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Holger Zemanek, Ansgar Belke, and Gunther Schnabl¹

Current Account Balances and Structural Adjustment in the Euro Area

Abstract

In the past decade, a set of euro area countries has accumulated large current account deficits. After a brief relaxation of the euro area internal imbalances in the wake of the financial crisis, it appears as if this pattern arises anew when times normalize again and Germany still sticks to export-led growth. This issue has been labelled one of the most challenging economic policy issues for Europe inter alia by the European Commission and some other players on the EU level. In this paper, we analyse the role of private restructuring and structural reforms for the urgently needed sustainable readjustment of intra-euro area current account balances. A panel regression reveals a significant impact of structural reforms on intra-euro area current account balances. This implies that in particular structural reforms and wage restraint in notorious current account and budget deficit countries such as Greece are highly suitable to support long-term economic stability in Europe.

JEL Classification: E24, F15, F16, F32

Keywords: Structural reforms; current account balances; euro area; dynamic panel estimation; interaction term

March 2010

¹ Holger Zemanek, University of Leipzig, Institute for Economic Policy; Ansgar Belke, University of Duisburg-Essen and IZA Bonn; Gunther Schnabl, University of Leipzig, Institute for Economic Policy, and CESifo. – We thank Volker Clausen, Daniel Gros, Karsten Staehr, Thomas Steger, Michael Thiel, Paul Welfens, European Commission, DG ECFIN, and participants in the 2009 CICM Conference, London, for helpful comments and support. – All correspondence to Ansgar Belke, University of Duisburg-Essen, Campus Essen, Department of Economics, 45117 Essen, Germany, e-mail: ansgar.belke@uni-due.de.

1. Introduction

Since the creation of EMU, the intra-euro area current account balances of euro area member states have diverged steadily and significantly. While Germany has seen rising trade surpluses against other euro area countries in the years 2002 to 2007, other countries like Spain, Italy and Portugal have accumulated large current account deficits. Up to the present, this divergence of intra-euro area current accounts seems to persist and shows just slow signs of a temporary reversal in the wake of the financial crisis (de Grauwe 2009a; Gros et al. 2005; Decressin and Stavrev 2009). Only most recently after the financial crisis has severely hit the real economy, intra-euro area current account deficits and surpluses started to shrink slowly. However, the impact of national structural reforms and private market adjustment on intra-euro area current accounts has still not been analysed in the necessary depth. Our contribution tries to fill this gap.

In general, changes of the current account balance of whatever sign are no indication of malfunctioning as they reflect inter-temporal saving as well as consumption and investment preferences of private enterprises, households and governments (Obstfeld and Rogoff 1994). Additionally, business cycles, demographic developments (De Santis and Lührmann 2006) and fiscal policy are important determinants of empirical realisations of the current account balance. Furthermore, the European integration process certainly affected intra-euro area current account balances. In particular, Spain, Italy, Greece and Portugal have taken advantage of improved access to international financial markets in the wake of EMU. A rising expected rate of return (Blanchard and Giavazzi 2002), convergence of interest rates (Fagan and Gaspar 2007; Mendoza et al. 2007) and a reduced currency risk for lenders tends to accelerate domestic investment.

In contrast, some analysts interpret intra-euro area current account balances as the result of diverging competitiveness in the euro area (Argyrou and Chortareas 2006; EC 2009). They argue that the real appreciation due to wage austerity in Germany and rising wages in Southern Europe distorted the international competitiveness of Spain, Greece, and Portugal (Blanchard 2007). Absent labour market flexibility, a main mechanism to adjust competitiveness in a currency union (Mundell 1961), can therefore be drawn upon as the main reason for such large and persistent current account deficits and surpluses in the euro area (Blanchard and Giavazzi 2002; Blanchard 2007; EC 2009). However, this line of reasoning has been controversially discussed more recently. For instance, de Grauwe (2009b) argues that in the face of the crisis, flexibility represents a handicap for euro area countries

and rigidities are virtuous. His 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. But the insolvency crisis surrounding Greece and, to a lesser extent, also countries like Portugal and Spain highlighted the necessity of a grave austerity programme in order to be able to earn more from net exports than a country has to pay for interest on the debt burden. Otherwise a country cannot stabilize its debt. Greece is an excellent case in point because, for instance, its shipping industry which is heavily dependent on the business cycle heavily suffers from a competitiveness problem which has been aggravated by the financial and economic crisis. Hence, going for structural reforms and a nearly 10 percent cut of real wages was the only way out from insolvency for Greece. This insight is also highly beneficial also for countries like Portugal which cannot keep their capital stock constant any more by the cash flow it generates.

Up to now, research on this issue of structural reforms and external balances in the euro area has been quite scarce. Kennedy and Sløk (2005) analyse the role of structural policy reforms for the solution of global current account imbalances for 14 OECD countries. They find a significant but small contribution of structural policy indicators to explain current account positions. In the same context, Mussa (2005) argues that structural reforms in industrial countries are desirable as they might boost long-term growth and hence import demand. In the euro area, structural reforms affect the adjustment capacity of the currency union as a whole. Therefore, external balances will more easily readjust in the wake of shocks in general such as the introduction of the single currency or of asymmetric shocks manifesting themselves in diverging country-specific competitiveness positions. This view goes far back to the seminal paper by Mundell (1961) on optimum currency areas as well as to more recent research, such as Pissarides (1997) or Blanchard (2007).

The remainder of the paper is organised as follows. Section 2 discusses the empirical pattern of the evolution of intra-euro area current account balances. Section 3 reviews the theoretical and empirical literature on the impact of structural reforms and private market adjustment on current account balances. In section 4, we estimate the individual impacts of private restructuring and structural reforms on euro area bilateral trade accounts in a dynamic panel for 11 euro area countries for the years 1991 to 2007. Section 5 concludes with some policy implications.

2. Current account balances within the euro area

After the start of EMU in 1999, unexpectedly large intra-euro area current account balances emerged. The emerging large gap between Germany (and some smaller countries) on the one hand and most other EMU members is increasingly regarded as *the* crucial issue for the macroeconomic and political stability of the euro area (EC 2009). Accordingly, some analysts argue that intra-euro area current account balances are determined, at least partly, by asymmetric changes in the international competitiveness of euro area countries (Blanchard 2007; EC 2009). Therefore, we start with an assessment of international competitiveness as a determinant of the (speed of) adjustment of current account balances. Later on, we analyse how national policies and the international division of labour might have affected current account balances.¹

2.1. The competitiveness approach

From the perspective of competitiveness driven intra-euro area balances, Germany holds a relatively strong competitiveness position, for instance, vis-à-vis Spain since German current account surpluses vis à vis Spain have been quite large recently. In this context, the real exchange rate is the most commonly used measure of cost and price competitiveness (Lipschitz and McDonald 1992; Arghyrou and Chortareas 2006). In a monetary union with a common currency, the real exchange rate only depends on changes in relative prices between countries. A country with low competitiveness needs to undergo a real depreciation and, hence, to deflate its general price level in relative terms to regain competitiveness. Domestic products have to become cheaper as compared to foreign goods. If this is the case, exports increase, imports decrease and the current account deficit is eliminated. Conversely, a country with a competitive economy 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 re-balanced via flexible prices and wages.

¹ Economic integration in general and Eastern enlargement of the European Union in particular created a wider European single market, thereby stimulating structural adjustment and economic specialization. Borbély (2006) in some cases applies methods quite similar to ours, but takes a different perspective analyzing trade specialization patterns in the enlarged European Union with a special focus on the new EU member states and the cohesion countries. From a sectoral trade point of view, she presents empirical findings on revealed comparative advantage and a broader picture of competitiveness on the single market. Empirically identifying the determinants of successful trade specialization and taking into account the role of foreign direct investment, she offers new insights into the dynamics of trade, innovation and integration. Thus, our study complements her work in increasing our understanding of the nature of international adjustment processes.

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. 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 persistent asymmetric wage growth rates. The argument is well known and runs as follows.

According to the trade theories of factor price equalisation, trade and/or labour migration act as transmission channels for relative wage adjustment. In a country characterized by an increasing price level competitiveness, decreases and exports tend to decline (*trade channel*). Competitiveness of the home country is regained by reductions of wages whereas in the partner country exports tend to rise and labour demand is boosted which, in turn, encourages wage increases. Additionally or alternatively, parts of the labour force migrate from the country in recession to the country finding itself in a boom (*labour migration channel*)². Labour movement will continue until relative wages and relative prices are re-balanced. Both mechanisms only work efficiently if wages are flexible and/or labour mobility is high.

However, adjustment of competitiveness differences lasts longer, if prices and wages are rigid (EC 2008). Moreover, it is more costly in terms of unemployment because in cases of downward wage rigidity labour demand decreases (Blanchard 2007). In contrast, the more competitive country faces a shortage of labour. 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”. Both the speed of this adjustment process and the level of unemployment during the adjustment process depend on the degree of nominal wage rigidity and the degree of price stickiness. Such a period of competitive disinflation has often been argued to have taken place in Germany, where real wages have

² This is the main mechanism through which U.S. states adjust to unemployment. 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.

remained widely constant since the turn of the millennium after unemployment had increased to historical levels.

