

1.

Calculating equilibrium wages

1.1 Theory

We define the equilibrium wage as the level of total labour compensation, at which the average return on the capital stock in a given economy or in a given sector is equal to the average return in the euro area as a whole. The return on capital (RoC) is the ratio of non-wage value added relative to the historical value of the aggregate capital stock of a country or sector. Hence, it is the return on the capital stock before taxes. It can be described as the product of the capital share (which is the complement to the wage share $\sigma_k=1-\sigma_w$) and the average efficiency of capital. The average capital efficiency (ACE) is measured in nominal terms, which means it is determined by a relative price effect, defined as the ratio of the GDP deflator P to the price deflator for capital goods P_k , and by capital productivity in the narrow sense as output to capital at constant prices. The inverse of ACE is the capital–output ratio (COR).

$$(1) \quad RoC = \frac{Py-wL}{Py} \frac{Py}{P_k K} = \sigma_k ACE = (1-\sigma_w) ACE$$

$$(1a) \quad ACE = \frac{Py}{P_k K} = \frac{1}{COR}$$

We also define nominal labour productivity as nominal output per person employed:

$$(1b) \quad \lambda = \frac{Py}{L}$$

where Py is GDP or sectoral value added at current prices and $P_k K$ is the value of the accumulated capital stock at historical cost; w stands for the labour remuneration per worker (the ‘wage’) and L is the number of people employed.

We can then set the equilibrium condition as:

$$(2) \quad \text{RoC}_{xi} = \text{RoC}_\epsilon$$

$$(3) \quad (1 - \sigma_{wx})ACE_x = (1 - \sigma_{w\epsilon})ACE_\epsilon$$

where RoC_{xi} is the return on capital in country x for sector i , calculated as the non-wage share of GDP or sectoral value added relative to the nominal value of the aggregate capital stock (ACE) and σ_{wx} is the wage share of country x . We assume that the average wage share in Europe is an exogenous variable, which is true at least for small countries, and that it changes over time.

The equilibrium wage share of a country or sector is then:

$$(4) \quad \sigma_w^* = 1 - (1 - \sigma_{w\epsilon}) \frac{ACE_\epsilon}{ACE_x} = 1 - \sigma_{k\epsilon} \frac{COR_x}{COR_\epsilon}$$

The wage share is identical to real unit labour costs,¹ so that equation (4) also represents a country's equilibrium real unit labour costs. Thus, if a country's capital productivity is higher than the average European capital productivity, so that $\frac{ACE_\epsilon}{ACE_x} < 1$, its equilibrium wage share (and therefore its real unit labour costs) will be above that of the euro area. This is the same as saying that a larger share of value added can be used to remunerate labour because capital is more productive. We will see that this is consistent with skill-biased technical change, for the use of more productive capital equipment often requires more highly skilled operators, who will be paid higher wages. On the other hand, if in some countries the labour share has fallen over time, it may simply reflect lower capital productivity. Assuming equilibrium as a starting position, voluntarist increase in wages, as suggested by wage-led growth theorists, would only generate deviations from equilibrium and harm competitiveness.

Because the nominal wage w is identical to the product of nominal labour productivity $\lambda = \frac{P_y}{L}$ times the wage share $\sigma_w = \frac{wL}{P_y}$, the country-specific nominal equilibrium wage level is:

Equilibrium wage = labour productivity λ x equilibrium wage share (σ_w^*):

$$(5) \quad w^* = \lambda \sigma_w^* = \lambda - \lambda (1 - \sigma_{w\epsilon}) \frac{ACE_\epsilon}{ACE_x} = \lambda \left(1 - \sigma_{k\epsilon} \frac{COR_x}{COR_\epsilon} \right)$$

It is clear that the equilibrium wage so defined is a function of the average wage share in the euro area, national or sector-specific labour productivity and the relative development of nominal capital productivity, that is, relative prices of goods and capital and the national (or sectoral) capital–output ratio relative to that of the

1. Unit labour costs are defined as wage costs per unit of output: $ULC = \frac{wL}{P_y} = \frac{w}{\lambda}$. Hence real unit labour costs are $RULC = \frac{ULC}{P} = \frac{wL}{P_y} = \sigma_w$

euro area. The productivity of labour and capital are related through the production function, as we shall discuss below.

To measure competitiveness, we will match actual labour compensation against the equilibrium wage. If actual wages are higher than the equilibrium wage, the return on capital in a particular country or industry will be lower than the euro-average. We interpret this as a competitive disadvantage, for lower profitability is likely to deter investment until the return on capital is improved, while highly competitive sectors and countries would attract capital and boost economic growth until over-accumulation reduces the return. Hence, wage cost competitiveness depends on actual wages as they emerge from wage negotiations and on structural factors that shift the equilibrium wage. It also depends on the average wage share of the euro area; in other words, on how aggregate wages develop relative to inflation and productivity in the euro area as a whole. If a particular region or industry deviates from the average performance, it will gain or lose competitiveness. This means that if wage increases are slowing down in the euro area as a whole, all countries will have to follow suit if they wish to remain competitive. This is one reason why Germany as the largest economy is a trend setter for the whole of the euro area.

Our concept of equilibrium wage is important as it defines the limits for wage increases that are consistent for stimulating demand and pursuing a wage-led growth strategy. The famous *Rehn-Meidner rule* recommended that nominal wages ought to increase at the rate of productivity plus inflation, so that the wage share remains constant. In the euro area that has been amended to say that wage increases should take into account labour productivity and the inflation target of the ECB (see Koll 2005; European Commission 2005). However, this rule ignores the impact of capital productivity on equilibrium wages. Balanced growth would require that nominal wages be equal to equilibrium wages and then vary with changes in national or sectoral equilibrium wages.

As equation (5) shows, the effect of capital productivity on equilibrium wages is far from trivial. Even if all countries had exactly the same rate of nominal wage increases in line with the Rehn-Meidner rule, their competitiveness could still be distorted by diverging capital productivity developments. Such divergence may be a consequence of broad country-specific factors, such as infrastructure, R&D, skill building and so on, but it may also reflect different weights of economic sectors with diverse capital–output ratios. For example, it is well-known that productivity is more likely to improve in manufacturing than in most service industries, so that an industrial hub such as Germany is prone to reap larger competitive advantages than service-intensive economies. For this reason it is important not only to analyse aggregate, but also sectoral equilibrium wages.

From (5) we know that the equilibrium wage will increase when labour and capital productivity rise. Higher capital productivity implies that the capital–output ratio in a given country or sector will fall faster than in the euro area as a whole. However, we have seen above that higher capital productivity generates more output, which can be used to remunerate workers. If nominal wages do not increase in line with the higher efficiency of the aggregated capital stock, actual wages will fall below the

equilibrium wage level and the country's return on capital will rise above the euro average.

This raises the question of how capital accumulation and capital efficiency affect labour productivity. Labour productivity can be expressed as the product of capital productivity and capital intensity. Thus, in order to understand what the determinants of competitiveness changes are, we need to investigate the reasons underlying changes in capital productivity and in the relative use of capital and labour in domestic production.

