Why is it so Difficult and Complex to Solve the Euro Problem?

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This paper discusses the complexities and challenges in finding a stable long-run solution for the Eurozone crisis. We first discuss the macroeconomic and structural differences among North and South European countries. Focusing on trade, labour productivity and balance of payments data, we show that periphery's current account deficits are endemic and closely follow economic growth. Our analysis suggests that while German stagnant wage policy might have contributed to the building up of imbalances within the Eurozone to an extent, monetary policy by ECB, deficit-dependence of growth in Southern Europe and the cheap-credit environment of pre-crisis period also played major roles. In addition, we analyze the feasibility of policy proposals for saving the Eurozone, evaluating potential costs/benefits and reviewing the pros and cons of the newly established European Banking Union. We conclude that since the problems in Southern Europe are structural, an active industrialization policy in these countries and a partial fiscal union are essential for a sustainable long-run solution. Furthermore, the Banking Union as it is, is far too immature to have a quick impact on the problem. The costs of the necessary long-lasting reforms and regulations in the Eurozone can exceed short-run benefits. Therefore, a strong political will power with less attention to the short run benefits is necessary for a successful recovery.

Introduction

Over the last two years, European economies have been experiencing their most severe economic crisis since the establishment of the European Union. In the beginning of 2012, many investment banks and analysts were betting on various countries to exit the Eurozone, and the possibility of the currency union to break up. The level of uncertainty regarding these economies was strikingly lower since the introduction of the euro in January 1999 until the start of the subprime crisis in mid-July 2007. During this period, spreads on bonds of Eurozone sovereigns had varied in a narrow range with minor differences across countries, indicating that the single currency mechanism was working properly. However, after the collapse of Lehman, interest rates on treasury bonds of member states started to diverge significantly. Simultaneous problems in banking and sovereign debt have caused many Eurozone countries to experience negative GDP growth, leading to high unemployment rates. Therefore, fixing the Eurozone problem has now become an important task for the leaders of member states.

Various financial and economic remedies have been proposed to fix the Eurozone problem. As of beginning of 2013, financial markets are less concerned about a tail event probability of a break up in the Eurozone after the strong policy action taken by ECB. However, from a longer perspective, several uncertainties still remain to be resolved for a more convincing and viable solution for the Eurozone crisis. Particularly, establishing a harmonized

fiscal and financial environment in the Eurozone still requires serious policy actions, several of which have considerable economic and political costs associated with them.

Even though the economic environment in the Eurozone countries now is better than a year ago, the cost and benefit of these proposed measures to fix the euro problem needs to be assessed in more detail. In this paper, first, we give brief account of the sources of the Eurozone problem. We summarize the causes of the Eurozone crisis in three categories: Macroeconomic imbalances in Europe, lack of fiscal discipline and consumption boom in the southern countries. Different classifications and interpretations on Eurozone problem have been studied extensively elsewhere (Baldwin et. al (2010), Wyplosz (2010), Buchheit and Gulati (2012) . We also review some commonly held beliefs on the reasons of the Eurozone crisis, discussing the adequacy of corresponding policy proposals as a sustainable solution. We have organized the paper as follows. In part I, we discuss the main macroeconomic and financial problems that caused Eurozone crisis. In the second part, we present a detailed analysis of trade flows of Germany and the periphery, showing that peripheral Europe is structurally dependent on current account deficits. In the final section, we critically evaluate several solutions suggested in the literature, namely wage policy, austerity, Eurobonds, fiscal-banking union and exit from the monetary union. We conclude that the complexities inherent in the Eurozone problem make each of the solutions much more costly than initially proposed. In short, our analysis suggests that notwithstanding the difficulties associated with it, a (partial) fiscal and banking union accompanied by an active productivity-enhancing industrialization policy in the periphery is a necessary first step in solving the Eurozone problem. However, since long term economic and financial adjustments need large and unequal sacrifices at times, a strong political support is certainly a must for a sustainable solution.

1. What is the problem in the Eurozone?

Eurozone's problems gained widespread popularity with the surfacing of sovereign debt issues first in Ireland and Greece, followed by Spain, and Portugal as these countries asked for bail-outs from European funds and the IMF one after the other following the crisis in 2008. Despite low level of public debt prior to the crisis, the large costs of bank bail-outs in Ireland rapidly pushed up this ratio and led to questions about the sustainability of public debt. As interest rates on Irish bonds skyrocketed, Ireland needed to be bailed- out by the EU and the IMF in November 2010. This was accompanied by the Greek crisis in 2010 and the first IMF bail-out in May 2010, and subsequently by Spain and Portugal, (as well as Greece) being bailed-out by the European Stability Fund in 2012.

Figure 1. Gross Government Debt (% of GDP)
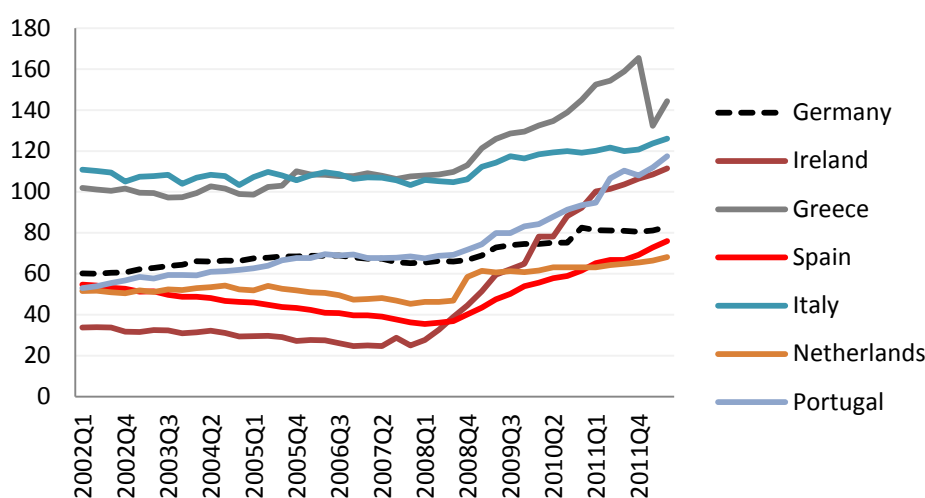
Source: Eurostat

One common characteristic of bail-out countries is the massive increases in debt to GDP ratios following the 2008 crisis, mostly due to large bail-out costs of domestic banking systems and large negative growth rates. Portugal, Ireland and Spain all started from low levels of debt to GDP ratios in 2002, and maintained these low ratios until 2008. Spain particularly reduced its debt to below 40% of GDP in this period, while Ireland had only around 30% debt to GDP prior to the crisis. However, Portuguese and Irish debt rapidly climbed over 100% of these countries GDPs after 2008, while in Greece, a partial default was necessary as public debt reached over 160% of Greek GDP. The accumulation of large amounts of public debt in these countries following the crisis has led policymakers in the Eurozone to push for a reduction of budget deficits and tight austerity measures including reduction in wages and elimination of social safety nets such as unemployment benefits. Advocates of this policy have suggested that eliminating budget deficits will also eliminate current account deficits in the periphery, therefore solving the balance of payments problems at the same time, which we will discuss in detail below.

Table 1
Maturing Debt as % of Current Debt Stock

	2013	2014	2015	2016	2017	Total
Greece	6.1%	5.6%	2.8%	1.9%	18.0%	34.3%
Portugal	10.6%	9.9%	9.2%	6.5%	4.2%	40.4%
Italy	12.6%	7.8%	7.9%	5.5%	5.7%	39.6%
Spain	16.8%	12.4%	10.8%	9.7%	9.7%	59.4%
Ireland	6.1%	6.8%	4.4%	8.0%	4.1%	29.3%

Source: Bloomberg

As well as the volume of the debt, the main problem with the periphery is the large fall in government revenues due to the contraction of the economy and the necessity to roll-over the existing stock of debt. Particularly for Spain, Italy and Portugal, around half of the existing debt needs to be rolled over in the following five years (Table 1), which corresponds to around 50% of these countries' respective GDPs. Combined with the current budget deficits, this brings about huge borrowing requirements for these countries until 2017, and renders the evolution of future debt dynamics very sensitive to the developments in the interest rates.

**Figure 2. Yields on 10-year Government Bonds**
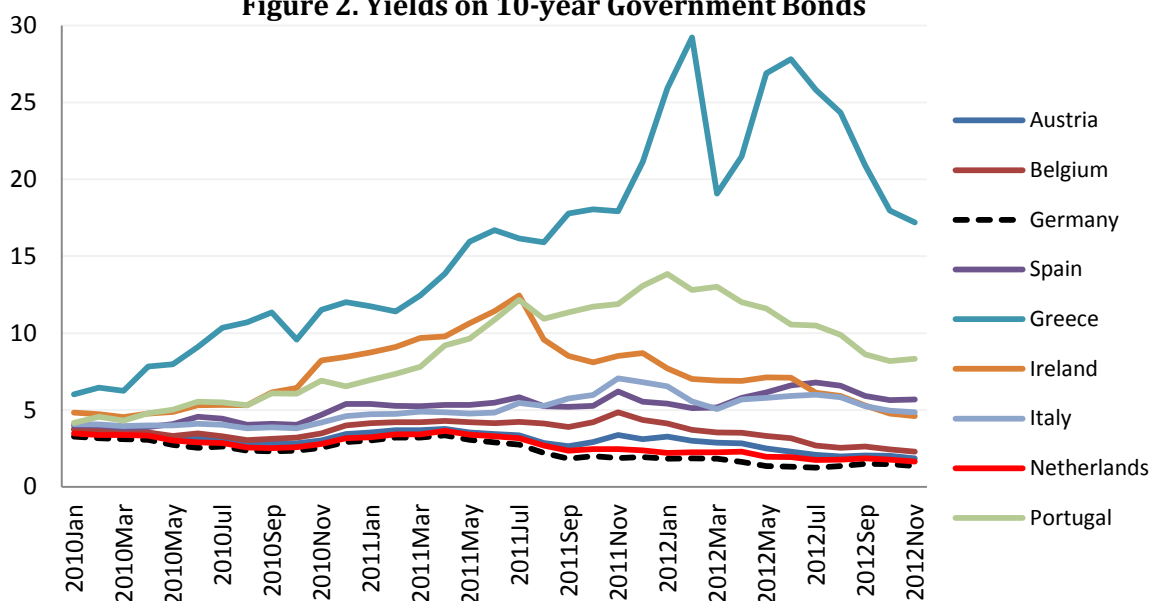
Source: Eurostat

However, for peripheral Europe, the interest rates on 10-year government bonds in secondary markets increased very rapidly after January 2010, reaching over 10% for Ireland and Portugal and almost 30% for Greece. Despite some easing in the last six months, there is still a divergence in financing costs of rolling over the debt between the North and the South.

A second major problem particularly in peripheral Europe (Greece, Spain, Portugal Italy and Ireland) is low growth rates and very high levels of unemployment (Figure 3). While there were modest falls in unemployment in the periphery during the first years of the union, unemployment rate has reached to 25% of civilian labour force in Greece and Spain, and to over 16% in Portugal as of September 2012, with no sign of slowing down despite (or rather due to) recent policy measures. Core European economies - particularly Germany – on the other hand have enjoyed significant improvements in employment rates following the monetary union. German unemployment rate continued to fall even after the crisis, and there were only slight increases in unemployment in Austria and Netherlands, as the rates hover around 5% in all these countries.

Figure 3. Unemployment
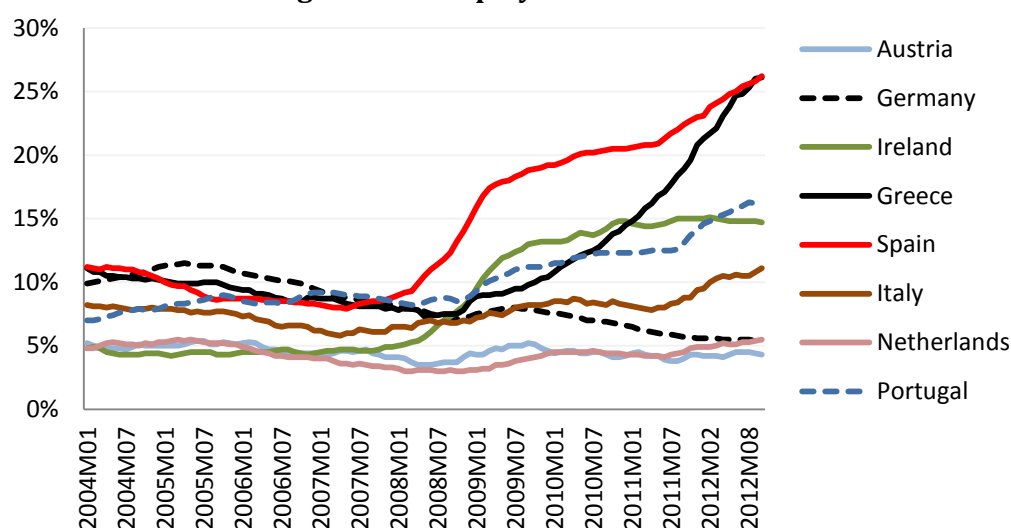
Source: Eurostat

2. Imbalances in Europe: Current Accounts, Wages and Consumption Booms

A large number of studies have stressed that current account divergence among member Eurozone countries had a negative impact on the currency union. In Table 2 below, we display the evolution of current account positions of selected Eurozone countries between 1999 and 2011. The data shows a clear divergence among member states. For instance, while countries like Luxembourg, Austria, Finland, Germany and Netherlands were running continuous current account surpluses, Southern European countries like Greece, Portugal and Spain have persistent deficits. In addition, the pace of the deficits in these countries has increased between 2002 and 2008, reaching to 10% of gross domestic product at the onset of the crisis, while surplus countries accumulated higher current account surpluses in the same period. Germany particularly moved from a current account deficit in 2000 to a surplus of 7.4% of its GDP in 2007, as well as the Dutch surpluses jumping from 2.6% of its GDP to 9.3% in 2006. However, as argued by Blanchard and Giavazzi (2002), under perfect factor mobility, the accumulation of imbalances would not be detrimental in a monetary union. In a monetary union if such imbalances reallocated capital from capital-abundant countries to capital-scarce countries, particularly in sectors where high productivity gains can be achieved. However, if the imbalances are due to increases in investment or expenditures in non-tradables and real estate,

capital in one country cannot move into other which constitutes a serious risk in a monetary union. Under such circumstances, domestic inflation would push up wages in these sectors and draw resources away from productive tradable goods sectors (Blanchard 2007).

Table 2. Current Account Balance as % of GDP

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Belgium	4.0	3.4	4.5	3.4	3.2	2.0	1.9	1.6	-1.6	-1.6	1.4	-1.0
Germany	-1.7	0.0	2.0	1.9	4.7	5.1	6.3	7.4	6.2	5.9	6.0	5.7
Ireland	-0.4	-0.6	-1.0	0.0	-0.6	-3.5	-3.5	-5.3	-5.6	-2.9	0.5	0.7
Greece	-7.7	-7.2	-6.5	-6.5	-5.8	-7.6	-11.4	-14.6	-14.9	-11.1	-10.1	-9.8
Spain	-4.0	-3.9	-3.3	-3.5	-5.2	-7.4	-9.0	-10.0	-9.6	-4.8	-4.5	-3.5
France	1.5	1.8	1.2	0.7	0.5	-0.5	-0.6	-1.0	-1.7	-1.3	-1.6	-2.0
Italy	-0.2	0.3	-0.4	-0.8	-0.3	-0.9	-1.5	-1.3	-2.9	-2.0	-3.5	-3.2
Netherlands	2.0	2.6	2.6	5.5	7.6	7.4	9.3	6.7	4.3	4.1	7.0	8.7
Austria	-0.7	-0.8	2.7	1.7	2.2	2.2	2.8	3.5	4.9	2.7	3.0	1.9
Portugal	-10.3	-10.3	-8.2	-6.4	-8.3	-10.3	-10.7	-10.1	-12.6	-10.9	-10.0	-6.4
Finland	7.8	8.4	8.5	4.8	6.2	3.4	4.2	4.3	2.6	1.8	1.4	-1.2

Source: Eurostat

A second issue regarding the sustainability of persistent current account imbalances within the union emerges from the financing of periphery's deficits. The Eurozone as a whole maintains a balanced current account position with the rest of the world. While one might be tempted to think that the common currency Euro therefore makes the financing of at least within-union deficits a trivial issue, this is not necessarily the case[1].

Several reasons have been put forward in the literature regarding the reasons of the massive current account imbalances exist in the Eurozone. We have classified the reasons of these imbalances in three sections. The first group of papers mainly blames the wage suppression in Germany as the main culprit for the current account imbalances within the Eurozone. A second group of papers argue that irresponsible fiscal policy in peripheral Europe is the main reason for the large debt stocks, And finally, related to the first two approaches, the credit-driven consumption booms in the was also considered to building up of imbalances. We discuss these approaches in the next sections in more detail.