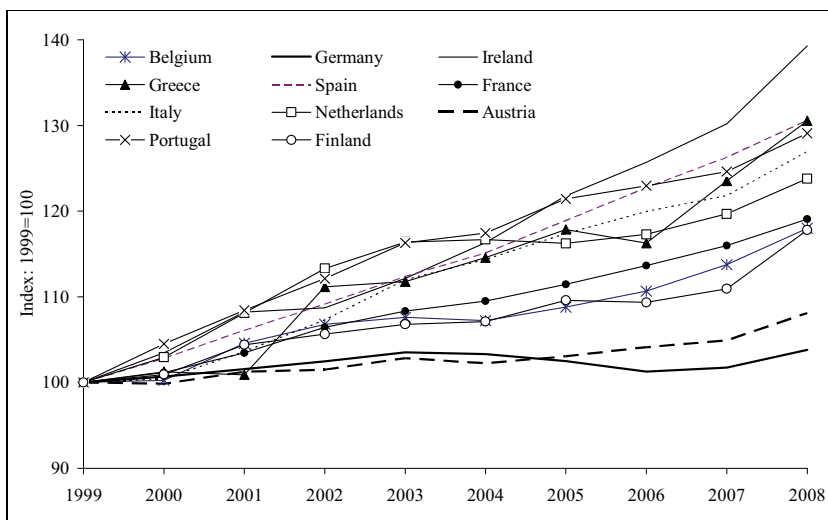
In case of EMU, it is the common monetary policy and the low inflation policy of the ECB, which narrow the scope for a competitive disinflation process without any downward movements of the wage. Assuming that nominal wage cuts are unlikely, a country with lagging competitiveness that holds nominal wages constant can only realize 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 countries³, and the more the re-balancing process is postponed.

Seen on the whole, thus, downward wage flexibility is - given similar levels of productivity increases - crucial for balancing current account balances in the euro area via the competitiveness channel. This is even more valid as the common currency has reduced transaction costs for intra-euro area trade and has enhanced price transparency across borders (Badinger 2007; EC 2008). What is more, the process of globalisation and the rising competition from China and the Central and Eastern European Countries (CEECs) going along with the former, have further enhanced the pressure on competitive as well as on less competitive euro area countries.

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 and a huge loss in competitiveness of the former countries which in turn has, according to the majority of studies (see section 3.1), significantly contributed to the build-up of intra-euro area current account imbalances. In view of the rather large unit labour cost growth differential, this pattern should hold even without imposing overly large values on export and import demand price sensitiveness in the euro area countries. It is important to keep in mind that these imbalances are driven by the private sector (trade unions and enterprises) rather than by the harmonized common macroeconomic policies (EC 2009).

³ Here we simply assume no real wage cuts in competitor countries.

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



Source: European Commission, AMECO.

From this perspective, intra-euro area imbalances, which are steadily rising from 1999 to 2008, imply that there was neither wage competition nor wage harmonization within the euro area across this period. Apparently, relative wages have not adjusted to diverging competitiveness to a sufficient extent and have thus ultimately failed to correct the rising current account imbalances. According to Altissimo et al. (2006) this is due to the fact that structural rigidities and in particular downward rigid prices and wages in the euro area have prevented any significant adjustment of real exchange rates in many euro area countries as one of the dominant textbook driving forces of the current account balance. Correspondingly, the European Commission (2006) comes up with the result that country-specific unit labour costs respond differently to positive and negative output gaps. During an economic downturn, the loss of competitiveness is typically higher in Portugal, Italy, Greece, France and Finland than in Germany and Austria. In general, this pattern has to be attributed to different degrees of real wage rigidity.

2.2. National inflation and wage policies

Despite a common monetary policy, national policies of fiscal policy, taxation, or wage determination remain heterogeneous across the euro area. This might have contributed to the emergence of different country-specific developments of income, consumption, investment

and, thus, also of import demand. What is more, structural differences in wage growth and inflation between members of the euro area have persisted and have even increased in the last couple of years in the euro area for several reasons.

First, there are marked differences in inflation traditions and inflation expectations. The ECB's low inflation target seems to be anchored to a different extent in anticipated national inflation rates, which is reflected in divergent long-run expected inflation across different member countries of the euro area (Hofmann and Remsperger 2005). Along with inflation differences having been lower more recently 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 just seemed to mirror the process of price level convergence within 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 exposed differently to extra euro area trade, changes in the external value of the euro should have a country-specific impact on imported inflation (Honohan and Lane 2003; Hofmann and Remsperger 2005). For example, since Ireland trades more with the UK than with Germany, a depreciation of the euro against the pound should raise import prices in Ireland more than in Germany. Furthermore, countries are asymmetrically exposed to common temporary shocks, such as the surge of raw material and oil prices due to different degrees of dependence on crude oil (Hofmann and Remsperger 2005; EC 2006). More technology intensive economies such as Germany tend to use relatively less oil per unit GDP than Southern European countries, which therefore have been hit more severely by an increase in raw material prices.

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

Fourth and probably most importantly, national inflation rates were driven by different degrees of national wage and productivity growth. In Germany, high unemployment, being partly a legacy of its unification, restrained real wage growth. Beyond EMU, German wage austerity since the mid 1990s represents a consistent 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-Salido et al. 2005) and/or buoyant capital inflows. Productivity growth remained moderate. Furthermore, structural reforms in labour and complementary markets were implemented at different speeds and scopes (Belke et al. 2006a; de Grauwe 2009a). This affected the differential between the country-specific inflation dynamics (Beck et al. 2009).

2.3. Division of labour and industry specialization

Beyond different degrees of price competitiveness and country-specific economic policies, some other factors are made responsible by analysts for the recent pattern of intra-euro area current account imbalances. One obvious candidate is the division of labour among euro area member countries, i.e. the degree and area of specialization of national industries. For instance, Amable and Verspagen (1995) and Ilzkovitz et al. (2008) emphasise the role of the so-called non-price competition 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 gives - other things equal - ample room for 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.

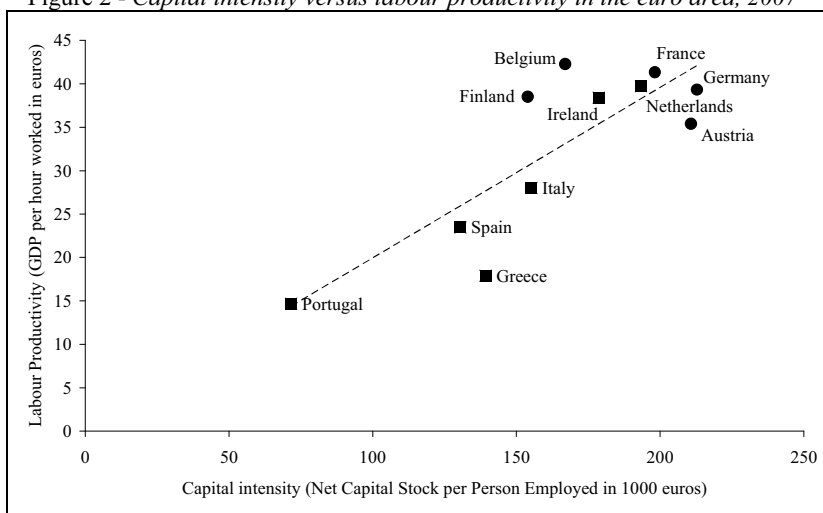
Second, the production structure determines how and to what extent rising wage costs can be passed on to international markets and, thus, for the realisation of a country's current account imbalance. If a country is specialized in the production of labour intensive goods, the power to pass prices to international markets is 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 more labour-intensive production such as Italy, Greece, or Portugal might accelerate the loss of market shares 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 displayed in Figure 2, the capital intensity of production 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 accommodated by lower wage increases if competitiveness shall not be eroded. The squares denote those countries experiencing high relative unit labour cost growth since 1999. They indicate that in Greece, Italy, Spain and Portugal, relative wage growth was not accompanied by relative labour productivity gains. Productivity growth in Ireland was very likely influenced by the fast growth of the financial sector and therefore can be expected to be corrected nearly automatically in the years to come.

Third, the nature of competition and the heterogeneity of goods matter for current account balances. Supply of diversified and/or high quality goods allow a country to claim 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 via prices. In the latter case, excessive wage growth is more harmful because competition with low labour cost countries, such as the new EU members or the East Asian emerging markets, is much fiercer. With rigid labour markets, unemployment tends to rise as a dire consequence and to become structural and persistent. In the euro area, Portugal, Spain, Greece, and to some extent also Italy for a long time relied mainly on low-tech and medium-tech exports (ECB 2005; Baumann and di Mauro 2007). They have suffered from price competition from new EU member countries and East Asia (Bennett and Zarnic 2008). Current account deficits have thus gradually increased in these cases.

Figure 2 - Capital intensity versus labour productivity in the euro area, 2007⁴



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 current account balances have become visible in the tradable sector, there is a need for adjustment also in the non-tradable sector, mainly 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 tend to fuel inflation (López-Salido et al. 2005) which reduces the purchasing power of wages in the tradable sector. In turn, the trade unions in the tradable sector claim a higher inflation compensation within the wage bargaining process. By this second-round effect the production costs of tradable goods increase and the competitiveness of the tradable sector shrinks. 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 might reduce the current account balance.

Figure 3 supports this view and provides evidence that the non-tradable sector contributed significantly to the striking labour cost divergence in Europe. It displays the cumulative growth of sectoral unit wage costs⁵ in percent from 1999 to 2007 for eleven core euro area

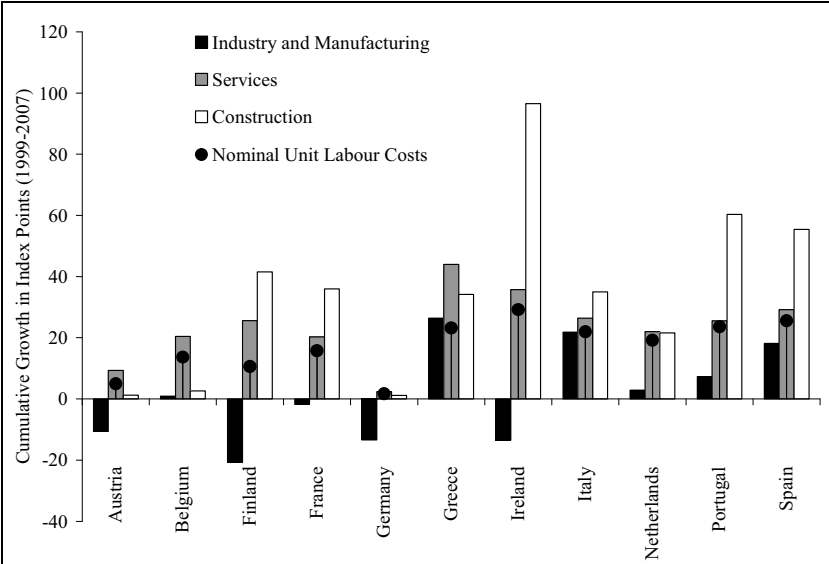
⁴ High labour productivity and capital intensity in Ireland is due to the financial sector, which will probably shrink during the current financial crisis.

