

How bad is divergence in the euro zone? Lessons from the United States and Germany

Abstract: *This paper compares relative unit labor cost developments in the countries of the euro area since the beginning of the European Monetary Union (EMU) both with historical developments and with intraregional developments in the United States and Germany. Unit labor cost indices for the U.S. states and census regions from 1977 to 1997 as well as for the German Länder from 1970 to 2004 have been constructed. It is found that unit labor cost increases since 1999 in Portugal, and to a lesser extent, in Spain and Greece can be judged as excessive, which might impair a smooth working of the EMU in the future.*

Key words: *divergences, European Monetary Union, labor costs.*

Ten years after its introduction, the euro has generally been judged to be a huge success. However, even though inflation on average remained low and growth relatively robust over these past ten years, a number of observers have voiced concern that dangerous divergences might be growing under the surface. Both growth and inflation have been diverging across the monetary union; while some countries such as Ireland and Spain for a long time experienced high growth and high inflation, other countries such as Germany and Italy experienced long periods of subpar growth and in Germany even longer periods of subpar inflation. These divergences in growth and inflation have coincided with increasing macroeconomic imbalances within the European Monetary Union (EMU). Some countries (such as Portugal, Spain, and Greece) in the EMU have accumulated huge current account deficits of 10 percent of gross domestic product (GDP) or more, while Germany is now running a huge current account surplus

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of more than 6 percent of GDP even in the wake of a sharp increase in commodity prices over the last years.

In the view of these trends, a number of observers started to ask whether countries might leave the EMU (Riches-Flores, 2006). Gros (2006) questioned whether the EMU could survive the decade, and Munchau (2006) and Roubini (2006) asked whether Italy and Spain might have an interest to leave the EMU over the coming years. Even if these scenarios are exaggerated, it seems safe to agree with what Martin Wolf remarked in May 2008 in his *Financial Times* column that the EMU's "second 10 years may be tougher" than the first decade.

Behind this debate is the argument that, although inflation is not necessarily diverging more in the EMU than in other currency unions (European Central Bank [ECB], 2003), the divergence is much more persistent. Moreover, it is argued that the persistent divergence in inflation and the divergence in economic performance among countries are connected (Lane, 2006) and lead directly to dangerous imbalances in the EMU and possibly a political backlash against European integration altogether (Dullien and Schwarzer, 2005). As an illustration, often the long slump in Germany from 2002 to 2005 and the strong boom in Spain until the bursting of the housing bubble in late 2007 is mentioned. Empirically, the German slump has been going hand in hand with very low rates of inflation and even talk about Germany falling into deflation. The Spanish boom, on the other hand, has coincided with annual consumer price increases, almost twice as high as the average of the euro area. Dullien and Schwarzer (*ibid.*) and Enderlein (2004) have hence argued that the divergence in inflation amplifies regional boom-and-bust cycles. While high inflation in high-growth countries has made investments in fixed assets and housing more attractive and has thus boosted property markets and construction, low inflation in countries such as Germany has made financing conditions more burdensome, depressed domestic demand and construction, and has contributed to the travails of regional banking systems. Given both inflation and growth trends, the common interest rate of the European Central Bank has been perceived to be inappropriate both for fast-growing as well as slow-growing countries.

However, all monetary unions show some kind of divergence which does not necessarily imply trouble. The important question is thus not whether inflation rates differ, but whether the differences result from structural features of the economy which might have serious economic consequences in the medium and long run. If, for example, differences in inflation stem from labor market institutions that do not allow for a fall of regional wage increases below that of the rest of the currency union,

a real overvaluation once reached will not be corrected anymore. In this case, a region can experience a continuing deterioration of its economic structure and might be caught in a permanent low-growth trap as has been witnessed in the case of East Germany.¹

This question is particularly interesting from a Post Keynesian perspective. The EMU has often been perceived as a neoliberal project and has been heralded as a project bringing mainly market liberalization. Especially, the Maastricht framework was set up without any macro-economic instrument that could help regional adjustment, even though earlier proposals and expertises such as that of MacDougall (1977) had explicitly called for fiscal redistribution mechanisms to help prevent lasting divergences. Although other monetary unions such as the United States or Germany have a strong federal level with transfer payments and the possibility to boost regional demand in a regional downturn, the EMU lacks such an instrument. As Dullien and Schwarzer (2009) show, the EU budget is too small for such a task and is structured in a way that it might amplify, not dampen, divergences. The belief when the Maastricht treaty was signed was that imposing a common, orthodox monetary policy to the EMU as a whole would be enough to force existing structures to become flexible enough for a smooth market adjustment (Sievert, 1993). If now divergences show to be lasting, this means that these hopes were in vain and that the EMU might need some additional fiscal stabilization mechanisms such as those proposed in Dullien and Schwarzer (2009).

This paper tries to shed some light on the question of how dangerous divergences in the EMU actually are. It does so by looking at the underlying changes of unit labor costs. It examines current levels reached as well as the dynamics, both in a historical perspective and in comparison with two well-functioning currency unions—the United States and the Federal Republic of Germany. Unit labor costs have been chosen for this comparison because they are arguably the best measure available for a region's real appreciations and depreciations in a currency union (remember that lasting changes in the real exchange rates between regions in a monetary union can only result from different paces in labor cost changes, as the nominal exchange rate has been fixed and capital markets are widely integrated).