2.1 Labour Costs and Competitiveness Differentials

As mentioned above, one line of literature blames the developments in the relative competitiveness of Eurozone members, particularly the divergence between Germany and the periphery for the growing current account imbalances within the union. According to this view, this divergence mainly occurred due to the differences in wage dynamics inside the Eurozone, as wage moderation in Germany and the pace of increase in wages in the periphery led to competitiveness losses in these countries. (Bibow (2012), Onaran (2010), Bagnai (2012), Cesaratto (2012)). Indeed, beginning from 2001, wages in Germany stagnated due to the reforms in the labour market, while peripheral Europe experienced considerable increases in nominal wages. This was reflected in a large divergence in "unit labour costs" between Germany and the periphery, as the gap reached almost 30% between Germany and Greece (Figure 3).

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[1] Financing of intra-union deficits are closely related to TARGET2 balances, which we will discuss in detail below.

Figure 3. Nominal Unit Labour Costs (2000=100)
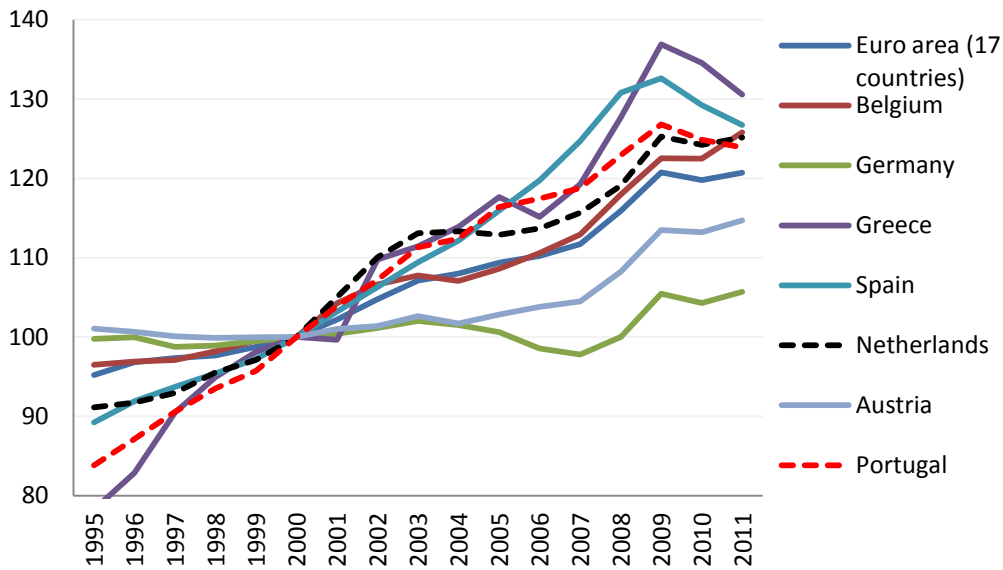
These developments have led some scholars to accuse Germany with implementing "beggar thy neighbour" policies and monetary mercantilism at the expense of their neighbours and argue that the main reason for the imbalances is the divergence in unit labour costs. (Wray (2011), Bibow (2012), Cesaratto (et al 2011), Cesaratto (2012). Bibow (2012) for example argues that Germany exploited the full-employment policies of other Eurozone members by slashing its domestic demand through wage suppression and exporting its surplus. Cesaratto (2012) on the other hand contends that low domestic wages, which enable high profits for the corporate sector, imply that the lack of domestic demand can be substituted with higher demand from the periphery, which is enabled by capital flows into these countries. In fact, Germany's trade balance over its GDP stood at 4.5% of its GDP in 2001, rapidly rising to 8% until 2007. Following the crisis in 2008, there was a quick fall to 6% in 2008 and 2009, but the trend has reversed once again after 2010, and as of 2011, German trade surplus stands at around 7% of its GDP once again.

## Figure 4. Average Contributions to Growth 2001-2007
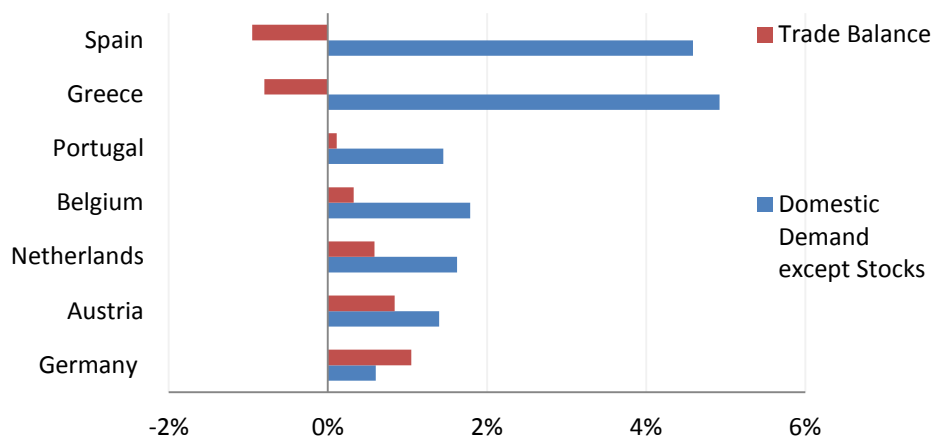
Figure 4 above shows that while the cumulative demand's contribution to growth in Germany was positive between 2001 and 2007, foreign demand was indeed the main engine of growth. Similarly, Netherlands and Austria also had a considerable share of foreign demand contribution in their growth rates while on the other hand, Spain and Greece exhibited a very strong contribution of domestic demand to growth, and trade had a negative impact cumulatively. In essence, a recent study by the European Council argues that changes in domestic demand could account for as much as 40-50% of the differences in current accounts observed in the euro-area since the launch of the euro (EC 2010).

However, a closer look at both the unit labour cost statistics and total labour cost data in industry (which is more relevant for merchandise trade) reveals that it is very difficult to find a one-to-one relationship between labour costs and trade performance. As Figure 5 below shows, Netherlands, and Finland both experienced a higher increase than Portugal for example in total labour costs in industry between 2000 and 2008, with almost no deterioration in trade balance or current account positions in this period. Similarly, while Belgian labour costs closely followed that of Portugal, Belgium recorded higher merchandise trade surpluses against Germany (and France) during this period despite sizeable increases in total labour costs in industry, while it did not experience any reduction in its merchandise trade surplus against Austria, which had the lowest increase in labour costs after Germany[2]. On the contrary, Finland's goods trade balance against Germany (and Netherlands & Belgium to a lesser extent) continuously worsened during this period, while large increases in labour costs and real wages seemed to have no affect on its trade with the remaining Eurozone countries. Therefore, while labour costs in industry undoubtedly has an effect on trade between countries (especially in price-elastic consumption goods sectors), they have limited power in explaining the direction and magnitude of trade flows among countries inside the Eurozone.

Figure 5. Total Labour Costs (Industry)
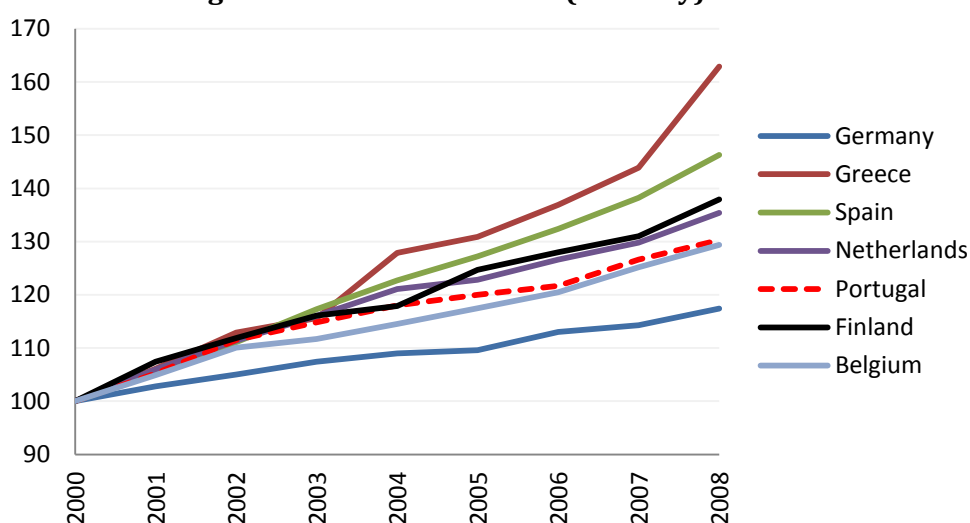
Source: Eurostat

2.2 Lack of Fiscal Discipline

The second group of papers argue that loose fiscal policy in Southern Europe, and the inability of governments to implement countercyclical fiscal policy is the main reason for the build-up of excessive public debt and current account imbalances in the Eurozone (Lane 2012, Fernandes et al 2011, among others). Benetrix and Lane (2012) further argue that fiscal policy

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[2] See "External and intra-EU trade A statistical yearbook (Data 1958 – 2010)" for a detailed breakdown of intra-EU goods trade balances.

became less countercyclical after the introduction of the Euro, as governments used the additional resources during the boom years to increase government spending or cut taxes. Unsurprisingly, this approach recommends a tightening of fiscal policy in the South in order to eliminate the persistent imbalances in the Euro area, which we will turn to again below.

However, as we argued above, apart from Greece, the periphery's debt overhang particularly increased following the crisis in 2008, rather than before. In fact, it was Germany that breached the 3% deficit rule during the labour market reform until 2006, and German deficits were even higher than Portugal between 2002-2005. Portuguese debt to GDP ratio was also below that of Germany until 2006, and remained only slightly above Germany until the crisis began. Further, as Figure 3 shows, Portuguese unemployment steadily increased between 2004 and 2008, with modest annual economic growth of around 1.5% during this period. Similarly, the Irish budget surpluses turned into huge deficits following the crisis due to the massive costs of bank bail-outs, while Spanish debt is still among the lowest in the Eurozone despite massive increases in the budget deficit following the crisis. Therefore, blaming fiscal policy for the large debt overhang of the periphery is not fair to say the least, particularly when neither national governments/EU nor ECB were aware or critical of the underlying danger due to booming asset prices and rising inflation.[3]

Figure 6. Budget Deficit (% of GDP)
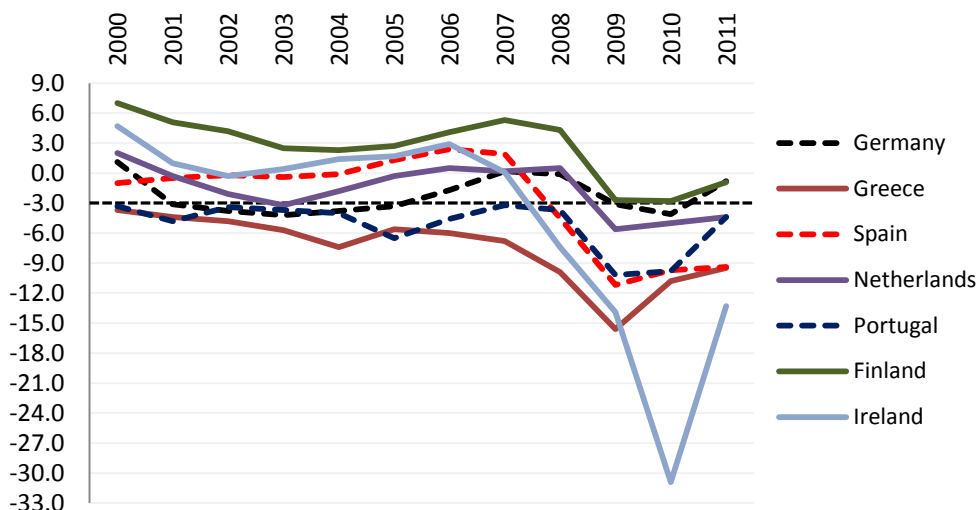

Source: Eurostat

2.3 Consumption Boom in the Periphery

A third (and in our opinion a much more valid) reason for the growing imbalances in the Eurozone is the consumption and housing booms observed in Southern Europe both due to the low interest rate environment following the adoption of the Euro and the abundance of cheap credit particularly after 2002 (Uxo 2012, Cesaratto et al 2011, Lane 2012, Bibow 2012) While the availability of cheap credit during the sub-prime boom in the U.S and Spain is related to the process of securitization and the associated lax lending standards, the loose monetary policy implemented by the ECB also contributed to the increase in private debt levels and a consumption boom, particularly in Southern Europe. In this context, Nechio (2011) provides evidence that the monetary policy in Eurozone followed very closely the Taylor rule recommendations suitable for core Europe, which consists of Austria, France, Finland, Germany, Belgium and Netherlands, rather than the periphery consisting of Spain, Portugal, Greece and

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[3] We will discuss the relationship between fiscal policy and current account deficits in the periphery in Part 2.

Ireland. As Figure 7 shows, a simple Taylor rule recommended a much higher policy rate by the ECB for the periphery, due to higher inflation particularly before the crisis whereas the converse if true for the post-crisis period as the peripheral countries experienced deflationary pressures and much higher unemployment gaps than the core. The relatively high target rate for the periphery in the post-crisis period is one of the key factors that aggravate the sovereign debt problems haunting peripheral Europe (Nechio 2011). Such a core-oriented monetary policy shows the affect of Bundesbank's historical low-inflation-policy on ECB's current decision making process, particularly following the crisis when ECB was reluctant to reduce interest rates voicing concerns over inflation, as argued by Bibow (2010) as well.
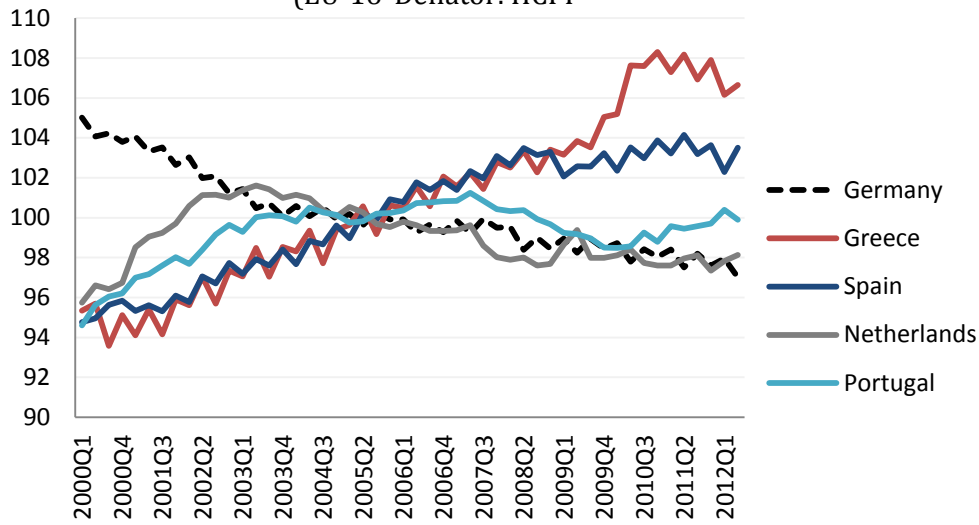
Figure 7

Taylor Rule in the EU
(Nechio 2011)

Figure 3
Policy rules: Periphery vs. core (quarterly average)
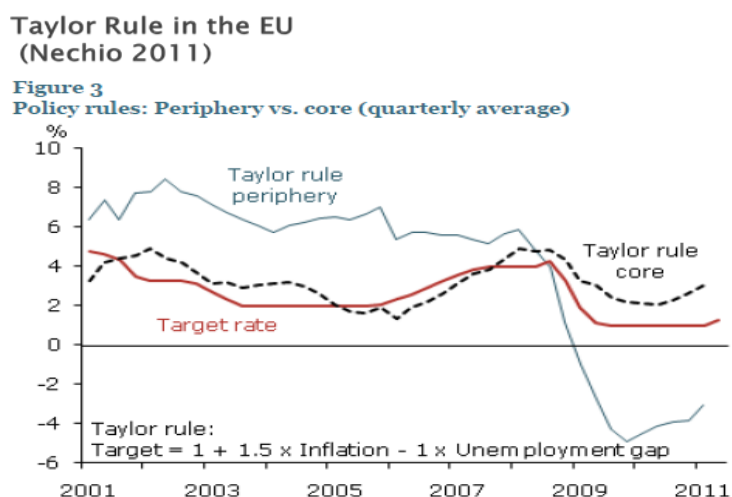
As expected, the transmission mechanism of monetary policy and the loose lending standards in the pre-crisis period resulted in a large fall in the real interest rates charged on domestic loans in peripheral Europe. The real lending rates in these countries began to fall sharply before joining the Euro due to expectations of lower future interest rates, and following the adoption of the Euro, the real lending rates were close to zero in Greece and Spain especially until the first signs of the crisis in 2007. This led to a credit-financed consumption boom in the peripheral Europe as credit to private sector doubled between 2000 and 2008 as percentage of GDP in Spain and Ireland, and increased more than 50% of GDP in Portugal and Greece in the same period. However, the characteristics of the surge in consumption were different among the periphery. While Spain (and Ireland) experienced the famous housing booms in this period, government spending and private consumption shared the increases in domestic demand almost equally in Greece and Portugal. Borio (2012) also shows that once adjusted for credit and property prices, the output gap in Spain for example was much higher than official estimates, signalling a credit-driven consumption boom at the level of U.S in the pre-crisis period.