⁵ 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*.

countries subdivided by sector. We classify the industry and the manufacturing branch as tradable sectors, whereas services and construction are defined as non-tradable goods. The black dot indicates the cumulative nominal labour cost growth within the period. In countries whose current account deficit has widened since 1999, the growth of unit wage costs in services and construction exceeded those 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 also argued by the European Commission (2006).

In sections 2.1 to 2.4, we have collected an array of potential determinants of intra-euro area current account imbalances. Moreover, we have identified certain areas in which either private adjustment or, as a substitute, government initiated structural reforms might lead to a re-balancing of the imbalances. Taking this as a starting point, we now turn to a deeper and more concrete analysis of the relation between structural reforms, market forces and the current account in order to deliver the theoretical underpinnings of our estimation equations in section 4.

Figure 3 - *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 the current account

The quite obvious significance of the lack of market-based adjustment mechanisms in general, but especially of labour market flexibility, for intra-euro area current account balances puts two questions on the agenda. First, how structural reforms, in particular on the labour market, affect the current account balance (section 3.1) and, second, how more labour market flexibility can be achieved. With respect to the latter, we first investigate how *national governments* can enhance labour market flexibility by structural reforms (section 3.2). Then, we investigate potential responses of the *private sector* to falling exports and rising import competition (section 3.3). This is for what we later on coin the notion of “market adjustment”.

3.1 Structural reforms and the current account

There are at least two competing theories on how structural reforms, in particular on the labour market, might affect the current account balance. The first one is related to the intertemporal approach to the current account (Obstfeld and Rogoff 1994). In our context, it would imply the following. Since structural reforms tend to be painful today but promise future gains, it would be rational for countries to borrow today in order to compensate for the current pain of structural reforms. Hence, the current account balance should decline in the short run. However, since future gains of structural reforms will be used to pay back the loans in the future, we should observe a reversal and a positive change of the current account in the future. However, returns of reforms in the future are uncertain.

A second argument concerning the sign of the impact of structural reforms on current account balances is propagated by Kennedy and Sløk (2005: 9). They argue that, in a first step, wages and prices decline as result of structural reforms. Hence, the country receives a price advantage and exports increase and imports decline. As a result, the current account balance improves in the short run. Profitability increases with a time lag and the internal interest rate increases. Investment goes up and foreign capital is attracted which, in turn, tends to reduce capital exports and, therefore, goods exports. In the long run, the current account surplus should thus decline. This theory therefore refers to the competitiveness approach of current accounts (see section 2.1.).

Bertola and Lo Prete (2009) analyse the effects of rising income growth and income risk as result of labour market deregulation. They argue in the same vein as Kennedy and Sløk (2005) that labour market deregulation should improve the current account balance of the

reforming country without much delay, since forward-looking individuals increase their precautionary savings because of higher uninsurable risk. Another explanation for rising current account balances is that purchasing power shifts towards individuals with higher saving propensities.

Hence, the impact of structural reforms on the current account balance is a priori not clear. However, up to now the majority of available empirical results for developed countries (Kennedy and Sløk 2005; Bertola and Lo Prete 2009) points at a current account improving effect of structural reforms. In this paper, we would like to scrutinize this pattern for the case of intra-euro area current account imbalances.

3.2. Structural reforms

Governments might be trying to lower huge current account deficits. By doing this, structural reforms can play an important role in reducing intra-euro area balances by increasing labour market flexibility and 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 wage⁶ and the wage bargaining power of employees (Arpaia and Mourree 2005, Nickell and Layard 1993). High labour market flexibility increases the responsiveness of the labour market to competitiveness (section 2.1) and therefore 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. 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 lowers prices for labour-intensive and low technology production as unit labour costs fall (see section 2.3.).

Lower wages reduce production costs and prices, which might accelerate exports and shift demand from imports to domestic products. 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 can be avoided (Blanchard 2007).

⁶ As defined as the lowest wage at which workers accept a particular type of job.

Nevertheless, reducing labour protection may not be the best response to current account deficits. 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 current account balances by keeping 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 and 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 training to arrive at a skilled labour force. Unemployed labour could be re-trained 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). Through this mechanism, rising productivity lowers production costs and improves the current account balance.

Beyond the pure labour market focus, also product market deregulation tends to increase adjustment pressure as the responsiveness of prices and wages to changes in the market environment increases (Bayoumi et al. 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). The effect of product market deregulation is not overall clear. On the one hand, more intense competition could reduce prices and would hence lead to a current account improvement. On the other hand, product market deregulation might lower the entry-thresholds of foreign competitors to the domestic market, which could in turn worsen the current account balance (Kennedy and Sløk 2005).

Even if needed quite pressingly, structural reforms nevertheless 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 et al. 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 and Garriga 2003).

The upshot is that politicians tend to postpone reforms and try to fight rising unemployment resulting from low competitiveness or current account deficits 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 and 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 adjust current account deficits temporarily (Belke et al. 2006a, 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.

3.3. Private sector adjustment

In contrast to the government, the private sector generally tends to adjust earlier to declining exports or rising import competition because of its tighter budget constraint. As declining exports and/or rising import competition translate 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 cutting 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. However, the current account balance should improve under both scenarios. There are several ways of restructuring.

First, the private sector can increase productivity by substituting capital for labour. In this case, wage costs per unit of output, i.e. unit labour costs, typically decline but, at the same

time, unemployment tends to increase. Figure 4 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, for instance, substituted more capital for labour than Italy. This gap was especially large in the 1990s.

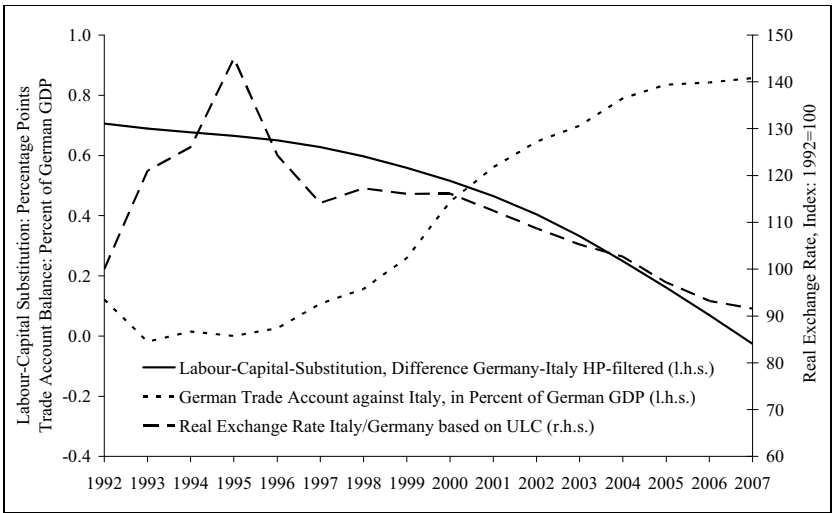
Germany suffered from a strong real appreciation of the Deutschmark in the late 1980s and during its unification boom which deteriorated the German trade balance. A faster speed of labour-capital substitution helped to restore the German economy, as indicated by the real depreciation and the improved trade account. After the introduction of the euro in 1999, relative labour-capital substitution continued which can best be interpreted as the response to an overvalued entry of the mark into the monetary union (EC 2008). The rise of the German current account surplus 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, one possibility to cut unit labour costs is by international outsourcing of labour-intensive production via FDI (offshoring)⁷ and/or importing labour-intensive intermediates (Farrell 2004). For instance, Daveri and Jona-Lasinio (2008) estimate that offshoring intermediate good(s) 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 offshoring and imports of intermediates, 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).⁸

⁷ According to IMF (2007: 164), offshoring or offshore outsourcing is defined by the movement of parts of production to less costly foreign locations.

⁸ However, Welfens and Borbely (2009) partly reject the Sinn hypothesis, referring to an input-output analysis according to which the national outsourcing effect is in some cases economically more important than the international outsourcing effect.

Figure 4 - *Labour-capital substitution and the real exchange rate*⁹, Germany versus Italy



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

To summarize, both private market adjustment and structural reforms have the potential to reduce intra-euro area balances 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 current account balances 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 offshoring.¹⁰

⁹ 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 now proceed by empirically testing for the impact of private market adjustment and structural reforms on the current account balances of the euro area member countries. For this purpose, we employ an up-to-date dynamic panel estimation framework. During this exercise, we also assess the empirical significance of potential interdependencies (complementarity vs. substitutability) within both processes towards more flexibility - structural reforms and private market adjustment. Because private market adjustment is probably endogenous with respect to structural reforms, we lay special emphasis on one direction of this interrelation, namely the question whether the degree of structural reforms has a specific impact on the relation among current account imbalances and private market adjustment. To be more specific, we test the following three hypotheses:

1. *Structural reforms and private market adjustment affect current account balances.* This hypothesis suggests a significant impact of both measures in promoting current account balance adjustment as described in sections 3.2 and 3.3.
2. *Structural reforms modify the characteristics of the current account adjustment process.* Here we test, whether structural reforms and private market adjustment are interdependent in a sense, i.e. are complements or substitutes with regard to their impact on the current account balance.
3. *The effectiveness of structural reforms and private market adjustment has been affected by the start of European Monetary Union (EMU).* Here, we take the OCA literature as a starting point suggesting that EMU has reinforced the need for structural reforms and, hence, their effectiveness is higher from 1999 on.