Assuming that the average wage share in Europe is an exogenous variable, the equilibrium wage depends on nominal labour productivity λ and on the relative average capital efficiency (ACE). As mentioned above, the relative ACE can be decomposed into the relative price effect caused by the deflators for GDP and capital equipment and relative capital productivity. We speak of capital efficiency when we refer to nominal values, which include the price effect, and we call capital productivity the ratio of output per unit of capital when prices are assumed to be constant. The decomposition assumes the following form:

$$(6) \quad \frac{ACE_{\epsilon}}{ACE_x} = \frac{P_{\epsilon}}{P_x} \frac{P_{kx}}{P_{k\epsilon}} \frac{Y_{\epsilon}}{K_{\epsilon}} \frac{K_x}{Y_x} = Peff \cdot Kprod_{\epsilon} \cdot \frac{K_x}{Y_x}$$

where $Peff = \frac{P_{\epsilon}}{P_x} \frac{P_{kx}}{P_{k\epsilon}}$ is the combined effect of the relative GDP and capital stock's deflators. By expressing nominal labour productivity as:

$$(7) \quad \lambda = P_x \frac{Y_x}{K_x} \frac{K_x}{L_x} = ACE \frac{P_k K}{L}$$

we see that nominal labour productivity is related to the average capital efficiency (ACE) by the nominal factor intensity $\frac{P_k K}{L}$ and we obtain a definition of equilibrium wages depending on capital productivity and the capital–labour ratio (also called capital intensity):

$$(8) \quad w^* = P_x \frac{K_x}{L_x} \left[\frac{Y_x}{K_x} - \psi_{\epsilon} Peff \right] \quad \text{where } \psi_{\epsilon} = (1 - \sigma_{w\epsilon}) Kprod_{\epsilon}$$

Thus the equilibrium real wage is:

$$(9) \quad \frac{w^*}{P_x} = \frac{K_x}{L_x} \left[\frac{Y_x}{K_x} - \psi_{\epsilon} Peff \right]$$

Assuming for the moment constancy in prices, average euro capital productivity and the euro wage share, **the (real) equilibrium wage will depend positively on the capital–labour ratio and on the country's capital productivity.** If the capital productivity increases, an increase in the capital intensity of production (higher capital/labour ratios, due, say, to automatisaion) will amplify the competitiveness effect.

As shown in equation (7), with no change in factor intensities and constant prices, **the two productivities are proportional and must grow at the same rate as total factor productivity (TFP)**. This is a special case in which the Rehn-Meidner rule for wage bargaining is valid, because capital productivity does not distort competitiveness. However, in general and *ceteris paribus*, the equilibrium real wage will increase if the capital intensity (K/L) increases more than the capital productivity (K/Y). This situation is often describes as Harrod-neutral technological progress or labour-saving technical change.

However, factor intensities are rarely constant. The recent literature has explained these changes by shifts in relative factor prices and by factor-biased technical change or by the development of global production networks. As shown by (Timmer *et al.* 2014), since the mid-1990s global value chains have increased at a rapid pace, causing a change in international specialisation in terms of factor intensity. The authors used the World Input-Output database and matched it with the evolution of domestic capital and labour, with the latter further divided into low, medium and high skilled labour, in order to understand which factors have been favoured by the dis-integration of production to different countries. They find that the international division of production increased the use of capital and skilled labour and that this effect is common to all countries, not only to those abundant capital and skills. On the other hand, low and medium skilled labour have lost relative importance in production. The explanations for these findings point to the role of skill biased technical change (Acemoglu 2002; Autor *et al.* 2003) as a pervasive technological change in both advanced and catching-up economies. Within this framework, the increase in the capital share can be explained by assuming capital–skill complementarity, meaning that skill-biased technological change is associated with capital-biased technological change.

In the European context, an additional explanation is provided by the emergence **of central and eastern European countries as main partner for the delocalisation of some stages of production**. Given their inherited industrial structure and the skill composition of the workforce, the delocalisation of heavy industries and capital-intensive stages of production has been more convenient for the countries in western Europe. The increase in the share of capital may also reflect the importance of financial capital as a means to reduce transaction costs and favour the development **of outsourcing**.

These changes at regional and global level have affected all countries, but Germany has benefitted relatively more from these developments due, on one hand, to the geographical proximity of the most advanced central and eastern European countries and, on the other hand, to the specialisation of the country in medium-high tech industries – in particular, machinery and automotive – whose production is more easily divided between different countries. A wide literature has investigated the pattern of outsourcing for Germany and the other main EU countries; it has provided evidence that Germany has gained relatively more from outsourcing to central and eastern Europe in terms of productivity and export market shares (see, among others, Marin 2006, Guerrieri and Esposito 2012, Guerrieri and Esposito 2013).

In section 3 we will provide some econometric evidence on the impact of outsourcing and biased technical change on the relative use of capital and labour at sectoral level and on equilibrium wages, but first we shall present empirical evidence for equilibrium wages and our competitiveness index. We start with aggregate country data here and present sectoral data in section 2.

1.2 Aggregated empirical evidence

Our aggregated evidence for EU member states is based on Ameco data, the sectoral analysis in the next chapter on Eurostat. Unfortunately, for some countries data are missing, usually capital stock estimates. We distinguish four country groups: northern euro area, southern crisis countries, new member states in the east and outside the euro area in the west.

