

## **Structural Change in Europe During the Crisis**

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**This note examines the extent and patterns of structural changes that have occurred in European economies during the recent crisis using some stylised facts on changing output and employment structures at detailed sectoral level. Focusing mainly on the new EU member states, we compare the performance of various European countries by looking at the differentiated impact of the recent crisis on structural shifts in their economy. We start with stylised facts related to output and employment structures at broader sectoral (NACE-2) level and attempt to find out whether there has been a structural convergence (or divergence) of the New EU Member States (NMS) compared to the more advanced 'old' EU countries (OMS) during the crisis. Finally, we provide also some policy conclusions related to the future role of the NMS in the economy of an integrated Europe, especially in view of post-crisis growth challenges. The financial crisis 2008-2011 adversely affected manufacturing industry more than services – particularly in terms of employment – and accelerated structural change in favour of the services sector. The latter tendency was more pronounced in the NMS though even here country specific differences were remarkable. The importance of industry in this group of countries remains strong. There has been no EU-wide uniform pattern of structural change; the formulation of industrial policy at EU level – even reaching the 20% target of industry's share in GDP – is challenging and hardly attainable.**

### **1. Historical patterns of output and employment restructuring**

The majority of NMS have inherited an oversized and inefficient industrial sector from the period of central planning. At the same time, the services sector – in particular market services such as trade, financial and insurance activities as well as real estate – was grossly underdeveloped (Landesmann, 2000). Due to considerable structural distortions and production inefficiencies, the high degree of industrialisation initially turned out to be a drawback rather than an advantage: it implied, among other problems, also the underdevelopment of other sectors, especially of market services. In all NMS, industry – mining as well as manufacturing – suffered over-proportionately from the 'transformational recession' at the beginning of transition in early 1990s. By the year 2001 only Hungary and Poland produced more industrial output, by 60% and 70% respectively, than in 1990. By contrast, in Bulgaria and Romania industry shrank by more than 30% during that period, in the Baltic States by half, while in the remaining NMS the cumulative output decline amounted to about 10%. By the year 2011, only the Czech Republic and Romania had a manufacturing industry with a share of more than 20% of GDP – about the same as in the two most industrialised 'old EU Member States' (OMS) Germany and Ireland (Figure 1). Among the OMS, Austria, Germany and Portugal were the only

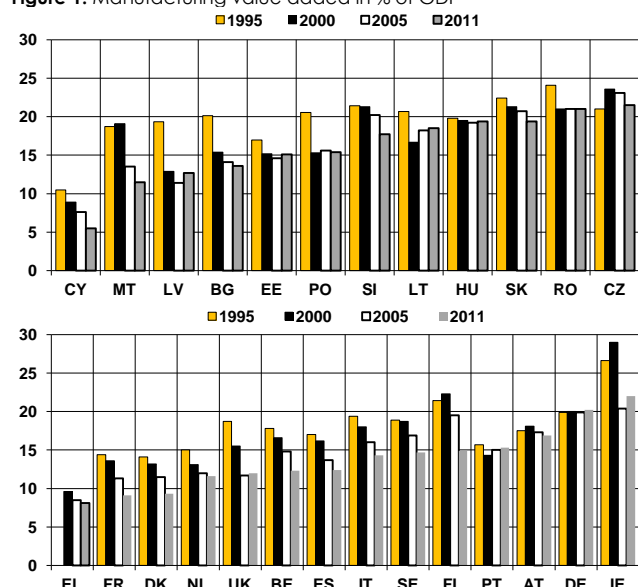
countries to succeed in maintaining the share of manufacturing in GDP more or less constant over the past two decades (at 20% and 15% respectively of GDP – see Figure 1); in all other OMS, manufacturing shrank considerably over that period. At the beginning of the current decade, the shares of manufacturing in GDP in the majority of NMS were higher than in West and South European EU Member States. In the majority of EU-27 countries, real estate, renting and business activities replaced manufacturing as the largest sector.<sup>1</sup> At the global scale, manufacturing accounted for 17% of GDP in 2010 (33% in China, 28% in South Korea, 20% in Japan, 17% in Mexico and 12% in the United States – see Mc Kinsey, 2012; Deutsche Bank, 2013). Within the EU, there is a huge diversity across individual member states in terms of manufacturing importance: value added shares ranged between 5% (Cyprus) and more than 20% of GDP (Czech Republic and Ireland). The target set by the EU Commission to increase the share of industry in GDP to 20% on average by 2020 will not be reached (European Commissions, 2012; see also Deutsche Bank, 2013). NMS employment underwent even more dramatic change. As a rule, employment declined more than output and millions of jobs were lost in the region dur-

