Università degli Studi Roma TRE

Department of Economics
PhD Candidate in Economics and Quantitative Methods
XXVII Cycle

THE RELEVANCE OF TRADE IMBALANCES WITHIN THE EUROPEAN MONETARY UNION

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DOTTORATO IN ECONOMIA
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Abstract

The inception of the single currency was expected to make balance of payments irrelevant among Euro area members. This is why during the first ten years of EMU both academic and political debates disregarded the widening of trade imbalances among its members. The eruption of the financial crisis in 2008 changed the attitude towards this issue and the persistence of trade imbalances became source of growing concern. Owing to a substantial lack of clarity in the debate, the aim of this research is to fill the gaps of this discussion and answer the question whether, and eventually why, trade imbalances should matter even in the European Monetary Union.

Keywords: European Balance of Payments Crisis, European Monetary Union, Trade Imbalances, Target 2, ISA System.

"That it reached conclusions quite different from what the ordinary uninstructed person would expect, added, I suppose, to its intellectual prestige. That its teaching, translated into practice, was austere and often unpalatable, lent it virtue. That it was adapted to carry a vast and consistent logical superstructure, gave it beauty. That it could explain much social injustice and apparent cruelty as an inevitable incident in the scheme of progress, commended it to authority [...]".

J. M. Keynes (1936), "The General Theory of Employment, Interest, and Money"

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INTRODUCTION

Since January 2010, a series of sovereign crises are calling into question the existence of the Euro area. The instability of the European Monetary Union started when financial markets began to question the ability of the Greek Government to meet its obligations on public debt. A few months later, the concerns moved on to Ireland and Portugal, and involved, in the Summer of 2011, Spain and Italy.

The economic literature provides two main interpretations of the European crisis. According to the common view, southern European countries have been fiscally irresponsible and the sovereign crises have been caused by the accumulation of excessive levels of public debt. On these bases, austerity measures are required in order to reduce the level and the costs of the public debt. On the other hand, it has been argued that "the European Union is currently experiencing a serious internal balance of payments crisis" (Sinn 2012). Specifically, there has been a growing concern about the presence of internal trade imbalances among Euro area members.

This topic has been receiving increasing interest, especially considering that the inception of the single currency was initially expected to make balance of payments positions irrelevant among Euro area members, as within regions of a single State. While outside a monetary union a persistent current account deficit is expected to cause a depletion of foreign reserves, the European Monetary Union was supposed to eliminate this problem. In a report on the potential benefits and costs of forming an economic and monetary union, the European Commission itself posited that "a major effect of EMU is that balance of payments constraints will *disappear*" (European Commission, 1990). Actually, during the first years of the European Monetary Union the question of the relevance of current account imbalances has been widely neglected in both academic debates and in the policy management of the Euro area.

In recent years, however, both economists and institutions started maintaining that a single currency is not by itself sufficient to make balance of payments positions irrelevant and the issue of current account imbalances did regain importance in the macroeconomic policy discussion.

This change in perspective found its origin in an influential article by Blanchard and Giavazzi (2002) where trade imbalances were considered as a transitory effect of the financial integration, which would have disappeared as soon as peripheral countries would have been able to export to core countries. In this way, balance of payments positions were implicitly assumed to be relevant and since then, the academic and institutional debate focused its attention on the temporary or persistent nature of trade imbalances, rather than on the question of their relevance.

However, a few years later, imbalances revealed their persistent rather than temporary nature and this pushed one of the author of the first article to review his position and provide explanations of this phenomenon: according to Giavazzi and Spaventa (2010), trade imbalances would not have disappeared because foreign capitals would have been addressed towards the production of non-tradable goods and services. Thus, the consensus on the irrelevance of imbalances within the European Monetary Union had been progressively evaporating and the issue started being approached like in absence of a single currency.

The analysis of the academic debate around this topic shows how the new thinking has blurred the issue of the relevance and reveals that the economic literature lacks of sufficient explanations on the possible implications arising from the presence of trade imbalances among members of a same monetary union. To this aim, the present research tries to fill the gaps existing in this discussion and investigate whether and why trade divergences should represent a source of concern. More specifically, the question is whether and why trade imbalances should be relevant within a monetary union, in particular within the actual framework of the European Monetary Union.

This thesis will be structured as follows. We start providing empirical evidences of the widening of imbalances among Euro area members and then we analyze the lively debate about the causes underlying the formation of these imbalances (Chapter 1). Then, we examine the academic and institutional debate around the relevance of trade imbalances and we investigate the aspects on which, according to us, the literature has not focused sufficient attention. In particular, we study the possible implications deriving from a persistent trade

deficit, within and outside a monetary union. The reasoning conducted in this section shows that the persistence of a trade deficit implies increasing debts for the various sectors of the deficit economy, especially for the banking sector, acting as intermediary (Chapter 2). In Chapter 3, we analyze an important element of the specific context of the Euro area: the Target 2 system, the instrument devoted to the government of payments among Euro area members. The analysis of the data concerning Target 2 balances and its operation allows us to underline the important role of the European Central Bank (ECB) in financing the banking system of European deficit countries and in sustaining trade imbalances among Euro area members. Then, we examine the literature assigning to Euro area imbalances an important role in determining the European sovereign crises and we try to answer the question of whether the European crisis should be considered as a balance of payments crisis (Chapter 4). Ultimately, we compare the Euro Area with the other most extended currency area, the United States. To this aim, we compare Target 2 with the ISA system, the US counterpart of Target 2, and then we investigate whether the different fiscal architectures of the two currency areas could have different implications for the relevance of trade imbalances (Chapter 5). Finally, we conclude that although the establishment of a single currency is not by itself sufficient to eliminate any relevance of trade imbalances, under the current institutional framework of the European Monetary Union, the ECB intervention through the Target 2 system can sustain persistent trade imbalances among Euro area members.

1

IMBALANCES IN THE EURO AREA AND THE DEBATE ON THEIR CAUSES

1.1 IMBALANCES BETWEEN PERIPHERAL & CENTRAL COUNTRIES: DATA ANALYSIS

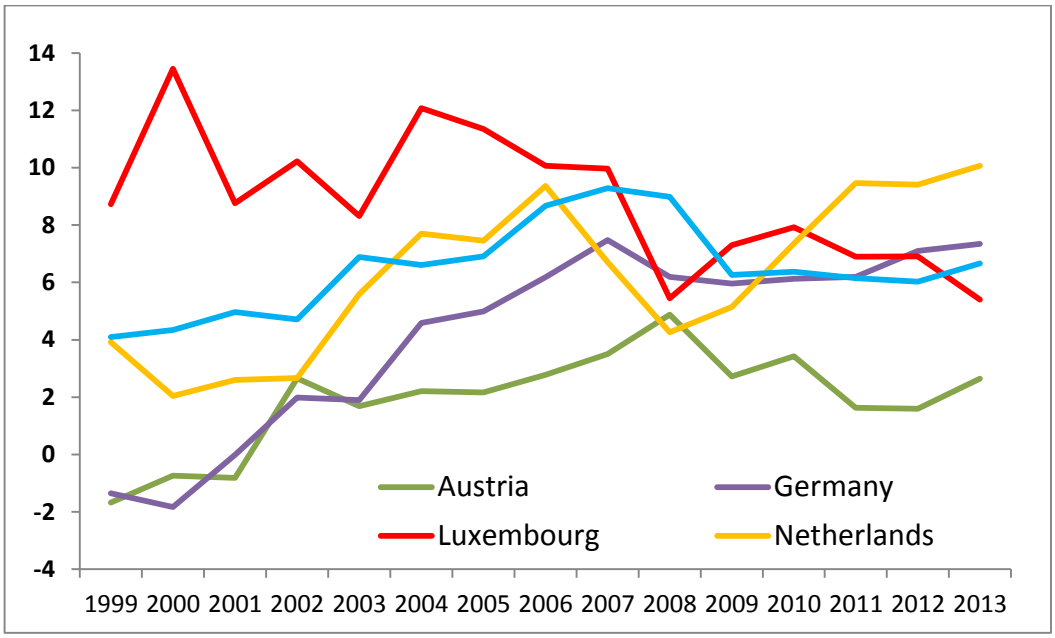
We can introduce the analysis by considering the recent increase of divergences in the balance of payments positions among Euro area members. In particular, the economic and academic debate focused on the divergent patterns in the current account, the section covering the real transactions.
However, for balance of payments data a geographical breakdown of the counterparts is not available. Only OECD website provides data on trade balances vis-à-vis Euro area members. Therefore, we will first focus on the total positions of Euro area members in the current account, which keeps track of all transactions between a country and the rest of the world and then we will analyze the specific intra-euro positions of trade balances.

1.1.1 – *Euro members' current accounts vis-à-vis the rest of the world*

The OECD data on current account positions of Euro area members in the period from 1999 to 2012 (see figure 1) show the consolidation of two distinct areas: on the one hand, northern European countries (Austria, Germany, Sweden, the Netherlands and, to a lesser extent, Luxembourg) have seen their current account surplus increase significantly. On the other hand, southern European countries (Ireland, Portugal, Greece, Spain and, to a lesser extent France and Italy) have experienced an increase in their current account deficit.

Euro Area current account balances (1999-2012), % of GDP

Surplus countries



Deficit countries

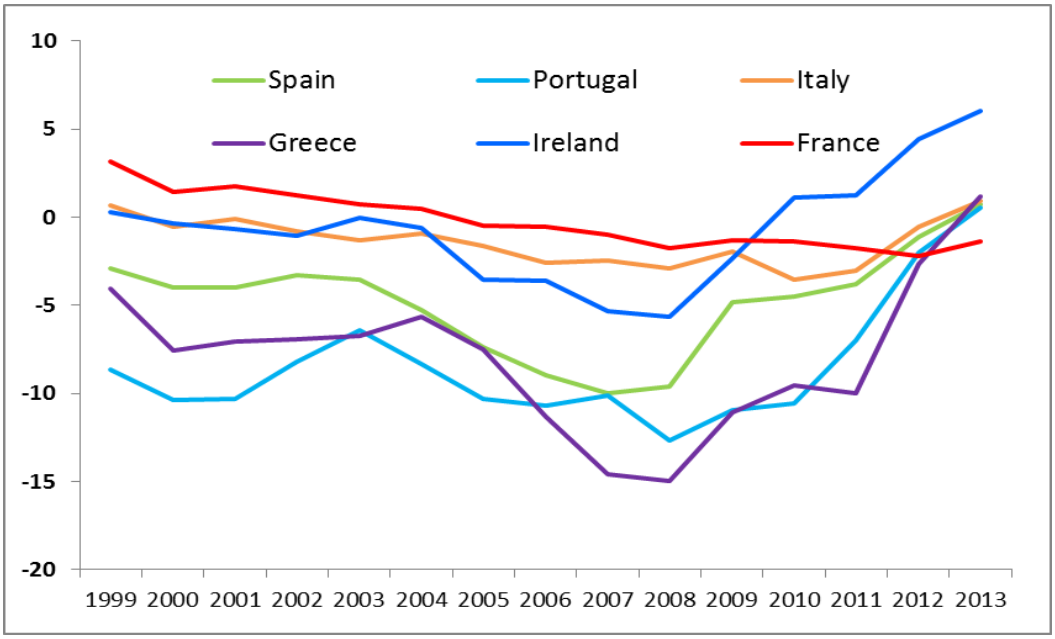


Figure 1 – Source: OECD

However, since the outbreak of the financial crisis in 2008 there has been a reversal of the previous divergences in current accounts. In fact, the crisis has led to a narrowing of the current account differences. This reversal affected both surplus and deficit countries: countries with large current account surplus have seen falls in their external balances; countries with sizeable deficits experienced improvements in their deficit positions, instead.

This adjustment can be considered as a direct effect both of the collapse of the global activity level caused by the crisis of 2008 and of the austerity measures adopted by European countries in response to the sovereign crises. Indeed, most of the member states which had an improvement of their current account since the beginning of the crisis have also experienced a contraction in the domestic demand (European Commission, 2010).

If the cumulated sum of current account deficits were greater than the cumulated sum of current account surplus, Euro area as a whole would record a current account deficit vis-à-vis the rest of the world. This position could trigger fears about a possible devaluation of the single currency.

Euro area current account (cumulated transactions as % of GDP)

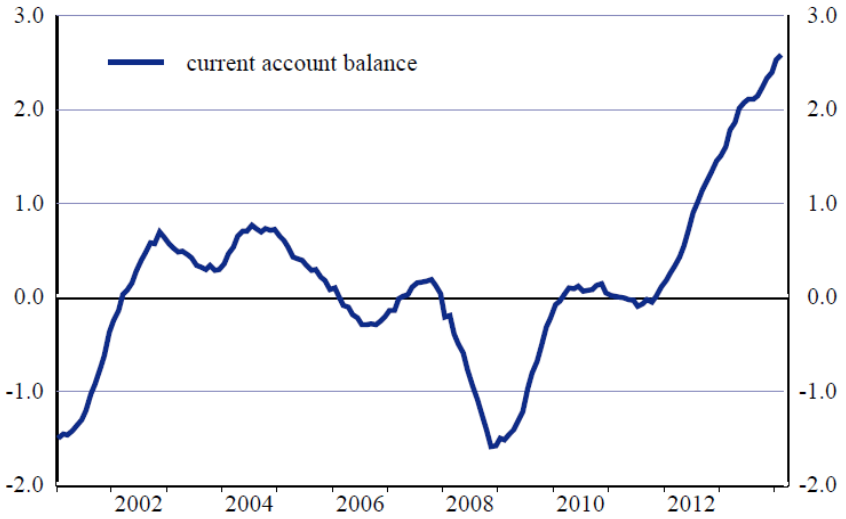


Figure 2 – Source: ECB[1]

[1] European Central Bank website, http://sdw.ecb.europa.eu/reports.do?node=100000210

Nevertheless, this is not the case. European Central Bank data show that since the inception of the single currency Euro area current account, except for 2008, has been increasing (see figure 2).

1.1.2 – *Intra – Euro area current accounts*

In recent years, economists and institutions have also focused on intra euro current account positions. However, data on current accounts of Euro area members vis-à-vis the Euro area are not totally available and the only reliable source of these data is a European Commission report (European Commission, 2010). According to this report, since the introduction of the Euro the differences between intra-euro balance of payments positions have been increasing. Specifically, the most divergent patterns can be found in the current account: differences in intra-euro account positions have increased rapidly, reaching the peak in 2007 (European Commission, 2010).

Even for intra-Euro current account positions two distinct area must be considered: northern European countries (Germany, the Netherlands, Austria, Luxembourg and Finland) have experienced increasing current account surpluses; south European countries (Spain, Greece, Ireland, Cyprus and Portugal) recorded increasing current account deficits.

With respect to the positions vis-à-vis the rest of the world, it is possible to notice that France and Italy do not appear among deficit countries. In fact, intra-euro positions of France and Italy between 1999 and 2012 remained broadly unchanged (European Commission, 2010). As shown in figure 3, among northern countries the rise in the current account surplus has been significantly more marked in Germany.

However, even with respect to intra-euro positions since the outbreak of the financial crisis in 2008 there has been a sudden reversal of the previous divergences in current accounts. In accordance to the European Commission report, to a large extent the divergent trend can be traced back to developments in the balance of goods and services, which is usually the largest component of the current account.

Current account of Germany with the Euro zone (bn €)

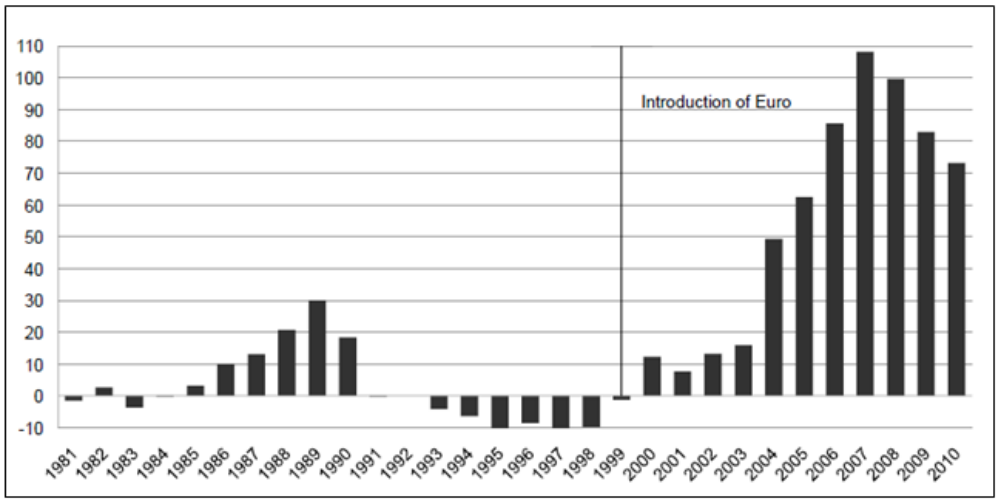
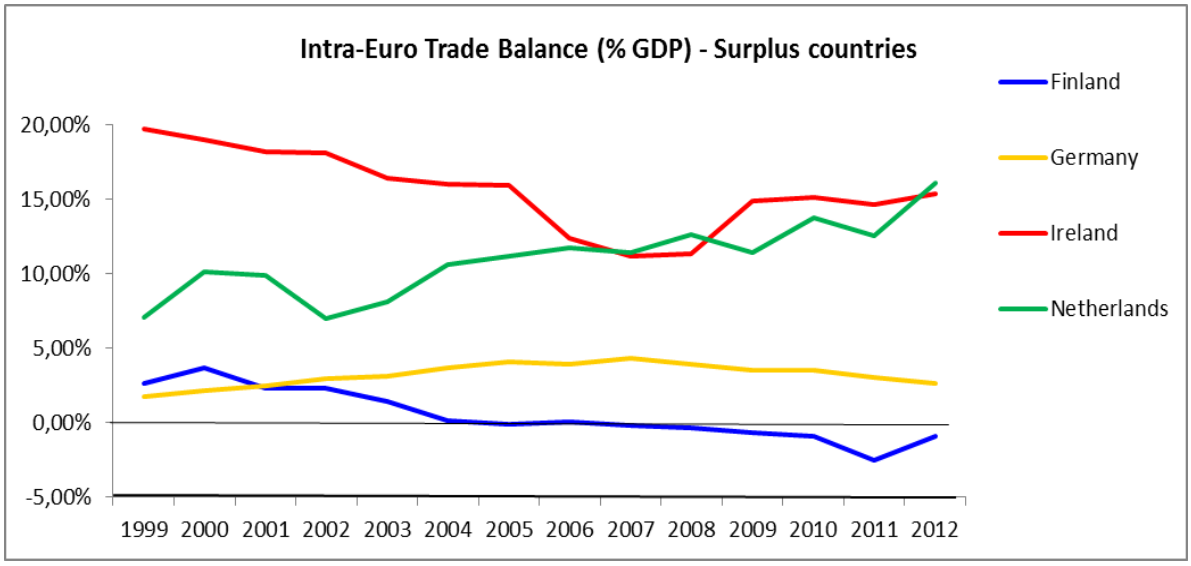


Figure 3 – Source: Deutsche Bundesbank, in Lehndorff (2012)

While data on intra-euro current accounts are hardly available, data on intra-euro trade balances can be easily found in the OECD database. Analyzing OECD data on intra-euro trade balances (see figure 4), we can observe that there are some different results with respect to those relative to current accounts described by the European Commission report.

In particular, we can see two "anomalies": on the one hand, Ireland appears among surplus countries - for an overview of the Irish case see Bagnai (2010) -; on the other hand, Luxemburg and Austria appear among deficit ones. Since the current account includes both the trade balance and the net incomes from abroad, we can suppose that in the period considered for countries as Ireland Luxembourg and Austria the trends of the latter were more relevant than those of the former.

Intra Euro Trade Balances (% of GDP) – Surplus and Deficit countries



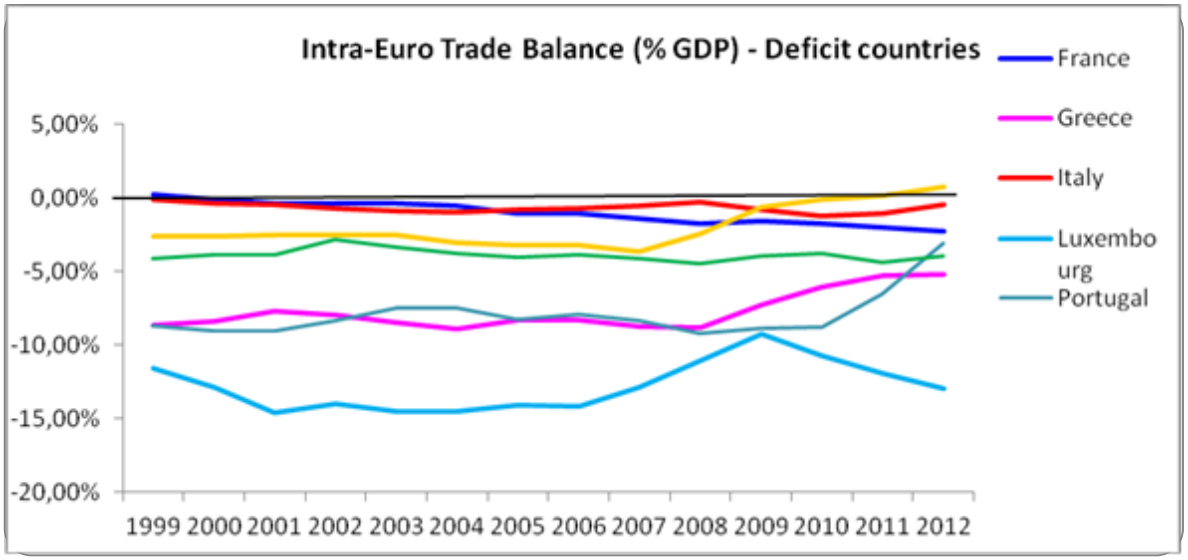


Figure 4 – Source: Elaboration on OECD's Stats

Summing up, by the data analysis on current accounts and trade balances of the Euro area we can highlight the following evidences:

- current account imbalances among Euro area members have been increasing and two distinct areas have formed (north and south European countries);
- the same divergences recorded vis-à-vis the rest of the world can be found in the intra-euro current account positions; this is true for most countries, except for Italy and France, whose positions remained broadly unchanged;
- to a large extent, these divergent trends can be traced back to developments in the trade balances. Nevertheless, the comparison between the results on intra-euro current account balances (reported by European Commission) and OECD data on intra-euro trade balances shows that in some cases (Ireland, Luxembourg and Austria) current account positions are driven from the net incomes from abroad, rather than the trade balance.