One of the main pillars of a functioning currency union is the convergence in inflation rates, since otherwise deviations in real exchange rates would result in regional imbalances. The Eurozone, however, displayed very divergent characteristics with regards to overall inflation rates since the adoption of the Euro. While Germany had inflation rates below the 2% threshold between 2000 and 2007 due to low aggregate domestic demand and stagnating wages, the periphery's inflation rates continuously exceeded this value in the same period due to domestic demand pressures, resulting in large accumulated inflation differentials. Among the periphery, Portugal managed to reduce its inflation rate from over 4% in 2001 to close to the 2% benchmark in 2007, whereas in Spain and Greece, the increases in prices remained over 3% through this entire period.

Figure 8. Real Effective Exchange Rates
(EU-16 Deflator: HCPI

Source: Eurostat

The differentials in inflation rates brought about a massive appreciation of the real exchange rates of the periphery against particularly Germany, as well other core countries such as Austria and Netherlands (Figure 8). At this point, it is important to stress that the main reason behind the increase in wages in the periphery was due to high inflation compared to the core, rather than an increase in real wages or the share of wages in total output. As much as the stagnation of wages in Germany contributed to this appreciation, the high inflation rates due to credit-induced demand and wage-indexation in the periphery also helped significantly. Apart from Greece where real wages increased fastest among the periphery, Spanish real wages increased very modestly between 2000 and 2007, while the increase in Portuguese real wages

Figure 9. Industry Real Wage Index (2000=100)
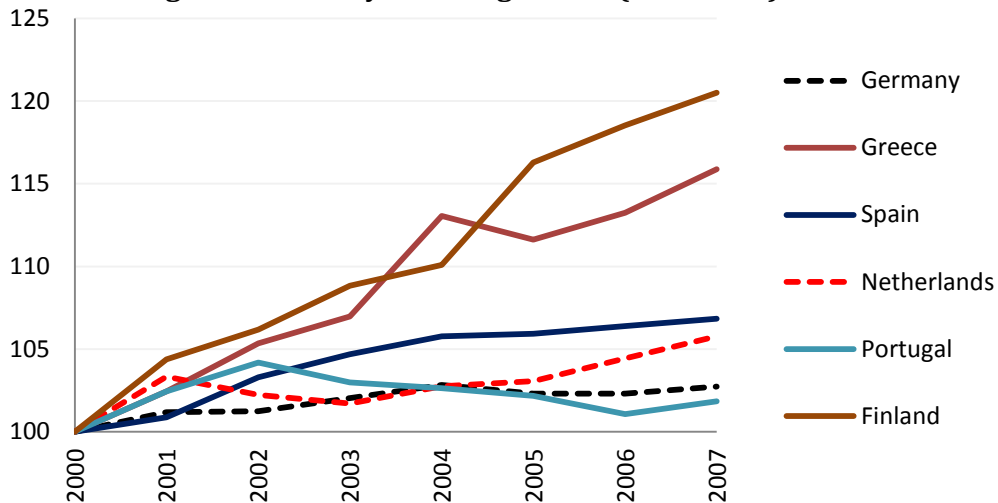
Source: Own calculations from Eurostat data on "Wages and Salaries in Industry", and "HCPI"

in industry was below that of Germany. Further, the share of wages as percentage of GDP continuously fell in between 2002 and 2007 in the periphery as well as Germany, despite improvements in the unemployment rate in Greece and Spain. Throughout this period,

unemployment rates fell by 4% in Spain and Greece to 8%, while at the same time the share of wages and compensation of workers as a percentage of GDP fell similarly by around 4%. This share was more stable for Portugal with only a slight fall, but at the expense of rising unemployment. In fact, Portugal's unemployment rate rose steadily even during the boom years, reaching to 9% before the crisis[4].

3. What are the Complexities in the Eurozone Problem?

While we agree that German wage policy and public deficits in Greece have played some role in the building up of large amounts of public debt and current account deficits in the periphery, in our view, none of these are able to provide a full explanation of the reasons behind the problems in the Eurozone. For this reason, policy suggestions drawing from such diagnosis are too simplistic at best (wage increases in Germany or wage reductions in the periphery), if not completely irrelevant (austerity). Peripheral Europe (Greece, Portugal and Spain) suffers from structural problems in industry and export markets, with a significant dependence of growth on persistent current account deficits financed by capital inflows. This has been the case particularly after full capital account liberalization in these countries in early 1990s, as current account deficits gradually widened during late 1990s. Further, a common characteristic of the periphery (especially of Greece and Portugal, and to a lesser extent Spain) is persistent deficits in merchandise goods trade, which are partially offset by surpluses in trade in services (tourism). Coupled with credit-driven consumption boom fuelled by low interest rates and lack of regulation, these deficits in goods trade have been the main drivers of huge current account deficits, despite sizeable surpluses in services trade, especially in Greece and Portugal before the crisis. Therefore, in this section, we will present a detailed analysis of the current account and goods trade dynamics of peripheral Europe both with Germany and rest of the world, focusing on the financing of these deficits and their relationship with growth as well.

3.1 Current Accounts, Fiscal Deficits and Growth in the Periphery

As we mentioned above, some scholars have blamed the lack of fiscal discipline and countercyclical fiscal policy as one of the main reasons of the current account imbalances within the union. This is the famous "twin deficits" argument, which states that budget deficits and current account deficits move and in hand.

As an accounting identity, the current account deficit can be written as

$$CA = (I - S) + (T - G)$$

where (I – S) is the private saving deficit and (G – T) is the budget deficit of the government. So current account deficits occur either because the government spends more than it taxes (G > T) or private investment exceeds private savings (I > S) or both. It is important to keep in mind that the above equation is only an accounting identity and does not imply any causal relation between current account and deficits.

Figure 10 below displays the dynamics of current account deficits, private and public deficits and growth rates of GDP in the periphery between 1990-2011. The data shows that Spain significantly reduced its budget deficit almost steadily after 1995. For Portugal, apart from 2005-2006, budget deficits were hovering around the 3% criteria set by the Maastricht

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[4] See AMECO database for the data on wage share (Nominal compensation per employee at factor cost)

Figure 10

Greece: Sectoral Balances (% of GDP) and Growth

Legend: Budget Deficit, Private Deficit, Growth Rate, Current account Deficit

Spain: Sectoral Balances (% of GDP) and Growth
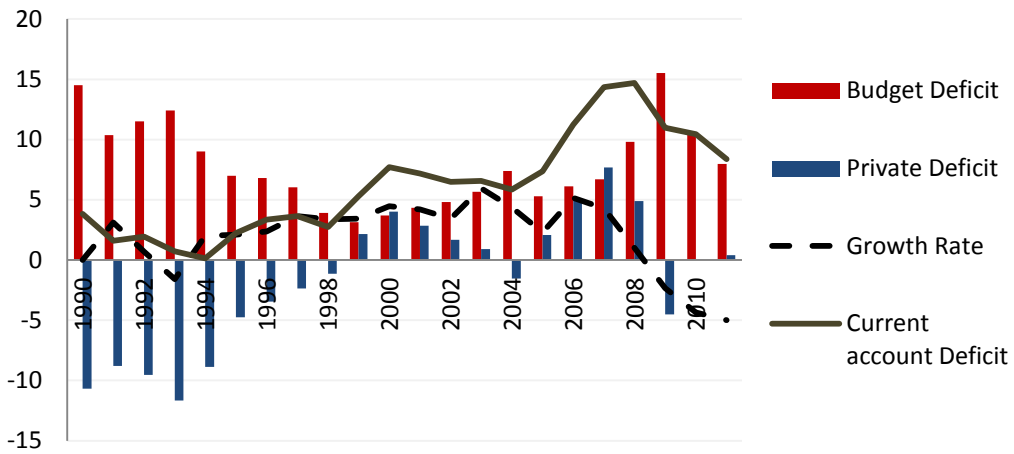
Legend: Private Deficit, Budget Deficit, Current account Deficit, Growth
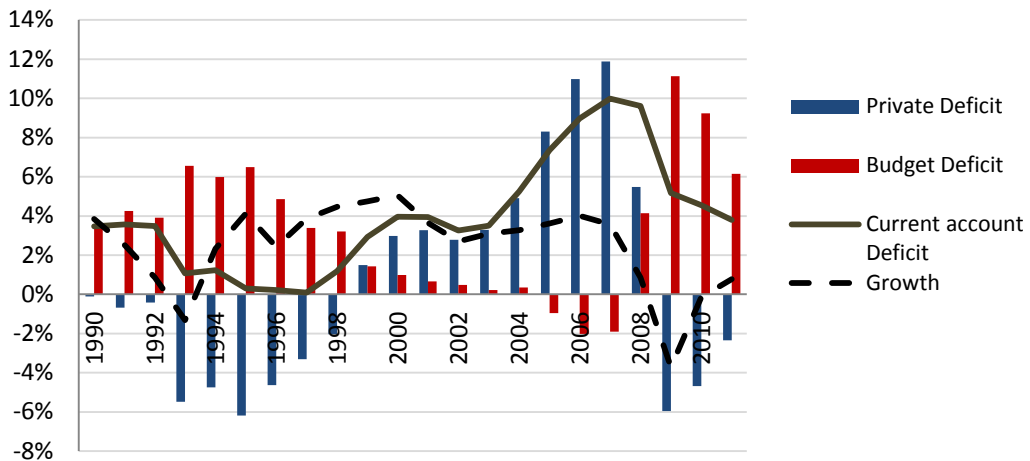
Portugal: Sectoral Balances and Growth

Legend: Budget Deficit, Private Deficit, Growth Rate, Current Account Deficit
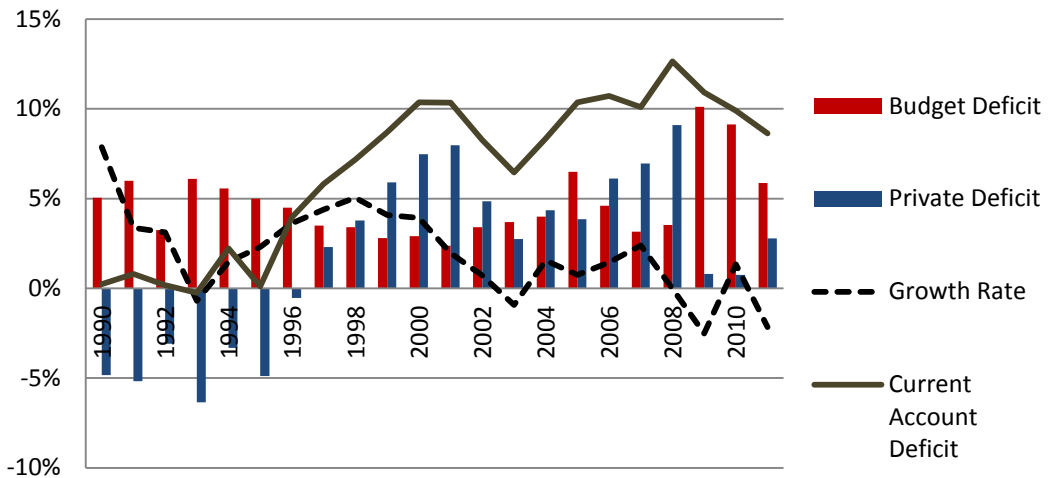
Source: Eurostat, IMF, AMECO

Treaty between 1995-2008, whereas for Spain, deficits fell considerably after 1998, and between 2005 and 2007, the Spanish government was actually running budget surpluses.[5]. For both of these countries, the main reason for the huge current account deficits was the private savings deficit, as private investment exceeded domestic private savings enormously.[6] For Greece on the other hand, in the early years in the union, the current account deficit was mainly driven by budget deficits, but the jump after 2004 is due to a massive increase in private deficits, fuelled by easy credit and increase in household indebtedness, although below the levels observed in Spain[7].

Another clear relationship that can be observed from the data is the close correlation between growth and current account deficits in the periphery, particularly between mid 1990s and 2008. For Greece and Portugal, the growth rate behaves like a mirror image of current account deficit, indicating that the deficits are structural and growth is dependent on persistent deficits. The same is true for Spain although to a lesser extent, as the relationship seems to weaken between 2004 and 2007 with the current account deficit soaring and growth rate increasing only modestly. Further, as we argued in the beginning of this section, the full capital account liberalization in the periphery has increased the magnitude of current account deficits of especially after the second half of 1990s, prior to joining the monetary union.

3.2 Trade Dynamics of the Periphery and Germany

We start with detailed trade statistics within the union in order to observe their magnitude, composition and evolution in time. Table 3 below presents the intra EA-17, Extra EA-17 and total goods trade balances of Germany, Greece, Spain and Portugal. As the table shows, apart from a small decrease between 2005 and 2006, Germany has consistently accumulated higher trade surpluses within the Eurozone between 2001 and 2007. These surpluses were reversed following 2008 and have significantly fallen at the end of 2010. On the other hand, Extra-EA17 exports of Germany have also increased continuously since 2001 and have shown almost no slowdown even after the 2008 crisis, with a small fall in 2009, which was immediately reversed in 2010. The data therefore suggests that Germany has instantly diversified its export markets, and managed to replace the loss of demand for its exports from the Euro-zone with other export markets. Southern Europe on the other hand displays divergent dynamics with regards to the composition of their goods trade deficits. While Greece's trade deficit is almost equally shared between Euro area and the rest of the world, and is stable during this period, a much larger proportion of Spain's trade deficit is with non-Eurozone countries. More significantly, although Spain had almost equal trade deficits with Intra-EA17 and Extra-EA17 countries in 2001, during the boom years of 2003-2007, trade deficit with Extra-EU17 countries exploded and almost doubled the trade deficit with Intra-EA-17 countries. Total deficit in goods trade tripled between 2001 and 2007, and is the main culprit for the huge current account deficits in Spain. Portugal, however, completely separates from Greece and Spain in this sense, as around 75% Portugal's trade deficit is with Euro-zone countries, and this ratio has not varied before or after the crisis in 2008.

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[5] Even for Greece, until the crisis in 2008, the budget deficits were way below the levels experienced during 1990s, although above the 3% threshold

[6] For Portugal and Spain, Bagnai (2010) also finds no empirical evidence in favour of the twin deficits hypothesis that public deficits lead to current account deficits.

[7] If large current account deficits reflected unusually high levels of investment in export-supporting infrastructure by the government, those deficits could be smoothly reduced by increased savings out of progressively higher domestic incomes and increases in exports of goods and services (Eichengreen et al 2007). However, this clearly was not the case in Greece.

Table 3. Goods Trade Balances (billion Euros)

Germany	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Intra EA17	31.7	42.3	46.1	56.1	60.9	56.3	70.6	58.0	38.9	32.8	19.3
Extra-EA17	63.8	90.1	83.8	100.0	94.9	104.1	123.7	119.6	100.0	121.1	138.1
Total	**95.5**	**132.4**	**129.9**	**156.1**	**155.8**	**160.4**	**194.3**	**177.6**	**138.9**	**153.9**	**157.4**

Greece	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Intra EA17	-13.7	-10.7	-14.4	-15.9	-15.4	-16.7	-19.2	-20.3	-16.6	-13.0	-10.4
Extra-EA17	-10.3	-11.7	-13.9	-14.2	-14.5	-17.4	-20.9	-23.4	-18.5	-18.8	-10.6
Total	**-24.0**	**-22.4**	**-28.3**	**-30.1**	**-29.9**	**-34.1**	**-40.1**	**-43.7**	**-35.1**	**-31.8**	**-21.0**

Spain	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Intra-EA17	-20.3	-21.6	-22.9	-29.6	-33.6	-37.0	-44.4	-33.6	-13.8	-11.3	-10.1
Extra-EA17	-22.1	-20.1	-23.5	-31.3	-43.7	-54.6	-54.8	-61.6	-33.4	-40.5	-40.2
Total	**-42.4**	**-41.7**	**-46.4**	**-60.9**	**-77.3**	**-91.6**	**-99.2**	**-95.2**	**-47.2**	**-54.8**	**-50.3**

| Portugal	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Intra-EA17	-12.1	-11.8	-10.9	-11.2	-14.6	-15.6	-16.1	-18.6	-16.3	-16.4	-12.1
Extra-EA17	-5.1	-3.3	-2.8	-4.2	-5.6	-5.5	-5.5	-6.6	-3.4	-5.0	-4.5
Total	**-17.2**	**-15.1**	**-13.7**	**-15.4**	**-20.2**	**-21.1**	**-21.6**	**-25.2**	**-19.7**	**-21.4**	**-16.4**

Source: Eurostat

Next, we turn to a more detailed decomposition of goods trade among the members of the union. For this purpose, Figure 11 below shows the percentage shares of selected Eurozone countries and China in Spain's trade deficit. The values are calculated as a ratio of Spain's bilateral goods trade deficit with each of these countries to Spain's total trade deficit, using the data in Eurostat. Between 2000 and 2008, Spain had been running continuous goods trade deficits with most of the countries in the Eurozone[8]. While around 30% of Spain's total goods trade deficit occurred from bilateral trade with Germany in 2002, this ratio almost continuously fallen until the crisis and stands at 24% as end of 2011. A similar pattern can be observed more sharply in Spain's bilateral trade with France, as deficits turned into surpluses after 2009, and reached to surpluses against Portugal. On the other hand, the fall in German and French exports to Spain were replaced by exports from China, as the share of trade with China in total deficits exceeded the share of Germany in 2010. The share of Belgium, Netherlands, Ireland and Italy in total Spanish goods trade deficits remained almost constant during this period.