The implicit argument behind the comparison of unit labor cost trends to historical precedents in the United States and Germany is as follows:

¹ For an excellent exposition how a real overvaluation due to excessive wage increases after the German currency union and labor market institutions, which keep wages from falling again, interacted in producing the persistent East German slump, see Snower and Merkl (2006).

if regional unit labor cost developments are part of a normal adjustment mechanism in a well-functioning currency union, they should not deviate more from their long-term average than has been experienced by regions within the United States or within Germany over the past decades. Moreover, as a higher speed of unit labor cost dynamics means that the short-run amplifying effect of the real interest rate on economic activity is stronger, regional booms and busts tend to be more pronounced the more dynamic unit labor costs change. Thus, if unit labor cost dynamics in EMU countries turn out to be faster than in the United States or Germany, this might provide an indication of a higher probability of disturbing cyclical developments and excesses in parts of the EMU.

By choosing Germany and the United States, the paper moreover allows to test for the hypothesis that centralized wage-bargaining limits divergences. Had we compared EMU developments only to those in Germany, it would have been possible that divergences in Germany were artificially limited by the quasi-centralized (or at least strongly coordinated) wage bargaining institutions in that country. For the United States, this is clearly not the case: the U.S. labor market is often seen as a model of a decentralized wage-bargaining system. Hence, divergences in the United States can be mostly seen as the outcome of a market process.

In this paper, we provide some theoretical background for determining whether divergences in the euro area are harmful or not and how to best spot harmful divergences. In the third section, relative nominal unit labor cost indices for the euro countries are constructed, and then we look at the development of these indices in a historical perspective. Then we compare the most recent developments with those before the start of the EMU and try to draw a conclusion whether recent divergences are excessive by historical standards. We then take a look at the developments of unit labor costs between the states (*Länder*) of the Federal Republic of Germany. We present formerly unpublished estimates for relative unit labor costs of the German *Länder* from 1970 to 2004² and compare the trends and adjustments to those in the euro member states. The subsection "Lessons from the United States" does the same for the 50 U.S. states and the 8 U.S. census regions. It presents newly calculated unit labor cost indices for these regions from 1977 to 1997 and compares the trends and stylized facts with those in the euro zone. Then the comparisons are made with an emphasis on two features of the time series. First, we evaluate whether the *dynamics* of relative nominal unit labor costs in single EMU

² For details on the data and the choice of the periods for comparison, see the section "Indices for Relative Unit Labor Cost Performance."

countries since 1998 have any precedents in the German Länder or in the U.S. regions. To this end, we investigate whether there have been any eight-year periods³ during which unit labor costs in part of Germany or of the United States have changed as much as in the EMU countries since its beginning. Second, we check whether the current level of unit labor costs, measured as the deviation from the long-run average, has any precedents in Germany or the United States.

How to spot harmful divergences in a monetary union

Before measuring divergences in the EMU, it is useful to distinguish which types of divergences actually pose economic problems, which types are benign, and which types might actually be useful and wanted adjustment mechanisms. Figure 1 illustrates the classification of divergences graphically.

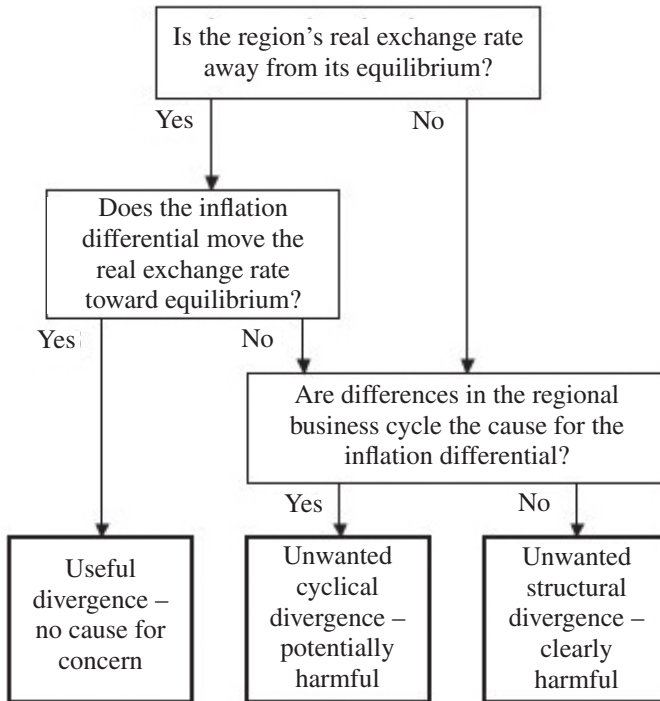
Labor cost divergences as part of necessary adjustment

Divergences in inflation do not necessarily cause harm. As the ECB (2003) notes correctly, if a single country has entered the EMU with an exchange rate that is below the long-run equilibrium exchange rate, it may need an inflation rate above the rest of the EMU to reach equilibrium. If a country has entered the EMU at an overvalued exchange rate, it may need a below-average rate of inflation to regain competitiveness and again reach its equilibrium exchange rate.

A similar argument can be made if a country is hit by an asymmetric demand shock. In the case of a negative demand shock to a single country, prices for that country's output in international markets need to fall in order to prevent a prolonged shortfall of demand and thus an increase in unemployment. If, on the other hand, global demand for a country's products suddenly and structurally increases, an above-average rate of inflation might be warranted in order to bring demand back into line with supply. In both cases, one would also expect wages to move in line with inflation.

As prices and wage trends tend to be sticky, such an adjustment process can be expected to last for several years rather than happen at once. However, neither these divergences nor their persistence need to be reason for concern.

³ The eight-year period was chosen as this is the longest period for which there are data available for the EMU.

