Health and social care sector is missing, the share of sector 86 as a proportion of the broad Health and social care sector in the previous year is applied to gross up from the sector 86 value for the year of interest.

PAD, Education and Health services in Bulgaria

There are no data available from any of the sources for NACE 2 sections O (PAD), P (Education) and Q (Health and social work) for Bulgaria post-2006. However, Eurostat National Accounts does provide data for the total across all three of these sections for 2007-10. Therefore the shares of the three sections as a proportion of their sum in 2006 have been applied to the Eurostat National Accounts figures to generate estimates for the separate subsectors for 2007-10.

Employment activities

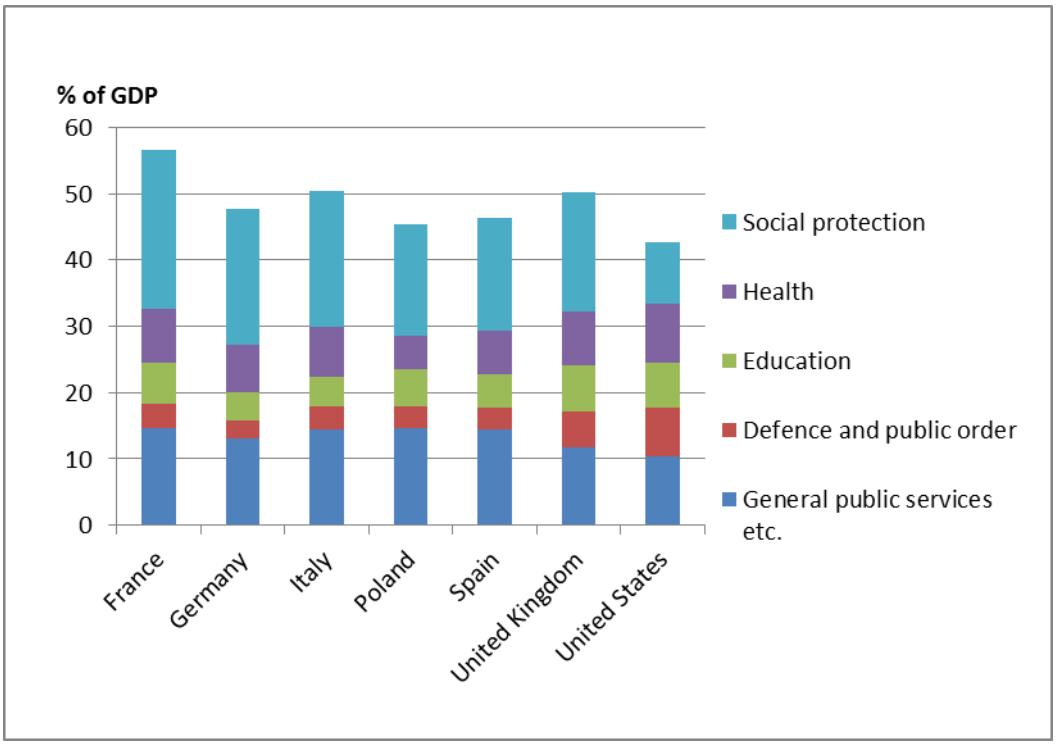
Our definition of SGIs includes NACE 2 sector 78.1 (Activities of employment placement agencies). The closest available sector from Eurostat SBS in NACE 1.1 is 74.5 (Labour recruitment and provision of personnel). This sector is actually equivalent to the broad NACE 2 sector 78 (Employment activities). This sector was included as an SGI in the 2010 report but for the present study it was decided to exclude the part of that sector that covers temporary and other human resources provision.Eurostat data that are available in NACE 2 and NACE 1.1 overlap in 2008 for most datasets. Therefore, the share of NACE 2 sector 78.1 as a proportion of NACE 2 sector 78 is calculated for 2008. This share is then applied to the figures for NACE 1.1 sector 74.5 in order to compute suitable estimates for NACE 2 sector 78.1 in 2006-07 for all countries and indicators.

2.6 Comparing public services and government spending in the EU and the US

In this report we define a service as 'public' by the nature of the service that is provided, regardless of whether the service provider is owned privately or by government and regardless of whether the service is financed by a fee paid by the user or out of general taxation. Consequently, although there is a general perception that the role of the state is smaller in the US than it is in the EU, this does not necessarily mean that the scale of public services as defined in this report is smaller. But even on the basis of government spending alone, differences between the EU and the US can be overplayed.

Figure 2.1 shows that *expenditure by government* is, indeed, smaller (in relation to GDP) in the US than in the six largest EU Member States.

Figure 2.1: General government expenditure by function, 2010



Sources: OECD.

But the breakdown by function of spending shows that the main reason for this is the much lower expenditure on social protection transfers (which are not a public service on the definition adopted here). It is also true that spending on 'general public services etc.', which broadly includes public administration activities, is lower in the US, but Figure 2.1 shows that this difference is largely made up when we take account of the higher share of US spending on defence and public order. It is striking that US general government spending on education and health is at the higher end of the range shown in **Error! Reference source not found.**, despite the greater importance of non-government spending on these activities in that country; for example, federal, state and local government spending on health accounted for only some 45% of all spending on health in the US in 2010 (source: http://www.cms.gov).

3 Public services in 2010

3.1 Headline indicators

Public services in Europe

Value added

In 2010 public services generated €2,926bn of value added across the EU27, accounting for just over a quarter of all value added in the EU27, see Table 3.1.

Table 3.1: Summary indicators for EU27 public services, 2010

	2010	
	level	share of total economy %
Value added (€m)	2,930,057	26.7
Employment ('000s)	65,698	29.5
Investment (€m)[1]	501,521	22.1

Notes:
1 Excludes sectors not covered by the Structural Business Statistics (2.10, 2.40, 87, 88, 91, 96.03, Q), except that investment in sectors 84-86 and Health is included (drawing on national accounts sources).

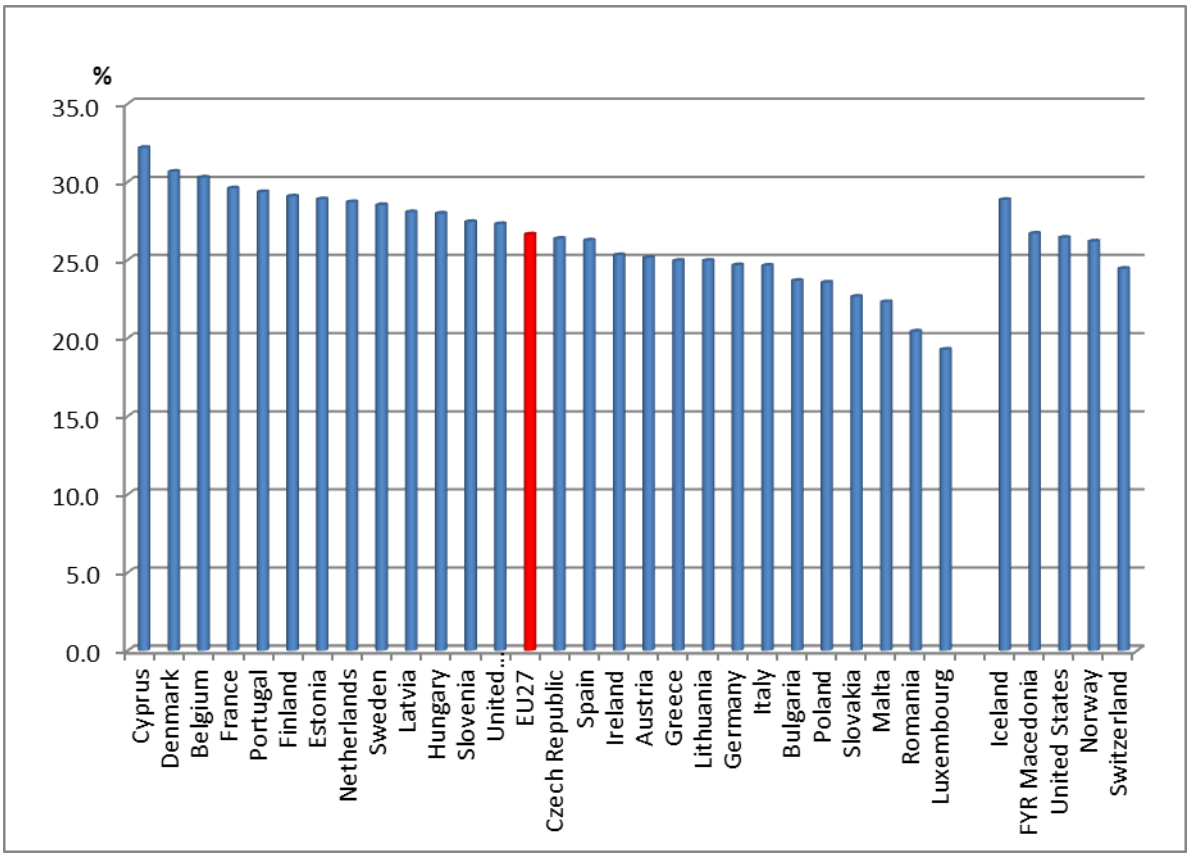
Sources:
Eurostat, OECD (Structural Business Statistics and National Accounts), various national statistical authorities.

Across Member States

Across the individual Member States, SGIs' share of whole economy value added ranged from just under 20% in Luxembourg to over 30% in Denmark, Belgiumand Cyprus (see Figure 3.1).

Other than the relatively high shares seen in the Scandinavian countries, there are no strong patterns according to types of country. Across the older members of what was the EU15, Germany, Italy and Austria all sat below the EU average while Belgium, France and the UK all sat above.

Figure 3.1: Share of public services in whole-economy value added, 2010



Notes: Value added for SGIs is estimated as value added at basic prices for Public administration, Health and Education and value added at factor cost for the other SGIs.

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Likewise for the new Member States[8] (NMS): SGIs' share of whole-economy value added was below the EU27 average in Lithuania, Poland and Slovakia, and above the average in Estonia, Hungary and Slovenia. Similarly, when comparing northern EU countries with southern EU countries, Member States from each group are spread out above and below the EU27 average.

Outside the EU27

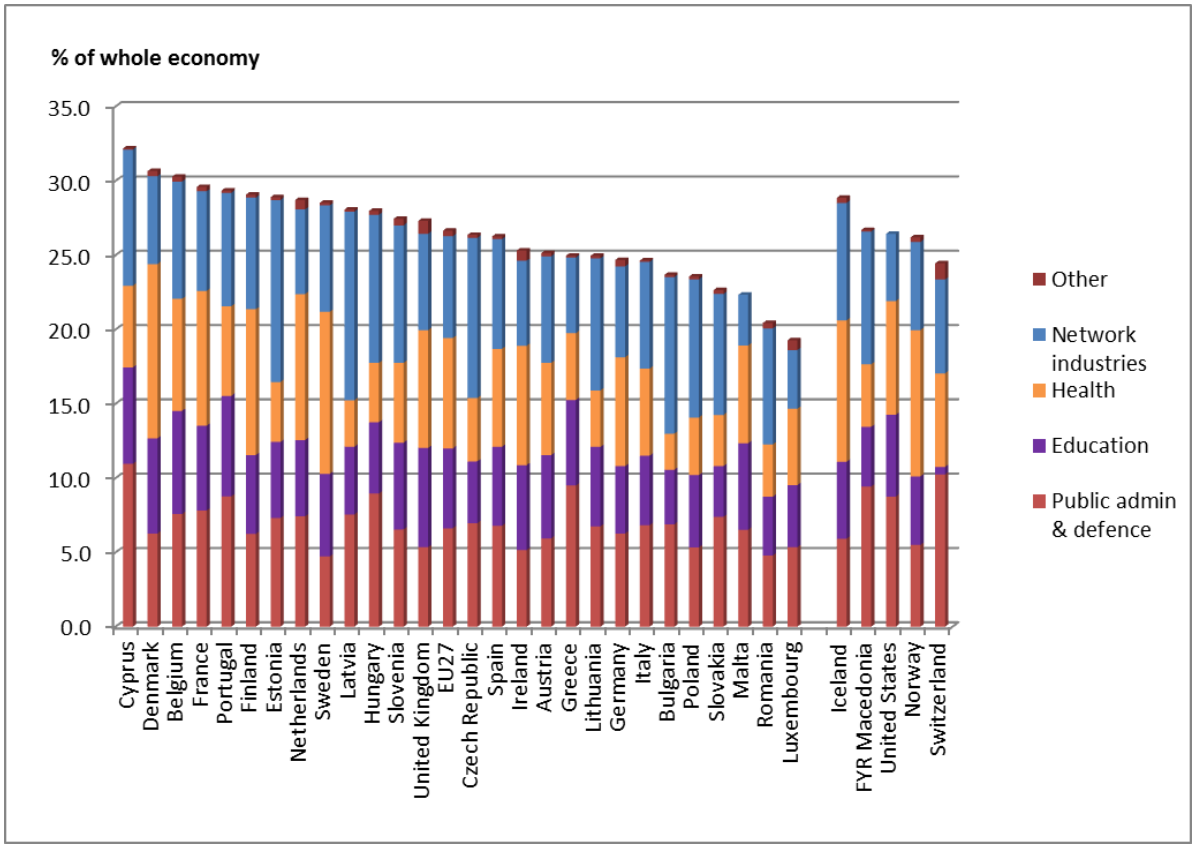
Figure 3.1 also includes some values for countries outside the EU27. For all those presented, SGIs' share of whole economy value added was in a similar range to that observed in the EU27. In Iceland, SGIs' share of whole economy value added (28.93%) was well above the EU27 average, while in FYR Macedonia it was in line with the EU27 average. In the US and Norway SGIs' share of whole economy value added was just below the EU27 average. The SGI share in Switzerland was lower than the EU27 average, at 22½%,

[8] The twelve Member States that have joined the EU since May 2004 (Bulgaria, Czech Republic, Poland, Slovakia, Lithuania, Latvia, Estonia, Slovenia, Malta, Cyprus, Hungary, Romania)

Value added across SGI sectors

Public services accounted for 26.6% of whole-economy value added in the EU27 in 2010. Health (which includes Social Services) made up the largest share among the SGI sectors, accounting for 7.4% of whole-economy value added, see Figure 3.2. This was followed by network industries and public administration, which accounted for 6.8% and 6.6% of whole-economy value added in the EU27 respectively. Education accounted for 5.4%.

Figure 3.2: Share of public services'sectors in whole-economy value added, 2010



Notes: Value added for SGIs is estimated as value added at basic prices for Public administration, Health and Education and value added at factor cost for the other SGIs.

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Among those Member States where SGIs' share of whole-economy value added is above the EU27 average:

- education typically accounts for 5-7% of whole-economy value added, except in Latvia and Hungary, where it accounts for just 4¾%
- in most countries, the share of whole-economy value added accounted for by network industries was in the range of 6-8%. Latvia, Estonia and Hungary were notable exceptions, with network industries accounting for 10-13% of whole-economy value added

- in public administration the shares vary somewhat, from around 5% of whole-economy value added in Sweden and the UK to around 9% in Hungary and Portugal, and 11% in Cyprus
- the share of whole-economy value added accounted for by health varies more widely, from 11-12% in Denmark and Sweden to 3-4% in Latvia, Estonia and Hungary

Among those Member States where SGIs' share of whole-economy value added is below the EU27 average:

- in Slovakia, education accounts for just 3½% of whole-economy value added, but across the other Member States education typically accounts for 4-6% of whole-economy value added;
- the share of whole-economy value added accounted for by network industries varies somewhat;in the Czech Republic and Bulgaria network industries accounted for 10-11% of whole-economy value added, with Poland just behind;in Greece it was just 5% and in Malta and Luxembourg network industries accounted for an even smaller share of whole-economy value added;
- public administration generally accounts for 5-7% of whole-economy value added, with slightly higher shares in Slovakia (7.4%) and Greece (9.5%); and,
- in several Member States, the share of whole-economy value added accounted for by health is around just 4% or less. Even in those Member States where it is higher, only in Ireland (8%) was it above the EU27 average (although Germany (7.3%) is broadly in line with the EU27 average).

Employment

Across the EU27 SGIs employed 65.7m people in 2010, which corresponded to just under 30% of total employment (see Table 3.1).

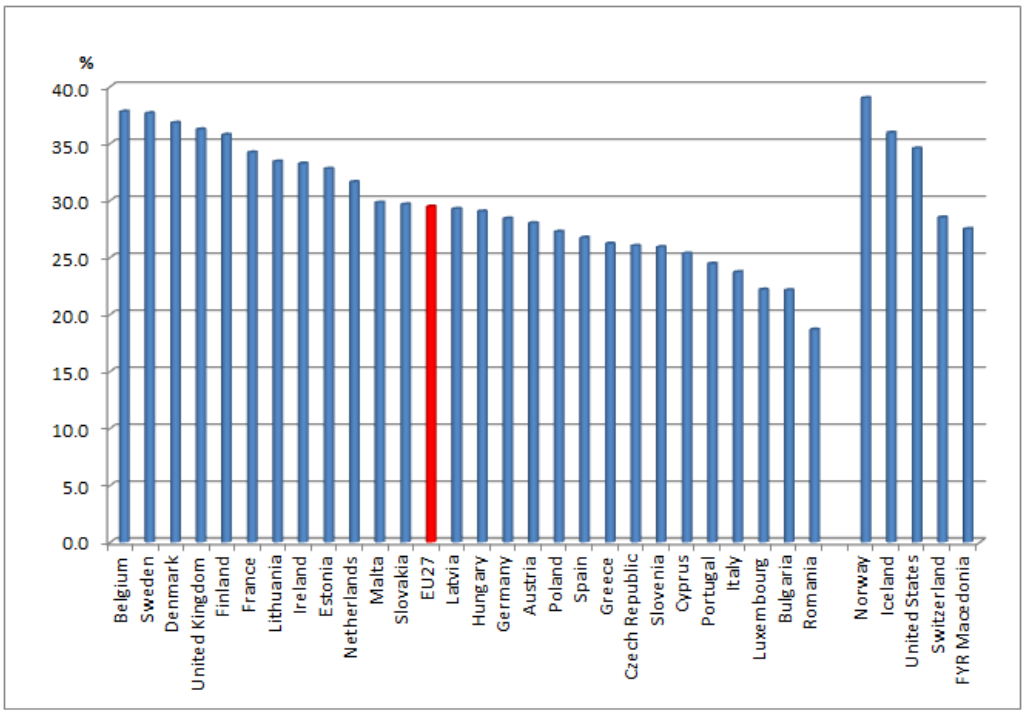
Overall, SGIs' share of employment across the Member States covers a wider range of values, compared to SGIs' share of value added: from Romania, where SGIs account for just 19% of employment, to Belgium and Sweden, where SGIs account for just under 38% of whole-economy employment.

Across Member States

In five of the 12 Member States where the share was above the EU27 average, it was above 35%[9] (see Figure 3.3). Again, other than the high shares seen in the Scandinavian countries, there are no obvious patterns by type of country.

[9] The data for Sweden exclude the SGI sector "Scientific R&D" (NACE (Rev.2) 74), which showed a large fall in employment between data on the NACE Rev. 1.1 basis (2006-08) and the NACE Rev 2 basis (2009-10), and this in turn may be due to a change in the industrial classification from NACE Rev. 1.1 to Rev. 2.

Figure 3.3: Share of public services in whole-economy employment, 2010



Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Outside the EU27

The share of SGIs in whole-economy employment in a selection of countries outside the EU27 is presented in Figure 3.3 above and Table 3.2 below.

Table 3.2: Summary indicators for public services in non-EU countries, 2010

	Value added (€m) 2010		Employment (000s) 2010		Investment (€m) 2010	
	level	share of total economy	level	share of total economy	level	share of total economy
EU27	2,930,057	26.7	65,698	29.5	501,521	22.1
US	2,893,583	26.4	50,476	34.6	505,913	30.7
Norway	73,977	26.2	1,010	39.0	14,104	23.4
Switzerland	86,083	21.9	1,311	28.5	11,403	13.7
Croatia	2,815	7.3	402	26.1	917	9.9
FYR Macedonia	1,617	26.1	154	27.5	na	na
Iceland	2,447	29.3	60	35.9	459	37.9

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

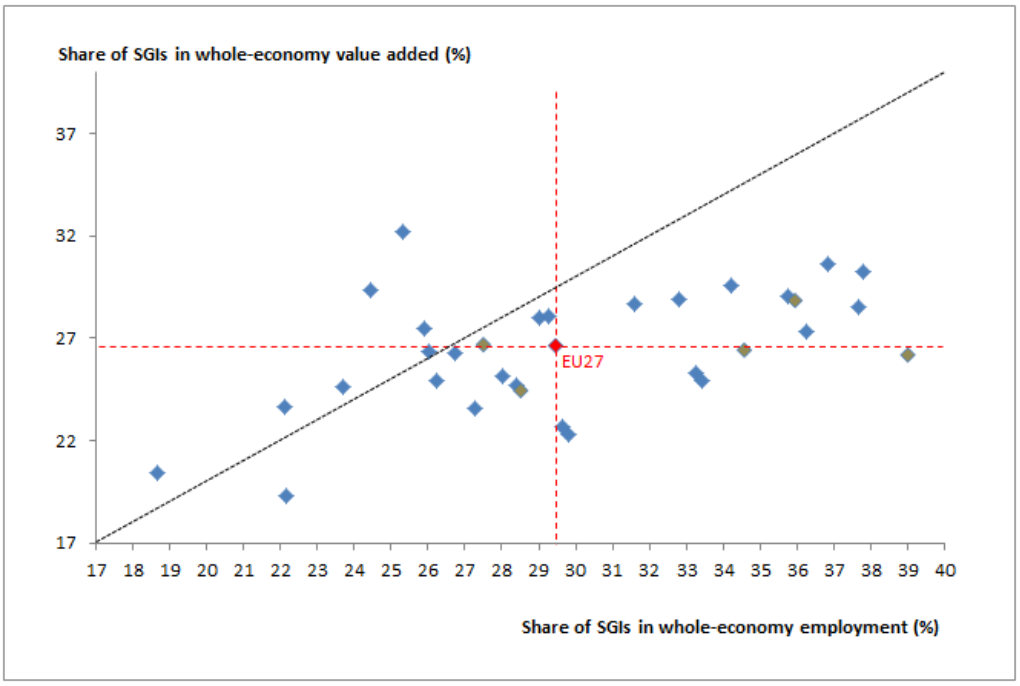
In Switzerland and FYR Macedonia the SGI share of whole-economy employment is just below the EU27 average. In the US, Iceland and Norway the SGI share of whole-economy employment is noticeably higher than the EU27 average, with SGIs accounting for around 35% of whole-economy employment in 2010 in the US and Iceland and close to 40% in Norway, which is higher than in all Member States.

Comparing value added and employment shares

In Figure 3.4 below we chart SGIs share of value added against SGIs share of employment.

First of all, this shows that in only seven EU27 Member States did SGIs account for a larger share of value added than employment in 2010 (represented by the blue markers sitting above the black diagonal hash line): Bulgaria, Cyprus, Czech Republic, Italy, Portugal, Romania, Slovenia.

Figure 3.4: Share of public services in whole-economy value added and whole-economy employment, 2010



Notes: Points along the black diagonal indicate SGIs' share of value added and employment are the same; points above (below) the black line indicates SGIs' share of value added is greater (less) than SGIs' share of employment. Markers above (below) the red horizontal line indicate countries where the SGI share of whole-economy value added is above (below) the EU27 average. Markers to the right (left) of the red vertical line indicate countries where the SGI share of whole-economy employment is above (below) the EU27 average. EU Member States are denoted by blue markers; non-EU countries are denoted by brown markers.

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

With the exception of Italy, these Member States are among the smaller economies in the EU27 and all except Portugal are among the more recent entrants to the EU (in either 2004 or 2007). In two cases (Czech Republic and Romania), however, the difference was small (less than 1 pp).

In the other 20 Member States, SGIs accounted for a larger share of employment than value added in 2010 (represented by the blue markers sitting below the black diagonal hash line). Greece and Hungary are those Member States where the difference is smallest at around 1 pp. But in some other Member States the difference is in the region of 9 pp; for example, in the UK, SGIs accounted for just over 27% of whole-economy value added compared to just over 36% of whole-economy employment.

Secondly, the figure identifies four groups of Member States:

- ten Member States where the shares of employment and value added accounted for by SGIs were below the EU27 averages: Austria, Bulgaria, Czech Republic, Germany, Greece, Italy, Luxembourg, Poland, Romania, Spain;
- eight Member States where SGIs' shares of employment and value added were above the EU27 averages: Belgium, Denmark, Estonia, Finland, France, Netherlands, Sweden, United Kingdom;
- those Member States where the share of employment accounted for by SGIs was above the EU27 average while the SGIs' share of value added was below the EU27 average: Ireland, Lithuania, Malta, Slovakia; and,
- those Member States where the share of employment accounted for by SGIs was below the EU27 average while the SGIs' share of value added was above the EU27 average: Cyprus, Portugal, Hungary, Latvia, Slovenia.

For all those non-EU countries presented, SGIs accounted for a larger share of employment than value added in 2010 (represented by the brown markers sitting below the black diagonal hash line). There was a wide variation in how they compared to the EU27 as a whole. In the US and Norway SGIs' share of employment was comfortably above the EU27 average whilst SGIs' share of value added was in line with the EU27 average. In FYR Macedonia SGIs' shares of employment and value added were below the EU27 average whilst in Iceland they were both above the EU27 average.

Investment

In 2010 SGIs were responsible for €501bn[10] of investment in the EU27, equivalent to just over22% of all investment undertaken in the EU27 in 2010.

Across Member States

Figure 3.5 presents the distribution of shares across each Member State. The SGI share of investment was below the EU27 average in ten Member States.

In the remaining Member States the SGI share was above the EU27 average, but only just in the case of Finland and Germany. In several other Member States the SGI share of whole-economy investment was much higher than the

[10] This value includes an estimate for France, for which full data were not available.