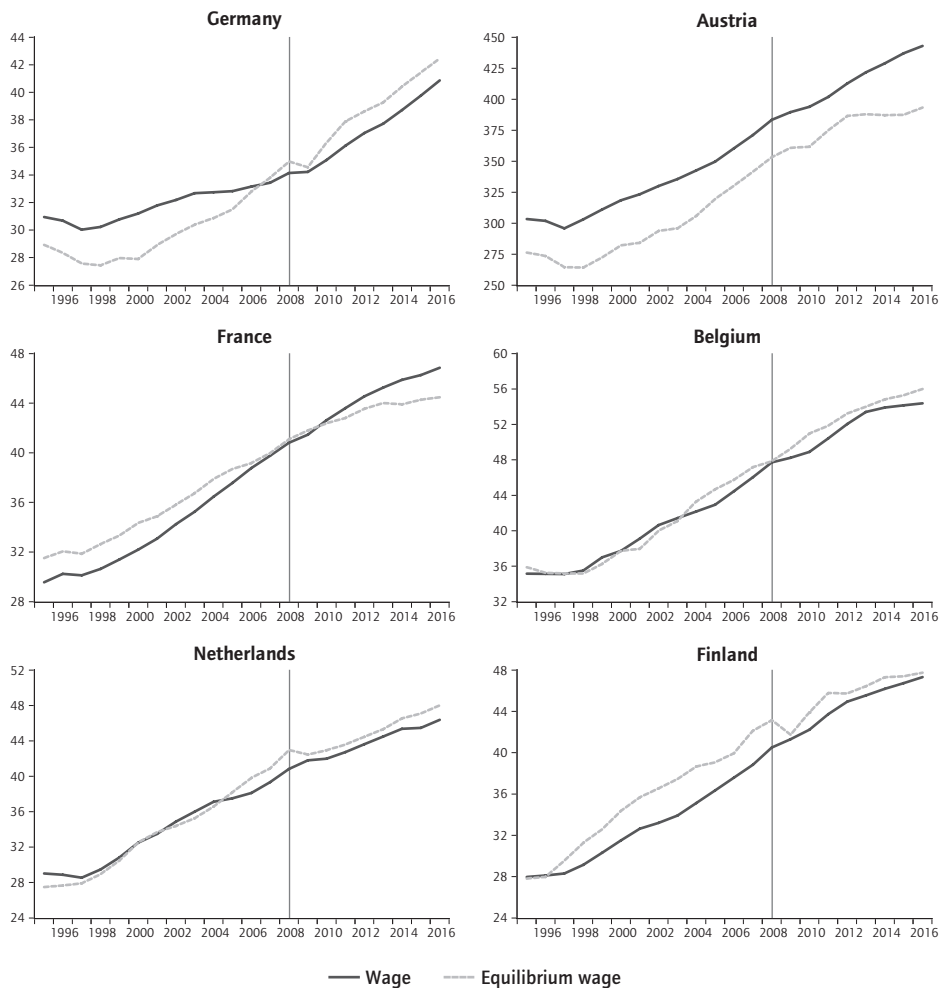
Figure 1 shows the evolution of actual and equilibrium wages in selected EU member states. The gap between the two may be caused by excessive nominal wage settlements or by changes in the equilibrium wage due to variations in capital and labour productivity. The figure shows that the adjustment process varies significantly between countries. In Germany, Spain and the United Kingdom, equilibrium wages have risen faster than actual wages, but in France and Italy the improvement of equilibrium wages has slowed down and nominal wages have outgrown them. Greece had moderately improved its wage competitiveness before the crisis, but since then the equilibrium wage has fallen even more rapidly than nominal wages, largely reflecting the negative developments in capital productivity resulting from insufficient use of productive capacities. Sustained lack of demand due to austerity has caused a slow and gradual reduction of the capital stock and potential output. Hence, insofar as wages are a major factor of aggregate demand, *cutting wages* is not necessarily a strategy that improves competitiveness, while *slowing down wage increases* may do so, under certain conditions.

We can condense this information into a single competitiveness indicator (Comp henceforth) by calculating the ratio of actual to equilibrium wages, as in Figures 3a-3e. The horizontal line indicates a wage level at which the return on the country's capital stock would be equal to the euro area average. A wage gap above 1 implies that wages are too high and the return on capital too low to be attractive within the euro area. A wage gap below 1 indicates a competitive advantage.

Among the Northern countries, Germany has eliminated an important competitive disadvantage in the 2000s that was inherited from unification in the early 1990s and it has now a nominal wage level of approximately 4 per cent below the equilibrium. By contrast, France has gone in the opposite direction. Finland and the Netherlands have lost their competitive advantage but are still below equilibrium; Austria always has a positive wage gap, while Belgium is usually below equilibrium. For crisis countries, competitiveness does not seem to matter: Greece and Spain are always above the equilibrium wage, which could support the view that the crisis was caused by lack of competitiveness, but Ireland and Cyprus are always below and still had a serious crisis. Portugal has improved its wage competitiveness since 2007; Italy

Figure 2a Actual versus equilibrium wages

Northern euro area

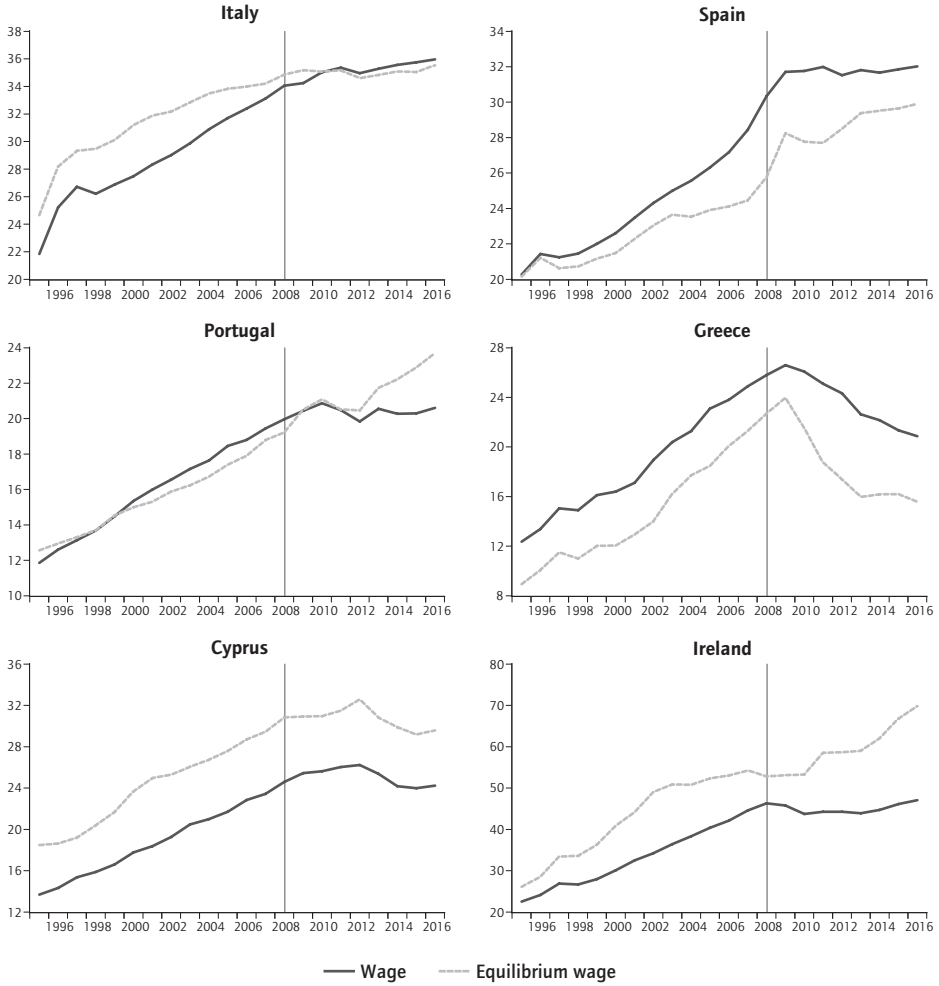


Source: Authors' elaboration on AMECO.

has seen a persistent tendency to lose wage competitiveness since the beginning of monetary union. The most consistent pattern in accordance with standard theory is represented by the low wage levels in the new member states, irrespective of whether they are inside or outside the euro. Among the opt-out countries, Denmark has a stable negative wage gap, Sweden is too costly and the United Kingdom has gained cost advantages since the crisis. Internationally, the euro area is at a disadvantage relative to the United States, but it has a narrowing cost advantage over Japan.