Figure 1 Classifying divergences in a monetary union

Moreover, a divergence of inflation rates may just be a sign of a different position in the economic cycle, which by itself does not need to be a problem. After all, regional boom-and-bust cycles have been experienced in the United States and have been analyzed well before the beginning of the EMU (Krugman, 1993). Given decently working labor and product markets, inflation differentials should correct themselves in due time. As Arnold and Kool (2003) and Lane (2006) explain, there are two counterbalancing effects at work in a monetary union. The first effect amplifies growth in high-inflation areas via a lower real interest rate, while the second effect dampens growth in those regions via a real appreciation. Given a common nominal interest rate, the real interest rate in regions with high inflation is lower than in regions with low inflation. Consequently, demand, credit growth, and housing markets in these regions are stimulated, again pushing up inflation. At the same time, high-inflation regions slowly lose competitiveness vis-à-vis the rest of the currency area, which in due time will dampen export demand and thus economic growth in the high-inflation region. Although the

first effect seems to be working much quicker than the second effect, the second one finally leads to the end of a regional boom or bust cycle (Arnold and Kool, 2003).

Dangerous divergences

Even for divergences that are not part of the adjustment mechanism and do not fall under those examined above, one might argue that they do not pose serious economic problems, as long as prices converge back to equilibrium in the long run. Prices in one country would then be a little higher than in the rest of the union for a number of years and below the average for another number of years. As long as individuals can borrow in financial markets, welfare effects should be expected to be small. The phenomenon, one could argue, is a purely nominal one, without any real effects.

However, there are a number of theoretical arguments to cast doubt on this view. First, as an above-average rate of domestic inflation makes finance cheaper while investment in the tradable sector becomes less attractive with the loss of competitiveness, it might lead to excessive investment in the housing sector. This means that an excessive amount of capital is allocated to this sector which contributes relatively little to the long-term productivity growth. In addition, workers are lured into construction jobs who might later be hard to retrain once a building boom ends, thus shifting the Beveridge curve outward and increasing structural unemployment.

Second, persistent deviations in the price trend might lead to a strong overvaluation of one country in the monetary union. Whereas undervaluation leads to increasing exports and income, import prices raise and, via deterioration in the trade balance, adjustment occurs in the long run. Adjustment processes might, however, be asymmetric with regard to speed and intensity, due to hysteresis phenomenon: once trapped in a situation of overvaluation, profits suffer and investments contract. This leads to a longer period of subtrend economic growth which only ends when higher unemployment eventually brings about a correction of the overvaluation. These boom-and-bust periods may not only bring about negative welfare effects,⁴ but may also lower the potential output of a single country. As we know from labor market economics, there are good arguments for hysteresis in the labor market, meaning that unemployment is, at least to a certain extent, path dependent. This does not necessarily

⁴ This may be true even though Lucas (2003) argues that direct welfare effects from economic fluctuations are rather small. See Yellen and Akerlof (2006).

imply an insider/outsider setup, as has been assumed by Blanchard and Summers (1986), but can also be constructed by new-growth-theory considerations of human capital accumulation. Saint-Paul (1997) describes the detrimental effects of longer stints of unemployment on potential output with the words “unlearning by not doing”: if a person is unemployed for an extended period, he or she would miss out on learning new technologies and might even lose some basic skills necessary for productive employment.

In addition, recent research has pointed to the fact that periods of below-trend-growth might even lower the rate of technological progress, thus depressing the long-run growth rate of an economy. Aghion and Howitt (2005) argue that in countries with underdeveloped financial markets, firms might not be able to get capital for research and development (R&D) activities in a cyclical downturn. Excessive (or long) downward deviations from the trend thus lower the economies’ expenditure on R&D, which in turn depresses technological progress. As Aghion and Howitt (*ibid.*) point out, this effect can be expected to be larger in EMU countries than in the United States given the relative underdevelopment of financial markets in Europe.

Finally, political economy arguments hint that prolonged boom-and-bust cycles as a result from divergences might actually endanger the political stability of the euro area. A country that finds itself at the beginning of the bust leg of a business cycle amplified by the structure of the EMU might find the idea of leaving the monetary union increasingly attractive. Leaving the union would allow the country to depreciate sharply and forgo the adjustment costs of relative wage deflation. If the country’s politicians have a sufficiently high personal discount rate, the short-term benefits of leaving the EMU might actually be perceived as larger than the long-run costs of the forgone membership in the monetary union, such as lower long-term interest rates. This might in the end lead to single countries pulling out of the EMU.

Possible reasons for excessive divergences in EMU

There are a number of arguments why there might be strong divergences in the EMU that are not part of a normal adjustment mechanism. First, the absence of national monetary policy can amplify the national business cycle (Enderlein, 2004; Lane, 2006), thus leading to a further real appreciation when a country already has an overvalued real exchange. As the ECB sets its interest rate with reference to the whole EMU, for some EMU countries, the interest rate by definition will be below what would be optimal for the current position in the business cycle, while it will be

above the optimum level for other countries.⁵ Consequently, if a single country is finding itself in a stronger cyclical growth position than the rest of the EMU, economic growth in this country is further amplified as the ECB interest rate is accommodating. The opposite is true for a country finding itself with a larger output gap and lower inflation than the rest of the EMU, as national growth in this case will be dampened further.

Due to this mechanism, relative prices and wages can be depressed or boosted even for countries that had a real exchange rate in equilibrium to begin with. In principle, this kind of divergence should reverse in due course: with the real appreciation of the booming country, external demand should slow while the real depreciation of a country with subpar growth should boost exports. However, empirically, the real exchange rate channel seems to work much more slowly than the interest rate channel, leading to long periods of appreciation even if a country already has an overvalued real exchange rate. Similarly, even if a country is already highly competitive, it might thus experience further real depreciation.