<sup>1</sup> On the EU-27 average, manufacturing value added accounted for less than 15% of GDP in 1999 whereas market services accounted for 50% of GDP – see European Commission (2011), p. 37. Only Bulgaria, Poland, Estonia and Latvia have similarly low manufacturing shares.

ing the first transition decade (Landesmann, 2000; Grinberg et al., 2008).<sup>2</sup> Another labour market shock occurred as a consequence of the crisis in 2009 and thereafter: with the exception of Poland, the share of manufacturing employment dropped in all EU countries between 2005 and 2011 (Figure 2). Still the manufacturing industry remains an important job provider in many NMS; the highest employment shares in the manufacturing industry are recorded in the Czech Republic, Estonia, Slovakia and Slovenia (more than 20% of total employment in 2011 – see Figure 2). In all NMS bar Latvia, Cyprus and Malta, and despite a relative decline in the importance of manufacturing as a job provider in the first years of EU membership, manufacturing jobs still account for more than 15% of the total. Such relatively high shares of manufacturing employment have remained only in a few OMS: Portugal, Italy, Austria, Germany and Finland – see Figure 2.

Judged by the current differences in value added and employment shares, Bulgaria, Estonia and Poland have the most 'labour-intensive' manufacturing industry among the NMS while – surprisingly – Romania and Lithuania are least labour-intensive. Apart from these two countries, Germany, the Netherlands and Austria also have relatively efficient and more productive manufacturing sector which generates more value added with less employment (Figure 3).<sup>3</sup> Again, the differences within the EU are huge also in this respect.

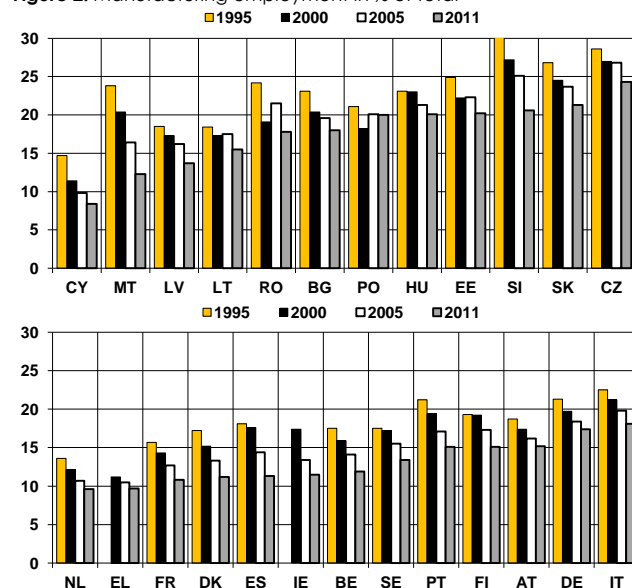
Figure 1: Manufacturing value added in % of GDP



<sup>2</sup> For more details on labour market developments during the 1990s see Vidovic (2002).