A similar pattern can be observed with regards to Greece, which, like Spain, runs trade deficits against all Euro-zone countries apart from Cyprus and Malta. Germany and Italy almost equally share the majority of Greek trade deficits, both hovering around %15 of total Greek merchandise trade deficit in 2001 (Figure 12). However, the shares of both countries have fallen significantly recently, as increasing competition from Chinese goods pushed up Chinese exports to Greece, and China caught up with Germany and Italy at the end of 2010. On the other hand, Netherlands, Belgium, Spain and France also record goods trade surpluses against Greece, the shares of which have remained more or less stable in total Greek goods trade deficit.

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[8] Apart from Portugal and Greece.

Figure 11. Spain Trade Deficit Partners
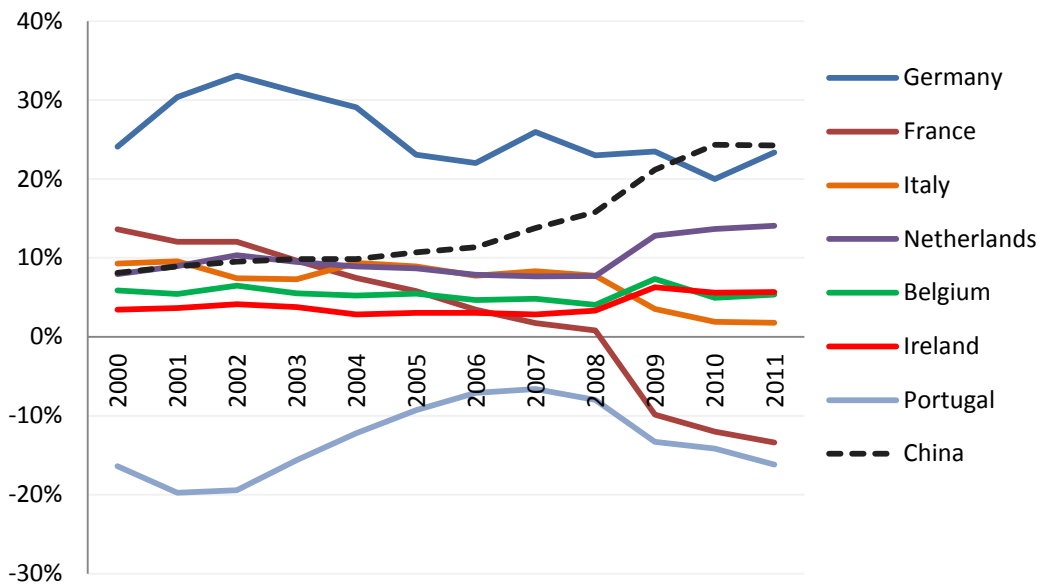
Figure.12 Greece Trade Deficit Partners
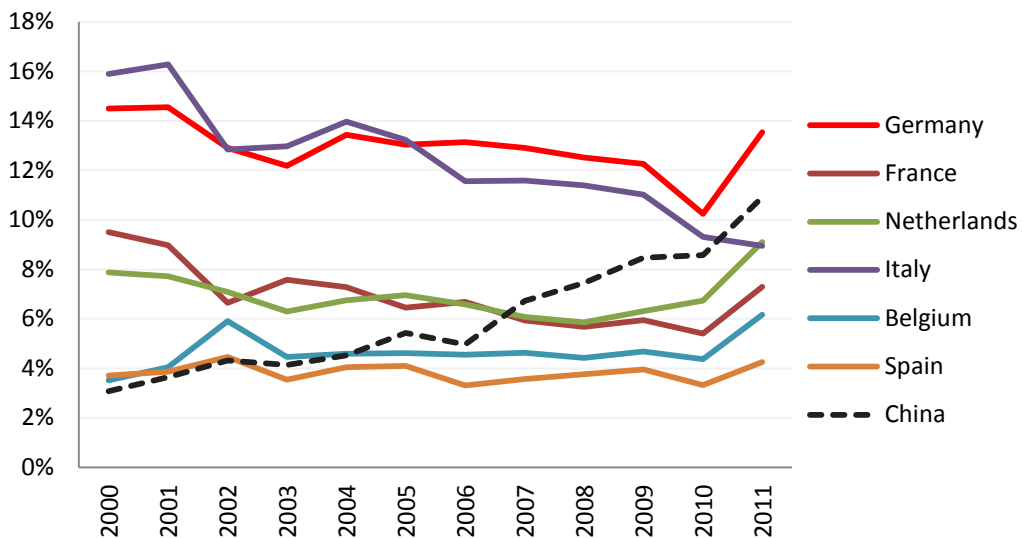
Among the three Southern European countries, Portugal seems to display the most stable and interesting trade balance dynamics (Figure 13). Unlike Greece and Spain, a very large proportion of Portuguese goods trade deficit is within EA-17. Further, a whopping 40-50% of Portuguese goods trade deficit is against Spain, and this ratio has been fairly stable, only slightly falling to 35% between 2004 and 2008 and then rising again. Following the adoption of the Euro in Portugal, Germany took a larger share in Portuguese deficit but only constituted around 15 % of the total until 2010. Italy, Netherlands and Belgium are respectively the three other countries which have sizable shares in Portuguese deficit after Germany.

Figure 13. Portugal Trade Deficit Partners
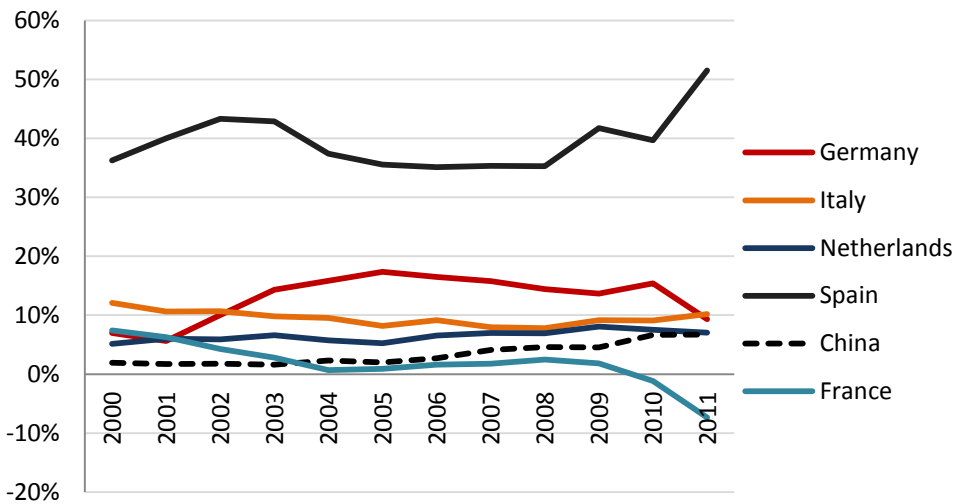
The analysis above shows that Germany's share in the periphery's goods trade deficit has not increased since the adoption of the Euro for Greece and Spain (if anything it has fallen), whereas for Portugal, there is a small increase but trade deficit against Germany still does not constitute a significant proportion of the total. Similarly, the dynamics of the ratio of periphery's trade deficit against Germany to their gross domestic products do not yield any strong evidence that Germany's policies have caused any significant change (Figure 14). The data shows that beginning from 2002, Greece and Spain experienced only slight increases in this ratio from around 2% to 2.4%, which were immediately reversed after the crisis in 2008. For Portugal on the other hand, the increase is more considerable from 1% to over 2%, as the previous figures would also suggest. However, following the crisis, the ratio has fallen once again, below 2%. Therefore, there is no evidence of a significant change in the trade relations of the periphery with Germany during this period.

Figure 14. Periphery's Goods Trade Deficit against Germany (% of GDP)
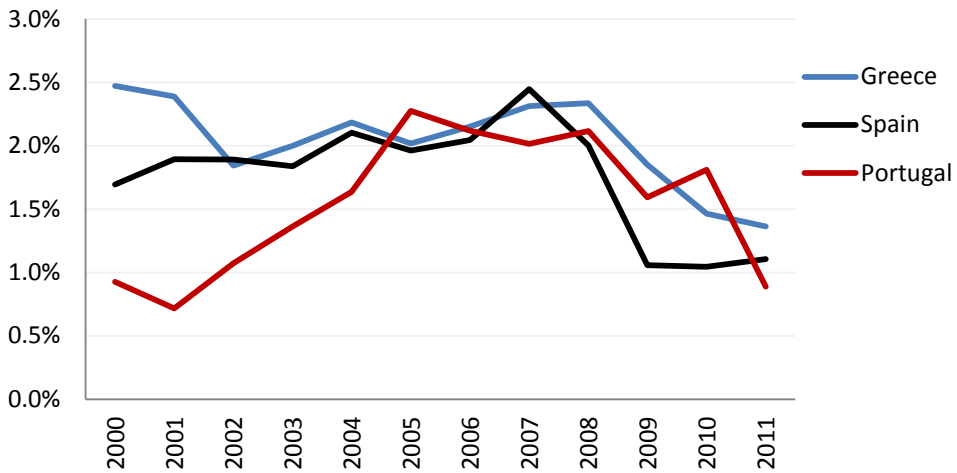
Next, we turn our attention to the composition of trade surpluses of Germany. The source of German savings and the channelling of these savings to the periphery have been discussed from different perspectives by Sinn (2011) and Cesaratto (2012). While Sinn claims that the flowing of German savings to the periphery has constrained credit availability in Germany, Cesaratto (2012), Bagnai (2012) and Bibow (2012) rightly argue that there are no a priori savings for Germany and the savings surpluses of Germany have resulted from its current account surpluses, the main driver of which are merchandise exports. Therefore, the savings surpluses of Germany –at least partially - emanate from the trade deficits of the periphery.

Figure 15 below displays the shares of selected Eurozone countries and UK in the total trade surplus of Germany between 2001 and 2010. The data shows that while Germany's trade surplus from its bilateral trade with Spain is around 15% of its total trade surplus, the shares of Greece and Portugal are particularly low, hovering around 3-4% of total surpluses. Altogether, these three countries make up less than 25% of Germany's total trade surplus, and this ratio is very stable until 2008, with only minor variations. Following the crisis, the share of Spain has fallen considerably, as domestic demand collapsed following the bursting of the housing boom, while Greece and Portugal's shares remain almost unchanged. On the other hand, Germany runs continuous current account deficits in its bilateral trade with Belgium and Ireland, as well as Netherlands. As we will show in detail below, especially Belgium and Netherlands are among the top competitors of German exports, with complex export structures and high labour productivity. Overall, while periphery's deficits indeed create German savings surpluses, the level of these deficits compared to Germany's total surpluses is very low for Greece and Portugal, and varies only slightly for Spain. Rather, German trade surpluses seem to have increased almost equally in ratios during 2001-2008 for its main export markets inside the Eurozone, and for the UK.

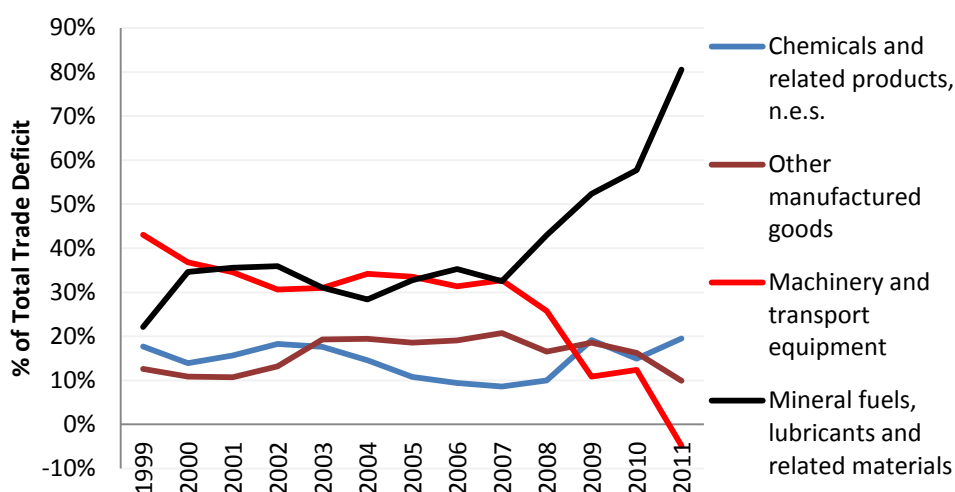**Figure 15. German Trade Surplus Partners**
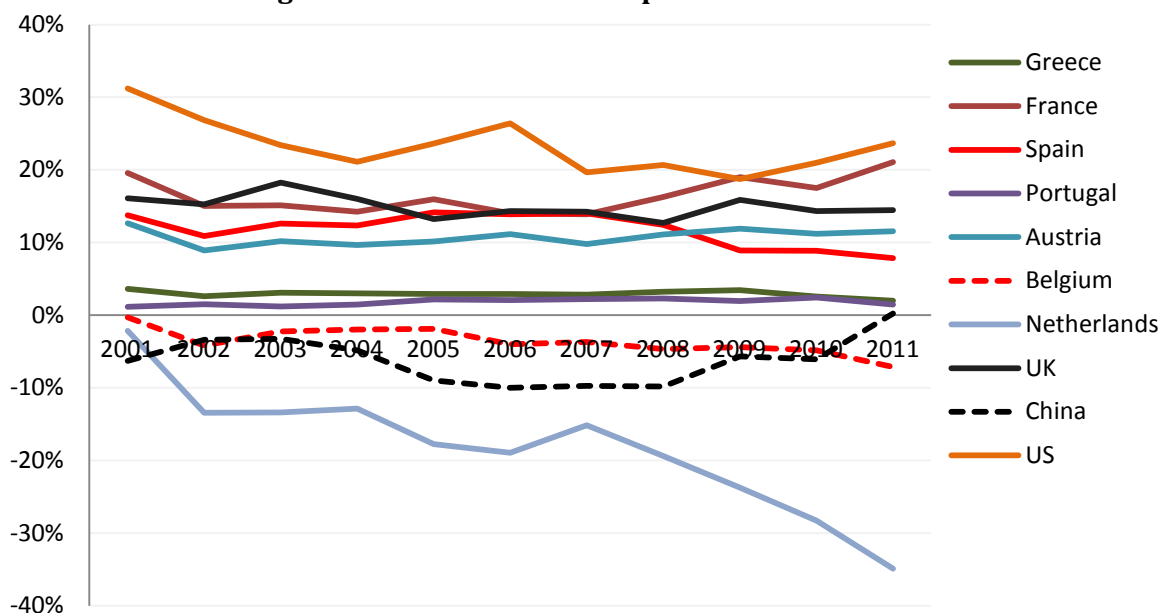
Source: Eurostat

3.3: Sectoral Decomposition of Periphery's Trade Deficits

In order to analyze the structure of the trade deficits of the periphery, we next present a decomposition of Spanish, Greek and Portuguese trade deficits in terms of main product groups (SITC) since 1999 below.

Figure 16. Spain Trade Deficit

Source: Eurostat

As Figure 16 shows, the composition of Spanish trade deficit has remained almost constant between 1999 and 2007, with small variations in the percentage shares. The share of machinery and transport equipment in total trade deficit fell from around 45% in 1999 to 30% in 2004 and stayed slightly over 30% until 2008, whereas the share of mineral fuels and lubricants jumped from 20% to over 30% during the boom years. Following the crisis, the contraction in GDP coupled with the fall in investment (particularly the burst of the housing boom) led to a huge drop in imports of machinery and transport equipment, and as of 2011, the Spanish economy registered a trade *surplus* in this category for the first time over the last two decades. Correspondingly, the data reveals that as of 2011, 80% of Spanish trade deficit is due to deficit in minerals fuels, lubricants and related materials, suggesting that the fall in the deficit has reached its boundaries unless there are significant improvements in Spanish exports of goods in other categories or exports of services. However, as we will discuss in detail below, without the devaluation of the currency or structural reforms to increase productivity, the only possible way to increase competitiveness of Spanish economy is further downward adjustment in wages, which will squeeze domestic demand and lead to further contraction of output, putting highly leveraged Spanish banking system at the risk of collapse due to an increase in non-performing loans and worsening Target2 balances, as banks use LTRO or other ECB facilities to finance their capital needs.[9]

A similar pattern emerges from the analysis of Greek trade deficit in terms of the evolution of machinery and transport equipment and mineral fuels, but imports of machinery still form the largest component in Greek trade deficit despite the massive contraction in GDP since 2008. Interestingly, during the boom years, there was little change in the share of imports of other manufactured goods or chemicals; these shares seem to be stable and independent of the growth rate of the economy. Although not depicted in the figure, it is important to note that Greece runs persistent trade deficits in food, drinks and tobacco as well, which accelerated during this period to replace the deficits in machinery and transport, and can mostly be attributed to the loss of competitiveness in these industries due to the appreciation in the real exchange rate.