4.1. Data and variables

We estimate the impact of private market adjustment and structural reforms on current account balances in the euro area based on a dynamic panel of bilateral yearly differences of 11 euro area countries.¹¹ As we measure current account balances in percent of GDP, we can use the full matrix. The sample period covers the period from 1991 to 2007. Since we work

¹⁰ Note that negative employment effects in home country emerge in case of horizontal and vertical integration of multinational enterprises as well as in the case of outsourcing especially in the low-skilled sector. If labor markets are rigid in these segments, structural unemployment tends to emerge.

with annual data, we arrive at a maximum number of 1870 observations. Due to missing data, the sample in the end even becomes a little smaller.

Current account balances

As our research focuses on intra-euro area current account balances, we use bilateral *trade account balances* (TAB)¹², in percent of national GDP. 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 consumption¹³ and export price inflation.

Structural reforms

The measurement of structural reforms is not easy and its discussion fills many pages. We follow empirical papers on structural reforms (e.g. Belke et al. 2006a) and use the (difference of the) Fraser Index of Economic Freedom of the World as indicator of the intensity of structural reforms¹⁴. The index measures economic freedom cardinally taking values in the range of 1 to 10, with higher values indicating a higher degree of economic freedom. An advantage of this index is the disaggregation according to different policy areas. However, the drawback is that annual data are only available from the year 2000 on. In our empirical investigation we decided to make use of the summary index (FI) as well as of the labour market sub-index (FI_labor).

In a second step, we use the following two macroeconomic variables as proxies of structural reforms and assume that these macroeconomic indicators proportionally display the effects of accumulated previous structural reforms. The advantage of this method is twofold. First, these indicators are available for a longer period, and, second, the macro variables might serve as instrumental variables of some sort because private adjustment is endogenous with respect to the degree of structural reforms. Thereby, these macroeconomic variables might indicate long-term effects of structural reform.

¹¹ Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain.

¹² Bilateral current account data are generally not available.

¹³ Here, we use the change in private consumption as the latter might have a direct impact on the trade balance and it is highly correlated with real GDP growth.

¹⁴ For details of the computation of the index see Gwartney and Lawson (2003).

As a first macro variable, we use *structural unemployment* as 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 calculations of the NAWRU from the European Commission. We assume that declining structural unemployment is due to (past) structural labour market reforms.

As a second macro variable, *social benefits* (SB) in percent of GDP are used as a proxy of cumulated past structural reforms of 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 current account balances.

To enhance the coherence and readability of our estimation results we finally multiply both macroeconomic proxies with (-1). After this transformation, higher realisations of (-1)*NAWRU or (-1)*SB proportionally correspond to a higher degree of structural reforms. In accordance with Bertola and Lo Prete (2009), we expect both proxies to be positively correlated with the bilateral trade balance.

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 seen as an important determinant of competitiveness and might therefore affect current account balances. 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 benefits¹⁵. Again, both indicators are multiplied by (-1). Third, we test for the impact of *productivity* (PROD) and, fourth, the

¹⁵ 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 (such as children's, spouse's or payments made to workers because of illness, accidental injury).

degree of *labour-capital-substitution* (LABCAP) on the trade account. These latter two variables are of course not multiplied by the factor (-1) by the same logic as applied above.

Our fifth and the sixth measure of the extent of private restructuring consist of a proxy for offshoring and an indicator of technological competitiveness. In any case, it is rather difficult to find an undisputed proxy for *offshoring*. Offshoring is in most cases measured at a highly disaggregated level. For example, IMF (2007) and Daveri and Jona-Lasinio (2008) use input-output data for their analyses; Goerg et al. (2008) base their empirical analysis on plant level data. Neither data set fits 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 offshoring, based on the assumption that offshoring as proxy for private restructuring is associated with increasing outward FDI. This approach excludes offshoring 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.¹⁶ 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. In so doing, we multiply the RCA variable by 1 for higher technology industries and by -1 in case of lower technology industries.¹⁷ 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).

¹⁶ The Revealed Comparative Advantage is calculated as written below, where m indicates sectors and i countries:

$$RCA_{m,i} = \frac{\frac{X_{m,i}}{\sum_{i=1}^n X_{m,i}}}{\frac{\sum_{i=1}^n X_{m,i}}{\sum_{i=1}^n \sum_{m=1}^n X_{m,i}}} \quad m \in (1, n), i \in (1, j).$$

¹⁷ Industry 9 (ITS-SITC Rev.3: “Commodities and Transactions, n.e.s.”) is multiplied by 0 as it cannot be explicitly classified as a lower or higher technology branch.

Control variables

To control for business cycle effects in bilateral trade data we use private consumption, as is standard in this type of literature. Additionally, private consumption accounts for differences in consumption of euro area countries that might have driven the current account balances. Since nominal trade account data are also influenced by nominal prices, we check for relative price developments by employing a variable measuring relative export price inflation. We have to drop import price inflation due to multicollinearity. Finally, a dummy variable accounts for a possible structural break at the start of EMU. The dummy is coded as one for all years in which a country is member of the EMU and is otherwise set to zero.

4.3. Empirical model

To analyse the impact of structural reforms and market adjustment on current account balances, we use three differently specified regression equations. In the following, we give some details about each of the three different specifications. Let us start with hypothesis one.

We test the validity of our first hypothesis claiming that structural reforms and private market adjustment affect current account balances by means of the following regression equation:

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

where $C_{k,t}$ denotes a vector of changes in bilateral trade account balances with

$$C_{k,t} = \left(\frac{TAB_{i,j,t}}{GDP_{i,t}} - \frac{TAB_{i,j,t-1}}{GDP_{i,t-1}} \right). \text{ The indices } i \text{ and } j \text{ identify the countries involved, } t \text{ denotes}$$

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. In our dynamic model setting, we also include the one-period lagged dependent variable as well as the level of the trade account balance (L) prevailing in the previous period to account for the degree of initial problem pressure. We expect that the higher a trade deficit turns out to be, the larger the probability of structural reforms or private restructuring is, as the need for adjustment is especially pronounced. The vectors $P_{k,t}$, $G_{k,t}$ and $X_{k,t}$ contain the change in the bilateral absolute differences between country i and j , with:

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

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

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

This variable transformation generates stationary time series to avoid spurious regression. Panel unit-root tests (Levin et al. 2002; Im et al. 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 structural reforms, FI, FI_labor, (-1) NAWRU and (-1) SB, reveals a positive sign. This would indicate that structural reforms in a country tend to enhance bilateral trade balances. The estimated coefficients of private market adjustment, β_p , are expected to have a positive sign, too. Let us now proceed with the specification of the regression equation related to our hypothesis two. The latter actually claims that structural reforms influence the private adjustment process. For this purpose, we scrutinize the interrelations between market adjustment and structural reforms via adding an interaction term $P_{k,t}G_{k,t}$. This yields:

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

This specification enables us to 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 and Turrisi 2003). Such interaction effects can be isolated by product terms of the independent variable $P_{k,t}$ (the so-called focal variable) and the second independent variable $G_{k,t}$ (moderator variable). Note, that the interpretation of regression coefficients changes in this case. With respect to our own estimation exercise the interpretation of regression coefficients can be summarized as follows (Jaccard and 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.¹⁸

Generally, we cannot reject the hypothesis that 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 adjustment, β_p , then it indicates a complementary (substitutive) relationship between structural reforms and private restructuring. Let us now finally derive the regression framework to test our third hypothesis.

Our third hypothesis maintains that the effectiveness of private market adjustment and structural reforms to balance current accounts has been affected by membership of the respective country in EMU. We decided to test the former by adding an interaction term $P_{k,t}d_{k,t}$ which interrelates private market adjustment with the EMU dummy variable or an interaction term $G_{k,t}d_{k,t}$ measuring the impact of EMU on the effectiveness of structural reforms in influencing current account balances. In this case, the regression equations boil down to be the following:

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

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

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

We estimate the three specifications (1), (3) and (4) based on a dynamic panel model by means of a System-GMM estimator (Arellano and Bover 1995, Blundell and Bond 1998) to account for possible endogenous variables, fixed effects and heteroskedasticity. In contrast to the Difference-GMM (Arellano and 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

¹⁸ 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 structural reforms affect the private adjustment process.

country pairs) which has originally been raised in the context of the Arellano-Bond procedure. We hold the number of instruments at a minimum to enhance the discriminating power of post-estimation over-identification tests. However, time lags are large enough to account for long-term adjustment. All variables are assumed to be endogenous with respect to the dependent variable except the EMU dummy, which we treat as exogenous for obvious reasons. The presented results in the tables 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 test¹⁹ 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.²⁰ As the overall pattern of our results is untouched by this specification, only results based on specifications excluding deterministic time dummies are reported.

4.4. Estimation results

Test of hypothesis 1: Do structural reforms and private market adjustment affect current account balances?

Our estimation results related to our first hypothesis are reported in Table 1 for the Fraser summary index, in Table 2 for the Fraser labour market sub-index, in Table 3 for the macro variable structural unemployment and in Table 4 for the macro indicator social benefits.

In general, the estimated coefficients of the variables measuring the impact of *private market adjustment* on bilateral trade balances turn out to be of *rather low significance*. Only the coefficients of FDI (column 5), productivity (column 3), and the nominal compensation rate (column 7) are significant at the common levels. In contrast, the estimated coefficients of

¹⁹ 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.

²⁰ We use time dummies to make the assumption of no autocorrelation across individuals in the idiosyncratic disturbances more likely to hold (Roodman 2006).

structural reforms turn out to be positive and significant in almost all estimations. Especially, a relative increase in the overall as well as in the labour market-specific Fraser Index and a reduction of structural unemployment relative to the partner country is linked to an improvement of the bilateral trade balance.

The estimated coefficients of the macroeconomic control variables are in accordance with theory and, thus, corroborate the robustness of our estimation results. For instance, a relative increase in private consumption and relatively lower export prices reduce the (nominal value of the) bilateral trade balance. The estimated coefficients of the EMU dummy (Table 3 and 4) are in several cases significant and display a positive sign. This clear empirical pattern 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 balances since 1999 between Germany as a net creditor country and Spain, Italy, Portugal, France and Ireland as net debtor countries.