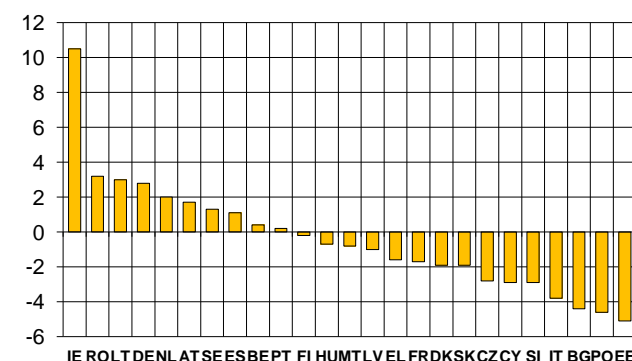
<sup>3</sup> Needless to say, these differences are affected by the sectoral composition of manufacturing industry branches and their varying capital intensity. The extreme example is Ireland where more than 20% of total value added was generated in manufacturing while it employed just 11% of total labour in 2011.

Figure 2: Manufacturing employment in % of total



Source: Own calculations based on wiw Database and Eurostat.

Figure 3: Differences in manufacturing industry shares: GVA versus employment shares, year 2011, in pp



## 2. Structural change during the recent crisis

Changes in the importance of manufacturing industry obviously mirror shifts in the importance of other economic sectors. In order to evaluate the overall speed and patterns of structural change we use the structural change indicator  $S$  which evaluates aggregate shifts in sectoral shares.<sup>4</sup> Table 1 provides the results for changes in the structure of EU countries' GDP (gross

<sup>4</sup> The structural change indicator  $S$  is calculated from 1-digit NACE Rev. 2 data for sectoral gross value added (at current prices) and employment using the formula:

$$S^* = \sqrt{\sum_k (sh_k^{t_2} - sh_k^{t_1})^2 \cdot (sh_k^{t_1} / 100)}$$

$k$  = individual NACE Rev 2 sector

$sh_k$  = share of sector  $k$  in total output or employment (in %)

$t_i$  = time index, where  $i$  denotes different years (2008, 2011).

value added - GVA) and employment in the crisis period 2008-2011. In this period, Romania, Latvia, Lithuania and Bulgaria experienced the fastest structural change in output among the NMS whereas the output structures of the Czech Republic and Poland remained most stable. Among the OMS the 'least' restructuring was observed, apart from Belgium and Sweden, again in Austria, Germany and France whereas structural changes in output were most pronounced in Ireland, Finland and Greece. Employment structures in Hungary (and Malta) as well as in Austria, Germany and France changed very little. On the other hand, in the Baltic states and in Romania, and even more so in Ireland and Spain, employment structures changed much more during the crisis period 2008-2011 (Table 1).

A more detailed picture of structural change patterns is provided by the set of Figures 4 and 5 which show sectoral changes in shares of gross value added in GDP (Figure 4) and employment (Figure 5) during the period 2008-2011 for selected EU countries for which comparable data are available. Structural change during the crisis differed a lot in individual EU member states. Apart from a certain revival of manufacturing (e.g. in Hungary, Romania and in the Baltic States where the shares of manufacturing – NACE Rev. 2 code C - increased during the period) it was mostly construction (F) and trade (G) which suffered most from declining value added shares during the crisis. In contrast, shares of manufacturing declined in the Czech Republic, Slovakia and Slovenia. Structural change was least pronounced in the Czech Republic during this period, similarly to a number of OMS (e.g. Austria, France, Germany, Belgium, Italy and Sweden). In Poland – the only EU country which did not experience a decline in GDP during the crisis period – a certain return to a 'traditional' structural pattern occurred as a number of 'productive' sectors (energy, construction and trade) managed to increase their shares in GDP while the shares of information and communication services (J) and especially financial services (K) had declined. Among the OMS, France, Italy, Denmark, Finland and Sweden experienced declining shares of manufacturing while the main burden of the crisis in Greece and Spain fell on construction. In Austria, very little structural change happened yet the observed sectoral patterns mirrored Germany: a minor drop in the share of manufacturing and financial services in Austria contrasted with an increase of these sectors in Germany. In real estate activities (L) the opposite was the case: its share in GDP increased in Austria yet dropped in Germany.