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[9] In fact, Felipe and Kumar (2011) show that increases in unit capital costs in the periphery have exceeded the increases in ULC in the periphery and/or increases in unit capital costs in the core, and therefore downward adjustment in capital gains could also increase competitiveness.

Figure 17. Greece Trade Deficit
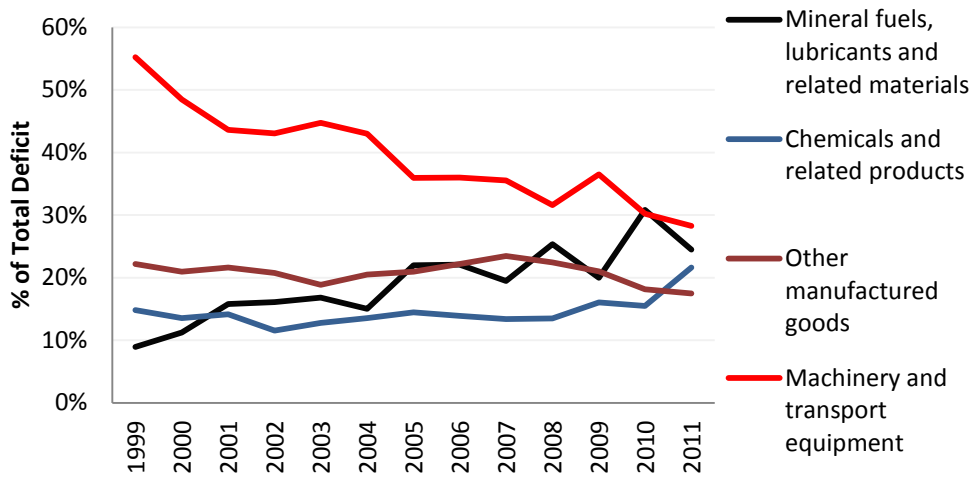
Source: Eurostat

Figure 18. Portugal Trade Deficit
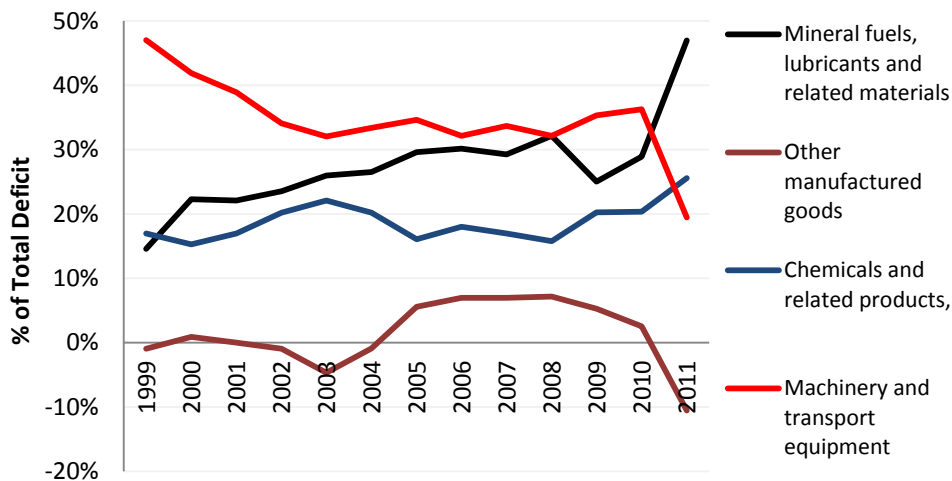
Source: Eurostat

And finally, Figure 18 shows that the dynamics of Portuguese trade deficit is also similar to the Spanish case in terms of the behaviour of trade deficit in mineral fuels, which make up around half of all deficits as end of 2011. As in Spain, the share of machinery and transport equipment remained stable during the boom years but fell sharply in 2011, while the share of chemicals in total deficits is stable once again as in Greece and Spain. Overall, the data shows an endemic trade deficit problem for the periphery emerging from imports of mineral fuels, chemical products, and machinery and transport equipment. The growth rate of the economy closely follows the current account deficits until 2008, after which the inability to devalue under the Euro seems to have broken this link, as the periphery now runs large deficits and has negative growth at the same time. The deficits mainly rise from imports of intermediate and capital goods, and as Table 4 shows, the share of these goods in the overall trade deficit has been fairly stable for Greece and Portugal during the boom and post-crisis period. Spain on the other hand has a large surplus in trade of consumption goods, and a significant reduction in the share of imports of capital goods following the crisis, while the deficit in the trade of intermediate goods exceeded the total trade deficit on average between 2009-2001.

Table 4. Periphery's Trade Deficit

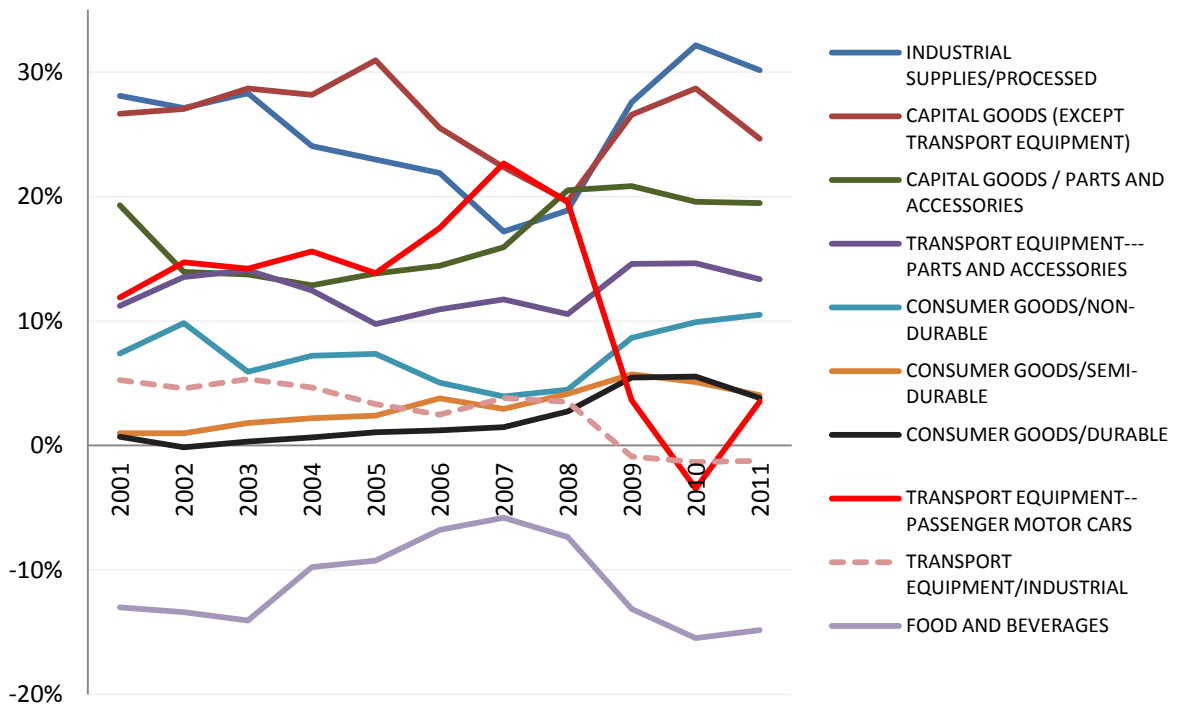| Spain	1995-2001	2002-2008	2009-2011
Intermediate Goods	90.6%	80.3%	107.3%
Capital Goods	28.6%	20.1%	10.1%
Consumption Goods	-19.0%	-0.3%	-17.4%
Greece			
Intermediate Goods	51.6%	51.3%	50.4%
Capital Goods	28.4%	23.9%	21.1%
Consumption Goods	20.0%	24.8%	28.5%
Portugal			
Intermediate Goods	68.3%	62.6%	60.6%
Capital Goods	25.1%	19.8%	16.1%
Consumption Goods	6.6%	17.6%	23.3%

Source: Eurostat

Since trade deficits against Germany are the main drivers of total deficits in Spain and Greece and the centre of discussion for imbalances in the Eurozone, we next move on to a more detailed presentation of bilateral trade between these countries and Germany.

Figure 19 below displays the share of certain groups of goods in Spanish trade deficit against Germany. Unsurprisingly, Spain exhibits trade deficits in all groups apart from food and beverages in its goods trade with Germany. However, the financing of the trade deficit with this surplus substantially fell between 2001 and 2007, as appreciation of the real exchange rate directly affects exports in food and beverages, which can be substituted easily with Spain's competitors in these markets. But more importantly, a very large proportion of the deficit arises due to deficits in capital goods, their parts and accessories, and imports of intermediate goods (processed industrial supplies). Together, these make up around 60% of total goods trade deficits of Spain against Germany. Further, a whopping 35% of Spanish goods trade deficit against Germany resulted from imports of passenger motor cars and parts and accessories of transport equipment and the recent fall in the overall trade deficit seems to have resulted from the massive drops in imports of these goods after the crisis.

The composition of Greek trade deficit against Germany on the other hand has different characteristics and is much more stable than that of Spain. However, especially after the crisis in 2008, a much larger proportion of the total deficits are due to non-durable consumption goods deficit. This is mainly because the imports of passenger motor cars collapsed after 2008 just like Spain. On the other hand, trade deficit in capital goods, their parts and accessories and intermediate goods still make up over 50% of Greek trade deficit. Clearly, despite the adjustment in ULC-deflated real exchange rates, and the recent fall in wages in the periphery, more than half of their trade deficits against Germany arise due to imports of capital goods and intermediate goods, the shares of which have been pretty stable over time. This is a structural problem which requires considerable improvements in productive technology in these countries and cannot be solved by pushing up wages in Germany or pushing them down in the periphery.

Figure 19. Spanish Trade Deficit Against Germany

Legend:
- INDUSTRIAL SUPPLIES/PROCESSED
- CAPITAL GOODS (EXCEPT TRANSPORT EQUIPMENT)
- CAPITAL GOODS / PARTS AND ACCESSORIES
- TRANSPORT EQUIPMENT--- PARTS AND ACCESSORIES
- CONSUMER GOODS/NON-DURABLE
- CONSUMER GOODS/SEMI-DURABLE
- CONSUMER GOODS/DURABLE
- TRANSPORT EQUIPMENT-- PASSENGER MOTOR CARS
- TRANSPORT EQUIPMENT/INDUSTRIAL
- FOOD AND BEVERAGES

Source: Eurostat

Figure 20.Greek Trade Deficit Against Germany

Legend:
- INDUSTRIAL SUPPLIES/PROCESSED
- CAPITAL GOODS (EXCEPT TRANSPORT EQUIPMENT)
- CAPITAL GOODS / PARTS AND ACCESSORIES
- TRANSPORT EQUIPMENT-- PASSENGER MOTOR CARS
- TRANSPORT EQUIPMENT--- PARTS AND ACCESSORIES
- CONSUMER GOODS/NON-DURABLE
- CONSUMER GOODS/SEMI-DURABLE
- CONSUMER GOODS/DURABLE
- TRANSPORT EQUIPMENT/INDUSTRIAL
- FOOD AND BEVERAGES
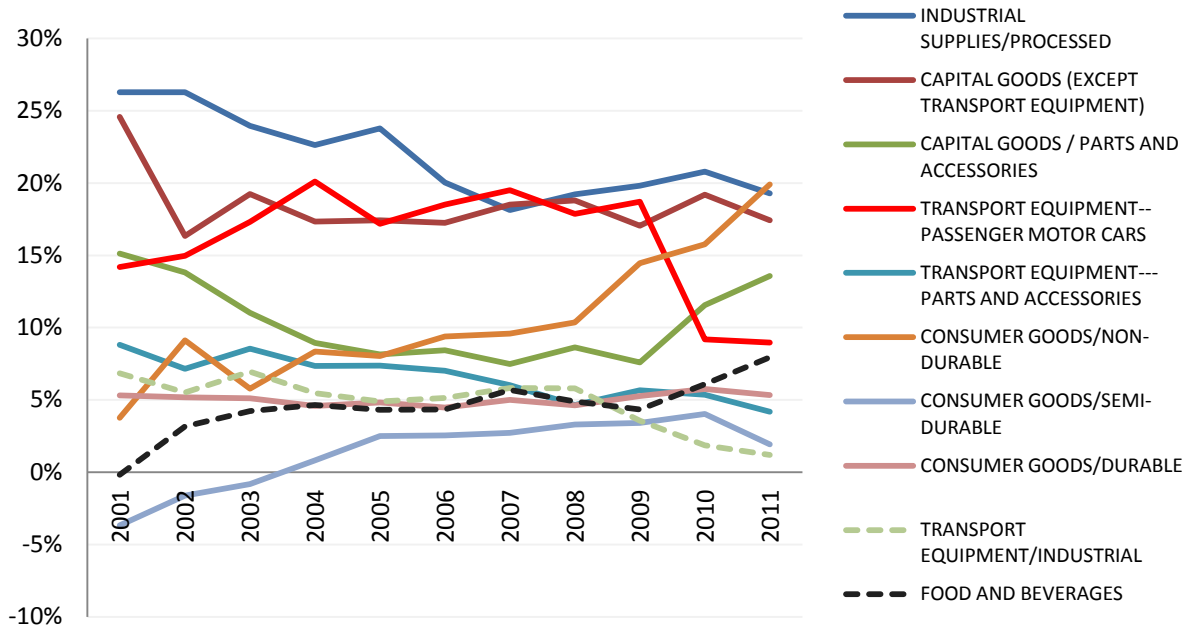
Source: Eurostat

3.4 Export Complexity: Is the trade deficit structural?

Another evidence supporting our argument comes from a recent study on export complexity by Abdon et al (2011). Extending on Hidalgo and Haussmann (2009), the authors provide a detailed analysis of the complexity of export structure and diversification of export structure for a group of 124 countries, using trade data from Harmonized System for 5107 different products. In terms of broad classification, chemicals, electrical machinery, plastic and rubber, metals and transportation form the most complex products, which constitute the main trade deficits of the periphery against Germany, as well their total deficits. Their findings also show that Germany is among the top five exporters in the world in eight out of the ten most complex products (which consist of several organic chemicals, electronic machinery, and semiconductors) with significant export market shares in the world in most of them. Further, there is a very strong positive relationship between product complexity and income, as the most complex products are exported by high income countries only. Out of the 5107 products analyzed, Germany has comparative advantage in 3615 products and ranks second in the world, while exports of the two most complex product groups out of six makes over two-thirds of total German exports. Unsurprisingly, the other countries the periphery runs continuous trade deficits, Netherlands, and Belgium (and Finland) appear in the list several times. Netherlands for example are among the top five exporters in four and Belgium in three of the ten most complex products. On the other hand, as our analysis of trade data would also suggest, Spain separates from Greece and Portugal in terms of export complexity, while it still ranks way below these core European economies.

As mentioned above, one policy recommendation in order to solve the growing current account imbalances in the Eurozone is an upward adjustment to German wages. In theory, the increase in wages would both reduce the competitiveness of core European countries against the periphery (particularly Germany), therefore reducing their imports from the core and lead to an increase in domestic demand in these countries, increasing their exports from the periphery (EC 2010, Cesaratto & Stirati 2011, Stockhammer 2011, Bibow 2012, Bagnai 2012). Such a policy would then reduce the trade deficits of the periphery against the core, and lead to an improvement in the balances inside the Eurozone.

However, the analysis shows that Germany is in a different class from the periphery in terms of export product complexity and structure. While developments in unit labour costs in Germany have led the country to underbid its competitors in its export markets (particularly in complex products), peripheral Europe is *not* among these competitors. Therefore, we do not agree with Cesaratto et al (2011) that if price competitiveness of the South had not declined, their exports would have increased at the same rate. Germany is a main exporter of a wide range of intermediate and capital goods, ranging from high value-added chemicals, electronic and mechanical machinery, and transportation equipment and the demand for such products from countries with structural deficits increase significantly during boom years. So we doubt that increases (decreases) in wages in Germany (Periphery) will lead to a direct decline in the deficits of the South due to increases in the relative competitiveness of the periphery. The analysis suggests that periphery's deficits against Germany rise due to massive imports of intermediate goods and capital goods, as booming peripheral European economies structurally rely on the imports of these goods for growth.

Latest data on labour productivity measured as Euro per hour worked in Table 5 below also provides evidence in favour of this argument. Taking EU27 labour productivity as the basis, the data shows that core European economies have a relatively very high labour productivity compared to the periphery, and the gap does not show any signs of closing over time, indicating that there have not been any significant productivity gains during periods of large current account deficits. This is an expected result as a large part of the current account deficits arise from imports of consumption goods and capital goods for non-tradables sectors

such as housing. Despite the recent fall in wages and soaring unemployment, the periphery's relative position inside the EU27 bloc remains unchanged, particularly for Greece and Portugal. As we would expect, Spain performs much better than these countries with a relatively productive economy and labour force, but still remains as one of the lowest productive economies in the Eurozone.

