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Abstract

Low international competitiveness of a set of euro area countries, which have become evident by large current account deficits and rising risk premiums on government bonds, is one of the most challenging economic policy issues for Europe. We analyse the role of private restructuring and public structural reforms for the urgently needed readjustment of intra-euro area imbalances. A panel regression reveals a significant impact of private restructuring and public structural reforms on intra-euro area competitiveness. This implies that private restructuring and public reforms are rather than public transfers the best way to preserve long-term economic stability in Europe.

JEL-Classification: E24, F15, F16, F32, F33

Keywords: Structural reforms, competitiveness, current account imbalances, euro area, European Monetary Union, dynamic panel estimation, interaction term.

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1. Introduction

Since the creation of EMU, the intra-euro area competitiveness of euro area member states has diverged steadily and significantly. While German competitiveness has increased as evidenced by rising trade surpluses in the years 2002 to 2007, other countries like Spain, Italy and Portugal have fallen behind due to high wage growth and low productivity increases. Up to the present, this divergence of competitiveness seems to persist and shows no sign of reversal (de Grauwe 2009c and Gros, Mayer and Ubide 2005). This is reflected in still growing intra-euro area current account imbalances and most recently in rising yields and CDS premiums on government bonds versus Germany.

With the current financial and economic crisis, the diverging competitiveness in the euro area has moved on top of the political agenda (EC 2009). Some analysts argue that in the face of the crisis, flexibility represents a handicap for euro area countries and rigidities are virtuous (see, for instance, de Grauwe 2009a). The main argument is that rigidities in wages, employment and social security allow countries to better deal with the fixed levels of debt imposed on households and firms. Hence, we should cherish these rigidities today.

We show that this view does not correspond with empirical evidence. More flexibility of labour markets and a more incentive compatible welfare state remain the key for the necessary re-balancing of large intra-euro area current account imbalances. The main concern is with respect to real exchange rates within the euro area: countries with low competitiveness and high current account deficits find themselves in dire need to depreciate in real terms against countries with strong competitiveness. The absence of nominal intra-euro area exchange rates implies that asymmetric shocks must have a valve elsewhere. This shifts the burden of adjustment to relative wages and prices which presupposes that wages have to be flexible and/or labour force has to be mobile. However, both wage flexibility and labour mobility remain rather limited in the euro area.

Up to now, research on this issue has been quite scarce. The seminal paper by Mundell (1961) on optimum currency areas analyses the adjustment to asymmetric shocks in a currency union in a Keynesian framework, stressing the crucial role of flexible labour markets. In the advent of the euro, the adjustment capacity of future EMU members has been intensively discussed and the need for flexible labour markets was stressed e.g. by Pissarides (1997). Blanchard and Giavazzi (2002), Blanchard (2007), and European Commission (2009) analyse the competitiveness adjustment process within the euro area following the

introduction of the euro. According to Blanchard (2007), a key result is that without labour market flexibility the process of competitiveness adjustment will cause high unemployment until competitiveness is restored.

The remainder of the paper is organized as follows. Section 2 discusses the determinants and the process of competitiveness adjustment in the euro area with respect to public structural reforms and private restructuring. Section 3 reviews the theoretical and empirical literature on the background of the current financial distress in the euro area. In section 4, we estimate the individual impacts of private restructuring and public structural reforms on competitiveness in a dynamic panel for eleven euro area countries for the years 1991 to 2007. Section 5 discusses policy implications.

2. Competitiveness within the euro area

After the start of EMU in 1999, unexpected intra-euro area current account imbalances emerged. Meanwhile, the rising gap between Germany (and some smaller countries) on the one hand and most other EMU members on the other has cumulated in diverging yields on national government bonds during the recent financial turmoil (de Grauwe 2009a,b). Because of rising doubts that countries with low industrial competitiveness will be able to repay high international liabilities, the intra-area adjustment of competitiveness between member countries is regarded as a crucial issue for the macroeconomic and political stability of the euro area (EC 2009). Either competitiveness well be adjusted or the euro area will fall apart.

2.1. The competitiveness channel in the euro area

Given a common currency, the real exchange rate depends on changes in relative prices between countries. A country with low competitiveness needs a real depreciation and, hence, to deflate its general price level in relative terms to regain competitiveness. Domestic products have to become cheaper compared to foreign goods. If this is the case, exports increase, imports decrease and the current account deficit is eliminated. Conversely, a competitive country could reduce its export surplus by a real appreciation for instance by increasing wages. This would accelerate national inflation via higher costs and prices. Competitiveness in the euro area would be rebalanced via flexible prices and wages.

The argument that a monetary union with heterogeneous members requires flexible markets goes back to the literature on optimum currency areas (OCA). The seminal paper by Mundell (1961) demonstrates that members of a monetary union need flexible labour markets to adjust to asymmetric shocks. Otherwise, membership in a common currency area is not beneficial for them. Sudden changes in relative prices necessitate a gradual readjustment in the enterprise sector to restore relative competitiveness. Note that in contrast to Mundell's (1961) case, the current pressing disequilibrium within EMU has not emerged suddenly through a shock, but gradually via persistently asymmetric wage policies.

According to the trade theories of factor price equalisation, trade and/or labour migration act as transmission channels for relative wage adjustment. In the country with relative high prices (low competitiveness), exports will decline (*trade channel*). To regain competitiveness, wages are reduced whereas in the country with rising exports labour demand is boosted which encourages wage increases. Additionally or alternatively, labour force migrates from the country in recession to the country in the boom (*labour migration channel*)[1]. Labour movement will continue until relative wages and relative prices are rebalanced. Both mechanisms will only work efficiently if wages are flexible and/or labour mobility is high.

If prices and wages are rigid, adjustment of competitiveness differences lasts longer (EC 2008) and is costly in terms of unemployment (Blanchard 2007). Given downward wage rigidity, lower labour demand will cause unemployment. In contrast, the highly competitive country will face labour shortage. In the long run, as unemployment increases, the pressure for adjustment in the less competitive country increases. Blanchard (2007: 7) calls this way of adjustment *competitive disinflation*, representing "[…] *a period of sustained high unemployment, leading to lower nominal wage growth until relative unit labour costs have decreased,* [and] *competitiveness has improved"*. The speed of this adjustment process and the level of unemployment depend on the degree of wage rigidity. Such a period of competitiveness disinflation can be argued to have taken place in Germany, where real wages remained widely constant since the turn of the millennium after unemployment had increased to historical level.

[1] This is the main mechanism through which U.S. states adjust to unemployment (Blanchard 2006). In this context, Wasmer (2003) argues that higher labour mobility results from high labour market flexibility. US labour force faces low employment protection and invests therefore more in person specific human capital, which enables them to be mobile. In contrast, European workers tend to invest in firm specific human capital, which makes them less mobile.

The common monetary policy and the low inflation policy of the ECB further narrow the scope for a competitive disinflation process. Assuming that nominal wage cuts are unlikely, a country with lagging competitiveness that holds nominal wages constant can only gain real wage cuts by means of sizeable inflation. The lower inflation is, the smaller will be real wage cuts and competitiveness gains against other euro area countries[2], and the rebalancing process is postponed.

All in all, given similar levels of productivity increases, downward wage flexibility is crucial for balancing competitiveness in the euro area. This is even more the case as the common currency has reduced transaction costs for intra-euro area trade and has enhanced price transparency across borders (EC 2008, Badinger 2007). Moreover, the process of globalisation, i.e. rising competition from China and the Central and Eastern European Countries (CEECs), has further enhanced the pressure on competitive as well as less competitive euro area countries.

2.2. Prices, wages and productivity in the euro area

Despite a common monetary policy, structural differences in wage growth and inflation between members of the euro area have persisted and have even increased in the euro area for several reasons. First, there are differences in inflation traditions and inflation expectations. The ECB's low inflation target seems to be anchored differently in anticipated national inflation rates, which is reflected in divergent long-run expected inflation in different parts of the euro area (Hofmann/Remsperger 2005). Although inflation differences are lower than in the past, wages and prices continued to rise in many Southern European countries despite a tighter monetary policy stance in the EMU centre. In this context, structural inflation differences can be seen as the outcome of price level convergence in the euro area, as some EMU members such as Greece, Portugal and Slovenia continued to catch-up in terms of productivity, the well-known Balassa-Samuelson effect.

Second, differences in consumption and production structures across countries have an impact on national inflation. As countries are differently exposed to extra euro area trade, changes in the external value of the euro have a country-specific impact on imported inflation (Honohan/Lane 2003, Hofmann/Remsperger 2005). For example, since Ireland trades more with the UK than with Germany, a depreciation of the euro against the pound increases import

[2] Here we simply assume no real wage cuts in competitor countries.

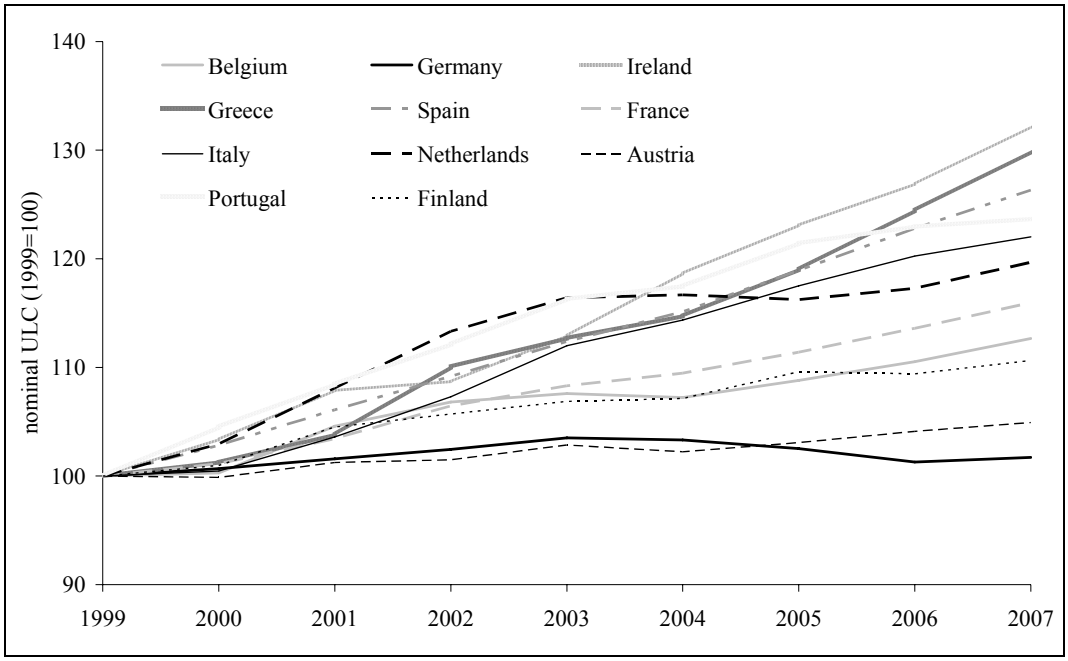
prices in Ireland more than in Germany. Furthermore, countries are unequally exposed to temporary shocks, such as the surge of raw material and oil prices due to different crude oil dependency (Hofmann/Remsperger 2005, EC 2006). More technology intensive economies such as Germany use relatively less oil per unit GDP than Southern European countries, which therefore have been hit stronger to increasing raw material prices.