Overall, our results confirm our hypothesis that in general structural reforms and, only in some cases, also private market adjustment tends to increase the trade balance. The weaker evidence for private market adjustment might reflect the fact that private capital inflows (from Germany) and public capital inflows (from EU institutions) allowed to postpone private restructuring in the majority of euro area member countries. Hence, our results confirm empirical research of Kennedy and Sløk (2005) and Bertola and Lo Prete (2009).

Table 1 – *Regression results: impacts of private market adjustment and structural reforms (Fraser summary index) on bilateral trade balances (2001-2006)*

dependent variable: Δ bilateral trade balance							
	#	1	2	3	4	5	6
market	$\Delta (-1)$ *nominal compensation rate	-0.012					
adjustment		(0.517)					
	$\Delta (-1)$ *unit labour costs		-0.006				
			(0.005)				
	Δ productivity			-0.003			
				(0.008)			
	Δ labour capital substitution				-0.006		
					(0.037)		
	Δ FDI					0.015*	
						(0.007)	
	Δ RCA						0.001
							(0.001)
structural reforms	Δ Fraser Index (summary index)	0.085**	0.074**	0.081**	0.090**	-0.151	0.076
		(0.042)	(0.035)	(0.039)	(0.040)	(0.189)	(0.050)
macro variables	Δ trade balance	-0.287***	-0.264***	-0.287***	-0.288***	-0.017	-0.377***
	(t-1)	(0.079)	(0.082)	(0.072)	(0.078)	(0.172)	(0.076)
	trade balance	0.090**	0.068**	0.076*	0.072*	-0.008	0.161*
	(t-1)	(0.040)	(0.029)	(0.039)	(0.037)	(0.038)	(0.081)
	Δ private consumption	-0.003	-0.002	-0.003	-0.007	-0.019	-0.006
		(0.006)	(0.006)	(0.006)	(0.006)	(0.015)	(0.007)
	Δ export prices	0.006	0.001	0.007	0.008	0.044*	0.018*
		(0.008)	(0.008)	(0.009)	(0.010)	(0.022)	(0.010)
	EMU dummy						
	constant	-0.011	-0.015	-0.010	-0.012	-0.019	-0.020
		(0.012)	(0.010)	(0.012)	(0.012)	(0.023)	(0.019)
model specification	N	660	660	660	660	640	562
	instruments	23	23	23	23	18	23
	AR (2)	0.699	0.584	0.734	0.747	0.225	0.710
	Hansen (p-value)	0.580	0.486	0.549	0.343	0.849	0.053

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

Table 2 – *Regression results: impacts of private market adjustment and structural reforms (Fraser labour market sub-index) on bilateral trade balances (2001-2006)*

dependent variable: Δ bilateral trade balance							
	#	7	8	9	10	11	12
market	$\Delta (-1)$ *nominal compensation rate	0.070					
adjustment		(0.478)					
	$\Delta (-1)$ *unit labour costs		-0.005				
			(0.005)				
	Δ productivity			-0.006			
				(0.008)			
	Δ labour capital substitution				-0.003		
					(0.038)		
	Δ FDI					0.018	
						(0.011)	
	Δ RCA						0.000
							(0.001)
structural reforms	Δ Fraser Index (labor market)	0.016**	0.010	0.013*	0.018**	-0.051*	0.008
		(0.007)	(0.007)	(0.007)	(0.008)	(0.028)	(0.010)
macro variables	Δ trade balance	-0.250***	-0.241***	-0.266***	-0.274***	-0.097	-0.368***
	(t-1)	(0.090)	(0.085)	(0.079)	(0.089)	(0.120)	(0.077)
	trade balance	0.075*	0.061	0.072	0.065	-0.018	0.130**
	(t-1)	(0.043)	(0.039)	(0.048)	(0.042)	(0.044)	(0.065)
	Δ private consumption	-0.009	-0.008	-0.006	-0.014*	-0.011	-0.013
		(0.006)	(0.006)	(0.005)	(0.008)	(0.011)	(0.009)
	Δ export prices	0.007	0.005	0.010	0.010	0.026*	0.019*
		(0.007)	(0.006)	(0.008)	(0.009)	(0.016)	(0.010)
	EMU dummy						
	constant	-0.013	-0.016	-0.010	-0.017	-0.011	-0.007
		(0.013)	(0.011)	(0.013)	(0.013)	(0.019)	(0.021)
model specification	N	660	660	660	660	640	562
	instruments	23	23	23	23	23	23
	AR (2)	0.487	0.470	0.607	0.704	0.264	0.738
	Hansen (p-value)	0.853	0.731	0.729	0.242	0.933	0.063

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

Table 3 – Regression results: impacts of private market adjustment and structural unemployment on bilateral trade balances (1992-2007)

dependent variable: Δ bilateral trade balance							
	#	13	14	15	16	17	18
market	$\Delta(-1)$ *nominal compensation rate	0.436					
adjustment		(0.309)					
	$\Delta(-1)$ *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	$\Delta(-1)$ *structural unemployment	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	-0.141*	-0.189***	-0.164**	-0.154**	-0.187**	-0.244***
	(t-1)	(0.072)	(0.070)	(0.081)	(0.075)	(0.074)	(0.065)
	trade balance	0.016	0.022	0.023	0.017	0.019	0.059***
	(t-1)	(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	N	1643	1720	1720	1720	1396	1502
specification	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 at 10%, 5% and 1% level.

Table 4 – Regression results: impacts of private market adjustment and social benefits on bilateral trade balances (1992-2007)

dependent variable: Δ bilateral trade balance							
	#	19	20	21	22	23	24
market	$\Delta(-1)$ *nominal compensation rate	0.568*					
adjustment		(0.309)					
	$\Delta(-1)$ *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	$\Delta(-1)$ *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	N	1643	1720	1720	1720	1396	1520
specification	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 at 10%, 5% and 1% level.

Test of hypothesis 2: Reforms as a propagation mechanism fostering the impact of private adjustment on the current account balance?

The estimation results related to our second hypothesis are displayed in Tables 5 and 6 for structural unemployment and social benefits as our indicators of the degree of structural reforms. Estimations using Fraser Index variables do not deliver any significant interaction term and are not reported. The estimated 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 significant with a negative sign, suggesting a substitutive relationship. Since the estimated β_A in case of a negative sign of β_A indicates the number of units that β_p decreases if $G_{k,t}$ grows by one unit, a straightforward interpretation is that a higher degree of structural reforms diminishes the impact of private adjustment on the current account balance. In other words, less structural reforms require more private market adjustment and vice versa. An alternative interpretation is that private market adjustment mechanisms are not needed as pressing any more if structural reforms, for instance in the area of social benefits, are conducted.

However, if we measure private market adjustment via FDI we find a complementary relationship (Table 6, column 35). In this case, we feel legitimized to conclude that structural reforms foster the effectiveness of FDI to increase the current account balance. Notably, the described pattern of results is not dependent on whether we consider an interaction with social benefits or with structural unemployment as an indicator of the reform intensity, which again stresses the robustness of our results.

Seen on the whole, thus, our estimation results indicate that we cannot reject our second hypothesis if we measure the degree of reforms by structural unemployment and, alternatively, by means of a social benefit variable. Structural reforms tend to influence the current account adjustment process. More specifically, we find mainly substitutive relationships between structural reforms and private market adjustment.

Table 5 – Regression results: impacts of market adjustment and structural unemployment on bilateral trade balances including an interaction term (1992-2007)

dependent variable: Δ bilateral trade balance							
#		25	26	27	28	29	30
market adjustment	$\Delta(-1)$ *nominal compensation rate	0.518* (0.287)					
	$\Delta(-1)$ *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	$\Delta(-1)$ *structural unemployment	0.044** (0.022)	0.039** (0.017)	0.058*** (0.017)	0.033* (0.017)	0.081** (0.037)	0.029 (0.021)
	interaction term (market adjustment*structural reforms)	-0.574* (0.314)	-0.004* (0.002)	0.004 (0.007)	-0.030* (0.016)	0.005 (0.005)	0.000 (0.001)
macro variables	Δ trade balance (t-1)	-0.176*** (0.063)	-0.187*** (0.067)	-0.196*** (0.066)	-0.211*** (0.075)	-0.187** (0.075)	-0.241*** (0.066)
	trade balance (t-1)	0.014 (0.013)	0.022 (0.013)	0.021 (0.013)	0.018 (0.017)	0.018 (0.018)	0.061*** (0.016)
	Δ private consumption	-0.011*** (0.003)	-0.013*** (0.004)	-0.016*** (0.004)	-0.016*** (0.005)	-0.013*** (0.004)	-0.014*** (0.004)
	Δ export prices	0.006** (0.002)	0.008*** (0.003)	0.007*** (0.002)	0.008** (0.003)	0.008** (0.003)	0.004* (0.002)
	EMU dummy	-0.021* (0.012)	-0.022** (0.011)	-0.024* (0.015)	-0.016 (0.013)	-0.036* (0.019)	-0.007 (0.009)
	constant	0.011 (0.009)	0.013* (0.008)	0.016* (0.009)	0.003 (0.008)	0.022 (0.016)	0.008 (0.008)
	model specification	N	1643	1720	1720	1720	1396
	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 at 10%, 5% and 1% level.