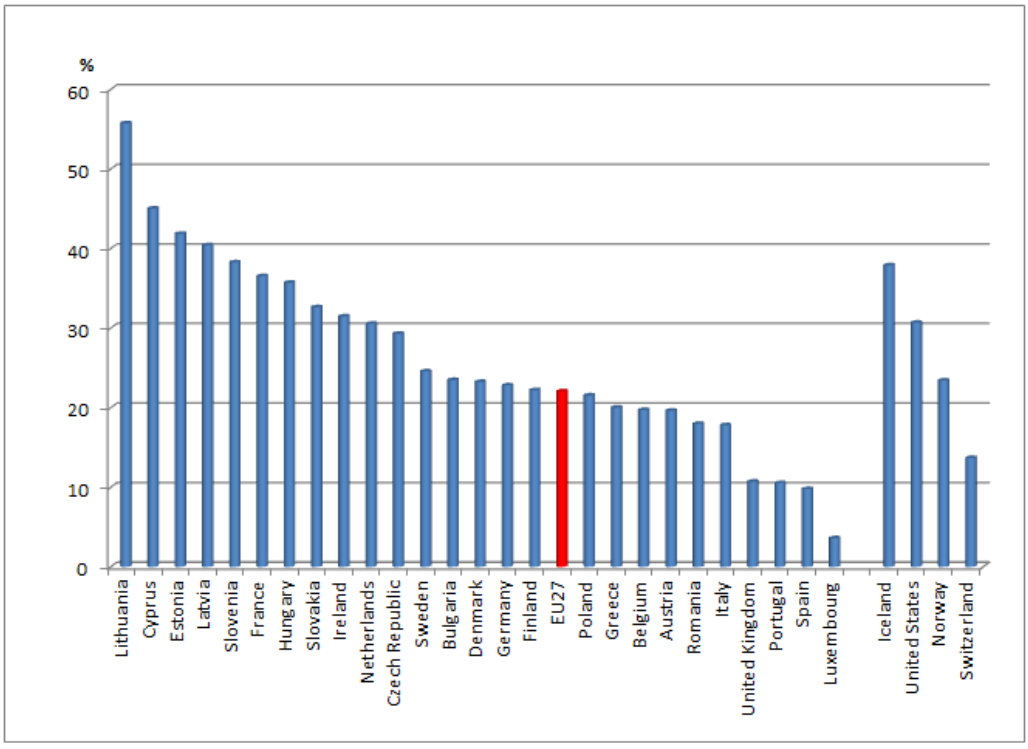
EU27 average, from just under 30% in the Czech Republic to over 50% in Lithuania.

It should be noted that the level of SGI and whole-economy investment in many of these countries is small compared with the EU27 total. In contrast, Germany, Italy, Spain and the UK together account for around 55% of SGI and whole-economy investment. This dominance helps to pull the EU27 average down, as across these four Member States the SGI share of investment is just 16½%.

Outside the EU27

In countries outside the EU27, SGIs' share of whole-economy investment varies almost as much as it does in the EU27. In Iceland, SGIs' share of whole-economy investment was 38%, similar to those for Slovenia and Estonia. In contrast, SGIs' share of whole-economy investment in Switzerland was just 14%, placing it below the EU27 average and more in line with the UK. In the US, SGIs accounted for just over 30% of whole economy investment, putting it well ahead of the EU27 and in line with the Netherlands.

Figure 3.5: Share of public services in whole-economy investment, 2010



Notes: Investment for SGIs is estimated as the sum of Gross Fixed Capital Formation for Public administration, Health and Education plus Gross Investment in Tangible Goods for the other SGIs.

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

3.2 Headline indicators by SGI

The previous section provided an overview of the share of SGIs taken together in the EU27. This section provides a brief look at how that breaks down across individual SGIs and their shares of whole-economy activity.

Table 3.3 presents the level and whole-economy share of value added, employment and investment for each SGI in the EU27 in 2010.

Value added and employment

The table shows how Public administration, Education and Health dominate SGI activity.

In 2010 Public administration accounted for just under a quarter of total SGI value added and total SGI employment. Similarly, Education and Health both accounted for around 20% of total SGI value added. Education accounted for a slightly higher share (24%) of total SGI employment in the EU27, while just under 20% of those employed in SGIs worked in Health. Taken together, this means Public administration, Education and Health were responsible for around two-thirds of total SGI value added and employment. Consequently, around 17% of whole-economy value added and 20% of whole-economy employment were attributable to these SGIs. These shares are higher still if Social work and care activities are included in Health.

The contribution of Veterinary services is small, at less than ½% of SGI value added and employment; and thus less than ¼% of whole-economy value added and employment.

The other main contributors to SGI value added and employment are Electricity, Land Transport, and Warehousing and transport support activities. Land transport accounts for 6-7% of total-SGI value added and employment. Warehousing and transport support activities generates 5½% of total-SGI value added and employs just under 4% of those who work in SGIs. Around 7½ of total-SGI value added and just under 2% of total-SGI employment are attributable to Electricity.

Together, these three SGIs create nearly a fifth of total-SGI value added and around 13% of employment across all SGIs. In the context of the wider economy, however, each of these SGIs typically accounts for just 1-2% of whole-economy value added and employment. And so collectively, these three SGIs generate just 5% of whole-economy value added and 3½% of whole-economy employment.

Postal and courier activities makes up 1½-2% of total-SGI employment and value added, but otherwise the shares of other SGIs are generally small.

Table 3.3: Key indicators for selected SGI sectors in the EU27, 2010

	Value added		Employment		Investment[1]	
	share of total SGIs %	share of total economy %	share of total SGIs %	share of total economy %	share of total SGIs %	share of total economy %
35 Electricity, gas, steam and air conditioning supply	7.5	2.0	1.9	0.5	21.0	4.6
36 Water collection, treatment and supply	1.0	0.3	0.6	0.2	3.9	0.8
37 Sewerage	0.2	0.1	0.2	0.1	1.9	0.4
38 Waste collection, treatment and disposal; materials recovery	1.2	0.3	1.2	0.4	1.9	0.4
39 Remediation activities and other waste management services	0.0	0.0	0.1	0.0	0.0	0.0
49 Land transport and transport via pipelines	6.0	1.6	7.0	2.1	9.7	2.1
50.3 Inland passenger water transport	0.0	0.0	0.0	0.0	0.0	0.0
51 Air transport 10%	0.1	0.0	0.1	0.0	0.6	0.1
52 Warehousing and support activities for transportation	5.4	1.4	3.8	1.1	12.6	2.8
53 Postal and courier activities	1.5	0.4	1.9	0.6	0.4	0.1
60.2 Programming and broadcasting activities 40%	0.3	0.1	0.1	0.0	0.2	0.0
61.1 Wired telecommunications activities	2.4	0.6	0.5	0.2	2.6	0.6
61.3 Satellite telecommunications activities	0.1	0.0	0.0	0.0	0.2	0.0
72 Scientific research and development	0.8	0.2	0.7	0.2	1.1	0.2
75 Veterinary activities	0.2	0.1	0.3	0.1	0.1	0.0
78.1 Activities of employment placement agencies	0.4	0.1	0.5	0.1	0.0	0.0
84 Public administration, defence; compulsory social security	24.9	6.6	23.2	6.8	25.2	5.5
85 Education	20.2	5.4	23.7	7.0	7.0	1.5
Q 86-88 Health and Social Work	27.9	7.4	33.3	9.8	11.4	2.5
86 Human health activities	19.5	5.2	19.3	5.7	7.1	1.5
87 Residential care activities	na	na	6.6	1.9	na	na
88 Social Work activities without accommodation	na	na	7.4	2.2	na	na
91 Libraries, museums; other cultural activities	na	na	0.9	0.3	0.0	0.0
Total SGIs	€2,930,05 7	26.7	65,698	29.5	€501,521	22.1

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts), ONS.

Notes:1 Excludes sectors not covered by the Structural Business Statistics (2.10, 2.40, 87, 88, 91, 96.03, Q), except that investment in sectors 84-86 and Health is included (drawing on national accounts sources).

Investment

The distribution of investment across SGIs is somewhat different. Just under 40% of total-SGI investment came in Public administration, Education and Health (or just under 45% if Social work and care activities are included). More than half of the investment in these three SGIs came in Public administration. In the context of the whole-economy, Public administration, Education and Health account for 8½% of whole-economy investment (9½% with Social work and care activities).

A roughly equal share of investment is attributable to the network SGIs of Electricity, Land Transport, and Warehousing and transport support activities. Together they also account for just over two-fifths of total-SGI investment, with nearly 20% of total-SGI investment coming in Electricity, just under 10% coming in Land Transport, and around 13% coming in Warehousing and transport support activities.

The other network industries of Water supply and Wired telecommunications were responsible for 4% and 2½% of total-SGI investment respectively.

Electricity, Land Transport, and Warehousing and transport support activities account for just under 10% of whole-economy investment, but this edges above 10% when Water supply and Wired telecommunications were included.

Other SGIs' shares of total-SGI investment are small, at less than 2%, and so they make up around just ¼% or less of whole-economy investment.

3.3 Employment in detail

Public services in the EU

Compared to the economy as a whole:

- A higher proportion of SGI employees are women
- Employment in Public Services is slightly more concentrated in the 25-64 age group, with young people accounting for a much lower share
- Employees in SGIs are more likely to have a high-level qualification and less likely to hold a qualification classed as low
- Even excluding Public Administration, Education and Health, a markedly higher proportion of SGI employees work in large enterprises; a noticeably smaller proportion work in micro enterprises
- A markedly lower share of public services employees are managers and senior officials; and noticeably higher shares hold professional and associate professional posts

Table 3.4 below presents a more detailed breakdown of employment in all SGIs in the EU27 in 2010.

Table 3.4: Detailed employment indicators for public services in the EU27

	2010		
	level	%	Whole economy %
Employment by gender (000s)			
Male	29,037	42.3	55
Female	39,596	57.7	45
Employment by age (000s)			
15-24	3,572	5.9	18.3
25-49	38,270	63.5	58.1
50-64	17,845	29.6	22.2
65+	587	1.0	1.4
Employment by qualification (000s)[1]			
Low	8,610	14.0	22.1
Medium	25,116	40.8	47.1
High	27,882	45.3	30.8
Employment by enterprise size[2]			
Micro (<10 employees)	1,978	17.6	30.6
Small (10-49)	1,857	16.5	20.2
Medium (50-249)	1,948	17.3	17.0
Large (250+)	5,467	48.6	32.2
Employment by occupation (000s)			
Armed forces	1,190	1.9	0.5
Legislators, senior officials and managers	2,708	4.3	8.6
Professionals	16,769	26.7	14.8
Technicians and associate professionals	14,441	23.0	16.6
Clerks	6,528	10.4	10.6
Service workers and shop and market sales workers	9,736	15.5	13.9
Skilled agricultural and fishery workers	218	0.3	4.2
Craft and related trades workers	1,476	2.3	12.6
Plant and machine operators and assemblers	5,140	8.2	7.8
Elementary occupations	4,692	7.5	10.3

Notes:

(1) Employment by qualification uses CEDEFOP definitions which are as follows:

Low - (Pre-)primary and lower secondary (ISCED 0-2, 3c); Medium - Upper and post-secondary (ISCED 3-4, excluding 3c); High - Tertiary (ISCED 5-6)

(2)Excludes sectors not covered by the Structural Business Statistics (2.10, 2.40, 84, 85, 86, 87, 88, 91, 96.03.

Sources: Eurostat *Labour Force Survey* and *Small Business Statistics databases*; CEDEFOP employment database.

Employment by gender

In the EU, men accounted for around 42% of employment across all SGIs in 2010 while women made up around 58%. In the wider economy, men accounted for 55% in 2010 while 45% of workers were women. The higher share of female employees in SGIs reflects the often more family friendly working conditions in SGI sectors and the nature of many jobs in the Education, Health and Social Work sectors.

Employment by age

When looking at the distribution of employment by age, young people (15-24) accounted for just 6% of all employees in SGIs in 2010, a lower share than in the wider economy (18%). Those aged 25-49 made up 63% of all workers in SGIs, broadly comparable to the 58% in the economy as a whole. Around 30% of workers across all SGIs were aged 50-64 compared to 22% across the whole economy. Across the whole economy and all SGIs around 1¼-1½% of workers were aged over 65. This is likely to rise in future as women's and men's retirement ages are equalised and raised in response to increasing longevity.

So SGIs as a whole are similar to the broader economy in that those aged 25-49 account for the largest share of the workforce; those aged 50-64 account for the second largest share and those aged over 65 account for the smallest share.

The key difference is that while those aged 15-24 are the third largest age group, they account for a much smaller share in SGIs. This in part reflects the comparatively higher skilled nature of the work in SGIs (see discussions below on employment by qualification and occupation) and the extended training required to undertake such work. At the same time, a slightly smaller share of the SGI workforce was over 65. Compared to the broader economy, this indicates employment across all SGIs in 2010 was more concentrated among 25-64 year olds.

Employment by qualification

A little under half of those employed in SGIs were qualified to a high level (tertiary level education) in 2010, a much higher proportion than in the broader economy where just 31% were qualified to a high level. Around 41% of those employed in SGIs were educated to medium level (upper secondary and non-tertiary post-secondary education), below the average for the wider economy (47%). Nevertheless, just 14% of those working in SGIs held a qualification classed as low (lower secondary education), compared to 22% in the economy as a whole. Workers in SGIs tended to be better qualified than their counterparts in other parts of the economy.

Employment by size of enterprise

It should be noted that the presented figures come from the Structural Business Statistics and so exclude the following sectors: 2.10, 2.40, 84, 85, 86, 87, 88, 91, 96.03. The excluded SGIs include Public Administration, Health and Education. The inclusion of these sectors would more than likely increase the share of SGIs employees in large enterprises.

For those sectors included, around 18% of those employed in SGIs in 2010 worked in micro-enterprises, well below the average for the wider economy (31%). A further 17% SGI employees worked in both small and medium enterprises, broadly in line with the averages for the wider economy. In

contrast, while nearly half of all SGI employees worked in a large enterprise, in the rest of the economy only around a third worked in large enterprises.

Employment by occupation

There are some similarities between SGIs and the rest of the economy. In both cases, around 8% of employees are plant and machine operators, around 10½% of employees are employed as clerks, and 14-15% are employed as service workers and shop and market sales workers.

But there are also some marked differences. Notably, that senior officials and managers account for just over 4% of the workforce in SGIs, half the share seen in the rest of the economy (8.6%); and that noticeably higher shares of SGI employees are employed in professional and associate professional occupations (23-27% in SGIs compared to 15-17% in the rest of the economy).

4 Trends in Public Services over 2006-10

4.1 Headline indicators

EU27 summary

Table 4.1 shows the change in the headline indicators that measure the size of SGIs compared with the whole economy between 2006 and 2010 for the EU27 taken as a whole.

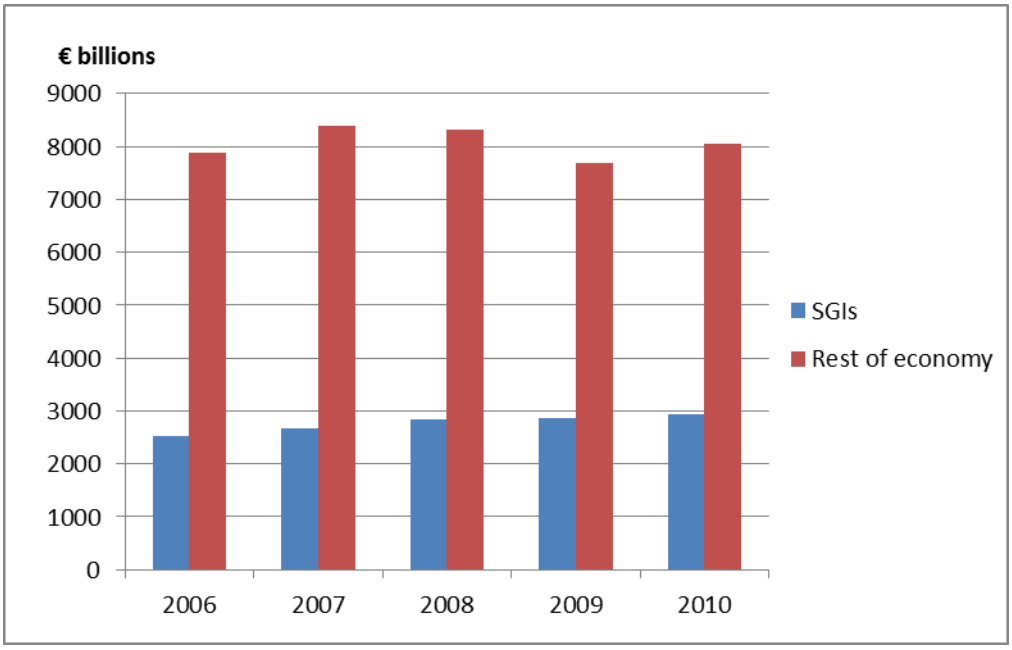
The change in SGIs' gross value added (GVA) and employment between 2006 and 2010 was slightly stronger than the whole-economy outturn, and so the shares of public services in the whole economy totals in 2010 increased a little compared with the shares in 2006: to over 26% for GVA and just under 30% for employment.

Table 4.1: Changes in summary indicators for EU27 public services, 2006-10

	2006		2010		2006-10	
	level	share of total economy %	level	share of total economy %	Change (%)	change in economy share pp
Value added (€m)	2548353	24.4	2930057	26.7	15.0	2.3
Employment ('000s)	62391	28.1	65698	29.5	5.3	1.4
Investment (€m)[1]	485120	20.1	501521	22.1	3.3	2.0

Whereas GVA in the wider economy showed a sharp fall during 2009 and a modest recovery in 2010, GVA growth in SGIs continued to rise over 2006-10, as Figure 4.1 shows. This reflects the fact that SGIs tend to be less sensitive to the economic cycle than other parts of the economy (notably construction and manufacturing). The data for investment by SGIs are not as complete as for GVA and employment and so it is unwise to seek to draw strong conclusions, but the indications are that, here too, SGIs did not experience as sharp a cycle as did the whole economy.

Figure 4.1: EU27 gross value added, 2006-10



Sources: Eurostat, OECD (Structural Business Statistics and National Accounts), ONS.

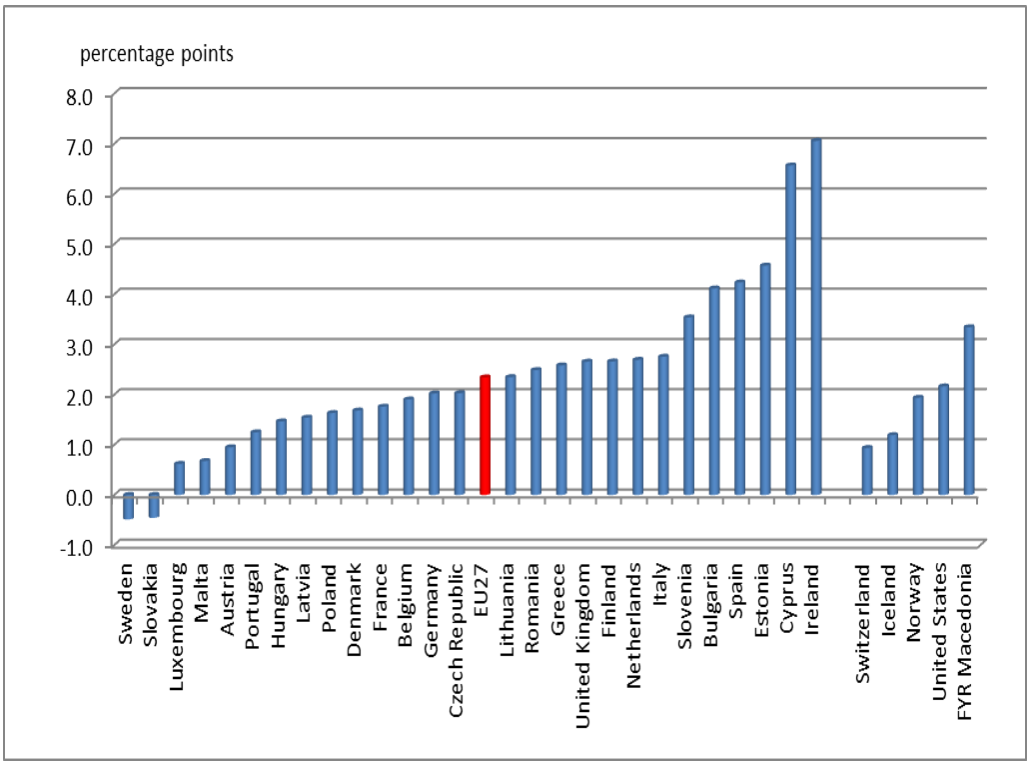
Summary analysis by country

Value added

Between 2006 and 2010, most Member States saw somewhat faster growth in SGIs than in the economy as a whole, so that the share of SGIs in whole-economy value added increased, asFigure 4.2 shows.

The share of SGIs in EU27 value added rose by 2.2 pp, and for 19 Member States the increase in share was in the range 0.6-2.8 pp. For four of the five non-EU countries for which comparable data have been collected, the increase in the share of SGIs in the whole economy was a little slower than the EU27 average (the exception is FYR Macedonia). In some countries the share rose through to 2009 and fell back slightly in 2010 as the initial recovery from the 2009 recession was reflected more strongly in non-SGI sectors (for example, manufacturing industry) than among SGIs.

Figure 4.2: Change in share of public services in whole-economy value added, 2006-10

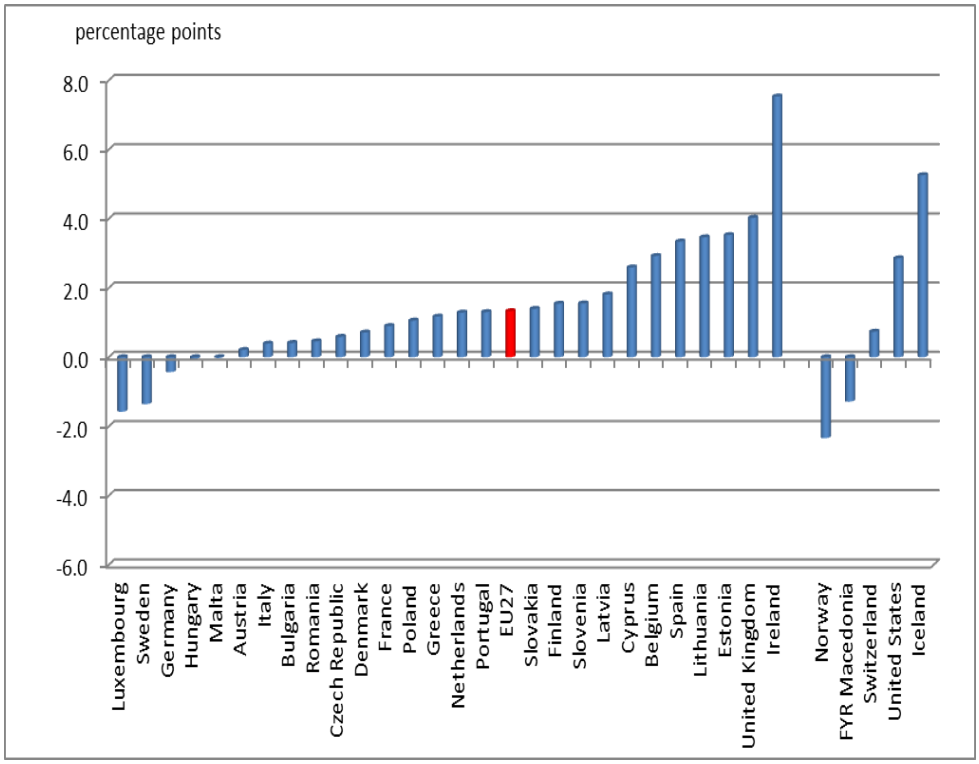


Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Employment

For the EU as whole, there was a modest increase in the share of SGIs in whole-economy employment. Figure 4.3 shows the distribution across Member States. The shares in whole-economy employment fell between 2006 and 2010 in three Member States, including Germany. In France and Italy it increased by less than 1 pp, while in the UK and Spain it increased by more than 3 pp. The largest increase was recorded for Ireland, the result of strong growth in SGIs in 2007 and 2008 followed by little change in 2009 and 2010, compared with large declines in 2009-10 in the whole economy. The US saw an increase in the share of SGIs over the same period.

Figure 4.3: Changes in shares of whole-economy employment, 2006-10



Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Countries outside the EU27

Table 4.2 presents the change in SGIs value added and employment in the countries for which comparable data were available. Growth in SGIs was somewhat stronger in the EU27 over this period than in the US.

Table 4.2: Change in selected indicators for comparator countries, 2006-10

	Value added (€m)			**Employment (000s)**		
	Change over 2006-10			Change over 2006-10		
	Level	Growth (%)	Economy share (pp)	Level	Growth (%)	Economy share (pp)
EU27	380950	15.0	2.2	3305	5.3	1.3
US	301414	11.6	2.2	2013	4.2	2.9
Norway	15442	26.4	1.9	5	0.5	-2.3
Switzerland	14494	20.2	-1.6	109	9.1	0.7
FYR Macedonia	646	66.5	2.7	14	10.2	-1.3
Iceland	-606	-19.8	1.6	8	14.5	5.3

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

4.2 Extended indicators

Table 4.3 shows the change between 2006 and 2010 for a range of detailed employment indicators for SGIs.

The shares of employment by gender were little changed over the period.

There was a modest shift from younger to older workers in the composition of the SGI workforce.

There was a shift from low and medium qualification levels to high qualification levels, and this was also reflected in a lower share of some occupations normally associated with lower qualifications (notably elementary occupations) and a higher share for professional and associate professional occupations. But there was also an increase in the share of service workers and shop and market sales workers, which are not high qualification level occupations.

Table 4.3: Changes in detailed employment indicators for EU27 SGIs, 2006-10

	2006		2010		Change over 2006-10	
	level	%[1]	level	%[1]	Growth (%)	Share (pp)
Employment by gender (000s)						
Male	24630	41.2	29037	42.3	17.9	1.1
Female	35081	58.8	39596	57.7	12.9	-1.1
Employment by age (000s)						
15-24	3621	6.1	3572	5.9	-1.3	-0.2
25-49	39298	66.0	38270	63.5	-2.6	-2.5
50-64	16132	27.1	17845	29.6	10.6	2.5
65+	508	0.9	587	1.0	15.5	0.1
Employment by qualification (000s)[2]						
Low	9807	16.5	8610	14.0	-12.2	-2.6
Medium	24804	41.8	25116	40.8	1.3	-1.1
High	24702	41.6	27882	45.3	12.9	3.6
Employment by enterprise size (000s)[3]						
Micro (<10 employees)	2080	16.8	1978	17.6	-4.9	0.8
Small (10-49)	1706	13.8	1857	16.5	8.8	2.7
Medium (50-249)	1920	15.5	1948	17.3	1.5	1.8
Large (250+)	6652	53.8	5467	48.6	-17.8	-5.2
Employment by occupation (000s)						
Armed forces	1298	2.2	1190	1.9	-8.4	-0.3
Legislators, senior officials and managers	2447	4.1	2612	4.2	6.7	0.1
Professionals	15634	26.4	16537	26.8	5.8	0.5
Technicians and associate professionals	13439	22.7	14154	23.0	5.3	0.3
Clerks	6429	10.8	6361	10.3	-1.1	-0.5
Service workers and shop and market sales workers	9063	15.3	9723	15.8	7.3	0.5
Skilled agricultural and fishery workers	208	0.3	217	0.4	4.7	0.0
Craft and related trades workers	1322	2.2	1156	1.9	-12.5	-0.4
Plant and machine operators and assemblers	4887	8.2	5006	8.1	2.4	-0.1
Elementary occupations	4587	7.7	4652	7.6	1.4	-0.2

Sources: Eurostat, OECD (Structural Business Statistics, National Accounts and Labour Force Statistics), CEDEFOP.

Notes:(1) The column shows the shares of each category's components in its total, except in the case of apparent labour productivity where the ratio to the whole-economy average is shown.

(2) Employment by qualification uses CEDEFOP definitions which are as follows:

Low - (Pre-)primary and lower secondary (ISCED 0-2, 3c);

Medium - Upper and post-secondary (ISCED 3-4, excluding 3c);

High - Tertiary (ISCED 5-6).