Third, structural differences among national euro area inflation rates can be driven by idiosyncratic business cycles (Honohan/Lane 2003, EC 2006). For instance, after the turn of the millennium Spain and Ireland experienced a period of sustained growth while German growth remained sluggish. Thereby, the implementation of the common monetary policy and its resulting country specific real interest rate shocks contributed to asymmetric economic developments (EC 2008). Falling interest rates and persistent inflation rates reduced real interest rates and boosted demand in former high inflation countries such as Spain or Ireland (López-Salida et al 2005). In contrast, relatively high real interest rates in Germany reduced investment demand and kept inflation low.

Fourth and probably most important, national inflation rates were driven by different degrees of national wage and productivity growth. In Germany, high unemployment, partly a legacy of its unification, restrained kept real wage growth. Beyond EMU, German wage austerity since the mid 1990s can be seen as response to low wage competition from the CEECs and East Asia. In addition, German productivity increased. In contrast, wage growth in Spain, Italy, Portugal and Greece remained high, for instance due to inflation indexation in Spain (López-Salida et al 2005) and/or buoyant capital inflows. Productivity growth remained moderate. Furthermore, structural reforms in labour markets were implemented in different speeds and scopes (de Grauwe 2009c) affecting the country-specific inflation dynamics (Beck et al. 2009).

Figure 1 displays the development of unit labour costs in the euro area from 1999 to 2007. While Germany and Austria almost kept the level of 1999, in Ireland, Portugal, Spain, Greece, Italy, and Netherlands unit labour costs have increased significantly up to 30% compared to 1999. This implies a real appreciation/depreciation, a loss/gain in competitiveness, and the build-up of intra-euro area current account imbalances. Note that these imbalances are driven by the private sector (trade unions and enterprises) rather than by the harmonized common macroeconomic policies.

Figure 1 - *Unit labour costs in the euro area, 1999=100*

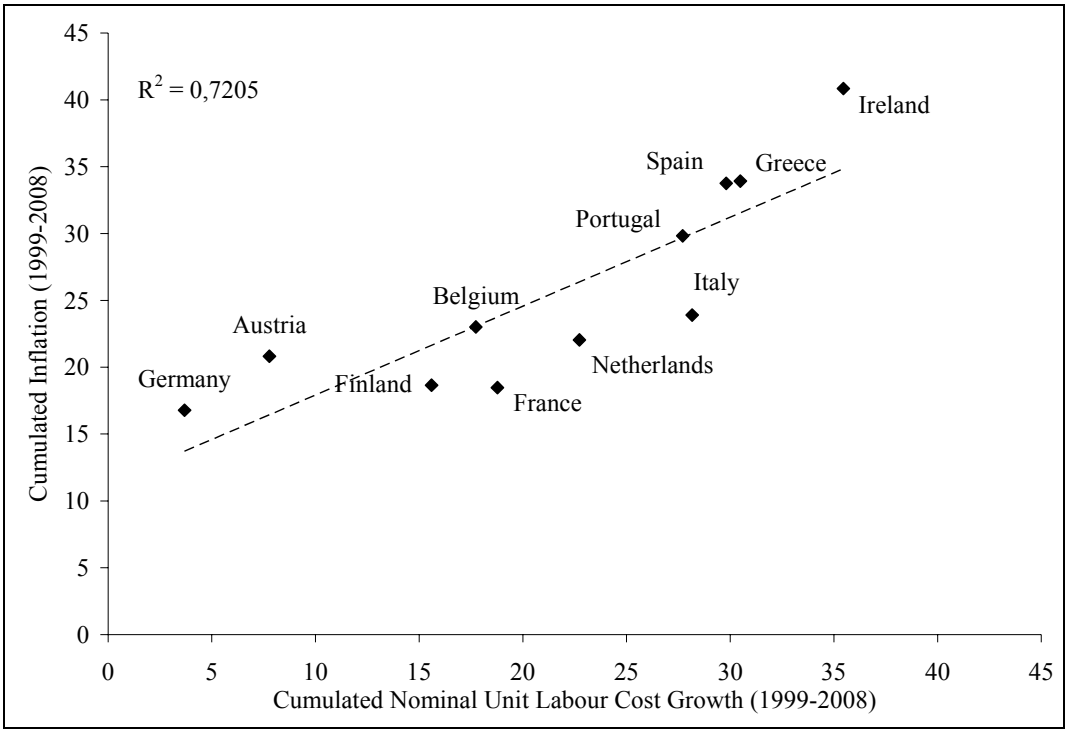


Source: European Commission, AMECO.

Figure 2 shows the close interrelation between unit labour costs and national inflation. The x-axis shows cumulative nominal unit labour cost growth since 1999, the y-axis displays the cumulated inflation during the same period. Countries with low unit labour cost growth over the last years such as Germany and Austria are also in the country group with low inflation. In contrast, Ireland, Greece, Spain and Portugal have seen high unit labour cost growth and high country-specific inflation. The dashed regression line indicates a strong correlation between unit labour cost growth and inflation.

The steadily rising intra-euro area imbalances imply that there is neither wage competition nor wage harmonization within the euro area. Apparently, relative wages have not been adjusted to diverging competitiveness and have failed to correct rising imbalances. Altissimo, Ehrmann and Smets (2006) argue that structural rigidities and in particular downward rigid prices and wages in the euro area have prevented an adjustment of real exchange rates. In this context, the European Commission (2006) shows that country specific unit labour costs respond differently to positive and negative output gaps. In Portugal, Italy, Greece, France and Finland competitiveness is lost relatively more compared to Germany and Austria during an economic downturn. Generally, this pattern is attributed to different degrees of nominal wage rigidity.

Figure 2 - *Inflation and growth of unit labour costs in Europe (1999-2008)*



Source: European Commission, AMECO.

2.3. Non-price competitiveness

Besides unit labour cost divergences, which are here referred to as price competitiveness, also non-price competitiveness can explain intra-euro area imbalances. Amable and Verspagen (1995) and Ilzkovitz et al (2008) emphasise the role of non-price competitiveness, which covers a large set of variables such as sectoral and geographical specialization of the export sector, production and technology structure, as well as the quality of products.

First, a clear pattern of specialization in specific goods and export markets is important for competitiveness. A country with a sectoral specialization in difficult-to-imitate goods has an advantage which allows higher relative wage growth and vice versa (Ilzkovitz et al 2008). Additionally, the geographical specialization, i.e. the structure of a country's main export destinations, matters. Export specialization to dynamic (emerging) markets will boost overall exports relative to exports to mature markets.

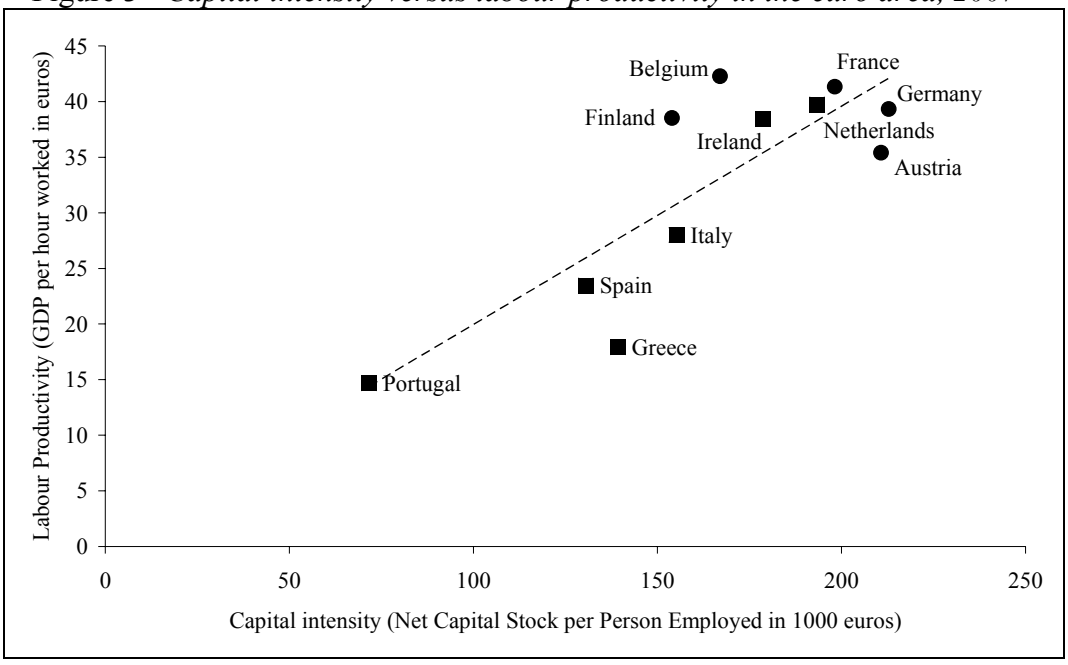
Second, the production structure determines how and to what extent rising wage costs can be passed on to international markets. If a country is specialized in the production of labour intensive goods, the power to pass prices to international markets will be low and

international market shares are lost in response to higher wages. This is because rising wages are translated to a larger extent into rising production costs as wage costs account for a larger share of overall costs. Hence, wage growth in countries with labour-intensive production such as Italy, Greece, or Portugal accelerated the loss of competitiveness relative to countries with capital-intensive production such as Germany. This effect is particularly strong in the euro area, where a common monetary policy and integrated capital markets provide almost equal capital costs (ECB 2008).

As shown in Figure 3, capital intensity in the euro area differs significantly between Germany, Austria and France at the top and Greece, Spain and Portugal at the bottom. Notably, the capital per worker ratio in Portugal is almost one third of the German one. Labour productivity of bottom group countries is much lower than in capital-intensive countries. Theoretically, low productivity growth needs to be compensated by lower wage increases. Squares mark countries with high relative unit labour cost growth since 1999. They indicate that relative wage growth was not accompanied by relative labour productivity gains in Greece, Italy, Spain and Portugal. Productivity growth in Ireland is likely to have been influenced by the fast growth of the financial sector and therefore can be expected to be corrected in the years to come.