Table 6 – Regression results: impacts of market adjustment and social benefits on bilateral trade balances including an interaction term (1992-2007)

dependent variable: Δ bilateral trade balance							
#		31	32	33	34	35	36
market adjustment	$\Delta(-1)$ *nominal compensation rate	0.632** (0.325)					
	$\Delta(-1)$ *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	$\Delta(-1)$ *social benefits	0.009 (0.007)	0.018** (0.009)	0.011* (0.006)	0.009 (0.009)	0.031** (0.015)	0.003 (0.007)
	interaction term (market adjustment*structural reforms)	-0.383** (0.194)	-0.001 (0.003)	-0.005 (0.004)	-0.008* (0.004)	0.012* (0.007)	-0.001 (0.001)
macro variables	Δ trade balance (t-1)	-0.147* (0.080)	-0.132 (0.098)	-0.182** (0.072)	-0.132* (0.072)	-0.209*** (0.072)	-0.252*** (0.059)
	trade balance (t-1)	0.017 (0.017)	0.010 (0.033)	0.022 (0.016)	-0.009 (0.020)	0.012 (0.025)	0.065*** (0.015)
	Δ private consumption	-0.007** (0.003)	-0.016*** (0.004)	-0.015*** (0.003)	-0.022*** (0.045)	-0.016*** (0.004)	-0.014*** (0.003)
	Δ export prices	0.005*** (0.002)	0.006** (0.003)	0.007*** (0.002)	0.009*** (0.003)	0.009** (0.004)	0.005* (0.003)
	EMU dummy	-0.009 (0.009)	-0.010 (0.013)	-0.015 (0.011)	-0.031** (0.014)	-0.020 (0.016)	-0.002 (0.009)
	constant	0.001 (0.007)	0.004 (0.012)	0.009 (0.009)	0.014 (0.015)	-0.000 (0.017)	0.002 (0.008)
	model specification	N	1643	1720	1720	1720	1396
	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 at 10%, 5% and 1% level.

Test of hypothesis 3: Has the effectiveness of structural reforms and private market adjustment been affected by EMU?

The estimation results based on regression equations designed to check the validity of our third (EMU) hypothesis are reported in the Tables 7 and 8.²¹ Again, the rows referring to the significance of interaction terms are highlighted in grey. The estimated coefficients for the interaction between private market adjustment and the EMU dummy are almost entirely insignificant. This suggests that EMU had virtually no influence on the impact of private adjustment on current account balances. Only if the degree of market adjustment is measured by the RCA variable, the interaction terms (column 48, Table 7, and column 60, Table 8) become significant and reveal a negative sign, indicating that the effectiveness of increasing share of high technology goods to improve current accounts has dropped since the start of the EMU. That might be a hint, that price competition has become more important since start of the EMU.

These weak results gained for private market adjustment are in strong contrast to those based on the degree of structural reforms, at least if the latter is proxied by structural unemployment. The coefficients for the interaction of structural unemployment with the 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 current accounts declined in most euro area countries. This could indicate that - as was often argued with respect to EMU - the so-called up-front costs of structural reforms might be larger within a currency union. This holds especially in large, relatively closed countries for which changes in the nominal exchange rate are not so effective in alleviating the necessary “crowding-in” effect. Removing restrictions in financial markets tend to stimulate demand more than labour market reforms and hence allow an easier and quicker “crowding-in” of reforms (Duval and Elmeskov, 2005: 6-7).

However, using the social benefit variable instead of structural unemployment as a proxy of structural reforms, the estimated coefficients of the interaction term reveal a positive sign but at low significance levels. This conveys weak evidence in favour of a higher effectiveness of structural reforms after the start of EMU in fostering the adjustment of trade balances (Table 8, column 41). Seen on the whole, however, the evidence of either a positive or a

²¹ As the Fraser Index is available at annual frequency not earlier than from 2000 on, we can, again, only provide estimation results for structural unemployment and social benefits.

negative impact of EMU on the effectiveness of reforms in improving current account balances appears to be overall weak.

4.5. Robustness checks

In macroeconomic applications with a low number of cross-sections a finite sample problem emerges: the estimation results based on the System-GMM estimator might depend on the specific choice of instruments. Therefore, we check our results as a complement by means of bias-corrected dynamic fixed effect least square dummy variable estimations (LSDV) with a boot-strap variance-covariance matrix (Bruno 2005). This method uses the Anderson-Hsiao estimator to correct biased standard errors to avoid the Nickell bias (Nickell 1981). This method might lead to a potentially better finite-sample performance than the System-GMM estimator which we used in the previous section.

As examples, we display the corresponding results for the Fraser Summary Index in Table 9 and for social benefits in Tables 10 and 11.²² Overall, the LSDV results confirm our results gained using the System-GMM estimation procedure (see Tables 1, 4, and 6). The signs of the estimated coefficients generally remain the same. While private market adjustment seems to have virtually no impact on current account balances, relative structural reforms, in contrast, tend to improve the bilateral trade balance. The substitutive relationship between structural reforms and market adjustment is only weakly confirmed by this estimation procedure. Finally, we again find little evidence of an interaction between structural reforms or market adjustment with the EMU dummy. Hence, we do not report these results.

Second, we check for nonlinearities in the effect of structural reforms on the current account balance. Thereby, we use squared values of the empirical realisations of our structural reform variable.²³ Non-linearities might emerge either because the underlying relationships are non-linear (the so-called “Calmfors-Driffill hump” (Calmfors et. al. 1988; Belke et al. 2006b; Duval and Elmeskov 2005; Nicoletti and Scarpetta 2005)) because of the possibility that a given reform may have different impact on labour markets depending on the initial policy stance in the area considered (Duval and Elmeskov 2005, 13) or because the

²² Our results based on equations containing the Fraser labour market sub-index and the variable “structural unemployment” as an indicator of structural reforms confirm our results gained earlier with System-GMM and are available on request.

²³ Figures are squared. However, the sign remains the same to keep the relationship.

sequencing of goods and labor market reforms plays a significant role (policy complementarity, Alesina et al. 2008). Another rationale might be that some factors, such as capital and labor, may face non-linear adjustment costs and irreversibilities in case of no reforms and, hence, reforms - by lowering fixed costs of adjustment - also lead to non-linear effects and reform shifts may take various periods to affect current account imbalances. By using the Fraser Index values or social benefits as indicator for structural reforms, the coefficients of the structural reform and the private adjustment variables and their squares are not statistically significant at conventional critical values. However, coefficients for structural reforms become significant if we use structural unemployment as proxy for structural reforms. That indicates a non-linear relationship between structural unemployment and current account balances (Table 12). As the interaction terms are overall not significant, we do not report the respective tables.

Third, we add the bilateral change in GDP per capita as a control variable. By this, we account for the wealth effect on the current account balance as proposed by the inter-temporal current account approach (see section 3.1). According to the latter, low-income countries are associated with current account deficits and high-income countries with current account surpluses. A relative increase in GDP per capita should therefore lead to an improved current account. Tables 13 and 14 provide the results of the System-GMM estimations of the GDP (per capita) augmented equation to test our hypotheses one and two for the case of structural unemployment as our macroeconomic proxy of structural reform. Again, this estimation specification confirms our baseline results. However, any significance of interaction effects between structural reforms and market adjustment disappears. Relative GDP per capita is in general insignificant, a result which casts some doubt on its role in explaining the intra-euro area current account balances observed more recently within the euro area.

Table 7 – Regression results: impacts of market adjustment and structural unemployment on bilateral trade balances including EMU interaction (1992-2007)

dependent variable:	#	37	38	39	40	41	42	43	44	45	46	47	48
market adjustment								0.547* (0.317)					
$\Delta(-1)$ *nominal compensation rate		0.693** (0.315)							0.005 (0.004)				
$\Delta(-1)$ *unit labour costs			0.005 (0.004)							0.005 (0.007)			
Δ productivity				0.010 (0.007)							-0.019 (0.017)		
Δ labour capital substitution					-0.002 (0.017)							0.003 (0.007)	
Δ FDI						0.001 (0.004)							
Δ RCA							-0.000 (0.001)						0.002 (0.001)
structural reforms		0.053** (0.023)	0.067*** (0.026)	0.064** (0.029)	0.065** (0.027)	0.065** (0.041)	0.042** (0.020)	0.048* (0.028)	0.050*** (0.019)	0.048*** (0.019)	0.045** (0.023)	0.083** (0.040)	0.030 (0.025)
interaction term (market adjustment*EMU dummy)								0.349 (0.474)	0.000 (0.005)	0.009 (0.010)	0.038 (0.031)	-0.001 (0.007)	-0.005*** (0.002)
interaction term (structural reforms*EMU dummy)		-0.045* (0.026)	-0.064** (0.030)	-0.071** (0.035)	-0.058* (0.030)	-0.064 (0.041)	-0.061** (0.025)						
macro variables		-0.168** (0.071)	-0.195*** (0.070)	-0.181*** (0.070)	-0.168** (0.067)	-0.189*** (0.072)	-0.253*** (0.065)	-0.139* (0.078)	-0.189** (0.081)	-0.157* (0.092)	-0.143** (0.071)	-0.194*** (0.072)	-0.247*** (0.073)
Δ trade balance (t-1)		0.016 (0.015)	0.017 (0.014)	0.019 (0.012)	0.016 (0.012)	0.011 (0.023)	0.053*** (0.018)	-0.001 (0.027)	0.021 (0.014)	0.023 (0.015)	0.015 (0.012)	0.015 (0.019)	0.056*** (0.017)
Δ private consumption (t-1)		-0.011*** (0.004)	-0.013*** (0.004)	-0.016*** (0.005)	0.014*** (0.004)	-0.014*** (0.004)	-0.015*** (0.004)	-0.013*** (0.003)	-0.012*** (0.003)	-0.015*** (0.003)	-0.015*** (0.004)	-0.012*** (0.004)	-0.014*** (0.004)
Δ export prices		0.005** (0.002)	0.008** (0.003)	0.009*** (0.003)	0.007*** (0.003)	0.010*** (0.004)	0.007** (0.003)	0.003 (0.003)	0.006*** (0.002)	0.007*** (0.002)	0.009*** (0.002)	0.006 (0.004)	0.007** (0.003)
EMU dummy		-0.021 (0.014)	-0.025** (0.013)	-0.018 (0.015)	-0.023* (0.014)	-0.028 (0.018)	-0.019* (0.010)	-0.023** (0.015)	-0.023** (0.012)	-0.017 (0.016)	-0.021* (0.013)	-0.038* (0.020)	-0.018 (0.011)
constant		0.006 (0.009)	0.016 (0.009)	0.010 (0.009)	0.014 (0.010)	0.022* (0.013)	0.016* (0.008)	0.008 (0.010)	0.012 (0.008)	0.007 (0.010)	0.011 (0.010)	0.025 (0.016)	0.009 (0.009)
model	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
specification	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 at 10%, 5% and 1% level.