(3) Excludes sectors not covered by the Structural Business Statistics (2.10, 2.40, 84, 85, 86, 87, 88, 91, 96.03.

5 Adapting to the crisis: how public services have responded

The data presented in Chapters 3 and 4 are published with a time lag of at least two years, and that timing is particularly unfortunate given that responses to the financing squeeze precipitated by the crisis have particularly taken effect in the period since 2010.In this chapter we draw on published reports to present an account of the pressures on public services in different countries of the EU. We start with an account of the effects on employment in public services in comparison to some other sectors. We then look in more detail at the ways in which public and government services in the principal countries were affected by the economic circumstances of the countries and the types of austerity measures that their governments adopted. We conclude with seven case studies to illustrate some aspects of these impacts.

Employment in public services during the crisis – an overview

Data published by the European Foundation for the Improvement of Living and Working Conditions (ERM 2012)[11] set the recent trends in employment in public services in the wider context of employment across all sectors. These data show that the 1-digit NACE categories of Manufacturing and Construction accounted for by far the largest declines in employment in the EU27 between 2008Q1 and 2012Q1, in absolute and percentage terms. Between them these two sectors suffered a net loss of just over seven million jobs, representing a decline of -17.3% in Construction and -10.6% in Manufacturing, well above the total net loss across all sectors of just over five million (-2.3%). Some public services registered net job losses: Transportation & storage (-5.3%), Public administration & defence (-1.4%). Others, however, registered net increases: Utilities (Electricity, gas etc. +14.7%; Water, sewerage etc. +3.1%), Education (+3.6%), Health (+8.7%). This amounts to a net gain of about 2¾% in employment across these public service activities. The same report also shows the change in average hours worked (per person) for broad groups of activities,which can act as an indicator of the strength of labour demand (for example, reduced overtime or a shift towards more part-time working). In the period 2008Q1-2010Q1 average hours worked increased by just over 2% in Public administration & defence, education and health and by about ¼% in the following two-year period 2010Q1-2012Q1. In the earlier two-year period the only other broad group in which there was an increase (about 2½%) in average hours worked was Arts, entertainment & recreation and various other services and household activities. In the later period, when there was some recovery from the depths of the crisis, the small increases in average hours worked in these two broad groups were easily exceeded by increases of between 2¼% and 3½% in Professional & scientific & business support services, Information & communications and Real estate activities, and of 1% in Financial services. The evidence in the ERM report also suggests that, whereas, public administration had helped to sustain employment in the early

[11]Eurofound (2012), ***ERM report 2012 - After restructuring: Labour markets, working conditions and life satisfaction***, Publications Office of the European Union, Luxembourg

years of the crisis, this is no longer the case. The report cites job cuts in public administration in the UK and France, and the list of the largest job losses announced between 2011Q3 and 2012Q2 includes 44,719 in the public administrations of Greece (30,000), the Czech Republic (8,000) and Hungary (6,719). These, along with 11,000 in utilities (the German company E.ON), account for more than 47% of the total 117,059 job losses in the list. Large employment increases, on the other hand, amount to 48,100, of which only 10,100 or 21% are attributable to public services (Polish police and the French energy company EDF)[12].

The financial responses of Member States

We now turn to examine the ways in which the responses of Member States to the global economic crisis have affected expenditure on public services. The discussion draws on two reports from the OECD[13] and a chapter in the European Commission's biennial report *Industrial Relations in Europe 2012*[14].

Influences shaping the responses

The timing and nature of the responses have been strongly influenced by two interrelated factors:

1 the external pressures to reduce fiscal deficits and/or levels of government debt

2 the levels of fiscal deficit and/or government debt as proportions of GDP

The principal external pressures are exerted either by providers of financial assistance (the Troika of IMF, EU and ECB, and, in some cases, the World Bank) or by the bond markets.

In relation to expenditure on public services a third factor has also been of considerable importance:

3 the presence or absence of reforms to public sector employment and work practices prior to the global crisis

Categorising countries

In light of the effects of the first two factors in 2011, OECD (2012) put countries into four groups:

A those subject to programmes of financial assistance because of their high levels of fiscal deficit and government debt: Greece, Ireland and Portugal

B those under distinct bond market pressures because of their high levels of fiscal deficit and/or government debt: Belgium, Hungary, Italy, Poland, Slovakia, Slovenia and Spain

[12] The figures given in the ERM report are based on data submitted by Member States or collected by Eurofound. The authors do not claim that their figures constitute an exhaustive record of all large job losses and gains. They most probably come close to but do not amount to a complete record. At any rate, they may be taken as a reliable indicator of trends in employment.

[13] OECD (2011), *Restoring Public Finances*, Special Issue of the *OECD Journal* on *Budgeting*, Volume 2011/2, OECD Publishing, Paris.
OECD (2012), *Restoring Public Finances, 2012 Update*, OECD Publishing.
http://dx.doi.org/10.1787/9789264179455-en

[14] Bach, S. and R. Pedersini, 'The consequences of the crisis for public sector industrial relations', in European Commission (2013), *Industrial Relations in Europe 2012,* Luxembourg: Office of the European Union.

C those with substantial deficits or debts but under less market pressure: Austria, Czech Republic, Denmark, Finland, France, Germany, Netherlands and UK

D those with no need or only marginal need for fiscal consolidation: Estonia, Luxembourg and Sweden

In this summary account we concentrate on countries in Groups A, B and C.

The OECD does not list six member states: Bulgaria, Cyprus, Latvia, Lithuania, Malta and Romania. Bulgaria, Latvia and Malta would probably be in Group D.

Bulgaria reported a low level of debt in 2011 (16.3% of GDP) and a fiscal deficit of only 2% of GDP. Nevertheless, Bulgaria has embarked on a strict austerity programme, motivated partly by the collapse of a property bubble but more by the discipline imposed by its currency-board system. We explain and discuss this further in Case Study 6 (Section 5.6 below), which deals with the effects of austerity on some utility services in the poorest member of the EU.

Latvia received assistance from the EU and the IMF in 2008 and has since then halved its deficit to 3.5% of GDP. Its debt has risen nearly fourfold since 2007 but in 2012 still stood at only 42.6% of GDP.

Malta had a slowly rising debt level of 72% in 2011 and a decreasing fiscal deficit of 2.7% of GDP.

Romania and Lithuania would be on the borderline between Groups C and D. Romania received assistance from the EU and the World Bank in 2008 and 2009. Both countries have large fiscal deficits (5.2% of GDP in 2011 in Romania and 5.5% in Lithuania) but low levels of debt (33.3% in Romania and 38.5% in Lithuania).

In Bulgaria, Latvia and Romania general government expenditure was between 35% and 39% of GDP in 2011 and it was 43.3% in Malta, whereas the EU27 average was 49%. In all five countries, it had been on a downward path since 2009.

Finally, the terms of the bank bailout agreed in March 2013 put Cyprus definitely in Group A, perhaps even in a group of its own, as the only member state facing not just austerity but the collapse of its whole economic model.

Responding through reforms rather than cutting wages and employment

The relevance of the third factor (presence or absence of reforms before the crisis) is that countries that were already engaged in or had largely completed public service reforms have been able, by and large, to respond to austerity through further reforms rather than through additional operational measures such as wage cuts or reductions in employment. The countries in question are Germany, Sweden, Denmark, France, the Netherlands, Italy and the UK. All are in Group C, except for Italy in Group B and Sweden in Group D. The UK differs from the others in that it is implementing substantial job cuts and a wage freeze as well as pursuing reforms to work practices and administrative organisation.

Countries in Groups A[15] and B[16]

In Ireland the share of government debt as a percentage of GDP more than tripled between 2007 and 2011 to stand at just over 108% of GDP in 2011, when the EU27 average was 82.5% (and the Maastricht ceiling is 60%). In Greece the increase was only 54% but the starting level in 2007 was much higher, with the result that Greece was by far the most indebted country in the EU in 2011, with government debt at more than 165% of GDP. Both countries also had large fiscal deficits, falling rapidly in Ireland to 13% of GDP in 2011 and falling more slowly in Greece to 9%. In Portugal debt increased by 58% between 2007 and 2011, but the starting point was lower and so the share of just under 108% of GDP in 2011 was only slightly lower than that of Ireland. The fiscal deficit, however, was much smaller, at just over 4% of GDP.

Of the countries in Group B, only Italy was comparable to the Group A countries in its 120% debt level in 2011, but the rise since 2007 had been modest, only 16.5%. Of the other Group B countries, Belgium (98%) and Hungary (80.6%) had levels well above the Maastricht ceiling. Spain's 68.5% level was not far above the Maastricht ceiling, but its increase of more than 89% since 2007 gave cause for concern. Similarly, Slovenia was still well below the Maastricht ceiling at 47.6%, but the increase since 2007 was 106%. Only Poland and the Slovak Republic had relatively modest increases, leading to fairly low levels of 56% and 43% respectively. Their fiscal deficits in 2011, however, were higher than the Maastricht level of 3% and the EU27 average of 4.5%. Spain's deficit of 8.5% approached the 9.1% of Greece.

Higher shares of government employees' pay in GDP

In Greece and Ireland employment in government services remained fairly constant as a percentage of the labour force between 2000 and 2008 (around 15% in Ireland, and rising slightly to 10% in Greece), but the pay of government employees rose sharply as a proportion of GDP, from 8% in 2000 to above 13% in 2009 in Ireland and from just above 10% to nearly 14% in Greece. In Portugal, the share of the total workforce fell slightly to just below 15% and the share of compensation in GDP fell from above 14% to 13%. In all three countries the shares of pay in GDP in 2011 were between 11% and 12%, above the EU27 average of 10.8%.

Of the seven countries in Group B, the 20% share of general government employment in the labour force in Hungary in 2008 was higher than in any other Member State (except Denmark [28%], Sweden [27%], Finland [23%] and France [22%]), and the 16% shares in Italy and Slovenia were higher than the 13%-14% shares in Poland, Spain and the Slovak Republic[17]. All Group B countries except for the Slovak Republic had levels of compensation of government employees equivalent to around 12½%-13% of GDP in 2009, but the rises had been much less steep in the preceding years. Only in the Slovak Republic did the share of pay in GDP decline in this period, from 10½% to 10%, even though the share of the total labour force rose from 12% to 13%. Only Hungary, Poland and the Slovak Republic had shares of pay in GDP lower than the EU27 average in 2011.

[15] Greece, Ireland and Portugal (and, imminently, Cyprus)

[16] Belgium, Hungary, Italy, Poland, Slovakia, Slovenia and Spain

[17] OECD (2011) did not have data for Belgium.

It should be borne in mind that, for most of the period in which government pay of employees was rising as a share of GDP, GDP itself was growing strongly. After the onset of the crisis, when GDP began to fall from around 2009 onwards, a continuing rise in the GDP share of employee pay is compatible with reductions in wages and staff numbers, whereas a decline in the share can indicate a very steep reduction in wages or employee numbers.

Reductions in government expenditure achieved mainly through cuts in programmes...

In none of the countries in Groups A or B had there been any substantial attempts at reform of public services before the crisis. Consequently, no part of the reductions in government expenditure required under the agreements with the Troika or made in response to pressures in the bond markets could easily be made by pushing ahead more vigorously with reforms. Moreover, because of the need to take rapid action, expenditure had to be reduced largely by cuts in programmes and by operational measures.

The OECD distinguishes between cuts in programmes (e.g. in the level of benefits or the categories entitled to receive them), operational measures (e.g. wage cuts, increases in efficiency, or staff reductions) and 'other' measures (mostly overall spending cuts or freezes on public consumption). Health, welfare and pensions are the main 'big spending' programmes on which cuts have been focussed. Cuts to programmes also include infrastructure programmes, but these do not directly affect public services. In most OECD members, cuts to programmes have made by far the largest contribution to fiscal consolidation and debt reduction. This is particularly true of countries in Groups A or B because of the pressure to achieve quick and substantial reductions in expenditure. Programme measures accounted for between two-thirds and four-fifth of the cumulative expenditure reductions planned in all countries in Groups A and B.

Greece plans to make cuts equivalent to just under 2% of GDP in its social welfare programmes by 2015, while Ireland, Hungary and Poland plan cuts equivalent to just over 1% in the same period. Belgium, Ireland and Portugal plan cuts of around 1% of GDP in their health care budgets, while Greece and Spain plan cuts of 0.8% and 0.7% respectively.

In pensions programmes, Hungary aims to cut the equivalent of 3% of GDP from its expenditure between 2009 and 2015, whereas Portugal and Poland are aiming for 1½%. The main methods used by Hungary are to weaken the second pillar and to bring private-sector pension funds into the state scheme; and in Portugal the pension assets of Portugal Telecom have been transferred to the state.

One strategy for reducing further rises in pension costs is to raise the retirement age. This, however, takes effect only in the medium and longer terms[18].

... and to a lesser extent through operational measures...

Operational expenditures were reduced by wage cuts, wage freezes and staff reductions. In 2011 wages in public administration were cut by 5% in Portugal and Spain, by 10% in the Slovak Republic, by 13.5% in Ireland and by 14% in Slovenia. For the two years 2012-13 there is a public sector wage freeze in

[18] Estonia, France, German, Greece, Hungary, Ireland, Spain and the UK have all legislated to raise the qualification age for state pensions; but only Germany begins to implement the changes before 2018.

Portugal, and from mid-2012 there are wage cuts of 8% in the public sector in Slovenia. In several countries lower earners or particular groups were protected from wage cuts and freezes. In Ireland, Italy and Poland wage cuts were imposed on higher earners and not on lower earners. In Poland and the Slovak Republic, teachers were protected from wage freezes or cuts (in Poland their pay actually increased). In Greece the pay freeze for government employees in 2010 was imposed on those earning more than €2,000 per month and was followed by a reduction in allowances amounting to a 20% pay cut by 2012 for this group. One of the main allowances abolished in Greece was the 13th and 14th month salary each year. In 2012 the 13th month salary was abolished in Portugal for civil servants earning over €1,000 per month. The abolition of the 13th month salary in Hungary in 2010 amounted to an 8% wage cut.

At the time of writing (April 2013), the Portuguese government is preparing additional spending cuts in health, social security, education and public enterprises, to make up for the increase (estimated at around €1.3bn) in the deficit for 2013, brought about by the ruling of the constitutional court in April 2013 that four of the cuts the government had earlier proposed were unconstitutional. In case study 7 (Section 5.7 below) we describe how information technology introduced at Portugal's largest port shortly before the global crisis has facilitated increased efficiency and productivity during the time of austerity and thus contributed to the increase in volumes handled at the port for the third consecutive year in 2012.

Another form of wage cut is to increase working hours without an increase in pay. The working week was increased from 37.5 to 40 hours in Greece in 2011 and from 35 to 37.5 hours in Spain in 2012.

... without much consultation

Because the cuts in programmes and the reductions in wages and staff numbers were made under strong external pressures and over a relatively brief period of time, there was little opportunity for consultation with the social partners. The measures aroused widespread protests and industrial action. Only in one country was there a coordinated effort to establish a framework within which wage cuts and job reductions could be made while efforts were made to preserve services. This was the Croke Park Agreement in Ireland, reached in 2010 after a series of strikes and protests. This is discussed in Case Study 2 in Section 5.2 below.

Use of temporary contracts

In most continental European countries employment in public services is protected by statutory agreements. Under these circumstances flexibility in staff levels has normally been achieved by temporary contracts, particularly in Spain and Italy. Since the financial crisis started there has been increasing use of these contracts. The other main way of reducing numbers when employment is protected by statue is by not filling vacancies. Current policies are to fill only one vacancy in ten in Spain and Greece and one in five in Italy.

Greece also took steps to reduce the public sector payroll by abolishing a large number of public agencies and reducing the number of local administrative bodies.

Countries in Group C[19]

Whereas cuts in programmes are making by far the largest contribution to expenditure reductions in public services in all countries in Groups A and B, there is a substantial minority of countries in Group C in which reductions in operating expenditure carry much of the burden.

In some MS reductions in operating expenditure are important...

In the Czech Republic, Denmark and the UK reductions in operating expenditure account for more than 40% of expenditure reductions[20]. In this context it is relevant to note that Denmark devotes a higher share of its GDP (17% in 2011) to pay for government employees than any other member of the EU (or the OECD). It is followed by Iceland, Finland, Sweden, Norway and France, with shares of around and a little below 14%. The Czech Republic (like Estonia in Group D) is also relying heavily on 'other measures' (i.e. freezing expenditure so as to keep expenditure growth well below revenue growth).

In Austria the government had increased spending in 2010 to counteract the effects of the recession and global slowdown. Partly in response to the loss of its AAA rating in 2012 the government introduced a package of spending cuts and tax increases designed to save €27.9bn over the period 2012-16 and thus to reduce the deficit to 3% of GDP in 2012 and to balance the budget in 2016. About 33% of the savings are to come from higher taxes on the wealthy and Austrian companies operating abroad, and about two-thirds are to come from spending cuts. These cuts are focussed on deferring rises in pensions and pay increases for workers in public administration.

In Case Study 5 (Section 5.5 below) we describe the way in which transport services in Vienna are thriving despite this incoming austerity and the decision of the city government to reduce some fares by up to 19% in 2012. We contrast this experience with the position in Flanders, where more vigorous policies of low fares and comprehensive service have contributed to a decline in service standards and in passenger numbers.

... and cuts to programmes

Cuts to programmes account for almost all the reduction in public services expenditure planned in Germany for the period 2009-15. These cuts include reductions equivalent to more than 1% of GDP in welfare programmes. Welfare reductions on a similar scale are planned in the UK, whereas in France and the Netherlands they amount to around 0.6% of GDP.

The programme cuts in Germany are motivated mainly by the constitutional requirement (the Schuldenbremse or Debt brake) introduced in 2009 that from 2016 the Federal Government will not be allowed to have a structural deficit greater than 0.35% of GDP and from 2020 the Land governments will not be allowed to have any structural deficit.

Case Study 3 (Section 5.3 below) describes two initiatives targeted at young people in Berlin in which the approaches that could be helpful to potentially

[19] Austria, Czech Republic, Denmark, Finland, France, Germany, Netherlands and UK, and, arguably, Lithuania and Romania.

[20] OECD (2011) pp. 41-42.

marginalised groups at a time of cuts in welfare programmes and continuing austerity.

Case Study 4 (Section 5.4 below) of Hillingdon shows how one London borough went against the trend of cuts to certain services in other parts of London and by a novel involvement of the private sector managed to preserve its library services and also managed to extend its residential care services by a more intensive use of specialist technology.

Wage cuts, pay freezes and less recruitment

The main operational measures adopted in government employment were wage cuts and pay freezes, along with policies of reducing staff numbers by not replacing those who had retired. In the Czech and Slovak Republics the wage bill was cut by 10% in 2011 and there is a pay freeze until 2014; in France there is a two-year pay freeze; in Lithuania there was a 15% wage cut and a pay freeze until 2012; in the Netherlands there has been a wage freeze for central government employment since 2011; in Romania there was a temporary 25% cut in 2010, a pay freeze in 2012 and the 13th month pay was abolished in 2012.

Reforms to work practices

In contrast to other countries in this group, Germany, Denmark, France the Netherlands and the UK had introduced reforms to work practices in public services. These included amalgamation of departments, new management practices, performance-related pay, increased use of IT, and outsourcing to private companies, particularly of IT, finance, legal services and human resource management. Case Study 1 (Section 5.1 below) illustrates how various kinds of managerial reform in Hinchingbrooke Hospital were introduced by involving a private company in one part of the public health service in the UK.

The onset of the financial crisis strengthened the motivation to pursue such reforms further. Since these four countries were under less external pressure from markets than countries in Groups A and B, they were able to control or reduce operating expenditure mainly through further reforms and with less resort to wage or staff cuts. Nonetheless, there was a wage freeze in public administration in France in 2011 and the policy of replacing only one in two of retiring state employees is meant to lead to a reduction of 150,000 posts in the public sector by 2013. In Germany staff numbers in the federal government are to be cut by 10,000 by 2014. The UK, however, is something of an exception, since in addition to reforms in organisation and management and much use of outsourcing, it also has a programme of wage restraint and substantial staff cuts, starting with a two-year wage freeze and continuing with a reduction of 710,000[21] in government employment by 2016/17. Unlike the position in many continental countries, this kind of employment in the UK is not protected by statute.

Pay increases are rare

In contrast to the wage freezes and cuts in other countries, some two million public sector employees in Germany are receiving pay rises averaging 6.3% in total between 2012 and 2014. In Austria and the Nordic countries there are also pay rises, but only modest ones.

[21] Figure projected by the Office for Budget Responsibility.

Countries in Group D[22]

Like Germany and the Netherlands, Estonia took action early before any substantial pressures had built up. Basic pay was cut by 6% between 2008 and 2010, and there was also a pay freeze in 2009 and 2010. In Bulgaria employment in central government was reduced by 12% between 2009 and 2011. Under its agreement with the IMF, Latvia introduced a single pay system for those in central and local government; this cut pay by an average of 5% in 2010. There was also a 15% pay cut in 2009 and pay cuts of 20% in 2010 for the higher paid and 15% for the lower paid. Finally, Sweden, where some 27% of the labour force is employed by the central government, the pressures from the crisis were so low that only minimal operational responses were needed. There was no wage freeze, but there was some moderation in pay rises. There was no policy of staff reduction, but there was less employment of staff on fixed-term contracts.

5.1 Case Study 1: Hinchingbrooke Hospital, Huntingdon UK

Background

Hinchingbrooke is an all-purpose district general hospital near Huntingdon in Cambridgeshire. It has 276 beds and employs about 1,700 staff. It is part of the National Health Service (NHS). It is administered by the Hinchingbrooke Health Care NHS Trust (referred to hereafter as the Trust).

Clinical and financial problems before 2010

Since 2006 the hospital has encountered serious clinical and financial problems. Its clinical problems led to the loss of five chief executives and made the hospital the subject of two independent external reviews.

The financial problems were related to the clinical problems. The hospital was failing to generate enough revenue from its patient services to cover its costs, principally because general practitioners (who act as gatekeepers to hospital care in the NHS) were referring patients to hospitals outside the district rather than to Hinchingbrooke and patients who could choose their hospital were going elsewhere. Between 2003/04 and 2007/08 the hospital's cumulative deficit grew from £263,000 to £39m on annual income of around £73m. Over 2006-08 the Department of Health provided about £40m in working capital to support the Trust while it tried to return the hospital to in-year financial balance. However, the Trust's recovery plans were unsuccessful and it managed to return to in-year balance from 2009/10 onwards only with supplementary financial help from the local healthcare authorities. In 2011/12 the hospital's annual income was £107m, but future losses were projected to amount to around £230m over the coming ten years.

Franchise to operate the hospital for ten years

After considering various options, the East of England Strategic Health Authority (SHA) was allowed by the Department of Health (DoH) to invite bids for a ten-year franchise to operate the hospital.

In November 2011 the franchise was awarded to the private company Circle Health for ten years from February 2012 with the objective of generating sufficient profit from its patient services to pay off its £40m debt.

[22] Estonia, Luxembourg and Sweden and, arguably, Bulgaria, Latvia and Malta.

The action of the SHA was a response not to austerity but to the hospital's clinical and financial problems. But NHS hospitals are generally being required to make cost savings of 4%-5% in 2012 and the success or failure of Circle at Hinchingbrooke over the ten-year period will probably influence responses to austerity in health and other public services. In the NHS itself some other trusts are considering entering into similar franchise arrangements in the near future.

Circle Health and its ten-year contract

Circle's previous experience in the health service

Circle is a partnership in which its employees own 49.9% of the shares. It is also supported by some prominent hedge funds. Four of the six medical facilities managed by Circle are in the private health sector: two hand and eye surgery clinics (in Stratford-on-Avon and Windsor); two hospitals (one in Bath, opened in 2011; and one in Reading, opened in 2012). Circle's only other medical facility in the NHS apart from Hinchingbrooke is a day surgery centre in Nottingham.

The first case of private management, but is it a precedent?

Hinchingbrooke is the first NHS district general hospital to be run by a private organisation. The closest precedent is the three-year contract awarded in 2003 to a private company to run Birmingham's Good Hope hospital (not a district general hospital). This was terminated eight months early after the hospital's deficit quadrupled. Hinchingbrooke represents a more radical departure for the NHS than other current types of private involvement: mainly the outsourcing of non-clinical services and the buying-in of some clinical services from private providers. Private involvement in the NHS is a very controversial issue in the UK, whereas private involvement in state-owned medical services in other European countries is much more accepted.

The risk's in the franchise

The contract transfers to Circle all the demand risk, i.e. the risk that there will not be enough patients to meet Circle's financial targets. It also transfers a considerable financial risk, since Circle receives no fee in any year in which the hospital does not generate a profit and Circle receives the full franchise fee of £31m over ten years only if it generates the £311m of savings set out in its bid. Conversely, Circle is liable for the first £5m of any deficit generated by the hospital. If the deficit exceeds £5m, then either the SHA or Circle can terminate the contract. The liability of the SHA is capped at £10m if it terminates the contract for reasons other than the default of Circle or failure to repay the cumulative deficit in full.

The assets of Hinchingbrooke are still owned by the Trust and the staff are still employees of the Trust, but the staff will be entitled to receive free shares in Circle, in relation to their performance and seniority.

Circle's strategy at Hinchingbrooke

Improving services and cutting costs

There are two prongs of Circle's declared strategy. The first is to improve the quality of the patient services at the hospital in the hope that an improved reputation among patients and GPs will lead to an increase in patient numbers and associated income. Quality is assessed in terms of the clinical outcomes for the patient and the total experience of the patient at the hospital (from ease of car-parking to quality of food and of entertainment). The second prong is to cut costs, but mainly, Circle claims, through reducing waste and inefficiency rather than through job cuts. The main areas Circle has identified for cost-cutting are back-office functions, procurement, the length of time that patients stay in the hospital, and more efficient use of operating theatres.

Circle's successful bid for the franchise assumes that it will be able to make savings of more than 5% in each of the ten years, including an annual efficiency saving of 4.3% from the fourth year of the franchise onwards.

Two key instruments behind both prongs are what Circle calls 'distributed leadership' and the involvement of all staff in setting objectives for the improvement of the hospital and of initiatives to achieve those objectives.

Distributed leadership: A different model of leadership and staff involvement

In contrast to the rather centralised management style at the NHS (described by one midwife at Hinchingbrooke as 'very top-down'), leadership is shared between doctors, nurses and administrators in the following structure. The whole hospital is divided into two clinical divisions (Elective and women; and Emergency and medicine), each of which is governed by a board. Each division is divided into clinical units, each of which has a representative on its clinical board. Each clinical unit consists of between 50 and 100 staff under the leadership of a doctor, a nurse and an administrator. Each unit is responsible for the quality of the service its patients receive, and also for its budget and financial performance. Thus, for the day-to-day running of the hospital and its performance over time, the key element of distributed leadership is the clinical unit.