Third, the nature of competition and the heterogeneity of goods matter. Non-price competition based on diversified goods and quality allows higher prices in international markets as customers are willing to offer an extra pay for special characteristics of goods (Aiginger 2000). In this case, firms are able to shift higher wage costs to international customers. Such kind of quality competition dominates in high technology and high skill industries (Aiginger 2000). In contrast, low technology and low skill (labour-intensive) industries mostly compete by prices. In the latter case wage growth is more harmful because competition with low labour cost countries, such as the new EU members or East Asian emerging markets is fiercer. With rigid labour markets, unemployment tends to rise, and to become structural and long lasting. In the euro area, Portugal, Spain, Greece, and to some extent Italy rely mainly on low-tech and medium-tech exports (ECB 2005, Baumann/di Mauro 2007). They have suffered from price competition from new EU member countries and East Asia (Bennett/Zarnic 2008). Current account deficits have gradually increased.

Figure 3 - *Capital intensity versus labour productivity in the euro area, 2007* [3]



Source: European Commission, AMECO. Squares mark Countries with relative high ULC Growth since 1999.

2.4. The role of the non-tradable sector

Although the divergences in euro area competitiveness have become visible in the tradable sector, there is a need for adjustment in the non-tradable sector for two reasons. First, non-tradable goods (i.e. services) such as logistics, IT, construction, personnel and financial services are used as inputs for the production of tradable goods. Rising prices in the non-tradable sector push up the costs in the tradable sector. Second, price increases in the non-tradable sector fuel inflation (López-Salida et al 2005) which reduces the purchasing power of wages in the tradable sector. Trade unions in the tradable sector claim inflation compensation in the wage bargaining process. By these second-round effects the production costs of tradable goods increase and competitiveness is eroded. This corresponds to a kind of reversed Balassa-Samuelson setting where rising wages in the non-tradable sector trigger wage adjustment in the traded goods sector, which erodes competitiveness in international markets.

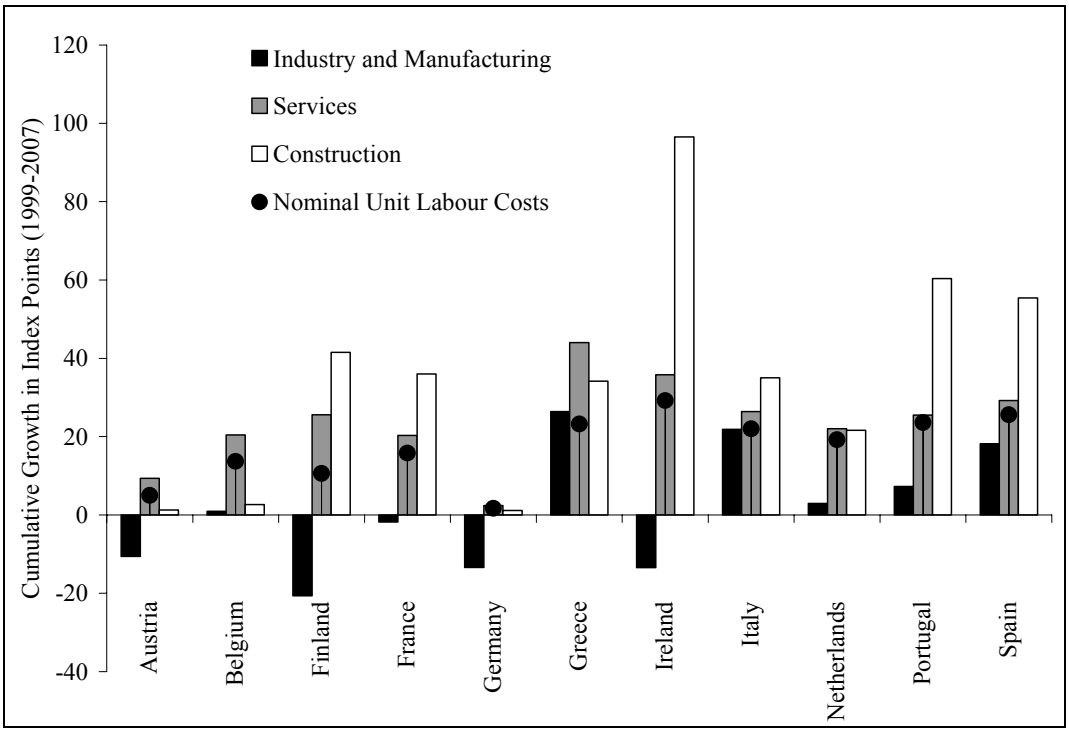
Figure 4 supports this view and provides evidence that the non-tradable sector contributed significantly to competitiveness divergence in Europe. It displays cumulative growth of sectoral unit wage costs[4] in percent from 1999 to 2007 for eleven core euro area countries subdivided by sector. While industry and manufacturing are classified as tradable sectors,

[3] High labour productivity and capital intensity in Ireland is due to the financial sector, which will probably shrink during the current financial crisis.

[4] Unit wage costs as defined by the European Commission are equivalent to the compensation of employees in sector *i* divided by gross value added of sector *i*.

services and construction are defined as non-tradables. The black dot indicates the cumulative nominal labour cost growth within the period. In countries whose competitiveness has deteriorated since 1999, as measured by high overall unit labour cost growth, unit wage cost growth in services and construction exceeded that in industry and manufacturing by far. In contrast, in Germany and Austria unit wage costs in the service and construction sectors have increased only moderately which contributed to low overall unit labour cost growth as argued by the European Commission (2006).

Figure 4 - *Nominal unit wage costs by major sectors and overall unit labour costs, cumulative changes in index points 1999-2007*



Source: European Commission, AMECO.

3. Structural reforms, market forces, and competitiveness adjustment

The pivotal role of labour markets for a reduction of intra-euro area imbalances raises the question of how more labour market flexibility can be achieved. We first analyse how national governments can enhance labour market flexibility by public structural reforms. Then, we investigate potential responses of the private sector to deteriorating competitiveness.

3.1. Public structural reforms

Public structural reforms play an important role in restoring competitiveness and in reducing intra-euro area imbalances. They increase labour market flexibility by improving labour market institutions. In particular, the adequate choice of labour market institutions is crucial for a good labour market performance because it affects the reservation wage[5] and the wage bargaining power of employees (Arpaia/Mourree 2005, Nickell/Layard 1993). High labour market flexibility increases the responsiveness of the labour market to the current account balance.

A radical straightforward reform strategy is to relax employment protection and to reduce unemployment benefits. First, less employment protection increases employers' flexibility when responding to changes in demand via lay-offs. This reduces workers' bargaining power and facilitates wage cuts in the face of recession. Either employment or wages or even both of them will be more volatile over the business cycle (Bentolila/Bertola 1990, EC 2006). In particular, in a monetary union lower employment protection necessitates wage flexibility because monetary policy cannot address idiosyncratic shocks. The adjustment speed increases and unemployment is diminished. Second, lower unemployment benefits raise the incentive of unemployed labour force to accept jobs at a lower wage because the reservation wage as the implicit minimum wage is reduced. This in turn enhances price competitiveness for labour-intensive and low technology production as unit labour costs fall.

Nevertheless, reducing labour protection may not be the first-best solution to restore competitiveness. The European Commission (EC 2006) argues that given more flexible labour markets, volatility of unemployment rises with indeterminate effects on structural unemployment over the business cycle. Yet, structural reforms should assure an adjustment of competitiveness by holding unemployment low. In this context, Acemoglu and Shimer (2000) show that risk averse workers tend to accept lower wages in return for a higher employment probability which encourages enterprises to create low wage and low productivity jobs. Both, structural unemployment and overall productivity decline (see also Arapaia/Mourre 2005). In contrast, more generous unemployment benefits can influence productivity positively by creating more capital-intensive jobs (Acemoglu 2001).

To address these caveats, structural reforms could be supported by productivity improvement, for instance by active labour market policies such as better education and

[5] As defined as the lowest wage at which workers accept a particular type of job.

training to arrive at a skilled labour force. Unemployed labour could be retrained for a changed labour market demand. This argument corresponds with the European Commission's flexicurity approach which asks member states to improve labour market flexibility (wages and mobility), to balance employment protection and security in the labour market, as well as active labour market policy (EC 2007).

Beyond labour markets, product market deregulation increases the competitiveness adjustment pressure as the responsiveness of prices and wages to changes in the market environment increases (Bayoumi/Laxton/Pesenti 2004). The European single market program has already increased competition by streamlining the regulations in the EU tradable sector and dismantling trade barriers such as tariffs and exchange rate fluctuations. However, competition in the non-tradable sector is still limited (EC 2007) and national price levels have tended to diverge rather than to converge (Deutsche Bundesbank 2009).

Despite the need for structural reforms, they tend to be delayed by political reform costs and/or a relaxed budget constraint. Political reform costs are arising for instance from opposition by insiders and/or outsiders (Saint-Paul 2004, Alesina/Ardagna/Trebbi 2006). Employed labour force opposes labour market reforms as rents in form of a high reservation wage are lost. The government faces protests and strikes as most prominently experienced in France. In this context, as politicians are concerned about their re-election, the time asymmetry of reform costs and benefits matters. Costs of reforms (in terms of voters' discontent) arise immediately but benefits are reaped in the future, possibly after elections (Conesa/Garriga 2003).

The upshot is that politicians tend to postpone reforms and try to fight rising unemployment resulting from low competitiveness by fiscal expansion. The opposition against additional government debt is less as costs imposed by higher taxes or higher inflation are postponed after elections. This ability to postpone reforms via higher government expenditure is lower in times of economic downturns when the resources for fiscal expansion are depleted (Drazen/Grilli 1993). Then political groups will more easily accept reforms as costs of non-reforming are more evident and room for fiscal expansion is small. Additionally, the common currency in the euro area disables the escape route of monetary expansion and devaluation to increase competitiveness temporarily (Belke/Herz/Vogel 2006, Bertola 2008). Governments are forced to reform which refers to the "there is no alternative" (TINA) argument. In contrast, bail-outs of single EMU members and outright government bond purchases by the ECB would be equivalent of postponing national reform efforts.

3.2. Private sector adjustment

In contrast to the government, the private sector generally tends to adjust earlier to deteriorated international competitiveness because of its tighter budget constraint. As declining competitiveness translates into lower or negative profit margins, pressure by shareholders and capital lenders forces private enterprises to restructure. Usually, the main pillar of such private adjustment will be to cut unit labour costs, which may incorporate a larger capital stock, better technology, less employment and/or lower wages. With flexible labour markets, wage costs can easily be adjusted within the wage bargaining process. In contrast, inflexible labour markets force private enterprises to lay off workers. Both cases increase competitiveness and the current account is balanced.

There are several ways of restructuring. First, the private sector can increase productivity by substituting capital for labour. Wage costs per unit of output, i.e. unit labour costs, decline but unemployment tends to increase. Figure 5 shows the difference in the degree of substitution of labour by capital, henceforth called labour-capital substitution, between Germany and Italy as well as the real exchange rate and the bilateral trade balance between both countries since 1992. As shown by the downward-sloped smoothed bold line, Germany substituted more capital for labour than Italy. This gap was especially large in the 1990s.