As far as changes in employment structures are concerned, the most striking development has been the sharp decline, in nearly all NMS, in employment shares of manufacturing and construction (the latter particularly in the Baltic States and excepting the Czech Republic and Poland – see the set of Figures 5). The most pronounced drop in manufacturing employment occurred in the Czech Republic, Poland, Slovakia, Slovenia and Romania. Non-market services such as

administrative and support services activities (N), public administration (P) and education (O) partly compensated (at least in relative terms) job losses in manufacturing and construction sectors e.g. in Poland, the Baltic states and Slovenia. Among the OMS, employment cuts in the construction industry of a similar (relative) magnitude occurred in Greece, Ireland and Spain which all suffered from the construction bubble whereas the share of manufacturing jobs dropped nearly everywhere (especially in Austria, Germany, Italy, Finland, Denmark and Sweden – see Figure 5).

**Table 1:** Structural change during 2008-2011\*)

NMS	Employment	GDP/GVA	OMS	Employment	GDP/GVA
BU	1.110	1.538	EL	0.792	1.435
CZ	0.815	0.322	IE	2.048	2.175
EE	1.318	1.252	PT	0.580	0.706
HU	0.555	0.607	ES	2.040	1.223
LV	1.911	2.013	IT	0.574	0.732
LT	1.582	1.913	AT	0.351	0.240
PL	0.929	0.335	DE	0.442	0.358
RO	1.369	2.410	FR	0.440	0.465
SI	1.297	0.830	UK	.	1.213
SK	1.114	0.809	NL	0.678	0.704
CY	0.781	1.746	DK	0.776	0.717
MT	0.482	1.175	BE	0.630	0.487
			FI	0.781	1.760
			SE	0.681	0.250

\*) S-indicator, calculated from data according to NACE Rev. 2 – see footnote 4 for definition.

Source: Own calculations based on Eurostat.

### 3. Conclusions

The recent crisis period 2008-2011 not only has had strong effects on the levels of economic activity and employment, but it has also affected the sectoral structures of European countries. However, both the structure and the extent of structural shifts were very much differentiated across the individual EU countries. Growth of value added was recorded not only in Poland (the only EU country which did not experience negative output growth during that crisis period), but also in the Czech Republic, Slovakia, Austria, Germany, France, the Netherlands and Sweden. In the Czech Republic and Poland both the manufacturing industry and trade dominated the positive output growth (in Slovakia it was just manufacturing). In Austria and Sweden, there was also a positive growth in manufacturing and trade. Finland provides an opposite example as both output and employment sharply dropped during the 2008-2011 period.

Shares of manufacturing industry in GDP range from 5% in Cyprus to more than 20% in the Czech Republic and Ireland; manufacturing employment shares display a similar variance within the EU. Despite restructuring and the growing importance of services, manufacturing industry continues to play an important role in the NMS – in fact more important than in most OMS – especially in terms of employment. The pace of

structural change in the NMS has generally been greater than in the majority of OMS. The patterns of structural change in terms of both output and employment have again been very much differentiated, both across time and individual European countries. In general, the NMS were affected more by the crisis and structural changes have been more pronounced with regards to employment than to output (implying large shifts in productivity performance), with broad shifts from industry towards services. Especially Bulgaria, Romania and the Baltic States have experienced more structural change than the Czech Republic, Slovakia and Slovenia. Among the OMS, economic structures in Austria, Germany and the Netherlands have remained more stable than in other countries. The structural shifts during the crisis period 2008-2011 have had more differentiated effects and, interestingly, these were not overwhelmingly negative. Positive structural growth effects were recorded in a number of EU countries (apart from Poland also in the Czech Republic, Slovakia, Austria, Germany, France, the Netherlands and Sweden). Again, manufacturing industry and trade provided a key impetus for aggregate growth even in the period of crisis. Declining importance of manufacturing in the Czech Republic, Slovakia and Slovenia was mirrored by growing shares of value added in their services sectors. In Hungary and in the Baltic states shares of manufacturing increased. Shares of manufacturing value added shrank also in a number of OMS between 2008 and 2011 (e.g. Italy, France, Finland and Sweden). In terms of employment, manufacturing shares dropped not only in the majority of NMS, but in most OMS as well.