Table 8 – Regression results: impacts of private market adjustment and social benefits on bilateral trade balances including EMU interaction (1992- 2007)

dependent variable: Δ bilateral trade balance	49	50	51	52	53	54	55	56	57	58	59	60
market adjustment												
$\Delta (-1)*$ nominal compensation rate	0.388* (0.223)						0.468** (0.238)					
$\Delta (-1)*$ unit labour costs		0.001 (0.004)						0.002 (0.004)				
Δ productivity			0.001 (0.006)						-0.001 (0.006)			
Δ labour capital substitution				-0.023 (0.014)						-0.019 (0.017)		
Δ FDI					-0.000 (0.002)						0.010 (0.008)	
Δ RCA						0.001 (0.001)						0.003** (0.002)
structural reforms												
$\Delta (-1)*$ social benefits	0.022* (0.011)	0.010 (0.008)	0.007 (0.007)	0.005 (0.008)	0.014 (0.012)	0.005 (0.009)	0.014* (0.008)	0.010 (0.006)	0.013* (0.007)	0.009 (0.006)	0.013 (0.015)	0.008 (0.008)
interaction term (market adjustment*EMU dummy)							-0.041 (0.549)	0.005 (0.007)	0.007 (0.008)	0.009 (0.019)	-0.10 (0.009)	-0.005*** (0.002)
macro variables												
Δ trade balance	-0.136* (0.078)	-0.190** (0.095)	-0.161* (0.094)	-0.135 (0.092)	-0.206*** (0.074)	-0.247*** (0.068)	-0.175** (0.089)	-0.189** (0.083)	-0.149 (0.092)	-0.101** (0.075)	-0.207*** (0.073)	-0.227*** (0.077)
trade balance (t-1)	0.004 (0.025)	0.026 (0.019)	0.021 (0.013)	0.016 (0.016)	0.012 (0.023)	0.062*** (0.016)	0.012 (0.032)	0.022 (0.017)	0.021 (0.018)	0.018 (0.023)	0.007 (0.023)	0.040** (0.017)
Δ private consumption	-0.013*** (0.003)	-0.013*** (0.003)	-0.012*** (0.003)	-0.016*** (0.004)	-0.014*** (0.004)	-0.012*** (0.003)	-0.010*** (0.030)	-0.013*** (0.003)	-0.016*** (0.003)	-0.016*** (0.004)	-0.014*** (0.003)	-0.010*** (0.003)
Δ export prices	0.004* (0.002)	0.007*** (0.003)	0.007*** (0.002)	0.007*** (0.002)	0.009*** (0.003)	0.004 (0.003)	0.003 (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.007 (0.003)	0.009** (0.004)	0.008*** (0.004)
EMU dummy	-0.018 (0.012)	-0.018* (0.011)	-0.012 (0.012)	-0.020 (0.013)	-0.025* (0.014)	-0.010 (0.010)	-0.008 (0.013)	-0.021* (0.012)	-0.011 (0.012)	-0.018 (0.012)	-0.020 (0.014)	-0.017 (0.013)
constant	0.001 (0.009)	0.008 (0.009)	0.005 (0.011)	0.006 (0.011)	0.015 (0.012)	0.006 (0.009)	0.002 (0.012)	0.010 (0.009)	0.003 (0.010)	0.006 (0.010)	0.016 (0.012)	0.005 (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 at 10%, 5% and 1% level.

Table 9 – Corrected LSDV Regression results: impacts of private market adjustment and structural reforms (Fraser summary index) on bilateral trade balances (2001-2006)

dependent variable: Δ bilateral trade balance							
	#	61	62	63	64	65	66
market adjustment	$\Delta (-1)$ *nominal compensation rate	1.966*** (0.268)					
	$\Delta (-1)$ *unit labour costs		0.008 (0.008)				
	Δ productivity			-0.002 (0.005)			
	Δ labour capital substitution				-0.139*** (0.020)		
	Δ FDI					0.007* (0.002)	
	Δ RCA						0.002*** (0.000)
structural reforms	Δ Fraser Index (summary index)	0.126*** (0.007)	0.112* (0.061)	0.115*** (0.030)	0.094*** (0.028)	0.070 (0.070)	0.099*** (0.029)
macro variables	Δ trade balance (t-1)	-0.069*** (0.008)	-0.072** (0.033)	-0.071*** (0.011)	-0.067*** (0.009)	-0.018 (0.031)	-0.067*** (0.004)
	trade balance (t-1)	-0.546*** (0.011)	-0.545*** (0.031)	-0.546*** (0.014)	-0.556*** (0.014)	-0.783*** (0.030)	-0.596*** (0.013)
	Δ private consumption	-0.035*** (0.003)	-0.027*** (0.009)	-0.032*** (0.001)	-0.038*** (0.002)	-0.036*** (0.011)	-0.033*** (0.002)
	Δ export prices	0.008*** (0.003)	0.007 (0.008)	0.009** (0.004)	0.012*** (0.001)	0.028*** (0.009)	0.007*** (0.002)
model specification	N	660	660	660	660	640	562

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

Table 10 – Corrected LSDV Regression results: impacts of private market adjustment and social benefits on bilateral trade balances (1992-2007)

dependent variable: Δ bilateral trade balance							
	#	67	68	69	70	71	72
market adjustment	$\Delta (-1)$ *nominal compensation rate	0.196 (0.354)					
	$\Delta (-1)$ *unit labour costs		0.001 (0.001)				
	Δ productivity			0.000 (0.000)			
	Δ labour capital substitution				-0.026** (0.013)		
	Δ FDI					0.003** (0.001)	
	Δ RCA						0.000 (0.001)
structural reforms	$\Delta (-1)$ *social benefits	0.037*** (0.012)	0.034*** (0.005)	0.034*** (0.014)	0.020 (0.027)	0.061*** (0.004)	0.027*** (0.005)
macro variables	Δ trade balance (t-1)	-0.109*** (0.011)	-0.108*** (0.002)	-0.107*** (0.017)	-0.109*** (0.019)	-0.060*** (0.006)	-0.103*** (0.017)
	trade balance (t-1)	-0.137*** (0.022)	-0.136*** (0.006)	-0.136*** (0.018)	-0.135*** (0.014)	-0.327*** (0.007)	-0.179*** (0.010)
	Δ private consumption	-0.025*** (0.003)	-0.023*** (0.002)	-0.024*** (0.004)	-0.024*** (0.004)	-0.028*** (0.001)	-0.023*** (0.002)
	Δ export prices	0.008* (0.004)	0.008*** (0.001)	0.008** (0.003)	0.009** (0.004)	0.017*** (0.001)	0.008*** (0.002)
	EMU dummy	-0.026* (0.016)	-0.029*** (0.010)	-0.029*** (0.012)	-0.029** (0.014)	-0.052*** (0.004)	-0.023*** (0.007)
model specification	N	1652	1730	1730	1730	1396	1512

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

Table 11 – *Corrected LSDV Regression results: impacts of market adjustment and social benefits on bilateral trade balances including an interaction term (1992-2007)*

dependent variable: Δ bilateral trade balance							
#		73	74	75	76	77	78
market adjustment	$\Delta (-1)$ *nominal compensation rate	0.192 (0.162)					
	$\Delta (-1)$ *unit labour costs		0.001 (0.001)				
	Δ productivity			0.000 (0.000)			
	Δ labour capital substitution				-0.026** (0.011)		
	Δ FDI					0.003*** (0.001)	
	Δ RCA						0.000 (0.000)
structural reforms	$\Delta (-1)$ *social benefits	0.037*** (0.010)	0.035*** (0.005)	0.034*** (0.005)	0.020 (0.023)	0.061*** (0.011)	0.026*** (0.003)
	interaction term (market adjustment*structural reforms)	-0.299*** (0.082)	-0.002 (0.002)	-0.001 (0.005)	0.011 (0.024)	-0.002*** (0.000)	0.000 (0.035)
macro variables	Δ trade balance (t-1)	-0.110*** (0.003)	-0.108*** (0.002)	-0.107*** (0.002)	-0.109*** (0.006)	-0.060*** (0.008)	0.103*** (0.008)
	trade balance (t-1)	-0.138*** (0.009)	-0.136*** (0.006)	-0.136*** (0.006)	-0.136*** (0.023)	-0.328*** (0.010)	-0.179*** (0.022)
	Δ private consumption	-0.025*** (0.001)	-0.023*** (0.002)	-0.024*** (0.002)	0.024*** (0.005)	-0.027*** (0.003)	-0.023*** (0.004)
	Δ export prices	0.008*** (0.001)	0.008*** (0.001)	0.008*** (0.001)	0.008 (0.010)	0.017*** (0.002)	0.008 (0.006)
	EMU dummy	-0.025*** (0.006)	-0.027*** (0.009)	-0.029*** (0.010)	-0.024*** (0.005)	-0.050*** (0.012)	-0.023*** (0.008)
	model specification	N	1652	1730	1730	1730	1396