Objectives and initiatives: Four objectives for an improved service

At the beginning of its contract Circle asked all staff to discuss and determine overall objectives for improving the hospital's services and ways to achieve them. About 1,200 of the 1,700 staff took part in the sessions and the results of their deliberations were categorised by Circle into four objectives (patient safety, patient experience, value for money and staff involvement), with four initiatives for each objective. A timetable was given for the introduction of procedures under each initiative. Each clinical unit is to take on some of the responsibility for designing and implementing the procedures relevant to itself. Orthopaedics provides an example to illustrate this. The orthopaedic team, introduced to management techniques used at Toyota, established the most efficient timetable for any one day and analysed the steps needed to achieve this. They found that the main disruption to the timetable under the previous system was surgeons missing a crucial meeting at 8.45 a.m. Nurses now have the authority to find and summon surgeons to this meeting if they are late, unthinkable under previous NHS procedures. Circle claims that by May 2012

the average length of stay for hip and knee patients had fallen from 5.6 to 3.5 days, saving £1.5m per year, and that 55% of the first incisions in the day's timetable were then on time, as opposed to only 38% previously.

Results so far

After the first nine months of Circle's management of the hospital (February – October 2012), some results could be recorded (in addition to the reduced length of stay for orthopaedic patients).

Results – according to Circle

In winter 2011 one in seven patients waited more than four hours to be admitted to Accident & Emergency, but by spring 2012 that number had fallen to below one in a hundred.

Before 2012 there used to be more than 100 patients at any one time who had been in the hospital for more than ten days; by May 2012 that number was 30.

By June 2012 incidents that threatened the safety of patients had been reduced by 70% and cancer targets were being met for the first time.

Some £1.6m had been saved by changing the system for ordering paper supplies; and other savings had been made by reducing cleaning in office and residential areas and increasing it in clinical areas.

According to patients

Since May 2012 Midlands and East NHS has been piloting a survey of patients' views about the treatment and experience in 46 hospitals in these regions of England. In May 2012 Hinchingbrooke ranked joint-first (with a hospital in Shropshire) with a rating of 89 out of a possible 100. In June it ranked ninth, in July eleventh; but in August it ranked 20th, with a score of only 69, in line with the average. Circle claims that the low ranking in August was due to disruption to patients caused by the opening of a new unit.

According to the National Audit Office

In November 2012 the National Audit Office (NAO) published a report on the franchising of Hinchingbrooke and the results achieved since February 2012. The NAO identified improvements in the accident and emergency department and in waiting times for cancer patients.

However, it highlighted several concerns.

1 Are the projected savings attainable?

As a percentage of Hinchingbrooke's normal annual turnover, the projected savings of £311m over ten years would be unprecedented in the NHS. The task has become harder in the first year. Because the hospital's underlying deficit was between £3m and £4m at the beginning of 2012/13, Circle has to make savings of £9m in 2012/13, compared to the £5m it had projected in its bid for the franchise.

Most of the savings are to be generated in the later years of the contract.

Circle is aiming to achieve an average annual surplus far greater than the largest achieved by the hospital since 2000, £0.6m. By the end of September 2012 the hospital's deficit for 2012/13 was £4.1m, compared to the deficit of £1.9m planned by Circle for that date.

2 Assessing progress and measuring success

The arrangements for the Trust to oversee the operation of the franchise and to manage any risks that arise were not put in place before the franchise started and were still being formulated in October 2012.

The stakeholders, i.e. the DoH, Circle, the Trust and HM Treasury have different views about what would count as the success of the franchise (e.g. full or only partial payment of the accumulated deficit).

It is not clear who will report progress in the franchise or whether the reports will be public. Nor is there much clarity about the indicators against which progress will be measured.

3 Other concerns

While congratulating Hinchingbrooke staff for improvements in many areas, the public services union Unison (press release 01 August 2012) reports that many staff are still nervous about their job prospects. So far, according to Unison, there have been job cuts among cleaning staff.

Conclusions

The most innovative features of the new management at Hinchingbrooke are distribution of leadership and responsibility for outcomes among the clinical units and the involvement of staff in setting and planning for objectives.

This approach inevitably requires medical and administrative staff to take on roles outside the areas of expertise in which they normally work. Thus it expands the content and skills of their work and requires training and assistance.

One key question is whether Circle will succeed in generating sufficient profit to pay off Hinchingbrooke's accumulated debt by attracting more patients and cutting costs without having to make substantial job cuts.

5.2 Case Study 2: Public services in Ireland under the Croke Park Agreement: winning the cooperation of employees

The economic background and the Croke Park Agreement 2010-2014

Under the programme to reduce its deficit to below 3% of GDP by 2014, the Irish government is committed to reducing its pay and pensions bill by €3.3bn (nearly 19%) between 2009 and 2015. In 2009 the bill was almost €18.5bn, of which pay accounted for almost €16.5bn. Following a period of protests and industrial action against austerity measures (including pay cuts) in 2009, the government took steps to secure the active cooperation of employees in public administration and across the public services. After discussions with unions and other bodies representing employees, an agreement was reached in June 2010 to cover the period 2010-14, under which the government would provide a framework of security related to pay, pensions and redundancies on condition that public servants and their managers work together to 'build an increasingly integrated Public Service which is leaner and more effective, and focussed more on the needs of the citizen' .

The overall aim of the agreement was to provide those working in the public service with security of jobs and pensions in return for changes in work practices.

The main elements of the framework of security provided by the government were that there would be:

- no further reduction in pay rates other than those applied in 2009 and 2010
- no compulsory redundancies, provided that public servants were flexible about redeployment
- a period to February 2012 during which pay reductions made in January 2010 were disregarded for the purpose of calculating pensions
- a review of public service pay in the spring of each year of the Agreement

The main elements of the changes in work practices were:

- acceptance of redeployment, up to a distance of 45 km, between different parts of a service or within the same part
- incentives for early retirement
- reduced payments for provision of services out of hours
- reorganisation of work schedules so as to achieve more regular provision of services within conventional hours
- lower pay scales for new recruits
- a greater degree of skill mix

Guided by these general principles, the affected departments (i.e.the Civil Service, the State Agency, Local Government, Education, Health, Prisons, the police and defence forces) were to achieve increases efficiency and reductions in cost particularly suited to the nature of their work.

There is an Implementation Body charged, in its words, with 'driving the implementation of the Agreement and the change agenda set out for each sector'. With the assistance of independent auditors, it has so far published two annual reviews of progress under the Agreement covering the two years to March 2012.

Extension of Croke Park Agreement beyond 2014

Between 2009 and March 2012, the pay and pensions bill had been reduced by nearly €1.6bn (8.5%). However, because of the slow growth of the economy, it became necessary in 2012 to raise the target for reductions by €1bn to €4.3bn (representing a reduction of 23.3% between 2009 and 2015). In January 2013, the government and the representative bodies began negotiations about changes to the Agreement and an extension beyond 2014. At the end of February agreement was reached on a set of proposals and the unions began to ballot their members in March.By mid-April, however, a majority had voted to reject the proposals. The government now faces the immediate problem that it needs to reduce its pay bill by €300m in 2013, but the Irish Congress of Trade Unions has threatened industrial action if the government attempts to legislate for pay cuts. The principal features of the rejected proposals were:

- Increases in working hours, but without an increase in pay: to 37 hours for those working between 35 and 37 hours per week, and to 39 for those working between 35 and 39 hours
- Pay reductions: by 5.5% for salaries between €65,000 and €80,000; by 8% for salaries between €80,000 and €150,000; by 9% for salaries between €150,000 and €185,000; by 10% for salaries above €185,000
- Deferral of increments: for a three-month period for salaries below €35,000; for two three-month periods for salaries between €35,000 and €65,000; for three years for salaries higher than €65,000
- Reduction in rates for overtime and unsocial hours
- Increased emphasis on redeployment, flexitime, performance management systems, restructuring so as to rationalise grades and/or reduce numbers of managers

The principal changes to working practices during the first Croke Park Agreement 2010-2013

Reductions in staff numbers and in the pay bill

The main changes in working practices introduced since 2010 come under the broad, and interrelated categories of redeployment within and between organisations, non-filling of vacancies, changes in hours and consequent reduction of overtime, amalgamation and restructuring of departments. Clearly, these affect the pay bill rather than the cost of pensions, but they also involve cost savings through increased efficiency. Some examples across the sectors of the Public Service illustrate the types of approach adopted.

Amalgamation leading to redeployment and reskilling in large organisations,

Local authorities are amalgamating separate sections and simplifying the access and enquiry procedures for their clients. For example, Fingal County Council amalgamated three separate sections (roads environment and parks) into a single operations department, redesigned many of the specialised activities within each of the three former sections and assigned staff to new types and locations of work. The Council claims that his increased cross-skilling and allowed greater flexibility in work planning. It also made it possible to provide the same range of services with fewer staff. For example, some 126 retired staff had not been replaced by October 2011, the Council no longer recruits temporary workers for the summer period and it does not replace those taking maternity leave or career breaks. From the point of view of users of services, there is now one point of contact for enquiries instead of the three former enquiry points. The Council is planning further amalgamations.

Teagasc, the semi-state body that provides training and consultancy for the agriculture and food industries, reduced its staff numbers by 25% between

2008 and early 2012, while providing 80% more training places. It achieved the staff reductions by redeploying 50 staff internally and 100 to other organisations while also introducing programmes of voluntary early retirement and redundancy. It plans to reduce staff numbers further to 993 by the end of 2014, a reduction of 37% in total from the level of 1,574 in 2008. This represents also a major change in ethos for an organisation whose staff numbers hardly changed during the boom years for the Irish economy when demand for training in farming and food was falling. In the time of austerity this demand is rising again. Teagasc has met increased demand with fewer staff by a 15% increase in teacher hours, a higher student-teacher ratio and increased use of external providers.

At the same time, Teagasc has restructured the advisory and consultancy services to its 45,000 farmer clients so as to manage with 36% fewer front-line advisors. It has closed offices (thirteen in 2011/12, for example) and replaced many one-to-one consultancy sessions with group meetings.

Other types of consolidation are under way in the prison service and the defence forces. Since 2008 the number of prison staff has been reduced by 8% and agreement was reached in 2012 to redeploy administration and support staff so as to release prison staff for front-line duties, and to merge eight separate prisons into three campus structures with shared services. Four army barracks were closed in 2012 and Ireland's army is to be reorganised from three brigades into two.

And in small organisations

There are several examples of redeployment in smaller organisations. Following 30 retirements early in 2012, the Brothers of Charity treatment centre for the disabled in Limerick consolidated some of its separate houses, redeployed staff, brought one of its transport services in-house and made changes to staff rosters. Roster changes and the insourcing of transport services have also been adopted elsewhere in the health service, for example in St Michael's House in Dublin, one of Ireland's largest providers of services for the mentally handicapped. Staff at St Michael's have also been redeployed between day and residential services so as to cope with reductions in staff numbers (the current payroll is 1,500).

Longer regular work hours and less overtime (and pay)

Changes to rosters often bring with them extended working hours. The consequent reduction of overtime pay and the ending of premium pay rates for unsocial hours have led to a fall in earnings for many employees. Nevertheless, staff have accepted reduced earnings, the public service union IMPACT argues, because of the job security and protection of basic pay and pensions given by the Croke Park Agreement. They are aware, also, of the seriousness of the country's economic plight.

There are several examples of an extended working day in the health service: liver transplant co-ordinators at Saint Vincent's Hospital in Dublin changing from a 7 am-3 pm day to 7.30 am-7.30 pm; longer daytime hours and the end of evening opening at addiction clinics in Dublin; an 8 am-8 pm working day at medical laboratories.

Longer work for the same pay

The extra pay for extended hours is normally less than the pay lost through reduced overtime or the ending of premium pay. In the education sector, however, hours have been extended without any increase in pay. Teachers in

primary and secondary schools have been working an extra 33-36 hours per year since spring 2011 and teachers in technical colleges and universities have increased their annual hours by between 26 and 35. For any one teacher, these annual increases do not come to much extra each week; but they do not bring with them any increase in pay. In many schools the extra hours ('Croke Park hours') fall outside normal teaching time and are assigned to staff development and training, coordination between teachers and contact with parents. Such activities used formerly to cut into class time.

In one case, extended working hours have been achieved through the abolition of a long-standing anachronism. Staff who entered the Civil Service before 2003 were entitled to 'bank time': a half-hour of paid leave each week (or fortnight in some cases) in which to cash their pay cheques at the bank, even though almost all were paid by electronic transfer. Introduced in the 1970s to encourage employees to take payment by cheque rather than in cash, bank time was finally abolished in 2010.

Lessons of the Croke Park Agreement

Security and consultation won the consent of staff

There is nothing particularly original or innovative about the changes in working practices mentioned in this case study. Nevertheless, most of them would have encountered strong resistance from employees in previous years. In fact, there was a wave of protests against austerity measures in the period before the Agreement was reached, and one motive for the Agreement was to make a repetition of these protests less likely. The IMPACT union argues that the emphasis in the Agreement on working together to introduce efficiencies and cut costs has enshrined the principle of consultation with and close involvement of staff and unions in designing and managing the changes. This cooperation, together with the security offered by the agreement, seems to have played a large part in winning acceptance for the changes. This acceptance is particularly striking in view of the fact that most of the reduction in the pay bill has been brought about by reduction in staff numbers and that increased efficiency and further cost reductions have been achieved by redeployment, extended work hours and reductions in overtime (and related pay). The Implementation Body calculates that, of the 28,000 (8.8%) reduction in Public Service staff numbers since 2008, some 17,300 job cuts were made in the first two years of the Agreement.

5.3 Case Study 3: Promoting public services employment among marginalised groups in Berlin

Future austerity

In comparison with most other European countries, Germany has not subjected its public services to austerity measures. This may change to some extent in the near future, because under the balanced budget amendment to the constitution (the Schuldenbremse or Debt brake), the Federal Government will not be allowed from 2016 onwards to have a structural deficit greater than 0.35% of GDP and from 2020 the Land governments will not be allowed to

have any structural deficit. The Federal Finance Ministry is believed to be planning an austerity budget for 2014. In any case, some initiatives recently adopted in Berlin, although not themselves responses to austerity, are relevant to countries faced with austerity, and perhaps to German itself within the next few years.

'Berlin needs you' and 'Berlin –worth more'

Tapping the wider skills of a population of diverse backgrounds

'*Berlin braucht dich*' (Berlin needs you[23]) is a joint initiative of the Berlin Vocational Training Network for Immigrants (BQN[24]) and the government of the Land of Berlin. Is aim is to raise to 25% the proportion of trainees for positions in the public services who come from an immigrant background. The motivation for this initiative is the belief that public services ought in their workforces to reflect the fact that Berlin has become an increasingly diverse and cosmopolitan city attracting immigrants from a wide range of countries. Despite this, only a very small proportion of people with an immigrant background, whether or not they have German nationality, are employed in the public services. In practice, as companies taking part in the initiative *Berlin – worth more* (see below) recognise, young people from an immigrant background may well have found it difficult to enter vocational training or apprenticeships. Thus, the initiative is also a means of helping people who might otherwise be marginalised, a category that is especially vulnerable in times of recession.

The occupational areas involved

The initiative covers twelve occupational areas in which public bodies are employers[25]. Along with schools and training providers, some of the city's largest public-services companies are involved in the programme: Berliner Wasserbetriebe (water and sewage), Berliner Stadtreinigung (cleaning and environmental services), Berliner Verkehrsbetriebe (public transport) and Vivantes (healthcare). Typically, these large organisations are involved at each stage of the structured progression in the final four years of secondary schooling, starting with information about careers in Class 7 and then proceeding in the three following years with one week of practical work experience, three weeks of work placement in an area chosen by the student and, I the final year, assistance in applying for training or apprenticeships. The companies then offer internships (typically of around ten months) to school leavers, at the end of which successful students may be offered full-time training leading to a position in the company.

[23] http://www.berlin-braucht-dich.de/

[24] Berufliches Qualifiziungsnetzwerk für Migrantinnen und Migranten in Berlin http://www.bqn-berlin.de/index.php

[25] Engineering, construction and related crafts, hotels & catering, transport, security, building design, healthcare, publicity & communications, environment and science laboratories, administration, teaching, and equipment and decoration for theatre and film.

The programme started in 2006, and by 2009 the number of young people from immigrant backgrounds engaged in training for the public services had doubled.

For the companies taking part in the programme there are other motives besides social responsibility. The water and sewage company BWB, for example, had found that the quality and skills of those applying for positions were declining. So, it hoped to get access to a wider pool of talent by encouraging youngsters from immigrant families to consider a career in the company. It believes that its hopes have so far been fulfilled.

Structured occupational advice within secondary schools

The search for a wider pool of talent was also one of the reasons that led BWB to take part in 2010 in one of the projects of the initiative '*Mehr wert Berlin*'[26] (Berlin – worth more), and then to continue its involvement in the following years. This initiative brings together 15 large companies from the public and the private sector with a common concern for improving the physical, social and economic environment of Berlin. The rationale is that they are thereby contributing to a more sustainable and economically successful future for the city, as well as providing an element of economic stability in the present uncertain global environment. The 15 companies together employ around 41,500 people as well as a further 2,000 trainees and claim to have an annual spending and investment capacity of nearly €2.4bn. The particular project in which BQB is involved ('Mehrwert-Chance-Ausbildung' = More value-Opportunity-Training) is aimed at young people who have not had opportunities for vocational training. Many of these youngsters come from immigrant families, and so this project overlaps with the 'Berlin needs you' initiative. BWB offers a ten-month course in team membership, work organisation, problem solving and many related broad skills. For those who succeed there is the offer of a training placement in the company.

Implications for public services in times of austerity

The design of these two initiatives and the ways in which participating companies engage with them help to reduce the risk of marginalisation of certain groups in times of austerity. The structured involvement with successive years of secondary schooling should enable companies to widen the pool of talent and skills from which they draw. Although the initiatives have not been designed for this purpose, the links between work experience at school and training in companies could make it easier for companies to introduce greater job flexibility and to adapt their training to suit more flexible working from the very start of an individual's career in public services.

5.4 Case Study 4: Adapting public services to austerity in Hillingdon, London.

This case study draws attention to three noteworthy features of Hillingdon's management of public services under the pressures of austerity.

- It has broadened and enlarged the provision of telecare so as to reduce the number of admissions to residential care for the elderly.

[26] http://www.mehrwert-berlin.de

- It has kept all 17 libraries open and invested about £4m to improve them, with the assistance of the Starbuck's coffee chain.
- It has embarked on a £128m capital investment programme for its schools.

The national context: cuts in revenue and spending power

Over the period 2010/11-2014/15 local authorities in England face average cuts in central government grants to support revenue spending, totalling 19.7%, before the effects of inflation are taken into account. The government prefers to set grants alongside councils' revenue from property taxes and thus to produce a total figure for 'spending power'. On this basis, the government calculates that the cumulative reduction in spending power over the four-year period amounts to 14% (without taking inflation into account).

The cuts in central government grant are front-loaded, since they consist of successive reductions in each of the four fiscal years averaging 11.4%, 9.5%, 0.8% and 5%. They are also accompanied by the abolition of some specific and special grants targeted at deprived areas.

The cuts for the fiscal year 2010/11 were announced by central government in the course of that year, first in the emergency budget of June 2010 and then in the 2010/11-2014/15 Spending Settlement of December 2010.

The cuts in grant apply also to spending on the police and fire services, but not to spending on schools.

A study published in January 2012 by the Joseph Rowntree Foundation[27] found that the cuts in public services implemented in 2010/11 and planned for 2011/12 fell most heavily on services for young people, on libraries and culture, on sport, leisure and parks. Most local authorities are making efforts to protect social care services. Moreover, local authorities had begun to prepare for cuts in funding even before the change of government in 2010. As a result many have already made most of the obvious organisational changes and efficiency savings that could cut costs.

Grant cuts and expenditure reductions in Hillingdon

The distinctive features of Hillingdon

Hillingdon, situated in the west of London, includes Heathrow, the largest single source of employment but also the point of entry for the large number of immigrants whose housing and social care is, at least initially, the responsibility of Hillingdon.

The population (on 2011 estimates), is 273,900, a 12.7% increase since 2001. Some 19.5% of the population is aged under 15 (London average = 18.7%) and almost 13% is aged over 65 (London average = 11%). Black and minority ethnic communities make up approximately 32% of population of Hillingdon, compared to 20% in 2011. The largest ethnic minority community in 2011 was Asian (20%).

[27] *Serving Deprived Communities in a Recession*, Joseph Rowntree Foundation, York, 2012.

In recent years some 44% of Hillingdon's total spending on key public services has been on education, about 11% on adult social care and 26% on social housing.

As a consequence of the cuts in central government grants, Hillingdon has had to make savings in order to balance its budget. The total savings in each year compared to the previous year's budget are £10.3m in 2010/11, £26m in 2011/12 and £17.8m in 2012/13. After 2012/13 the projected savings are £11.8m in 2013/14 and £9.7m in 2014/15[28]. The total budget requirement has come down from £194.2m in 2010/11 to £190.7m in 2012/13.

Where the cuts are being made

The major sources of the savings in expenditure on public services in the budget for 2012/13 are Planning, Environment, Education & Community Services (accounting for about 44% of savings) and Social Care, Health & Housing (accounting for 42%). However, Hillingdon faces unavoidable increases in the costs of its social services (apart from inflation). In 2012/13 the increase of £5m was due mainly to an increase of £2.2m for adult social care as a result of demographic pressures, and £1.5m for children in transition between child and adult care.

In the early years of austerity savings were made by re-organising work, making service delivery more efficient, cutting staff numbers (excluding school-based staff) and imposing a two-year pay freeze. Between 2007/08 and 2011/12 the number of full-time staff employed by Hillingdon council was reduced by 10.5% and part-time staff by 27.7%. This has changed the balance between full and part-time staff to the advantage of full-time posts, which accounted for 69% of the total in 2007/08 and for 72% in 2011/12.

Three noteworthy features of the response to austerity in Hillingdon

Communications technology and residential healthcare

In 2010 adult social care in Hillingdon was set the target of reducing its costs by £8.5m by 2012/13. This was a particular challenge because, among boroughs in Greater London, Hillingdon spends the third-highest proportion of its budget on residential and nursing care and is faced with an increasing share of older people in its population. In 2001 those aged over 65 accounted for 7% of the population; in 2011 that figure was almost 13%.

A key strategy adopted is to use telecare in place of admission to residential care.

The simplest form of telecare, a box with a button to ring an alarm at a medical centre, had been on offer in Hillingdon for 25 years. The new approach was to introduce a wider range of equipment tailored to the specific needs of patients, including personal pendants, fall detectors and bed-occupancy sensors.

[28] Figures in this and the following paragraph are from the Hillingdon budgets for 2011/12 and 2012/13.

Through a monitoring centre these are linked either to relatives or local carers or to a 24-hour response service for people without such local help.

Any resident of Hillingdon can apply for telecare, but a new method of assessment was also introduced for offering telecare services to patients on their discharge from hospital or following referral from the social care team. Telecare is free to those aged over 85 or those who meet the government's FACS (Fair Access to Care Services) criteria.

In 2012 an in-house assessment of the telecare service found that in its first year (2011) 1,120 people took up the service and that it had contributed to a halving of the number of admissions to residential care, to their lowest level since 2008. Some £4.7m of savings is attributed to reduced spending on care homes.

Hillingdon does not stand alone in using telecare; and it is, moreover, clear that the government intends to promote the use of telecare, and the related technology of telehealth (electronic monitoring of people for health-threatening conditions) in order to reduce hospital admissions and the use of care homes. The Department of Health is designing a programme 'Three Million Lives' to promote the use of these technologies by the NHS, medical practitioners and local authorities. The programme is based on the belief that at least three million people in the UK with long-term conditions and/or needs of social care could have their care improved and their quality of life improved through the use of telehealth and telecare within a comprehensive redesign of health care[29]. More care would be delivered in people's homes and NHS costs would be reduced.

Keeping libraries open, against the trend of closure

The study by the Joseph Rowntree Foundation (see footnote27 above) found that library and cultural services were among the first to be cut by council's in England seeking to reduce costs. Most London boroughs are closing libraries or reducing library services. Hillingdon, by contrast, has kept all its 17 libraries open and is now more than half way through a £4m programme to rebuild or refurbish them, including providing on-line access to the catalogues and lending services. It has also extended opening hours and decentralised the running of the libraries, giving local librarians the responsibility for selecting books for their library. By the end of 2011 visitor numbers had increased by 50% overall.

One aspect of the refurbishment is the introduction of Starbuck's coffee bars at some libraries and of drinks sold by staff at others. Starbuck's profits (£30,000 at one library between 2007 and 2011) are ploughed back into library services.

Saving the schools refurbishment programme from cuts

As the global financial crisis deepened in 2008 Hillingdon Council published a plan for a capital investment programme to provide for a steady increase in school places amounting to 24% in total by 2014. The need, which mainly affects primary schools, arises from the increase in population (nearly 13% between 2001 and 2011).

[29] Current details of the programme and its implementation can be found at http://3millionlives.co.uk/

Despite austerity and cuts in council grant Hillingdon is continuing with the programme.

The programme runs from 2010/11 to 2014/15, and the total expenditure of just under £128m is being funded by grants from the Department of Education (covering just under 44% of the cost) and by prudential borrowing by Hillingdon Council[30]. The heaviest expenditure, more than 71% of the total, is distributed fairly evenly over the two years 2011/12 and 2012/13. In September 2011, for example, the programme provided 15 additional entry forms in the borough's schools.

5.5 Case Study 5: Public transport in Vienna and Flanders

This case study looks at the public transport companies of Vienna (Wiener Linien) and Flanders (De Lijn) with particular attention to the similarities and contrasts between the services they offer and the constraints under which they operate and the ways in which those features affect their responses to austerity.

Political and economic context

Both companies operate all public transport services in their areas except for mainline rail services. Wiener Linien operates buses trams and the underground railway for Vienna, a city with 1.7m inhabitants and a population density of 4,000 per km², whereas De Lijn operates buses and trams for the region of Flanders (Vlaamse Gewest), with a population of 6.3m and a population density of 455 per km².

Both companies are under the control of their respective governments: the City of Vienna and the government of the Flemish region. Each government sets a high store on the environmental and social benefits of public transport.

In Austria the fiscal deficit rose to 4.4% of GDP in 2010 as the government increased spending to counteract the effects of the recession and global slowdown. Although the deficit was reduced to 3.4% of GDP in 2011, Austria lost its AAA rating in January 2012. Partly in response to this the government introduced a package of spending cuts and tax increases designed to save €27.9bn over the period 2012-16 and thus to reduce the deficit to 3% of GDP in 2012 and to balance the budget in 2016. About 33% of the savings are to come from higher taxes on the wealthy and Austrian companies operating abroad, and about two-thirds are to come from spending cuts. These cuts are focussed on deferring rises in pensions and pay increases for workers in public administration. Transport services are spared cuts, except for some scaling back of the rail tunnel being built under the Brenner Pass.

In Flanders the autonomous government has the policy of balancing its budget. It succeeded in doing this in 2011, but in 2012 it faced a steeper economic slowdown than it had previously forecast and an extra cost of €265m as a result of the liquidation in 2011 of Gemeentelijk Holding

[30] Figures in this paragraph are from the Hillingdon budget for 2012/13.