1.2 THE DEBATE ON THE CAUSES OF IMBALANCES

Before analyzing the main argument of this research, that is whether trade imbalances should matter within the European Monetary Union, we present shortly the fundamental points of another important discussion.

In fact, the widening of internal imbalances in the Euro area has been accompanied by a lively debate on the possible causes underlying their consolidation. It is characterized by a substantial lack of agreement and consists of three main interpretations: firstly, the increasing divergences in foreign positions have been attributed to supply side factors; secondly, they have been explained with referring to demand side factors; finally, trade imbalances have been considered as the natural effect of the adoption of a single currency. A special European Commission issue of the Quarterly Report on the Euro area published in March 2009, and updated in March 2010, provides a depth analysis of the differences in current account positions in the Euro area.

1.2.1 – *Supply side causes: price competitiveness*

The conventional view considers the divergences in current accounts as the consequence of the significant and persistent differences in competitiveness among Euro area members. In particular, the lack of competitiveness of peripheral countries would have been the main cause driving their rising deficits.

Given the increasing importance of the issue, it is not surprising that since 2009 the surveillance of competitiveness related to current account imbalances has become an important part of the European Commission's tasks. The European Commission report itself attributes part of the divergences in current accounts to the differences in competitiveness' trends. The different patterns in price competitiveness are measured by the REER[2] (see figure 5).

Euro area countries REERs vs EU 18, based on GDP deflator (1999=100)

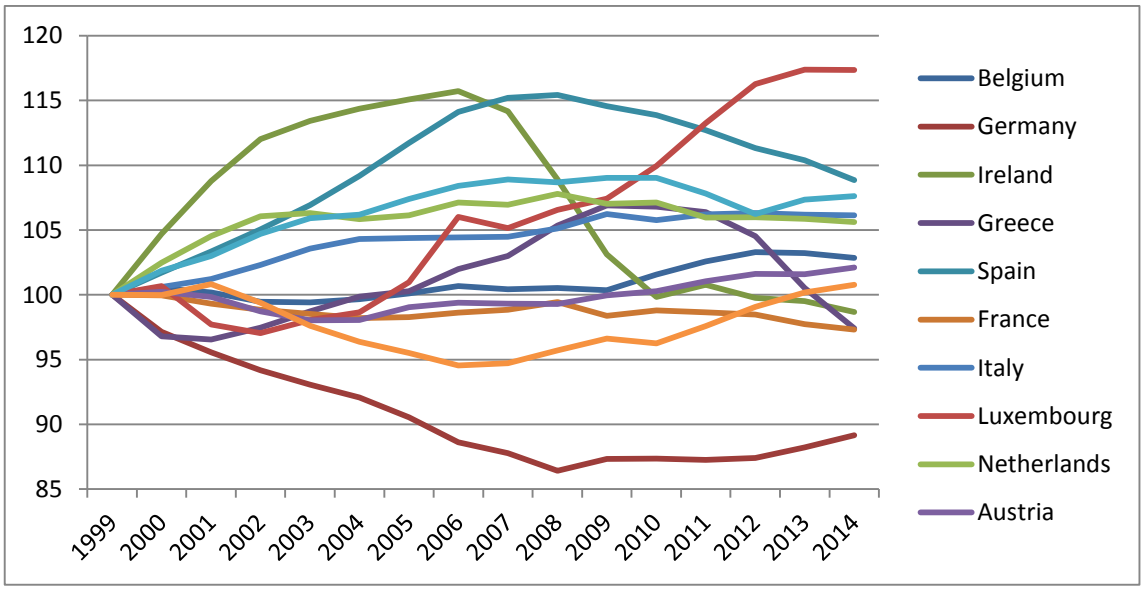


Figure 5 – Source: European Commission

[2] The REER (Real Effective Exchange Rate) is computed as the geometric average value of a country's currency relative to an index or basket of other major currencies adjusted for the effects of inflation; it can be calculated using Consumer Prices, GDP Deflator, ULC or Export Prices.

$$REER^t = \prod_{f=1}^{N} \left(\frac{d_i^t \, e_{f,i}^t}{d_f^t} \right)^{w_f}$$

where "d" measure the price level (both internal d_i and foreign $d_{(f)}$, "e" is an indicator of nominal exchange rates, and "w" is a set of weights (w) showing trade patterns among countries.

The previous figure shows how some northern European countries (Germany, Finland and Austria) had significant decline in this indicator, while others (Spain, Greece, Italy, Ireland, Portugal, the Netherlands) a sharp rise. Actually, it means competitiveness gains for the former and competitiveness losses for the latter. The patterns of the REER shown in the figure suggest to some authors that the Euro zone, especially peripheral countries, suffers from a competitiveness problem. This belief expresses the so-called "culture of stability", according to which the virtuous behavior of German economy should represent a model to be adopted by peripheral countries. In this view fiscal programs towards these countries would provide a temporary stimulus and relief but "at the expenses of postponing the long term adjustments that are needed to improve the competitiveness of the crisis-stricken countries" (Sinn, 2014, p.2).

The divergences in competitiveness shown by the different patterns of the REERs have been attributed to two factors: differences in the labour costs and/or labour productivity differentials. Indeed, Unit Labour Costs (ULCs)[3] in European central countries appear to be lower than those recorded in peripheral countries.

According to some studies, such a different trend in Unit Labour Costs (ULCs) can be explained by the divergences in nominal wages. Among them, Cesaratto and Stirati (2011, p.8) maintain that "the growing competitive advantage of Germany during the EMU years is not to be attributed to productivity gains, but to the ultra-moderate nominal wage policy". Also Stockhammer (2011, p. 4) observes that "Germany has pursued a policy of aggressive wage restraint (as a means of competitive – real – devaluation) resulting in large current account surpluses".

Conversely, other studies argue that the different trend of Unit Labour Costs (ULCs) can be explicated by the peripheral countries modest productivity, rather than by divergences in nominal wages. Draghi (2013) and Brancaccio (2011) seem to accept this interpretation. In particular, Brancaccio maintains that

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[3] ULC (Unit Labour Cost) is the relationship between nominal wage and average labour productivity. The basic formula used for ULC calculation is

$$ULC = \frac{\omega}{\rho}$$

where ω is a metric about *labor compensation* and ρ is a metric about *productivity* (output), both of them measured per hour per worker.

the most divergent patterns can be found in labour productivity, while nominal wages seem to show a convergence among them.

1.2.2 – *Supply side causes: the composition of exports*

A recent study argues that the differences in the REERs among European countries do not represent a satisfactory explanation of imbalances:

> Differences in price competitiveness [...] are only part of the explanation of the disequilibria, with a much greater role being played by the composition (and direction) of export: it is its quality that needs to be improved (Ginzburg et al., 2012, p. 1).

According to this approach, the "price competitiveness principle" should be revised or at least accompanied by a more structured industrial policy. These authors show how the REER indicator is based on a one-dimensional approach of competitiveness and it is therefore unable to capture the complex nature of the European imbalances phenomenon. In fact, the computation of REER assumes the homogeneity of products in European countries, without considering the differences in the structure and composition of products. They observe that a multidimensional indicator could also take into account the different content of products traded among European countries.
Moreover, this study suggests that peripheral countries deficits have been caused by the difficulty to diversify their production. In particular, their inability to produce more complex and higher-quality products would have exposed them to "low-cost" countries' competition. This would have been one reason why peripheral countries have been progressively losing export shares, in particular towards German economy. Furthermore, the fact that German system bases its economy on the compression of domestic demand and on the shift of its trade (in

particular the trade of intermediate goods) towards East European countries[4] and emerging Asia would have exacerbated current account imbalances.

1.2.3 – *Demand side causes: the domestic demand*

Even though the debate on the causes of European imbalances has largely focused on the divergent competitiveness trends of Euro countries, the European Commission (2009, 2010) emphasizes the role of the different patterns of domestic demand in increasing deficit positions. It is known that a stronger relative demand pressure tends to fuel import demand and to depress the current account; on the contrary, weaker demand pressure tends to weaken imports and to improve the current account. In the European Commission report on global competitiveness of 2009 it is quoted:

> External factors such as differences in export price competitiveness also play a role in explaining the divergence of current accounts, but it appears to be of secondary importance compared with domestic demand factors (European Commission, 2009, p. 27).

The same claim has been confirmed in a European Commission study of 2010:

> A large part of the cross-country divergences of current accounts since the launch of the euro has been determined by considerable and persistent differences in the strength of domestic demand across Member States (European Commission, 2010, p.7).

Indeed, these reports show a close correlation between changes in domestic demand growth over the past decade and changes in the trade balance of Euro area countries (figure 6).

[4] By 'eastern Europe' the authors mean the group of central and eastern European countries that are members of the EU.

Changes in domestic demand and in the trade balance of Euro area countries

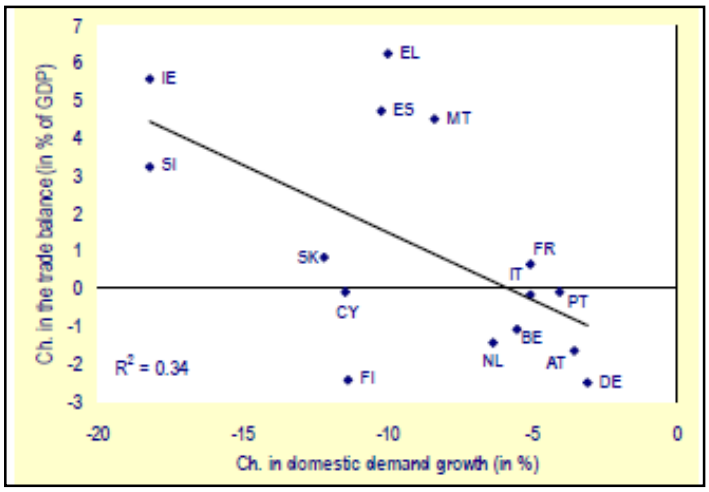

Figure 6 – Source: European Commission (2010)

The divergences in the strength of domestic demand have been attributed to the different patterns of nominal wages among European countries. In fact, divergent trends in nominal wages have a dual effect: one the one hand, they affect a country's competitive advantage[5]; on the other hand, they influence the country's domestic demand. These studies emphasize the latter. Therefore, if Germany reduces monetary costs of labour (per unit of output) and companies decide to leave prices unchanged, this would increase profit rate and decrease the wage share, changing the income distribution. Owing to different consumption propensities - wage earners vs. profit earners - this change would cause a drop in demand, a fall in imports and an increase of German trade surplus. According to the European Commission,

> The wage share declines in surplus countries are broadly in line with disposable income developments which, in turn, have led to weak consumption and domestic demand thereby resulting into current account surpluses (European Commission, 2010, p. 39).

[5] As seen in the previous paragraph

Indeed, a research conducted by OECD suggests that inequality has increased in Germany over the recent decades. This evidence can be explained by the stagnation of real wages compared to the productivity for the period 1999-2007, when the divergence was particularly accentuated (OECD 2008).

As widely analysed by Cesaratto and Stirati (2011), the German wage moderation policy (the so-called "German mercantilism") has been pursued since the post-World War period. It has been observed that in 1951 the Bundesbank president, Wilhelm Vocke, had already defined the maintaining of the price level below the other countries as the main target of the German economy.
The conduct of Germany before and during the crisis has been consistent with this policy. The German strategy has been based on taking advantages of fixed exchange rates by pursuing a domestic inflation rate lower than competitors to foster exports (the so-called "current account targeting"). In order to maintain the external competitive hedge, German authorities compensated any possible labour market overheating through fiscal and monetary policies. As examined by Cesaratto and Stirati (2011), wage moderation has been pursued through labour market reforms, especially those implemented during the Schroeder Government. These reforms were brought about with the acquiescence of the trade unions, under the threat of the off shoring of production in Eastern Europe and in other low wage regions.

1.3 THE EFFECT OF THE EUROPEAN MONETARY AND FINANCIAL INTEGRATION ON IMBALANCES

The third interpretation considers the consolidation of European imbalances as the direct effect of the European Monetary Union. Effectively, the period after the EMU saw a series of developments that led to a widening of the capital flows form the core to the periphery of the Euro area. These capital flows can be attributed to many factors.

First of all, as also noticed by Whelan (2012), financial integration can be considered as one of the main causes driving the capital movements. In fact, one of the main purposes of the EMU was to encourage greater financial integration

among member countries. Through the elimination of barriers to capital movements and the harmonization of financial market rules[6], the dimension of capital flows within the Euro area has significantly increased. The emergence of an integrated European financial market channelled a lot of money from Europe's core to its periphery either via bond market lending or via core country financial institution, expanding their operations into Euro-area member states.

Another factor that must be taken into consideration is the disappearance of the exchange rate premium. The introduction of the single currency and the consequent elimination of the exchange rate risk allowed capital to be easily moved to countries with greater investment opportunities. With investors no longer worried about the exchange rate depreciation, the premium associated with the risk disappeared from the interest rates charged to Governments, businesses and households. As shown in figure 7, since the inception of the Euro until the Lehman Brothers' default the spread between German Government bonds and the peripheral countries Government bonds disappeared[7]. Since Government bond rates usually act as a baseline for private borrowing rates, the decline in borrowing costs for peripheral Governments was transmitted to the private sector. These phenomena produced increasing capital flows from core to peripheral countries, which contributed to finance their current account deficits.

[6] According to Directive 93/22/EEC Member States must permit investment firms from other Member States to carry out in their territory the activities authorized by the home country.

[7] However, interest rate convergence was one of the four "convergence criteria" already established by the Treaty of Maastricht in 1992, according to which the nominal long-term interest rate should not be more than 2 percentage points higher than in the three lowest inflation member states.
These criteria were established for all European Union member states to enter the third stage of European and Monetary Union and adopt the Euro as their currency.

Convergence of interest rates
(Government bond yields)

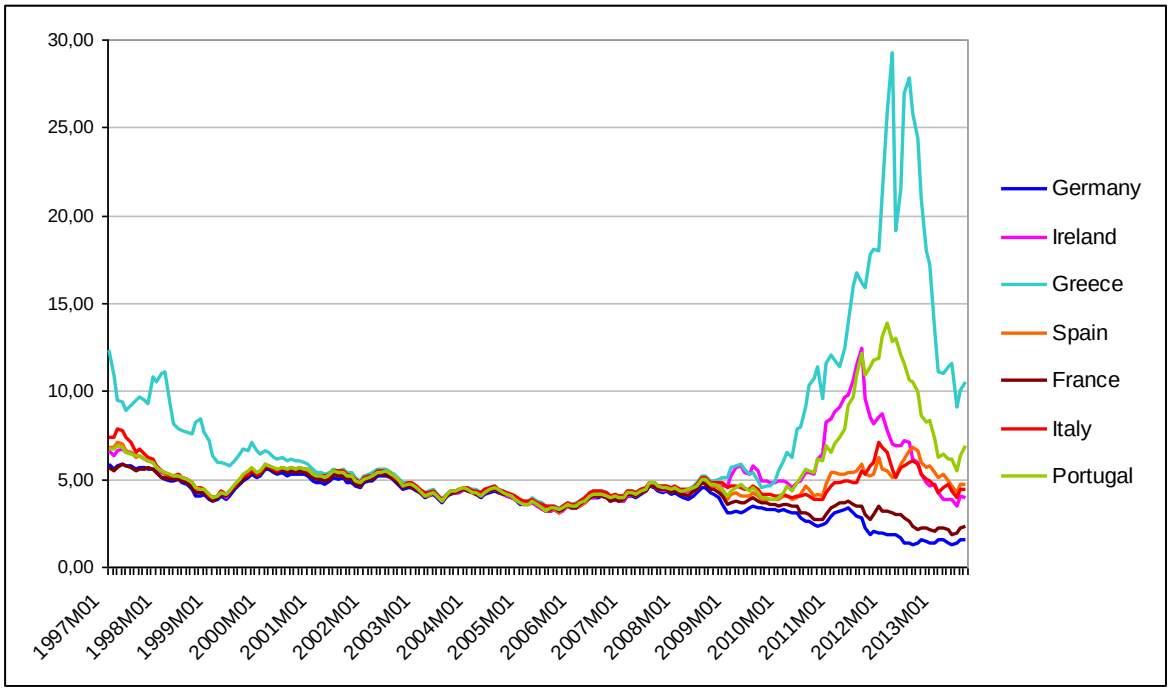

Figure 7 – Source: Eurostat

According to Blanchard and Giavazzi (2002), these capital flows not only financed the current account deficits of peripheral countries, but also enabled the widening of current account imbalances. The availability of the new credit would have determined an increase in investment in peripheral countries, and consequently in income and imports. However, we should observe how this reasoning is crucially based upon the neoclassical theory's assumptions. If capital flows from abroad have caused an increase in investments in peripheral countries, it is implicitly assumed that the presence of savings is the cause of investment. In other words, it is supposed that without foreign savings the investment in southern countries would not have taken place.

Vice-versa, beyond the neoclassical framework it should be argued that investment is not determined by the presence of savings, but by other factors, as a higher expected level of demand in that sector. In this way, we can suppose that investment in peripheral countries has not been driven by the availability of foreign capitals, but foreign savings only financed them. In other words,

according to the non-conventional view, current account deficits have likely been determined by other structural causes and foreign capitals only contributed to finance them.

After presenting data on European imbalances and the debate about the causes underlying their consolidation, now we focus on the main argument of this research, i.e. the question of the relevance of current account imbalances within a monetary union, and more specifically within the actual framework of the European Monetary Union.

2

EURO-AREA IMBALANCES: ARE THEY RELEVANT?

In this chapter, we first reconstruct the history of the economic and political debate about the relevance of current account imbalances in the Euro area. Given the substantial lack of clarity and the gradual change in views, we try to remove some opacity in the debate by analyzing the general implications of the presence of persistent trade divergences. At this aim, the construction of a simple economy and the gradual extension to a more complex case allows us to examine the consequences of trade deficits on economies outside a monetary union. Then, we focus on their implications for economies belonging to a same monetary union. After comparing the two cases and underlining the possible differences, we try to answer the question research, that is whether and why current account imbalances should be considered relevant within the European Monetary Union.

2.1 THE DEBATE ON EUROPEAN IMBALANCES

The inception of the single currency was expected to make balance of payments irrelevant within the Euro area. For a long time, it has been widely acknowledged that with the advent of the Monetary Union the traditional concept of a deficit or surplus in a member nation's balance of payments would have lost its significance.

As noted by Giavazzi and Spaventa (2010), James C. Ingram was perhaps the first to point out that under a monetary union the concept of a deficit or surplus would have become irrelevant. In one of the earliest paper on the European Monetary Union, Ingram observes that:

> Imbalances can be financed in the short run through the financial markets, without need for interventions by a monetary authority. Intracommunity payments become analogous to interregional payments within a single currency (Ingram, 1973, p. 10).

In October 1990, a European Commission report on the potential benefits and costs of forming an economic and monetary union similarly posited that "a major effect of EMU is that balance of payments constraints will disappear" (European Commission, 1990, p. 24). This quotation demonstrates how the introduction of the Euro was widely expected to make the issue of balance of payments constraints irrelevant, even among European economic and political institutions. This point was also made and enforced by Tom Palley (1997, p. 153) in the debate about the benefits of a currency union:

> As a part of a common currency area, country economies will take on a position similar to that of individual states in the US economy. These states can run either balance of payments deficits or surpluses with other states, but this poses no problem since all use a common currency. The only effect (which is never officially recorded) is that residents of deficit states either run down their existing asset holdings or build up obligations to residents of surplus states. An analogous situation would apply for EMU member countries.

This opinion was so widespread in the early 1990s that the Maastricht negotiators did not establish convergence criteria for the balance of payments positions of Euro area members. Moreover, art. 143 of the Treaty excluded members of the common currency from the benefits dealing with balance of payments problems.

The European Commission confirmed its belief that balance of payments constraints would have disappeared within the European Monetary Union on the occasion of the tenth anniversary of the Euro. In a 350 pages report aimed to evaluate the Monetary Union experience after a decade it was reported:

> Financial integration can leverage the benefits of structural reforms, allowing capital to flow freely to its best uses in an environment where current account

> constraints and exchange risk premium have disappeared (European Commission, 2008, p. 152).

There are some authors (Barba and De Vivo, 2013) that try to soften the strictness of this quotation, explaining that behind this view, there was not the idea that the external constraints within the union had been eliminated, but rather that the abolition of exchange rates and complete freedom of capital movements were sufficient to ensure that the current account of each member state would have tended to balance.

Another study that must be mentioned among the main historical contributions to the debate is the Mac Dougall Report. It is a deep study on the role of the public finance in the European integration conducted in 1977 by a group of experts appointed by the Commission of the European Communities and chaired by Donald MacDougall. According to this study, fiscal integration among regions would have been fundamental for the sustainability of balance of payments' imbalances within a monetary union:

> a member of the community [...] might, because of absence of any substantial compensation through the Community finances, find its balance of payments so seriously in deficit that the difficulty of meeting the situation by borrowing could force upon it a reduction of income larger than the initial fall in export earnings. This absence between Community members of the substantial compensatory public finance mechanism that works between regions inside integrated states is thus of great importance as an obstacle to fuller Community integration (European Commission, 1977, p. 35).

The idea is that the surplus of taxation over public expenditure of richer regions in a country would help to sustain the current account deficit on the regional balance of payments of the poorer regions. The report underlines how an important difference between the region on the one hand and the sovereign State on the other, is that the region would have no problem in financing the deficit in its interregional balance of trade: in face of a reduction in its exports, its citizens receive national or federal sources. Conversely, the sovereign state can sustain a

trade deficit only with a sufficient export surplus, or only as long as it is able to borrow from abroad. This point will be clearer at the end of the fifth chapter.

However, there has been a considerable shift in the opinion on whether the balance of payments constraints do exist or not among Euro area members. As we will see shortly, the idea that the introduction of the single currency would have produced the disappearance of any relevance of current accounts (Ingram, 1973; European Commission, 1990) was progressively and silently abandoned, by the European Commission itself. Many economists and institutions started to maintain that a monetary union was not sufficient to make trade positions irrelevant and the issue of current account imbalances started gaining relevance in the macroeconomic policy discussion.

Surprisingly, the academic debate adopted an opposite attitude and started evaluating the relevance of current account imbalances within the Euro area according to the temporary or persistent nature of these imbalances, exactly as occurs in absence of a single currency.