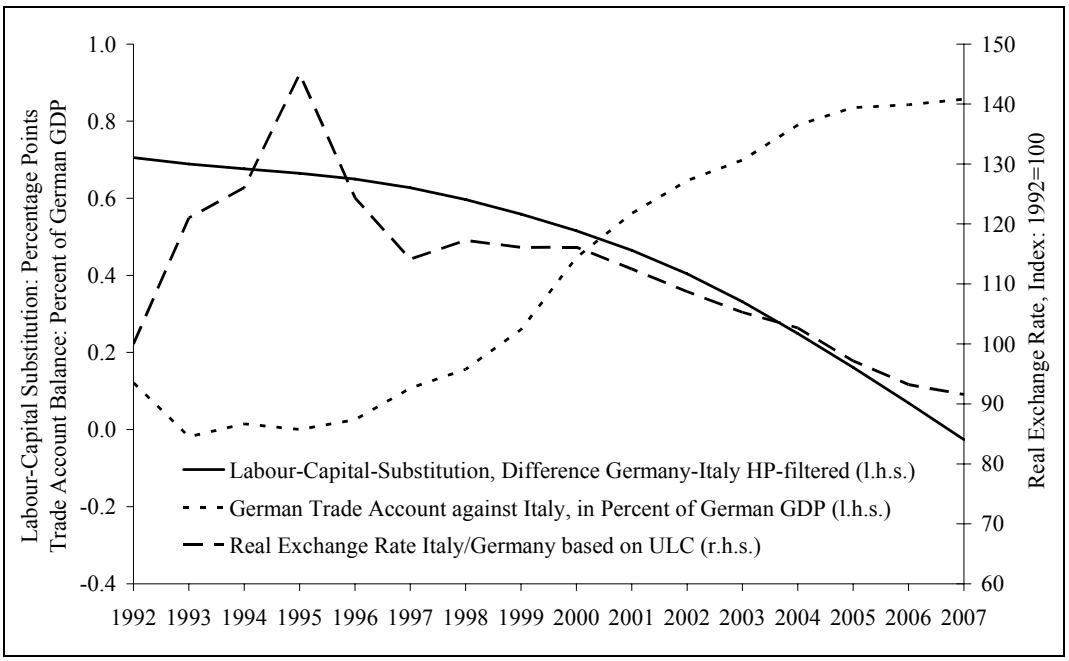
Germany suffered from a strong real appreciation of the Deutschmark in the late 1980s and during its unification boom which deteriorated German competitiveness and trade balance. A faster speed of labour-capital substitution helped to restore competitiveness of the German economy, as indicated by the real depreciation and the improved trade account. After the introduction of the euro in 1999, relative labour-capital substitution continued which can be interpreted as the response to an overvalued entry of the mark into the monetary union (EC 2008). The rise of German competitiveness continued until the financial crisis started in mid-2007 and even accelerated in 2008, when substantial competitiveness gaps within the euro area became apparent by rising spreads on euro area countries' government bonds.

Second, unit labour costs can be cut by international outsourcing of labour-intensive production via FDI (off-shoring)[6] and/or importing labour-intensive intermediates (Farrell 2004). For instance, Daveri and Jona-Lasinio (2008) estimate that off-shoring of intermediate good production contributed significantly to overall productivity growth in Italy. For Germany, Sinn (2004) coined the concept of a Bazaar economy, arguing that German

manufacturers have extensively made use of off-shoring and imports of intermediates to improve competitiveness, leading to unprecedented trade surpluses. Hence, the share of imported intermediate goods rose to over 50 percent of export values in 2007 (Sinn 2007). Companies have increased their competitiveness by reducing firm unit labour cost at the cost of domestic manufacturing employment (Farrell 2004, Sinn 2007).

Summarizing, both private market adjustment and structural reforms have the potential to increase competitiveness and to reduce intra-euro area imbalances via more flexible labour markets. Unit labour cost moderation at the firm level is the main driving force of the adjustment process. Both structural reforms and private market adjustment should lead to a rather similar outcome with respect to current account balances, but impose different costs in terms of political reform costs or unemployment. However, structural reforms influence the degree of labour market flexibility and therefore determine how competitiveness will adjust by setting the "rules of adjustment". Flexible labour markets allow direct relative wage adjustment. In contrast, rigid labour markets force the private sector to adjust via labour-capital substitution and/or off-shoring.

Figure 5 - *Labour-capital substitution and the real exchange rate*[7]*, Germany versus Italy*



Source: European Commission, AMECO and own calculation based on IMF, IFS and OECD, EO.

[6] According to IMF (2007: 164), off-shoring or offshore outsourcing is defined by the movement of parts of production to less costly foreign locations.

[7] As a real exchange rate variable we use a rate based on unit labour costs, which is highly correlated with a CPI based real exchange rate variable. In Figure 5, an appreciation corresponds to an increase of the index.

4. Empirical analysis

Taking our analysis in sections 2 and 3 as a starting point, we test the impact of private market adjustment and structural reforms on competitiveness of the euro area member countries in a coherent econometric panel framework. We also assess the empirical significance of potential interdependences (complementarity vs. substitutability) between both types of efforts. In this context, we test the following hypotheses:

1. *Structural reforms and private market adjustment foster international competitiveness.* This hypothesis tests the impact of both efforts in promoting competitiveness as described in section 3.1 and 3.2.
2. *Structural reforms modify the characteristics of the competitiveness adjustment process.* Here we test whether there is a interdependence between public structural reforms and private market adjustment.
3. *The effectiveness of structural reforms and private market adjustment has been affected by the European Monetary Union.* Here, we take the OCA literature as a starting point suggesting that EMU has reinforced the need for structural reforms.

4.1. Data and variables

We estimate the impact of private market adjustment and structural reforms on competitiveness in the euro area based on a dynamic panel of bilateral yearly differences of eleven euro area countries.[8] The sample period covers the period from 1991 to 2007. Since we work with annual data, we arrive at a maximum number of 1870 observations. Due to missing data, the sample becomes smaller. As international competitiveness of countries is defined as a measure of one country relative to another country, we will use relative variables, for instance Italian competitiveness against Germany or Spain, throughout the empirical analysis.

Indicators of international competitiveness

The OECD defines international competitiveness as *"...a measure of a country's advantage or disadvantage in selling its products in international markets"* (OECD 2008). This wide definition includes many variables that affect the macroeconomic performance of a country

[8] Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain.

(Durand/Simon/Webb 1992). These variables include a wide variety of competitiveness measures such as real exchange rates, unit labour costs and competitiveness indices.

As our research focuses on intra-euro area current account imbalances, we use bilateral *trade account balances* (TAB)[9], in percent of national GDP, to measure "realized" competitiveness. An advantage is that trade data also display the technical and quality competitiveness of a country's export sector. Similarly, they implicitly mirror competitiveness of the domestic sector whereas changing consumption patterns are not controlled for. As usual, structural reforms are assumed to promote exports and/or to decrease imports as the domestic competitiveness rises. Due to a lack of data, we cannot include trade in services or bilateral current account balances. We control for business cycle effects and nominal price effects by adding private consumption[10] and export price inflation.

Structural reforms

The measurement of structural reforms is not easy and its discussion fills many pages. Earlier empirical papers on structural reforms (Belke/Herz/Vogel 2006) use the Economic Freedom of the World Index as indicators for structural reforms. The index measures economic freedom cardinally. An advantage of this index is the disaggregation in different policy areas. However, data are only available in five year frequencies before the year 2000 and the variations over time as well as between countries are small. Duval and Elmeskov (2006) calculate a binary reform index based on an OECD database on structural reforms. This method mirrors explicit structural reforms but it does not account for the scope of a reform. Due to these shortcomings of indices on structural reforms, we use the following macroeconomic indicators as proxies for public structural reforms and assume that these macroeconomic indicators display the performance of accumulated previous public structural reforms.

First, we use *structural unemployment* measured by the non-accelerating wage rate of unemployment (NAWRU) which is the unemployment rate consistent with constant wage inflation and which reflects structural imbalances in labour markets. However, calculations on structural unemployment depend on the estimation concept used. We include both calculations from the OECD and the European Commission to check for robustness. We

[9] Bilateral current account data are not available.
[10] We use the change in private consumption, as it might have a direct impact on the trade balance and it is highly correlated with real GDP growth.

assume that declining structural unemployment is due to (past) structural labour market reforms.

Second, *social benefits* (SB) in percent of GDP are used as proxy for cumulated past structural reforms concerning the welfare system, especially unemployment compensation. Large social benefits are associated with moral hazard and inefficient allocation of public transfers. Additionally, social benefits can act as an implicit minimum wage. A reduction of social benefits increases the pressure for wage moderation by boosting the incentive of unemployed to accept job offers at lower wages. Both, lower structural unemployment and lower social benefits are assumed to be correlated with an increase in international competitiveness.

To enhance the readability of our estimation results we multiply both proxies with (-1). Then higher realisations of (-1)*NAWRU or (-1)*SB are now equivalent to more structural reforms. We expect both proxies to be positively correlated with bilateral trade balances.

Private restructuring

To measure private restructuring we use six different proxies. First, private market adjustment, such as increasing productivity or wage moderation, target *unit labour costs*, which are therefore seen as an important determinant of competitiveness. Hence, we apply changes in unit labour costs (ULC) as a proxy of private restructuring of the enterprise sector. Second, we use the nominal *compensation rate* (NCR) which measures wage costs including fringe benefits[11]. Again, both indicators are multiplied by (-1). Third, we test for the impact of *productivity* (PROD) and, fourth, the degree of *labour-capital-substitution* (LABCAP) on the trade account. These latter two variables are not multiplied by (-1).

It is difficult to find a proxy for *off-shoring*. Off-shoring is mostly measured at a highly disaggregated level. For example, IMF (2007) and Daveri and Jona-Lasinio (2008) use input-output data for their analyses; Goerg, Hanley and Strobl (2008) base their empirical analysis on plant level data. Both data sets do not fit for our analysis since data are not available for all countries during the observation period. Therefore, we use as fifth variable outward FDI in percent of GDP as a proxy of off-shoring, based on the assumption that off-shoring as proxy

[11] Compensation includes employer's contribution to statutory social security schemes or to private funded social insurance schemes and unfunded employee social benefits paid by employers in the form (such as children's, spouse's or payments made to workers because of illness, accidental injury).

for private restructuring is associated with increasing outward FDI. This approach excludes off-shoring that is not linked to FDI such as outsourcing of services to firms abroad or increasing imports of intermediate products.

Sixth, we measure *technological competitiveness* by making use of the Balassa index of Revealed Comparative Advantage (RCA) (Balassa 1965), which accounts for a relative export share in an industry compared to all countries.[12] We calculate the RCA indicator for ten industries of each country and aggregate over industries by classifying all industries according to the kind of technology used. Thereby, we multiply the RCA variable by 1 for higher technology industries and by -1 in case of lower technology industries.[13] The differentiation in "higher technology (high and medium-high technology)" and "lower technology (low and medium-low technology)" follows Baumann and di Mauro (2007: 23). Our final ranking of countries with respect to the industrial specialisation is quite similar to that gained by Baumann and di Mauro (2007).