Table 5. Labour Productivity (Euro per hour worked)

(EU27 = 100)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Belgium	144.3[(e)]	145.8[(e)]	143.9[(e)]	143.6	139.8	137.9	136.8	135.3	136.0	:
Germany	123.9	123.4	125.6	125.6	127.1	127.6	127.3	126.6	124.7	123.9
Ireland	114.3	119.4	122.2	122.7	120.9	121.3	123.5	116.4	120.1	125.7
Greece	**78.0[(p)]**	**79.7[(p)]**	**81.0[(p)]**	**81.5[(p)]**	**76.7[b]**	**78.7[(p)]**	**78.0[(p)]**	**79.7[(p)]**	**81.1[(p)]**	**77.8[(p)]**
Spain	**101**	**101.9**	**101.3**	**100.7**	**100.7**	**102.7**	**103.8**	**104.7**	**108.1**	**107.7**
France	133.8	136.6	131.9	128.9	130.5	130.9	130	129	129.9	129.8
Italy	116.5	109.1	106.9	103.9	103.2	102.2	102.6	104.5	104.1	102
Netherlands	135.4	135.8	133	135.2	137.6	137.3	137.7	138.4	133.5	135.7
Austria	112.2	113.2	113.5	113.7	112.5	114.3	112.6	113.1	113.4	114.7
Portugal	**61.7**	**61.3**	**61.6**	**60.4**	**63.0[(b)]**	**63.3**	**63.6**	**63.6**	**64.8**	**65.2**

b= break in series   e=estimated   p=provisional
Source: Eurostat

It is important to note at this point that several recent studies have addressed the relationship between off-shoring production to Eastern Europe and the efficiency of German export sector in general and the automobile industry in particular, which constitute a very significant part of German exports to Greece and Spain. As shown by (Marin 2009), German producers took advantage of the proximity of the cheap labour force (and favourable tax incentives) and shifted *various stages of production* to Eastern European economies such as Czech Republic and Slovakia, which led to increases in the productivity of these economies, as well as German producers[10]. For the auto industry particularly, Eastern European factories became a central part of what came to be termed as "Germany-centred value chains" (World Bank 2012). Therefore, in contrast to Blanchard and Giavazzi (2002), factor price equalization due to direct investment and the corresponding efficiency gains in the periphery did not really take place inside the Eurozone despite wage differentials.

3.5 Financing of Deficits and TARGET2 Balances

The appreciation of the real exchange rates and the credit-induced consumption boom in the periphery led to the deterioration of the current account positions due to the surge in domestic demand and imports, which were financed by foreign financial capital inflows in the form of portfolio investment and loans to periphery's private banks by the financial sector in core Europe and the rest of the world. Table 6 below presents the dynamics of average current

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[10] As Chiappini (2011) shows, unlike the French auto industry that outsourced entire production to developing countries in Asia and Latin America, the German auto industry engaged in "vertical specialization" or "vertical intra-industry trade", which involves outsourcing *some* stages of production, importing intermediate goods produced cheaper abroad and re-exporting the final product from mainland Germany. In an earlier study, Allard et al (2005) estimate that 60% of the increase in German exports between 2000-2005 can be attributed to this process. Such German off-shoring to Eastern Europe also explains the abrupt trade deficits Germany runs against Czech Republic and Slovakia recently.

account deficits and their financing for the periphery for three different periods between 1995 and 2011. As we stressed above as well, the periphery's current account deficits mainly arise from deficits in goods trade and the positive balances in services trade is far from offsetting these large deficits, despite large increases between 2002-2008 compared to the previous period. While Greece has a relatively higher surplus in services trade (as % of GDP) than Portugal and Spain, it also has the largest goods trade and current account deficits. The periphery's (particularly Greece and Portugal's) current account deficits are structural and endemic, but the magnitudes of these deficits vary according to domestic demand conditions. The data shows that the main increase in the current account deficit in this period occurred in Spain, owing to the debt-financed massive consumption and housing booms. Therefore, following the crisis, as private sector deleveraged, the deficits also adjusted faster than Greece and Portugal (see Figure 11). All countries on the other hand heavily rely on financial account to finance their current account deficits, with a very low contribution of foreign direct investment.

Table.6 Balance of Payments

Greece	1995-2001	2002-2008	2009-2011
Current account	**-4.3**	**-9.6**	**-10.4**
Current account, Goods	-12.9	-15.7	-13.0
Current account, Services	5.0	7.4	6.2
Current account, Income	-1.1	-3.0	-3.8
Capital account	**1.8**	**1.3**	**1.0**
Financial account	**3.9**	**8.3**	**9.5**
Direct Investment	N/A	0.8	0.4

Portugal	1995-2001	2002-2008	2009-2011
Current account	**-6.6**	**-9.5**	**-9.1**
Current account, Goods	-10.4	-11.4	-9.6
Current account, Services	1.5	3.0	4.0
Current account, Income	-1.3	-3.0	-4.9
Capital account	**1.7**	**1.3**	**1.0**
Financial account	**5.6**	**8.0**	**8.4**
Direct Investment	2.6	2.5	2.3

Spain	1995-2001	2002-2008	2009-2011
Current account	**-1.8**	**-6.9**	**-4.3**
Current account, Goods	-4.2	-7.0	-4.1
Current account, Services	3.2	2.6	2.7
Current account, Income	-1.3	-2.1	-2.3
Capital account	**1.0**	**0.8**	**0.5**
Financial account	**1.0**	**6.1**	**4.2**
Direct Investment	3.1	2.5	2.3

Source: Eurostat

As we argued above, a large portion of current account deficits of the periphery was financed by foreign lending to these countries. At its peak in 2008, foreign bank claims in Spain reached $1.2 trillion, almost 80% of Spanish GDP, while similarly foreign lending to Greece and Portugal tripled in the same period (Figure 21). Although following the crisis this trend reversed sharply as loans were called back or refused to be rolled over, total foreign lending to the periphery still lies well above the levels in 2000. Drawing from a wrong causality between investment and savings that savings finance investment, this has led Sinn (2011) to falsely claim that German surpluses were being recycled to the periphery and preventing growth in Germany, while others such as Bibow (2012) has rightly argued that German bank lending to the periphery was what enabled them to import from Germany in the first place and created the German surpluses.
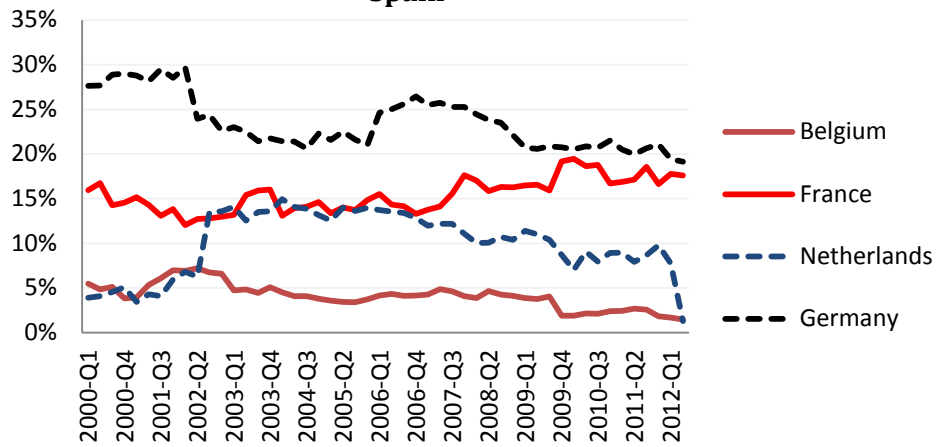
Figure. 21 Foreign Claims on Banks (billion $)
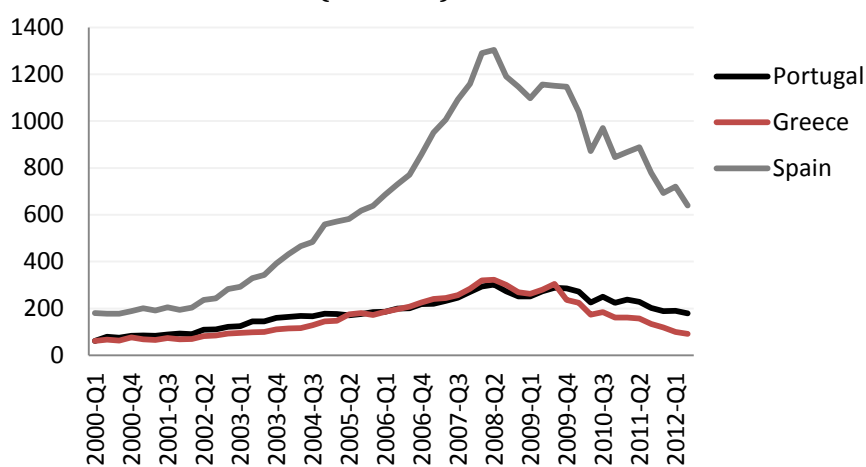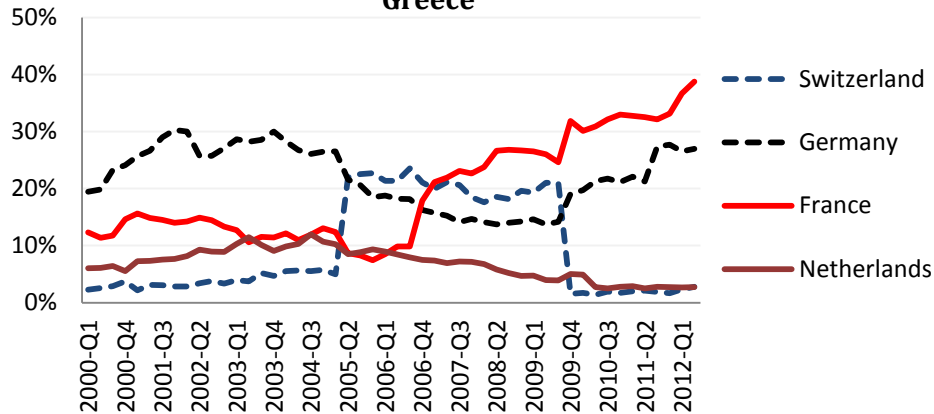

Source: BIS

In order to see how German lending to the periphery has contributed to the financing of the deficits, we present the decomposition of total foreign bank lending to these countries with regards to the originating bank's nationality, using BIS data. As the figures below show, the share of German banks in total foreign bank lending to Spain fell significantly between 2000 and 2006 from around 30% to 20%, and jumped to 25% for a brief period after 2006, continuously falling until and following the crisis. On the other hand, Dutch banks increased their lending to Spain after 2002, and combined with French bank lending, they exceeded total lending by German banks until recently. Similarly, German banks' share in total lending to Greece has steadily fallen after 2003, while French and Swiss banks outpaced Germany and were the largest lenders to the Greek economy between 2006 and 2009. In Portugal, on the other hand, most of the foreign bank lending ironically came from Spain, while German banks' share stagnated and French and British banks lending increased faster than German banks before the crisis. Therefore, the evidence suggests that there is no relationship between a country's lending to the periphery and its current account surplus (or savings). However, it is equally difficult to claim that German bank lending to the periphery enabled their imports from Germany, since British, Dutch, Swiss and particularly French banks were heavily involved in this lending frenzy to a similar (and sometimes much larger) extent than German banks.

Figure 22

**Foreign Claims on Banks
Spain**

Legend: Belgium, France, Netherlands, Germany

**Foreign Claims on Banks
Greece**

Legend: Switzerland, Germany, France, Netherlands

**Foreign Claims on Banks
Portugal**

Legend: Germany, France, UK, Italy, Spain
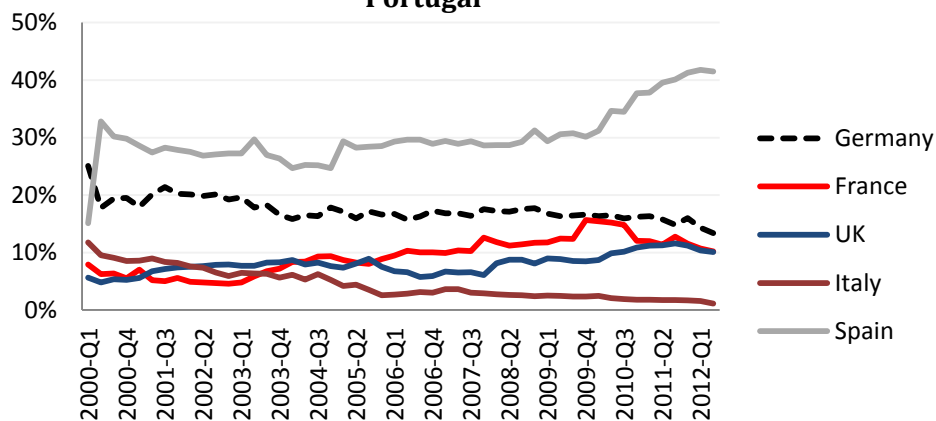
Source: BIS

Another important issue, which is closely connected with the current account imbalances within the union, is the imbalances in TARGET-2 payments system, particularly with regards to Germany and the periphery again. Garber (2010) and Bindseil and Konig (2011) show that TARGET2 imbalances can rise in a currency union due to two factors: Current account

deficits with a broken interbank market and capital flight. In essence, with a smoothly functioning interbank market where the banking system finances the current account deficits through lending as we have shown above, imbalances in the TARGET2 system need not arise.

Figure 23. Net Balance with the Eurosystem / Target [bn €]

Source: ECB

However, if the banking system of the periphery loses access to interbank markets in order to finance their reserve requirements, it needs to borrow the required funds from ECB, which creates liabilities for that country in the TARGET2 system.

Following the crisis in 2008 and the periphery's loss of access to interbank markets, the ECB has acted as a lender of last resort and widely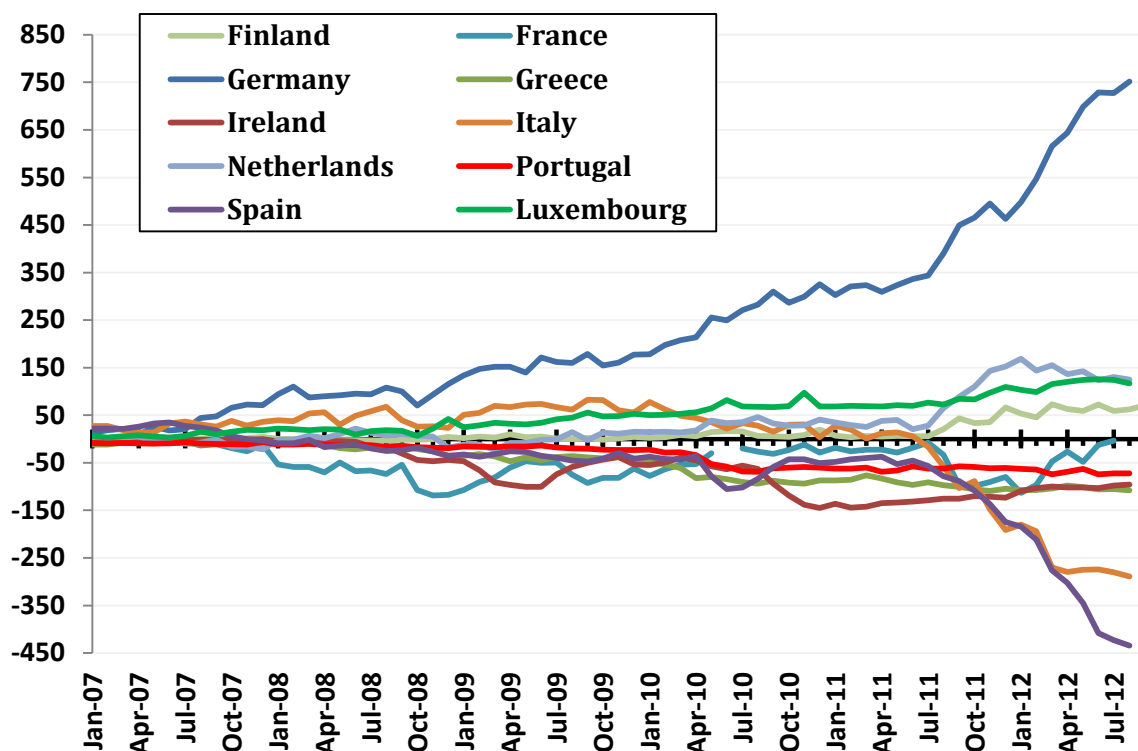 used various policy tools such as Long Term Refinancing Operations (LTRO) or short term Marginal Refinancing Operations (MRO) against eligible collateral in order to replenish the reserves of the national banks in the periphery. On the other hand, with a broken interbank market, instead of recycling the excess savings, surplus countries banking system chooses to deposit these as reserves in their national central banks, resulting in positive TARGET2 balances in this case. Figure 23 above shows the evolution of TARGET-2 claims and liabilities since 2007 inside the Eurozone. Beginning from 2007, Germany has accumulated vast amounts of TARGET2 claims, whereas the periphery's liabilities have increased correspondingly in the same period.