In general, the financial crisis 2008-2011 affected manufacturing industry more than services – particularly in terms of employment – and accelerated structural change in favour of the services sector, especially in the NMS. Nevertheless, manufacturing industry remains important in this group of countries. Moreover, rising shares of manufacturing value added coupled with declining shares of employment imply impressive improvements of manufacturing labour productivity in Hungary, Romania and the Baltic states. Among the OMS, a similar pattern of output/employment structural change – rising importance and efficiency of manufacturing – was observed only in Germany. The wide diversity of European economic structures represents a challenge for the formulation of EU-wide industrial policy. The 20% target set by the EU Commission for increasing the share of industry by 2020 is in all likelihood neither attainable nor – owing to a large diversity among EU member states – desirable for the EU as a whole; it may be attained by some NMS (and possibly also Germany).

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## 5. Annex

Figure 4: Structural change in selected EU states – sectoral shares in GDP (in pp), NACE Rev. 2 codes description see below

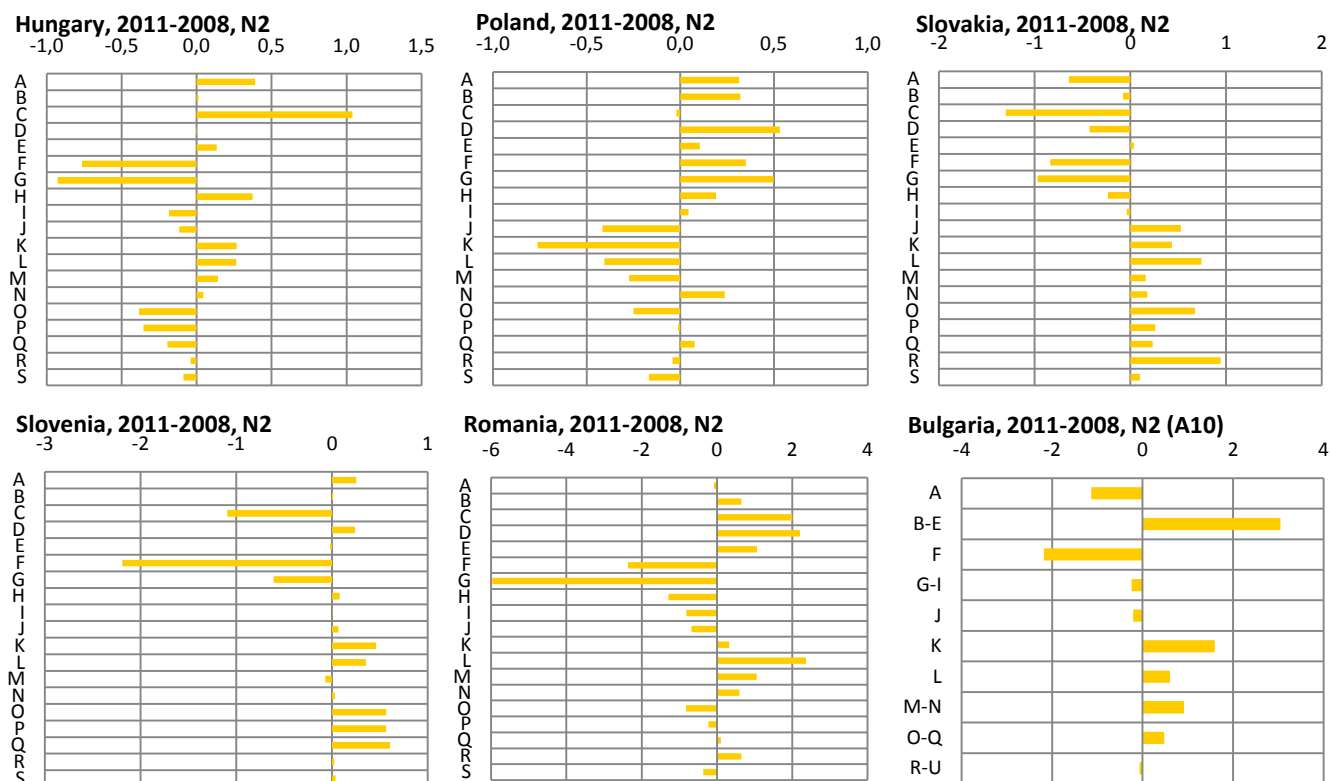
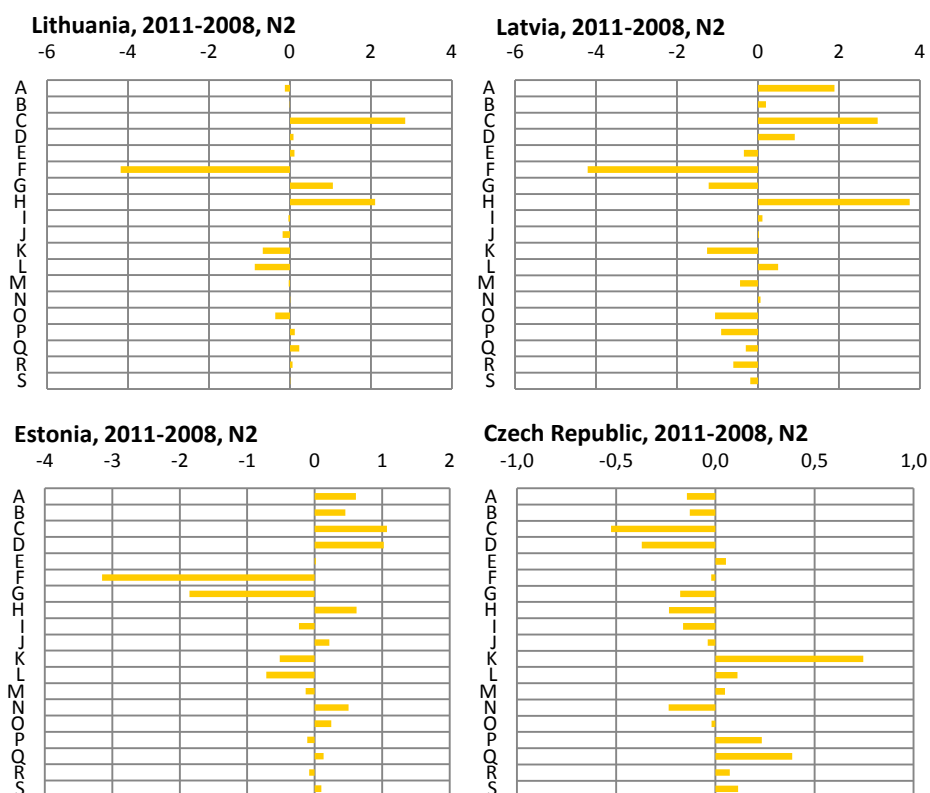
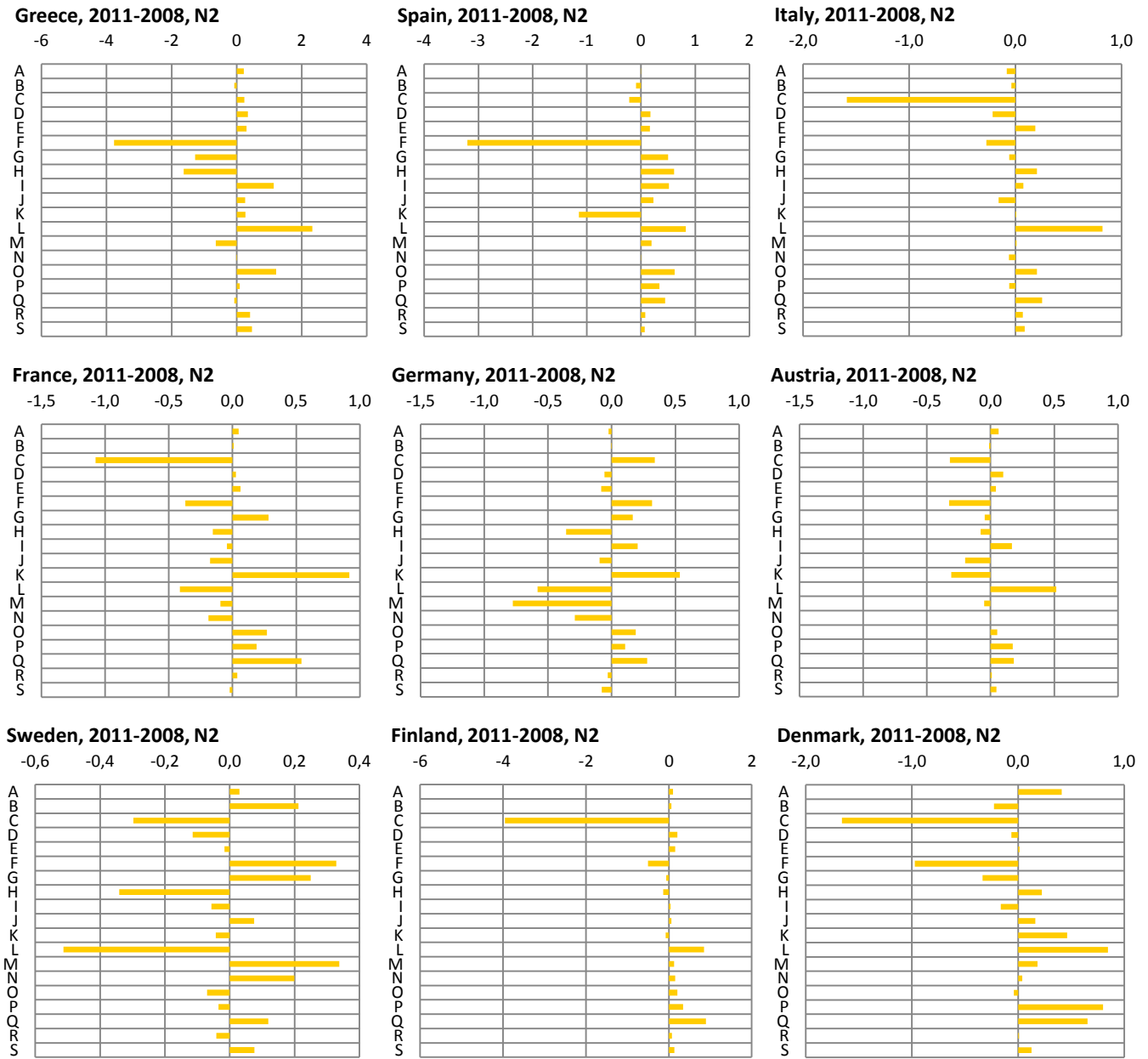