2.1.1 – *Good Imbalances. The benign view on imbalances*

The shift in the opinion on the relevance of current accounts found its origin in an influential study conducted by Blanchard and Giavazzi (2002), which reassured economists and institutions about the widening imbalances within the Euro area. According to their analysis, current account deficits would have represented a *temporary* cost of the financial integration, which would have disappeared as soon as peripheral countries would have been able to repay the debt in the future by exporting to core countries.

More specifically, they argue that the increase of current account deficits in peripheral countries could be considered as the natural and acceptable effect of the financial integration. These authors analyze the current account deficits of some European countries, in particular Portugal and Greece, by means of an intertemporal model. They show that foreign borrowing would have been optimal for a converging country and current account deficits would have been, thus, a physiological consequence of their catching up process. The monetary union would facilitate this process by promoting financial integration and reducing the

cost of foreign capital thanks to the elimination of the exchange-rate premium. It would have been "exactly what theory suggests can and should happen when countries become more closely linked in goods and financial markets" (Blanchard and Giavazzi, 2002, p. 148).

In their model, they find the same results suggested by the neoclassical theory. In fact, according to the neoclassical growth model, capital flows from rich countries to poor ones where the rate of return on capital is higher[8] (and the capital relatively scarcer), leading to growth in the latter and income convergence (Barro Sala-i-Martin, 2004). The authors observe that this is exactly what occurred in the Euro area, where peripheral countries played the role of lower-income capital-scarce countries.

> To the extent that they are the countries with higher expected rates of return, poor countries should see an increase in investment. And to the extent that they are the countries with better growth prospects, they should also see a decrease in saving. Thus, on both counts, poorer countries should run larger current account deficits, and, symmetrically, richer countries should run larger current account surpluses (Blanchard and Giavazzi, 2002, p. 148).

Therefore, the deficit of peripheral countries would have reflected the excess of investment over savings. Specifically, the rise in investment and the decrease in savings would have been the main channels through which integration caused the deterioration of peripheral current accounts: on the one hand, foreign capital flows would have financed the investment of peripheral countries; on the other, higher growth prospects would have led to a decrease in their saving rate.

However, it is important to observe how this line of reasoning suffers from some important limitations. As already pointed out before,[9] neoclassical assumptions are fundamental for the consistency of this reasoning. Firstly, when they argue that capital flows from abroad caused an increase in investment in

[8] We should note that the difference in the rates of return seems to be inconsistent with the convergence of interest rate observed in figure 7.
[9] See Chapter 1, section 1.3

peripheral countries, it has been implicitly assumed that savings are the cause of investment. Secondly, when they state that the capital coming from abroad caused not only an increase in investment, but also an excess of investment over saving, their argument necessarily lies on the hypothesis of a given level of income. Furthermore, in order to maintain that capital coming from abroad materializes itself in investment, the authors necessarily assume that capital is only in the form of money.

In conclusion, in their study the convergence mechanism provides a reason why European imbalances should not represent a source of concern. Current account deficits would have had a temporary nature and would have shrunk as soon as peripheral countries would have been able to repay the debt in the future by exporting to core countries. Since foreign borrowing is used to increase the country's productive capacity of exportable goods and services, the external budget constraint will be respected. Indeed, in their model these authors assume that all goods a country produces are tradable and can contribute to the achievement, in the future, of the export surplus required for the solvency condition.

Since then, the academic and institutional debate focused its attention on the temporary or persistent nature of trade positions, implicitly taking for granted the relevance of trade imbalances among members within a same monetary union.

2.1.2 – *Bad Imbalances. The non-tradable destination of foreign borrowing*

After the global financial crisis in 2008, intra-euro imbalances have been matter of growing concern. The catching up process expected by Blanchard and Giavazzi had not occurred and current account imbalances had further widened (as already observed in figure 4). European imbalances were no longer considered as the natural effect of a healthy process of convergence, but rather as an indicator of financial fragility.

The observation of this trend led Giavazzi, one of the supporter of the benign view on imbalances, to rethink his previous position. In particular, in a study conducted by Giavazzi and Spaventa (2010), the distinction between

tradable and non-tradable destination of foreign borrowing became the fundamental factor in order to evaluate the nature of trade imbalances in a monetary union. If foreign borrowing was channeled towards tradable productions they consider trade divergences as "*good imbalances*"; vice-versa, if foreign borrowing was channeled to non-tradable productions they speak about "*bad imbalances*". According to their study, even in a monetary union the solvency of the intertemporal budget constraint is fulfilled only if foreign capitals are addressed "to increase the country's productive capacity of exportable goods and services" (p. 6).

In order to demonstrate their thesis, they use a two-period, two-goods model. In their model they make the extreme assumption that all capital invested is financed by foreign borrowing. In addition, they hypothesize that the investment decisions between traded and non-traded productions depend on the expected value of the rate of return. This value depends on the expected relative prices between traded and non-traded goods.[10] On the basis of this model, they show that even in a monetary union, the intertemporal budget constraint is respected only if the foreign borrowing is used for financing the production of traded goods and services.

Thus, they explain the persistence of current account deficits in the Euro-area peripheral countries and the violation of the convergence patterns established by Blanchard and Giavazzi with an unproductive destination of foreign capital. According to them, the counterpart of the capital inflows would have produced a boom of non-tradable residential construction (like in Spain and Ireland) or an increase in consumption, rather than productive investments. This is why peripheral countries did not fit into the convergence patterns which would have justified the initial trade deficits. They conclude that the possibility to devote investment to the production of non-tradable goods and services could have made current account positions relevant, even within a monetary union:

[10] The authors explain as this assumption is possible only because within a monetary union there is no exchange rate. If the exchange rate was not fixed, a shift in price of non-traded goods could be partly offset by a change in the domestic currency price of traded goods.

> We conclude that a common currency [...] is not by itself sufficient to make that notion irrelevant (Giavazzi and Spaventa, 2010, p.10).

However, it is important to observe that the theory presented by Giavazzi and Spaventa suffers from some important limitations. First of all, their analysis is crucially based upon the neoclassical model; going out from this framework, the casual relationships of their reasoning are no longer valid. Secondly, it is not explained the reason why the competition did not offset the difference between traded and non-traded prices, as suggested by the neoclassical theory itself. Finally, the more important limitation of their theoretical contribution is the lack of a satisfactory answer to their research question, that is whether trade imbalances should matter within a currency union. Actually, by considering the relevance or not of trade imbalances according to their temporary o persistent nature, the simple persistence is by itself sufficient to make imbalances relevant. Thus, they end to assume what they should normally demonstrate and approach the issue of the relevance of imbalances within the Euro area exactly as outside a currency union.

This view was so widespread that also the European Commission started rethinking its position and moderating its assertions about the accumulation of current account deficits by southern European countries. In the European Commission's report on European imbalances it is quoted:

> In those States which accumulated large current account deficits and external debt, capital inflows were not channelled to the most productive uses and were associated with disappointingly weak productivity performance. In some Member States running current account deficits, the inflow of foreign capital facilitated the rise in household and/or corporate debt, fuelling excessive credit dynamics and contributing to the emergence of housing bubbles (European Commission, 2010, p.11).

This position can be also found in Eichengreen (2010), who argues that in countries like Spain and Ireland the rise in investment took the form of residential construction which "did little for productivity growth" (p. 3). The author defines factors turning European good imbalances into bad imbalances as

"disturbing anomalies" or "domestic distortions". However, it is important to observe how the classical notion of "distortion" usually refers to undesired deviations from what market would achieve under conditions of perfect competition. But in this case, the investors' choice to address their capitals towards non-tradable productions is driven by the higher rate of return, that is a result entirely consistent with a perfect competitive market.

2.1.3 – *Policy responses to European imbalances*

Although until 2008 Euro member countries' external payment situation was disregarded in both academic and policy debates, since 2010 the focus on this perspective made the debate over the nature of European imbalances even more widespread. A first step in preventing Euro area from accumulating excessive surpluses and deficits has been taken in autumn 2011, when the European Union introduced the Macroeconomic Imbalances Procedure (MIP)[11]. It consists in a series of criteria aimed at limiting the formation of excessive imbalances in Euro area countries. The MIP is a part of the so-called *six-pack legislation*, which is oriented to reinforce the surveillance of macroeconomic policies in the European Union. Although the procedure refers to the external current account positions (including both intra and extra-Euro area transactions), it can be interpreted as a clear signal of the growing concern about this issue. In fact, as shown by the data analysis on imbalances in Chapter 1, the external Euro-area current accounts basically reflect intra-Euro positions.

The European Commission's Alert Mechanism Report opens with this statement:

> Large and persistent macroeconomic imbalances – reflected in large and persistent external deficits and surpluses, sustained losses in competitiveness, the buildup of indebtedness and housing market bubbles – accumulated over the past decade and were part of the root causes of the current economic crisis.[12]

[11] "MIP" has been introduced with EU Regulation 1176/2011, passed on 16 November 2011.

[12] http://ec.europa.eu/economy_finance/economic_governance/documents/alert_mechanism_report_2012_en.pdf

The MIP contains an alert mechanism for the early detection of emerging macroeconomic imbalances based on a scorecard of eleven indicators that monitor external imbalances and competitiveness, as well as internal imbalances. The scorecard on current account imbalances is that the three-year average of the current account, as a percentage of GDP, has a threshold of 4 % for current account deficits and 6 % for current account surplus. If an excessive imbalance is detected, the member state concerned will have to prepare a corrective action plan with the deadlines for implementing adequate measures. If the corrective action is not sufficient to correct imbalances, the European Commission can apply sanctions to the country.

So far, however, the European Commission has never launched the Excessive Imbalance Procedure.

2.2 IMPLICATIONS OF CURRENT ACCOUNT IMBALANCES

Given the general disagreement in the debate and the lack of a satisfactory explanation about the relevance of trade imbalances within a monetary union, the purpose of the following analysis is to remove some opacity in the discussion and clarify the terms of the debate.

With this aim in mind, we first discuss the implications of current account imbalances by examining their consequences on economies which do not take part of a monetary union. Then, we analyze the implications of imbalances for economies within a monetary union. Finally, we compare the two cases underlining the possible differences. Unlike the literature taken into account in the previous section, we will base our reasoning upon the assumption that the level of income is not fixed, but it rather depends on the level of aggregate demand. Thus, we abandon the neoclassical framework in favour of the Keynesian approach.

Before discussing the implications of current account imbalances, it can be useful to recall some basic concepts coming from national account identities. According to the basic national account identities,[13] at macroeconomic level a current account deficit (X < M) is associated with either an excess of investments over savings (S < I) or with an excess of Government spending over tax revenues (T < G), or both. This is the case of the Spanish economy. On the other hand, a current account surplus (X > M) is associated either with a Government surplus (T > G) or with an excess of savings over investments (S > I), or both. This is the case of the German economy. Deficit economies record net liabilities to foreign countries, so that in areas characterized by current account deficits someone necessarily falls into debt to someone else in surplus countries. In order to identify which subjects of the economy would possibly fall into debt, we will first construct a basic economy characterized by only one individual, and then we extend the analysis to a more complex economy with a plurality of agents and Government intervention.

2.2.1 – *Implications of imbalances outside a monetary union: a simple economy*

Time "0". Suppose two countries (A, B) adopting a different currency, each one characterized by one agent (individual A and B) and one bank (Bank A and B), without Government intervention and recording an initial equilibrium in the current account. Assume that the individual in Country A consumes 50, exports 50 and imports 50 from the individual in Country B. The value of goods and services purchased abroad (50) equals the value of goods sold abroad (50),

[13] In an open economy, national income must be equal to the sum of consumptions, investments, Government spending and the difference between exports and imports:
$Y = C + I + G + (X - M)$
It is also true that national income must be equal to the sum of consumptions, savings and the taxes paid to Government:
$Y = C + S + T$
By combining these two identities, we get:
$(X - M) = (S - I) + (T - G)$

and the individual's income (100) is sufficient to pay for his expenditure (100). This is the case represented in the first line of figure 8.

Time "1". Now assume that individual A starts importing 60 rather than 50: in our simple economy, there will be an excess of expenditure (110) over income (100) and the economy A starts running a current account deficit of 10 (see the second line in figure 8). The same happens if the individual changes the composition of his consumption in favor of foreign goods and starts consuming 40, exporting 50 and importing 60: as before, there will be an excess of expenditure (100) over income (90) and the economy as a whole will run a current account deficit (see the third line in figure 8). In this case, the deficit is not caused by an excess of consumption over income by the individual, but by the fact that part of the domestic production remains unsold.

Current account deficit in a one individual economy

		INDIVIDUAL A			COUNTRY A		
		Domestic Consumption	Exports	Imports	Income	Expenditure	Current Account
TIME "0"		50	50	50	100	100	0
TIME "1"	Case 1	50	50	60	100	110	-10
	Case 2	40	50	60	90	100	-10

Figure 8

Now analyze how individual A could finance his excess of expenditure over income. First of all, Bank A could directly transfer the deposits of individual A to Bank B, that is the bank of individual B. However, in case of a persistent deficit the wealth owned by the agent will progressively decrease, and he will be forced to ask his bank for a loan. In other words, in order to finance a persistent excess of expenditure over income, the individual will necessarily fall into debt. Suppose that individual A asks his own bank (Bank A) for a loan and analyze the possible ways through which Bank A could finance the loan to individual A. In the simplest case, Bank A could have some liquidity reserves. However, since this liquidity will be used for the purchase of foreign goods or services, it will not return to the

banking system from which it originated. Thus, in case of a persistent trade deficit, it is reasonable to assume that Bank A itself will, in turn, fall into debt in order to finance individual A. For this reason, suppose that Bank A asks for a loan to the foreign Bank (Bank B), that has available reserves thanks to the liquidity obtained by exports.

In conclusion, in order to finance his excess of expenditure over income, the individual falls into debt with Bank A and the latter, in turn, falls into debt with Bank B. As shown in figure 9, individual A ends up with a liability of 10 to his bank, and Bank A ends up with recording a credit to individual A and a debt to Bank B of the same amount. Bank B will, in turn, record a credit to Bank A and a debt to individual B.

Financing imbalances outside a monetary union (1)

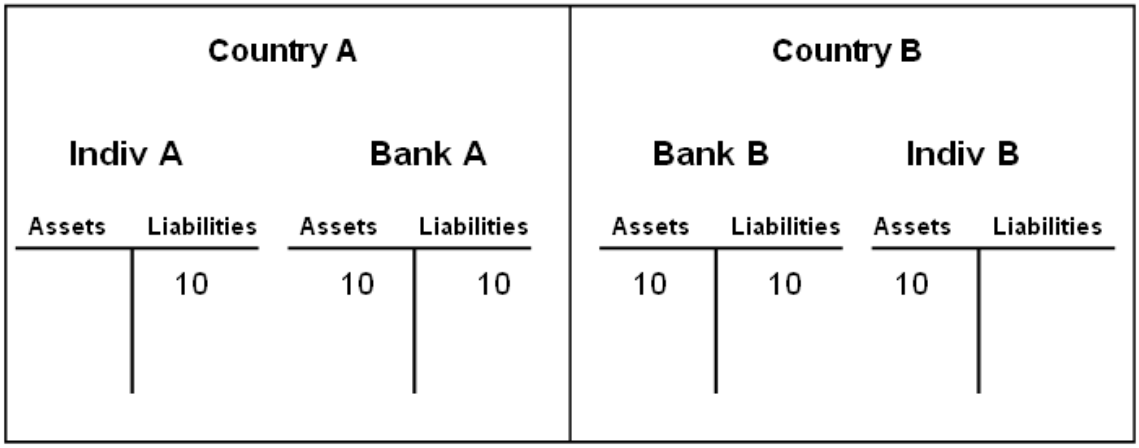

Figure 9

Furthermore, we can observe that while the credit of Bank A to individual A is denominated in domestic currency, its debt to Bank B is denominated in foreign currency. Ultimately, the subject who experiences an increase in external liabilities is Bank A.

Alternatively, Bank A could ask its own National Central Bank (NCB A) for a loan. The situation is similar as before, save that now we have an additional level of intermediation played by the National Central Banks (figure 10). In this case,

it is the National Central Bank A, rather than Bank A, to increase its liabilities to foreign country.

Financing imbalances outside a monetary union (2)

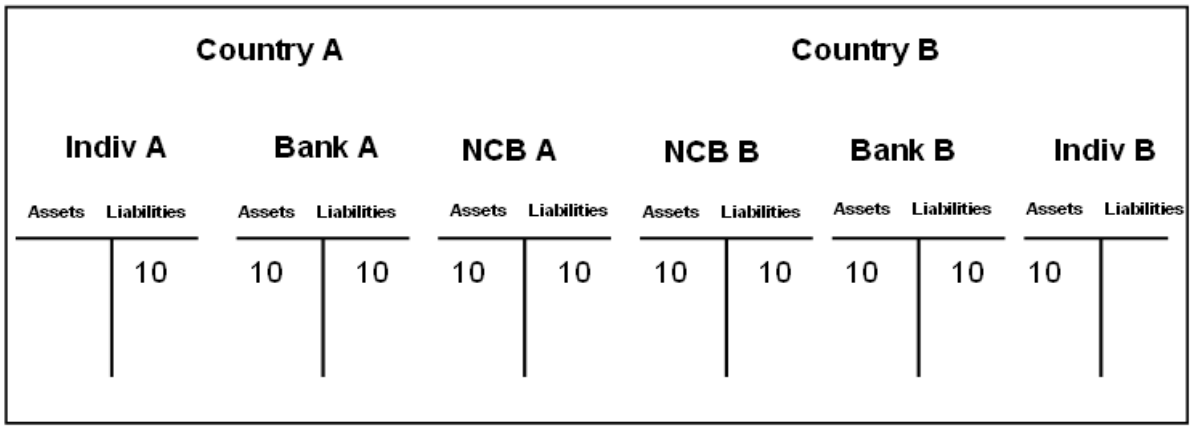

Figure 10

This case of a simple economy allows us to clarify some important microeconomic implications of a structural trade deficit. When a country runs a persistent trade deficit, its excess of expenditure over income implies an increasing debt of some of its agents to others in the surplus country. The banking system (through commercial banks or national central banks) ends to be necessarily get involved, but purely as an intermediate of these credits and debts. In fact, in the figures 9 and 10 it is possible to observe that the net position of both commercial banks (Bank A and Bank B) and central banks (NCB A and NCB B) remains unchanged: on the one hand, they record an asset; on the other, they record a liability.

However, it is important to observe that the representation of a simple economy composed by only one individual suffers from an important limitation: the agent who falls into debt unavoidably coincides with the importer. When we will consider a more complex economy characterized by several individuals, we will show that these subjects do not necessarily correspond.

Once clarified which agents of the deficit economy fall into debt, we can proceed our reasoning by analyzing the possible ways through which the individual could repay his debt to Bank A. In particular, consider two cases.

Case 1. The agent could record a current account surplus, by exporting 60 and importing 50. In this way, the individual would get the necessary resources to service his debt to Bank A (see case 1 in figure 11).

Case 2. The agent could consume less than he produces. In our example, he could consume 40 rather than 50 and use the 10 saved to repay the debt (see case 2 in figure 11).

Repay the debt outside a monetary union

	INDIVIDUAL A			COUNTRY A		
	Domestic Consumption	Exports	Imports	Income	Expenditure	Current Account
Case 1	50	60	50	110	100	10
Case 2	40	50	50	100	90	0

Figure 11

However, this hypothesis would necessarily imply that banks accept in kind payments: only in this way, he might well service his debt to Bank A by producing without consuming, and Bank A could repay his debt to Bank B. In other words, the individual could service the debt only by selling a share of his product abroad. In fact, in case Bank B accepts in kind payments, it is as if the individual sells part of his goods abroad. Thus, in our simple economy, the only way through which the individual could be solvent with his Bank is by selling goods or services abroad, i.e. running a current account surplus.

2.2.2 – *Implications of imbalances outside a monetary union: a more complex economy*

It is time to extend the example to a context of a more complex economy. Instead of one individual, consider two agents (A1 and A2, respectively enterprises and families), Bank A will be the banking system of Country A, and Bank B the banking system of Country B. In addition, introduce Government intervention. The introduction of a plurality of agents allows us to construct a more verisimilar

example and better specify the credit and debt positions arising from a trade deficit.