While a certain divergence from the equilibrium real exchange rate also happens in a pre-EMU regime, two facts might thereby cause the real exchange rate to diverge further from its equilibrium in a monetary union than in a floating regime. First, in a pre-EMU regime, the national central bank would fight national inflation earlier and harder, breaking wage trends before they lead to large changes in the real exchange rate. Second, in a pre-EMU environment, financial markets probably would not put up with very large current account deficits, putting a downward pressure on the nominal exchange rate.

Thus, these cyclical divergences are both a consequence and a cause of amplified business cycle in the EMU: they stem from the fact that a common monetary policy amplifies national booms and busts. At the same time, they set the stage for prolonged periods of boom and bust as they might force the real exchange rate of a booming country far away from its equilibrium, making a longer period of subpotential growth necessary to correct for the excessive price and wage increases.

A second possibility for malign divergences arises if inflation or wage trends in a single country have a high persistence and do not react quickly to a change in aggregate or labor demand. If, for example, wage bargainers in a single country hardly react to an increase in unemployment due to specific labor market structures, this country might experience a permanent real appreciation, even if it is in a situation of real overvaluation to

⁵ See Hayo (2006) for an estimate of the deviation of the ECB interest rate from the optimum for a number of EMU countries.

begin with. Abstracting from cyclical fluctuations, this would lead to a continuing increase in unemployment until labor market structures are changed or the wage bargaining regime breaks apart due to endogenous tensions from rising unemployment. Contrary to the *cyclical divergences* described above, these *structural divergences* can be expected to have much more serious consequences, as there is no clear mechanism by which they could be corrected.

Against these considerations, divergences in the EMU should be seen as a reason for concern if they fulfill the two criteria of moving the real exchange rate away from its equilibrium *and* are larger than before the beginning of the EMU. Moreover, if divergences persist beyond the regional business cycle, they can be assumed to be structural.

Empirical measurement

In order to spot harmful divergences, an indicator to measure these deviations is needed. As consumer prices are influenced by a number of factors that do not impact competitiveness and are therefore of little importance to the working of a monetary union (such as changes in indirect taxation, or copayments in public health systems, or changes in energy prices), the consumer price index (CPI) is only a weak indicator for underlying divergences. In contrast, unit labor costs closely describe the underlying change of a single country's competitiveness.

Indices for relative unit labor cost performance

The analysis of this paper is consequently done using an index of relative nominal unit labor costs (RNULC hereafter). For computing the RNULC index for the euro area, the European Commission's Annual Macroeconomic (AMECO) database's time series on nominal unit labor costs for the whole economy measured in the ECU/euro was used. For space constraints, only an overview of this data is provided in Table 1. (The complete data set is provided online at www.dullien.net/data.html.)

The RNULC index can be interpreted as a real exchange rate index relative to the euro zone, measured in unit labor costs. This index has the value 100 for all countries in the base year 1998. Moreover, it has the value 100 for the euro zone as a whole for the entire time range of the sample. Consequently, the reading for a specific country in a specific year shows how much price competitiveness has improved or deteriorated relative to the base year.

We chose 1998 as the base year, as this was the first year in which the nominal exchange rates of the 11 original EMU members were in the

Table 1
Summary of relative unit labor costs in the euro zone, 1980 to 2006,
1998 = 100

	Minimum	Maximum	Average	2006 in percent of average
Euro area ¹	100.0	100.0	100.0	100.0
Belgium	89.9	106.6	97.2	103.5
Germany ²	91.1	105.7	97.1	93.9
Greece	75.5	108.8	92.2	118.1
Spain	86.4	111.8	99.6	111.7
France	96.0	114.0	102.5	97.6
Ireland	92.9	118.6	105.6	104.1
Italy	86.7	120.8	104.6	104.6
Luxembourg	90.6	117.5	102.3	106.8
Netherlands	92.5	113.4	102.6	104.1
Austria	90.4	106.4	96.7	97.3
Portugal	68.3	116.8	91.1	128.1
Finland	89.6	136.9	109.9	90.8

Notes: ¹ Including linked German series. ² Linked series.

range of plus or minus less than 1 percent of their final euro conversion rate. Taking the Commission's standard base year (1995), on the other hand, might have led to the wrong conclusions: from 1995 until 1998, there were some cases of strong nominal exchange rate movements that cannot be attributed to a loss of competitiveness due to a malfunctioning of regional labor markets within the monetary union.⁶ Just as the EU Commission's figures on nominal unit labor costs include forecasts for 2006, the RNULC index also extends to 2006.

To judge the developments within the euro zone against the experiences of the Federal Republic of Germany, a similar RNULC index was computed for the German Länder (see Table 2). The underlying time series were taken from the Web site of the Länder's network for economic statistics ("Arbeitskreis VGR der Länder").⁷ Unit labor costs were computed by dividing the (nominal) compensation for employees by the real gross regional product for each Land. These numbers were indexed against a pan-German unit labor cost index. As the data for the old federal republic are only available until 1990, and from 1991 only data for all of Germany are provided, the reference shifts from the old

⁶ For example, the Italian lira gained back much of the value lost after the 1992 crisis of the European Monetary System in the years 1993–98.

⁷ www.vgrdl.de.