Figure 2b Actual versus equilibrium wages

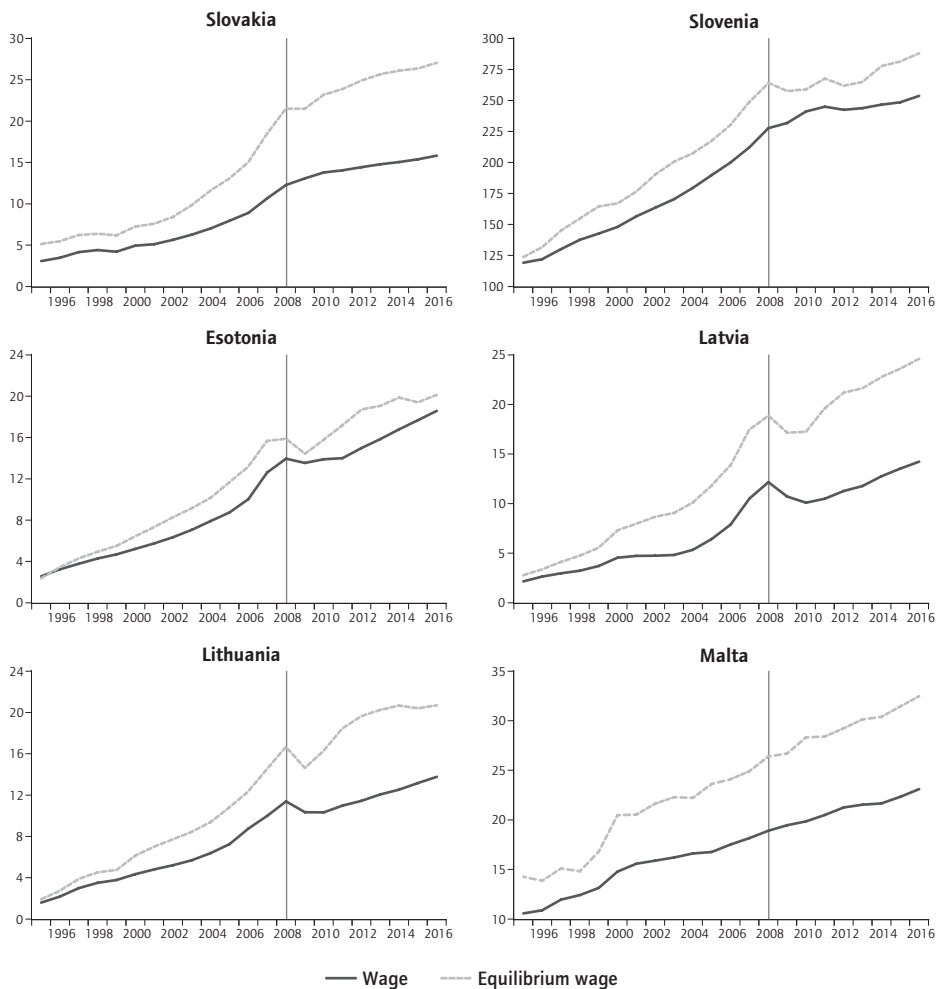
Southern crisis countries



Source: Authors' elaboration on AMECO.

Figure 2c Actual versus equilibrium wages

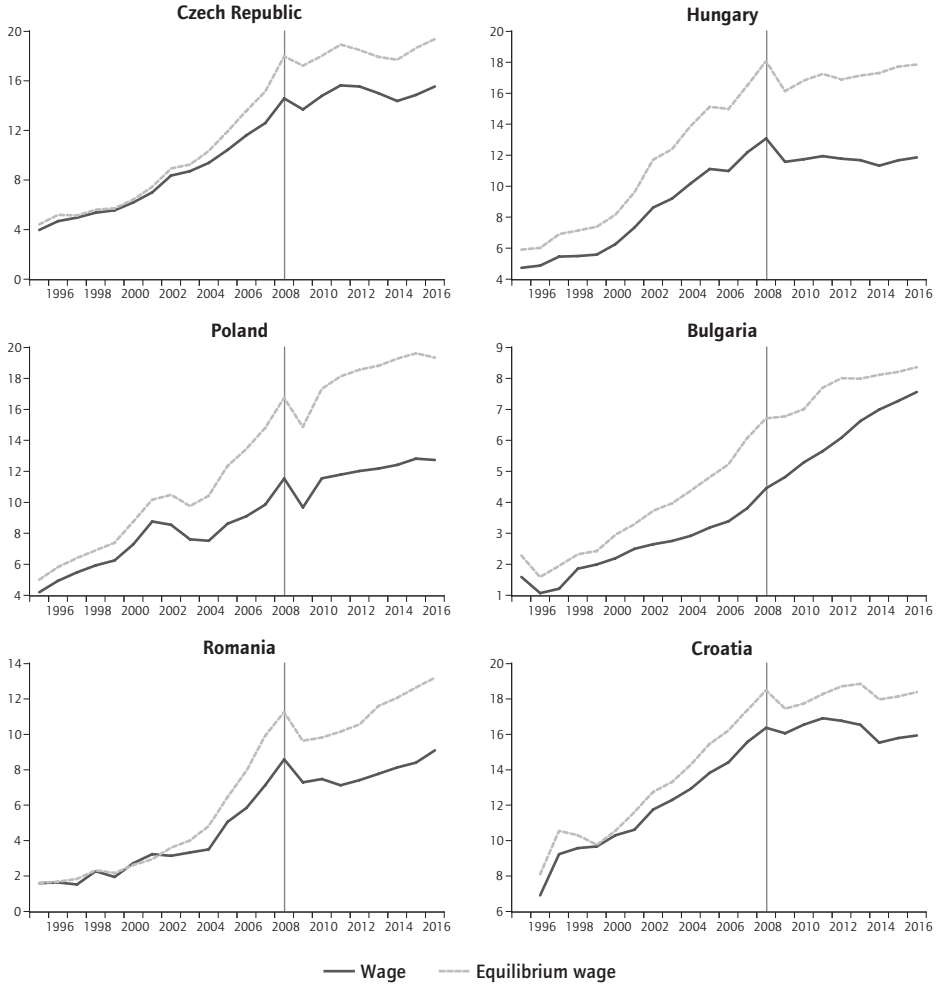
New member states



Source: Authors' elaboration on AMECO.