Assume that at time "0" consumption is 80, exports are 50, imports 50 and investment, equal to 20, is fixed and equals savings. The economy as a whole is in equilibrium: income (100) equals expenditure (100) and trade balance is zero. In order to identify how these components are distributed between families (wage earners) and enterprises (profit earners), assume that income is equally distributed between the two classes of agents:

$y^w = 0{,}5$
$y^\pi = 0{,}5$

where y^w and y^π are, respectively, the share of product of wage earners (families) and that of profit earners (enterprises).
In addition, suppose that:

$z^w = 0{,}2$
$z^\pi = 0{,}4$
$z^i = 0{,}2$

where z^w and z^π are the marginal propensities to import of consumer goods of wage and profit earners, and z^i is the marginal propensity to import of intermediate goods, so that the average propensity to import is:

$$z = (z^w \times y^w) + (z^\pi \times y^\pi) + z^i \rightarrow z = (0{,}2 \times 0{,}5) + (0{,}4 \times 0{,}5) + 0{,}2 = 0{,}5$$

Assume that marginal propensities to consume of wage and profit earners are, respectively:

$c^w = 0{,}9$
$c^\pi = 0{,}7$

The average propensity to consume is:

$$c = (c^w \times y^w) + (c^\pi \times y^\pi) \rightarrow \quad c = (0{,}9 \times 0{,}5) + (0{,}7 \times 0{,}5) = 0{,}8$$

Thanks to these assumptions it is possible to calculate how income and its main components are distributed between families and enterprises:

$$Y^w = y^w \times Y \rightarrow Y^w = 0{,}5 \times 100 = 50$$
$$Y^\pi = y^\pi \times Y \rightarrow Y^\pi = 0{,}5 \times 100 = 50$$

$$C^w = c^w \times Y^w \rightarrow C^w = 0{,}9 \times 50 = 45$$
$$C^\pi = c^\pi \times Y^\pi \rightarrow C^\pi = 0{,}7 \times 50 = 35$$

$$Z^w = z^w \times Y^w \rightarrow Z^w = 0{,}2 \times 50 = 10$$
$$Z^\pi = z^\pi \times Y^\pi \rightarrow Z^\pi = 0{,}4 \times 50 = 20$$

where Y^w and Y^π are, respectively, the total income of wage and profit earners, C^w and C^π the total consumption of wage and profit earners, Z^w and Z^π the total imports of wage and profit earners.
The results of this example can be summarized in the following table (figure 12):

A more complex economy: a numerical example (1)

	COUNTRY A				
	Income	Consumption	Investment	Exports	Imports
Families (A2) / Wage earners	50	45	-	-	10
Enterprises (A1) / Profit earners	50	35	20	50	20
Intermediate goods	-	-	-	-	20
Entire economy	**100**	**80**	**20**	**50**	**50**

Figure 12

Now suppose that, at the same conditions, at time "1" the economy starts exporting 10 rather than 50: the fall in exports causes a reduction in income and, at the same time, the economy starts running a trade deficit. The new level of income turns to be:

$$Y = \frac{1}{1-c+z} \times (I + X) = \frac{1}{1-0,8+0,5} \times (20 + 10) = 42,8$$

On the basis of their share of income, it is possible to calculate the total income of families and enterprises after the fall in exports:

$$Y^w = y^w \times Y \quad \rightarrow \quad Y^w = 0,5 \times 42,8 = 21,4$$
$$Y^\pi = y^\pi \times Y \quad \rightarrow \quad Y^\pi = 0,5 \times 42,8 = 21,4$$

Now we can calculate the total imports:

$$Z^w = z^w \times Y^w \quad \rightarrow \quad Z^w = 0,2 \times 21,4 = 4,28$$
$$Z^\pi = z^\pi \times Y^\pi \quad \rightarrow \quad Z^\pi = 0,4 \times 21,4 = 8,56$$

The value of imports of the economy as a whole will be:

$$Z = Z^w + Z^\pi + (z^i \times Y) \quad \rightarrow \quad Z = 4,28 + 8,56 + (0,2 \times 42,8) = 21,4$$

As a consequence, the whole economy will record a trade deficit of 11,4:

$$TB = X - Z \quad \rightarrow \quad TB = 10 - 21,4 = -11,4$$

As a counterpart of the trade deficit, some individuals within this economy are falling into debt. In order to detect which agents (families or enterprises) are spending over his income, we need to calculate the total level of consumption of the two classes of agents:

$$C^w = c^w \times Y^w \quad \rightarrow \quad C^w = 0,9 \times 21,4 = 19,26$$

$C^{\pi} = c^{\pi} \times Y^{\pi}$ → $C^{\pi} = 0{,}7 \times 21{,}4 = 14{,}98$

In figure 13 we can summarize the main results of this example:

A more complex economy: a numerical example (2)

	COUNTRY A					
	Income	Consumption	Investment	Exports	Imports	Income - Expenditure
Families (A2) / Wage earners	21,4	19,26	-	-	4,28	2,14
Enterprises (A1) / Profit earners	21,4	14,98	20	10	8,56	-13,58
Intermediate goods	-	-	-	-	8,56	
Entire economy	**42,8**	**34,24**	**20**	**10**	**21,4**	**-11,44**

Figure 13

Thanks to this example we can clarify two important aspects that have not emerged in our previous economy. Firstly, as shown in the table, the fact that the economy as a whole records a trade deficit of 11,4 implies that only a class of agents (in this case enterprises) records an excess of expenditure over income (in this case equal to 13,58). Conversely, families have an excess of income over expenditure of 2,14 so that the deficit of the whole economy (the excess of expenditure over income of the whole economy) will be 11,4 (13,58 - 2,14).
Furthermore, it is possible to clarify how the debt of the economy due to the trade deficit is not necessarily held by the importer: in this example both families and enterprises import from abroad but only the latter fall into debt. Effectively, this is what usually happens in the actual economy, where imports made by families cause a drop in domestic demand, and therefore a reduction of the enterprises' income. Ultimately, the agent of the economy who falls into debt is the one who suffers a reduction in the sale of product caused by addressing abroad part of domestic demand.

The analysis conducted so far allows us to represent, even for a more complex economy, the set of assets and liabilities arising from a trade deficit (for example equal to 10). The situation (see figure 14) is similar to that of our previous

simple economy, save that now only a class of agents (enterprises -A1) will be indebted to its bank (Bank A) because of the trade deficit.

Financing imbalances outside a monetary union

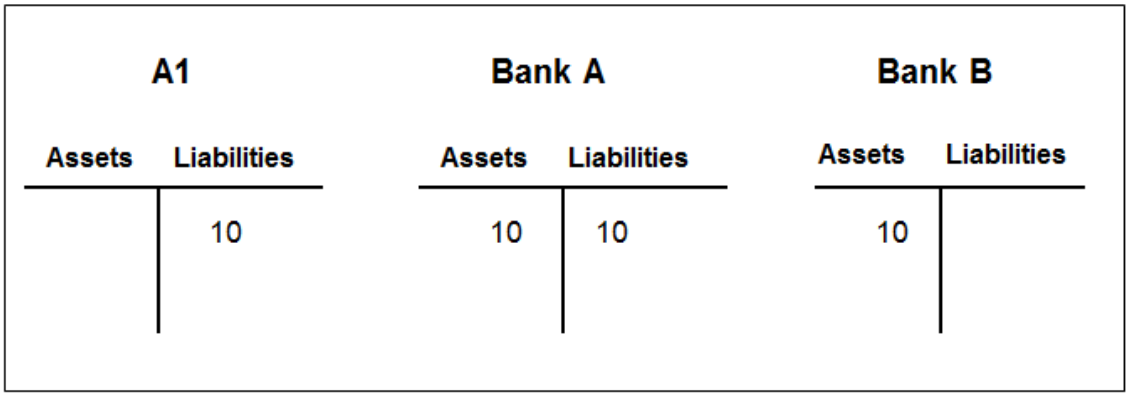

Figure 14

Now we can ask how agents in this economy can repay their debt, also considering Government intervention. Three cases can be taken into account:

Case 1. Agents could reduce their domestic consumption and save to service the debt. Although this could allow them to be solvent with their bank, the reduction in consumption of agents A1 will cause a fall in domestic demand, which, in turn, will cause either a loss of assets or the increase of the debt to their bank for other individuals (A2). In fact, as already observed before, in case of a structural deficit the agents will see their assets progressively decrease, so that with the passage of time assets will be no more sufficient to cover the losses caused by a persistent fall in domestic demand: agents will be forced to ask for a loan and unavoidably fall into debt.

Thus, savings by agents A1 would only produce the effect of shifting the debt (or assets loss) from some agents to others (in the example from group A1 to group A2) within the same economy (figure 15).

In other words, the attempt of debtors to reduce their debt by reducing expenditure, thereby saving more, would cause a fall in aggregated demand and consequently in the level of total income. Therefore, since for at least part of the agents expenditure would fall less than income, some further agents in the

economy would suffer a loss, and ultimately fall into debt, with possible increase and spreading of the debt positions, both in absolute and relative to income.
It must be noted that, even in cases where the fall of total income, by reducing imports, would ultimately reverse the trade balance into a surplus, the extent and/or sectoral distribution of the savings which the economy as a whole would be realizing, could not provide sufficient relief to the debt positions previously accumulated, and therefore to the solvency difficulties (possibly aggravated by the concomitant reduction of incomes) which some agents would face.

Repay the debt by saving

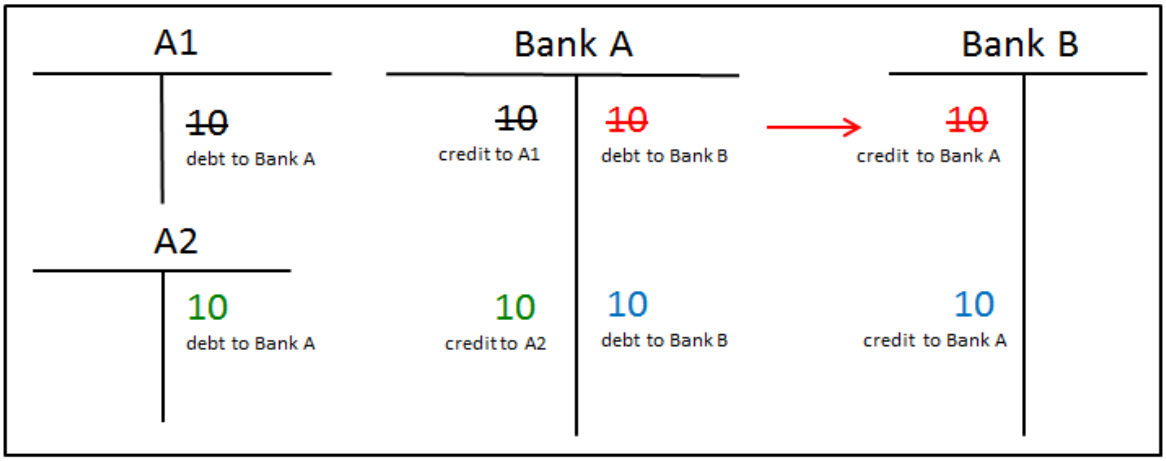

Figure 15

Case 2. Otherwise, agents could succeed in recording a current account surplus of 10, thanks to which they could be able to service the debt to their banks. In this case, the debt would not move to other agents in the deficit economy: thanks to the higher demand coming from abroad, no agent in the deficit economy would suffer from losses deriving from a lack of domestic demand.

Case 3. Introduce Government intervention and suppose that Government makes transfers to the individuals indebted to Bank A. It is possible to identify three cases.

a) Firstly, Government could provide fiscal transfers to agents A1 and finance this operation through the taxation of other individuals (in our example individuals A2). But since agents A2 belong to the deficit economy, by definition

they do not have a sufficient excess of income over expenditure for paying the higher taxation to Government. As it is possible to see in our example, the excess of income over expenditure of families (A2) is 2,14, an amount clearly not sufficient to compensate the excess of expenditure over income of enterprises, equal to 13,58.

Thus, agents A2 will in turn fall into debt in order to bear the tax burden and the final situation will be similar to that of case 1 (see figure 15): the debt would only shift by some agents to others within the same economy (from A1 to A2).

b) Alternatively, suppose that Government finances the transfers made to agents A1 through the emission of Government bonds. However, also in this case (see figure 16), the debt caused by the current account deficit will only move by some agents to others within the same economy (from A1 to Government).

c) Finally, the Government of the deficit country could finance its transfers to individuals by selling assets (wealth previously accumulated). But also this case, implying a deterioration in the Government balance sheet, will produce the same result as that shown in figure 16.

Repay the debt by public transfers

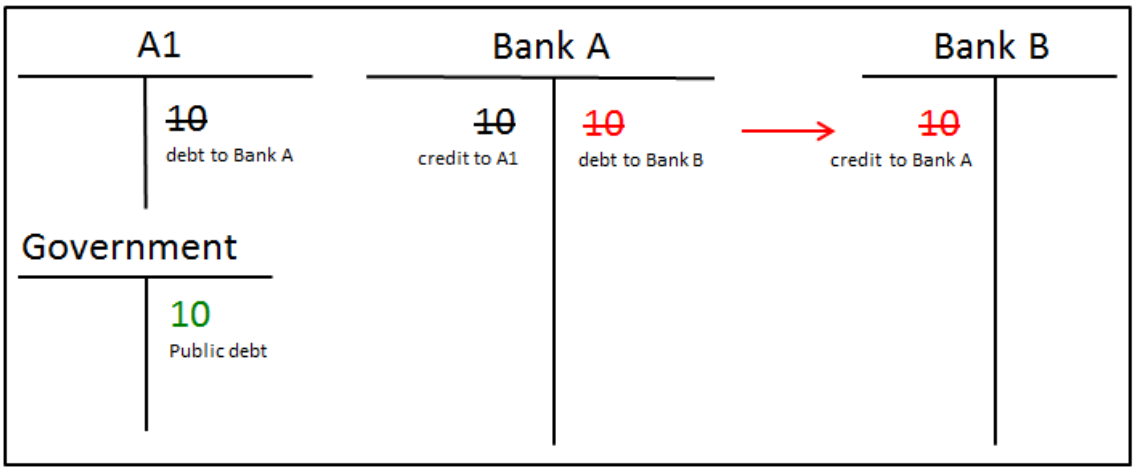

Figure 16

Summing up, by analyzing the implications of a current account deficit we have shown that when a country runs a current account deficit, some agents of its economy (A1, A2 or Government) will record a debt to their banks. The banking

system will be involved purely as intermediary. Furthermore, according to the different ways of refunding the debt, the latter could shift from some agents to other ones within the deficit economy.

Even if we continued complicating our example through the introduction of additional classes of agents, the implications of our reasoning would not change: the trade deficit would be always associated to an excess of expenditure over income and would imply a debt of some agents belonging to the deficit economy. Ultimately, who falls into debt will be the one who suffers the reduction in the sale of the product caused by addressing abroad part of domestic demand. The debt can be repaid only by running a trade surplus, thanks to which the lack of domestic demand can be balanced by the foreign one.

2.2.3 – *Implications of imbalances within a monetary union*

In this section we analyze the implications of persistent current account imbalances among members belonging to a monetary union.

It is important to highlight how the introduction of a single currency does not change the implications of a persistent trade deficit: even within a currency union, when a country runs a current account deficit some agents within its economy will record a debt to their banks. The only difference is that, within a currency union, the agents' debt is named in the same currency of the one recorded by domestic banks towards the foreign ones. This removes the problems related to the maintenance of the exchange rate, since banks of deficit countries no longer need to buy foreign currency in order to repay their debt to foreign banks. However, even within a monetary union the persistence of a trade deficit, leading to a continuous growth of some agents' debt relative to income, could potentially expose the indebted agents (and, in turn, banks) to insolvency risks. In this sense, the monetary union by itself is not sufficient to remove any relevance of internal imbalances among its members.

On the basis of the analysis conducted in this chapter, we can try to answer our question research, that is whether and why trade imbalances should matter even within a currency union. Firstly, with respect to the economic and

institutional debate[14] on the relevance of trade imbalances, we can assert that the lack of the currency problem has been improperly interpreted as the disappearance of any current account relevance. In fact, our analysis has provided explanations on the possible set of problems connected to the persistence of a trade deficit, that are aspects on which the economic literature on imbalances (Giavazzi and Spaventa, 2010) seems quite unsatisfactory. In particular, our reasoning has put in evidence how a persistent deficit implies rising debts relative to income for some classes of agents of the economy, that in case of default would also affect the banking system, acting as intermediary.

Under this perspective, the monetary union does not seem to show significant differences if compared to the absence of a single currency. This is why, in order to answer exhaustively our central issue, it is necessary to proceed the analysis by considering the specific case of the Euro area. Indeed, the European Monetary Union is not only a fixed exchange rate system but a payment union and it is characterized by a single monetary policy implemented by the European Central Bank. For this purpose, in the next chapter we will consider the peculiarities of the institutional framework in which the European Central Bank operates. In particular, we will analyze the Target 2 system, the instrument which governs payments among countries belonging to the Euro area. The analysis of this system would allow us to specify whether trade imbalances matter under the current European currency Union.

[14] Ingram (1973), Palley (1977), European Commission (1990 and 2008)

3

TARGET 2 SYSTEM: THE OPERATION AND THE DEBATE

As seen in the previous chapter, the inception of the single currency was expected to make current account positions irrelevant among Euro area countries, as among regions within the same country. Nevertheless, after the introduction of the Euro, the economic literature changed the attitude towards this issue and it was argued that "a common currency [...] is not by itself sufficient to make that notion irrelevant" (Giavazzi and Spaventa, 2010, p.10). The mere persistence of imbalances became source of concern: in other words, current account deficits in a currency union started being interpreted in the same way as if they were outside.

According to us, the economic literature has progressively blurred the issue of the relevance of imbalances and the purpose of our research is thus to clarify the matter and explain whether and why trade imbalances should be relevant even within a monetary union. Through the reasoning conducted in the previous chapter, we have seen that even if the monetary union removes the problems related to the maintenance of the exchange rates, the persistence of a trade deficit will imply in any case a growing debt relative to income for some individuals, exposing the indebted agents (and, in turn, banks) to insolvency risks. However, this does not mean that the presence of a common currency does not make any difference for the issue of the relevance.

In order to provide a comprehensive overview of this matter, in this section we analyze how a monetary union works. In particular, the chapter will focus on the Target 2 system, since it is an important channel through which payments produced by the internal trade among Euro area countries are regulated. As already pointed out, the analysis of the working principles of Target 2 is a

necessary digression aimed at understanding whether and how the presence of this instrument makes current account imbalances within a monetary union different from those in a standalone economy.

Target 2 is one of the institutional arrangements implemented after the stop of private-cross-border flows to the South caused by the eruption of the financial crisis in 2008. Specifically, public support has taken three forms in the Euro area. An important role has been played by the EU and IMF assistance programs, which provided funds to cover member countries' financial needs and face the structural problems affecting European economies. Secondly, in May 2010 ECB decided to start the Securities Markets Programme (SPM) and purchased sovereign bonds on the secondary market (i.e. from banks and against market prices). The last SPM purchases took place in February 2012 and were terminated in September of the same year. Last but not least, the Euro-system provided liquidity to the banking sectors hit by the crisis. One of the channel through which this liquidity assistance was provided was the Target 2 payments system.

3.1 TARGET 2 SYSTEM

3.1.1 – *Institutional aspects*

Target 2 (Trans-European Automated Real-time Gross settlement Express Transfer) is the Euro system operational tool through which national central banks of member states provide payment services for Euro area transactions.
The first generation of Eurosystem's payment system (Target) was put into operation in 1999. In November 2007, it was replaced by its successor Target 2.
Target 2 was introduced by the Decision of the European Central Bank of 24 July 2007, which opens with this statement:

> A single monetary policy entails the need for a payment arrangement through which the monetary policy operations between the national central banks (NCBs)

and credit institutions can be effected in a timely and secure manner, and which fosters the singleness of the money market within the euro area.

The original Trans-European Automated Real-time Gross settlement Express Transfer system (TARGET) is being replaced by TARGET2, which is characterized by a single technical platform called the Single Shared Platform (SSP). TARGET2 will continue to fulfil the same underlying purposes as TARGET, providing a sound and efficient mechanism, functioning on the basis of the SSP, to settle payments in euro.[15]

Given its decentralized nature, Target had several shortcomings with respect to cost efficiency and technical maintenance. Conversely, Target 2 has been based on a single technical platform and has allowed to overcome the problems owed by the first generation of Target.

In the Target 2 system, cross-border transactions involve the European Central Bank as the central counterpart of the system. In order to explain how this system works, we can take into consideration (see figure 17) an operation between two private banks located in two different countries (A, B). When a firm located in Country A purchases a good from a firm located in Country B, firm A asks its private bank (Bank A) to make a transfer to the current account of firm B in Bank B. At the same time, Bank A orders to its National Central Bank (NCB A) to transfer the amount to the private bank of Country B. The result of this operation is that NCB A reduces the reserve account of Bank A and asks NCB B to transfer the amount to Bank B. NCB B credits the reserve account of Bank B and finally Bank B increases the current account of firm B by the same amount.

At the end of each day, the European Central Bank has the important task of *clearing* the outstanding debts and credits between the national central banks so that the remaining assets or liabilities are shifted to the ECB Target 2 balance. Therefore, at the end of the day considered, NCB A shows a debit vis-à-vis the ECB and NCB B shows a credit vis-à-vis the ECB.

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[15] Decision of the ECB of 24 July 2007 concerning the terms and conditions of TARGET2-ECB (ECB/2007/7), OJ L 237, 8.9.2007, http://www.ecb.europa.eu/ecb/legal/pdf/l_23720070908en00710107.pdf

Example of a payment going from a firm located in a country to a firm located in a different country (within the Euro area)

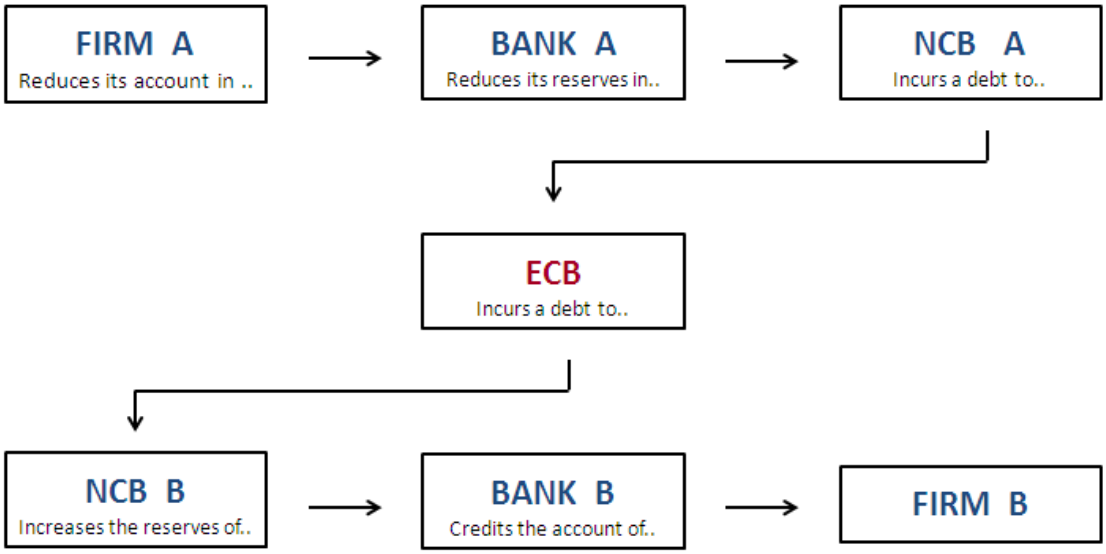

Figure 17

Target 2 can be used for both ECB own payments and ECB's customers[16] payments and there is no upper or lower limit to their amount. There are transactions for which Target 2 must be used[17] and transactions in which market participants are free to use Target 2 or any other payment system. However, banks usually prefer to regulate their transactions through Target 2 in order to prevent themselves from being exposed to the interbank credit risk and because payments are settled immediately.

Another task the European Central Bank has been commissioned is that of *settling* the credits and debits assigned by the clearing process. In particular, this operation would mean transferring the amount owed by the debtor national

[16] The ECB may only accept central banks and European and international organizations as customers.

[17] The article 3 of the ECB Decision of 24 July 2007contains the list of the operations which must be processed through Target 2:
(a) payment orders directly resulting from or made in connection with Eurosystem monetary policy operations;
(b) settlement of the euro leg of foreign exchange operations involving the Eurosystem;
(c) settlement of euro transfers resulting from transactions in cross-border large-value netting systems;
(d) settlement of euro transfers resulting from transactions in euro retail payment systems of systemic importance;
(e) any other payment orders in euro addressed to TARGET2 participants.

central bank to the creditor one, in order to delete the outstanding net positions resulting from the clearing process. After this procedure, each national central bank's net balance vis-à-vis the European Central Bank would return to zero. As we will see in the next paragraph, since 2008 this process has substantially changed.