Table 2
Summary of relative nominal unit labor costs in the German Länder, 1970 = 100

	Minimum	Maximum	Average	Minimum as percent of average	Maximum as percent of average
Baden-Wuerttemberg	96.6	100.0	98.2	98.3	101.7
Bavaria	93.3	101.4	97.4	96.1	104.5
Berlin	96.5	110.2	100.7	94.6	110.6
Bremen	93.2	104.2	100.4	93.5	104.5
Hamburg	86.4	100.6	94.9	89.6	107.3
Hesse	83.6	100.1	92.4	91.3	109.3
Lower Saxony	93.3	100.4	97.3	95.7	103.0
North Rhine-Westphalia	100.0	107.8	104.4	95.5	103.0
Rhineland-Palatinate	99.9	106.5	102.2	97.2	105.1
Saarland	94.7	101.5	98.0	96.3	103.3
Schleswig-Holstein	97.1	105.6	101.0	96.2	104.7
Federal Republic of Germany*	100.0	100.0	100.0	100.0	100.0

* Up to 1990, the old Länder; from 1991, old and new Länder.

Länder until 1990 to pan-Germany from 1991 onward. Thus, until 1990, the index shows the relative development of unit labor costs vis-à-vis the old federal republic, while from 1991 onward, the index shows the development relative to all of Germany.

Finally, to draw from the experience of the United States, an RNULC index was also constructed for the 50 U.S. states as well as for the eight census regions. The necessary data on gross state products (GSP) and total compensation of employees was taken from the Bureau of Economic Analysis's database on regional and state GSP.⁸ The change from the Standard Industrial Classification (SIC) to the North American Industry Classification System (NAICS) in 1997 created a slight problem: as data on employees' compensations were not published for the first years after the statistical change and were only resumed in 2001, an RNULC time series can only be constructed from 1977 to 1997. However, that still gives us 13 eight-year periods and an overall time span of about three times that of the EMU to compare recent developments in the euro zone to.

As in this case, a standard deviation or a range would not be a sensible matter, as it does not take into account whether the real exchange rate measured in unit labor costs was in equilibrium at the start of the EMU, so this paper uses two alternative yardsticks for evaluating divergences. First, the levels of RNULC are judged against their long-term average, both in comparison with historical precedents of pre-EMU times (when a nominal exchange rate still existed which might have caused adjustment) and in comparison with the United States and Germany. Second, the dynamics of the euro zone data is examined. Here, it is checked whether the dynamics after 1998 were unusual in comparison with other currency unions. There is the implicit assumption behind this approach that in the long run, real exchange rates fluctuated around their steady state and thus have, *on average*, not deviated much from their equilibrium value.⁹

Euro zone developments in historical perspective

Taking a closer look at the RNULC index for the euro zone, we see that a small number of countries lost a significant part (more than 7.5 percent) of their original price competitiveness between 1998 and 2006: By this measure, Portugal has appreciated by 16.8 percent, Spain by 11.3 percent, Ireland by 10 percent, Luxembourg by 9.3 percent, and Italy

⁸ www.bea.gov/bea/regional/gsp.htm.

⁹ This does not exclude that real exchange rates have deviated for longer periods from their equilibrium values. It only assumes that periods of persistent over- and undervaluation are roughly equally distributed.

by 9.4 percent. Greece has also strongly lost competitiveness. Because Greece only joined the EMU in 2001 after repeated nominal depreciations in prior years, the index figure for 2005 even understates the loss of competitiveness induced by nominal wage increases. From 2001 to 2006, the country lost 12.4 percent of its price competitiveness, more than any other countries in this five-year period.

All but two (the exceptions being Luxembourg and Ireland) of the countries that significantly lost competitiveness until 2006 lost competitiveness in almost every year since 1998. This is even more remarkable as Portugal and Italy have been underperformers with respect to economic growth in the past years. Had they well-functioning labor markets, one would have expected that their widening output gaps in 2003–5 would have put downward pressure on labor cost growth. Instead, unit labor costs in these two countries continued to rise quicker than in the rest of the euro zone, even though their economies were performing markedly worse. This development contrasts with that in the Netherlands: the Dutch economy lost competitiveness from 1998 to 2003 to almost the same extent as Spain did from 1998 to 2006. However, as the economy slowed, the trend in RNULC turned, and the competitive position improved again. By 2006, the Netherlands had regained a third of the competitiveness lost in prior years.

When comparing the current levels of competitiveness to historical performance, we see that Portugal has the worst competitive position since the beginning of the time series. The same is true for Spain, though that country's competitive position is close to that experienced in 1992, just prior to the speculative attacks that pushed its currency out of the European Monetary System (EMS). Greece's competitive position is the worst since the end of its military dictatorship in 1974 (and long before joining the European Union in 1981). The situation does not look quite as bleak for Italy, which is still slightly more competitive than it was just prior the EMS crisis in 1992. Ireland's real exchange rate relative to the rest of the EMU at the end of the time series was still significantly below that of the early 1980s.

Moreover, the loss of competitiveness of these countries is unusual even in a cross-country perspective. Compared to 1998, there have only been a few occasions on which single countries have been as uncompetitive as Portugal or Spain were in 2006. The Netherlands lost competitiveness to a similar degree in the 1970s, which culminated in a deep economic crisis in the early 1980s. Ireland had a similarly unfavorable relative unit labor cost position in the early 1980s when the country was widely seen to be in deep crisis and unemployment stood at double-digit rates.