(Communal Holding). GH was the investment body representing municipalities throughout Belgium. Its liquidation was due mainly to the collapse of the Dexia Group, in which it was a major shareholder. Flemish municipalities owned 39.8% of GH. The government of Flanders managed, by a combination of postponed expenditure, efficiency savings and tax rises, to cut costs by around €500m in 2012 without major cuts in expenditure. In 2013 it plans to cut costs by a further €500m. About €100m of this will come from cuts in spending on government administration through job cuts and pay restraint and a further €270m comes from not implementing some policies previously agreed (related to child benefit and a cap on the costs of home health care). As its contribution to these cuts, De Lijn had to make savings of €40m in 2012 and a further €60m in 2013.

Principal consequences of the political and economic context

Contrasts between Flanders and Vienna: low fares and free transport

In Vienna and Flanders the political authorities determine fares on public transport. For environmental reasons the authorities try to keep fares low, but the government of Flanders goes much further in this direction than the City of Vienna. The commitment of the Socialist Party in Flanders to ease of access from any part of the region has contributed to the outcome that buses often carry few passengers in rural areas but are over-crowded in the cities. The policy of providing free/cheap public transport has led to the present position that about 80% of passengers using De Lijn travel on free passes and the fares on De Lijn are among the lowest in Europe. In any case, all those aged 65 or above in Belgium are entitled to free travel, and so too, in Flanders, is the third child in each family up to the age of 24. An annual pass for an adult aged 25-64 costs €232 and for a youth between 6 and 24 the cost is €178. For the second youth in the family the cost is reduced by 20%.

The position is different in Vienna. After much debate, the city government reduced the price of an annual pass by nearly 19% in 2012 to €365. There is no free travel for the elderly, but those aged 60 or above can buy an annual pass for €224.

Contrasts between Flanders and Vienna: cost-cutting and reductions in services

Because of the combination of low fares, the obligation to run services throughout Flanders and the high proportion of free travel, De Lijn claims to be one of the most cost-efficient transport companies in Europe. However, the requirement to cut its costs by €40m in 2012 and €60m in 2013 has led to public discussion of the politically sensitive subject of reductions in services and increases in fares. The company is also under pressure to raise the share of its operating costs covered by income from the present 15% to 17.5%. In any case, the annual subsidy of €1bn when only about one-fifth of passengers pay for their travel is becoming a more sensitive issue. In 2012 De Lijn cut services in the main cities of Flanders: halving the number of bus lines in Mechelen, removing 990 buses from Antwerp city centre and abolishing night-time services at weekends in Ghent.

Between 1999 and 2007 the number of passenger journeys on the trams and buses of De Lijn more than doubled and then increased by a further 14% between 2007 and 2010. In 2011, however, they fell by 0.4% and then by nearly 1% in 2012. Moreover, the biennial passenger satisfaction survey conducted in 2012 found that a majority of passengers were dissatisfied with the service. The main complaints were overcrowding and unpunctuality.

Wiener Linien does not face any specific targets for cost reduction. Far from reducing its services, it is expanding them. Since September 2012 the underground has run all through the night at 15 minute intervals on weekends and public holidays. As discussed in the section on investment below, Underground lines are being extended to the north and south of the city.

Passenger numbers have been rising in recent years: by 3% in 2010, 4½% in 2011 and 3¾% in 2012. According to the most recent estimates available, some 29% of journeys within Vienna were made by car in 2011 and almost the same number (28%) on foot, while 6% were made by bicycle and 37% on Wiener Linien.

Contrasts between Flanders and Vienna: investment

Simply because Wiener Linien runs an underground railway, its investment volumes are bound to be far higher than those of De Lijn. Indeed Wiener Linien plans to invest €2.4bn over 2012-15, including €475m in 2012 and around €400m on its major projects in 2013. The principal sources of investment are the Austrian state and the City of Vienna. There have been no cuts to these investments under the Austrian Government's austerity programme for 2012-15, and the City Government has promised to provide an extra €525m, if needed, to cushion the impact on investment of the reduced fares.

In contrast, the planned investment of €93m on 386 new buses announced by De Lijn in February 2013 was described by the Flemish Minister for Mobility as the group's largest investment ever.

The bulk of investment under way or planned for Vienna's public transport system over 2012-15 is going to the underground, between 50% and 60% in 2013, for example. The northern extension of the U2 line opens in autumn 2013 and work on the southern extension is to be completed in 2019. The southern extension of line U1 is due to be built between 2013 and 2017; and there are also plans being drawn up to modernise line U4.

5.6 Case Study 6: Utilities in Bulgaria

Problems with utility services

In 2010 the European Commission announced that it would refer Bulgaria to the European Court of Justice for failing to implement EU waste law properly. Although the Commission suspended this action in October 2011, the country remains on a 'watch list'. In summer 2012, and not for the first time, water rationing was imposed in several cities, affecting around one-third of the country's population, but Sofia was not affected. In some towns the rationing remained in force into October. In February 2013 the government resigned following several weeks of angry public protests spurred mainly by very steep rises in electricity prices.

These are the most prominent recent examples of the long-standing problems Bulgaria has had with utility services. The problems antedate the current period of austerity by many years. The complexity of their causes cannot be reduced just to the impact of austerity. In particular, the problems related to electricity prices have to do also with the absence of alternative sources of heating, with the country's dependence on gas supplies from Russia and with the decision not to proceed further with a second nuclear power station. Nevertheless, the effects of austerity policies on public spending and on the financial resources with which to tackle problems in the utilities are important. This case study looks at some of those effects and at some recent improvements in utility services.

The economic and political context

Since 1997 Bulgaria has had a currency board system under which lending by the central bank is not permitted and fiscal and financial policies are tight. During the years of strong economic growth (2004-08) the country had a fiscal surplus and since the global financial crisis the fiscal deficit has exceeded 3% of GDP only in 2009 (-4.3%) and 2010 (-3.1%). In those two years public debt as a proportion of GDP rose to 16.3%.

Moreover, bank regulation on capital adequacy is much tougher than the Basle-2 requirements. In 2011 for example, when non-performing and restructured loans reached an average of 16.2% of commercial bank loans, the average capital adequacy ratio of Bulgarian commercial banks was 17.5%.

To a large extent the strong economic growth before 2009 was driven by inflows of foreign investment, but the investment was directed mainly to real estate. When the boom ended and the slowdown in the EU hit Bulgaria's export markets, the government might have been better advised, in view of the country's strong fiscal position, the low level of public debt and the soundness of its banks, to target its policies at sectors that had overheated and sectors that could drive productive growth. However, the government that came to power after the elections of 2009 chose to focus on reducing the fiscal deficit by controlling public spending. In 2011 the deficit was only 1.3% of GDP and in 2012 it was still below 2%. There were no clearly stated policies about which areas of public spending should be cut and which should be protected. In the event, the government concentrated on making improvements to the transport network (a new underground railway in Sofia; building of new roads and upgrading the rail network).

Considering also that Bulgaria is the poorest member of the EU in terms of GDP per capita, the constraints on public spending and the focus on infrastructure left very little money available to improve utility services. EU funds are available but Bulgaria had been fairly inefficient at absorbing these funds.

Problems of water supply and waste management

Water

Under the communist regime many large and small dams and reservoirs were built in Bulgaria, giving the country some of the largest water reserves in

Europe. Since the fall of communism, however, these dams have been neglected for more than 20 years and have fallen into serious disrepair. The usable water reserves are now among the smallest in the EU and the most recent estimates put the average annual inflow of water at around 2,300-2,500 cubic metres of water per person. Water rationing is now a regular feature of the summer. The severity of the rationing in 2012 was due to the exceptionally high temperatures in that year.

Moreover, most of the infrastructure for supplying water and carrying waste water and sewage is obsolete, being made of asbestos cement. This causes huge leaks and impairs water quality. Experts in the field estimate that, on average, 60% of water that enters the supply pipes in Sofia never reaches final consumers, and in some regions of the country that figure rises to 90%.

Waste disposal

Under the terms of its accession agreement Bulgaria ought to have had adequate facilities for waste disposal by the time of its accession to the EU in January 2007. It did not. In October 2007 the EC started infringement proceedings against Bulgaria and in 2010 it prepared to take the case to the Court of Justice. In October 2011 the Commission halted its action for the time being in view of the steps taken by Bulgaria.

The problem had become so acute in Sofia that the government declared a state of emergency on health and environmental grounds in 2009.

First steps towards tackling the problems

Water

The Bulgarian state and the municipalities are the owners of all the water supply systems and infrastructure, except for the Sofia water company, Sofiyska Voda, which was sold in 2000 as a 25-year concession to the UK company United Utilities. In 2010 United Utilities sold most of its unregulated water utilities to the French company Veolia, including its assets in Bulgaria (which have been regulated since 2005), Estonia and Poland. Veolia also bought the stake held by the European Bank for Reconstruction and Development, so that it now owns a 77.1% stake in Sofiyska Voda. Sofiyska Voda supplies water to 1.3m of the country's 7m inhabitants.

This was Veolia's first involvement in Bulgaria, but not in post-communist Europe, since it had been engaged in water businesses since 1994 in Hungary (Budapest and Szeged), since 2000 in Poland (Silesia) and Romania (Bucharest and Ploiesti) and since 2001 in the Czech Republic (Prague and other towns).

In 2012 the Environment Ministry estimated that it would cost more than 27bn Lev (€14bn) to build new dams and replace obsolete infrastructure and thus bring an end to water rationing. Clearly, no municipality is able to bear the cost of improving even the small part of the system for which each is responsible, nor is the Bulgarian state in any position to take on the burden of building new dams and renovating the infrastructure, even if the water supply system of the capital were left out of the calculation. While a combination of EU funds, foreign investment, commercial concessions and state involvement

might be able at some time to finance the full task of modernisation, for the time being only relatively small steps seem practicable.

One such step, large in absolute terms but small in relation to the total task of modernising the water system, was the refurbishment and enlargement of the water and sewage purification plant at Kubratovo. This serves the city of Sofia and is the largest such plant in the Balkans. First built in 1984, it was extensively refurbished in 1990 and, when United Utilities held the concession, in 2001. Between March 2009 and June 2011 there was a third major refurbishment and enlargement, including, from December 2009, an installation for the cogeneration of heat and electricity from biogas (obtained from treated sludge) and, from June 2011, a tertiary stage for removing nitrogen and phosphorus.

During the course of the project the concession and stake in Sofiyska Voda was transferred from United Utilities to Veolia, and two other foreign companies were involved: the Netherlands consulting engineers Tauw and the Danish company Grundfos, which supplied pumps and other equipment. The financing (€30.7m) came from the EU's ISPA funds (for pre-accession projects), the European Investment Bank and the national budget. These different types of foreign involvement and financing would appear to be, at the very least, extremely helpful, and probably essential for major improvements in utility services, not just during times of austerity but for so long as Bulgaria remains a poor country. However, this combination of foreign resources and expertise has not yet been applied in any noticeable degree to improving the infrastructure for supplying water to Sofia. In June 2011, six months after Veolia acquired control of Sofiyska Voda, the municipal overseer of concessions reported that in the preceding twelve months water quality had deteriorated, butin 2012 the administrative court of Sofia revoked both the penal decree and penalty related to water quality. To be fair, Veolia had not had much time to bring about improvements. It also faced the problem that the €30m total of outstanding payments owed by customers to Sofiyska Voda exceeded the €27m it had invested in 2010 in upgrading just 1% of the sewage system.

Waste disposal

The first steps taken to deal with the waste problem in Sofia were rather stop-gap. Garbage was taken from Sofia in 2010 to landfill sites in other towns.

However, in 2010 and 2011 funds under the EU's operational programme for the environment were allocated to build four waste management sites (two near Sofia, one in Vidin and one in Burgas). The first, at Botevgrad near Sofia, came into operation in November 2011, at a cost of €7.4m (84% from EU funds). There are plans for a further 19. Some 80% of the waste at Botevgrad is to be recycled, a distinct improvement from the recent past when smoke blew each day from the Botevgrad landfill.

This example is another illustration of the fact that small steps can bring about some improvement, even though the whole task of introducing adequate waste management systems in Bulgaria is considerable, but by no means as daunting as the task of bringing the water and sewage systems up to modern standards.

5.7 Case Study 7: Information Technology at the port of Sines in Portugal

This case study describes the recent history of the port of Sines, current investment plans and the uses of information technology to increase efficiency and facilitate the growth of the port.

The port of Sines in the European context

Located just over 100 km south of Lisbon, Sines is a natural deep water port sheltered by a cape and two breakwaters. For many years a fishing port, it was rebuilt as a modern port, initially for oil, petrochemicals and coal, from 1978 onwards. A multi-purpose terminal was added in 1994, a liquefied natural gas terminal in 2003 and a container terminal in 2004. Oil products (refined and crude) accounted for more than 47% of the 28.56m tonnes of cargo handled by the port in 2012, coal for 18½%, and containerised cargo for 23½%.

Within Portugal Sines is by far the largest port and the country's principal port for energy shipments. Within Europe it ranked 24th for tonnage handled in 2012, slightly ahead of Dublin and Gdańsk and slightly behind two Spanish ports, Huelva and Bilbao.

Before the crisis the tonnage handled had risen by more than 30% between 2003 and 2006 to a peak of nearly 27.2m, but then it fell by more than 10% to 24.4m in 2009. Thereafter it recovered, and the rise of 11% to 28.56m tonnes in 2012 was greater than in any other European port. Containerised cargo, measured in TEU (twenty-foot equivalent units), increased by 24% in 2012 and in January 2013 the port had its best month ever for container traffic[31]. Export volumes rose by 27% in 2012 to nearly 6.8m tonnes, or rather less than one-quarter of the total volume handled.

Current investment plans

In terms of logistics and accessibility Sines has the advantage that its hinterland had never been a site of heavy industry. The disadvantage, however, is that the road and rail connections are inadequate for handling increased traffic between Portugal, Spain and the rest of Europe. The main project to rectify this is the construction of a high-capacity rail freight line between Sines and the Spanish frontier at Badajoz. Further into Spain it would link with a proposed new freight line from the Spanish port of Algeciras, and then run north-east via Madrid to join the French network west of Toulouse. This is a priority project (TEN-T 16) within the future trans-European network. Its present status and timetable are uncertain.

For the immediate future, PSA Sines invited bids in March 2013 for the contract to complete the final phase of the extension of the container terminal. It is hoped to start the work by the first quarter of 2014 at the latest. PSA Sines, a subsidiary of the Port of Singapore Authority, was awarded a 30-year contract to build and manage the container terminal in 1999.

[31] Source of data: http://www.portodesines.pt/pls/portal/go

Information technology at Sines

Four related elements are central to the uses of IT at Sines: the JUP (Janela Única Portuária or Single Port Window), the CUP (Cartão Único Portuário or Single Port Card), the SIIG (Sistema de Identificação e Informação Geográfica or Geographical Identification and Information System) and VTS (Vessel Traffic Services).

The JUP brings together into a 'one-stop shop' all the information, documentation and processes needed by the various authorities (port, customs, maritime, health and borders) and by shipping agents, brokers and other service providers. It replaces much paper documentation and speeds up administrative processes. Customs and related processes that could once take two days or more can now be completed in a few hours. An essential precondition was the interoperability of the different systems of the various authorities.

The CUP is an electronic tool containing the information (including regulations and laws) needed by the authorities responsible for border control, security and access to bonded warehouses. Thus it is a key element in the JUP.

The SIIG provides the port authorities with real-time information about the movement of vessels within the port and its approaches. It is linked to the JUP and CUP and thus facilitates more efficient management of traffic flows.The SIIG relies on information about the location, routes and nature of vessels transmitted electronically by vessels equipped with VTS systems. These systems began to operate along the coast of Portugal in January 2008.

These systems are by no means unique to the port of Sines. They operate in many ports. The important point is that the JUP and CUP were planned, designed and modified to suit the needs of Sines within the last ten years. A key role in the design process was played by the Group or Forum for the Simplification of Procedures (FSP – Fórum para a Simplificação de Procedimentos). This brings together all stakeholders (shipping companies, the various authorities and officials of the port) in regular meetings to discuss and elaborate new or revised procedures. The work of the FSP is on-going. At present it is working on the future integration of logistics operations between the port and road and rail transport, with a view to creating a single logistics window (Janela Única Logística) for Sines.

Conclusions

Clearly, the main driver of growth or decline in the volumes handled by the port of Sines is the overall condition of the Portuguese economy, particularly in view of the central place of fuel imports in the port's activities. The role of the IT systems is a lesser one, but of crucial importance for the reduction in costs achieved by the coordination and speeding-up of procedures. Thus, the IT systems, although not designed in anticipation of the global crisis and continuing recession in Portugal, are certainly useful in reducing costs and increasing productivity in this time of austerity. These uses of IT build on the natural advantages Sines has as a new port unburdened by an old industrial hinterland and they also help to prepare the port for possible increases in its traffic, especially when (or if) the proposed high-volume freight rail line is built between Sines, Spain and, eventually, France.

6 Analysis by sector

6.1 Network activities

The strong growth in value-added and employment across Network activities was not matched by employment

The broad Network activities category covers the following:

- Electricity, gas, steam and air conditioning supply (NACE (Rev.2) sector 35);
- Water collection, treatment and supply (NACE sector 36);
- Sewerage (NACE sector 37);
- Waste collection, treatment and disposal activities; materials recovery (NACE sector 38);
- Remediation activities and other waste management services (NACE sector 39);
- Land transport and transport via pipelines (NACE sector 49);
- Inland passenger water transport (NACE sector 50.3);
- Air transport (NACE sector 51);
- Warehousing and support activities for transportation (NACE sector 52);
- Postal and courier activities (NACE sector 53);
- Wired telecommunications activities (NACE sector 61.1);
- Satellite telecommunications activities (NACE sector 61.3).

A number of the aggregate figures for different indicators do not have adequate data available for every constituent sector of this broad category. This will be highlighted where it has a significant bearing on the interpretation of a figure.

Value-added across the Network activities summed to €601bn in 2006, accounting for 5¾% of EU27 valueadded. Almost 11.5m people were employed in Network activities, which is the equivalent of around 5¼% of total EU27 employment. Investment in the broad sector was worth €190bn and accounted for 8% of total investment (seeTable 6.1).

In 2010, value-added generated by Network activities was worth over €743bn, representing strong growth of 23¾% over the 2006-2010 period. Investment in the broad sector grew at a similarly strong rate of 20½% to reach over €190bn in 2010. However, employment did not follow this trend and saw a slight fall of 1%.

The three largest sectors within Network activities are: Electricity, gas, steam and air conditioning supply (Electricity etc); Total Land transport and transport via pipelines (Land transport); Total Warehousing and support activities for transportation (Warehousing). Between 2006 and 2010 value-added stagnated in Land transport (seeTable 6.3) and fell in Warehousing by 1% (seeTable 6.4). However, value-added generated by Electricity etc grew

rapidly by 21% up to almost €220bn. While Electricity etc contributed more than the other large sectors to the growth in Network activities value-added, the growth in value-added has also been aided by very strong growth in some of the smaller sectors in the broad group, such as the other utilities sectors. It should be taken into account when assessing these figures that the 2006 data are more limited for the smaller sectors compared to the 2010 data. This means that the 2006 value-added figures will not cover some member states for the smaller sectors; hence their growth rates and the growth rates of Network activities value-added are likely overemphasised.

Land transport is the largest employer in the Network activities category. However, it is interesting to note that despite overall growth of employment in the broad sector, the number of people employed in Land transport fell heavily by 17½% to 4.6m in 2010. Warehousing is the second largest employer and employment in this sector grew strongly by 13¾% up to around 2.5m. This combined with very strong growth in some of the smaller component sectors were the main drivers of the employment growth across Network activities. Once again, the limitations in the 2006 data for small sectors mean that the growth rate in Network activities employment should be treated with some caution as it is likely overemphasised.

Labour productivity

Labour productivity in Network activities increased by around 25% between 2006 and 2010, from €52,000 per worker to €65,000 per worker. Because labour productivity in Network activities increased at a faster rate than in the rest of the economy between 2006 and 2010, it went from being 11% above the average for the rest of the economy to 34% above the wider-economy average. The above average labour productivity reflects the capital-intensive nature of these industries and the scope for economies of scale.

Comparing labour productivity in public services and other sectors

Higher productivity is a key driver of higher living standards: if more value added can be produced per unit of labour input, then this can be used to pay higher incomes to investors and workers. At the microeconomic level, if a firm has a lower level of productivity than its competitors, its owners and workers must either accept lower incomes than those enjoyed by its competitors or charge higher prices and face a loss of market share. At the macroeconomic level, differences in prosperity as measured by GDP per capita are driven in part by differences in labour productivity.

However, there are various difficulties when it comes to comparing labour productivity in public services and other sectors. Firstly, labour productivity (value added per worker, or per hour worked) differs across sectors because of the nature of the work done and the extent to which that work is labour or capital-intensive. Labour productivity is much higher in the production of electricity than in most sectors of the economy, but that does not mean that workers in that sector necessarily work harder, are more highly skilled or are paid more than workers in other sectors. Although network services are generally capital-intensive, many other public services are labour-intensive.

Secondly, some public services are not sold on the market (for example, public administration services) and so value added is difficult to measure. A commonly-adopted solution is to treat value added as equivalent to labour costs, whereas in a market sector value added is calculated as the difference between what customers pay for the service and the cost of bought-in inputs to production - approximately equivalent to labour costs plus profits. In this case, the value added, and hence the productivity, in those public services sectors is understated.

Thirdly, when assessing real changes in productivity over time, it can be difficult to assess changes in the quality of a service. As a result, measured labour productivity in education might increase if class sizes in schools were larger, and measured productivity in hospitals might increase if there were fewer nurses per patient, but in both cases the quality of service might decline. A more accurate measure of labour productivity would take account of quality changes (in a market sector a low quality producer might ultimately only stay in business if it charged a lower price).

Consequently, while the task of raising productivity in public services (so that the same service is delivered with fewer inputs) remains an important contributor to greater efficiency in the economy as a whole, labour productivity statistics remain a rather inadequate proxy for what we really want to measure.

Employment by gender

Across Network activities, around five times as many men (7.5m) were employed in Network activities compared to women in 2010. However, it should be noted that the employment by gender figures inTable 6.1do not include Sewerage, Remediation activities, Inland passenger water transport, Warehousing, Postal/courier, Wired telecommunications activities or Satellite telecommunications activities. The aggregate figures representing the available sectors show growth in both male and female employment between 2006 and 2010 (by 9½% and 11¼% respectively).

Employment by age

The figures for employment by age cover the same selection of sectors as employment by age minus Land transport (covers Electricity etc, Water, Waste and Air transport). Around two thirds of workers across these sectors were aged 25-49 in 2010. The number of employees in this group has grown by 30¾% since 2006. The number of employees aged 50-64 has also grown strongly by 47½% up to almost 860,000.

Employment by qualification and occupation

The figures in Table 6.1for employment by qualification and occupation were not available in a high level of sector detail so the figures presented in the table are an aggregate of Water supply, Land transport and Air transport. Across these three sectors, most of the employees have medium level qualifications (5.4m in 2010). This group saw modest growth (2%) in numbers since 2006. On the other hand, the number of workers with high level qualifications grew strongly by 19½% while the number with low qualifications fell by 12%. The large majority of employees over these sectors were plant and machine operators and assemblers. Around 4.5m employees were in this group in 2010 which represents modest growth of 3½% since 2006. As might be expected by the changes in employee qualifications, the numbers of employees work as clerks, craft workers and elementary workers has fallen while the number of professionals and senior officials etc has increased.

Employment by firm size

The employment by size figures in Table 6.1 cover all of the Network activity sectors except for Wired telecommunications and Satellite telecommunications. Most employees across these sectors work in large firms; with around 5.1m in 2010 which represents strong growth of 29¾% since 2006. There is an even split of employees working in micro, small or medium size firms (each employing around 1.7m in Network activities in 2010).

Working conditions

Figures for working time and the wage bill inTable 6.1cover, Electricity etc, Water supply, Waste disposal, Land transport, Air transport, Warehousing and Postal/courier. Both of these indicators saw little or no change between 2006 and 2010. In 2010, the number of working hours across Network activities was 3.4bn while the wage bill was valued at €236bn.

Data for employment by contract type are very limited such that the figures inTable 6.1are only available for Electricity etc in 2010.

Broadly there has been no change in the contribution that Network activities make to economic outturns across the EU27. The largest change was due to the strong growth in Network activities' investment which accounted for 12% of total investment for the EU27 (a 4.1 pp rise on the 2006 proportion).

Table 6.1 Total Network Activities in the EU27, 2006-10

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	601225	743620	23.7	5.8	6.8	1.0
Employment ('000s)	11484	11354	-1.1	5.2	5.1	-0.1
Investment (€m)	189703	272719	43.8	7.9	12.0	4.1
Apparent labour productivity (€'000s per employee)	52	65	25.1	111.4	133.7	22.3
Employment by gender:						
Male ('000s)	6833	7480	9.5	5.7	6.3	0.6
Female ('000s)	1290	1434	11.2	1.4	1.5	0.1
Male: female (%)	530	522	-1.6	423.9	434.7	10.7
Employment by age:						
15-24 ('000s)	91	105	15.9	0.4	0.5	0.1
25-49 ('000s)	1452	1900	30.8	2.3	3.0	0.7
50-64 ('000s)	583	859	47.5	2.8	3.6	0.8
65+ ('000s)	0	0	na	0.0	0.0	0.0
Employment by qualification:						
Low ('000s)	2618	2306	-11.9	4.6	4.7	0.1
Medium ('000s)	5281	5395	2.1	5.2	5.3	0.1
High ('000s)	1313	1568	19.4	2.2	2.3	0.1
Employment by size of enterprise:						
Micro (<10) ('000s)	1872	1783	-4.8	na	na	na
Small (10-49) ('000s)	1389	1714	23.4	na	na	na
Medium (50-249) ('000s)	1122	1761	57.0	na	na	na
Large (250+) ('000s)	3928	5096	29.8	na	na	na
Employment by occupation:						
Armed forces	1	1	-4.5	0.1	0.1	0.0
Legislators, senior officials and managers	665	686	3.1	3.6	3.6	0.1
Professionals	306	319	4.0	1.0	1.0	0.0
Technicians and associate professionals	856	886	3.5	2.5	2.5	0.0
Clerks	1435	1423	-0.8	6.0	6.1	0.1

Service workers and shop and market sales workers	292	279	-4.4	1.0	0.9	-0.1
Skilled agricultural and fishery workers	5	5	-5.3	0.0	0.1	0.0
Craft and related trades workers	550	459	-16.5	1.9	1.7	-0.2
Plant and machine operators and assemblers	4337	4483	3.4	24.7	26.8	2.1
Elementary occupations	763	729	-4.6	3.4	3.2	-0.2
Employment by contract type:						
Full-time ('000s)		1563	na	na	0.9	na
Part-time ('000s)		83	na	na	0.2	na
Temporary ('000s)		87	na	na	0.4	na
Working time (millions of actual hours worked)	3394	3408	0.4	0.0	0.0	0.0
Wage bill (€m)	236229	236205	0.0	6.6	5.9	-0.7
Number of strike days	5	0	-100.0	3.9	na	na

Sources: Eurostat (Structural Business Statistics, National Accounts and Labour Force Survey), OECD, CEDEFOP, ILO Laborsta.