3.1.2 – *Data on Target 2 balances*

Until 2007, Target 2 positions were close to balance. Since the beginning of the financial crisis in August 2007, the size of Target 2 balances has been constantly increasing.

Target 2 net balances with the Eurosystem (monthly data; € billion)

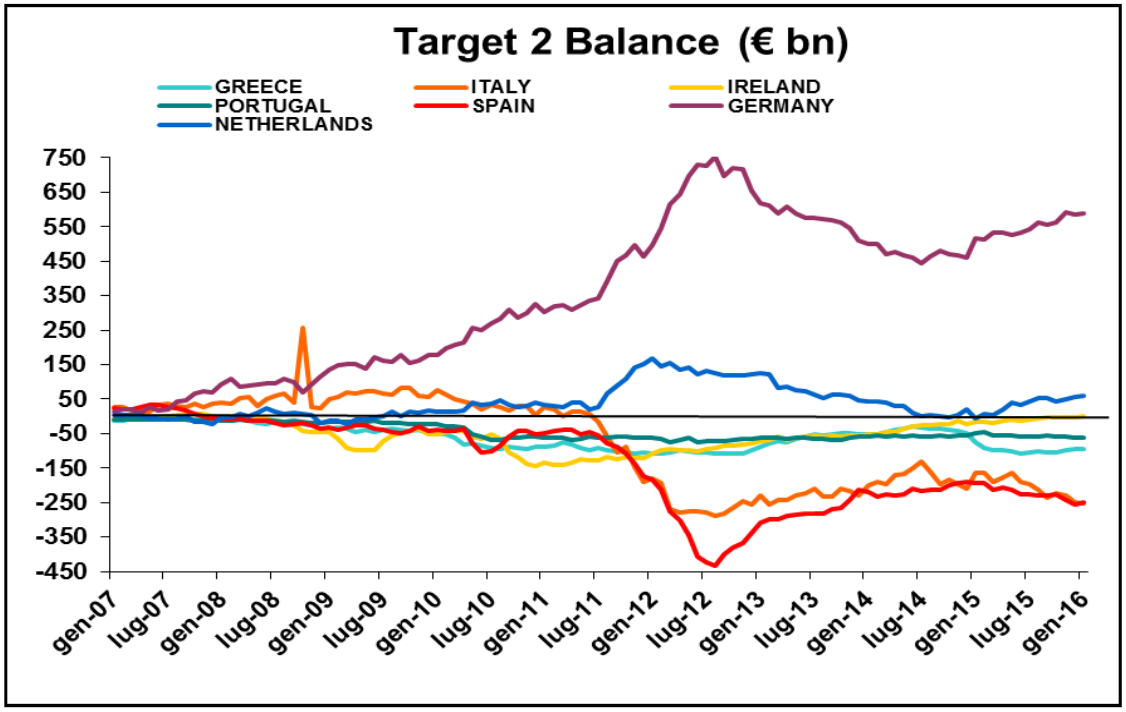

Figure 18 – Source: NCB's Balance Sheets[18]

[18] For more details about data sources on Target 2 see the Appendix.

As shown in figure 18, Germany became the largest creditor and Greece, Spain, Ireland and Portugal (the GIIPS countries) moved into debtor positions. During the Summer of 2011, also Italy started recording negative positions.
More precisely, in Germany and the Netherlands Target 2 claims increased from close to zero to about € 700 and € 140 billion respectively, at the end of May 2012. Conversely, in Greece, Ireland and Portugal, net liabilities increased to € 102, € 97 and € 63 billion respectively. Italy and Spain, which recorded Target 2 claims before the beginning of the financial crisis, recorded net liabilities of € 275 and € 345 billion at the end of May 2012. Owing to the lack of a single database, the analysis of Target 2 balances requires picking data from each National Central Bank's website (for details see Appendix A).

As shown in figure 19, we can distinguish between two distinct groups of countries.

T2 net balances by groups of countries
(monthly data; € billion)

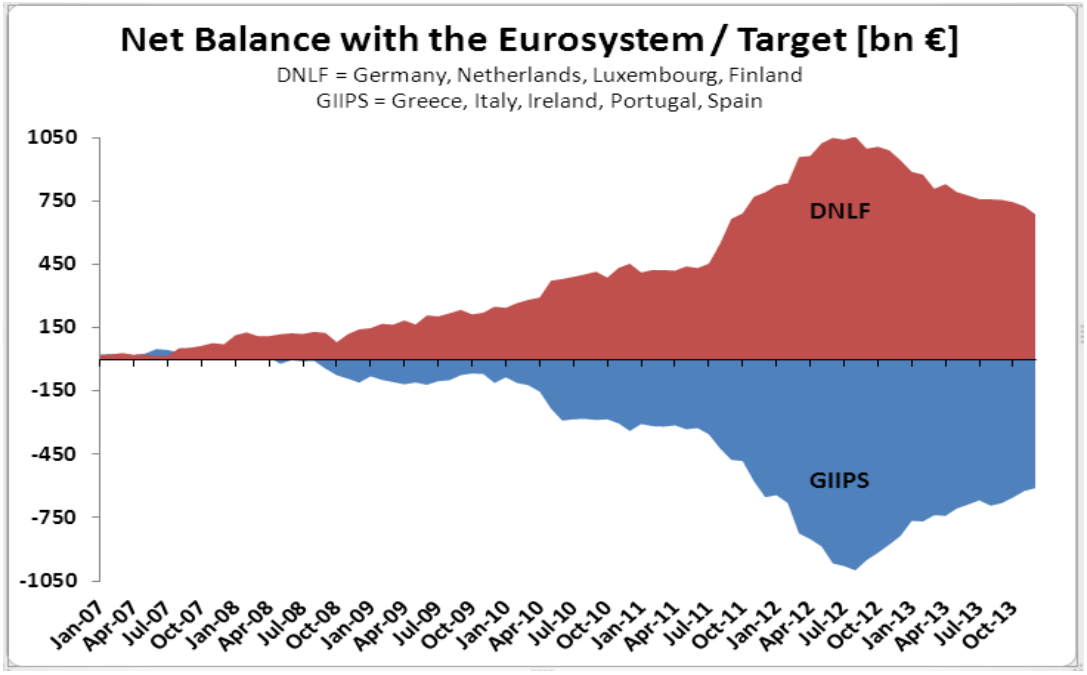

Figure 19 – Source: Institute of Empirical Economic Research
Osnabrück University

On the one hand, there are countries whose central banks recorded large increases in Target 2 claims towards the European Central Bank (Germany, Netherlands, Luxembourg, Finland); on the other, countries whose central banks recorded large increases in Target 2 liabilities (Greece, Portugal, Ireland, Italy and Spain).

The constant increase in Target 2 balances shown by the data provided above tells us that after 2008 the *settling* process has no longer occurred. In order to explain the underlying causes for sudden increases in Target 2 positions, in the following paragraphs we investigate in more detail how Target 2 balances have formed, how they have been settled until 2008 and what has changed starting from the eruption of the financial crisis.

3.2 DETERMINANTS OF TARGET 2 BALANCES

The aim of this paragraph is to clarify how Target 2 positions have formed. In particular, two important factors have driven the increase of Target 2 balances: on the one hand, Target 2 balances have been determined by the current account financing; on the other hand, they are the consequence of changes in the financial accounts. Now we explain both elements in more detail.

First of all, Target 2 balances can be linked to intra-euro current account imbalances. Since Target 2 is used to process payments for goods and services, when a country purchases more goods and services from another than it sells back, it will record a general decrease in the reserves that commercial banks hold in their National Central Banks[19]. If a country imports more than how much it exports, the net quantity of money flowing out for the payment of goods and services is greater than that flowing in the country and it will record a Target 2 liability. Thus, all cross border payment flows are associated with corresponding intra-system claims and liabilities. Indeed, data show how countries with Target 2 liabilities (see figure 19) correspond to countries running intra-euro current

[19] All commercial banks in the Euro area are legally required to maintain a reserve account with their national central bank. When a firm located in Country A purchases a good from a firm located in country B, Bank A reduces its reserves in NCB A.

account deficits. The same logic works for the capital account. If the capital flowing into a country is lower than that flowing outside, this country will record a Target 2 liability and vice versa.

The reversal of foreign investments occurred after 2008 caused net outflows in the financial accounts of peripheral countries, which was compensated by an increase in the ECB financing, reflected in Target 2 liabilities to ECB. Indeed, the stock of German banks' claims on peripheral Europe has fallen by roughly one half since their pre-Lehman peak, from just under €600 billion to €300 billion. In particular, from 2008 to 2012, the German banks' exposure has fallen of €82,54 billion through Ireland, of €12,32 through Portugal, of €92,25 through Spain, of €71,04 through Italy and of €23,46 billion through Greece. [20] If banks in core Europe, including German banks, reduce their outstanding claims on banks in the European periphery, banks in the periphery finance the repayment by refinancing with their national central banks, which will record Target 2 liabilities vis-à-vis the European Central Bank. Also the ECB report (2011) recognizes that the capital withdrawals operated by some banks located in the "core" exacerbated banks' funding tensions and required the ECB intervention.

The interbank market slowdown has substantially changed the procedure through which Target 2 assets and liabilities were settled. Before 2008, the interbank lending worked well and Target 2 assets and liabilities were settled through the interbank market financing. That is why until then Target 2 positions were close to balance. After the interbank market breakdown triggered by the financial crisis in 2008, the European Central Bank started applying credits and debits to the national central banks in order to settle payments. Thus, thanks to its intermediation operated through the Target system, the European Central Bank became the indirect creditor and debtor of the European commercial banks.

Thus, the analysis shows how Target 2 does not play only the role of a payment system, but since 2008 has turned to be an instrument of monetary policy. Being an automatic mechanism of financing, Target 2 balances reflect part of the European Central Bank's financing activity.

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[20] BIS consolidated banking statistics

3.2.1. – *The debate on T2 determinants*

The economic literature on this issue is focusing on Target 2 balances determinants, especially on the relative impact of the current and financial account. Many authors argue that Target 2 balances reflect to a much larger extent deposit outflows from peripheral countries than the divergences in current accounts, so that the academic debate fell into two camps, labelled as the "flow interpretation" and the "stock interpretation" (Cecchetti et al., 2012). The former considers Target 2 imbalances mainly determined by current account financing and this view has been driven by Sinn and Wollmershäuser (2011). On the other hand, the latter argues that Target 2 balances can be considered to a more extent the consequence of changes in the financial accounts. This interpretation can be found in several researches conducted by the Bank of Italy (Cecioni and Ferrero, 2012), Bindseil and König, Buiter et al. (2011), Whelan (2013). Finally, there are other studies that take an intermediate position. According to the European Economic Advisory Group (2012) and to Cecchetti et al. (2012), Target 2 balances have been driven to the same extent by current accounts and capital flows.

However, in the previous paragraph, analyzing how Target 2 balances have formed, we have explained that both current and financial account dynamics have been fundamental factors underlying their consolidation. Therefore, the fact that some authors began to question the existence of a strong causal relationship between the increase of Target 2 balances and current accounts requires some clarifications.

In particular, some of these positions appear very weak. For example, Whelan (2013, p. 20) argues that given the absence of a statistical correlation between Target 2 balances and current accounts, "assigning a special role to changes in Target 2 as the key factor driving current accounts may be misleading". But the absence of a statistical correlation between Target 2 balances and changes in current accounts does not represent a good argument for not assigning to the current account an important role in determining Target 2 balances. Indeed, Target 2 net balances cannot be automatically linked to intra-euro current account deficits in peripheral countries. The examination of the timing of the accumulation of current account deficits and Target 2 liabilities

could apparently reveal the lack of a relationship. During the period prior to the European sovereign crises (2008), the GIIPS countries had low Target 2 balances (as shown in figure 18) despite the fact they were running large current account deficits vis-à-vis the Euro area (see Chapter 1 – figure 4). In addition, liabilities towards ECB emerged during a period when most countries were lowering their current account deficits.

We argue that the accumulation of negative or positive intra–euro current account positions is not by itself a sufficient condition for incurring Target 2 liabilities or claims. As explained before, if deficit countries were able to obtain a credit directly in the interbank market, offsetting Target 2 balances would have occurred, despite the accumulation of current account deficits. This point is well taken by Bindseil and König (2011, p.21), maintaining that if the interbank market works well, Target 2 balances could have been netted out because "liquidity-rich banks in the exporting area may have lent to liquidity-seeking banks in importing areas in the interbank market". In fact, before the financial crisis, banks had relatively easy access to private funds. They received funds from abroad in the form of cross-border interbank loans, direct investment or deposits that broadly compensated for the payment outflows associated with net imports of goods and services (ECB, 2011). Thus, temporary Target 2 positions were quickly reduced by private capital flows. After the eruption of the financial crisis, the interbank market broke down and banks had difficulty in refinancing on the interbank market. Private money was no longer flowing into the banking system of deficit countries in sufficient amounts to compensate for their payment outflows. It was only at this point that Target 2 balances increased. The Eurosystem did not implement direct asset transfers, but allowed national central banks to record credits and debts vis-à-vis the European Central Bank. Thus, the relationship between current account and Target 2 balances is not "automatic" and cannot disregard the interbank markets' dynamics.

This position is also confirmed by a Bank of Italy research (Cecioni and Ferrero, 2012, p.20):

> The correlation of TARGET2 flows with the current account is not significant for any country before 2007 suggesting that the deficits before the crisis are financed

by other liabilities in the financial accounts. [...] Therefore, with the exclusion of Greece, the analysis suggests that during the crisis the current account and trade balance deficits per se are neither a necessary nor a sufficient condition for observing large TARGET2 liabilities.

Indeed, as shown in a study conducted by the Bank for International Settlements (Cecchetti et al., 2012), the correlation between current accounts and Target 2 balances starts to emerge only in 2008 (see blue line in figure 18), with the interbank market breakdown. This result is particular evident in 2010-2011, where the cumulative current account deficits and surpluses for eight quarters match the change in Target 2 balances.

Euro area current accounts and changes in T2 balances

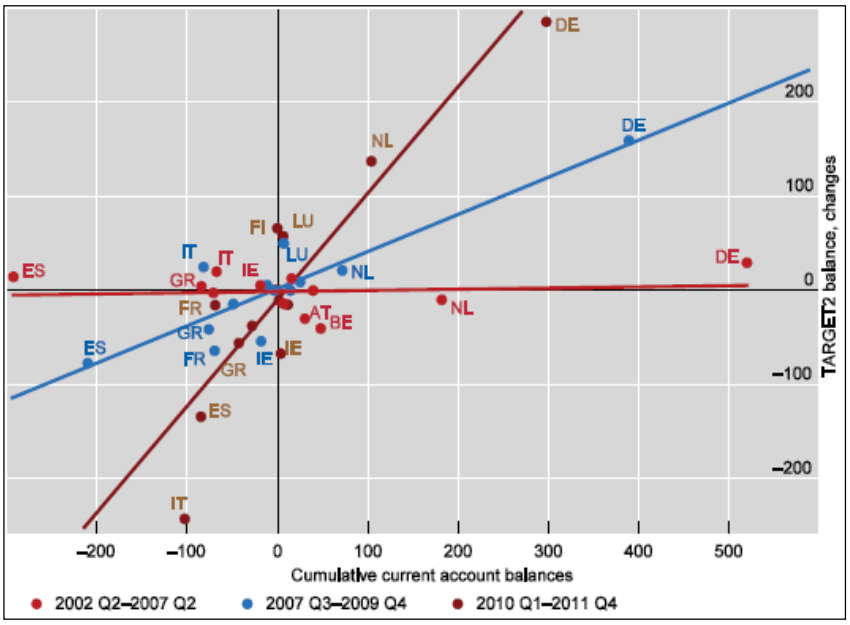

Figure 20 - Source: Datastream, IMF, OECD, as reported in Cecchetti et al. (2012, p. 6)

According to the Bank of Italy research (Cecioni and Ferrero, 2012), during the crisis, the main changes were in the financial account: the reduction of cross-border interbank market activity plays an important role in all countries. The correlation of TARGET2 flows with liabilities of MFIs' other investments, which include loans by foreigners to resident MFIs, is negative and significant during

the crisis. As a consequence, the net outflows were compensated by a considerable provision of liquidity by ECB, resulting in increase in Target 2 liabilities.

We can conclude that changes in Target 2 balances have been determined by both current and financial account divergences, even if the relationship between current account and Target 2 balances depends on the dynamics in the financial account. The European Central Bank, by means of the national central banks, became the interbank market maker after the breakdown triggered by Lehman bankruptcy. It allowed the financing of trade deficits, despite the difficulty to finance them in the interbank market. The ECB intervention ensured that European commercial banks did not experience a damaging shortage in their liquidity coverage due to the accumulation of current account deficits and to the capital withdrawals.

3.2.2 – *The ECB provision of Liquidity*

Although Target 2 balances have not been determined by the Eurosystem refinancing operations, the two are closely correlated. The conventional monetary policy instruments through which the Eurosystem provides liquidity to the national central banks are the main refinancing operations (MROs), the longer-term refinancing operations (LTROs) and the marginal lending facility (ML). During the crisis, after the interbank market slowdown, a regime of *full allotment*[21] has been adopted for all refinancing operations and eligibility criteria for collateral have been widened.

As shown in a European Central Bank report (2011), the overall size of Eurosystem lending operations has increased during the financial crisis (see figure 21). These measures allowed banks of peripheral countries to increase their demand for funds and use this liquidity to satisfy their reserve requirements and for payments to the surplus countries banking sectors through Target 2. This procedure allowed Target 2 debit and credit positions to increase.

[21] Under this procedure, banks can have unlimited access to ECB liquidity at fixed rate.

Liquidity provision (through the OMOs) to Euro area countries
(end-of-month data; € billion)

Figure 21 – Source: ECB (2011), p.37

In other words, allowing European National Central Banks to keep outstanding Target 2 credits and debits was perfectly in line with the expansionary monetary policy implemented by the European Central Bank during the economic and financial crisis, based on the provision of large amounts of liquidity at very low interest rates.

3.3 THE ROLE OF TARGET 2 ON THE SUSTAINABILITY OF CURRENT ACCOUNT DEFICITS WITHIN THE EURO AREA

After providing a deep analysis of Target 2 operation and the factors underlying the increase of Target 2 balances, we can return to the main question of our research. The consideration of the specific aspects characterizing the Euro area allows us to draw some important considerations about the relevance of trade imbalances within the European Monetary Union.

In order to better analyze this point, it can be useful to consider again the economy formed by only one individual. As seen before, in case of persistent current account deficit our individual would record a growing level of debt relative to his income. The rise in the stock of debt, even if named in euro, would imply growing payments for interests and reimbursements in addition to the net purchase of goods and services. In order to sustain the growing interest burden, the individual's income should constantly increase. If not, the individual could not be able to sustain the cost of interest payments on debt. Thus, the persistence of current account deficit, leading to a continuous growth of individual's debt relative to income, exposes him to insolvency risks. Indeed, if he could no longer meet its financial obligations with his lender he would become insolvent. In case of default his bank would seize the collateral and if the collateral also defaults the loss would go to the bank. The bank would, in turn, become insolvent with its lender. More generally, even within a currency area the persistence of a trade deficit, leading to a continuous growth of the agents' debt relative to their income, could expose agents and, in turn banks, to insolvency risks.

However, as noted before, the European Monetary Union is not only a fixed exchange rate system but it is characterized by a single monetary policy implemented by the European Central Bank. We have seen how Target 2 turned to be a channel through which the common monetary policy was implemented and by means of which the European Central Bank financed banks in deficit countries after the stop in the interbank market lending.

In our example, the institutional intervention of the European Central Bank in financing commercial banks of deficit countries can be represented in the figure 22. While in normal times the interbank market is the main source of finance, in recent crisis the European Central Bank financed banks of all over the Europe. Comparing the presence of current account deficits within the Euro area with those outside a monetary union, we can notice a fundamental difference (see figure 22): the role of the final creditor is no longer played by Bank B, that is a general commercial bank placed in the surplus country, but by the European Central Bank.

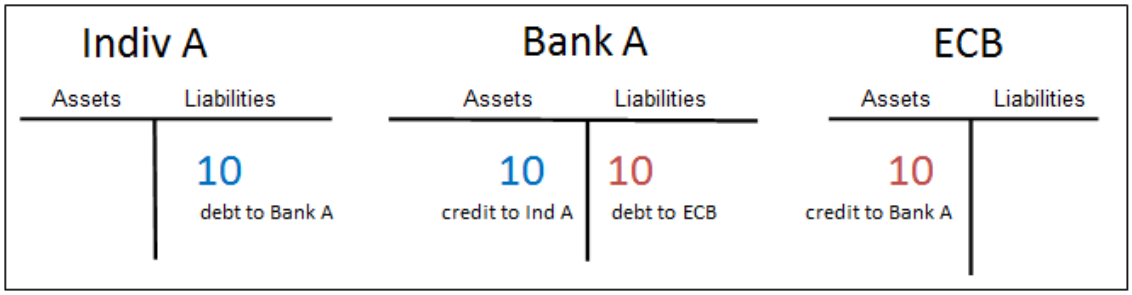

Fig 22

The fact that the European Central Bank replaced other commercial banks in financing current account deficits, cannot be considered only a change in the level of intermediation. In fact, the institutional purposes of the European Central Bank make it different from any other creditor. Unlike commercial banks, the European Central Bank is an institution aimed at providing financial stability, and it is supposed to adopt all possible means to prevent financial institutions from defaulting.

The difference between commercial banks and the Central Banks loans was efficaciously described by Hackley (1973, p.2), in the introduction to his book on the history of the lending functions of the Federal Reserve Banks:

> From these differences between commercial banks and Federal Reserve Banks stems one of the fundamental distinctions between commercial bank loans and Reserve Bank loans. Commercial banks make loans for profit – to all comers and for all conceivable purposes. Although loans made by the Federal Reserve Banks bear interest, they are made not for profit but for a public purpose; in general they are made only to banks that are members of the Federal Reserve System. It is for this reason that the Reserve Banks have often been called bankers' banks. Quite apart from differences in organization and purpose, an important distinction between loans made by Reserve Banks and those made by commercial banks is that the lending operations of the Reserve Banks often referred to as the Federal Riserve discount window, constitute a channel through which Federal Reserve credit policies can be implemented.