Only a strategy of deliberate undervaluation by very low wage increases brought this country back into a favorable competitive position. France had a unit labor cost position only a little shy of that of Portugal in 2006 in the early 1980s before major alignments in EMS took place in 1982 and 1983.¹⁰

There is one country that has significantly improved price competitiveness since 1998: Germany's relative unit labor costs fell by 8.9 percent from 1998 to 2006, significantly faster than Austria, the country with the second-highest decrease over the period (6.0 percent). However, a fall in RNULC as experienced in Germany has not been at all unusual for EU countries prior to the EMU when nominal depreciations of single currencies regularly led to large fluctuation in single countries' competitive positions. For example, Italy gained about 13 percent in price competitiveness in the two years after the EMS crisis in 1992 when the lira dropped out of the exchange rate mechanism. However, compared to its long-term relative unit labor cost position, Germany appeared to be highly competitive in 2006: one has to go back to the late 1960s to find a year in which the relative unit labor cost index was as low as in 2006.¹¹

Lessons from Germany

However, a certain divergence in the development might just reflect slightly different regional cycles or a correction of asymmetric shocks to one or more regions in a currency union, as has been experienced in other monetary unions. Taking a closer look at the RNULC developments of the German Länder, we find that a deterioration of the competitive position close to what we have seen in Italy, Ireland, and Luxembourg in the eight years up to 2006 has only happened once in one of the German Länder excluding Berlin (see Table 3, which shows the eight-year periods with the five largest upward and downward changes in the RNULC). In Schleswig-Holstein, relative unit labor costs deteriorated by 8.8 percent from 1975 to 1983. However, this increase came after a period of gains and competitiveness and was followed by a swift correction from 1983 onward. The increase in Italy, Ireland, and Luxembourg since 1998 was above this value. A deterioration of the RNULC position even close to

¹⁰ Finland's uncompetitive position before the early 1990s cannot be compared as that country only joined European Union in 1995 and had a very protected economy before that.

¹¹ The trends up to 2006 as analyzed in this paper seem to have continued until the publication of this paper in 2009. Spain, Portugal, and Greece have continued to lose competitiveness, while the German competitiveness has further improved.

Table 3
Maximum increases and decreases in relative unit labor costs over eight-year periods for the German Länder in percent, selection of periods with the five strongest increases and decreases, 1970 to 1996

Base year (eight-year period starting in)	Including Berlin		Excluding Berlin		Land with maximum increase
	Maximum ULC decrease in following eight years in percent	Maximum ULC increase in following eight years in percent	Maximum ULC decrease in following eight years	Maximum ULC increase in following eight years	
1974	-4.1	6.7	-4.1	6.7	Schleswig- Holstein
1976	-4.3	6.4	-4.3	6.4	Schleswig- Holstein
1977	-4.3	6.7	-4.3	6.7	Schleswig- Holstein
1987	-6.8	6.5	-6.8	3.2	Rhineland- Palatinate

1988	-7.8	7.6	-7.8	3.9	Hamburg	Rhineland-Palatinate
1989	-8.0	9.4	-8.0	3.3	Hamburg	Rhineland-Palatinate
1990	-6.9	10.3	-6.9	3.7	Hamburg	Saarland
1992	-6.5	7.8	-6.5	6.2	Hamburg	Saarland
1994	-8.3	7.7	-8.3	6.2	Hamburg	Saarland
Maximum	-8	10.3	-8	8.8		

Memorandum: relative unit labor cost changes 1998–2006

Italy	9.4
Spain	11.3
Portugal	16.8
Germany	-8.9
Greece	8.8

Notes: ULC = unit labor costs. The five largest increases and five largest decreases over any eight-year period were selected for the table (shown in boldface).

that experienced by Spain (11.3 percent) or Portugal (16.8 percent) cannot be found in any eight-year period in any of the German Länder, excluding Berlin. From 1990 to 1998, Berlin's relative unit labor cost position deteriorated by 10.3 percent. However, these data have to be interpreted with the historical background in mind. In 1990, the western part of the city was united with its eastern part so that relative unit labor cost jumped by more than 4 percent in a single year. Moreover, economic activity in Berlin today is strongly tilted toward public and government services. For these activities, competitiveness is not an issue, because these services cannot be substituted by similar services in other Länder.

Germany's performance within the EMU with a decrease in the relative unit labor cost position of 8.9 percent from 1998 to 2004 is also extraordinary by German Länder standards. A decrease of unit labor costs close to this magnitude in any given eight-year period was only observed in the small city-state of Hamburg, in the periods starting in 1988 and 1989. However, even there, relative unit labor costs never fell by more than 8.0 percent over any eight-year period. The maximum decrease for any larger German state (excluding the city-states) was the fall in relative unit labor costs in Hesse by 6.9 percent, in the period from 1988 to 1996.

However, in order to judge whether the divergence of relative unit labor costs in the EMU since 1998 can be considered as normal fluctuation, not only the speed of adjustment is important, but also the question of whether adjustment has moved beyond *a level* that is sustainable. To this end, the long-run average of the RNULC position was computed for each EMU country as well as for the German Länder. For the EMU countries, the 2006 value was set in relation with the long-term average since 1980, assuming that prior to that date, nationally sheltered markets might make comparison difficult. For the German Länder, the maximum deviation above and below the long-term trend were computed (Table 2). Against this background, the development of unit labor costs in Greece, Spain, and Portugal looks highly unusual; for the German Länder, only Berlin experienced any deviation of more than 9.3 percent above the long-term average, Spain's relative unit labor costs in 2006 stood at 11.7 percent, Greek unit labor costs at 18.1 percent, and Portugal's relative unit labor costs at 28.1 percent above its long-term average. Italy's competitive position, on the other hand, looks rather benign; with only 4.6 percent above the long-run average, this is clearly in the bounds of German Länder precedents. The same is true for Ireland, with the RNULC index standing only 4.1 percent above its average value. Germany's relative unit labor cost position in the EMU also does not look extraordinary. With 6.1 percent below the long-term average, similar developments

have been experienced by one large German Länder, Hesse and by the city-state of Bremen.