Control variables

To control for business cycle effects in bilateral trade data we use private consumption. As nominal trade account data are also influenced by nominal prices, we control for relative price developments by relative export price inflation. A dummy variable accounts for a possible structural break at the start of EMU. The dummy is set equal to one for all years in which a country is member of the EMU.

[12] The Revealed Comparative Advantage is calculated as written below, were m indicates sectors and i countries: $m \in (1,n),\ i \in (1,j)$.

$$RCA_{m,i} = \frac{\frac{X_{m,i}}{\sum_{m=1}^{n} X_{m,i}}}{\frac{\sum_{i=1}^{j} X_{m,i}}{\sum_{i=1}^{j}\sum_{m=1}^{n} X_{m,i}}}$$

[13] Industry 9 (Commodities and Transactions, n.e.s.) is multiplied by 0 as it cannot be explicitly classified as a lower or higher technology branch.

4.3. Empirical model

To analyse the impact of structural reforms and market adjustment on international competitiveness, we use three regression specifications. We test for our first hypothesis that structural reforms and private market adjustment affect international competitiveness by the following equation:

$$(1) \qquad C_{k,t} = \beta_0 + \beta_1 C_{k,t-1} + \beta_2 L_{k,t-1} + \beta_P P_{k,t} + \beta_G G_{k,t} + \beta_X X_{k,t} + \beta_d d_{k,t} + \varepsilon_k + \mu_{k,t}$$

where $C_{k,t}$ denotes a vector of changes in bilateral trade account balances with $C_{k,t} = \left(\frac{TAB_{i,j,t}}{GDP_{i,t}} - \frac{TAB_{i,j,t-1}}{GDP_{i,t-1}} \right)$. The indices i and j identify countries, t denotes time, and k is the cross-section index of country pairs. $P_{k,t}$ represents the vector of proxies for private market adjustment, $G_{k,t}$ stands for a vector of proxies for structural reforms, and $X_{k,t}$ captures a set of control variables. Additionally, we include the one-period lagged dependent variable for a dynamic model setting as well as the level of the trade account balance (L) lagged by one period to account for initial problem pressure. We expect that the higher a trade deficit is, which indicate low competitiveness, the higher will be the probability of public structural reforms or private restructuring as the need for adjustment is especially necessary. The vectors $P_{k,t}$, $G_{k,t}$ and $X_{k,t}$ are expressed as change in the bilateral absolute differences between country i and j, with:

$$(2a) \qquad P_{k,t} = \left(\Delta P_{i,t} - \Delta P_{j,t} \right)$$

$$(2b) \qquad G_{k,t} = \left(\Delta G_{i,t} - \Delta G_{j,t} \right)$$

$$(2c) \qquad X_{k,t} = \left(\Delta X_{i,t} - \Delta X_{j,t} \right).$$

This variable transformation generates stationary time series to avoid spurious regression. Panel unit-root tests (Levin/Lin/Chu 2002, Im/Pesaran/Shin 2003) for the transformed variables reject non-stationary nature of all independent variables. The dummy variable d controls for the impact of EMU on competitiveness. We account for unobserved heterogeneity using cross-section fixed effects ε_k. $\mu_{k,t}$ is the white noise error term.

Hypothesis one is corroborated if the coefficient β_G of public structural reforms, (-1) NAWRU and (-1) SB, reveals a positive sign. This would indicate that structural reforms in a

country tend to enhance international competitiveness as measured by bilateral trade balances. The estimated coefficients of private market adjustment, β_P, are expected to have a positive sign, too.

We test our second hypothesis that structural reforms influence the private adjustment process by scrutinizing the interrelations between market adjustment and structural reforms via adding an interaction term $P_{k,t}G_{k,t}$. This yields:

$$(3) \qquad C_{k,t} = \beta_0 + \beta_1 C_{k,t-1} + \beta_2 L_{k,t-1} + \beta_P P_{k,t} + \beta_G G_{k,t} + \beta_A P_{k,t} G_{k,t} + \beta_X X_{k,t} + \beta_d d_{k,t} + \varepsilon_k + \mu_{k,t}$$

Thereby we test, whether the relationship between the dependent variable $C_{k,t}$ and the independent variable $P_{k,t}$ is influenced by the third independent variable $G_{k,t}$ (Jaccard/Turrisi 2003). Such interaction effects can be isolated by product terms of the independent variable $P_{k,t}$ (focal variable) and the second independent variable $G_{k,t}$ (moderator variable). Note, that the interpretation of regression coefficients changes. With an eye on our own estimations, the interpretation of regression coefficients can be summarized as follows (Jaccard/Turrisi 2003): β_P captures the effect of $P_{k,t}$ on $C_{k,t}$ when $G_{k,t} = 0$, β_G estimates the effect of $G_{k,t}$ on $C_{k,t}$ when $P_{k,t} = 0$, and β_A indicates the number of units that β_P increases/decreases if $G_{k,t}$ grows by one unit.[14]

Generally, we cannot reject the hypothesis that public structural reforms affect the private adjustment process if β_A becomes statistically significant. If the estimated coefficient of the interaction between structural reforms and private restructuring β_A has (not) the same sign as the estimated coefficient of private restructuring β_P, then it indicates a complementary (substitutive) relationship between public structural reforms and private restructuring.

We test our third hypothesis that the effectiveness of structural reforms and private market adjustment to balance competitiveness has been affected by membership in the European Monetary Union by adding an interaction term $P_{k,t}d_{k,t}$ which interlinks private market adjustment and the EMU dummy variable. Alternatively, we use an interaction term $G_{k,t}d_{k,t}$ measuring the impact of EMU on public structural reforms. The regression equations are:

[14] The contrary explanation is possible: β_A indicates the number of units that β_g increases/decreases if $P_{k,t}$ grows by one unit. However, we assume in our theory that public structural reforms affect the private adjustment process.

(4a) $$C_{k,t} = \beta_0 + \beta_1 C_{k,t-1} + \beta_2 L_{k,t-1} + \beta_P P_{k,t} + \beta_G G_{k,t} + \beta_{A1} P_{k,t} d_{k,t} + \beta_X X_{k,t} + \beta_d d_{k,t} + \varepsilon_k + \mu_{k,t}$$

(4b) $$C_{k,t} = \beta_0 + \beta_1 C_{k,t-1} + \beta_2 L_{k,t-1} + \beta_P P_{k,t} + \beta_G G_{k,t} + \beta_{A2} G_{k,t} d_{k,t} + \beta_X X_{k,t} + \beta_d d_{k,t} + \varepsilon_k + \mu_{k,t}$$

Based on these specifications, we estimate the effect of EMU membership on the impact of private market adjustment and public structural reforms on competitiveness. Positive signs of the estimated coefficients β_{A1} and β_{A2} indicate a rising importance of private market adjustment or of structural reforms since the start of the European Monetary Union.

We estimate the three specifications (1), (3) and (4) based on a dynamic panel model by means of a System-GMM estimator (Arellano/Bover 1995, Blundell/Bond 1998) to account for possible endogenous variables, fixed effects and heteroskedasticity. In contrast to the Difference-GMM (Arellano/Bond 1991), the System-GMM addresses poor performance of first-differenced-variable instruments. Our data set fits the requirement of a relatively small time dimension (max. 17 points in time) and many cross sections (110 country pairs). We hold the number of instruments at a minimum to enhance the discriminating power of post-estimation over-identification tests. All variables are assumed endogenous except the EMU dummy, which we treat as exogenous for obvious reasons. The presented results are derived from robust two-step estimations, which have been corrected for potential bias of standard errors due to small sample size (Windmeijer 2005).

In order to arrive at a valid model specification the null hypotheses of the Arellano-Bond AR(2) correlation test[15] and the Hansen over-identification test (Hansen 1982) have to be rejected. As we use a robust estimation, the Sargan over-identification test (Sargan 1958) becomes inconsistent (Roodman 2006: 12). Hence, we only report the empirical realisations of the Hansen test statistic. To check for the validity of our model specification, we also perform specifications, which include additional time dummies (Roodman 2006). That improves the autocorrelation tests and the robustness of standard errors.[16] As the overall pattern of our results is untouched by this specification, only results based on specifications excluding deterministic time dummies are reported.

[15] It is important to note that the absence of AR(2) is the necessary condition for unbiased and efficient estimation with GMM-SYS, but not of AR(1). First order residual autocorrelation in the starting equation is no problem since the estimators work with first differences. Hence, the significance of AR(1) autocorrelation does not limit the validity of our results.

[16] We use time dummies to make the assumption of no autocorrelation across individuals in the idiosyncratic disturbances more likely to hold (Roodman 2006).

4.4. Estimation results

Hypothesis 1: Do structural reforms and private market adjustment foster competitiveness as measured by bilateral trade balances?

Our estimation results related to hypothesis one are reported in Table 1 for the indicator *structural unemployment* and in Table 2 for the indicator *social benefits*. As estimation results for structural unemployment differ little between AMECO and OECD data, we provide only results for the AMECO data. Results for OECD data are shown in the Appendix. In general, the coefficients of the variables measuring the impact of private market adjustment on bilateral trade balances have the expected signs, although their levels of significance are low. Only the coefficients of productivity (column 3) and the nominal compensation rate (column 7) are significant at the common levels. In contrast, the estimated coefficients of structural reforms turn out to be positive and significant in almost all estimations. Especially, a reduction of structural unemployment relative to the partner country is linked to an improvement of the trade balance.

The estimated coefficients of the macroeconomic control variables corroborate the robustness of our estimation results. For instance, a relative increase in private consumption and relatively lower export prices reduce the bilateral trade balance. The coefficients of the EMU dummy are always negative and in several cases significant. This piece of evidence reflects that after the start of EMU, bilateral trade balances in the majority of countries declined more rapidly. In short, this mirrors the development of intra-euro zone current account imbalances since 1999 between Germany as a net creditor country and Spain, Italy, Portugal, France and Ireland as net debtor countries.

Overall, our results widely confirm our hypothesis that in general structural reforms and private market adjustment tend to foster international competitiveness and increase the trade balance. This evidence is strong for structural reforms and weak for private market adjustment. The weak evidence for private market adjustment might reflect the fact that capital inflows (from Germany) allowed to postpone private restructuring in the majority of EMU members.