In fact, the European Central Bank provides loose credit conditions if compared to those provided by commercial banks. First of all, the rate of interest applied to Target 2 debits and credits is lower than that applied by the interbank market. This aspect makes the capacity to borrow greater, as well as the possibility to repay the debt. Secondly, the banks of deficit countries could default only if we assume that both the individual and his collateral default. Only in this case, the loss would go to the European Central Bank's shareholders. However, it is reasonable to assume that the European Central Bank shall adopt all the possible means in order to prevent banks from defaulting. In fact, the European Central Bank is currently fulfilling its institutional duties by allowing Target 2 liabilities to grow arbitrarily, which means that the European Central Bank finances banks of deficit countries without asking for the debts to be paid.

We can conclude that although the monetary union does not remove any relevance of trade imbalance (the persistence of a trade deficit could possibly expose agents and, in turn, banks of deficit economies to insolvency risks), it is not possible to analyze the presence of current account imbalances within a monetary union in the same way as if they were outside. Indeed, the fact that under the current institutional framework of the European Monetary Union the role of creditor is played by the European Central Bank rather than any other foreign commercial bank makes a significant difference. As long as ECB, through the Target 2 system, indefinitely finances banks (and indirectly individuals) of deficit countries without asking for the debts to be paid, trade imbalances among Euro area members are made sustainable, differently from what happens outside a currency union.

3.4 THE ALLEGED NEED TO LIMIT TARGET 2 BALANCES

The widening of Target 2 imbalances has recently drawn the attention, triggering a debate on the mechanics of transactions and their implications for ECB monetary policy.

Hans Werner Sinn, the president of the Ifo Institute for Economic Research and part of the German economy ministry's advisory council, has a great deal of responsibility for the increasing interest on the evolution of Target 2 imbalances. He has given rise to a debate about the need to set a limit to the size of Target 2 positions. This policy proposal, if applied, would have important consequences on the question of the sustainability of trade imbalances within the Euro area. We have seen that the possibility for Target 2 system to make trade imbalances sustainable crucially depends on the absence of any constraint to the amount of Target 2 loans. If the Eurosystem put a limit to Target 2 balances, the settlement of the debt should periodically take place, and the accumulation of trade deficits could become unsustainable in the long term. This is why it is of extraordinary importance to analyze the reasons of the argument put forward by the German economist.

According to H. W. Sinn there are two main reasons for such an extreme policy intervention: first, ECB Target 2 would represent a *stealth bailout*, "public loans that are being used to finance current-account deficits" (Sinn 2011.a); furthermore, the European Central Bank loans to peripheral countries would have flowed to surplus countries and crowded-out their refinancing credit. In the following paragraphs we illustrate these two points in more detail.

3.4.1 – *The "stealth bailout"*

As explained before, Target 2 was a fundamental intervention aimed at financing the persistent current account deficits recorded by peripheral countries. However, according to Sinn, the European Central Bank intervention through Target 2 would represent a "*stealth bailout*". Specifically, with this expression Sinn seems to allude to a hidden violation of the so called "no bail-out clause" - established by article 125 of the Treaty on the Functioning of the European Union – that makes it illegal for one member to assume the debts of another. In fact, the German economist argues that the European Central Bank, acting as lender of last resort of troubled banks of deficit countries, indirectly financed their budget deficits. In other words, the Central Bank credit would have served to a great extent to finance Governments of deficit countries:

> In reality, the European Central Bank thus allowed the Greek state to run its gigantic budget deficit [...], by resorting to the European money-printing press (Sinn and Wollmershäuser, 2011, p. 25).

This view is entirely subscribed by Martin Wolf (2011), chief economics commentator at the Financial Times: referring to Target 2 operations, he said "let us call *a spade a spade*: this is the central bank financing of the state". Thus, these authors interpret Target 2 financing as a fiscal rather than a monetary measure: without ECB financing banks of deficit countries would have found themselves so seriously in trouble to require Government intervention. The European Central Bank loans, replacing the Government ones, would have thus indirectly financed the State and secretly violated the art. 125 of the Maastricht Treaty.

In addition, according to Sinn, the Eurosystem refinancing operations would have allowed peripheral countries to finance their, otherwise unsustainable, current deficits. According to the German economist, the liquidity provided by the Eurosystem would have constituted an obstacle to the free operation of market forces, which would have avoided the deflationary measures necessary to correct current account deficits in peripheral countries. In other words, the European Central Bank financing allowed troubled countries to avoid the adoption of painful measures to correct their external position and to continue living "beyond their means".

> As markets would probably have been way too brutal with periphery countries, this was the right policy in the short run when the interbank market broke down in the aftermath of Lehman. [...] However, it is debatable whether this was the right policy in the long run (Sinn, 2012, p. 6).

Nevertheless, there is another sense in which the argument put by Sinn could be interpreted. As we will see at the end of the Chapter 5, there is - at least from a theoretical perspective - a substantial difference between Target 2 financing (monetary policy) and Government intervention (fiscal policy): while

the ECB provision of liquidity consists in loans which are *normally* supposed to be repaid, fiscal transfers represent unilateral interventions which do not require a reimbursement. Under this perspective, Sinn could implicitly allude to the fact that ECB, allowing Target 2 liabilities to grow without asking for the debts to be paid back, would ultimately provide unilateral favor to peripheral countries. On these bases, it could make sense to conceive Target 2 intervention as a fiscal rather than a monetary measure.

3.4.2 – *The "crowding-out" of the refinancing credit in the core*

Sinn justifies his objection to Target 2 financing not only with the argument of the "stealth bailout", but also with the idea of a both monetary and real crowding-out. However, this concept is characterized by a substantial lack of clarity, also confirmed by the several interpretations advanced by economists and institutions in response to Sinn's assertion. In this paragraph we try to reconstruct the most significant lines of his argument and provide both the main interpretations offered in literature and those which could be possibly conceived.

First of all, Sinn believes that the shift of the Eurozone's money creation towards deficit countries would represent a *monetary* crowding-out, because it would withdraw credit from surplus countries commercial banks. He writes that:

> If every year a further € 100 billion is granted to the GIPS as Target loans, the stock of credit given by non-GIPS central banks via refinancing operation will shrink by the same amount. Year by year, the money flowing from the GIPS countries to the other Eurozone countries is crowding out central bank money issued there as well as ECB loans given to those countries' commercial banks (Sinn 2011.a).

More specifically, Sinn and Wollmershäuser (2011) explain that the creation of new credit does not end the payment process: banks in the core receive the additional liquidity, because of the payment of goods and services by deficit countries. Since banks - given the interest costs - try to keep their liquidity low, German commercial banks would borrow a correspondingly lower amount of central bank money from the Bundesbank.

According to the authors, the result of this process is that the refinancing credit will fall by the same amount of outside money coming through purchases of goods and assets. The inflowing liquidity would crowd out the lending to the German private banking system, since the demand for central bank money would be limited. This fact seems to be confirmed by data on Bundesbank credit provided through the Main Refinancing Operations which, in the last years, has fallen sharply (see figure 23).

Main refinancing Operations / Bundesbank
(1999-2014) – Euro million

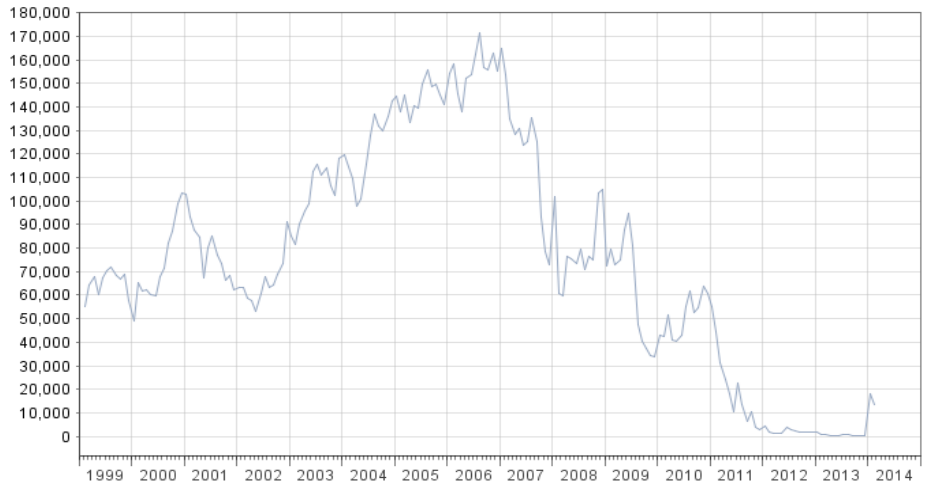

Figure 23 – Source: Deutsche Bundesbank

However, it is not clear how and in which sense the reduction in the demand for credit by German commercial banks could damage German economy. In order to explain the consequences of the credit shift, the authors combine the idea of the monetary crowding-out with that of a *real* one. In fact, they argue that ECB loans withdrew liquidity that core countries' NCBs usually gave to their domestic commercial banks. This means that German commercial banks would be deprived of the right of disposition over real economic resources up to the time that the loan matures. "With a loan, things can be purchased that otherwise couldn't have been, and the lender foregoes for a time the purchase of things of the same value" (Sinn and Wollmershäuser, 2011, p.24). The authors

would mean that Target 2 credits prevented banks from serving core countries' domestic uses: with the liquidity provided to peripheral countries' banks, central banks of core countries could have given a loan to their commercial banks, which would have allowed them to buy something that they now cannot. Using the same authors' example, if a Greek commercial bank uses ECB lending to finance the purchase of a truck by a Greek transportation company, the result is that "the truck is delivered to a Greek instead of a German transportation company" (Sinn and Wollmershäuser, 2011, p.25).

Under this perspective, the authors' concept of a *real crowding-out* could be interpreted in the sense of a reduction in the volume of the German economic activity: under the assumption of a given gross world product, countries running a current account deficit will grab a larger share of the world product than those running current account surplus. The authors' example of the purchase of a German truck by a Greek transportation company seems to be consistent with this interpretation. However, under another theoretical framework which does not accept the assumption of a given level of income, the concept of a "real crowding out" can be considered very weak. Moreover, from the empirical point of view, the high levels of unemployment recorded both in deficit and surplus countries makes the consistency of this argument very questionable.

The consideration of the economic consequences on surplus economies produced by Target 2 financing pushes the authors to propose of setting a cup on Target 2 accounts. According to Sinn and Wollmershäuser, Target 2 balances should be settled once a year by transferring gold, exchange reserves or other marketable assets from Target 2 debtors to creditors. In addition, without the funds provided by the Eurosystem, peripheral countries could no longer avoid the adoption of painful deflationary measures (wage deflation, fiscal austerity) in order to pay back cross border debts.

Sinn strengthens the reasons of his proposal on the grounds that this is the approach adopted by the Federal Reserve through the ISA system, the US counterpart of Target 2. We will provide a deep analysis of the ISA system in Chapter 5. However, according to the analysis of the operation of the ISA system, we will show the weakness of the argument advanced by Sinn. In particular, we will find that although before 2008 credits and debts among central banks of

different US districts were settled each year, after the eruption of the crisis this yearly settlement was no longer adopted and the Federal Reserve has not acted so differently from ECB.

3.4.3 – *Which crowding-out?*

Given the vagueness of the arguments put forward by Sinn, the concept of crowding-out has been subjected to several interpretations, misunderstandings and critiques.

Firstly, the immediate reaction of the central banks was to defend the conduct of the ECB monetary policy. The European Central Bank itself (ECB, 2011) clarifies that Target 2 balances have no adverse implications for the provision of credit to households and firms in specific countries. According to the European Central Bank, the provision of large amounts to banks in some countries has no negative impact on bank lending in other countries. Conversely, countries with positive Target 2 positions benefit from the cross border payment flows from deficit countries. Referring to the monetary crowding-out expressed by Sinn, the ECB gives emphasis to the fact that banks throughout the Euro area have unlimited access to the central bank liquidity and the provision of liquidity to a country does not withdraw resources to others.

The arguments of this reaction reveal that the European Central Bank has missed the point of the concept of crowding-out claimed by Sinn: ECB has interpreted the crowding-out as a reduction in the *supply* rather than in the *demand* of credit to the commercial banks of surplus countries. As clarified by Sinn itself with Wollmershäuser (2011), the sentence that may have led to the misunderstanding was perhaps the following, that is the English translation of a statement coming from a German newspaper[22]: since too much central bank money is circulating in Germany after the swift transfer through the Target system, "the Bundesbank can only lend correspondingly less to German banks"[23]. However, the authors clarify:

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22 Frankfurter Allgemeine Zeitung

23 This translation is made by Sinn and Wollmershäuser (2011, p.46)

> This was never meant to say that the money supply was fixed. In his first VOX piece[24] [...] Sinn made it clear that he meant demand rather than supply.

In line with the European Central Bank response to Sinn, also some national central banks defend Target 2 intervention. Among them, the Bank of Italy (Cecioni and Ferrero, 2012) considers Target 2 financing as a fundamental instrument aimed at preserving the stability of the Euro area as a whole. In addition, the Bundesbank itself, in response to Sinn, points out that there is no change in the level of risk to the Bundesbank due to the rise of Target 2 balances. In case of default of a Eurosystem's counterpart, any actual loss would be borne by the Eurosystem as a whole and would be shared among the national banks according with the capital share:

> the Bundesbank's risk position would be just the same if the positive settlement balance from Target 2 were accrued not by Bundesbank but instead by another Eurosystem national bank (Deutsche Bundesbank, 2011, p. 35).

This position shows another interpretation of the concept of crowding-out: the Bundesbank conceives the crowding-out in the sense of an increase in the level of risk of the Bundesbank activity.

Besides the reactions of the economic and financial institutions, the academic debate has been characterized by several authors that took a distant position from Sinn's point of view. Among them Whelan (2011), interpreting the crowding-out in terms of a reduction in the supply rather than in the demand of money, argues that by providing liquidity requested by banks with sufficient eligible collateral, ECB does not deny funds to Germany.

Also Buiter et al. (2011), even interpreting Sinn's concept in the right sense (as a crowding-out in the demand of credit), maintain that the fall in the amount of credit to German banks could be interpreted as a positive signal rather than a cause of concern, as it may indicate "an improved ability of German banks to attract private sector funding" (p. 10). In other words, the fall in the stock of the

[24] Sinn (2011.a)

central bank credit to German banks can derive from an alternative explanation. It is more likely that German commercial banks could access to more attractive sources of financing, such as domestic or foreign private deposits.

The analysis of the political and academic debate triggered by Sinn on the operation of the Eurosystem shows thus a widespread lack of comprehension of the real reasons underlying the critique advanced by the German economist. In fact, even interpreting the crowding-out in the sense expressed by Sinn, namely as a reduction in the *demand* rather than in the *supply* of money, it is not clear how, and through which channels, the reduction in the credit provided by the Bundesbank could prejudice the German economy.

It is possible to hypothesize that a possible source of concern could be connected with the Bundesbank's activity. On the one hand, the crowding-out could be interpreted in the sense of a reduction in the Bundesbank's profits, because the fall in the amount of credit provided by the Bundesbank to German commercial banks will cause a reduction in its profits. However, this interpretation implies that Sinn considers the Bundesbank just like any other commercial bank, disregarding its important institutional purposes. On the other hand, the crowding-out could be explicated in terms of a reduction in German commercial banks' profits. As commented before, after the Lehman crash, the European Central Bank practically became the interbank market maker for deficit countries. Thus, banks in peripheral countries were allowed to cover their liquidity needs through ECB rather than surplus countries' lending so that credit and debit positions vis-à-vis ECB increased. In other words, in this way, German commercial banks renounced to the interest rate usually applied on loans towards peripheral banks. This might suggest that German banks profits on loans have been crowded-out by ECB lending.

Given the big size of German Target 2 claims from 2010 (see figure 24), this could be an understandable source of concern for German commercial banks. As shown in the figure, the amount of German Target 2 claims is almost equal to the value of GIIPS countries' Target 2 liabilities. In this sense, the interest paid by peripheral countries on Target 2 liabilities could be an important source of profit for German commercial banks.

Target 2 positions, Germany vs GIIPS

Measure	Target 2 positions, Germany vs GIIPS					
Time	2008	2009	2010	2011	2012	2013
Country						
Germany	115.295	177.723	325.556	463.134	655.670	510.201
GIIPS	-104.871	-107.081	-305.452	-602.445	-867.249	-648.215

Figure 24 – Source: Elaborations on Central Banks' balance sheets

Not surprisingly, the first article by Sinn about Target 2 is in 2011: it is since 2010 that German Target 2 claims have been significantly increasing.

However, this interpretation was not made explicit in Sinn's article and could meet with contradictions: in fact, according to this interpretation, German commercial banks could be interested in maintaining current account imbalances, given the profits' opportunities in lending to countries running current account deficits. This would be apparently inconsistent with Sinn's prescription of a reduction in current account imbalances.

3.4.4 – *Monetary policy or "stealth bailout"?*

Since Sinn's positions appear extremely critical of the operation of the Eurosystem, there are many commentators that consider his policy prescriptions extremely dangerous.

It is largely widespread the view that considers Target 2 balances as a defensive and automatic monetary policy response by the European monetary authority to the crisis of the Eurozone. Thus, setting a limit to these operations would put into question the mere existence of the monetary union. As already seen before, the first defense of the Target 2 intervention comes from the European Central Bank itself, which stresses the importance of the role of the

provision of the European Central Bank liquidity for the transmission of the single monetary policy:

> The distribution of liquidity within the Eurosystem provides stability, as it allows financially sound banks [...] to cover their liquidity needs, thereby contributing to the effective transmission of the ECB's interest rate decisions to the wider euro area economy, with a view to maintaining price stability in the euro area over the medium term. (ECB, 2011 p.37),

In line with the European Central Bank, also authors from the Bank of Italy argue that any institutional change aimed at limiting Target 2 operations would probably undermine the existence of the common monetary policy. Without this intervention, it would have been impossible to maintain the smooth functioning of the payment system necessary for the uniform transmission of the common monetary policy:

> These measures played a key role in preserving the functioning of the payment system and the financial stability of the euro area. The EU Treaty (Article 105) assigns to the ECB the task of "promoting the smooth operation of payment systems" which implies "facilitating the circulation of money in a country or currency area". Without the increased role of intermediation assumed by the Eurosystem during the crisis, it would have been impossible to maintain the "smooth" functioning of the payment system, which is a necessary condition for the uniform transmission of the common monetary policy and, therefore, for pursuing the main objective of price stability. The resulting rise of liquidity was accompanied by the widening of the TARGET2 balances (Cecioni and Ferrero, 2012, p.23).

According to Febrero and Uxò (2013), the monetary policy implementation involves matching the supply of reserves to the demand for reserves in order to maintain their price close to a target level. They consider T2 imbalances as "the logical consequence of aiming at keeping a uniform very short term interest rate for the whole EZ and running a smooth settlements system" (p. 19). This claim is also stated by Bindseil (2004), according to whom the basic

principle of the monetary policy implementation is the possibility to influence the demand for reserves. According to Binseil and König (2011) too, putting a limit to T2 operations would imply that once a year deficit countries face the threat of being cut off from the European Monetary Union.

In conclusion, the purpose of this chapter was that to analyze the ECB intervention through Target 2 and show how this instrument has been playing a crucial role for the sustainability of trade imbalances among Euro area members. We have also pointed out that the possibility for Target 2 system to make trade imbalances sustainable crucially depends on the absence of any constraint to the amount of Target 2 loans. If the Eurosystem put a limit to Target 2 balances, the settlement of the debt should periodically take place, and the accumulation of trade deficits could become unsustainable in the long term.

However, we have seen that the arguments in favor of a limitation of Target 2 balances are not very clear and are based on very questionable assumptions. As a consequence, we have illustrated that the reactions of both academic and political debate are so far from considering the ECB intervention through Target 2 as a "stealth bailout", i.e. as an intervention overcoming the monetary policy legal purposes. It has been rather considered as a fundamental instrument of monetary policy owned by the European Central Bank, aimed at providing the stability of the Euro area as a whole.

4

IS IT POSSIBLE TO SPEAK ABOUT A EUROPEAN BALANCE OF PAYMENTS CRISIS?

The main purpose of the analysis conducted in the previous chapters was that of clearing up the complex issue of the relevance of current account imbalances within a currency union, in particular within the Euro area.
Through the analysis of all the possible implications deriving from a structural and persistent trade deficit, we argued that the currency union by itself does not remove any relevance of trade imbalances. However, the presence of the European Central Bank financing makes trade deficits sustainable within the Euro area, unlike outside a currency union.

In this chapter we focus on another important issue, that is closely connected with this research: we analyze whether it is possible to speak about a European balance of payments crisis. Indeed, in recent years, Euro area internal imbalances have been considered as the root cause of the European sovereign crises and it has been argued that also the Euro area could experience some forms of balance of payments crisis.

This chapter will be structured as follows: firstly, we will reconstruct the main steps of this argumentation; then, also according to the reasoning conducted in the previous chapters, we will try to answer the question about the possibility that a balance of payments crisis occurs within the Euro area.

4.1 SUDDEN STOPS IN THE EURO AREA

After the introduction of the Euro, a significant amount of capital started flowing from the core to the periphery. The elimination of the exchange rate risk and the consequent convergence in interest rates allowed capital to move to countries with better investment opportunities. Peripheral countries, i.e. Greece, Portugal, Ireland, Spain and Italy seemed to offer better investment opportunities and attracted foreign capitals, which financed their increasing current account deficits.

Nevertheless, the Lehman's bankruptcy in September 2008 changed the perception of the risk and triggered market's fears about the solvency and liquidity of banks. The general decrease in capital flows produced what in economic literature is defined as a "sudden stop", i.e. an unexpected slowdown in private capital inflows into emerging market economies (Calvo, 1998). In the Euro area this phenomenon occurred when banks in the core ceased to lend to deficit countries. The economic literature defines these phenomena as "sudden" in order to underline the unexpected nature of the capital slowdown. In fact, they are usually associated to unpredicted events as economic and financial crises.

A very detailed study conducted by the Bruegel[25] (Merler and Pisani-Ferry, 2012a) found evidences for sudden stops in the Euro Area.

In order to detect sudden stops they applied the standard methodology introduced by Calvo et al (2004)[26] to peripheral countries in the period from 2007 and 2011. Calvo methodology allowed them to identify the periods in which sudden stops occurred in the different countries, to date sudden stops and consequently find the contagion effects. In particular, for the Euro area they found three periods (see figure 25): the first period was that of the global financial crisis, in which the rise in risk aversion affected both Greece and Ireland; the second in Spring 2010, in which also Portugal was affected; at last, the third period was at the end of 2011, when a third wave involved Italy and Spain too.