Thus, compared to Germany, unit labor costs in some EMU countries have diverged further than was the case in any of the German states except Berlin. Although the deterioration of the unit labor cost position of Spain and Portugal are clearly beyond anything experienced in Germany, both Italy's and Ireland's real appreciation as well as Germany's real depreciation in unit labor cost terms can be considered to still be close to the Länder precedents.

Lessons from the United States

When comparing U.S. data to that from the EMU, the U.S. variations at first sight seem to be much larger than in the EMU, with increases of up to 21 percent and decreases of up to 35 percent over some eight-year periods (see Tables 4 and 5). Closer examination of the data, however, reveals that much of this variation is due to very distinct developments in one state and one territory—Alaska and Washington, DC. While the relative unit labor cost position of Alaska is extremely volatile, Washington, DC, experienced a continuing increase of RNULC since 1979. Two factors probably explain these developments. For Alaska, one reason might be the heavy reliance of the state's economy on natural resources such as oil, which leads to a very volatile GSP (with GSP changes of more than 10 percent year-on-year). The RNULC series thus seems to capture more of a change in the oil drillers' rents than in the state's competitiveness. As the capital, Washington, DC, provides services to the rest of the country which cannot be easily substituted by some other state's products. Thus, the permanent real appreciation might be a consequence of that territory's special role and of little economic consequence for Washington, DC.

If we look at the United States excluding Alaska and Washington, DC, the changes in relative unit labor costs of some EMU countries seem quite pronounced. None of the single U.S. states experienced any eight-year period in which the RNULC position deteriorated even close to Portugal's 16.8 percent. Spain's, Ireland's, and Italy's loss of competitiveness is still in the range of U.S. states. The largest increase of unit labor costs over any eight-year period in any U.S. state except Alaska was experienced in Louisiana from 1988 to 1996. Here, relative unit labor costs rose by 12.9 percent, compared to 10 percent in Ireland, 11.3 percent in Spain, and 9.4 percent in Italy.

Germany's performance, on the other hand, does not look extraordinary: the maximum decrease in RNULC over any eight-year period in the United States was 21 percent, experienced in Wyoming from 1982

Table 4
Maximum increases and decreases in relative unit labor costs over eight-year periods for the U.S. states in percent, selection of periods with the five strongest increases and decreases, 1970 to 1996

Base year (eight-year period starting in)	Including Alaska and Washington, DC		Excluding Alaska and Washington, DC		Excluding Alaska and Washington, DC	
	Maximum ULC decrease in following eight years in percent	Maximum ULC increase in following eight years in percent	Maximum ULC decrease in following eight years in percent	Maximum ULC increase in following eight years in percent	State with maximum decrease	State with maximum increase
1977	-35.0	12.5	-6.9	12.5	Iowa	Texas
1980	-15.6	16.9	-15.6	11.3	Wyoming	New Mexico
1981	-19.1	14.6	-19.1	12.3	Wyoming	North Dakota
1982	-21.8	12.3	-21.8	6.4	Wyoming	North Dakota
1983	-18.5	15.1	-18.5	5.5	Wyoming	Michigan
1988	-15.6	21.5	-15.6	12.9	New Mexico	Louisiana
1989	-19.2	17	-19.2	12.9	New Mexico	Louisiana
Maximum	-35.0	23.1	-21.8	12.9		
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Italy				9.4		
Spain				11.3		
Portugal				16.8		
Germany				-8.9		
Greece				8.8		

Notes: ULC = unit labor costs. The five largest increases and five largest decreases over any eight-year period were selected for the table (shown in boldface).

Table 5
Summary of different measures of relative unit labor cost developments in the 50 U.S. states and Washington, DC

	Maximum	Minimum	Maximum (without Alaska and Washington, DC)	Minimum (without Alaska and Washington, DC)
Highest increase (lowest decrease) over eight-year period	16.9 (DC)		12.9 (LA)	
Highest decrease (lowest increase) over eight-year period		-35.0 (AK)		-21.8 (WY)
Maximum level	130.4 (DC)		119.0 (LA)	
Minimum level		57.9 (AK)		86.2 (WY)
Average level	112.9 (DC)		109.1 (LA)	
Maximum as percent of average	141.1 (AK)		115.1 (WY)	
Minimum as percent of average		81.7 (AK)		87.2 (NM)

Note: Letters in parentheses denote U.S. state that experienced maximum or minimum value. DC = Washington, DC; LA = Louisiana; AK = Alaska; WY = Wyoming; NM = New Mexico.

to 1990, way above Germany's decrease of 8.9 percent. However, one must ask whether one can really compare Germany's adjustment (with its share of EMU GDP of more than 25 percent) to that of Wyoming (share of U.S. GDP: 0.2 percent).

To overcome this size issue, unit labor costs for the U.S. census regions were computed (see Table 6). With a 1997 weight of U.S. GDP of between 3.0 percent (Rocky Mountains) and 21.9 percent (Southeast), these regions roughly compare in relative size to the somewhat larger euro countries: Austria (2.9 percent of EMU GDP), Belgium (3.6 percent), the Netherlands (5.9 percent), Spain (12.2 percent), Italy (17.6 percent), France (19.9 percent), and Germany (26.3 percent).

Compared to the census regions, unit labor cost developments in Spain and Portugal look slightly excessive. Only on one occasion did a single census region experience a deterioration in its competitive position by more than 10 percent over an eight-year period (see Table 7). From 1977 to 1985, unit labor costs in the Southwest rose by 10.9 percent, still about seven percentage points shy of Portugal's RNULC increase and half a percentage point shy of Spain's RNULC increase in 1998. Italy's and Ireland's performances look rather on the border of the U.S. regional precedents: there was one eight-year period when relative unit labor costs in the Southwest rose as strongly as in Italy from 1998 to 2006. Germany's performance looks quite out of bounds when compared to the U.S. census regions: the maximum decrease in any U.S. census region was 4.5 percent, almost three percentage points shy of Germany's decrease since 1998.