Table 6.2Total Electricity, gas, steam and air conditioning supply in the EU27, 2006-10

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	181719	219889	21.0	1.7	2.0	0.3
Employment ('000s)	1228	1217	-0.9	0.6	0.5	0.0
Investment (€m)	63098	104348	65.4	2.6	4.6	2.0

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts), various national statistical authorities.

Table 6.3Total Land transport and transport via pipelines in the EU27, 2006-10

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	175267	175271	0.0	1.7	1.6	-0.1
Employment ('000s)	5557	4581	-17.6	2.5	2.1	-0.5
Investment (€m)	43896	48323	10.1	1.8	2.1	0.3

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts), various national statistical authorities.

Table 6.4Total Warehousing and support activities for transportation in the EU27, 2006-10

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	158831	156845	-1.3	1.5	1.4	-0.1
Employment ('000s)	2187	2488	13.8	1.0	1.1	0.1
Investment (€m)	57265	62813	9.7	2.4	2.8	0.4

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts), various national statistical authorities.

6.2 Public Administration and Defence

Value-added has grown while employment has stagnated in PAD, but there have been no changes in the contributions to the EU27 totals

In the EU27, value-added in Public Administration and Defence (PAD) was €656bn in 2006. Around 15.3m people were employed by this sector across the EU27. PAD contributed to 6¼% of total value-added and 7% of total employment. Investment in this sector was almost€165bn and accounted for nearly 7% of total investment over the EU27 (seeTable 6.5).

PAD value-added grew by 10¾% up to around €728bn between 2006 and 2010, faster than value-added growth of total SGIs in the EU27 (total SGIs' value-added grew by 6¼%). However, employment in PAD saw little change across the same time period, whereas EU27 SGIs' employment fell by just over 1%. Investment declined by 24% to around €125bn in 2010.

Labour productivity

The growth in value-added and the stagnation of employment means that labour productivity increased by just over 9% between 2006 and 2010, from €43,000 per worker in 2006 to €47,000 per worker in 2010. This was slightly faster than the increase in the wider economy and so labour productivity in

public administration was just 4% below the economy-wide average in 2010, compared to 9% below the economy-wide average in 2006

Employment by gender and age

Looking further into characteristics of the labour market it is interesting to note that male employment in PAD has fallen slightly (by ¾%) while female employment has seen growth (of 4¾%) over the 2006-2010 period.There were also signs that the PAD workforce has aged a little as the number of employees aged below 50 fell while the number aged 50 or older grew.

Employment by qualification and occupation

Most employees in this sector have medium or high level qualifications. However, the number of employees with a medium qualification has fallen by 6% and the number with a higher qualification has risen by 15¼%. This means that these two groups are evenly matched in terms of numbers; each accounting for over 6m PAD workers in 2010.

Most PAD workers are technicians or associate professionals (around 3.7m in 2010) but there was little change in the number of these employees over the time period. The number of PAD professionals grew strongly by 9% up to 2.8m in 2010, while PAD service workers grew by 3¼% to just under 2m. However, the number of clerks employed in PAD decreased to 2.6m (representing a 5% fall) and armed forces employees fell by 8½% to 1.2m.

Working conditions

In 2010, over 13m people were employed by PAD full-time while just fewer than 2m were employed part-time. The number of full-time workers has grown slightly faster than the number of part-time workers but both remain at similar levels to 2006. However, the number of temporary workers fell by 2¾% down to 1.8m. At the same time the total number of hours worked in PAD fell by 1¾%. The wage bill increased from €328bn in 2006 up to €371bn in 2010 (a 13% rise).

The contribution of PAD to EU27 outturns has barely changed between 2006 and 2010. In 2010, PAD accounted for 6½% of value-added outturns, 6¾% of total employment and 5½% of total investment over the EU27.

Table 6.5Total Public administration and defence in the EU27, 2006-10

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	656481	727506	10.8	6.3	6.6	0.3
Employment ('000s)	15306	15259	-0.3	6.9	6.8	-0.1
Investment (€m)	164701	125251	-24.0	6.8	5.5	-1.3
Apparent labour productivity (€'000s per employee)	43	47	9.3	91.5	95.9	4.4
Employment by gender:						
Male ('000s)	8444	8380	-0.8	7.1	7.1	0.0
Female ('000s)	6842	7166	4.7	7.2	7.3	0.1
Male: female (%)	123	117	-4.9	98.4	97.5	-0.9
Employment by age:						
15-24 ('000s)	946	804	-15.0	4.3	4.0	-0.2
25-49 ('000s)	10245	9974	-2.6	16.3	15.8	-0.5
50-64 ('000s)	3996	4620	15.6	19.0	19.1	0.1
65+ ('000s)	87	91	4.8	6.6	5.9	-0.7
Employment by qualification:						
Low ('000s)	2363	2018	-14.6	4.2	4.1	0.0
Medium ('000s)	7030	6604	-6.1	6.9	6.5	-0.4
High ('000s)	5422	6247	15.2	9.1	9.2	0.1
Employment by occupation (000s):						
Armed forces	1292	1184	-8.4	98.7	98.2	-0.6
Legislators, senior officials and managers	714	762	6.7	3.8	4.0	0.2
Professionals	2548	2779	9.1	8.3	8.6	0.3
Technicians and associate professionals	3629	3656	0.8	10.5	10.2	-0.3
Clerks	2745	2610	-4.9	11.4	11.2	-0.2
Service workers and shop and market sales workers	1897	1958	3.2	6.5	6.4	0.0
Skilled agricultural and fishery workers	143	152	6.1	1.4	1.6	0.2
Craft and related trades workers	417	360	-13.6	1.4	1.3	-0.1
Plant and machine operators and assemblers	270	232	-14.1	1.5	1.4	-0.2

Elementary occupations	1160	1175	1.3	5.2	5.2	0.0
Employment by contract type:						
Full-time ('000s)	13325	13564	1.8	7.6	7.8	0.2
Part-time ('000s)	1963	1974	0.5	5.1	4.7	-0.3
Temporary ('000s)	1829	1778	-2.8	7.2	7.2	0.0
Working time (millions of actual hours worked)	12264	12053	-1.7	6.6	6.5	-0.1
Wage bill (€m)	327832	370536	13.0	9.1	9.3	0.2
Number of strike days	1		na	0.8	na	na

Sources: Eurostat (Structural Business Statistics, National Accounts and Labour Force Survey), OECD, CEDEFOP, ILO Laborsta.

6.3 Education

There has been respectable growth in the main economic indicators of Education, particularly for value-added and investment

The Education sector generated €526bn of value-added, employed around 14.9m people and generated investment worth over €49bn in 2006. This meant that Education contributed to around 5% of total value-added, 6¾% of total employment and 2% of investment over the EU27 (seeTable 6.6).

Value-added in Education grew by just over 12% to around €590bn between 2006 and 2010. Employment also grew over this period but at a slower rate of 4½% (15.6m people employed in 2010). Investment fell by 29¾% up to €34.6bn. Value added and employment grew faster in Education compared to total SGIs in the EU27.

Labour productivity

With value-added growing faster than employment, labour productivity in Education increased slightly from €35,000 per employee to €37,000 per employee between 2006 and 2010. This represents an increase of around 6% and was in line with the economy-wide average. As such, labour productivity in Education in 2010 was around 75% of the economy-wide average, as it was in 2006. However, as noted in the box above this reflects the relatively labour-intensive nature of teaching and does not capture quality effects.

Employment by gender

A further breakdown of employment shows that the number of female employees is over double that of male employees. The number of male employees grew by 3¾% (up to 4.5m in 2010) whereas the number of female employees grew by 7¼% (up to 11.4m). However, the ratio between the two saw little change over the time period.

Employment by age

The Education workforce does not seem to have aged similar to that of PAD. Both the 15-24 and the 50-64 groups have seen growth of 8-9%. The 25-49 group accounts for the majority of those employed in Education and saw growth of 4¼% up to just under 10m in 2010.

Employment by qualification and occupation

Around two thirds of all employees in Education have a high level qualification. The number of employees in this group grew by 8% between 2006 and 2010 (up to 10.6m). The number of employees with a medium qualification stagnated while the number with lower qualifications fell by 16¾%.

Unsurprisingly, the large majority of employees in this sector are classified as professionals. This group saw employment grow by 2½% up to just over 9m between 2006 and 2010. Of the other occupations in Education, the number of technicians and associate professionals grew by 9¼% (to 2.5m) and the number of service workers grew by 11¼% (to 1.3m). However, those in elementary occupations fell by 4¾% (to 1.2m).

Working conditions

It is notable that the number of part-time employees in Education has grown faster (by 11½% up to 4.1m) between 2006 and 2010 than the number of full-time employees (by 4½% up to 11.8m). This is likely related to the observation that the number of workers on temporary contracts has also grown between 2006 and 2010 (by 6¾%). However, the number of hours worked has grown modestly by 2½% over the period. The wage bill has grown by 14¾% up to €315bn in 2010. This is similar to the growth rate for the PAD wage bill.

The shares of EU27 economic outturns accounted for by Education have remained fairly stable between 2006 and 2010. In 2010, Education contributed to 5½% of total value-added, 7% of total employment and 1½% of total investment. Despite only small changes in the importance of the Education sector to the indicators there were some interesting changes. The most noteworthy is that despite the number of Education professionals growing over the time period, the contribution of Education professionals to the total number of professionals in the EU27 fell by 0.8 pp to account for 28% of the total. A similar pattern occurs with the number of people aged 50-64 working in Education (which grew by 8%) as this group now accounts for 20¾% of the total number of employees aged 50-64, which is a 1.3 pp fall on the 2006 proportion. Also, with the number of temporary Education workers increasing, this group now accounts 9¾% of all temporary workers across the EU27 (a 0.9 pp rise).

Table 6.6 Total Education in the EU27, 2006-10

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	526381	589911	12.1	5.1	5.4	0.3
Employment ('000s)	14892	15584	4.6	6.7	7.0	0.3
Investment (€m)	49230	34593	-29.7	2.0	1.5	-0.5
Apparent labour productivity (€'000s per employee)	35	37	5.7	74.5	75.5	1.0
Employment by gender:						
Male ('000s)	4379	4545	3.8	3.7	3.8	0.2
Female ('000s)	10636	11400	7.2	11.2	11.6	0.4
Male: female (%)	41	40	-2.4	32.8	33.3	0.5
Employment by age:						
15-24 ('000s)	702	762	8.6	3.2	3.8	0.7
25-49 ('000s)	9507	9916	4.3	15.1	15.7	0.6
50-64 ('000s)	4627	4997	8.0	22.0	20.7	-1.3
65+ ('000s)	153	201	31.7	11.7	13.1	1.4
Employment by qualification:						
Low ('000s)	1376	1145	-16.8	2.4	2.3	-0.1
Medium ('000s)	3742	3761	0.5	3.7	3.7	0.0
High ('000s)	9794	10566	7.9	16.5	15.6	-0.8
Employment by occupation:						
Armed forces	3	3	0.0	0.2	0.2	0.0
Legislators, senior officials and managers	439	467	6.3	2.3	2.5	0.1
Professionals	8779	9005	2.6	28.7	27.9	-0.8
Technicians and associate professionals	2296	2509	9.3	6.6	7.0	0.4
Clerks	757	788	4.0	3.1	3.4	0.2
Service workers and shop and market sales workers	1144	1273	11.3	3.9	4.2	0.3
Skilled agricultural and fishery workers	20	22	6.9	0.2	0.2	0.0
Craft and related trades workers	128	118	-8.2	0.4	0.4	0.0
Plant and machine operators and assemblers	44	47	8.5	0.2	0.3	0.0

Elementary occupations	1302	1241	-4.7	5.8	5.5	-0.3
Employment by contract type:						
Full-time ('000s)	11312	11819	4.5	6.4	6.8	0.3
Part-time ('000s)	3691	4115	11.5	9.5	9.9	0.4
Temporary ('000s)	2247	2400	6.8	8.8	9.7	0.9
Working time (millions of actual hours worked)	9557	9790	2.4	5.2	5.3	0.1
Wage bill (€m)	274722	315050	14.7	7.6	7.9	0.2

Sources: Eurostat (Structural Business Statistics, National Accounts and Labour Force Survey), OECD, CEDEFOP, ILO Laborsta.

6.4 Health and Social

Moderate employment growth in Health and social activities was accompanied by slight falls in value-added and investment

The broad Health and social category covers:

- Veterinary activities (NACE sector 75);
- Human health activities (NACE sector 86);
- Residential care activities (NACE sector 87); and,
- Social work activities without accommodation (NACE sector 88).

It should be noted that Veterinary activities typically account for a small proportion of this broad category. A number of the aggregate figures for different indicators do not have adequate data available for every component sector of this broad category. This will be highlighted where it has a significant bearing on the interpretation of a figure.

Health and social activities generated €728bn in value-added in 2006., accounting for 7% of total value-added for the EU27. Around 20.2m people were employed in Health and social activities in the same year, contributing to 9% of EU27 total employment. Just over €75bn was invested in the broad sector which was worth 3% of total investment across the EU27 (seeTable 6.7).

The value-added generated by Health and social activities was worth just over €822bn in 2010, which represents a 13% increase on the 2006 figure. Investment also saw a steep fall of 23¾%. At the same time, employment across this category grew respectably by 8% up to 21.8m. This yields a mixed comparison with total SGIs over the EU27. The movement in value-added over the time period was similar to the growth of 15% seen in total SGIs. However, total SGI employment grew modestly by 5¼% in contrast to the growth experienced in Health and social activities.

Labour productivity

The movements in value-added and employment meant that labour productivity increased from €36,000 per worker in 2006 to €38,000 perworker

in 2010. This means that labour productivity was largely unchanged between 2006 and 2010 at three-quarters of the economy-wide average. Again, as with the Education SGI, this in part reflects the labour-intensive nature of this industry and does not measure the quality of service delivered.

Employment by gender and age

The number of female workers in the Health and social activities (17.5m in 2010) is over three times the size of the number of male employees (4.7m). Female employment across this category also grew faster than male employment between 2006 and 2010 (8¾% and 3% respectively). Well over half of all those employed in the broad sector are aged 25-49. Numbers in this group grew by a modest 2¼% up to 13.8m in 2010. The number of employees in the 50-64 group saw strong growth of 21½% up to 6.3m. The 65+ category saw a sharp fall but it should be noted that this accounts for a small proportion of employment across the broad sector.

Employment by firm size

The employment by firm size figures refer only to Veterinary activities as Health and social care sectors were not available. The available raw data suggest very strong growth in veterinary employment for each of the size bands between 2006 and 2010, so the results should be treated with caution. In 2010, the large majority of employees in the sector (109,000) were working in firms employing less than 10 people.

Employment by qualification and occupation

The figures for employment broken down by qualification and occupation were only available for the Health and social care sectors (NACE 86-88) and not for Veterinary activities. Unsurprisingly, employment in Health and social care is dominated by individuals with medium or high level qualifications (each employing close to 9.5m people in 2010). The number with high level qualifications grew by 16¼% since 2006, which is faster that the growth experienced by the medium group (7%). The number of people with low level qualifications fell by 9% over the period. The three most common occupation groups in Health and social care are: Technicians and associate professionals (7.1m in 2010); Service workers and shop and market sales workers (6.2m); Professionals (4.4m). All three of these groups saw an increase in numbers since 2006 with growth rates of 6¾%, 8½ and 10¾% respectively.

Working conditions

The employment by contract type dataset is limited in that it does not cover Veterinary activities at all and it does not have any 2010 figures for Health and social care sectors. In 2006, 14.1m people were employed full-time in Health and social care sectors. This is more than double the number of part-time workers in these sectors (6.4m).

Only Health and social care sectors are available for working time and wage bill indicators. It is interesting to observe that between 2006 and 2010 while the number of hours worked in Health and social care has grown by 7¾% up to 18.7bn, the wage bill has fallen slightly by 1¼% to €330bn.

Similar to PAD and Education, there has been minimal change in the contribution that Health and social activities make to EU27 economic outturns. The fall in Health and social value-added saw the contribution to EU27 value-added fall to 6½% in 2010. At the same time the employment growth in Health and social activities helped to slightly boost the contribution to total employment to 9¾%. The most noticeable changes in contributions to outturns occurred in particular employment age bands. For example, the

strong growth in the number of employees aged 50-64 in Health and social activities increased the contribution to total employment in that age band by 1.7 pp up to 26½% in 2010. A similar occurrence happened with the 65+ age group.

Table 6.7Total Health and Social Activities in EU27

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	728149	822259	12.9	7.0	7.5	0.5
Employment ('000s)	20248	21841	7.9	9.1	9.8	0.7
Investment (€m)	75171	57350	-23.7	3.1	2.5	-0.6
Apparent labour productivity (€'000s per employee)	36	38	4.7	76.5	76.8	0.3
Employment by gender:						
Male ('000s)	4532	4671	3.1	3.8	4.0	0.2
Female ('000s)	15978	17376	8.8	16.8	17.7	0.9
Male: female (%)	28	27	-5.2	22.7	22.4	-0.3
Employment by age:						
15-24 ('000s)	1560	1582	1.4	7.0	8.0	0.9
25-49 ('000s)	13507	13797	2.2	21.5	21.8	0.3
50-64 ('000s)	5221	6345	21.5	24.8	26.2	1.4
65+ ('000s)	211	186	-11.8	16.1	12.1	-4.0
Employment by qualification:						
Low ('000s)	3451	3140	-9.0	6.1	6.4	0.3
Medium ('000s)	8750	9357	6.9	8.6	9.2	0.6
High ('000s)	8173	9501	16.2	13.8	14.1	0.3
Employment by size of enterprise:						
Micro (<10) ('000s)	18	109	521.8	na	na	na
Small (10-49) ('000s)	0.6	42	6815.3	na	na	na
Medium (50-249) ('000s)	0.5	10	2156.7	na	na	na
Large (250+) ('000s)	0	8	na	na	na	na
Employment by occupation:						
Armed forces	3	2	-23.5	0.2	0.2	0.0
Legislators, senior officials and managers	628	697	10.9	3.4	3.7	0.3
Professionals	4001	4435	10.8	13.1	13.7	0.6
Technicians and associate professionals	6659	7103	6.7	19.2	19.9	0.6

Clerks	1492	1540	3.3	6.2	6.6	0.4
Service workers and shop and market sales workers	5730	6212	8.4	19.5	20.4	0.9
Skilled agricultural and fishery workers	39	39	0.0	0.4	0.4	0.0
Craft and related trades workers	226	219	-3.3	0.8	0.8	0.0
Plant and machine operators and assemblers	235	244	3.5	1.3	1.5	0.1
Elementary occupations	1362	1507	10.7	6.0	6.6	0.6
Employment by contract type:						
Full-time ('000s)	14076		na	8.0	na	na
Part-time ('000s)	6396		na	16.5	na	na
Temporary ('000s)	2560		na	10.0	na	na
Working time (millions of actual hours worked)	17347	18685	7.7	9.4	10.1	0.7
Wage bill (€m)	334067	330183	-1.2	9.3	8.3	-1.0

Sources: Eurostat (Structural Business Statistics, National Accounts and Labour Force Survey), OECD, CEDEFOP, ILO Laborsta.

6.5 Other

Value added and employment have fallen relatively heavily in R&D and Employment activities, compared to the growth experienced by total SGIs

The figures inTable 6.8 for the broad Other activities category cover the following:

- Scientific research and development (NACE sector 72); and,
- Activities of employment placement agencies (NACE sector 78.1).

The majority of figures inTable 6.8 are an aggregate of Scientific R&D and Activities of employment agencies. Any occasions where this is not the case will be highlighted. There are a number of other sectors that would be included in the Other activities definition but have been omitted from the figures inTable 6.8 either because the availability of data for that sector is not consistent between 2006 and 2010 or because there are no data available at all. The sectors not included are:

- Silviculture and other forestry activities (NACE sector 2.10);
- Support services to forestry (NACE sector 2.40);
- Programming and broadcasting activities (NACE sector 60.2);
- Central banking (NACE sector 64.11);
- Libraries, archives, museums and other cultural activities(NACE sector 91); and,
- Funeral and related activities(NACE sector 93.03).

Value added across the Other activities (R&D and Employment activities) summed to €33.1bn in 2006. Around half a million people were employed in Other activities and investment was worth €6.3bn. Other activities accounted for ¼% of EU27 outturns in value added, employment and total investment across the EU27 (seeTable 6.8).

There was some relatively strong growth after 2006 in value added and employment for Other activities, as value added increased by 30% to €43.1bn and employment grew rapidly by 92½% to 864,000 in 2010. Investment grew by 9% to €6.9bn over the same time period. This means that the growth rates of these main indicators were faster than the equivalent rates for total SGIs in the EU27.

Labour productivity

Value added growing slower than employment in Other activities means that labour productivity has fallen from €74,000 per employee in 2006 to €50,000 per employee in 2010. This means labour productivity in Other activities has gone from being well above the economy-wide average in 2006 to being just above the economy-wide average in 2010.

Employment by firm size

Over R&D and Employment activitiesand Programming and broadcasting activities, the large majority of employees are employed in medium or large sized firms. The number of employees in each of these grew robustly between 2006 and 2010. The number employed in a medium firm grew by 67¼% to 177,000 and the number employed in a large firm grew strongly by 94¼% to 343,000. It should be noted that these strong growth rates were driven by data for Programming and broadcasting activities being available for 2010 but not 2006. Meanwhile, employment in small and micro sized firms also increased.

Employment by gender and age

Employment broken down by age and gender is only available for Scientific R&D and Libraries, so the figures inTable 6.8 represent only these sectors. Fewer men (660,000 in 2010) are employed in Other activities than women (723,000) with female employment growing faster than male employment over 2006-10. The large majority of employees are aged 25-49 (903,000 in 2010). This group saw numbers rise by 66¼% between 2006 and 2010. The second largest group is that of employees aged 50-64, which also grew robustly to 340,000 in 2010.It should be noted that the very strong growth rates are driven by data for Libraries etc being available for 2010 but not for 2006..

Working conditions

The working time and pay level indicators are also only available for the R&D sector inTable 6.8. The total number of hours worked in R&D across the EU27 grew by 2% up to 934m between 2006 and 2010. The wage bill grew by 13½% up €27.8bn over the same time period.

There are no data available for employment broken down by contract type, occupation or qualification for any of the sectors within Other activities.

As with many of the broad sectors, there has been no change in the contribution of Other activities to the economic outturns across the EU27. This is less surprising for this broad group as it accounts for very small proportions of economic outturns.

Table 6.8Total Other Activities in EU27

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value added (€m)	33107	43056	30.1	0.3	0.4	0.1
Employment ('000s)	449	864	92.4	0.2	0.4	0.2
Investment (€m)	6315	6887	9.1	0.3	0.3	0.0
Apparent labour productivity (€'000s per employee)	74	50	-32.4	156.9	101.7	-55.2
Employment by gender:						
Male ('000s)	441	660	49.7	0.4	0.6	0.2
Female ('000s)	336	723	115.4	0.4	0.7	0.4
Male: female (%)	131	91	-30.5	105.0	76.0	-29.0
Employment by age:						
15-24 ('000s)	25	59	135.1	0.1	0.3	0.2
25-49 ('000s)	543	903	66.3	0.9	1.4	0.6
50-64 ('000s)	180	340	88.9	0.9	1.4	0.6
65+ ('000s)	1	9	718.2	0.1	0.6	0.5
Employment by size of enterprise:						
Micro (<10) ('000s)	61	87	41.9	na	na	na
Small (10-49) ('000s)	63	101	60.0	na	na	na
Medium (50-249) ('000s)	106	177	67.3	na	na	na
Large (250+) ('000s)	187	363	94.2	na	na	na
Working time (millions of actual hours worked)	917	934	1.9	0.5	0.5	0.0
Wage bill (€m)	24461	27762	13.5	0.7	0.7	0.0

Sources: Eurostat (Structural Business Statistics, National Accounts and Labour Force Survey), OECD, CEDEFOP, ILO Laborsta.

7 Analysis by Member State

7.1 Austria

SGIs' share of the Austrian economy did not change much between 2006 and 2010

In Austria, SGIs generated €57bn of value-added in 2006 and employed 1.09m people, accounting for about 24¼% of value-added and 28% of total employment in Austria in that year(see Table 7.21).

Table 7.1 Total SGIs in Austria

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	56921	65123	14.4	24.3	25.1	0.9
Employment ('000s)	1089	1140	4.7	27.8	28.0	0.2
Investment (€m)[1]	9903	11543	16.6	17.9	19.6	1.7

Notes:1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03)/.
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-addedof SGIs increased by 14½% in nominal terms to €65bn, and employment in SGIsgrew by 4¾% to 1.14m.

AcrossAustria's economy as a whole there was a similar increase in value-added (10½%) and 4% increase in employment.

The investment of €9.9bn in SGIs in 2006 represented about 18% of total investment in Austria. Between 2006 and 2010, investment in SGIs grew by 16½%, whereas total investment in Austria grew by about 6%.

These results mean that the importance of SGIs to the Austrian economy remained about the same between 2006 and 2010 as SGIs accounted in 2010 for 28% of employment (a 0.2 pp increase), 19½% of investment (a 1.7 pp increase) and just over 25% of value-added (0.9 pp increase).

The shares of SGIs in Austria in 2010 were close tothe EU27 averages on all three indicators: 25.6% of value-added, 29.5% ofemployment and 15.8% of investment.

7.2 Belgium

SGIs' share of the Belgian economy increased slightly between 2006 and 2010

In Belgium, SGIs generated €80.6bn of value-added and employed 1.5m people in 2006, accounting for around 28½% of total value-added and 35% of total employment in Belgium in that year (see Table 7.22).

Table 7.2Total SGIs in Belgium

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	80633	96250	19.4	28.4	30.3	1.9
Employment ('000s)	1503	1694	12.7	34.9	37.8	2.9
Investment (€m)[1]	13226	14029	6.1	19.8	19.7	-0.1

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

In 2010, the value-added created by SGIs increased to €96bn, a rise of 19½% between 2006 and 2010, while employment in SGIs increased by 12¾% to almost 1.7m.

There was similar growth in value-added and employment in Belgium as a whole between 2006 and 2010: at €318bn total value-added in 2010 was 11¾% higher than in 2006 and employment increased by 4% to 4.5m.

The €13.2bn invested in SGIs in Belgium in 2006 represented 20% of the total investment of €67bn in Belgium. Between 2006 and 2010 investment in SGIs in Belgium increased by 6% to around €14bn, while total investment in Belgium rose by 6½% to €71bn.

These results mean that the importance of SGIs to the Belgian economy remained broadly unchanged between 2006 and 2010 as SGIs accounted for the same 37¾% share of employment (a 2.9 pp increase), 30¼% share of value-added (an increase of 1.9%) and a 19¾% share of investment (a decrease of 0.1 pp).

Compared to the EU27 averages, SGIs in Belgium had larger shares on all three indicators in 2010.