[25] Bruegel is an institute based in Brussels devoted to policy research on international economic issues.
[26] The Calvo methodology is based on monthly data and identifies a sudden stop as an episode in which there is at least one observation with capital inflows two standard deviations below the mean.

Sudden stop episodes in southern Euro area countries (2007-2011)

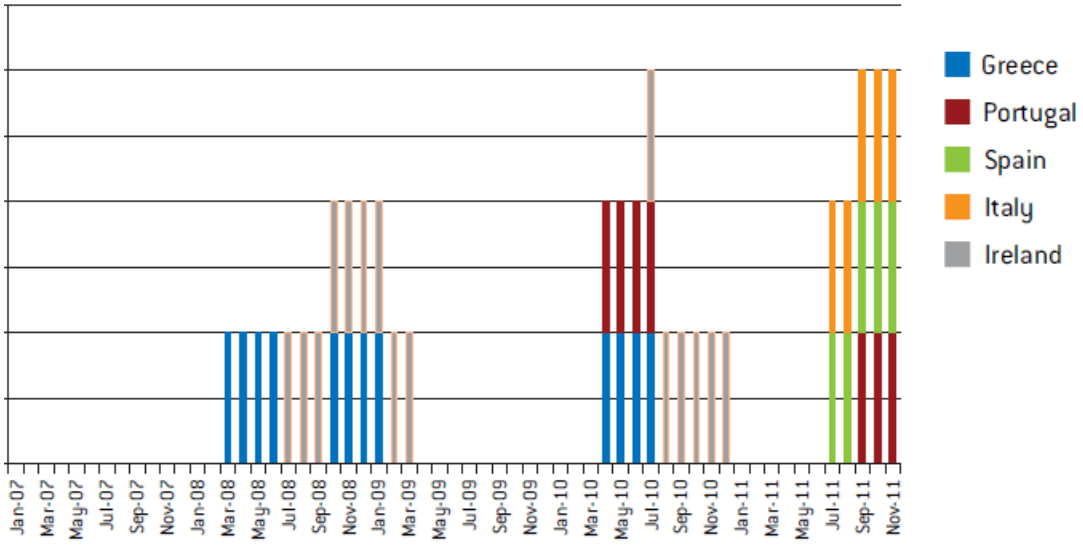

Figure 25 – Source: Bruegel

These episodes changed the attitude of economists and institutions towards the presence of trade imbalances within the European Monetary Union, which became source of growing concern. Indeed, as shown in Chapter 2 (section 2.2.1), when a country runs a trade deficit its banking system ends to be necessarily involved as intermediary. Thus, as occurs outside a currency union, if foreign investors stop lending, banks in countries recording a current account deficit would suffer from a liquidity run and could encounter some difficulties. For these reasons, trade imbalances started being considered as a source of financial instability. According to some scholars, the banking turbulences due to the stop in capital flows prompted the sovereign debt crises.
In the next paragraph we explain the alleged link between banking troubles and the European sovereign crises.

4.1.1 – *From banking to sovereign*

The financial situation of the banking sector was supposed to affect the public debt through two main channels.

One the one hand, it has been observed that market's fears about banking solvency were indirectly extended to the sovereigns because of their role of banks' guarantors (Merler and Pisani-Ferry, 2012b). Also Mody and Sandry (2011) argue that the rescue of important banks in 2008-2009 (in particular the rescue of Bear Stearns in March 2008) made the sovereign spreads even more connected to the banking dynamics. Acharya et al. (2011) and Alter and Schueler (2011) provided empirical evidences of the increasing importance of banking dynamics in affecting sovereign spreads. They show that sovereign CDS[27] generally have been increasing before the bailout of banks made by Governments.
On the other hand, it has been observed that in some cases, when foreign capitals ceased to finance current account deficits, Governments in countries as Spain and Ireland directly intervened in order to preserve banking stability and avoid the collapse of the global activity (Cesaratto, 2012).

This view has been entirely subscribed by Martin Wolf, an influential columnist of the *Financial Times*. In an article published in 2012, he explicitly accepts the idea of the stops in foreign capitals as the cause of the European Sovereign crises:

> In the years of euphoria prior to the financial crisis, private capital flowed freely, not least into countries in southern Europe. Greece, Portugal and Spain ran current account deficits of 10 per cent of gross domestic product, or more. These financed huge excesses of spending over income in private sectors, public sectors, or both. [...] Then came the sudden stops in private inflows [...] Of course, when capital ceased to flow to the private sector, activity collapsed and the fiscal position worsened dramatically (Wolf, 2012).

Thus, given the exposure of public finances to the risk that banks in deficit countries could be affected by stops in foreign capital flows, many authors

[27] CDS (Credit Default Swaps) on sovereign bonds are the insurance for credit default or other specified events mentioned in the contract. CDS quotations are associated with the risk of the underlying assets. Markets react to unfavourable news by increasing the quotation of CDS and to favourable news by decreasing its quotation.

assigned to intra-euro current account deficits an important responsibility in triggering the European Sovereign crises.

In some authors, this view is taken to the extreme: the level of the current account deficit is seen as the main determinant of the sovereign spread.[28]
Among them, the German economist Daniel Gros (2011) found a positive correlation between the current account of Euro area members in the period 2007-2009 and the spreads between the rates of return of the respective public bonds and those of German public bonds calculated in February 2011.[29]
The author justifies the importance of the external debt in determining spreads by considering the fact that Governments do not retain the full sovereignty over the taxation of foreign citizens. If the bond holders are foreign citizens, he argues that "the Government could no longer freely tax the individual. Governments do not have a free hand in taxing non-citizens; they are bound by existing treaties and international norms" (Gros, 2011, p. 2).[30]

However, the argument put forward by Gros can be considered very weak. First of all, the fact that part of sovereign bonds is owed by foreign investors cannot be supposed to affect the level of the national wealth, but only its composition. Secondly, the author disregarded the fact that Government cannot tax sovereign bonds without difficulty: on the one hand, Government is generally interested in keeping high the competitiveness of sovereign bonds; on the other hand, taxing sovereign bonds could damage national banks, that usually hold the largest share of them. In addition, it is important to point out that Government could establish other types of taxation in order to service their debts.

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[28] In finance, the spread is the difference between the quoted rates of return on two different investments. In this analysis we refer to the difference between Government bonds yeld at 10 years of a country and that of analogous bonds of Germany.

[29] The statistical link is described by a quadratic relation, which reveals that spreads increase more than proportionally than a rise in the trade deficit: $y = 0.02\,x^2 - 0.19\,x + 0.67$, where y is the sovereign spread and x the current account in share of GDP. R^2 is 0.73.

[30] This is especially true for Italy. According to the Italian law (Legislative Decree 239/96) Italian Government cannot impose a tax on the return of foreigners' bonds. The collection of interest payments should be under the jurisdiction of the country of origin of each investor. Nevertheless, owing to a general lack in the information's transmission mechanisms, foreign investors are allowed to hold tax-free Italian bonds.

Also the Italian economist Brancaccio (2011) provided an analysis aimed at demonstrating the strong correlation between current accounts and spreads. He collected current account data from 1999, in order to extend the period of the study with respect to Gros' analysis and cover the entire span of the European Monetary Union. He provided a new test for twelve countries of the Eurozone and explained the connection between current accounts and spreads through a linear relationship. He attempted to demonstrate that the Government deficit is less important than current account in determining spreads. Indeed, in all the periods considered, the correlation between current account and spreads presents a higher coefficient than that between the Government deficit and spreads. This is especially true for the Italian case (Brancaccio, 2008).

According to the author (Brancaccio, 2011, p.4), this strong connection can be explained by the fact that spreads would incorporate the risk of collapse of the Eurozone and hence of the exchange-rate devaluation:

> the current account deficits can be seen as an indicator of insufficient competitiveness of the national productive system. Above all in a situation of prolonged stagnation or depression, the country in question can opt for the abandonment of the single currency and exchange-rate devaluation in order to attempt to regain some margin of competitiveness [...].

In this view, creditors will demand higher rates of interest in order to cover themselves against the risk of the devaluation of the national currency associated to the abandon of the Euro area.

After providing an overview of the debate which assigns to current account developments a key role in determining the European sovereign crisis, in the next paragraph we try to express our point of view on this issue and analyze whether it is possible to speak about a European balance of payments crisis.

4.2 DOES TARGET 2 MAKE A DIFFERENCE?

It was argued that the stop in foreign capital flows exposed banks of peripheral deficit countries in the Euro area to financial fragility.
However, in the previous chapter we stressed the importance of the sizeable liquidity provision to the banking sector operated by the Euro system by means of Target 2, which compensated the private capital outflows. The substitution of the private capital inflows by the ECB financing helped to accommodate current account deficits, despite the interbank market breakdown. The ECB intervention has been essential for preserving the stability of the financial system and mitigating the effects of the slowdown in capital inflows. Thus, in order to consider the European crisis as a balance of payments crisis, it seems extremely important clarifying how Target 2 system managed to alleviate the negative effects of the capital flows interruption on the financial sector.

4.2.1 – *The role of Target 2 in the European Monetary Union*

The introduction of the single currency in 1999 required that cross-border payments within the monetary union should be treated as payments within a single country. In this sense, Target 2 is essential for the smooth processing of cross-border payments. In fact, the Eurosystem is charged with the task of providing and guaranteeing a smooth operation of payments and settlement systems in the Euro Area.

Besides its institutional purposes, as seen in the previous chapter, during the financial crisis Target 2 system played an important role in financing trade deficits of European peripheral countries, allowing European national central banks to hold indefinitely credits and debits vis-à-vis the European Central Bank rather than settle payments. In this way, Target 2 does not play only a role of a payment system, but turns to be an automatic mechanism of financing.
We argue that the provision of liquidity operated by ECB was an important instrument to avoid banking crises after the stop in capital flows.

Indeed, the ECB intervention can be considered as a fundamental instrument in order to discern what happens within and outside a monetary

union. Outside a monetary union, when a country experiences a capital flows slowdown arising from a combination of a loss of investors' confidence and attacks on its currency, these outflows are limited by the size of the country's foreign exchange reserves. In the case of the Euro Area, Target 2 does a job similar to creating "foreign exchange reserves" for the country that is suffering from liquidity losses. In addition, Target 2 equilibrating mechanism moves automatically and represents an automatic balance of payments equilibrating mechanism inside the common currency area. The only limit on the liabilities of a national central bank is the collateral that it can bring to the refinancing operations.

This makes the Euro area different from a fixed exchange rate system among different countries. As rightly pointed out by Collignon, Professor at the London School of Economics and International Chief Economist of the CER (*Centro Europa Ricerche*[31]), the European monetary union is a currency area where "credit contracts can be enforced and extinguished by paying the legally defined and generally accepted currency. This currency [...] is issued by the central bank" (Collignon, 2012, p.11).

Also Whelan (2013) recognizes that if the Eurosystem had been a fixed exchange rate system rather than a common currency, given the magnitude of Target 2 liabilities, deficit countries would have probably run out of foreign reserves.

The same view can be found in Bindseil and Konig (2011), who argue that the substantial increase in liquidity supplies ensured that all banks in deficit countries did not experience a damaging shortage of their liquidity coverage.

Thus, the Eurosystem provision of liquidity through Target 2 system prevented banks of deficit countries from experiencing troubles after the stop in foreign capital flows. Whelan (2013) stresses this special function of Target 2 system: "without such replacement funding, it is likely that banks in Spain and elsewhere would have had to engage in asset fire-sales that could have damaged their solvency".

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[31] *Centro Europa Ricerche* is a research institute based in Rome in applied economic analysis focusing on the central issues for Italian and European economic policy.

We can conclude that within the current operation of the European Monetary Union, a stop in capital flows cannot manifest itself in a balance of payments crisis. As long as the European Central Bank does not set limits to Target 2 positions, the latter represents an automatic balance of payments equilibrating mechanism which can sustain persistent balance of payments imbalances among its internal members. This is the reason why we argue that it is improper to speak about a balance of payments crisis in the Euro area.

The important role of the European Central Bank through Target 2 is a constitutive feature of the European Monetary Union. As stated by Bindseil and Winkler, "the unlimited and unconditional character of Target 2 balances is at the very heart of monetary union" (Bindseil and Winkler, 2012, p. 37).

On the other hand, setting a limit on Target 2 operations (Sinn's position) would make stops in capital inflows damaging for peripheral countries, even within a currency area. However, as also pointed out by the European Central Bank itself, setting a cup on Target 2 operations "would be inconsistent with a concept of a currency union" (ECB, 2011, p. 39).

5

TRADE IMBALANCES IN THE US: A COMPARISON WITH THE EURO AREA

In the previous chapters, we argued that the European Monetary Union was improperly supposed to remove any relevance of balance of payments positions among its members. We have shown that also within a currency area, current account deficits and surpluses are respectively associated with debits and credits of some of its agents which in turn, involve the banking system as intermediary of these positions. However, we have seen that within the actual framework of the European currency union, the Target 2 system has provided unlimited loans at very low interest rate without demanding the settlement of the debts, so that trade imbalances are made sustainable among Euro area members. Only if Target 2 changed its operations, for example by setting a limit to Target 2 balances, the repayment of the debt should periodically take place, and the debt positions deriving from the accumulation of trade deficits could become unsustainable in the long term.

In this final chapter we offer a comparison between the European Monetary Union and the other most extended currency union, the United States, so as to highlight whether and eventually in which terms the issue of the relevance of trade imbalances can be different between the two currency areas.

This chapter is structured as follows. In the first part we analyse the issue from a monetary perspective: through the study of the working principles of the ISA system, which is the US counterpart of Target 2, we examine how payments are governed among the US different districts and offer a comparison between

the two payment systems. The second part of the chapter addresses the topic on a fiscal level: we first examine the implications of Government intervention in financing current account deficits on theoretical bases, and then we compare the fiscal architecture of the EU with that of the US. At the end of the chapter, we examine whether the different institutional (monetary and fiscal) architecture could make for US the issue of the relevance of trade imbalances different from the Euro area.

5.1 THE US FINANCING OF CURRENT ACCOUNT DEFICITS: THE ISA SYSTEM

In this section we present the ISA system, which is the US counterpart of the European Target 2. We first investigate how payments are regulated among the different US federal States and then we highlight the possible differences with the Target 2 system.

The Interdistrict Settlement Account (ISA) keeps track of movements in assets and liabilities across Federal Reserve Banks within the Federal Reserve System. It has been largely inspired by Target 2, since the European Monetary Union has a similar character to the United States from a monetary perspective (it is composed by a system of Central Banks which adopt a single currency). In both systems an instrument aimed at managing and coordinating payments among banks belonging to different States becomes extremely important for a smooth operation of the payments system.

If we look into details at the ISA system, it is possible to denote how it was designed to perform two main functions: the *clearing* and the *settlement* of payments among banks of different districts, as TARGET 2 acts for banks of different states. However, it is relevant to remark that the ISA system plays no role in intradistrict transactions, as Target 2 plays no role in intrastate operations. On the one hand, *clearing* is the process of determining the total amount of debts or credits of some national central banks towards the central bank, on the bases of the interbank market operations. The clearing process occurs on daily basis. ISA clearing process works similarly to Target 2: in both systems, the national

central bank of the country to which payments flow will record a credit vis-à-vis the central bank (Fed or ECB); vice-versa, the national central bank of the country from which payments originate will record a debt vis-à-vis the central bank. As widely explained in Chapter 3 (see section 1.1), these credits and debits towards central banks are determined by both current and capital accounts. In fact, as occurs in the Target 2 system, the US central banks of countries with a deficit in its balance of payments will record a debit towards the central bank, and vice-versa the central banks of countries with a balance of payments surplus will record a credit.

On the other hand, the *settlement* process involves the material payment of the credits and debits assigned by the clearing process. In particular, this operation involves transferring the amount owed by the debtor national central banks to the creditor ones, in order to delete the outstanding net positions resulting from the clearing process. After the settling process, each national central bank's net balance vis-à-vis the central bank would return to zero.

Despite the similarities of the respective clearing processes, the ISA settling process presents some differences with respect to the European Target 2. As widely explained in Chapter 3, in Target 2 the final settling is on hold indefinitely, given the possibility for Target 2 balances among countries in the European Monetary Union to grow arbitrarily. In this way the European Central Bank becomes the final creditor of the debts resulting by current account deficits. Now we focus on whether and how the net positions accounted in the ISA system are settled, highlighting its differences and similarities with Target2.

For what concerns the ISA settlement process, two key attributes need to be analyzed into details in order to infer the peculiarities of this mechanism: the means (the material means of payment accepted for deleting the outstanding debits and credits) and the timing of settlement (when and how often the settlement occurs). For a comprehensive analysis of the historical steps of the interdistrict settlement mechanism, we go back to the history of the ISA system in order to investigate how this process has changed over time and has acquired its present framework.

The ISA system dates back to 1915. During its first decades, it was known as the *Gold Settlement Account* (GSA). The Federal Reserves of each US State

were asked to keep a balance of $1 million in gold in the Gold Settlement Account. Once clearing process was operated, a district Fed recording a debt to another counterparty saw its Gold Settlement Account reduced, while the creditor district had its account increased. Finally, payments between the Federal Reserves of two different districts were settled in gold: district banks were required to deposit gold in the Gold Settlement Account and transfer it daily in order to achieve the final settlement (Koning, 2012). Nevertheless, this constituted not only a limit for the single district Federal Reserves, but for the system as a whole, since when a Federal Reserve Bank run out of gold, it could no longer make any operation with banks belonging to other districts. In other words, there was a limit to the business that banks of one district could make with banks of other districts.
In order to overcome this constraint, Federal Reserve banks recording a surplus were allowed, on voluntary basis, to discount district banks facing payments outflows.[32] As reported by Hackley (1973, p.77) in his book on the history of the laws governing Federal Reserve lending, in 1933 almost each National Reserve Bank run out of gold, so that several districts were required to rediscount:

> In 1933, the law was amended to permit advances to member banks on paper eligible for rediscount or for purchase by the Reserve Banks for periods of up to 90 days.

This event can be interpreted as a clear signal that something needed to be changed.

In 1935, the current Interdistrict Settlement Account replaced the Gold Settlement Account. The new system introduced several innovations. In particular, the Federal Reserve Board took the control of the interdistrict clearing and settlement processes. As reported in the Federal Reserve Act (section 16)[33]:

> The Board of Governors of the Federal Reserve System shall make and promulgate from time to time regulations governing the transfer of funds and charges therefore

[32] According to Section 11(b) of the Federal Reserve Act (a section which is no longer in existence), the Federal Reserve Board could force district banks to rediscount on other district banks.
[33] http://www.federalreserve.gov/aboutthefed/section16.htm

> among Federal reserve banks and their branches, and may at its discretion exercise the functions of clearing house for such Federal reserve banks, or may designate a Federal reserve bank to exercise such functions [...].

Since the Federal Reserve Board was allowed to make and promulgate rules governing interdistrict payments, ISA clearing and settlement systems have changed over time. Firstly, with respect to the Gold Settlement Account, ISA allowed the district Federal Reserve Banks to be in temporary overdraft.

However, it was only after 1975 that the ISA system saw significant changes. In August 1975, the Federal Open Market Committee (FOMC) recommended to discontinue the old procedure. More specifically, two limits of the previous system were asked to be revised: firstly, it was recommended to discontinue the use of gold as a medium for interdistrict settlement; secondly, it was asked to settle payments on a yearly rather than on a daily basis.

Under these recommendations, a new procedure of interdistrict clearing and settlement took place. Shifts in the holdings of the System Open Market Account (SOMA) became the new settlement medium. SOMA is the pool of dollar-denominated assets acquired via open market operations by district Federal Reserve banks. The relevant aspect is that SOMA portfolio is mainly composed by US treasury securities. This fact is widely explained in a Federal Reserve Bulletin of 1997 (Cheryl L. Edwards, 1997, p. 862):

> Operations are conducted in domestic securities, primarily U.S. Treasury and federal agency securities. Nearly all of the Federal Reserve's domestic securities holdings are Treasury securities, with roughly equal shares of Treasury bills and Treasury coupon securities.

Also Carpenter et al. (2012, p. 7) show that at the end of 2006, of the $875 billion of total assets of the Federal Reserve's consolidated balance sheet, about $780 billion were in the domestic SOMA portfolio, which only consisted of Treasury securities. This means that the regulation of payments among different districts occurs by shifting public debt securities held in the Fed SOMA portfolio from a district central bank to another one.

Another important innovation was that while the ISA clearing process would occur on daily basis, it would only require once-a-year settlement, in the month of April.

However, we can observe that in recent years the ISA settlement process is not working any more as established, and from 2008 ISA net balances have started increasing (see figure 26). Some districts (as Richmond and San Francisco) were allowed to record unusually large outstanding ISA debts; on the other hand, NY Fed recorded increasing ISA credits. In other words, it seems that also US has its own Target 2 imbalances. Data in figure 26 show that while the pre-crisis period was characterized by a substantial equilibrium among ISA balances, from 2007 the size of these balances has considerably increased.