Both studies mentioned above also present in detail that capital flight from one country within the union to another has precisely the same effect on TARGET2 balances. The capital outflow can take the form of direct deposit flight from the periphery to the core or local banks of core countries refusing to roll-over loans to the periphery's banking system. Therefore, rising TARGET2 liabilities of the periphery need not only arise from reckless spending of households and the ECB-financing of the following current account deficits but they may also be due to large amounts of capital outflows from the periphery to the core. Data on capital flows to the

periphery between 2002-2011, presented by Merler and Ferry (2012), show that a very large proportion of rising TARGET2 liabilities emerge from capital outflows from 2008 onwards. Latest BIS Quarterly Review (BIS: September 2012) statistics also confirm this finding for the first quarter of 2012, as "Euro area banks accounted for the bulk of the reduction in foreign claims on Greece, Ireland, Italy, Portugal and Spain ($71 billion or 5.1%). This was largely driven by German and French banks ($31 billion or 7.4% and $24 billion or 4.4%, respectively" (BIS 2012:16) In relation to German-periphery capital flows, Bornhorst and Mody (2012) also show that Germany's TARGET2 claims very closely follow its financial account balances with Portugal, Ireland, Italy, Spain and Greece, whereas there is no close correlation between its current account and TARGET2 claims, especially between 2001 and 2007, while the interbank markets were working smoothly. In essence, a very large proportion of German TARGET2 claims is due to the unwinding of the credit to the periphery during 2002 -2007 and direct deposit flight by residents of peripheral countries to the banks in Germany. This creates a controversial situation where previous current account deficits, which were financed by private capital inflows from the core countries, are now being financed by TARGET2 balances.

In fact, by acting as a smooth mechanism, TARGET2 balances are making the capital flight inside the Eurozone relatively painless and preventing sovereign/banking defaults. As argued by Cesaratto (2011) and Bindseil and Konig (2011) as well, in the absence of TARGET2 balances and ECB's intervention, peripheral governments and banks would be led to defaults as interbank markets refused to roll-over loans to private sector or governments in the periphery. By accepting peripheral government and bank bonds and asset-backed securities as collateral, the ECB provided the roles of lender of last resort and prevented large bank failures in the periphery[11]. However, on the other hand, the accumulation of TARGET2 imbalances also imply that negative balance countries

3.6 Sudden Stops and Peripheral Europe

In our view, the experience of peripheral Europe is very similar to the sudden stop experiences of developing economies especially in 1990s. As documented by Frenkel et al (2009), one of the main characteristics of sudden stop episodes in developing countries is that the boom cycle starts with an exogenous policy shock, such as the implementation of fixed exchange rate, by the policymakers. Such an exogenous shock creates profitable arbitrage opportunities due to the differences in returns on domestic and foreign assets, triggering capital inflows. In general, capital inflows either finance housing booms or consumption of non-tradables and durable goods, as agents pull their consumption forward to take advantage of cheaper financing and the appreciating currency. A very common characteristic of developing countries experiencing sudden stops is high import propensity of the economy, and the reliance on imports of intermediate and capital goods for economic growth. As we have shown above, Greece, Portugal and to a lesser extent Spain all share these features as well. In this context, the adoption of the Euro by the periphery and the fixed exchange rate with the rest of the Eurozone serves as the macroeconomic policy shock, which starts the boom-bust cycle.[12]

Several papers recently have shown that removal of the exchange rate risk under the Euro has encouraged large capital flows to the periphery after 2002 (Cesaratto 2012, Tilford and Whyte, 2011, Merler and Ferry 2012). In fact, using the approach suggested by Calvo et al (2004), Merler and Ferry (2012) show that the level of capital outflows from Greece, Portugal,

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[11] While Sinn (2011) argues that caps must be placed on TARGET2 balances of individual countries, Bindseil and Konig (2011) and Garber (2010) show that the introduction of such caps or rejection of government bonds as eligible collateral by the ECB could lead to further capital flight from the periphery, resulting in massive defaults in the banking system, and possible sovereign defaults.

[12] The dynamics of the consumption boom financed by foreign capital inflows are studied in detail by Diaz-Alejandro (1985), Neftci (2002), Calvo et al (2004) and Frenkel et al (2009).

Ireland and Spain can be identified as episodes of sudden stops, reminiscent of the experiences of Latin American countries in 1990s. However, unlike the experiences of developing economies, the absence of exchange rate devaluation for the periphery makes gradual adjustment of the current account virtually dependent on downward adjustments on wages or pro-cyclical fiscal policy, or an "internal devaluation", which leads to the further slackening of domestic demand, without a sizeable improvement in current account deficit. A recent study by Hutchison et al (2010) finds that contrary to the theory of expansionary fiscal contraction, contractionary fiscal policy in the midst of a sudden stop aggravates the output losses significantly[13].

Figure 24. Current Account Balance (% of GDP)
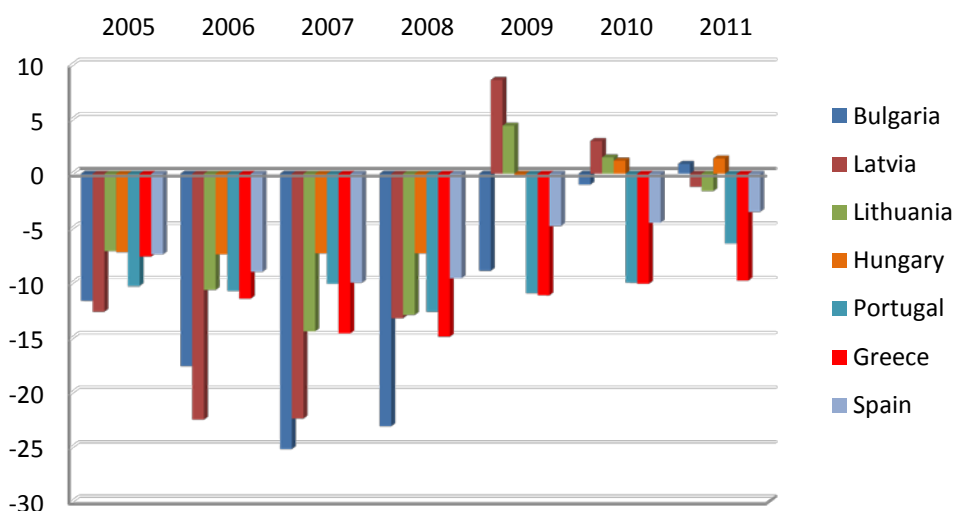
Source: Eurostat

Figure 24 presents a comparison of four Eastern European economies, Bulgaria, Lithuania, Hungary, and Latvia, which were running large current account deficits prior to the crisis, with the periphery before and after 2008[14]. While Eastern European economies were running larger current account deficits than the periphery as a percentage of their respective GDPs, the deficits were instantly reversed to surpluses following large depreciations following the crisis. The periphery's inability to devalue, on the other hand, prevented them from eliminating their deficits, despite sizeable downward adjustments in labour costs. As argued above, the only policy tools left for peripheral economies to strengthen their current account positions is either further reductions in wages (or profits) or elimination of budget deficits. However without improvements in productivity, this leads to a vicious cycle where the fall in wages leads to higher defaults on the large stock of household debt further damaging the balance sheets of the financial sector and contraction in GDP due to tight fiscal policy reduces income and hence tax receipts, without yielding the desired affects on government finances.

In essence, the main problem with peripheral economies, particularly Greece and Portugal and to a much lesser extent Spain is that although classified as high income countries, these countries display very similar dynamics to in what Gill and Kharas (2008) and Kharas and Kohli (2012) have termed as middle-income traps. Kharas and Kohli (2012) for example state that the one of the main features of countries stuck in middle income traps is the inability to compete with low income low wage economies in manufactured exports and the inability to

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[13] The loss of output due to tight fiscal policy will be even higher than Hutchison et al's (2010) findings in the absence of exchange rate adjustment.

[14] Merler and Ferry (2012) use a similar figure.

compete with high income countries in high-skilled high value added innovations. While their examples include mainly Latin-American countries and South Africa, Greece and Portugal's trade deficit dynamics show a very high level of dependence on imports of minerals and fuels, and intermediate and capital goods from high-income countries, as well as large trade deficits against low-income countries such as China. This is also supported by the findings of Abdon et al (2010) on export complexity, which show that Greece and Portugal rank 63rd and 64th respectively in the world in terms of the complexity of their exports. More importantly, the PPP-adjusted per capita income of these countries are way above the countries ranked in the same range. While one of the main reasons for such a divergence is the share of services sector (tourism) in the exports of peripheral Europe, the surpluses are far from offsetting the merchandise goods trade deficits, particularly during global economic slowdowns. Therefore, as argued above, these countries rely on structural current account deficits financed by capital inflows during periods of high economic activity, a phenomenon commonly observed in countries trapped at high middle-income levels.

4. Is there any Easy Solution?

Several suggestions have been made in the literature in order to solve the sovereign debt, unemployment and current account problems inside the Eurozone. However, most of such proposals only focus on one aspect of the issue at hand, and therefore cannot provide a sustainable long run solution to the problems in the monetary union. In this section, we will analyze wage policy, austerity, Eurobonds, fiscal-banking union and German and/or Peripheral exit from the monetary union in detail. To sum up our position, we believe that issuance of Eurobonds (or a fiscal-banking union) a more active monetary policy by ECB in order to reduce the borrowing costs of the South, and a productivity-enhancing industrialization policy in the periphery should all simultaneously be in place for a working solution inside the Eurozone . In the absence of such policies, staying in the monetary union may prove to be more detrimental for the periphery than an exit, particularly if current austerity measures will be kept or even strengthened.

4.1 Wage Policy

As we have shown above, the peripheral economies, particularly Greece and Portugal, run structural current account deficits rising from imports of high value-added intermediate and capital goods, for which Germany is among the main exporters in the world, together with several other core countries such as Netherlands, Belgium and Finland. Therefore, we argued, that reducing wages in the periphery will not help these countries to reduce their trade balances with the core countries and make them more competitive against the core, since there is a large productivity and export-complexity gap between the two groups of countries. On the other hand, while we agree that an increase in wages in Germany might result in a *limited* increase in German imports from the periphery (especially in the services sector), this increase is both far from offsetting huge goods trade deficits of the periphery and it will lead to an increase in the prices of German exports, possibly driving Germany out of some of its export markets. In this case, however, unless an active industrialization policy is in place, rather than an instant and autonomous production of these goods in the periphery, the imports of intermediate and capital goods will be supplied by the main competitors of Germany (or Germany itself), albeit at a higher price, which might offset or even controversially worsen the current account position of the periphery initially. Further, other members of core Europe, such as Netherlands, Belgium, Finland and Austria might replace Germany in these export markets, therefore accumulating larger surpluses with the periphery this time.

One argument in favour of reducing wages in the periphery is that lower labour costs will attract foreign investment from core European economies (and the rest of the world), therefore increasing productivity and boosting exports. However, as the studies we cited above show as well, such investment is mainly directed to Eastern European economies such as Czech Republic, Hungary, Poland and Slovakia, and other developing countries such as Turkey, Brazil

Table 7. Nominal Labour Costs (Euro per hour)

	2009	**2010**	**2011**	**2012***
Poland	6.4	7.0	7.1	7.3
Hungary	7.3	7.3	7.6	7.9
Slovakia	7.9	8.0	8.4	8.6
Czech. Republic	9.3	9.9	10.5	10.8
Portugal	11.9	12.0	12.1	11.8
Greece	17.6	17.5	16.5	15.0
Spain	20.0	20.2	20.6	20.8
EA-17	26.5	26.9	27.6	28.1
Germany	29.0	29.1	30.0	30.8
Belgium	37.0	38.2	39.3	40.5

Source: Eurostat conducts labour costs surveys (LCS) every four years, with the last one in 2008. Therefore, the figures until 2011 are obtained by extrapolating the 2008 LCS levels using the changes in Labour Cost Index by Eurostat. We apply the same methodology to get 2012 figures using the data in Eurostat News Release 184/2012, and assuming three-quarter averages also reflect annual changes in labour costs.

and Argentina. These countries all provide large tax incentives for foreign investment, which are beyond the reach of peripheral governments struggling with budget deficits, as well significantly lower labour costs than peripheral Europe (Table 7). In essence, nominal labour costs in Eastern Europe are around 30% below that of Portugal, while the gap with Greece and Spain is much larger despite recent falls in wages.

Our analysis suggests that in the absence of a currency devaluation, one of the necessary conditions for the periphery (particularly Greece and Portugal) to be able to eliminate their current account deficits both against the core and the rest of the world is a jump in the productivity of capital and labour to produce high value-added intermediate and capital goods and reduce their structural merchandise trade deficits. [15]Such a jump is the most vital step in escaping from middle-income traps the periphery is marching towards, and requires a considerable amount of investment in R&D, education of the labour force and public infrastructure, which are all beyond the reach of the governments of the periphery with a huge overhang of debt and soaring interest payments. Spain separates from Greece and Portugal in this context with a low level of public debt and a more sophisticated export structure, but suffers from problems in its banking sector due to very high leverage of households and increasing defaults, making the costs of restructuring the financial sector higher for the Spanish government, and reducing their capability to undertake the necessary investments and reforms.

4.2 Austerity

One of the main reasons for peripheral economies to run large budget deficits is the high cost of rolling-over their debt stock, as the interest rates on government bonds have increased following doubts about the sustainability of debt. As we document in Table 8, a very large

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[15] Zemanek et al (2010) also find empirically that structural reforms improve intra-EU current account balances. However, they also argue that in the absence of such reforms, downward adjustment in wages is necessary to improve current accounts, which we do not consider as a sustainable solution for reasons outlined above.

proportion of Greek and Portuguese budget deficits (as well as Italian) are due to large interest payments and this ratio has increased steadily since 2008. As of 2011, Portugal almost runs a primary balance, while Greece has a primary deficit of only 2.2%, whereas interest payments on the existing debt stock are the main drivers of the deficit with 7% and 3.9% of GDP respectively. Spain on the contrary, runs a large primary deficit and interest payments are only around 2% of the total budget deficit. This is mainly because Spain has one of the lowest debt/GDP ratios in the Eurozone (just over 60%) while struggling with an unemployment rate of 25%.

Table 8 Primary Balance and Interest Payments as % of GDP

Primary Balance									
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Germany	-1.1	-0.9	-0.5	1.2	3.0	2.7	-0.5	-1.8	1.6
Greece	-0.7	-2.6	-0.7	-1.4	-2.0	-4.8	-10.4	-4.7	-2.2
Spain	2.0	1.9	3.1	4.0	3.5	-2.9	-9.4	-7.4	-6.1
Italy	1.5	1.2	0.2	1.2	3.4	2.5	-0.8	0.0	1.0
Netherlands	-0.6	0.7	2.1	2.7	2.4	2.7	-3.4	-3.1	-2.6
Portugal	-1.0	-1.4	-4.0	-1.8	-0.2	-0.6	-7.3	-7.0	-0.4

Interest payments									
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Germany	3.0	2.9	2.8	2.9	2.8	2.8	2.7	2.5	2.6
Greece	5.0	4.8	4.6	4.6	4.8	5.1	5.1	5.8	7.0
Spain	2.4	2.0	1.8	1.6	1.6	1.6	1.8	1.9	2.4
Italy	5.1	4.8	4.7	4.6	4.9	5.1	4.6	4.5	4.8
Netherlands	2.6	2.5	2.4	2.2	2.2	2.2	2.2	1.9	2.0
Portugal	2.7	2.6	2.5	2.4	3.0	3.1	2.9	2.9	3.9

Source: Eurostat

While the levels of public debt is clearly at very high levels in Greece and Portugal (and Italy) and needs to be tackled with urgency, reducing budget deficits leads to a further contraction of GDP, falling tax receipts and rising unemployment in the periphery. In fact, the increases in unemployment rates in Greece and Spain show no sign of slowing down, reaching over 25% recently, while Portugal struggles with an unemployment rate of 16.3%, which has almost doubled following the crisis (Figure 3).

With a highly- leveraged household and corporate sector, the increase in unemployment and the removal of automatic fiscal stabilizers from the system result in increases in non-performing loans in the periphery and damages the balance sheets of the banking system further, making re-capitalization and bail-outs ever more likely. As Table 9 below shows, the

Table 9 Non-Performing Loans/Total Loans

	2008	2009	2010	2011
Greece	5.0%	7.7%	10.4%	15.9%
Spain	2.8%	4.1%	4.6%	6.8%
Portugal	3.6%	5.1%	5.2%	7.5%

Source: Bank of Greece, Bank of Spain, Bank of Portugal

ratio of non-performing loans to total loans reached to 16% in Greece at the end of 2011, while this ratio has more than doubled in Spain and Portugal since 2008[16].

Therefore, any solution to the problems of Eurozone needs to tackle the growing interest expenses of peripheral Europe immediately and allow these countries to be able to borrow at lower rates in order to reduce these costs. Insisting on austerity dampens the prospects of growth and will lead to further increases in unemployment and correspondingly in default rates, which may necessitate higher costs for bailing out the banking system. The latest projections by ECB indicate that Greek economy will shrink a further 6% in 2012, while Spanish and Portuguese economies will contract by 1.4% and 3% respectively. These negative growth rates will controversially increase the debt-to-GDP ratios in these countries, particularly when one considers the infeasibility of achieving high enough primary surpluses with the current interest rates to offset this affect.