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

Table 12 – *Regression results: impacts of private market adjustment and non-linear structural unemployment on bilateral trade balances (1992-2007)*

dependent variable: Δ bilateral trade balance							
#		79	80	81	82	83	84
market adjustment	$\Delta (-1)$ *nominal compensation rate	-0.388* (0.205)					
	$\Delta (-1)$ *unit labour costs		0.000 (0.002)				
	Δ productivity			0.000 (0.003)			
	Δ labour capital substitution				-0.008 (0.012)		
	Δ FDI					0.001 (0.001)	
	Δ RCA						-0.001 (0.001)
structural reforms	$\Delta (-1)$ *structural unemployment ²	0.020* (0.012)	0.025* (0.13)	0.026** (0.010)	0.029*** (0.010)	0.036 (0.026)	0.014 (0.011)
macro variables	Δ trade balance (t-1)	-0.138* (0.079)	-0.188** (0.083)	0.150* (0.087)	0.188* (0.085)	-0.213*** (0.070)	-0.245*** (0.071)
	trade balance (t-1)	0.017 (0.014)	0.023 (0.015)	0.021 (0.015)	0.017 (0.015)	0.020 (0.020)	0.057*** (0.017)
	Δ private consumption	-0.012*** (0.003)	-0.012*** (0.003)	-0.013*** (0.003)	-0.014*** (0.004)	-0.013*** (0.004)	-0.011*** (0.003)
	Δ export prices	0.005** (0.002)	0.007*** (0.002)	0.006*** (0.002)	0.007*** (0.002)	0.007** (0.002)	0.005** (0.002)
	EMU dummy	-0.010 (0.013)	-0.018 (0.012)	-0.019 (0.013)	-0.020 (0.014)	-0.035* (0.018)	-0.009 (0.011)
	constant	0.002 (0.009)	0.011 (0.009)	0.006 (0.010)	0.009 (0.010)	0.022 (0.013)	0.008 (0.008)
model specification	N	1643	1720	1720	1720	1396	1502
	instruments	26	26	26	26	26	26
	AR (2)	0.968	0.656	0.898	0.871	0.161	0.417
	Hansen (p-value)	0.582	0.189	0.307	0.309	0.071	0.281

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

Table 13 – Regression results: impacts of private market adjustment and structural unemployment on bilateral trade balances (1992-2007)

dependent variable: Δ bilateral trade balance								
#		85	86	87	88	89	90	
market adjustment	$\Delta (-1)$ *nominal compensation rate	0.035 (0.432)						
	$\Delta (-1)$ *unit labour costs		0.002 (0.004)					
	Δ productivity			0.008 (0.007)				
	Δ labour capital substitution				0.010 (0.023)			
	Δ FDI					0.009 (0.006)		
	Δ RCA						0.001 (0.001)	
structural reforms	$\Delta (-1)$ *structural unemployment	0.050* (0.026)	0.040** (0.020)	0.071*** (0.025)	0.071** (0.028)	0.061 (0.064)	0.003 (0.025)	
macro variables	Δ trade balance (t-1)	0.101 (0.137)	0.088 (0.133)	0.040 (0.141)	0.113 (0.155)	0.214 (0.147)	0.033 (0.181)	
	trade balance (t-1)	0.037* (0.019)	0.030** (0.015)	0.038*** (0.014)	0.039** (0.016)	0.003 (0.030)	0.055*** (0.018)	
	Δ private consumption	-0.014* (0.007)	-0.004 (0.008)	-0.013* (0.007)	-0.012 (0.011)	-0.010 (0.013)	0.005 (0.013)	
	Δ export prices	0.006 (0.004)	0.010* (0.005)	0.006 (0.004)	0.010 (0.007)	0.029*** (0.013)	0.003 (0.006)	
	Δ GDP per capita	-0.003 (0.007)	-0.002 (0.008)	-0.006 (0.009)	0.000 (0.009)	0.015 (0.013)	-0.005 (0.009)	
	EMU dummy	-0.005 (0.011)	-0.016 (0.010)	-0.004 (0.010)	-0.009 (0.012)	-0.035* (0.018)	-0.017 (0.011)	
	constant	0.003 (0.009)	0.015* (0.008)	0.007 (0.009)	0.010 (0.010)	0.025 (0.018)	0.008 (0.007)	
	model specification	N	1643	1720	1720	1720	1396	1502
	instruments	23	23	23	23	23	23	23
	AR (2)	0.424	0.426	0.504	0.388	0.289	0.523	0.523
Hansen (p-value)	0.282	0.450	0.554	0.543	0.393	0.241	0.241	

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

Table 14 – Regression results: impacts of market adjustment and structural unemployment on bilateral trade balances including an interaction term (1992-2007)

dependent variable: Δ bilateral trade balance								
#		91	92	93	94	95	96	
market adjustment	$\Delta (-1)$ *nominal compensation rate	-0.396** (0.195)						
	$\Delta (-1)$ *unit labour costs		0.001 (0.002)					
	Δ productivity			-0.000 (0.004)				
	Δ labour capital substitution				-0.011 (0.012)			
	Δ FDI					0.001 (0.001)		
	Δ RCA						-0.001 (0.000)	
structural reforms	$\Delta (-1)$ *structural unemployment	0.047* (0.028)	0.038* (0.020)	0.054*** (0.016)	0.045** (0.018)	0.080* (0.043)	0.013 (0.018)	
	interaction term (market adjustment*structural reforms)	-0.333 (0.343)	-0.002 (0.002)	-0.001 (0.005)	-0.016 (0.015)	0.003 (0.004)	0.001 (0.001)	
macro variables	Δ trade balance (t-1)	-0.171** (0.070)	-0.178** (0.076)	-0.176** (0.069)	-0.195*** (0.071)	-0.214*** (0.074)	-0.237*** (0.071)	
	trade balance (t-1)	0.017 (0.014)	0.023* (0.014)	0.020 (0.012)	0.023* (0.013)	0.012 (0.020)	0.055*** (0.016)	
	Δ private consumption	-0.019*** (0.003)	-0.017*** (0.004)	-0.017*** (0.004)	-0.016*** (0.004)	-0.014*** (0.004)	-0.016*** (0.004)	
	Δ export prices	0.006** (0.002)	0.008*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.009** (0.003)	0.005** (0.002)	
	Δ GDP per capita	0.005* (0.003)	0.006* (0.003)	0.004 (0.003)	0.004 (0.003)	0.005 (0.005)	0.006** (0.003)	
	EMU dummy	-0.015 (0.013)	-0.016 (0.012)	-0.015 (0.012)	-0.015 (0.011)	-0.051** (0.020)	-0.009 (0.009)	
	constant	0.009 (0.010)	0.010 (0.009)	0.009 (0.009)	0.006 (0.008)	0.037** (0.187)	0.008 (0.007)	
	model specification	N	1643	1720	1720	1720	1396	1502
	instruments	34	34	34	34	34	34	34
	AR (2)	0.730	0.697	0.711	0.607	0.164	0.471	0.471
Hansen (p-value)	0.316	0.403	0.502	0.307	0.060	0.725	0.725	

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

5. Policy implications

This paper has assessed the adjustment process in the euro area in the light of rising intra-euro area current account balances. For this purpose, we investigated in particular the impact of structural reforms and private market adjustment on intra-euro area balances. Our estimation results for euro area countries confirm only in some cases a small significant impact of private market adjustment on bilateral trade balances. In contrast, structural reforms overall tend to improve intra-euro area current accounts, with labour market flexibility turning out to be a crucial determinant in this process. Hence, we clearly confirm the empirical results of Kennedy and Sløk (2005) as well as Bertola and Lo Prete (2009) for the euro area and have to reject the hypothesis that structural reforms will first lead to a worsening of the current accounts balance. We also find substitutive relationships among market adjustment and structural reforms. The latter imply that, without structural reforms, private market adjustment such as relative wage cuts is necessary to improve current accounts. However, there is some evidence that in euro area countries the effectiveness of structural reforms to foster the adjustment of current accounts has diminished since the start of EMU.

Overall, thus, our empirical results strongly support the potential benefits of structural labour market reforms in countries with large intra-euro area current account deficits. Referring to our empirical results, we therefore tend to join Gros (2009) and Gros et al. (2005) and argue in contrast to De Grauwe (2009b, c) that the only way out of the dilemma is to stick to the reform path already taken by the stronger reformer countries as, e.g. Germany, within the euro area. It is apparent that Germany is the country least affected by the crisis in Europe. The German export led model might not have prevented (possibly only temporarily) a sharp fall in GDP, but it seems to have provided a much more stable background for its consumers and workers than the housing bubble led economies of, for instance, Greece, Portugal and Spain. Obviously, the countries suffering most durably from the financial and economic crisis are those which relied too much on private and public debt in order to stimulate domestic demand. But, as the recent experience with Greece has clearly shown, the chickens come home to roost and those countries are presented the bill which, however, most probably will be passed on to other EU countries as well. Hence, re-gaining competitiveness is certainly no zero-sum game for Europe, especially with an eye on sound public finances, technological progress, innovation and general competitiveness vis-à-vis the rest of the world (Borbély 2006).

Given the substantial intra-euro area current account imbalances, reforms should be implemented as soon and steady as possible. The necessary adjustment process will be painful but then pass through to a timely economic recovery and less long-term unemployment. The alternative would be a long-lasting period of high and painful unemployment as experienced by Germany after its 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 balances would diminish and the international competitiveness of Europe as a whole would rise, as the competition among wage setters and politicians is reinforced. This in turn could also strengthen, for instance, the role of the euro as a reserve currency vis-à-vis the dollar. Moreover, this scenario neither calls for further steps towards political union nor for a coordination or centralization of wage policies at a supranational level. Finally, it clarifies that any notion of a European Economic Government should include the fight against euro area internal imbalances and to go for fiscal consolidation. Political union which turns to be a transfer union would be counter-productive - not least because in this case, the former hard-currency countries would finally leave the euro area.

Sustaining wage rigidities in under-performing euro area countries in order to stimulate domestic demand would not prevent these countries from turning into deflation. Instead, it would finally lead to lower domestic demand and higher current account balances within the euro area by destroying domestic employment. This, in turn, is likely to strengthen economic nationalism and therefore the likelihood of a break-up of the euro area. The recent example of Greece is highly illuminating in this respect. Hence, in order to safeguard the European integration process, we should believe in markets (again) 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.
GDP per capita	IMF, World Economic Outlook Database.
INV	OECD, Economic Outlook Database.
labour-capital substitution	European Commission, AMECO Database.
structural unemployment (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.