Table 1 –*Regression results: impacts of private market adjustment and structural unemployment (AMECO data) on competitiveness*

dependent variable:	Δ bilateral trade balance						
	#	1	2	3	4	5	6
market adjustment	Δ (-1)*nominal compensation rate	0.436					
		(0.309)					
	Δ (-1)*unit labour costs		0.000				
			(0.002)				
	Δ productivity			**0.011****			
				(0.005)			
	Δ labour capital substitution				-0.014		
					(0.012)		
	Δ FDI					-0.001	
						(0.003)	
	Δ RCA						-0.000
							(0.001)
structural reforms	Δ (-1)*structural unemployment (AMECO data)	**0.037***	**0.037****	**0.047****	**0.035*****	**0.067***	0.029
		(0.019)	(0.015)	(0.020)	(0.014)	(0.035)	(0.019)
macro variables	Δ trade balance (t-1)	**-0.141***	**-0.189*****	**-0.164****	**-0.154****	**-0.187****	**-0.244*****
		(0.072)	(0.070)	(0.081)	(0.075)	(0.074)	(0.065)
	trade balance (t-1)	0.016	0.022	0.023	0.017	0.019	**0.059*****
		(0.014)	(0.015)	(0.015)	(0.013)	(0.019)	(0.017)
	Δ private consumption	**-0.010*****	**-0.013*****	**-0.015*****	**-0.014*****	**-0.013*****	**-0.014*****
		(0.003)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
	Δ export prices	**0.006*****	**0.008*****	**0.007*****	**0.008*****	**0.008****	0.004*
		(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
	EMU dummy	-0.015	**-0.023****	-0.019	-0.022	**-0.039***	-0.007
		(0.012)	(0.011)	(0.013)	(0.014)	(0.020)	(0.010)
	constant	0.003	**0.016***	0.007	0.010	0.026	0.009
		(0.008)	(0.008)	(0.010)	(0.009)	(0.016)	(0.007)
model specification	N	1643	1720	1720	1720	1396	1502
	instruments	26	30	30	27	28	25
	AR (2)	0.962	0.627	0.801	0.869	0.217	0.403
	Hansen (p-value)	0.638	0.526	0.400	0.647	0.216	0.630

Robust standard errors are reported in parentheses. *, ** and *** indicate significance of 10%, 5% and 1%.

Table 2 – *Regression results: impacts of private market adjustment and social benefits on competitiveness*

dependent variable:	Δ bilateral trade balance						
	#	7	8	9	10	11	12
market adjustment	Δ (-1)*nominal compensation rate	**0.568***					
		(0.309)					
	Δ (-1)*unit labour costs		0.001				
			(0.004)				
	Δ productivity			-0.001			
				(0.005)			
	Δ labour capital substitution				-0.014		
					(0.013)		
	Δ FDI					-0.002	
						(0.003)	
	Δ RCA						-0.000
							(0.001)
structural reforms	Δ (-1)*social benefits	**0.012***	**0.013****	**0.012****	0.009	**0.027****	0.003
		(0.007)	(0.006)	(0.006)	(0.007)	(0.013)	(0.007)
macro variables	Δ trade balance	**-0.143***	**-0.192*****	**-0.152***	**-0.137***	**-0.201*****	**-0.251*****
	(t-1)	(0.078)	(0.070)	(0.079)	(0.078)	(0.074)	(0.061)
	trade balance	0.017	0.026	0.021	-0.014	0.011	**0.066*****
	(t-1)	(0.016)	(0.016)	(0.015)	(0.015)	(0.023)	(0.015)
	Δ private consumption	**-0.008*****	**-0.014*****	**-0.016*****	**-0.017*****	**-0.017*****	**-0.014*****
		(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)
	Δ export prices	**0.005*****	**0.006****	**0.007*****	**0.008*****	**0.009*****	**0.005***
		(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)
	EMU dummy	-0.013	**-0.018***	-0.012	**-0.022***	**-0.027****	-0.003
		(0.009)	(0.011)	(0.010)	(0.013)	(0.013)	(0.009)
	constant	0.000	0.007	0.004	0.007	0.015	0.003
		(0.007)	(0.008)	(0.009)	(0.011)	(0.012)	(0.008)
model specification	N	1643	1720	1720	1720	1396	1520
	instruments	27	32	26	28	28	26
	AR (2)	0.943	0.615	0.854	0.962	0.188	0.367
	Hansen (p-value)	0.513	0.145	0.447	0.385	0.216	0.402

Robust standard errors are reported in parentheses. *, ** and *** indicate significance of 10%, 5% and 1%.

Hypothesis 2: Reforms as a propagation mechanism for the adjustment of competitiveness?

The estimation results for our hypothesis two are shown in Tables 3 and 4. The coefficients of the interaction term between private market adjustment and structural reforms are reported in the grey highlighted rows. Some coefficients of the interaction terms are negative and significant suggesting a substitutive relationship: Less public structural reforms require more private market adjustment and vice versa. An alternative interpretation is that private market adjustment is not as necessary if public structural reforms are conducted. For FDI we find a complementary relationship (column 23). Public structural reforms increase the effectiveness of FDI to increase competitiveness. Notably, coefficients for an interaction with social

benefits partly confirm results for structural unemployment, which underlines the robustness of our results.

The estimation results indicate that we cannot reject our second hypothesis. Structural reforms tend to influence the competitiveness adjustment process. More specifically, we find mainly substitutive relationships between structural reforms and private market adjustment. Without structural reforms, private market adjustment such as relative wage cuts is necessary to improve competitiveness. According to our results, structural reforms tend to reduce this need.

Table 3 – *Regression results: impacts of private market adjustment and structural unemployment (AMECO data) on competitiveness including an interaction term between structural unemployment (AMECO data) and private market adjustment*

dependent variable: Δ bilateral trade balance							
	#	13	14	15	16	17	18
market adjustment	Δ (-1)*nominal compensation rate	**0.518***					
		(0.287)					
	Δ (-1)*unit labour costs		0.001				
			(0.002)				
	Δ productivity			**0.011***			
				(0.006)			
	Δ labour capital substitution				-0.011		
					(0.014)		
	Δ FDI					-0.001	
						(0.003)	
	Δ RCA						-0.001
							(0.001)
structural reforms	Δ (-1)*structural unemployment	**0.044****	**0.039****	**0.058*****	**0.033***	**0.081****	0.029
	(AMECO data)	(0.022)	(0.017)	(0.017)	(0.017)	(0.037)	(0.021)
	interaction term	**-0.574***	**-0.004***	0.004	**-0.030***	0.005	0.000
	(market adjustment*structural reforms)	(0.314)	(0.002)	(0.007)	(0.016)	(0.005)	(0.001)
macro variables	Δ trade balance	**-0.176*****	**-0.187*****	**-0.196*****	**-0.211*****	**-0.187****	**-0.241*****
	(t-1)	(0.063)	(0.067)	(0.066)	(0.075)	(0.075)	(0.066)
	trade balance	0.014	0.022	0.021	0.018	0.018	**0.061*****
	(t-1)	(0.013)	(0.013)	(0.013)	(0.017)	(0.018)	(0.016)
	Δ private consumption	**-0.011*****	**-0.013*****	**-0.016*****	**-0.016*****	**-0.013*****	**-0.014*****
		(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)
	Δ export prices	**0.006****	**0.008*****	**0.007*****	**0.008****	**0.008****	**0.004***
		(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
	EMU dummy	-0.021*	**-0.022****	**-0.024***	-0.016	**-0.036***	-0.007
		(0.012)	(0.011)	(0.015)	(0.013)	(0.019)	(0.009)
	constant	0.011	**0.013***	**0.016***	0.003	0.022	0.008
		(0.009)	(0.008)	(0.009)	(0.008)	(0.016)	(0.008)
model specification	N	1643	1720	1720	1720	1396	1502
	instruments	32	36	32	50	34	30
	AR (2)	0.721	0.640	0.572	0.521	0.219	0.425
	Hansen (p-value)	0.497	0.594	0.412	0.215	0.254	0.806

Robust standard errors are reported in parentheses. *, ** and *** indicate significance of 10%, 5% and 1%.

Table 4 – *Regression results: impacts of private market adjustment and social benefits on competitiveness including an interaction term between social benefits and private market adjustment*

dependent variable	Δ bilateral trade balance						
	#	19	20	21	22	23	24
market adjustment	Δ (-1)*nominal compensation rate	**0.632****					
		(0.325)					
	Δ (-1)*unit labour costs		-0.001				
			(0.005)				
	Δ productivity			-0.001)			
				(0.005			
	Δ labour capital substitution				-0.025		
					(0.017)		
	Δ FDI					-0.001	
						(0.003)	
	Δ RCA						-0.000
							(0.001)
structural reforms	Δ (-1)*social benefits	0.009	**0.018****	**0.011***	0.009	**0.031****	0.003
		(0.007)	(0.009)	(0.006)	(0.009)	(0.015)	(0.007)
	interaction term	**-0.383****	-0.001	-0.005	**-0.008***	**0.012***	-0.001
	(market adjustment*structural reforms)	(0.194)	(0.003)	(0.004)	(0.004)	(0.007)	(0.001)
macro variables	Δ trade balance	**-0.147***	-0.132	**-0.182****	**-0.132***	**-0.209*****	**-0.252*****
	(t-1)	(0.080)	(0.098)	(0.072)	(0.072)	(0.072)	(0.059)
	trade balance	0.017	0.010	0.022	-0.009	0.012	0.065***
	(t-1)	(0.017)	(0.033)	(0.016)	(0.020)	(0.025)	(0.015)
	Δ private consumption	**-0.007****	**-0.016*****	**-0.015*****	**-0.022*****	**-0.016*****	**-0.014*****
		(0.003)	(0.004)	(0.003)	(0.045)	(0.004)	(0.003)
	Δ export prices	**0.005*****	**0.006****	**0.007*****	**0.009*****	**0.009****	**0.005***
		(0.002)	(0.003)	(0.002)	(0.003)	(0.004)	(0.003)
	EMU dummy	-0.009	-0.010	-0.015	**-0.031****	-0.020	-0.002
		(0.009)	(0.013)	(0.011)	(0.014)	(0.016)	(0.009)
	constant	0.001	0.004	0.009	0.014	-0.000	0.002
		(0.007)	(0.012)	(0.009)	(0.015)	(0.017)	(0.008)
model specification	N	1643	1720	1720	1720	1396	1502
	instruments	30	25	30	29	34	30
	AR (2)	0.910	0.977	0.664	0.986	0.180	0.357
	Hansen (p-value)	0.610	0.201	0.286	0.462	0.208	0.511

Robust standard errors are reported in parentheses. *, ** and *** indicate significance of 10%, 5% and 1%.

Hypothesis 3: The effectiveness of structural reforms and private market adjustment has been affected by EMU?