When taking the deviation from the relative long-term competitive position as a reference (Table 6), developments in Portugal, Spain, and Greece again look to have run beyond the precedents set by U.S. states; excluding Alaska and Washington, DC, no U.S. state ever experienced a deviation from its long-run competitive position compared to Portugal's or Greece's. Spain's deviation in 2006 with 11.7 percent above the long-term average still looks close to Wyoming's precedent which, in 1982, reached an RNULC position 15.1 percent above its long-term average. However, one has to note that Wyoming rather looks like an outlier in the United States. Without Wyoming, the largest upside deviation was 9.4 percent, which was experienced in West Virginia.

From the U.S. census regions, no single entity has ever experienced the relative unit labor cost position deviating more than 3.7 percent above its long-term average. Italy, Spain, Portugal, and Spain look unusual from this point of view. Germany's experience, in contrast, looks in line with that of U.S. census regions.

Table 6
Summary of relative nominal unit labor costs in the U.S. census regions, 1977 = 100

	Maximum	Minimum	Average	Maximum as percent of average	Minimum as percent of average
New England	106.0	102.1	103.5	102.4	98.6
Mideast	101.6	99.0	100.4	101.2	98.6
Great Lakes	109.6	105.1	106.9	102.5	98.3
Plains	101.6	98.0	99.8	101.9	98.2
Southeast	98.3	95.6	97.0	101.3	98.5
Southwest	98.6	88.4	95.1	103.7	92.9
Rocky Mountains	100.6	96.5	99.1	101.6	97.4
West	99.8	97.2	98.5	101.3	98.7

Table 7
Change in relative labor unit cost position of U.S. census regions relative to all of the United States in the eight years following the base year (negative values denote improvement of competitiveness) in percent

	Minimum	Maximum
New England	-2.2 (1984)	-0.4 (1981)
Mideast	-0.9 (1977)	1.5 (1979)
Great Lakes	-3.8 (1978)	1.3 (1985)
Plains	-1.5 (1977)	3.4 (1985)
Southeast	0.6 (1987)	1.6 (1977)
Southwest	-4.5 (1986)	10.9 (1977)
Rocky Mountains	-0.5 (1985)	3.7 (1978)
West	-1.6 (1979)	0.5 (1989)

Note: Numbers in parentheses denote year of largest positive or negative change.

Conclusion

Table 8 summarize these results. While unit labor cost developments seem to be well in line for most EMU countries, a handful of countries actually have experienced unusual developments—namely, Portugal, Spain, and to a lesser extent Greece, Italy, and Germany. The developments since 1998 were especially unusual for two countries—Portugal and Spain. In these countries, relative unit labor costs increased much faster than in any of the German Länder (except Berlin), faster than for any continental U.S. state, and significantly faster than in any U.S. census region. Relative unit labor costs for these countries also deviated more from their long-term average than was the case for any German Länder or any U.S. census region. In the case of Portugal, moreover, no instance could be found in which a single U.S. continental state had ever deviated more from its long-term average relative unit labor cost position. This hints that the divergence of these two countries is unwanted and might pose problems in the future. For Portugal, the divergence might even be structural given that even the harsh recession after 2001 did little to correct the divergence. For Spain, it is too early to make any conclusions whether the divergence is cyclical or structural, given that the country

Table 8
Unusual relative labor cost developments in selected EMU countries compared to Germany and the United States

	German Länder		U.S. states		U.S. census regions	
	Eight-year dynamics	Level relative to long-term average	Eight-year dynamics	Level relative to long-term average	Eight-year dynamics	Level relative to long-term average
Germany	X				X	
Italy	X					X
Ireland	X					
Spain	X	X		X	X	X
Portugal	X	X	X	X	X	X
Greece		X		X		X

X = no comparable precedent found.

has continuously experienced robust growth until the beginning of the subprime crisis in 2007. Also worrying in international comparison is the development of relative unit labor costs in Greece. Cost dynamics in this country over the past eight years have been in line with dynamics experienced in Germany or in the United States, but the deviation from the long-run average now is above that experienced by any German Länder, any U.S. state, and any U.S. census region. More worrying, the dynamics of relative unit labor costs in Greece since 1998 was understated by the country's late entry to the EMU and the nominal depreciation in the years prior to EMU membership. This hints that Greece's divergence is also unwanted.

Italy and Ireland seem to be borderline cases: Italy's unit labor cost position has deteriorated faster than that of any German Länder in the sample. Moreover, Italy's level is now farther away from its long-term average than that of any U.S. census region. However, compared to the dynamics in the U.S. census regions and the deviations from the long-term average in Germany, Italy's cost position still looks to be within the precedents. Ireland is a special case, with the dynamics having been very strong in recent years (especially from 2003 to 2006), but which had at the same time started at an undervalued euro conversion rate in which there remains some room for appreciation.

The development in Germany, the country with the strongest fall in unit labor costs relative to the rest of the currency union, on the other hand, cannot yet clearly be judged to be unusual. While the dynamics of German unit labor costs was stronger than in any U.S. census region and any larger German Länder in the sample, it still looks reasonably normal when compared to the U.S. states. Moreover, compared to the long-run average, the level of German competitiveness still seems to be within the range experienced in other currency unions. Thus, for Germany, we cannot rule out that the divergence is still a correction of a misaligned euro conversion rate.

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