Figure 2d Actual versus equilibrium wages

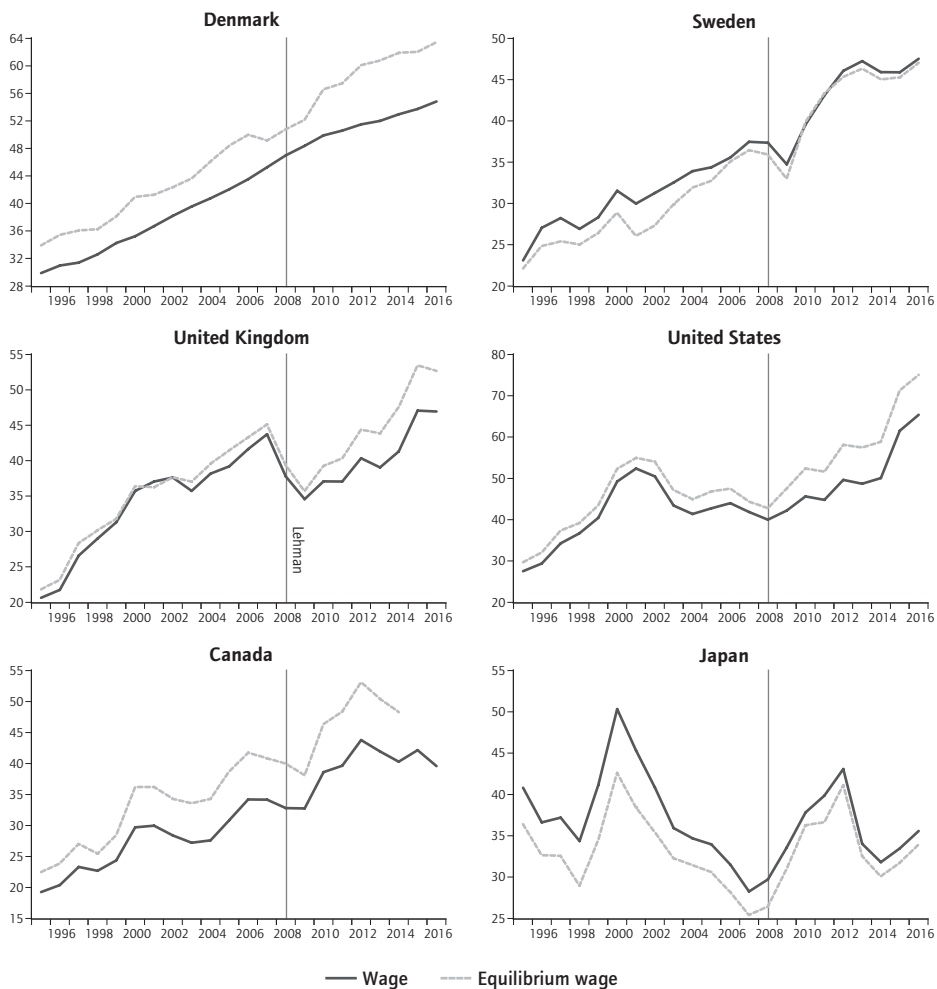
Central and eastern European countries



Source: Authors' elaboration on AMECO.

Figure 2e Actual versus equilibrium wages

Non-Euro area countries



Source: Authors' elaboration on AMECO.