The estimation results for our third hypothesis are reported in the Tables 5 and 6. Again, the rows referring to the significance of interaction terms are highlighted in grey. The coefficients for the interaction between private market adjustment and the EMU dummy are almost entirely insignificant. This suggests that EMU had virtually no impact on private enterprise restructuring. Only for the RCA variable interaction terms (columns 36 and 48) become negative significant, which indicates that the effectiveness of increasing technology competitiveness has lowered since the start of the EMU. In contrast, the coefficients for

interaction of public structural reforms with EMU dummy are clearly negative and mostly significant. This suggests that in some cases since the start of EMU the effectiveness of structural reforms to improve competitiveness declined in most euro area countries. In contrast, using the social benefit variable as a proxy of structural reforms, the estimated coefficients of the interaction terms reveal a positive sign but at low significance levels yielding weak evidence that a higher effectiveness of structural reforms (relating to social benefits) fosters an adjustment of trade balances (column 41). Seen on the whole, however, evidence of either a positive or a negative impact of EMU on effectiveness of reforms in favour of more competitiveness is weak. Therefore, we reject hypothesis three.

Table 5 – *Regression results: impacts of private market adjustment and structural unemployment (AMECO data) on competitiveness including an interaction term between structural unemployment (AMECO data) or private market adjustment and the EMU dummy*

dependent variable:	Δ bilateral trade balance											
	#	25	26	27	28	29	30	31	32	33	34	35	36
market adjustment	Δ (-1)*nominal compensation rate	**0.693****						**0.547***					
		(0.315)						(0.317)					
	Δ (-1)*unit labour costs		0.005						0.005				
			(0.004)						(0.004)				
	Δ productivity			0.010						0.005			
				(0.007)						(0.007)			
	Δ labour capital substitution				-0.002						-0.019		
					(0.017)						(0.017)		
	Δ FDI					0.001						0.003	
						(0.004)						(0.007)	
	Δ RCA						-0.000						0.002
							(0.001)						(0.001)
structural reforms	Δ (-1)*structural unemployment (AMECO data)	**0.053****	**0.067*****	**0.064****	**0.065****	0.065	**0.042****	**0.048***	**0.050*****	**0.048*****	**0.045****	**0.083****	0.030
		(0.023)	(0.026)	(0.029)	(0.027)	(0.041)	(0.020)	(0.028)	(0.019)	(0.019)	(0.023)	(0.040)	(0.025)
	interaction term (market adjustment*EMU dummy)							0.349	0.000	0.009	0.038	-0.001	**-0.005*****
								(0.474)	(0.005)	(0.010)	(0.031)	(0.007)	(0.002)
	interaction term (structural reforms*EMU dummy)	**-0.045***	**-0.064****	**-0.071****	**-0.058***	-0.064	**-0.061****						
		(0.026)	(0.030)	(0.035)	(0.030)	(0.041)	(0.025)						
macro variables	Δ trade balance (t-1)	**-0.168****	**-0.195*****	**-0.181*****	**-0.168****	**-0.189*****	**-0.253*****	**-0.139***	**-0.189****	**-0.157***	**-0.143****	**-0.194*****	**-0.247*****
		(0.071)	(0.070)	(0.070)	(0.067)	(0.072)	(0.065)	(0.078)	(0.081)	(0.092)	(0.071)	(0.072)	(0.073)
	trade balance (t-1)	0.016	0.017	0.019	0.016	0.011	**0.053*****	-0.001	0.021	0.023	0.015	0.015	**0.056*****
		(0.015)	(0.014)	(0.012)	(0.012)	(0.023)	(0.018)	(0.027)	(0.014)	(0.015)	(0.012)	(0.019)	(0.017)
	Δ private consumption	**-0.011*****	**-0.013*****	**-0.016*****	**0.014*****	**-0.014*****	**-0.015*****	**-0.013*****	**-0.012*****	**-0.015*****	**-0.015*****	**-0.012*****	**-0.014*****
		(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
	Δ export prices	**0.005****	**0.008****	**0.009*****	**0.007*****	**0.010*****	**0.007****	0.003	**0.006*****	**0.007*****	**0.009*****	0.006	**0.007****
		(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)
	EMU dummy	-0.021	**-0.025****	-0.018	**-0.023***	-0.028	**-0.019***	-0.023*	**-0.023***	-0.017	**-0.021***	**-0.038***	-0.018
		(0.014)	(0.013)	(0.015)	(0.014)	(0.018)	(0.010)	(0.013)	(0.012)	(0.016)	(0.013)	(0.020)	(0.011)
	constant	0.006	0.016	0.010	0.014	0.022*	**0.016***	0.008	0.012	0.007	0.011	0.025	0.009
		(0.009)	(0.009)	(0.009)	(0.010)	(0.013)	(0.008)	(0.010)	(0.008)	(0.010)	(0.010)	(0.016)	(0.009)
model specification	N	1643	1720	1720	1720	1396	1502	1643	1720	1720	1720	1396	1502
	instruments	34	30	40	30	29	30	27	30	38	30	36	30
	AR (2)	0.790	0.605	0.693	0.764	0.194	0.353	0.966	0.660	0.863	0.954	0.207	0.410
	Hansen (p-value)	0.300	0.245	0.145	0.194	0.351	0.352	0.528	0.462	0.674	0.567	0.137	0.237

Robust standard errors are reported in parentheses. *, ** and *** indicate significance of 10%, 5% and 1%.

Table 6 - *Regression results: impacts of private market adjustment and social benefits on competitiveness including an interaction term between social benefits or private market adjustment and the EMU dummy*

dependent variable:	Δ bilateral trade balance												
	#	37	38	39	40	41	42	43	44	45	46	47	48
market adjustment	Δ (-1)*nominal compensation rate	**0.388***						**0.468****					
		(0.223)						(0.238)					
	Δ (-1)*unit labour costs		0.001						0.002				
			(0.004)						(0.004)				
	Δ productivity			0.001						-0.001			
				(0.006)						(0.006)			
	Δ labour capital substitution				-0.023						-0.019		
					(0.014)						(0.017)		
	Δ FDI					-0.000						0.010	
						(0.002)						(0.008)	
	Δ RCA						0.001						0.003**
							(0.001)						(0.002)
structural reforms	Δ (-1)*social benefits	**0.022***	0.010	0.007	0.005	0.014	0.005	**0.014***	0.010	**0.013***	0.009	0.013	0.008
		(0.011)	(0.008)	(0.007)	(0.008)	(0.012)	(0.009)	(0.008)	(0.006)	(0.007)	(0.006)	(0.015)	(0.008)
	interaction term (market adjustment*EMU dummy)							-0.041	0.005	0.007	0.009	-0.10	-0.005***
								(0.549)	(0.007)	(0.008)	(0.019)	(0.009)	(0.002)
	interaction term (structural reforms*EMU dummy)	0.011	0.018	0.023	0.019	**0.038***	0.004						
		(0.021)	(0.018)	(0.015)	(0.015)	(0.020)	(0.020)						
macro variables	Δ trade balance (t-1)	**-0.136***	**-0.190****	**-0.161***	-0.135	**-0.206*****	**-0.247*****	**-0.175****	**-0.189****	-0.149	**-0.101****	**-0.207*****	-0.227***
		(0.078)	(0.095)	(0.094)	(0.092)	(0.074)	(0.068)	(0.089)	(0.083)	(0.092)	(0.075)	(0.073)	(0.077)
	trade balance (t-1)	0.004	0.026	0.021	0.016	0.012	**0.062*****	0.012	0.022	0.021	0.018	0.007	0.040**
		(0.025)	(0.019)	(0.013)	(0.016)	(0.023)	(0.016)	(0.032)	(0.017)	(0.018)	(0.013)	(0.023)	(0.017)
	Δ private consumption	**-0.013*****	**-0.013*****	**-0.012*****	**-0.016*****	**-0.014*****	**-0.012*****	**-0.010*****	**-0.013*****	**-0.016*****	**-0.016*****	**-0.014*****	-0.010***
		(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.030)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
	Δ export prices	**0.004***	**0.007*****	**0.007*****	**0.007*****	**0.009*****	0.004	0.003	**0.007*****	**0.007*****	0.007	**0.009****	0.008**
		(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)	(0.004)
	EMU dummy	-0.018	**-0.018***	-0.012	-0.020	**-0.025***	-0.010	-0.008	**-0.021***	-0.011	-0.018	-0.020	-0.017
		(0.012)	(0.011)	(0.012)	(0.013)	(0.014)	(0.010)	(0.013)	(0.012)	(0.012)	(0.012)	(0.014)	(0.013)
	constant	0.001	0.008	0.005	0.006	0.015	0.006	0.002	0.010	0.003	0.006	0.016	0.005
		(0.009)	(0.009)	(0.011)	(0.011)	(0.012)	(0.009)	(0.012)	(0.009)	(0.010)	(0.010)	(0.012)	(0.010)
model specification	N	1643	1720	1720	1720	1396	1502	1643	1720	1720	1720	1396	1502
	instruments	33	31	32	31	31	31	33	32	30	30	32	37
	AR (2)	0.966	0.658	0.824	0.981	0.192	0.410	0.744	0.664	0.887	0.881	0.178	0.546
	Hansen (p-value)	0.468	0.167	0.279	0.367	0.218	0.156	0.315	0.272	0.388	0.195	0.245	*0.042*

Robust standard errors are reported in parentheses. *, ** and *** indicate significance of 10%, 5% and 1%.

5. Policy implications

This paper evaluates the competitiveness adjustment process in the euro area in the light of rising intra-euro area current account imbalances, rising spreads between European government bonds and demands for monetary policy to cure financial and real distress. Our empirical estimations for euro area countries confirm a significant impact of private market adjustment, in particular wage adjustment, on competitiveness as measured by bilateral trade balances. Additionally, public structural reforms improve competitiveness, with labour market flexibility turning out to be a crucial determinant of competitiveness. We also find substitutive relationships among market adjustment and public structural reforms. There is weak evidence that in most EMU countries the effect of structural reforms for competitiveness adjustment has diminished since the since the start of EMU.

Overall, our empirical results strongly support the potential benefits of structural reforms in countries with low industrial competitiveness, which have tended to abandon fiscal policy discipline already before the crisis. With public debt at high levels, national governments cannot address competitiveness problems in the same way as they did in the past via devaluations. Therefore, policy-makers were from the beginning likely to step up pressure on the ECB to pursue an expansionary monetary policy and even quantitative easing. This, however, would increase the incentive to postpone reforms and to accumulate even more debt. With an eye on our empirical results, we therefore join Gros, Mayer and Ubide (2005) and argue in contrast to De Grauwe (2009a, b) that the only way out of the dilemma is to stick to the reform path chosen by the stronger reformers within the euro area.

Given the substantially different competitiveness gaps within the euro area, reforms should be implemented soon. The necessary adjustment process will be painful but then pass through to a timely economic recovery and less long-term unemployment. The alternative is a long period of high and painful unemployment as experienced in Germany after reunification. In this context, reform pressure and enacting reforms are unlikely to lead to a race to the bottom with respect to wage cuts, leading to a deflationary spiral. Instead, intra-euro area current account imbalances would diminish and the international competitiveness of Europe as a whole would rise, as competition among wage setters and politicians is reinforced. Moreover, this scenario neither calls for further steps towards political union nor for a coordination or centralization of wage policies at a supranational level.