7.3 Bulgaria

SGIs' share of the Bulgarian economy increased between 2006 and 2010, particularly ininvestment

In Bulgaria, SGIs generated nearly €4.4bn of value-added and employed 784,000 people in 2006, accounting for 19½% of value-added and 21¾% of total employment in Bulgaria in that year (see Table 7.23).

Table 7.3 Total SGIs in Bulgaria

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	4346	7350	69.1	19.6	23.7	4.1
Employment ('000s)	784	786	0.2	21.7	22.1	0.4
Investment (€m)[1]	884	1931	118.4	12.1	23.5	11.4

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).

Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 69% to nearly €7.4bn, and employment increased by ¼% to 786,000.

In Bulgaria as a whole between 2006 and 2010 value-addedincreased less, by 40% to €31bn, and employment decreased, by 1¾% to3.5m.

In 2006 the nearly €0.9bn invested in SGIs was equivalent to 12% of the total of around €7.3bn invested in the Bulgarian economy. Between 2006 and 2010 total investment in SGIs in Bulgaria increased by 118½% to around €1.9bn, whereas total investment in Bulgaria increased by only 12½% to €8bn.These results mean that, despite the small change in employment in SGIs, the importance of SGIs to the Bulgarian economy increased between 2006 and 2010, as SGIs accounted for greater shares on all three indicators: 23¾% of value-added (a 4 pp increase between 2006 and 2010), just over 22% of employment (0.4 pp increase) and 23½% of investment (an increase of 11.4 pp).

In 2010, SGIs had smaller shares of the Bulgarian economy than the EU27 averages in terms of value-added and employment; however, in terms of investment SGIs had a larger share of the economy (23½%) than the EU27 average of 22%. It is worth keeping in mind that the GDP deflator was much larger for Bulgaria (around 27%) than the EU27of around 3½% between 2006 and 2010.

7.4 Cyprus

SGIs' share of value-added, employment and investment in the Cypriot economy increased between 2006 and 2010

In Cyprus, SGIs generated €3.4bn of value-added and employed around 85,000 people in 2006, accounting for around 25½% of value-added and 22¾% of total employment in that year (see Table 7.2).

Table 7.4Total SGIs in Cyprus

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	3368	5059	50.2	25.6	32.2	6.6
Employment ('000s)	85	99	16.9	22.7	25.3	2.6
Investment (€m)[1]	659	1501	127.8	21.8	45.0	23.2

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 50¼% to €5.1bn, and employment in SGIs increased by 17% to approximately 99,000.

In Cyprus as a whole between 2006 and 2010 value-added and employment rose less strongly, with a rise of 19½% to €16bn for value-added and 5% to 391,000 for employment. The €0.7bn invested in SGIs in Cyprus in 2006 was equivalent to 21¾% of the total of €3bn invested in Cyprus. Between 2006 and 2010, investment in SGIs in Cyprus increased by 127¾% to around €1.5bn, whereas, total investment in Cyprus increased by 10% to €3.3bn.

These results mean that the importance of SGIs to the Cypriot economy increased between 2006 and 2010, as SGIs accounted for slightly greater shares on all three indicators: over 30% of value-added (a 6.6 pp increase), 25¼% of employment (an increase of 2.6 pp) and 45% of investment (a 23.2 pp increase).

In 2010 SGIs had greater shares of the economy of Cyprus in terms of value-added (30¼%) and investment (45%) than the EU27 averages of 26½% for value-added and 22% for investment. However, the 25¼% share of employment was smaller in Cyprus than the EU27 average of 29½%.

7.5 Czech Republic

SGIs' share of value-added and employment in the Czech Republic increased slightly between 2006 and 2010, while the share of investment increased more substantially

In the Czech Republic, SGIs generated €26bn of value-added and employed around 1.3m people in 2006, accounting for around 24½% of value-added and 25¼% of total employment (see Table 7.2).

Table 7.5 Total SGIs in the Czech Republic

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	26113	35756	36.9	24.4	26.4	2.0
Employment ('000s)	1267	1316	3.9	25.4	26.0	0.6
Investment (€m)[1]	7072	10812	52.9	23.3	29.3	6.0

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 37% to nearly €36bn, and employment in SGIs increased by 4% to slightly above 1.3m.

In the Czech Republic as a whole between 2006 and 2010 value-added and employment increased less steeply, with an increase of 25½% to €135bn for value-added and an increase of 1½% to 5m for employment.

The total of €7bn invested in SGIs in the Czech Republic in 2006 was equivalent to 23¾% of the total of around €30bn invested in the Czech Republic. Between 2006 and 2010, investment in SGIs increased by 53% to around €11bn, whereas total investment in the Czech Republic increased by 21½% to €37bn.

These results mean that the importance of SGIs in the economy of the Czech Republic increased between 2006 and 2010, as their shares of value-added and investment increased, to just over 26½% for value-added (a 2 pp increase) and 29¼% for investment (a 6 pp increase) and 26% of total employment (0.6 pp increase).

In the Czech Republic the SGIs' share of the economy was broadly in line with the EU27 averages in 2010, with the exception of investment for which the share was markedly higher in the Czech Republic: 29¼% compared to 15¾%.

7.6 Denmark

SGIs' share of value-added, employment and investment in Denmark increased slightly between 2006 and 2010

In Denmark, SGIs generated around €54bn of value-added and employed around 1m people in 2006, accounting for around 29% of value-added and 36% of total employment in Denmark in that year (see Table 7.26).

Table 7.6Total SGIs in Denmark

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	53650	62436	16.4	29.0	30.7	1.6
Employment ('000s)	1020	1037	1.7	36.1	36.8	0.7
Investment (€m)[1]	9150	9284	1.5	19.3	23.3	3.9

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 16½% to €62.4bn, and employment in SGIs increased by 1¾% to a little above 1m.

In Denmark as a whole between 2006 and 2010 value added increased less while employment declined, with an increase of 10% to €204bn for value-added and a decrease of ¼% to 2.8m for employment.

The total of a little above €9bn invested in SGIs in Denmark in 2006 was equivalent to 19¼% of the total of around €47bn invested in Denmark. Between 2006 and 2010, investment in SGIs increased by 1½% to nearly €9.3bn, whereas total investment in Denmark declined by 15¾% to €40bn.These results mean that the importance of SGIs in the economy of Denmark increased slightly between 2006 and 2010, as their shares of value-added and investment increased slightly, to 30¾% for value-added (a 1.6 pp increase) and 23¼% for investment (a 3.9 pp increase), and the share of just under 37% in total employment represented a small increase of 0.7 pp.

SGIs in Denmark had a greater contribution to the economy in 2010 than the EU27 averages on all three indicators: 30¾% compared to 26½% for value-added, 37% compared to 29½% for employment and 23¼ compared to 22¼% for investment.

7.7 Estonia

SGIs' share of the Estonian economy increased between 2006 and 2010

In Estonia, SGIs generated nearly €3bn of value-added and employed around 186,000 people in 2006, accounting for around 24¼% of value-added and 29¼% of total employment in Estonia in that year (see Table 7.27).

Table 7.7Total SGIs in Estonia

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	2861	3607	26.1	24.3	28.9	4.6
Employment ('000s)	186	181	-3.0	29.3	32.8	3.5
Investment (€m)[1]	1313	1144	-12.9	27.3	41.9	14.6

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 26% to €3.6bn, but employment in SGIs decreased by 3% to approximately 181,000.

In Estonia as a whole between 2006 and 2010 value added increased less steeply and employment declined more steeply, with an increase of 6½% to €12.5bn for value-added and a decrease of 13½% to 550,900 for employment.

The total of around €1.3bn invested in SGIs in Estonia in 2006 was equivalent to 27¼% of the total of around €4.8bn invested in Estonia. Between 2006 and 2010, investment in SGIs decreased by 13% to around €1.1bn, whereas total investment in Estonia declined by 43¼% to €2.7bn.

These results mean that the importance of SGIs to the Estonian economy increased between 2006 and 2010 as SGIs accounted for greater shares on all three indicators: 29% of value-added (a 4.6 pp increase), just under 33% of employment (an increase of 3.5 pp) and 42% of investment (a 14.6 pp increase).

In 2010 SGIs in Estonia had larger shares of economy than the EU27 averages on all three indicators. It is worth bearing in mind that the GDP deflator was much larger for Estonia between 2006 and 2010, around 17%, than the EU27average of around 3½%.

7.8 Finland

In Finland the share of SGIs in the economy increased across all three indicators between 2006 and 2010

In Finland, SGIs generated nearly €38bn of value-added and employed around 833,000 people in 2006, accounting for around 26½% of value-added and 34¼% of total employment in Finland in that year (see Table 7.2).

Table 7.8Total SGIs in Finland

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	37988	45251	19.1	26.4	29.1	2.7
Employment ('000s)	833	888	6.6	34.2	35.8	1.5
Investment (€m)[1]	6276	7510	19.7	18.9	22.2	3.3

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 60.2, 61.1, 61.3, 64.11, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 19% to more than €45bn, and employment in SGIs increased by 6½% to approximately 888,000.

In Finland as a whole between 2006 and 2010 value added and employment increased less steeply, with an increase of 8¼% to €156bn for value-added and an increase of only 2% to 2.5m for employment.

The total of around €6bn invested in SGIs in Finland in 2006 represented under 19% of the total of around €33bn invested in Finland. Between 2006 and 2010, investment in SGIs increased by 20% to around €7.5bn, whereas total investment in Finland increased by only 2% to €33.8bn.

These results mean that the importance of SGIs to the economy of Finland increased between 2006 and 2010 as SGIs accounted for slightly greater shares on all three indicators in 2010: just over 29% of value-added (a 2.7 pp increase), 35¾% of employment (an increase of 1.5 pp) and 22¼% of investment (a 3.3 pp increase).

SGIs had slightly larger shares of value-added, total employment and investment in Finland in 2010 than the EU27 averages.

7.9 France

SGIs' shares of employment and value added in France increased slightly between 2006 and 2010, while that of investment increased significantly

In France, SGIs generated €448bn of value-added and employed around 9m people in 2006, accounting for around 28% of value-added and 33¼% of total employment in France in that year (see Table 7.29).

Table 7.9Total SGIs in France

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	447900	515284	15.0	27.9	29.6	1.7
Employment ('000s)	8871	9156	3.2	33.3	34.2	0.9
Investment (€m)[1]	86817	137715	58.6	24.1	36.6	12.5

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 15% to €515bn, but employment in SGIs grew by 3¼% to approximately 9.2m.

In France as a whole between 2006 and 2010 value-added increased by 8½% to just over €1,741bn, less than the percentage increase for SGIs, and total employment increased slightly, by ½% to 27m.

The total of around €87bn invested in SGIs in France in 2006 was equivalent to just over 24% of the total of around €360bn invested in France. Between 2006 and 2010 SGI investment grew by 58½% to €138bn. Note that the figure for 2010 is estimated, see chapter 2.5.

These results mean that the importance of SGIs to the French economy remained increased between 2006 and 2010: with shares of 29½% of value-added (a 1.7 pp increase), 34¼% of employment (an increase of 0.9 pp) and 36½% of investment (12.5 pp increase).

SGIs contributed more to value-added, employment and investment in France than the EU27 averages in 2010: 29½% compared to 26½% in the case of value-added, 34¼% compared to 29½% in the case of employment and 36½% compared to 22% for investment.

7.10 Germany

The importance of SGIs to the German economy decreased slightly in terms of employment between 2006 and 2010, but increased slightly in terms of value-added and investment

In Germany, SGIs generated €473bn of value-added and employed around 11.3m people in 2006, accounting for around 22¾% of value-added and 28¾% of total employment in Germany in that year (see Table 7.210).

Table 7.10Total SGIs in Germany

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	473811	551873	16.5	22.7	24.7	2.0
Employment ('000s)	11303	11535	2.1	28.8	28.4	-0.4
Investment (€m)[1]	86994	99301	14.1	20.8	22.8	2.0

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 16½% to €552bn, and employment in SGIs grew only by 2% to 11.5m.

The picture for Germany as a whole contrasted with that for SGIs. Total value-added increased less steeply, by 7¼% to €2,237bn and employment increased more sharply, by 3½% to 41m.

The total of nearly €87bn invested in SGIs in Germany in 2006 was equivalent to 20¾% of the total of around €418bn invested in Germany. Between 2006 and 2010, investment in SGIs increased by 14% to around €99bn, whereas total investment in Germany increased by only 4¼% to €435bn.These results mean that the importance of SGIs to the German economy remained roughly unchanged between 2006 and 2010 as SGIs accounted for slightly greater shares of value-added and investment, and a slightly smaller share of employment: 24¾% of value-added (a 2 pp increase), 28½% of employment (a decrease of 0.4 pp) and 22¾% of investment (a 2 pp increase).

SGIs' shares of value-added and employment in Germany were broadly in line with the EU27 averages in 2010.

7.11 Greece

The importance of SGIs in Greece increased slightly on all three indicators between 2006 and 2010

In Greece, SGIs generated €41bn of value-added and employed around 1.19m people in 2006, accounting for around 22½% of value-added and 25% of total employment in Greece in that year (see Table 7.11).

Table 7.11Total SGIs in Greece

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	41094	48721	18.6	22.4	25.0	2.6
Employment ('000s)	1187	1235	4.1	25.0	26.2	1.2
Investment (€m)[1]	7093	7850	10.7	15.0	20.0	5.0

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by around 19% to €48.7bn, and employment in SGIs rose by 4% to approximately 1.24m.

In Greece as a whole between 2006 and 2010 value-added increased by only 6¼% to €195bn, while employment declined by ½% to 4.7m

The total of around €7bn invested in SGIs in Greece in 2006 represented 15% of the total investment of around €47bn in Greece. Between 2006 and 2010 investment in SGIs in Greece increased by 10¾% to €7.8bn, but total investment fell by 17% to €39bn.

These results mean that the importance of SGIs to the Greek economy increased between 2006 and 2010 as SGIs had slightly greater shares on all three indicators: 25% of value-added (a 2.6pp increase), 26¼% of employment (an increase of 1.2 pp) and 20% of investment (a 5 pp increase).

In Greece, SGIs' shares of the value-added, employment and investment in2010 were slightly below the averages for the EU27.

7.12 Hungary

SGIs' share of value-addedin Hungary increased slightly, while the shares of employment and investment remained broadly unchanged

In Hungary, SGIs generated nearly €21bn of value-added and employed around 1.2m people in 2006, accounting for around 26¾% of value-added and 29% of total employment in Hungary in that year (see Table 7.12).

Table 7.12Total SGIs in Hungary

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	20667	22827	10.5	26.7	28.0	1.3
Employment ('000s)	1219	1182	-3.0	29.1	29.0	0.0
Investment (€m)[1]	7112	6312	-11.2	36.5	35.7	-0.8

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 10½% to nearly €23bn, but employment in SGIs decreased by 3% to approximately 1.18m.

In Hungary as a whole value-addedincreased between 2006 and 2010, while employment declined. Value added increased by 5¼% to €82bn and employment fell by 2½% to 4m.

The investment of around €7bn in SGIs in Hungary in 2006 represented 36½% of the total of around €19bn invested in Hungary. Between 2006 and 2010 investment in SGIs in Hungarydecreased by roughly 11% to around €6.3bn, but total investment in Hungaryfell by 9¼% to €18bn.

These results mean that the importance of SGIs to the Hungarian economy remained roughly the same between 2006 and 2010 as SGIs accounted for a slightly larger share of value-added, an unchanged share of employment and a slightly smaller share of investment.

The shares of SGIs in value-added and employment in Hungary in 2010 were broadly in line with the EU27 averages, but the share of investment was substantially greater: 35¾% compared to 22%.

7.13 Ireland

The importance of SGIs to the Irish economy increased greatly between 2006 and 2010

In Ireland, SGIs generated just over €28bn of value-added and employed around 527,000 people in 2006, accounting for around 18¼% of value-added and 26% of total employment in Ireland in that year (see Table 7.13).

Table 7.13Total SGIs in Ireland

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	28279	35833	26.7	18.3	25.3	7.1
Employment ('000s)	527	614	16.7	25.7	33.2	7.5
Investment (€m)[1]	9894	5884	-40.5	20.5	31.5	11.0

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added created by SGIs increased by 26¾% to €35.8bn, and employment in SGIs grew by 17% to approximately 614,000.

InIreland as a whole, by sharp contrast, value-addedfell by 8½% between 2006 and 2010 to €141bn, and employment declined by 9¾% to 1.9m.

The total of around €9.9bn invested in SGIs in Ireland in 2006 represented 20% of the total €48bn investment in Ireland. Between 2006 and 2010 investment in SGIs in Ireland fell sharply (by 40½%) to nearly €5.9bn, but total investment fell by 61% to €19bn.

These results mean that the importance of SGIs to the Irish economy increased between 2006 and 2010 as SGIs accounted for greater shares on all three indicators: just over 25% of value-added (a 7 pp increase), 33¼% of employment (an increase of 7.5 pp) and 31½% of investment (an 11 pp increase).

In 2010, SGIs had larger shares of employment (33¼) and investment (31½) in Ireland than the EU27 averagesof 29½% for employment and 22% for investment. However, the 25¼% share of value-added was slightly lower than the EU27 average of 26½%.

7.14 Italy

A mixed picture for Italy with growth of SGIs' value-added but a fall in investment between 2006 and 2010

In 2006, SGIs in Italy created nearly €292bn of value-added and employed 5.8m people, accounting for around 22% of value-added and 23% of total employment in Italy in that year (seeTable 7.14).

Table 7.14 Total SGIs in Italy

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	291876	342963	17.5	21.9	24.6	2.7
Employment ('000s)	5800	5847	0.8	23.3	23.7	0.4
Investment (€m)[1]	62153	54229	-12.7	19.5	17.8	-1.7

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-addedof SGIs grew by 17½% to €343bn. Growth did slow down in 2009 but it remained positive through the recession, whereas the whole Italian economy saw a fall in value-added in 2009 and the EU27 saw a fall in 2010. Over the same period, employment in SGIs in Italy increased by ¾%to 5.85m,.

In Italy as a wholevalue-addedincreased by 4½% to €1,392bn between 2006 and 2010, whereas employment declined by just under 1% to 24.7m.

The total of around €62bn invested in SGIs in Italy in 2006 represented almost 20% of the total €316.7bn investment in Italy. Between 2006 and 2010 investment in SGIs in Italyfell by 13% to just above €54bn. Total investment in Italy also fell between 2006 and 2010, but much less steeply,to €304.6bn.These results mean that the importance of SGIs in the Italian economy increased between 2006 and 2010 for value-added as the share grew from 22% to 24½%, but declined for investment, as the share fell by 1.7 pp to 17¾%. The increase in the share of employment was only a small ½ pp to 23¾%.

In Italy, the shares of SGIs in value-added, employment and investmentin 2010 were all lower than the EU27 averages (26.6% forvalue-added, 29.5% for employment and 22.1% forinvestment).

7.15 Latvia

The contribution of SGIs to the economy of Latvia has grown, especially for investment, despite the decline of employment

In 2006, SGIs created around €3.7bn of value-added in Latvia and employed nearly 300,000 people, accounting for more than one-quarter of Latvia's value-added and over 27% of total employment in that year (see Table 7.215).

Between 2006 and 2010, the value-addedof SGIs grew by 21½% to over €4.5bn, but employment fell by 7¾% from just under 300,000 in 2006 to 273,000 in 2010.

In Latvia as a whole value-added grew more slowly between 2006 and 2010 than the value-added of SGIs, rising by 15% to €16.2bn, but total employment fell more steeply, by 13½% to 933,000.

The total of around €1.2bn invested in SGIs in Latvia in 2006 represented 23% of the total €5.26bn invested in Latvia. Between 2006 and 2010 investment in SGIs in Latvia increased by nearly 10% to just over €1.3bn. In an interesting contrast, investment in the whole Latvian economy moved in the opposite direction and fell by more than 37% to €3.3bn.

Table 7.15 Total SGIs in Latvia

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	3738	4540	21.5	26.6	28.1	1.5
Employment ('000s)	296	273	-7.8	27.4	29.3	1.8
Investment (€m)[1]	1208	1329	10.0	22.9	40.4	17.5

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

The importance of SGIs to economic outturns increased on all three measures between 2006 and 2010, but most of all for investment. SGIs accounted in 2010 for 28% of total value-added (a slight rise of 1.5 pp) and 29¼% of total employment (a 1.9 pp rise) so the share of total employment increased, despite the fall in SGI employment, because total employment fell more steeply. The growth in SGI investment, accompanied by a precipitous decline in total investment, led to a dramatic growth in the SGIs' share of total investment (from 23% in 2006 to 40½% in 2010).

The shares of SGIs in Latvian value-added and employment were similar tothe EU27 averages in 2010. However, the SGIs' 40½% share of total Latvian investment in 2010) was much higher than the EU27 share of 22.1%.It is worth bearing in mind that the GDP deflator was much larger for Latvia (around 33%) than for the EU27(3½) between 2006 and 2010.

7.16 Lithuania

SGIs' value-added and employment grow to contribute more to economic outturns, while SGIs' investment becomes much more significant as investment in the broader economy falls

In Lithuania, SGIs generated almost €5bn of value-added and employed nearly 450,000 people in 2006, accounting for almost 23% of total value-added and 30% of total employment in Lithuania in that year(see Table 7.216).

Between 2006 and 2010, the value-added of SGIs grew by 25½% to €6.2bn but employment remained virtually unchanged.

In Lithuania as a whole value-added grew more slowly between 2006 and 2010 than the value-added of SGIs, rising by around 14% to €24.7bn, but total employment fell by around 10% to just above 1.3m.

Table 7.16 Total SGIs in Lithuania

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	4925	6184	25.6	22.6	25.0	2.3
Employment ('000s)	446	449	0.7	30.0	33.4	3.5
Investment (€m)[1]	2183	2517	15.3	35.8	55.7	19.9

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

The total of around €2.2bn invested in SGIs in Lithuania in 2006 represented nearly 36% of the total €6bn invested in Lithuania. Between 2006 and 2010 investment in SGIs in Lithuania increased by 15¼% to just over €2.5bn. In a striking contrast, investment in the whole Lithuanian economy moved in the opposite direction and fell by nearly 26% to €4.5bn.

The shares of SGIs in value-added, employment and investment increased between 2006 and 2010. It is striking that, although value-added of SGIs increased markedly, its percentage share rose by only 2.4 pp to 25%, a result of the strong growth of total value-added. Employment in SGIs increased only marginally, but as total employment declined, its percentage share rose by 3.4 pp to 33.4%. The most pronounced growth, however, was the 19.9 pp rise in the share of SGIs in total investment to 55.7%, a result of a strong rise in their investment at a time when total investment plunged. The shares of Lithuanian SGIs in value-added and employment were similar tothe EU27 averages in 2010, but the share of investment was far higher. It should be borne in mind that the 17¼% GDP deflator for Lithuania between 2006 and 2010 was much higher than the 3½% deflator for the EU27.

7.17 Luxembourg

The contribution of SGIs in Luxembourg to value-added and employment did not change between 2006 and 2010

In Luxembourg, SGIs generated €5.7bn of value-addedand employed 76,000 people in 2006, accounting for around 18¾% of total value-added and around 23¾% of total employment in Luxembourg in that year(see Table 7.217).

Table 7.17 Total SGIs in Luxembourg

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	5700	6966	22.2	18.7	19.3	0.6
Employment ('000s)	76	80	5.4	23.7	22.2	-1.6
Investment (€m)[1]	1643	265	-83.9	25.3	3.6	-21.7

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-addedof SGIs grew by 22¼% to just under €7bn while employment grew by more than 5½% to 80,000. It is noteworthy that the value-added of SGIs did not fall through the Great Recession.

In Luxembourg as a whole value-added grew at a similar rate between 2006 and 2010, rising by 18¼% to just over €36bn and total employment grew by nearly 13% to around 360,000.

The total of around €1.6bn invested in SGIs in Luxembourg in 2006 represented a quarter of the total €6.3bn invested in Luxembourg. Between 2006 and 2010 investment in SGIs in Luxembourg fell sharply by 84% to just over €265m. This suggested fall should be treated with caution as the data up to 2009 suggest a gradual increase in investment up to that point. By contrast, investment in the whole Luxembourg economy grew slowly, increasing by 13% to €7.3bn.

Because the value-added of SGIs grew at a similar pace to that of the whole economy, the share of SGIs in total value-added barely changed between 2006 and 2010 (from 18¾% to 19¼%). For SGI employment there was a 1.5 pp fall in the SGIs' share of total employment to 22.2% in 2010. The SGIs' share of total investment fell sharply but this suggested fall should also be treated with caution.

The shares of SGIs in value-added (19.3%), employment (22.2%) and investment (3.6%) in Luxembourgin 2010 were much lower than for the EU27 averages of 26.7%, 29.5%, and 22.1%.

7.18 Malta

Malta has seen no change in how SGIs contribute to total value-added and employment

In Malta, SGIs generated almost €975m of value-added and employed 46,000 people in 2006, accounting for 21½% of total value-added and nearly 30% of total employment in Malta in that year (see Table 7.218).

Table 7.18 Total SGIs in Malta

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	975	1229	26.1	21.6	22.3	0.7
Employment ('000s)	46	49	6.4	29.8	29.8	0.0
Investment (€m)[1]	91	na	na	8.2	na	na

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010 the value-added of SGIs increased by 26% to €1.2bn, relatively unaffected by the Great Recession. SGI employment grew by 6½% to 49,000 in 2010. Employment grew strongly between 2006 and 2008 but then remained stable through to 2010.

In Malta as a whole, value-added grew by around 22¼% to €5.5bn between 2006 and 2010, not far below the growth rate for SGIs. Except for stagnation in 2009, the growth profile of the whole economy was close to that for SGIs. Total employment in Malta increased by 6½% from 154,000 in 2006 to 164,000 in 2010.The growth profile was almost identical to that for SGI' employment.

Investment of €91m in SGIs in 2006 represented 8.2% of total investment in that year. Because there are no data available for SGI investment for 2010, we cannot give a growth rate for the whole period. Nevertheless, the available data show that investment grew to around €104m in 2007 but then stagnated in 2008. Between 2006 and 2010, total investment in Malta fell by 1½%.

The close similarity between the growth profiles of value-added and employment for SGIs and the whole economy means that the importance of SGIs in these features of the economy hardly changed between 2006 and 2010. SGIs accounted for 22¼% of total value-added and 29¾% of total employment in 2010.

The shares of SGIs in value-added and employment in Malta are close to the EU27 averages. In 2010, the 22¼% share of SGIs in value-added was only slightly lower than the EU27 average of 26¾%.

7.19 Netherlands

There has been minimal change in the importance of SGIs' value-added has increased in the Netherlands, but the contribution to investment has increased

In the Netherlands, SGIs generated around €125bn of value-added and employed 2.5m people in 2006, accounting for more than 26% of total value-added and over 30% of total employment in that year (see Table 7.219).