Figure 3a Competitiveness index in the old euro area members

Northern Euro Area

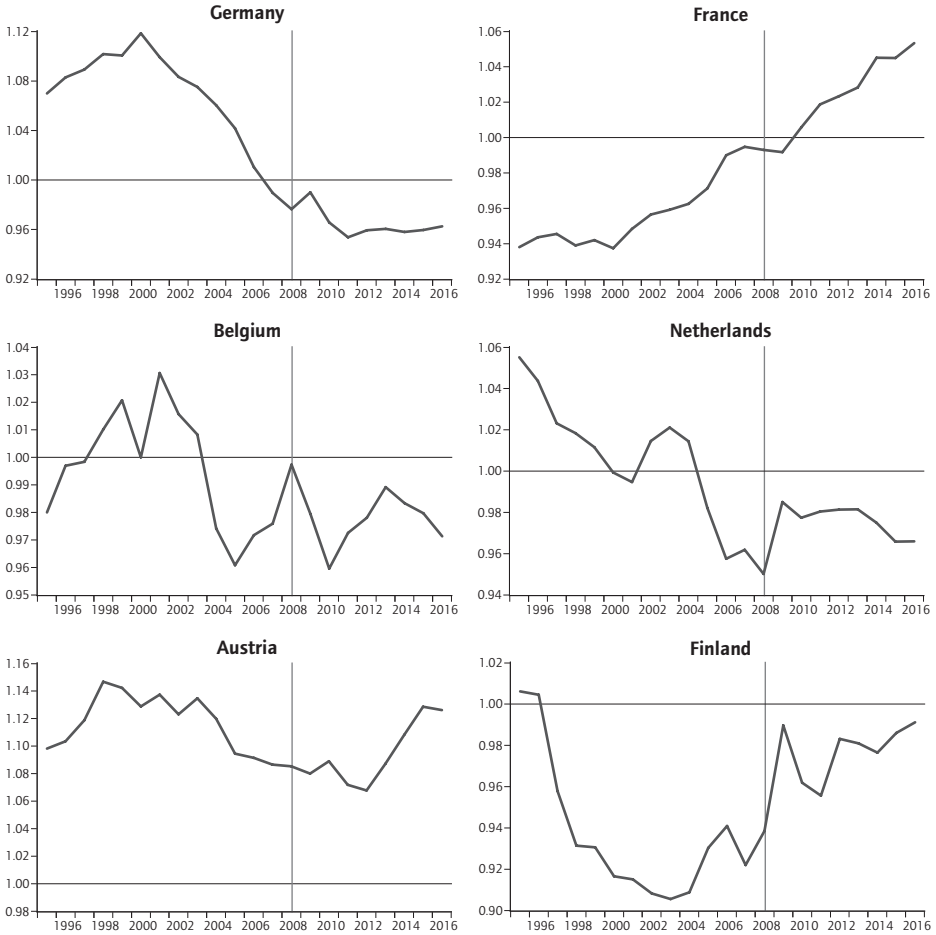


Figure 3b Competitiveness index in the old euro area members

Crisis countries

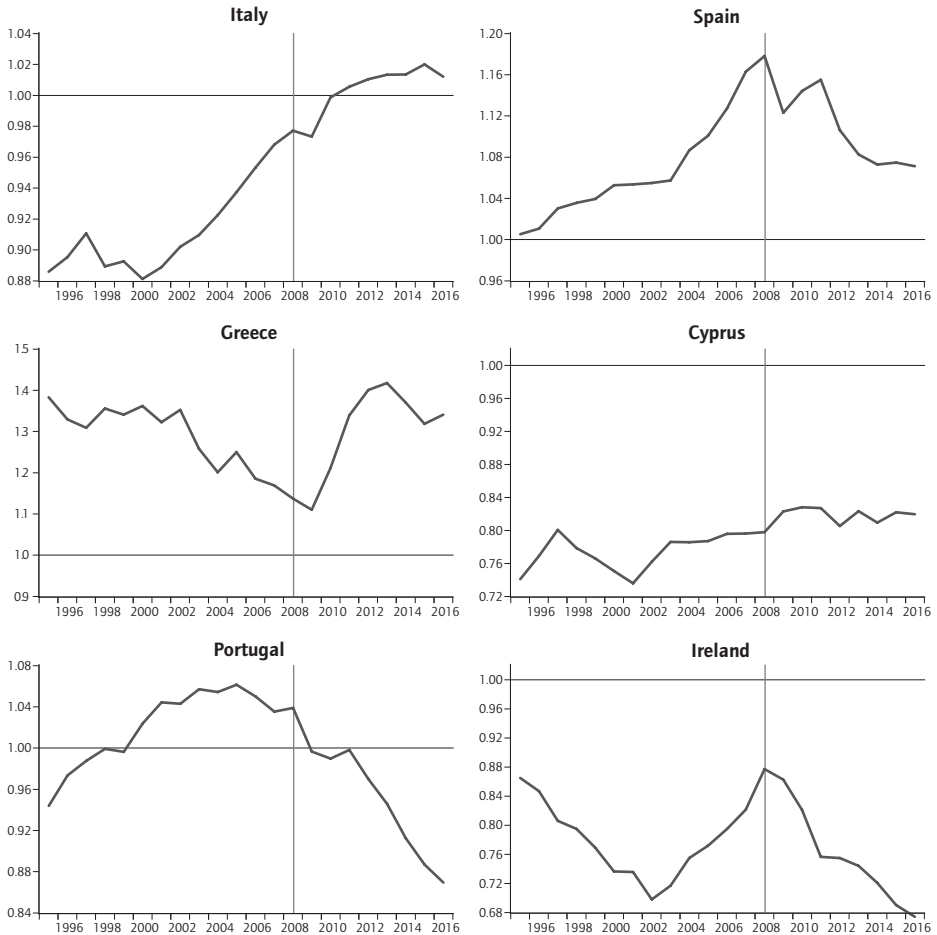


Figure 3c Competitiveness index in the old euro area members

New Member States

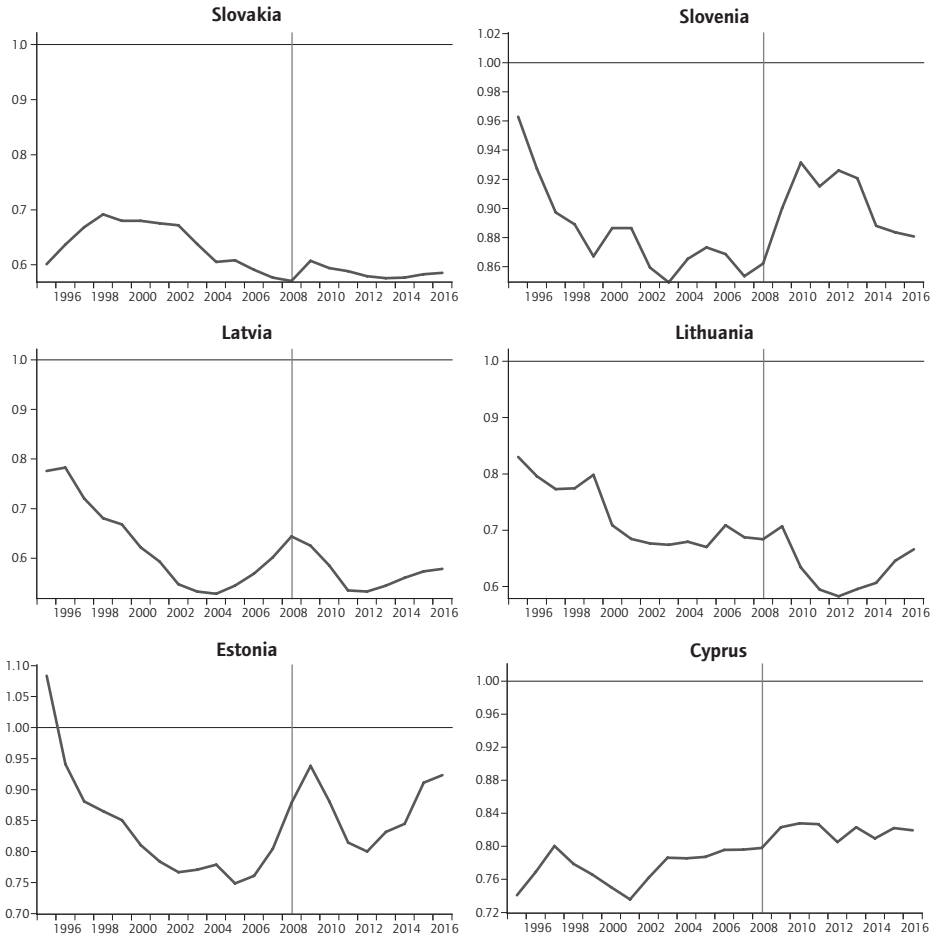


Figure 3d Competitiveness index (Comp) in the old euro area members

Central and Eastern Europe

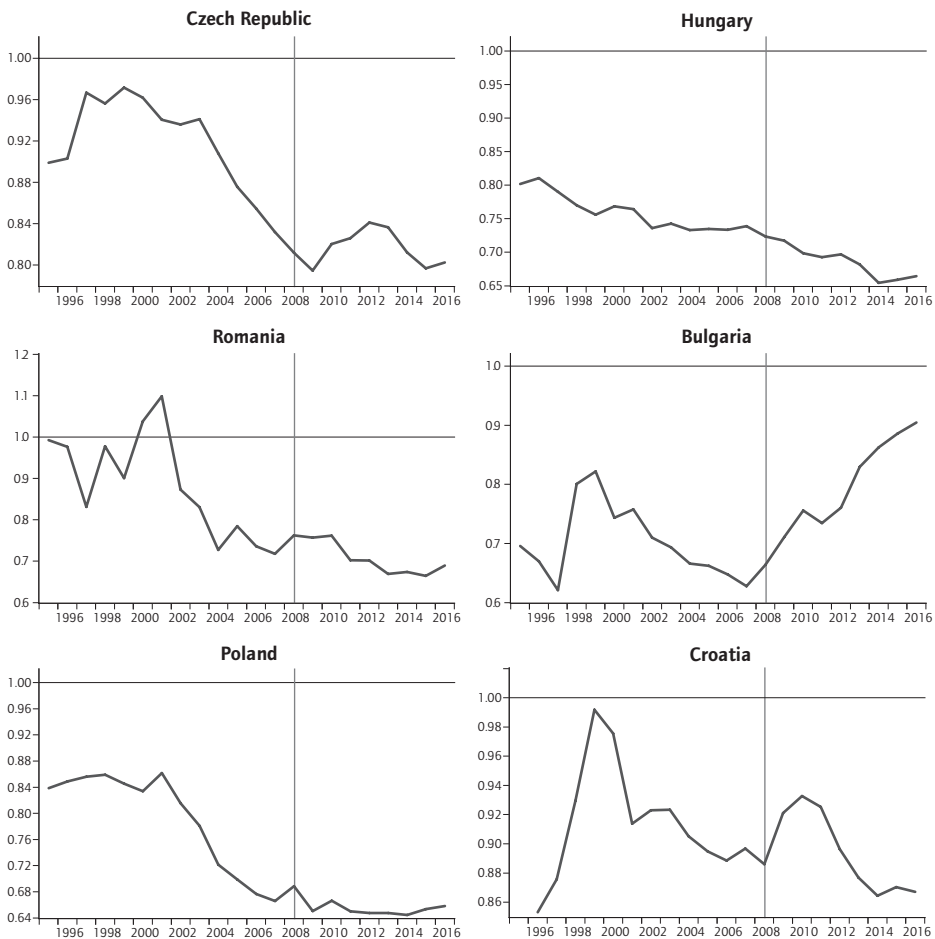


Figure 3e Competitiveness index (Comp) in the old euro area members

Opt out and extra-EU countries

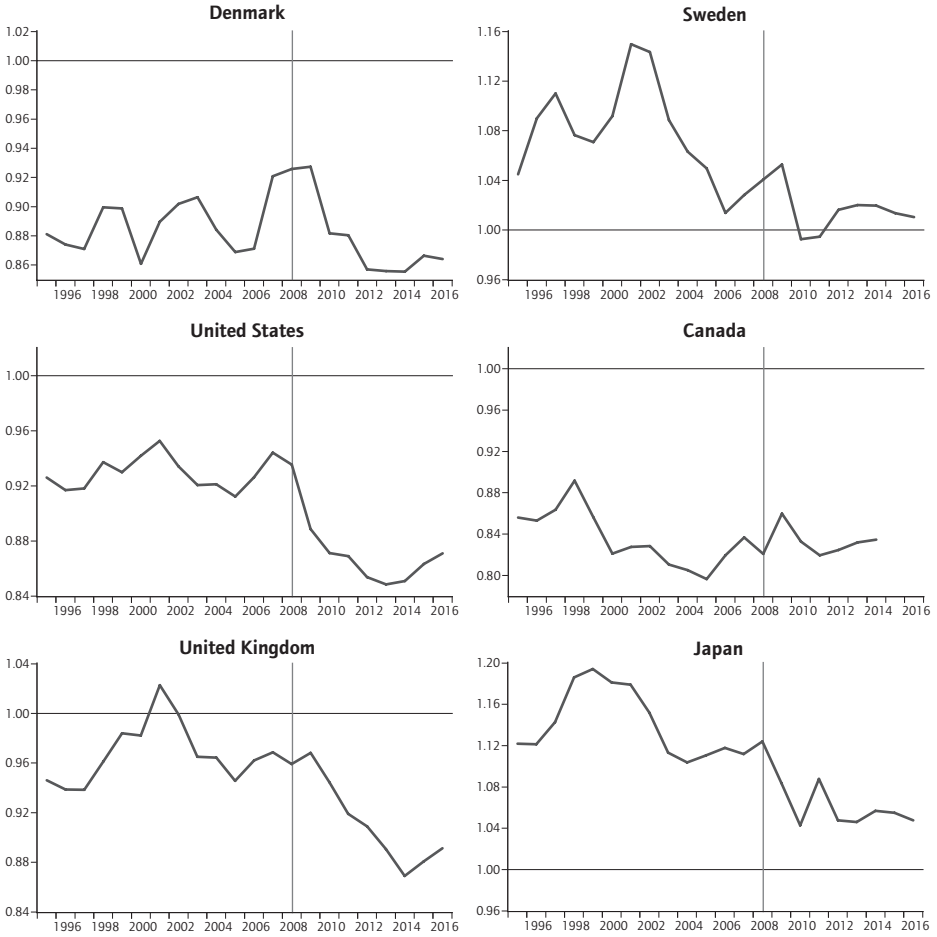


Table 1 shows actual and equilibrium wages before and after the Lehman crisis, as well as the wage gap in absolute euro amounts and as a percentage of equilibrium. In 2015 the average monthly wage in the euro area was €3,250, in Luxembourg it was €5,414 but the equilibrium level was €7,300. By contrast, in Lithuania actual wages were only €1,090 against the equilibrium wage of €1,803. German wages are in the middle with a gap of €146 below equilibrium, while Greek wages, at €1,884, are €512 above equilibrium. In the Non-Euro Area wages are undervalued in all countries except Sweden. On average the relative wage gap is higher because of the larger weight of the transition economies in central and eastern Europe. In Romania and Poland, nominal wages are more than a third below their equilibrium level, but even within the euro area Lithuania, Slovakia and Latvia are more competitive. Polish wages could go up on average by €579 per month without pushing the return on capital below the euro area average. Among the old opt-out member states, the United Kingdom and Denmark have gained significant competitive advantages, while Sweden has reduced its cost disadvantage. In the United Kingdom, monthly wages could go up by €356 and in Denmark even by €685, but in Sweden they would have to fall by €180. Note that Denmark has a fixed exchange rate to the euro, but the United Kingdom and Sweden do not.

Within the euro area, five countries – amounting to approximately 50 per cent of euro-area GDP – are above equilibrium wage levels: Greece, Austria; Spain, Italy and France. In Italy and France, wages are a bit more than 2 per cent above equilibrium levels, while in Germany wages are 4.2 per cent below equilibrium, with a falling trend. Portugal and Ireland have benefitted from very low wage costs. Greece had reduced its comparative disadvantage significantly before the crisis, but due to the adverse effects of austerity, the equilibrium wage has fallen more rapidly than actual wages, so that Greek actual wages are now 37.3 per cent *above* equilibrium. It is clear that closing such a wage gap cannot be done by nominal wage cuts but requires changes in productivity.