The worst scenario we can think of, however, would be that the ECB would be forced very soon to engage in quantitative easing and will buy government bonds – maybe even euro bonds. Even if the spread between European government bonds is currently likely to be exaggerated due to financial panic, the ECB should not privilege the purchase of Irish, Greek, Spanish and Italian government bonds. In doing so, it would eliminate the incentives for further structural reform that these spreads create. The reason is that the denationalization of debt would lead to moral hazard and calls for a supranational fiscal bailout by governments and enterprises which have postponed reforms in the past.

Sustaining wage rigidities in under-performing euro area countries to stimulate domestic demand would not prevent these countries from turning into deflation but finally would lead to lower domestic demand and higher current account imbalances within the euro area by destroying domestic employment. This is likely to strengthen economic nationalism and therefore the likelihood of a break-up of the euro area. Hence, in order to safeguard the European integration process, we should believe in markets and put the emphasis of our political efforts on shaping incentives to enact structural reforms.

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Annex

I. Data sources

Data	Source
FDI	IMF, IFS.
GDP	OECD, Economic Outlook Database and IMF, World Economic Outlook Database.
INV	OECD, Economic Outlook Database.
labour-capital substitution	European Commission, AMECO Database.
structural unmployment (OECD data)	OECD, Economic Outlook Database.
structural unmployment (AMECO data)	European Commission, AMECO Database.
nominal compensation rate	OECD, Economic Outlook Database.
private consumption	OECD, Economic Outlook Database.
productivity	OECD, Economic Outlook Database.
social benefits	OECD, Economic Outlook Database.
bilateral trade balances, trade data for RCA	OECD, ITCS International Trade by Commodities Statistics, Rev. 3, Vol. 2007 Release 1.
export price inflation	OECD, Economic Outlook Database.

II. Estimation tables for OECD (instead of AMECO) data of structural unemployment

Table I - *Regression results: impacts of private market adjustment and structural unemployment (OECD data) on competitiveness*

dependent variable:	Δ bilateral trade balance						
	#	A1	A2	A3	A4	A5	A6
market adjustment	Δ (-1)*nominal compensation rate	**0.342****					
		(0.171)					
	Δ (-1)*unit labour costs		0.001				
			(0.005)				
	Δ productivity			**0.011****			
				(0.005)			
	Δ labour capital substitution				0.016		
					(0.011)		
	Δ FDI					-0.002	
						(0.003)	
	Δ RCA						-0.000
							(0.001)
structural reforms	Δ (-1)*structural unemployment (OECD data)	**0.035****	**0.034***	**0.036****	**0.040****	**0.061****	**0.039***
		(0.017)	(0.019	(0.017)	(0.016)	(0.029)	(0.020)
macro variables	Δ trade balance (t-1)	**-0.209*****	**-0.198****	**-0.197*****	**-0.187*****	**-0.204*****	**-0.260*****
		(0.067)	(0.083)	(0.066)	(0.070)	(0.071)	(0.060)
	trade balance (t-1)	0.027	0.025	0.023	0.019	0.015	**0.065*****
		(0.018)	(0.018)	(0.015)	(0.015)	(0.026)	(0.015)
	Δ private consumption	**-0.007****	**-0.011*****	**-0.012*****	**-0.016*****	**-0.014*****	**-0.013*****
		(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
	Δ export prices	**0.006****	**0.008*****	**0.008*****	**0.009*****	**0.009****	**0.005***
		(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)
	EMU dummy	-0.016	**-0.023***	-0.014	**-0.025***	**-0.032****	-0.010
		(0.013)	(0.012)	(0.011)	(0.014)	(0.015)	(0.009)
	constant	0.008	0.015	0.009	0.015	0.021	0.008
		(0.007)	(0.009)	(0.006)	(0.010)	(0.013)	(0.008)
model specification	N	1643	1720	1720	1720	1396	1502
	instruments	38	26	40	26	27	26
	AR (2)	0.522	0.579	0.577	0.630	0.184	0.291
	Hansen (p-value)	0.125	0.169	0.387	0.253	0.179	0.354

Robust standard errors are reported in parentheses. *, ** and *** indicate significance of 10%, 5% and 1%.

Table II - *Regression results: impacts of private market adjustment and structural unemployment (OECD data) on competitiveness including an interaction term between structural unemployment (OECD data) and private market adjustment*

dependent variable: Δ bilateral trade balance							
	#	A7	A8	A9	A10	A11	A12
market adjustment	Δ (-1)*nominal compensation rate	0.354					
		(0.275)					
	Δ (-1)*unit labour costs		0.001				
			(0.005)				
	Δ productivity			**0.010****			
				(0.005)			
	Δ labour capital substitution				-0.015		
					(0.012)		
	Δ FDI					-0.003	
						(0.003)	
	Δ RCA						-0.001
							(0.001)
structural reforms	Δ (-1)*structural unemployment	0.016	0.029	**0.044****	**0.037***	0.055	**0.043****
	(OECD data)	(0.020)	(0.029)	(0.019)	(0.021)	(0.034)	(0.022)
	interaction term	**-1.037***	**-0.020***	0.004	**-0.033****	**0.029***	0.000
	(market adjustment*structural reforms)	(0.551)	(0.012)	(0.008)	(0.017)	(0.015)	(0.002)
macro variables	Δ trade balance	**-0.202*****	**-0.180****	**-0.199*****	**-0.183*****	**-0.209*****	**0.259*****
	(t-1)	(0.065)	(0.078)	(0.063)	(0.069)	(0.069)	(0.060)
	trade balance	0.024	0.024	**0.023***	0.021	0.016	**0.065*****
	(t-1)	(0.016)	(0.018)	(0.013)	(0.015)	(0.026)	(0.016)
	Δ private consumption	**-0.008****	**-0.012*****	**-0.012*****	**-0.015*****	**-0.014*****	**-0.013*****
		(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
	Δ export prices	**0.006****	**0.008****	**0.009*****	**0.008*****	**0.009****	**0.005***
		(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)
	EMU dummy	-0.019	**-0.028****	-0.017	-0.018	**-0.051*****	-0.013
		(0.012)	(0.013)	(0.013)	(0.012)	(0.017)	(0.010)
	constant	0.012	0.017	0.009	0.007	**0.026****	0.008
		(0.009)	(0.010)	(0.006)	(0.009)	(0.012)	(0.008)
model specification	N	1643	1720	1720	1720	1396	1502
	instruments	32	30	48	30	32	30
	AR (2)	0.535	0.696	0.554	0.667	0.133	0.301
	Hansen (p-value)	0.182	0.368	0.583	0.262	0.294	0.407

Robust standard errors are reported in parentheses. *, ** and *** indicate significance of 10%, 5% and 1%.

Table III - *Regression results: impacts of private market adjustment and structural unemployment (OECD data) on competitiveness including an interaction term between structural unemployment (OECD data) or private market adjustment and the EMU dummy*

dependent variable: Δ bilateral trade balance													
	#	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24
market adjustment	Δ (-1)*nominal compensation rate	**0.393***						**0.406***					
		(0.230)						(0.221)					
	Δ (-1)*unit labour costs		-0.000						0.002				
			(0.004)						(0.003)				
	Δ productivity			0.003						0.006			
				(0.005)						(0.005)			
	Δ labour capital substitution				-0.007						-0.028		
					(0.012)						(0.022)		
	Δ FDI					0.000						**0.012***	
						(0.002)						(0.006)	
	Δ RCA						0.000						0.002
							(0.001)						(0.001)
structural reforms	Δ (-1)*structural unemployment (OECD data)	**0.033***	**0.046****	**0.036*****	**0.046*****	**0.055***	**0.033****	**0.032****	**0.025***	**0.041****	**0.038****	0.016	**0.042***
		(0.018)	(0.018)	(0.013)	(0.015)	(0.031)	(0.015)	(0.015)	(0.014)	(0.018)	(0.018)	(0.037)	(0.025)
	interaction term (market adjustment*EMU dummy)							-0.137	-0.004	0.010	0.043	**-0.011***	**-0.004*****
								(0.567)	(0.006)	(0.008)	(0.032)	(0.006)	(0.001)
	interaction term (structural reforms*EMU dummy)	-0.048	**-0.080****	**-0.055***	**-0.074****	-0.035	**-0.055***						
		(0.036)	(0.031)	(0.031)	(0.031)	(0.046)	(0.031)						
macro variables	Δ trade balance (t-1)	**-0.197*****	**-0.187****	**-0.171****	**-0.165****	**-0.194*****	**-0.256*****	**-0.206*****	**-0.202****	**-0.203*****	**-0.183****	**-0.178*****	**-0.253*****
		(0.072)	(0.082)	(0.075)	(0.067)	(0.071)	(0.063)	(0.069)	(0.086)	(0.067)	(0.074)	(0.064)	(0.066)
	trade balance (t-1)	0.023	0.021	0.021	0.015	0.008	**0.059*****	**0.029***	0.023	0.023	0.017	0.004	**0.058*****
		(0.015)	(0.016)	(0.014)	(0.014)	(0.027)	(0.017)	(0.015)	(0.016)	(0.016)	(0.014)	(0.036)	(0.016)
	Δ private consumption	**-0.008****	**-0.012*****	**-0.013*****	**-0.013*****	**-0.014*****	**-0.013*****	**-0.008****	**-0.011*****	**-0.014*****	**-0.014*****	**-0.014*****	**-0.012*****
		(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)	(0.004)
	Δ export prices	**0.006****	**0.008*****	**0.007*****	**0.009*****	**0.010*****	**0.006***	**0.005*****	**0.006*****	**0.008****	**0.011*****	**0.009*****	**0.008****
		(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)
	EMU dummy	-0.013	**-0.022****	-0.011	-0.020	**-0.028****	-0.015	-0.014	**-0.021***	-0.014	**-0.027***	-0.018	**-0.020***
		(0.012)	(0.011)	(0.009)	(0.013)	(0.014)	(0.010)	(0.014)	(0.012)	(0.014)	(0.016)	(0.014)	(0.011)
	constant	0.004	**0.015***	0.008	0.013	0.020	0.011	0.003	0.012	**0.012***	0.019*	0.011	0.011
		(0.007)	(0.008)	(0.008)	(0.009)	(0.012)	(0.008)	(0.007	(0.009)	(0.007)	(0.011)	(0.010)	(0.008)
model specification	N	1643	1720	1720	1720	1396	1502	1643	1720	1720	1720	1396	1502
	instruments	37	33	30	30	31	30	39	33	48	32	29	30
	AR (2)	0.614	0.672	0.749	0.790	0.197	0.335	0.556	0.587	0.552	0.689	0.219	0.354
	Hansen (p-value)	0.128	0.427	0.747	0.541	0.199	0.299	0.265	0.327	0.258	0.176	0.311	0.156

Robust standard errors are reported in parentheses. *, ** and *** indicate significance of 10%, 5% and 1%.

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