Table 7.19 Total SGIs in the Netherlands

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	125342	151072	20.5	26.2	28.7	2.5
Employment ('000s)	2545	2731	7.3	30.3	31.6	1.3
Investment (€m)[1]	27151	31192	14.9	25.5	30.6	5.0

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-addedof SGIs grew by 20½% to €151bn, rising in every year. Employment grew modestly by 7¼% to 2.7m despite a slowdown in 2009.

In the Netherlands as a whole between 2006 and 2010, value-added grew by around 9¾% to €526bn, and total employment grew by around 3% to 8.6m. Unlike SGI employment, the growth of total employment slowed steadily throughout the period, and did not fall steeply in 2008.

The €27.2bn investment in SGIs in 2006 represented one-quarter of total investment in the Netherlands in that year. Between 2006 and 2010 investment in SGIs grew by 15% to €31.2bn, unaffected by the Great Recession. By sharp contrast, total investment in the Netherlands fell by 4% to €102bn in 2010.

The shares of SGIs in value-added and investment increased between 2006 and 2010, by 2.5 pp to 28¾% for value-added and by 5.1 pp to 30½% for investment. The modest growth in SGIs employment outpaced that of total employment which increased the SGI share of employment by 1.3 pp to 31½%. The shares of SGIs in value-added and employment in the Netherlands are very close to the EU27 averages. However, the SGIs' 30.6% share of total investment in the Netherlands was around twice the EU27 average of 22% in 2010.

7.20 Poland

SGIs' shares of value-added and employment remained largely unchanged in Poland, but the share in investment increased sharply

In Poland, SGIs generated €52.6bn of value-added and employed around 3.8m people in 2006, accounting for 22% of total value-added and over a quarter of total employment in that year(see Table 7.20).

Table 7.20 Total SGIs in Poland

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	52648	73594	39.8	22.0	23.6	1.5
Employment ('000s)	3800	4328	13.9	26.2	27.3	1.1
Investment (€m)[1]	9019	15174	68.2	16.9	21.5	4.7

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03)
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010 value-added generated by SGIs grew by 39¾% to €73.6bn, and employment in SGIs grew by 14% to 4.3m.

In Poland as a whole between 2006 and 2010 value-added and employment grew nearly as strongly as in the case of SGIs, with value-added rising by around 30¾% to €312bn, and employment increasing by 9½% to 15.8m.

In Poland, investment in SGIs grew in value substantially by 78¼% from €9bn in 2006 (17% of total investment) to €15.2bn in 2010 (21.5% of total investment). Total Polish investment also strongly, but at less than half the rate of SGI investment, rising by 31¾% to €70.4bn.

There was little change in the shares of SGIs in value-added and employment between 2006 and 2010, a result of the similar growth patterns between SGIs and the total economy. In 2010, the SGI shares were 23½% for value-added and 27¼% for employment. However, the rapid growth in SGI investment raised their share of total investment by almost 5 pp to 21½% in 2010. The shares of SGIs in the three economic indicators in 2010 were very similar to the EU27 averages.

7.21 Portugal

SGIs' share of investment fell steeply between 2006 and 2010, but the shares in value-added and employment remained broadly unchanged

In Portugal, SGIs generated €38.9bn of value-added and employed nearly 1.2m people in 2006, accounting for 28% of total value-added and 23% of total employment in that year (see Table 7.21).

Table 7.21 Total SGIs in Portugal

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	38959	44440	14.1	28.2	29.3	1.2
Employment ('000s)	1186	1207	1.7	23.1	24.4	1.3
Investment (€m)[1]	7916	3571	-54.9	22.1	10.6	-11.5

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added of SGIs increased by 14% to €44.4bn, and employment increased by 1¾% to 1.2m. SGI employment in Portugal was hit particularly hard in 2008 but there has been modest growth in other years.

The trends in value-added and employment in Portugal as a whole were similar to those for SGIs, with a rise of 9½% in value-added between 2006 and 2010 to €151bn, and a fall of 3¾% in employment to 4.9m. These trends are similar to those experienced by SGIs in Portugal. Investment in SGIs fell by nearly 55% between 2006 and 2010, declining from €7.9bn to €3.6bn,Investment in the whole Portuguese economy fell by 5¾% to €33.8bn over the same period.

Because of the similarity in the trends of value-added and employment in SGIs and the whole economy, there was little change is the shares of SGIs between 2006 and 2010. In 2010 the shares of 29¼% of value-added and 24½% of employment were just than 1-1¼ pp above the shares in 2006. The fall in SGI investment, however, led to an 11.5 pp decrease in the share of total investment to 10½%.

SGIs accounted for a greater proportion (29¼%) of total value-addedthan the EU27 average of 26½% in 2010, but their shares of employment and investment were around 5 pp lower than the EU27 average for employment and 11.5 pp lower than the EU27 average for investment.

7.22 Romania

The Romanian economy has remained largely unchanged in terms of SGIs' contributions to the economic outturns

In Romania, SGIs generated €15.5bn of value-added and employed 1.7m people in 2006, accounting for 18% of total value-added and total employment in that year (see Table 7.22).

Table 7.22 Total SGIs in Romania

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	15510	22624	45.9	18.0	20.4	2.5
Employment ('000s)	1699	1709	0.6	18.2	18.7	0.5
Investment (€m)[1]	4853	5526	13.9	19.4	18.0	-1.4

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added of SGIs increased by 46% to €22.6bn. Most of the rapid growth occurred in the run-up to the 2008 recession. However, the GVA deflator in Romania grew strongly by around 44% over the period which helps explain the rapid growth in SGIs' value-added. However, employment remained largely unchanged at 1.7m.

In Romania as a whole between 2006 and 2010 value-added grew slower than in the case of SGIs, rising by around 28¼% to €111bn. However, as with the rapid growth in SGIs' value-added, it is worth considering the strong growth of the Romanian GVA deflator. Total employment in Romania has fallen slightly by 1¾% down to 9.2m in 2010.

In Romania investment in SGIs grew by 14% from €4.8bn in 2006 to €5.5bn in 2010. Total investment in Romania also grew but faster than SGI investment, rising by 22¾% to €30.7bn.

There was little change in the share of SGIs in employment between 2006 and 2010, a result of the similar growth patterns between SGIs and the total economy, and a slight increase in SGIs' share of value added. In 2010, the SGI shares were 20¼% for value-added, 18¾% for employment and 18% for investment.

Consequently, SGIs accounted for smaller proportions of total value-added, employment and investment than the EU27 averages of 26½% (for value-added), 29½% (for employment) and 22% (for investment) in 2010.

7.23 Slovakia

The dependence on SGIs did not change much in Slovakia, aside from a fall in SGIs' share of investment

In Slovakia, SGIs generated €9.3bn of value-added and employed around 600,000 people in 2006, accounting for 23¼% of total value-added and 28¼% of total employment in that year (see Table 7.23).

Table 7.23 Total SGIs in Slovakia

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	9297	13568	45.9	23.2	22.7	-0.5
Employment ('000s)	603	643	6.8	28.3	29.7	1.4
Investment (€m)[1]	4872	4520	-7.2	41.3	32.6	-8.6

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010, the value-added of SGIs grew by 46% to €13.6bn and employment grew by 6¾% to over 640,000. Unlike many of the other countries that saw rapid growth in SGIs' value-added, the GVA deflator in Slovakia was not far away from the EU27 figure (both around 3½% over 2006-2010). Employment fell in 2009 but then bounced back with growth that was stronger than 2006-2008 before the recession.

In Slovakia as a whole between 2006 and 2010, value-added grew by around 49¼% to €40.1bn and total employment grew by around 1¾% to 2.2m. The growth of value added mirrors the strong growth seen by SGIs. Whole economy value-added fell slightly in 2009, whereas SGIs' value-added continued to grow through the recession (albeit at a gradually decelerating pace). The falls in 2009 and 2010 suggest that the recession hit total employment harder than SGIs' employment.

In Slovakia, investment in SGIs fell by 7¼% from €4.9bn in 2006 to €4.5bn in 2010, however, total investment increased by 17¼% to reach €13.9bn in 2010.

There was little change in the shares of SGIs in value-added and employment between 2006 and 2010, a result of the similar growth patterns between SGIs and the total economy. However, the decline in SGI investment decreased their share of total investment by 8.7pp to 32½% in 2010.

The shares of SGIs in value-added and employment in 2010 were very similar to the EU27 averages. However, despite SGIs accounting for a smaller share of total investment in Slovakia, they still accounted for a greater proportion of investment (32½%) than the EU27 average of 22% in 2010.

7.24 Slovenia

The dependence of all three measures on SGIs increased in Slovenia between 2006 and 2010

In Slovenia, SGIs generated €6.5bn of value-added and employed 230,000 people in 2006, accounting for around 24% of total value-added and total employment. (see Table 7.24).

Table 7.24 Total SGIs in Slovenia

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	6512	8504	30.6	23.9	27.4	3.5
Employment ('000s)	230	249	8.3	24.4	25.9	1.6
Investment (€m)[1]	2574	2744	6.6	31.3	38.3	7.0

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03)
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Between 2006 and 2010 value-added generated by SGIs grew by around 30% to €8.5bn. Over the 2006-2010 period, the GVA deflator in Slovenia is a little higher than that of the EU27 (10% and 4% respectively). Growth has been strong throughout the time period and it only slowed in 2009. Over the same time period, employment in SGIs grew by 8¼% up to about 250,000. Growth in SGIs' employment also only slowed in 2009 and the total did not fall during the recession.

In Slovenia as a whole between 2006 and 2010 value-added grew by 13¾% to €31bn and total employment grew by 1¾% to 963,000. It seems as though the broader economy was hit harder by the recession compared to the SGIs as both of these measures for outturns fell in 2009 and 2010.

Slovenian investment in SGIs grew by 6½% up to €2.7bn in 2010. This contrasts with the trend for the rest of the economy as total investment fell by 13% from €8.2bn in 2006 to €7.2bn in 2010.

The contribution of SGIs to total employment has seen minimal change as SGIs did not grow significantly faster than the rest of the economy. In 2010, SGIs' employment accounted for 26% of total employment in Slovenia. Conversely, SGIs' have grown in importance with respect to value-added and investment outturns. SGIs contribute to 27½% of value-added outturn (a 3.5pp rise on the 2006 value) and 38¼% of investment outturn (a 7pp rise).

The share of SGIs in value added was very similar to the EU27 average and the share of total employment is slightly lower in Slovenia (around 29½% for the EU27 in 2010). Slovenian SGIs contribute to 38¼% of total investment and this is around 16pp higher than the equivalent proportion for the EU27.

7.25 Spain

Employment and value added in Spain relied more on SGIs in 2010 compared to 2006

In Spain, the value-added generated by SGIs was €193bn in 2006 and around 4.7m people were employed by SGIs, accounting for 22% of total value-added and nearly a quarter of total employment (see Table 7.25).

SGI value-added grew by 30% up to €251bn and SGI employment grew by 7¼% to just over 5m in 2010. Growth was very strong in both indicators leading up to the recession. However, employment fell in 2008 and its growth rate then stagnated, whereas value-added growth initially slowed but only became negative in 2010. In Spain, total value-added increased from €877bn in 2006 up to €958bn in 2010, representing growth of 9¼% which is slower than that of the SGIs. Total employment fell by 6¼% from around 20.1m people down to 18.9m people, with most of the fall happening in 2009-2010. Employment in SGIs appeared to be less impacted by the recession as it bounced back to growth in 2009-2010..

Investment in SGIs fell from around €46bn in 2006 to around €22.9bn in 2010. This suggests a sharp fall of 51% over the period. It is worth noting that SGI investment accounts for a relatively small proportion of total investment in Spain. Meanwhile, total investment fell sharply by 22½% to €234bn, with most of the fall occurring in 2009.

Table 7.25 Total SGIs in Spain

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	193548	251520	30.0	22.1	26.3	4.2
Employment ('000s)	4703	5041	7.2	23.4	26.7	3.3
Investment (€m)[1]	46721	22859	-51.1	15.5	9.8	-5.7

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

In 2010, SGIs in Spain accounted for 26¼% of total value-added (a 4.2pp rise on the 2006 figure), 26¾% of total employment (a 3.3pp rise) and 9¾% of total investment (a 5.7pp fall). Because SGI employment grew faster than in the rest of the economy, the SGI share of total employment increased. The contribution to investment fell, because investment fell more strongly than in the rest of the economy.

The contribution of SGIs to total value-added and employment in Spain are similar to the EU27 averages. There is a noticeable difference in the SGIs' contribution to total investment between the EU27 (22.1% in 2010) and Spain (9.8%).

7.26 Sweden

In Sweden, the importance of SGIs to economic outturns has decreased

In 2006, Sweden's SGIs generated value-added worth around €84bn, which was worth30% of total value-added. Just over 1.7m people worked in SGIs' which accounted for close to 40% of total employment (see Table 7.26).

In Sweden, SGI value-added increased to around €90bn in 2010, representing an increase of 8% over the 2006-2010 period. Employment in SGIs fell by 1½% to just over 1.7m over the time period.

In Sweden as a whole value-added increased by 9¾% from around €279bn in 2006 up to around €306bn in 2010. This included a fall in 2009 followed by a bounce back in 2010. Total employment grew modestly by 2% up to 4.5m over the same time period and remained relatively stable year-to-year.

Table 7.26 Total SGIs in Sweden

	levels		growth (%)	share of total economy		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	84018	90867	8.1	30.1	29.7	-0.4
Employment ('000s)	1737	1712	-1.4	39.3	38.0	-1.3
Investment (€m)[1]	12676	15502	22.3	21.2	24.6	3.4

Notes: 1 Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

Investment in SGIs increased by 22% from €12.6bn in 2006 to €15.5bn in 2010. Total investment in Sweden followed a different trend as it increased from around €59.6bn up to around €63.1bn, representing a growth rate of 6% over the period. Much like value-added, there was a steep fall in 2009 followed by a bounce back in 2010.

In 2010, SGIs contributed to 29¾% of total value-added (a 0.4pp fall on the 2006 proportion), 38% of total employment (a 1.3pp fall) and 24½% of investment outturn (a 3.4pp increase).

Despite SGIs making smaller contributions to whole-economy value added and employment, the 2010 shares still remain comfortably around or above the EU27 averages. In the EU27,SGI's contributed to 26.6% of value-added (3.1pp lower than the proportion for Sweden in 2010), 29.5% of employment (8.5pp lower) and 22.1% of investment (2.5pp lower).

7.27 United Kingdom

There were falls in SGIs' value-added and investment between 2006 and 2010, but SGIs' share of employment and value added in the UK increased

In the UK, SGIs generated €438bn of value-added and employed just over 9m people in 2006. This means that SGIs accounted for around a quarter of total value-added and just under a third of total employment in the UK in 2006 (see Table 7.27).

In 2010, the value-added created by SGIs had slipped to €417bn, a 4¾% fall over the period, but employment in SGIs increased by 12½% between 2006 and 2010 to reach 10.5m.

The outturns for value-added and employment in the UK as a whole were less favourable: at €1,526bn total value-added in 2010 was 12½% lower than in 2006 while employment, at just over 29m, was virtually unchanged.

At the same time, around €333bn was invested in total in the UK in 2006. Investment in SGIs was worth around €52bn and thus accounted for 15½% of total investment in the UK.

In 2010, SGIs in the UK invested around €27bn, which was 48% lower than the 2006 level. At the same time, total investment in the UK came to just €255bn in 2010, a 23% fall on the level of investment in 2006.

Table 7.27 Total SGIs in the United Kingdom

	levels		growth (%)	share of total economy (%)		change in share (pp)
	2006	2010	2006-10	2006	2010	2006-10
Value-added (€m)	437675	416615	-4.8	25.1	27.3	2.2
Employment (000s)	9351	10517	12.5	32.2	36.2	4.0
Investment (€m)[1]	51949	27277	-47.5	15.6	10.7	-4.9

Notes: 1Excludes sectors not covered by the Structural Business Statistics and National Accounts (2.10, 2.40, 91, 96.03).
Sources: Eurostat, OECD (Structural Business Statistics and National Accounts).

These results mean that despite falls in the levels of value-added and investment generated by SGIs, the importance of SGIs to the UK economy increased between 2006 and 2010 as SGIs accounted for greater shares of value added and employment: just over 27% of value-added (a 2.2 pp increase between 2006 and 2010), just over 36% of employment (an increase of 4 pp) and 10¾% of investment (a 4.9 pp decrease).

Compared to the averages for the EU27, therefore, SGIs in the UK account a similar share of value-added, a greater share of employment and a smaller share of investment.

Appendix A: Definition of Public Services

The NACE Rev.2-based definition of public services used for this report is given below.

Table A.1: Definition of public services using the NACE Rev.2 classification

NACE Rev.2	SGI
02.10 Silviculture and other forestry activities	ALL
02.40 Support services to forestry	ALL
35 - Electricity, gas, steam and air conditioning supply	ALL
36 - Water collection, treatment and supply	ALL
37 - Sewerage	ALL
38 - Waste collection, treatment and disposal activities; materials recovery	ALL
39 - Remediation activities and other waste management services	ALL
49 - Land transport and transport via pipelines	ALL except: 49.39 Other passenger land transport n.e.c ., 49.42 Removal services, 49.32 Taxi
50 - Water transport	Only 50.3 - Inland passenger water transport
51 - Air transport	In part - estimated as 10% of NACE 51
52 - Warehousing and support activities for transportation	ALL
53.1 - Postal activities under universal service obligations	ALL
60.2 - Programming and broadcasting activities	In part - estimated as 40% of 60.2
61 - Telecommunications	61.1 Wired telecommunications activities 61.3 Satellite telecommunications activities
64 - Financial service activities, except insurance and pension funding	Only 64.11 central banking
72 - Scientific research and development	ALL
75 - Veterinary activities	ALL
78 - Employment activities	Only 78.1 Employment agencies
84 - Public administration and defence; compulsory social security	ALL

85 - Education	ALL
86 - Human health activities	ALL
87 - Residential care activities	ALL
88 - Social Work activities without accommodation	ALL
91 - Libraries, archives, museums and other cultural activities	ALL
96 - Other personal service activities	Only 96.03 Funeral and related activities

The following table shows the corresponding sectors on other classifications that are used in some of the sources.

Table A.2: Mapping from other classifications to SGI sectors

SGIs defined in NACE 2	NACE 1.1	ISIC rev. 4	ISIC rev. 3	CEDEFOP
2.10 - Silviculture and other forestry activities	A0112, A0201 A0202,			
2.40 - Support services to forestry	K7414			
35 - Electricity, gas, steam and air conditioning supply	E40	D35	C40	22. Electricity and 23. Gas Supply
36 - Water collection, treatment and supply	E41	D36	C41	24. Water Supply
37 - Sewerage	O9001			
38 - Waste collection, treatment and disposal activities; materials recovery	O9002, DN37			
39 - Remediation activities and other waste management services	O9003			
49 - Land transport and transport via pipelines (minus 49.39, 49.42 and 49.32)	I60 minus I6023, I6021 and I6022	D49	C60	29. Land Transport etc
50.3 - Inland passenger water transport	I612			
51 - Air transport	I62	D51	C62	31. Air Transport
52 - Warehousing and support activities for transportation		D52	C63	
53.1 - Postal activities under universal service obligations	I6411	D53		
60.2 - Programming and broadcasting activities				
61.1 Wired telecommunications activities				
61.3 Satellite telecommunications activities				
64.11 - Central banking	J6511			
72 - Scientific research and development	K73	D72	C73	
75 - Veterinary activities	N852			
781 - Activities of employment placement agencies	K745 (with share estimates applied)			

SGIs defined in NACE 2	NACE 1.1	ISIC rev. 4	ISIC rev. 3	CEDEFOP
84 - Public administration and defence; compulsory social security	L75	D84	C75	38. Public Administration & Defence
85 - Education	M80	D85	C80	39. Education
Q 86-88 Health and Social Work	N85	D86T88	C85	40. Health & Social Work
86 - Human health activities	N851			
87 - Residential care activities	N8531			
88 - Social Work activities without accommodation	N8532			
91 - Libraries, archives, museums and other cultural activities	O925			
96.03 - Funeral and related activities	O9303			

Appendix B: Analysis of Changes in Estimates of SGI Sector Value Added in 2006 from the Previous Mapping Study

The following table presents the estimates of value added for SGI sectors in 2006 for one country (Austria) that were made in the 2010 study together with the values now. It compares the figures published in the previous study against raw data available from Eurostat (both in NACE 1.1) and against the closest applicable sector in the new SGI list (this is defined on NACE 2 but raw data have been converted from NACE 1.1).

There are a number of cases where there is little difference between the numbers from the two studies. However, there are a few noteworthy differences that highlight some of the points made in the methodology chapter.

The figure for Land transport value added in the 2010 study is lower compared to the new study. This is because the 2010 study applied a 45% share to the total figure. The new list of SGIs states NACE 2 sector 49 as an SGI minus 49.39, 49.42 and 49.32. In cases where these sub-sectors are unavailable the total of Land transport is included in the dataset; hence it matches the NACE 1.1 Eurostat number.

The figure for NACE 1.1 sector 64 does not have an equivalent SGI sector in the new study as it only focuses on a small set of sub-sectors within this broader sector. A number of these NACE 2 sub-sectors do not have data available from the sources. In this case the only available sub-sector is 53 Postal and courier activities.

The figure for NACE 1.1 sector 74.5 is much larger than that of NACE 2 sector 78.1. Temporary and other human resources provision is not included in the new definition of SGIs; hence NACE 2 sector 78.1 is the closest equivalent sector and the rest of the broader sector 78 is not included.

There are differences between both reports for Public administration and defence, Education and Health and social work. This is because the data for these three sectors came from government expenditure figures in the 2010 study rather than from Eurostat National Accounts value added figures in the new study. This suggests that in the previous study value added was slightly underestimated for Public administration and defence and slightly overestimated for Education. There is a much larger gap between the Health and social work figures between the two studies.

Table B.1: Analysis of changes in estimates of SGI sector value added in 2006 from the previous mapping study

Austria	Sector	Value added in 2006 (€m)
Previous study (NACE 1.1)	40 Electricity, gas, steam and hot water supply	5,584
Eurostat SBS (NACE 1.1)	40 Electricity, gas, steam and hot water supply	5,583.80
Closest SGI sector in new study (NACE 2)	35 - Electricity, gas, steam and air conditioning supply	5584
Previous study (NACE 1.1)	41 Collection, purification and distribution of water	312
Eurostat SBS (NACE 1.1)	41 Collection, purification and distribution of water	312
Closest SGI sector in new study (NACE 2)	36 - Water collection, treatment and supply	312
Previous study (NACE 1.1)	60 Land transport; transport via pipelines (45%)	2544
Eurostat SBS (NACE 1.1)	60 Land transport; transport via pipelines	5653
Closest SGI sector in new study (NACE 2)	49 Land transport and transport via pipelines (the few relevant sub-sectors were not available for subtraction)	5653
Previous study (NACE 1.1)	61 Water transport	15
Eurostat SBS (NACE 1.1)	61 Water transport	15
Eurostat SBS (NACE 1.1)	61.2 Inland water transport	14.8
Closest SGI sector in new study (NACE 2)	50.3 - Inland passenger water transport	15 (rounded)
Previous study (NACE 1.1)	62 Air transport (10%)	60
Eurostat SBS (NACE 1.1)	62 Air transport	602
Closest SGI sector in new study (NACE 2)	51 - Air transport (10%)	60
Previous study (NACE 1.1)	64 Post and telecommunications	4417
Eurostat SBS (NACE 1.1)	64 Post and telecommunications	4417
Eurostat SBS (NACE 1.1)	64.1 Post and courier activities	1368
Closest SGI sector in new study (NACE 2)	53 - Postal and courier activities	1368
	60.2 - Programming and broadcasting activities	Not available

Austria	Sector	Value added in 2006 (€m)
	61.1 Wired telecommunications activities	Not available
	61.3 Satellite telecommunications activities	Not available
Previous study (NACE 1.1)	73 Research and development	273
Eurostat SBS (NACE 1.1)	73 Research and development	274
Closest SGI sector in new study (NACE 2)	72 - Scientific research and development	274
Previous study (NACE 1.1)	74.5 Labour recruitment and provision of personnel	2128
Eurostat SBS (NACE 1.1)	74.5 Labour recruitment and provision of personnel	2128
Closest SGI sector in new study (NACE 2)	78.1 - Activities of employment placement agencies	172
Previous study (NACE 1.1)	Section L: Public administration and defence; compulsory social security (based on expenditure data)	11132
Eurostat NA (NACE 1.1)	Section L: Public administration and defence; compulsory social security	13439
Closest SGI sector in new study (NACE 2)	84 - Public administration and defence; compulsory social security	13439
Previous study (NACE 1.1)	Section M: Education (based on expenditure data)	13235
Eurostat NA (NACE 1.1)	Section M: Education	12137
Closest SGI sector in new study (NACE 2)	85 - Education	12137
Previous study (NACE 1.1)	Section N: Health and social work (based on expenditure data)	26057
Eurostat NA (NACE 1.1)	Section N: Health and social work	13449
Closest SGI sector in new study (NACE 2)	Q 86-88 Health and Social Work	13449

Appendix C: Definition of occupations and qualifications

The ISCO-88 definitions of occupations used for this report are given below

Table C.1: Definition of occupations

Broad occupation categories used in this study	ISCO-08 codes and descriptions
Armed forces	01. Armed forces
Legislators, senior officials and managers	11. Legislators and senior officials 12. Corporate managers 13. Managers of small enterprises
Professionals	21. Physical, mathematical and engineering science professionals 22. Life science and health professionals 23. Teaching professionals 24. Other professionals
Technicians and associate professionals	31. Physical and engineering science associate professionals 32. Life science and health associate professionals 33. Teaching associate professionals 34. Other associate professionals
Clerks	41. Office clerks 42. Customer services clerks
Service workers and shop and market sales workers	51. Personal and protective services workers 52. Models, salespersons and demonstrators
Skilled agricultural and fishery workers	61. Skilled agricultural and fishery workers
Craft and related trades workers	71. Extraction and building trades workers 72. Metal, machinery and related trades workers

	73. Precision, handicraft, craft printing and related trades workers 74. Other craft and related trades workers
Plant and machine operators and assemblers	81. Stationary plant and related operators 82. Machine operators and assemblers 83. Drivers and mobile plant operators
Elementary occupations	91. Sales and services elementary occupations 92. Agricultural, fishery and related labourers 93. Labourers in mining, construction, manufacturing and transport

The ISCED 1997-based definitions of qualifications used for this report are given below.

Table C.2: Definition of qualifications

Level of qualification presented in report	ISCED Level	Description
Low	0	Pre-primary education
	1	Primary education or first stage of basic education
	2	Lower secondary or second stage of basic education
Medium	3	Upper secondary education
	4	Post-secondary non-tertiary education
High	5	First stage of tertiary education
	6	Second stage of tertiary education

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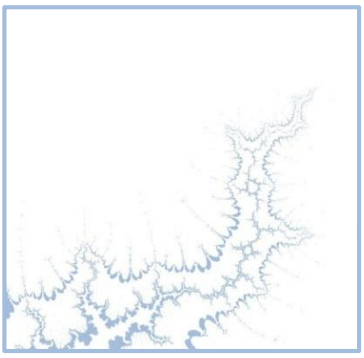

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