Table 1 Average monthly wage in € 000

	Gross wage (monthly, €)			Change (%)		Equilibrium wage (monthly, €)		
	1999	2007	2015	1999-2007	2007-2015	1999	2007	2015
European Union	2045	2613	2983	27.8%	14.2%	2016	2643	3083
Euro area (18)	2310	2801	3250	21.3%	16.0%	2310	2801	3250
Luxembourg	3398	4584	5414	34.9%	18.1%	4900	6363	7300
Belgium	3072	3829	4490	24.6%	17.3%	2955	3876	4545
Finland	2526	3236	3396	28.1%	4.9%	2730	3527	4010
Ireland	2329	3724	3896	59.9%	4.6%	2975	4483	5235
Netherlands	2568	3278	3841	27.6%	17.2%	2556	3432	3882
France	2616	3313	3834	26.6%	15.7%	2791	3348	3757
Austria	2592	3093	3656	19.3%	18.2%	2287	2866	3249
Germany	2565	2787	3316	8.7%	19.0%	2348	2828	3461
Italy	2240	2759	3035	23.2%	10.0%	2537	2888	2967
Spain	1833	2370	2655	29.3%	12.0%	1774	2052	2558
Slovenia	1189	1769	2102	48.8%	18.8%	1376	2079	2331
Greece	1369	2068	1884	51.1%	-8.9%	890	1623	1372
Cyprus	1384	1890	1868	36.6%	-1.2%	1813	2469	2595
Malta	1095	1514	1858	38.3%	22.7%	1395	2060	2550
Portugal	1207	1621	1732	34.3%	6.8%	1217	1574	1924
Estonia	379	1056	1476	178.6%	39.8%	454	1317	1673
Slovakia	350	888	1302	153.7%	46.6%	517	1542	2223
Latvia	308	876	1132	184.4%	29.2%	450	1457	2029
Lithuania	315	833	1090	164.4%	30.9%	396	1214	1803
<i>unweighted mean</i>	<i>1754</i>	<i>2394</i>	<i>2736</i>	<i>61.7%</i>	<i>16.9%</i>	<i>1914</i>	<i>2684</i>	<i>3130</i>
<i>standard deviation</i>	<i>993</i>	<i>1122</i>	<i>1254</i>	<i>59.0%</i>	<i>13.5%</i>	<i>1163</i>	<i>1300</i>	<i>1448</i>
Denmark	2854	3771	4520	32.1%	19.9%	3190	4112	5205
United Kingdom	2632	3675	3789	39.6%	3.1%	2615	3687	4145
Sweden	2359	3122	3782	32.3%	21.1%	2098	2922	3602
Croatia	800	1289	1427	61.1%	10.7%	815	1452	1495
Czech Republic	463	1049	1222	126.6%	16.5%	481	1267	1525
poland	520	821	1048	57.9%	27.6%	607	1232	1627
Hungary	474	1038	1000	119.0%	-3.7%	617	1375	1421
Romania	162	594	681	266.7%	14.6%	181	829	1038
Bulgaria	166	317	575	91.0%	81.4%	208	491	659
<i>unweighted mean</i>	<i>1159</i>	<i>1742</i>	<i>2005</i>	<i>91.8%</i>	<i>21.3%</i>	<i>1201</i>	<i>1930</i>	<i>2302</i>
<i>standard deviation</i>	<i>1115</i>	<i>1375</i>	<i>1555</i>	<i>74.5%</i>	<i>24.5%</i>	<i>1126</i>	<i>1303</i>	<i>1593</i>
United States	3371	3488	4857	3.5%	39.2%	3643	3712	5788
Japan	3408	2354	2707	-30.9%	15.0%	2879	2129	2365

Average monthly wage = annual nominal compensation (HWCDW) per employees (NWTG)/12

Source: Own elaboration on AMECO.

Change (%)		Wage gap (€)			Wage gap (%)		
1999-2007	2007-2015	1999	2007	2015	1999	2007	2015
31.1%	16.6%	29000	-30000	-100000	1.4%	-1.1%	-3.2%
21.3%	16.0%	0	0	0	0.0%	0.0%	0.0%
29.9%	14.7%	-1502000	-1779000	-1886000	-30.7%	-28.0%	-25.8%
31.2%	17.3%	117000	-47000	-55000	4.0%	-1.2%	-1.2%
29.2%	13.7%	-204000	-291000	-614000	-7.5%	-8.3%	-15.3%
50.7%	16.8%	-646000	-759000	-1339000	-21.7%	-16.9%	-25.6%
34.3%	13.1%	12000	-154000	-41000	0.5%	-4.5%	-1.1%
20.0%	12.2%	-175000	-35000	77000	-6.3%	-1.0%	2.0%
25.3%	13.4%	305000	227000	407000	13.3%	7.9%	12.5%
20.4%	22.4%	217000	-41000	-145000	9.2%	-1.4%	-4.2%
13.8%	2.7%	-297000	-129000	68000	-11.7%	-4.5%	2.3%
15.7%	24.7%	59000	318000	97000	3.3%	15.5%	3.8%
51.1%	12.1%	-187000	-310000	-229000	-13.6%	-14.9%	-9.8%
82.4%	-15.5%	479000	445000	512000	53.8%	27.4%	37.3%
36.2%	5.1%	-429000	-579000	-727000	-23.7%	-23.5%	-28.0%
47.7%	23.8%	-300000	-546000	-692000	-21.5%	-26.5%	-27.1%
29.3%	22.2%	-10000	47000	-192000	-0.8%	3.0%	-10.0%
190.1%	27.0%	-75000	-261000	-197000	-16.5%	-19.8%	-11.8%
198.3%	44.2%	-167000	-654000	-921000	-32.3%	-42.4%	-41.4%
223.8%	39.3%	-142000	-581000	-897000	-31.6%	-39.9%	-44.2%
206.6%	48.5%	-81000	-381000	-713000	-20.5%	-31.4%	-39.5%
70.3%	18.8%	-159263	-290000	-394053	-8.1%	-11.1%	-12.0%
73.2%	14.7%	415536	490696	603087	20.4%	18.5%	20.4%
28.9%	26.6%	-336000	-341000	-685000	-10.5%	-8.3%	-13.2%
41.0%	12.4%	17000	-12000	-356000	0.7%	-0.3%	-8.6%
39.3%	23.3%	261000	200000	180000	12.4%	6.8%	5.0%
78.2%	3.0%	-15000	-163000	-68000	-1.8%	-11.2%	-4.5%
163.4%	20.4%	-18000	-218000	-303000	-3.7%	-17.2%	-19.9%
103.0%	32.1%	-87000	-411000	-579000	-14.3%	-33.4%	-35.6%
122.9%	3.3%	-143000	-337000	-421000	-23.2%	-24.5%	-29.6%
358.0%	25.2%	-19000	-235000	-357000	-10.5%	-28.3%	-34.4%
136.1%	34.2%	-42000	-174000	-84000	-20.2%	-35.4%	-12.7%
119.0%	20.0%	-42444	-187889	-297000	-7.9%	-16.9%	-17.1%
101.2%	11.5%	156439	187346	268770	11.1%	14.8%	14.0%
1.9%	55.9%	-272000	-224000	-931000	-7.5%	-6.0%	-16.1%
-26.1%	11.1%	529000	225000	342000	18.4%	10.6%	14.5%

Wage gaps represent a competitive disequilibrium, which ought to be corrected over time. In Table 2, we show the result of a simple econometric exercise in which the change in the competitiveness indicator – that is, the wage gap – is regressed on its level in the previous period for the EMU countries. The result indicates that the adjustment process is rather slow, on average less than 20 per cent of the wage gap is corrected in Europe each year.

Table 2 Adjustment of wage gap and adjustment of relative GDP growth rates

Dependent variable: change in the wage GAP (DComp where D=Δ)				
Comp _{t-1}	-0.180***	R ² =0.07	Obs 361	
	[0.028]			
Dependent variable: deviation of GDP growth from the EMU average				
Comp _{t-1}	-0.139***	log(GDPpc) _{t-1}	-0.093***	R ² =0.35 Obs 361
	[0.043]		[0.010]	

In a second exercise, we regress deviation of GDP growth rates from the EMU average on the initial wage gap and per capita log-GDP. The results (Table 2 lower panel) indicate that wage gaps are important and provide an explanation for the different paces of growth and the different performances in overcoming the crisis. The deviation of growth rates is negatively correlated with the wage gap (ratio of actual to equilibrium wages) and with per capital income levels. In other words, competitive wages accelerate the catch-up of low-income countries.

However, as already pointed out, the aggregate data may hide very different dynamics in production sectors. We turn therefore to a sectoral analysis of European wage dynamics.