4.3 Eurobonds

One suggestion in order to reduce the borrowing costs of the periphery has been the issuance of Eurobonds, backed by the countries in the Eurozone. Varoufakis et al (2011) for example suggests that national debts in excess of 60% of GDP, as set by the Maastricht criteria, could be pooled and financed by the issuance of Eurobonds. A big problem with the issuance of Eurobonds, however, is how the interest payments on these bonds would be financed by member countries, and this has caused disagreements between the North and the South in Europe. While Eurobonds would reduce the interest burden on the existing debt stock for the periphery, which as we outlined above, and are crucial in order to service the existing debt stock, they would also mean higher interest rates for Northern members such as Germany, Netherlands, and Austria. In order to see what these costs would be, we present the debt/GDP ratios, current interest rates on 10-year government bonds and shares in total Eurozone GDP for the 17 member states below, and then compute the additional costs of issuing Eurobonds for excess debt over 60% of GDP for each member state under three different interest rate scenarios (1.5%, 2% and 2,5%) and under the assumption that the interest accruing to Eurobonds is shared by EU-17 countries according to their shares in Eurozone GDP. This implicitly assumes a partial fiscal union and therefore an entire Eurozone backing up of Eurobonds, pushing their yields down significantly. The extra interest costs are calculated as the difference (as % of GDP) between interest costs each country would have to pay annually on Eurobonds for excess debt over 60% and the interest costs on the same debt for each member state using current interest rates on 10-year government bonds. A negative cost means the country would have to pay less to Eurobonds than issuing its own government bonds throughout the duration of the bonds, and vice versa.

As we expected, countries with high debt levels and high interest rates (Belgium, Ireland, Greece, Spain, Italy, Portugal, Cyprus) are the main beneficiaries of Eurobonds, while Germany, Netherlands, and Austria are the main contributors under all interest rate scenarios. Assuming that 10-year Eurobonds replace 10-year national government bonds, Germany for instance would have to spend 0.16% of its current GDP more every year on interest payments for ten years if the interest rate on Eurobonds is 1.5%, 0.33% of its current GDP more every year if the interest rates are 2% and 0.49% more if they are 2.5%. While the contribution of

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[16]This point is briefly mentioned by Lane (2012) as well. On the other hand, latest reports by Bank of Greece and Bank of Spain indicate that the ratios continued to climb in 2012, standing at 19.4% in Greece and 9.2% in Spain.

Table 10. Cost of Eurobonds

	Debt/GDP	Interest Rates	Share in EU GDP	Extra Annual Interest Cost (% of GDP) at 1.5%	Extra Annual Interest Cost (% of GDP) at 2%	Extra Annual Interest Cost (% of GDP) at 2.5%
Belgium	102.5%	2.44%	4.0%	-0.54%	-0.39%	-0.20%
Germany	82.8%	1.47%	27.8%	0.16%	0.33%	0.49%
Ireland	111.5%	4.77%	1.7%	-1.96%	-1.8%	-1.63%
Greece*	144.3%	17.96%	2.1%	-14.63%	-14.46%	-14.29%
Spain	76%	5.64%	11.1%	-0.40%	-0.24%	-0.11%
France	91%	2.19%	21.4%	-0.18%	-0.02%	0.15%
Italy	126.1%	4.95%	16.5%	-2.78%	-2.61%	-2.44%
Cyprus	84.3%	7.00%	0.2%	-1.17%	-1.0%	-0.82%
Malta	76.3%	3.99%	0.1%	0.05%	0.28%	0.51%
Netherlands	68.2%	1.77%	6.4%	0.35%	0.52%	0.68%
Austria	75.1%	2.02%	3.3%	0.2%	0.37%	0.53%
Portugal	117.5%	8.17%	1.8%	-4.19%	-4.02%	-3.85%
Slovenia	48.1%	5.74%	0.4%	0%	0%	0%
Slovakia	50.1%	4.20%	0.8%	0%	0%	0%
Finland	51.7%	1.78%	2.0%	0%	0%	0%

*The rates are for secondary markets and Greek government does not borrow at this rate. The financing gains reported in the table for Greece are very high for this reason. A better measure would be the interest rates on current-future Greek bail-out packages but the rates change regularly and there is no guarantee that future bail-out packages will be released by the EU and the IMF.

Source: Own Calculations from Eurostat data

Netherlands would be larger than Germany in such a case, Finland, Slovenia and Slovakia would have to bear no costs, since they do not have any excess debt and conform to the criterion set by the Maastricht Treaty. It is important to note that although one needs to acknowledge the difficulty to convince member states in engaging in such a scenario, the potential benefits to peripheral Europe are significantly high. Considering the primary balances of peripheral Europe presented above, relief from Eurobonds would push Portugal to a budget *surplus* instantaneously for example, providing a big relief to Italian budget finances as well.

While we analyzed the costs of Eurobonds assuming that interest payments would be shared according to relative GDPs, one can also assume that each country would have to pay for its own part in the total Eurobonds issued. This will reduce the costs that need to be borne by the North, but it would also reduce the relief Eurobonds would provide to the periphery. Considering the large debt to GDP ratios in the periphery and the amount of maturing debt until 2017 as we presented above, a (partial) default on peripheral public debt might be unavoidable in this case unless sovereign bail-outs continue. In such an event, core European countries banking system would be severely hurt, depending on their exposure to peripheral government debt, and governments in core Europe might have to bail-out their own banking systems, the costs of which might well exceed the costs associated with Eurobonds particularly in the short-run, and might even lead to a breaking-up of the monetary union. While it is difficult to estimate such exposure accurately, recent stress tests released by the European Banking Authority (EBA) show that German, Dutch and French banks are heavily exposed to Greek, Spanish and Italian sovereign debt, and Spanish and British bank exposure to Portuguese sovereign debt is very high.[17] Therefore, although Germany and some other core European countries have voiced their

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[17] See http://eba.europa.eu/EU-wide-stress-testing/2011/2011-EU-wide-stress-test-results.aspx

disagreement on the issuance of Eurobonds, failure to do so might prove to be much more costly in terms of the bail-out costs or even dissolution of the union.

4.4 Fiscal Union

As argued by Varoufakis et al (2011) and Bibow (2012) among others as well, one of the main pillars of a workable solution for the Eurozone is the formation of a (at least partial) fiscal union, which will reduce the debt burden and the costs of financing this debt for the periphery. Such a union could take the form of significantly increasing the funds in the EU budget, issuance of common Eurobonds for a certain proportion of national debt as we showed above or a fully integrated fiscal union like in the U.S, in which case country-specific problems will be dealt like a domestic problem within the EU, fully internalizing the costs and benefits for all member states. A full fiscal union will require a higher degree of convergence among member states, particularly within the labour markets and social security networks, as well as harmonization of product markets and increased labour mobility. [18]

Overall, the Eurozone's overall public debt is lower than Japan and U.S and only slightly above that of U.K, which all manage to finance their debt at lower costs than many Eurozone members. The aggressive quantitative easing policies by central banks in these countries have managed to reduce the interest rates on 10-year government bonds to 1.6% in U.K and U.S, and 0.8% in Japan, whereas the average rate for the Eurozone countries is still 4.3%, with Southern Europe paying much higher rates than this as we showed above. Similarly, unlike U.S and the U.K with both fiscal and current account deficits, the Eurozone as a whole does not have a chronic current account deficit problem as it maintains a balanced current account with the rest of the world. However, the inability of Eurozone to deal with the country-level balance of payments and debt problems at the union level has resulted in aggravation of the problems in the periphery, and continues to do so.

On the other hand, ECB's unwillingness to engage in a large quantitative easing policy in order to reduce the borrowing costs of the periphery and the tight austerity measures aimed at reducing primary deficits instead have also led to high level of overall unemployment inside the Eurozone compared to U.S, U.K and Japan.[19] While these countries have managed to stop the increase in unemployment rates by fiscal expansions and an active monetary policy, there is no sign of slowing down in overall Eurozone unemployment rate. The ECB's focus on inflation, inherited from Bundesbank's approach as shown by Bibow (2010), has managed to keep overall Eurozone inflation below that of U.S and U.K at the expense of massive unemployment, asset price deflation and the threat of large bank failures in the periphery.

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[18] Marzinotto et al (2011) outline a framework for a limited fiscal union "...with a (Euro-area finance) minister with veto rights over national budgets that could threaten euro-area sustainability"

[19] Botta (2012) recalls Palley's (2011) distinction between an independent central bank and a detached central bank, where "...In the first case, the central bank is absolutely free from external influences in its decision making and can freely decide to buy or not to buy government bonds according to the objectives of the monetary policy. In the second case, the central bank is explicitly prohibited from buying government bonds or any other public institution liability" While Bank of England, FED (and BoJ in our view) are examples of independent central banks, the ECB mandate and operational framework renders it a detached central bank (Botta (2012))

Table 11. Eurozone and Industrial Countries

Debt/GDP %	2008	2009	2010	2011	2012-Q2
UK	52.3	67.8	79.4	85.0	86.0
US	69.4	84.3	91.2	97.1	101.7
Japan	174.1	194.1	200	211.7	214.5
Eurozone	70.2	80	85.4	87.5	90.0

Interest Rates (10 year bonds)	2008	2009	2010	2011	June-12
UK	4.5	3.4	3.4	2.9	1.6
US	3.7	3.3	3.2	2.8	1.6
Japan	1.5	1.4	1.2	1.1	0.8
Eurozone	4.3	3.8	3.6	4.4	4.3

Current Account/GDP	2007	2008	2009	2010	2011
UK	-2.5	-1.4	-1.5	-3.3	-1.9
US	-5.1	-4.7	-2.7	-3.2	-3.1
Japan	4.8	3.2	2.8	3.6	2.0
Eurozone	0.1	-1.5	-0.1	0	0.1

Unemployment	2008	2009	2010	2011	2012-Q2
UK	5.6	7.6	7.8	8.0	7.9
US	5.8	9.3	9.6	8.9	8.2
Japan	4	5.1	5.1	4.6	4.4
Eurozone	7.6	9.6	10.1	10.2	11.3

Inflation	2008	2009	2010	2011	2012-Q2
UK	3.6	2.2	3.3	4.5	3.1
US	4.4	-0.8	2.4	3.1	2.4
Japan	0.4	-1.7	-0.4	-0.2	0.2
Eurozone	3.3	0.3	1.6	2.7	2.5

Source: ECB, Bank of England, Bank of Japan

4.5 Banking Union: Could it be useful?

A serious negative feedback loop was observed between banks and their sovereigns throughout the Eurozone crisis. However, many national banking authorities did not show a timely response for their troubled banks. Many analysts agreed that the delay in the policy response in the banking crisis has deepened the financial problems. As a result, European authorities have decided to establish a single supervisory mechanism for the European banking under the name of European Banking Union (EBU). The union, which will be fully operational in March 2014 under ECB, will take direct responsibility for banks that have more than €30

billion in assets or balance-sheets accounting for 20% or more of national GDPs and it is considered to be a critical precondition for solving the Eurozone crisis[20]. While ECB will be undertaking the oversight of around 200 banks with this legislation, smaller banks mainly will be looked after by national supervisors. Needless to say, establishing the Banking Union in Europe will be a useful step to mitigate the negative impacts of the Eurozone crisis. However, in the short and medium run, there are some concerns over the use of this union to solve the crisis. We will try to list these concerns and uncertainties on the impact of European banking union (see Elliot (2012) and Beck (2013) for more discussion on European Banking Union).

The first concern is related to the timing of the union, since EBU will not become operational until next year, implying that it may not be helpful if a banking crisis occurs within 2013. Furthermore, it is not clear how quickly this agreement will help the recapitalisation of troubled banks. For instance, according to current regulations, if ECB decides that a bank in one of the southern countries is in need of cash, the necessary funding needs to be obtained by the member state. In other words, the question of who is going to pay the cost of the troubled banks is still unanswered. But since banking and sovereign risk are directly related through bank-funding of sovereign debt, a chicken-and-egg type problem emerges. Therefore, the main mechanism causing the negative feedback loop between banks and their sovereigns will still be present in the short run. Under these circumstances, recapitalization of troubled banks will still remain a critical issue, at least in the short run again.

On the other hand, under the initial set up outlined by EU, only 20% of the European banks will be under the control of ECB, while the rest of the banking system in Europe will be mainly supervised by their national supervisors. Therefore, there is still uncertainty regarding the supervisory role of the ECB, particularly if there is any need to intervene in any of these relatively smaller European banks. If there would be problems in small savings banks in Europe for instance, such as Cajas in Spain, there may exist a supervisory conflict between ECB and national supervisors on how regulatory restrictions will be imposed on these banks or resolution will be carried out.

Another missing caveat regarding the banking union is the question of who will handle the harmonization of the deposit insurance mechanism among European banks. Establishing a centralized Federal Deposit Insurance authority in Europe is a crucial step in solving the financial problems in the Eurozone. Most studies agree that deposit guarantee and banking resolution should be carried out by the same supervisory authority. But at present, deposit insurance and resolution remain to be considered only at a later stage, showing that one of the most important aspects of the complete financial integration in Eurozone will still be missing. And finally, the policymakers should carefully evaluate what the impact of the U.K. remaining outside of the union on the effectiveness of the EBU will be. A banking system without one of the most important financial centres in Europe, may raise serious concerns, since London remaining as an alternative financial centre to continental Europe may cause regulatory arbitrage.

To summarize, the establishment of European Banking Union is definitely a positive step for solving the European banking problem. However, many crucial details of this newly founded establishment are still unknown. One may argue that each of these complicated problems can be solved through time. But in this case, it might be too optimistic to contend that European Banking union will directly and more importantly *timely* address the current crisis.

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[20] See European Banking Union Declaration by EU (http://europa.eu/rapid/press-release_SPEECH-12-963_en.htm)

4.6 Exit: A Solution?

Although it has been rejected several times by policy makers as a viable alternative, a German or a peripheral exit from the monetary union is always a possibility, provided that necessary legal steps are taken. However, both of these scenarios bear significant economic risks for both parties, although for different reasons. A peripheral exit from the monetary union would imply a return to national currencies and would almost certainly include a sovereign default for Greece and Portugal in the short-run, as interest rates on government bonds would explode without EU backing in this case. Further, there will be a significant loss of wealth if national currencies rapidly lose value against the Euro after their adoption, also posing a serious risk of inflation due to high import-dependence of these economies. On the other hand, a sovereign default would immediately reduce the public debt but the loss of access to financial markets would necessitate monetizing the debt at least in the short run in these countries. While one might be tempted to think that depreciation of domestic currencies will increase competitiveness of peripheral Europe and reduce their current account deficits, the experience of developing countries has shown that such drops are short-lived and last until private sector starts leveraging again and growth picks up, unless there are significant jumps in capital and labour productivity in industry. Therefore, going back to national currencies does not necessarily imply the elimination of current account deficits for the periphery in the medium and long-run.

A peripheral exit would also cause problems for the German economy for two reasons: Directly since loss of purchasing power in the periphery and additional transaction costs will reduce German exports to these countries and indirectly as a stronger Euro would reduce competitiveness of German exports against the rest of the world. The same problem would emerge in the unlikely case of a German exit from Eurozone through the appreciation of Deutsche Mark. In fact, Germany has significantly benefited from the recent developments inside the Eurozone, as fears of sovereign default in the periphery have both led to an increase in demand for German bonds, therefore pushing yields to below 1.5% and put downward pressure on the value of Euro, therefore increasing German exports to the rest of the world and enabling it to substitute for the loss in its Mediterranean export markets after the crisis.

Further, as we stressed above as well, any exit policy from the monetary union would need to carefully evaluate the possible implications on TARGET2 balances. In case of a peripheral exit from the monetary union, periphery's liabilities in TARGET2 balances will be denominated in a foreign currency and significantly increase in value with the depreciation of national currencies, making it very difficult to be reclaimed. Mayer et al (2012) suggest clearing out TARGET2 balances with gold reserves or state-owned enterprises of member states, but for most countries such reserves are way below the current TARGET2 liabilities. Further, whether or not these countries would be willing to engage in any sort of settlement for these liabilities in case of an exit is an open question.

5. Conclusion

In this paper, we discussed the causes and consequent effects of the recent Eurozone crisis. We have argued that current account imbalances within Europe is one of the major reasons of the Eurozone crisis. We claim this problem is structural and mainly the heterogeneous productivity levels in Europe is one of the major sources of this problem. However, many of the suggested measures are short term solutions to this structural problem. Some of the proposed policies such as wage reductions and austerity for instance, do not address to fix these structural problems and hence can only worsen the existing conditions in the periphery. Our analysis suggests that, a solution with a continuing German trade surplus requires very well-designed fiscal and banking union mechanisms. For instance, to increase

productivity in the South a strong industrialization policy is necessary which can only be successful within an efficient fiscal union. The recent agreement on establishing a European Banking Union on the other hand was a right step to solve the Eurozone problem. However, a closer look at the initial construction of this institution reveals the fact that there are some important gaps which need to be filled for the banking Union to be a panacea for the Eurozone crisis. We hold that efficient and complementary use of both the banking and fiscal union will definitely be beneficial to solve the Euro crisis. However, fully utilizing these unions require serious economic and political costs to be paid with strong commitments from each member state. We therefore believe fixing Eurozone problem will be a challenge, and success requires a strong political will without paying much attention to some large and uncertain economic costs to be paid in the short run.

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