Figure 4 (cntd)



Source: wiw calculations based on Eurostat.

Figure 4 (cntd)



Source: wiiw calculations based on Eurostat.

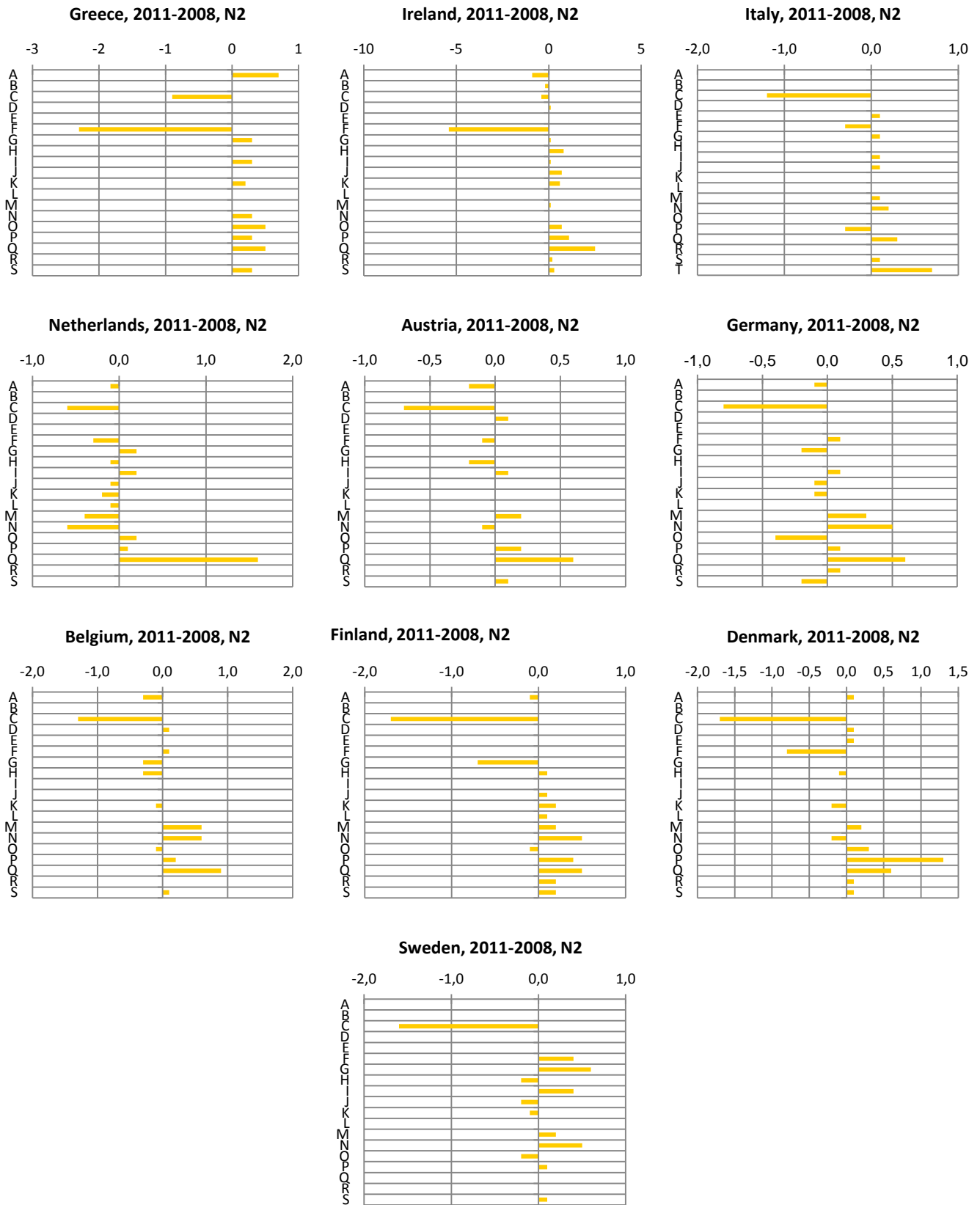
Figure 5: Structural change – sectoral shares in employment (in pp), NACE Rev. 2 codes description see below



Source: wiw calculations based on Eurostat.



Figure 5 (cntd)



Source: wiiw calculations based on Eurostat.



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**N2 (NACE Rev. 2) classification codes**

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- A Agriculture, forestry and fishing
- B Mining and quarrying
- C Manufacturing
- D Electricity, gas, steam and air cond.supply
- E Water supply, sewerage, waste management, etc
- F Construction
- G Wholesale, retail trade, repair of motor vehicles
- H Transportation and storage
- I Accommodation and food service activities
- J Information and communication
- K Financial and insurance activities
- L Real estate activities
- M Professional, scientific and technical activities
- N Administrative and support service activities.
- O Public admin., defense, compulsory social services
- P Education
- Q Human health and social work activities
- R Arts, entertainment and recreation
- S Other service activities
- T Activities of households as employers & for own use
- U Activities of extraterritorial organizations & bodies