US Federal Reserve Interdistrict Settlement Accounts positions

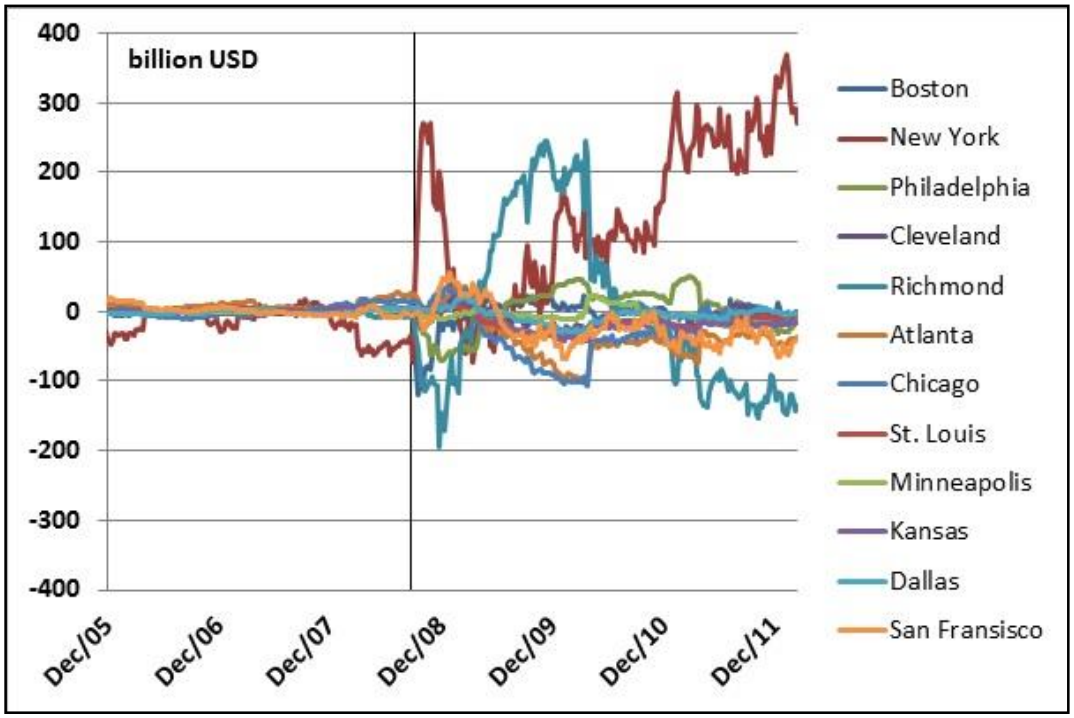

Figure 26 – Source: St. Louis FRED

In particular, it has been estimated[34] that in 2013 the New York Fed's closing balance was around $288 billion, but only $147 billion of SOMA securities have been transferred from owing district Federal Reserve banks to the NY Fed for settlement. In other words, the NY Fed did not receive enough SOMA securities to settle ISA balances. Conversely, the Richmond and San Francisco Feds were allowed to keep large debits. These observations allow us to remark that the surplus of New York covered the deficits of other districts such as Richmond and San Francisco.

Thus, in the last years the ISA settlement process has not worked as established and the rules of the Federal Reserve Accounting manual have not been followed. In fact, according to the Federal Reserve Accounting Manual[35] (p. 108), every year in April the average ISA balance over the past 12 months should be calculated and netted out. Allowing some districts to keep large outstanding ISA debts and credits can be considered as an infringement of the institutional framework that has disciplined ISA practices for what concerns the management of current account misalignments.

Therefore, the April ISA rebalancing mechanism does not move automatically and a certain degree of flexibility in these computations and operations can be observed. In other words, within the ISA system it is possible to change the settlement rules in order to safeguard the integrity of the system as a whole.

Since many aspects of the ISA system has been clarified, a comparison between the ECB Target 2 and the ISA system will be object of the next section.

5.2 THE ECB TARGET 2 vs. THE US ISA SYSTEM: SIMILARITIES AND DIFFERENCES

As pointed out before, from a monetary perspective the European Monetary Union retains many features in common with the United States. It is composed of a system of national central banks that together administer a single currency.

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[34] See KONING, J.P., (2012)

[35] http://www.federalreserve.gov/monetarypolicy/files/bstfinaccountingmanual.pdf

Thus, it is not surprising that considering the institutional framework in which Target 2 and ISA system operate, they present substantial similarities: in both cases, the "receiving-liquidity" countries will record a credit in the balance sheet of their national central bank; on the other hand, countries from which the payment originates will record a debt in the balance sheet of their national central bank. In both systems, these credits and debits are guaranteed by the Union Central Bank (Federal Reserve or European Central Bank).
As explained in Chapter 3, Target 2 debts rise when payments outflows are greater than the inflows. It can depend on either current or capital account deficits. Vice-versa, Target 2 credits are associated to current and/or capital account surpluses. The same happens in ISA system: also ISA imbalances can be generated by either current or capital account imbalances among US States.

Despite these similarities, there are two key operational differences between the two systems: both divergences involve the settlement process of Target 2 and ISA balances. Firstly, in Target 2 the final settling is on hold indefinitely, given the possibility for Target 2 balances to grow arbitrarily. Such a flexible aspect plays a crucial role in our analysis: the possibility for deficit countries to keep outstanding Target 2 debts transforms Target 2 from a simple payment system to an effective instrument of monetary policy. In fact, trough Target 2 countries experiencing current account deficits can obtain liquidity at very low interest rate from the European Central Bank. The liquidity obtained takes the form of a Target 2 debt towards ECB. On the other hand, countries with a current account surplus will record a Target 2 credit to the ECB. Vice-versa, this condition should not normally apply for what concerns the ISA system, in which settlement should occur every year, in the month of April. In fact, as underlined in the previous section, the Fed has historically called for some form of settlement, either the daily gold settlement in the Gold Settlement Account or the yearly settlement in SOMA securities under the current ISA system.

The cited difference has called the attention of the economic and political debate, and the discussion on this issue is in continuous evolution. In particular, as seen in Chapter 3 (see section 3.4) some German economists[36] argued that the

[36] Sinn and Wollmershäusen (2012)

US system is more restrictive than the European one, considering that it does not allow persistent imbalances among member states. On these bases, they call for a limit to Target 2 balances so that a periodical settlement would make Target 2 more similar to the ISA system. However, we have observed that in recent years the Federal Reserve changed its attitude towards the settlement system and eased constraints on district banks facing outflows. As seen before, some districts banks (San Francisco and Richmond Feds) were allowed to accumulate unusually large amounts of ISA debits. Thus, Sinn's proposal of setting a cup to Target 2 balances cannot be based upon the fact that this would have represented the policy adopted by the US: we have seen that when the financial system is stressed, the Federal Reserve behaviour appears to be not so distant from that of ECB.

Given the similarity in the indefinite nature of the timing of settlement, the only important difference between the two systems can be found in the nature of the assets through which the imbalances are settled.

Under the Target 2 system, creditor countries are paid by recording a credit in Target 2 accounts. On the other side, the regulation among US different federal districts takes place by shifting public debt securities held in the Fed SOMA portfolio from a district central bank to another. In the Euro area, surplus countries are getting paid by recording a credit to the central bank, and in the US by shifting public debt securities.

As rightly pointed out by Barba and De Vivo (2013, p. 91), "if a similar settlement were to be made in the TARGET system, it would be made by transferring say Greek public debt to the Bundesbank". But similar means of payment seem unacceptable to creditor countries in the Euro area (in particular to Germany), showing a substantial lack of integration in the European Monetary Union if compared with the US. The reason for which a scenario like this is unrealistic under the actual political framework of the European Union, can be explained by the fact that public debt is issued by different Governments and the public debt of a debtor country is not regarded as an internal asset by the creditor countries.

However, looking at this solution from a positive perspective, allowing deficit countries to keep indefinitely growing Target 2 debits, should bring economic

advantages to creditor countries: they could benefit from the persistence of an external source of demand.

The comparison between ISA and Target 2 system allows us to state that there are no significant differences between US and EU in the financing of trade imbalances through their respective payment systems. We have observed that when the financial system is stressed, in both systems the Central Bank of the deficit country or district can easily get the necessary financing by the Union Central Bank.

In the next section we will focus on the fiscal architecture of the two areas and investigate whether it is rather the presence of a federal fiscal system in US to make the issue of the relevance of trade imbalances different in the two currency unions.

5.3 CURRENT ACCOUNT IMBALANCES AND GOVERNMENT INTERVENTION

As widely acknowledged, although the Euro area represents an economic and monetary union, it does not have a fiscal union and most decisions about taxes and spending remain at the national level. In this section we try to understand whether the presence of a federal fiscal system in US could have some different implications for the issue of the relevance
of trade imbalances, if compared to the European case.

As shown in Chapter 2 (section 2.2), also within a currency union when a country runs a current account deficit, some of the agents within its economy (families, enterprises or Government) fall into debt to other agents in the surplus country. As analyzed before, agents in the deficit country could settle their debt only by selling goods and services abroad (i.e. by running a current account surplus). Conversely, savings of some individuals would cause a lack in domestic demand and produce a loss for other ones, shifting the debt from some agents to other ones.

Even if Government operated unilateral fiscal transfers in favor of the indebted subjects, this policy would not produce the settlement of the debt of the

whole economy, but it would only shift the debt from some agents to others of the same economy. After Government intervention, in order to detect which agents would ultimately fall into debt, in Chapter 2 (section 2.2.2) we analyzed the alternative ways in which Government finances its fiscal policy.

If Government finances fiscal transfers to agents A1 through the taxation of other individuals (for example individuals A2), the debt would shift by agents A1 to agents A2. In fact, since also agents A2 belong to the deficit economy, they do not have by definition a sufficient excess of income over expenditure for compensating the amount needed by agents A2 to repay the debt. Thus, agents A2 would, in turn, fall into debt in order to bear the higher tax burden.

Alternatively, Government could finance the transfers made to agents A1 through the emission of Government bonds. However, also in this case, the debt caused by the current account deficit would only move by agents A1 to Government. We can resume this passage in the figure below (see figure 27). Thanks to Government intervention individuals A1 could repay their debt to Bank A (the banking system of the deficit country) and, in turn, Bank A could repay its debt to Bank B (the banking system of the surplus country). Anyway, the debt will be shifted to the Government of the deficit economy, which has issued Government bonds in order to finance its fiscal policy.

Repay the debt by public transfers

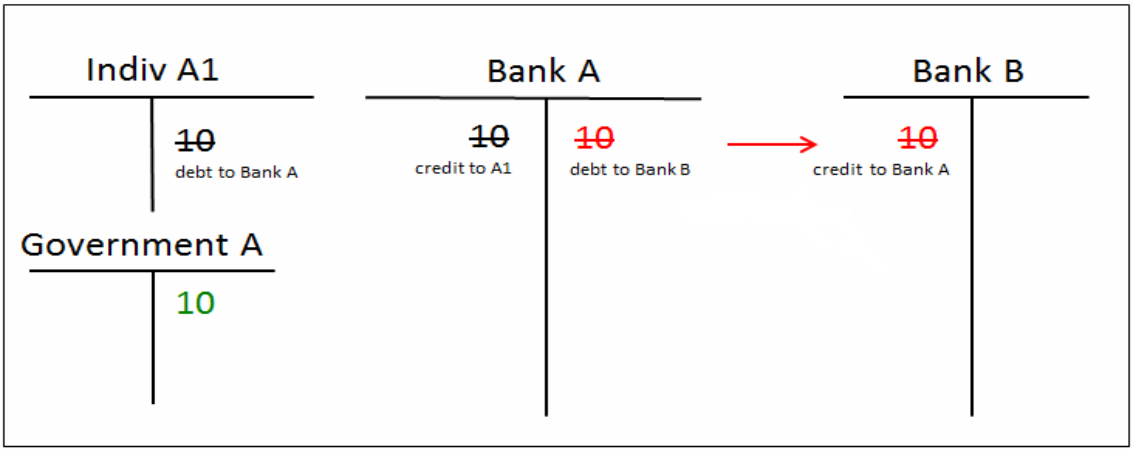

Figure 27

However, a point needs to be remarked: the fact that fiscal transfers operated by Government cause a change of the debtor, without netting out the debt, crucially depends on the hypothesis of the absence of a federal fiscal system between surplus and deficit countries. In order to understand this point, we can ask what would occur whether a similar fiscal policy towards deficit countries was implemented within an area characterized not only by a monetary union, but also by a fiscal one.

The essential feature of a fiscal union is that debtors (deficit countries) and creditors (surplus countries) lie under the same jurisdiction. This important aspect allows us to take into consideration another important way through which Government could finance their fiscal transfers towards individuals in deficit countries: the taxation of individuals in surplus countries.

Indeed, unlike deficit countries, surplus countries will have by definition an excess of income over expenditure sufficient to compensate the excess of expenditure in deficit countries. In this way, fiscal transfers towards indebted agents in deficit countries, financed by higher taxation of surplus countries, will not necessarily produce a debt for other subjects. In other words, under a fiscal union, a redistribution of income from surplus to deficit countries would take place, allowing deficit regions to repay their debt to surplus ones.

In conclusion, while in the Euro area the fiscal policy is not sufficient to eliminate the debt of the deficit countries to the surplus ones, in US the possibility to tax surplus regions could remove the assets and liabilities deriving from trade surpluses and deficits. In the next section we analyze data providing evidence of the difference between the fiscal systems in US and in the European Union.

5.4 FEDERAL BUDGET, REVENUES AND EXPENDITURES IN US AND IN EURO COUNTRIES

A detailed research conducted by Barba and De Vivo (2013) shows that the European (they consider data of the twenty-seven EU countries) federal budget is negligible if compared to the US federal budget (see figure 28).

US and EU Revenues and Expenditures (% GDP)

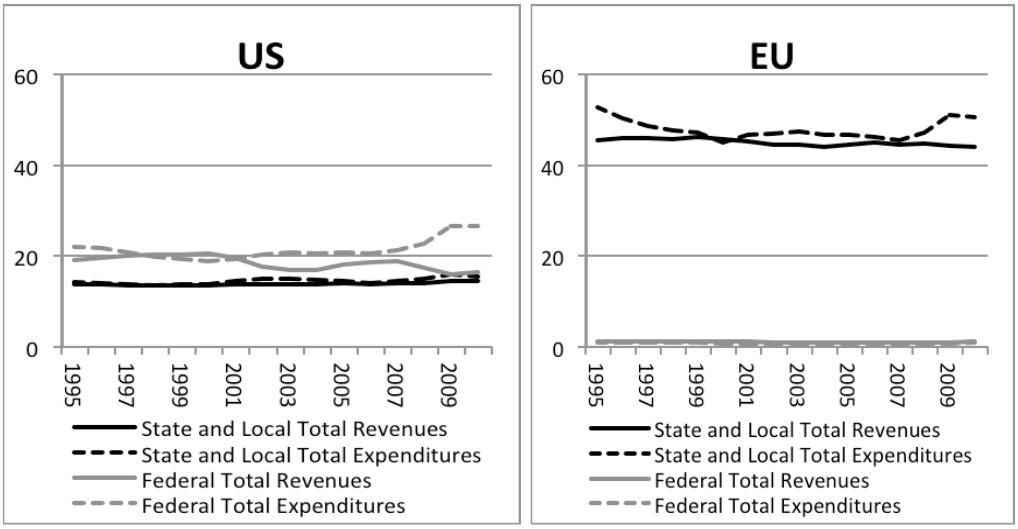

Figure 28 – Source: BEA and Eurostat, in Barba and De Vivo (2013)

From 1995 to 2009, the European federal budget has been around 1% of the twenty-seven European states' GDP. In the same period, federal total revenues and expenditures have been respectively around 18.6 and 21.3 % of GDP. Conversely, US local revenues and expenditures (revenues and expenditures recorded in the single States) are smaller than those observed in the EU. For example, from 1995 to 2009 the average of state and local revenues and expenditure amounted, respectively, to 13.8 % and 14.6 % of GDP; in the EU they amounted to 45 % and 48 %.

The table in figure 28 is therefore of substantial importance in order to appreciate the differences in political integration between single members of these two Unions. These data represent from the quantitative point of view the main difference between EU and US: in the European Union the tax system is not administrated at the federal level, tax revenues being collected by individual states; the situation is different in the US, where the tax system is a federal one and the collection of taxes is managed at the federal level.

The low consistence of its federal budget and the big entity of the local revenues and expenditures (see the chart on the right side of the table) show that the European Union lacks a comprehensive fiscal integration within its members.

Conversely, the significant allocation between local and federal competences in the United States is reflected in the chart on the left side of the table, that denotes how in quantitative terms the amount of local expenditures and revenues is very similar to the federal levels of revenues and expenditures.

This institutional difference between the two fiscal systems adds an important qualification to our reasoning on the relevance of trade imbalances: the fiscal union in US, allowing by definition US Government to tax surplus regions, makes redistribution policies in the US an important instrument for rebalancing trade imbalances among its regions, unlike the Euro area.

On the basis of data (figure 29 and 30) provided by the research of Barba and De Vivo (2013), it is possible to discuss into details the level and the consistency of the redistribution to local States.

US Per capita total individual income tax minus federal total direct payment to individuals in different states (year 2010, data in terms of per $ capita GDP).

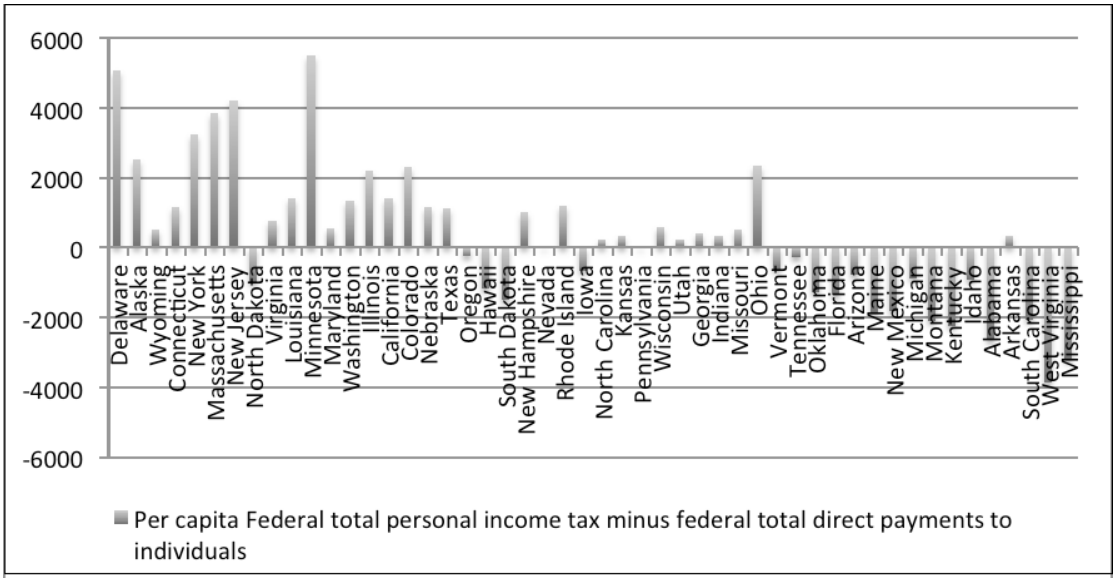

Figure 29 – Source: Consolidated Federal Funds, in Barba and De Vivo (2013)

EU total revenues minus EU total expenditures in different states (year 2010, data in terms of € per capita GDP).

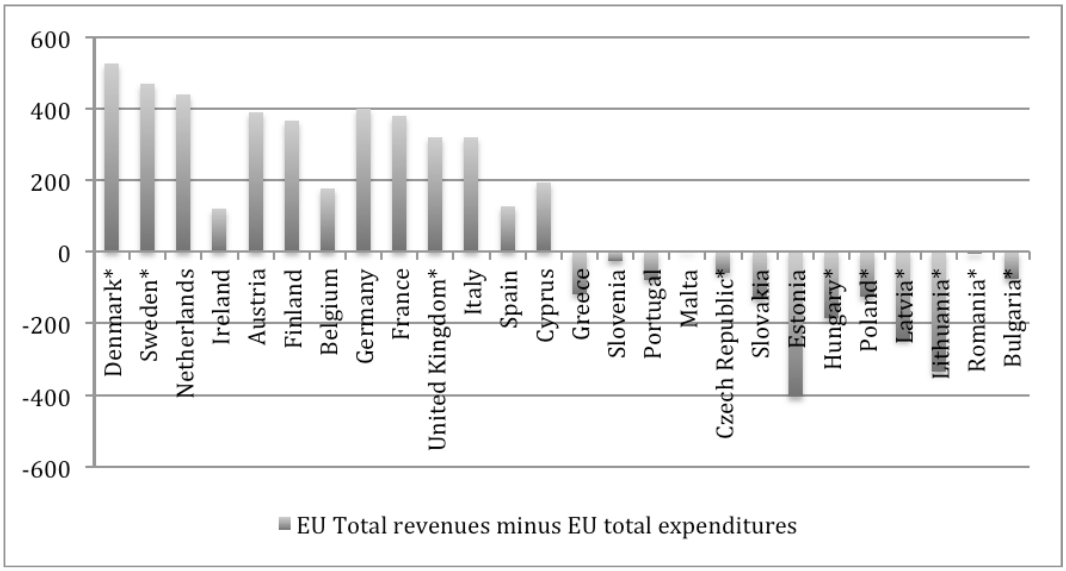

Figure 30 – Source: Eurostat, in Barba and De Vivo (2013)

They provide evidence in support of the fact that in the EU no form of redistribution of income is taking place, while it is relevant in the US, as in every federal union, where differences in income levels among states of the federation are associated with financial transfers from richer regions to poorer ones.

If we look at the tables 29 and 30, we can observe the presence of substantial differences between the income distribution operated at a federal level in the EU and US. Considering the difference between federal total individual income tax and federal total transfers to individuals in US and the gap between the EU revenues and EU expenditures in EU States, data clearly show that the EU budget operates a minimal redistribution, if compared to that operated in US. More in details, in figure 29 all US States have been ordered according to their level of per capita GDP (from the richest to the poorest). States on the left side of the table (such as Delaware, New York, Massachusetts) retain a higher GDP per capita when compared to the States placed in the right side (West Virginia, Mississippi, Alabama). As expected, data show that in the richest States of the federation (as Delaware and Alaska) the taxes on personal income exceed the direct transfers to individuals. Conversely, the poorest states (like West

Virginia and Mississippi and with the exception of Ohio) receive more in transfers than the amount paid in taxes. These findings are consistent with a fiscal policy managed at a federal level: in US all richer regions subsidize poorer regions through fiscal transfers made by Government, as occurs between richer and poorer areas belonging to the same state. In other words, citizens of US richer countries transfer part of their income to citizens of US poorer ones.

Conversely, if we look at the actual redistribution that takes place within the EU borders (see figure 30), we can observe that this process is not operating. It is necessary to underline how the dimension of this redistribution is negligible if compared to US, showing the weakness and the inadequacy of the redistribution policies within the Union. In addition, the main beneficiaries of the redistribution process are countries lying outside the Euro area (Hungary, Czech Republic, Poland, Latvia, Lithuania, Romania and Bulgaria). Anyway, the five countries that have been receiving more resources from the EU at a federal level (Greece, Slovakia, Portugal, Slovenia and Estonia) collected a total of 3 billion Euros, something very marginal when compared to their budget at a State level. Moreover, we can see that not only the main beneficiaries of the redistribution process are countries outside the monetary union, but also the net contributors as Denmark, Sweden, United Kingdom lie outside the Euro area.

In particular, among the net contributors we can find the United Kingdom, a country that consistently contributed to the EU budget in the last years, but whose membership to the currency union is still at stake, considering recent political debates. The figure below presents UK contributions to the EU budget during last years, from 1973 to 2013. Data show how the amount of UK public sector contributions to the federal budget have consistently increased during the last years.

UK Government contributions to the EU budget (1973-2013)

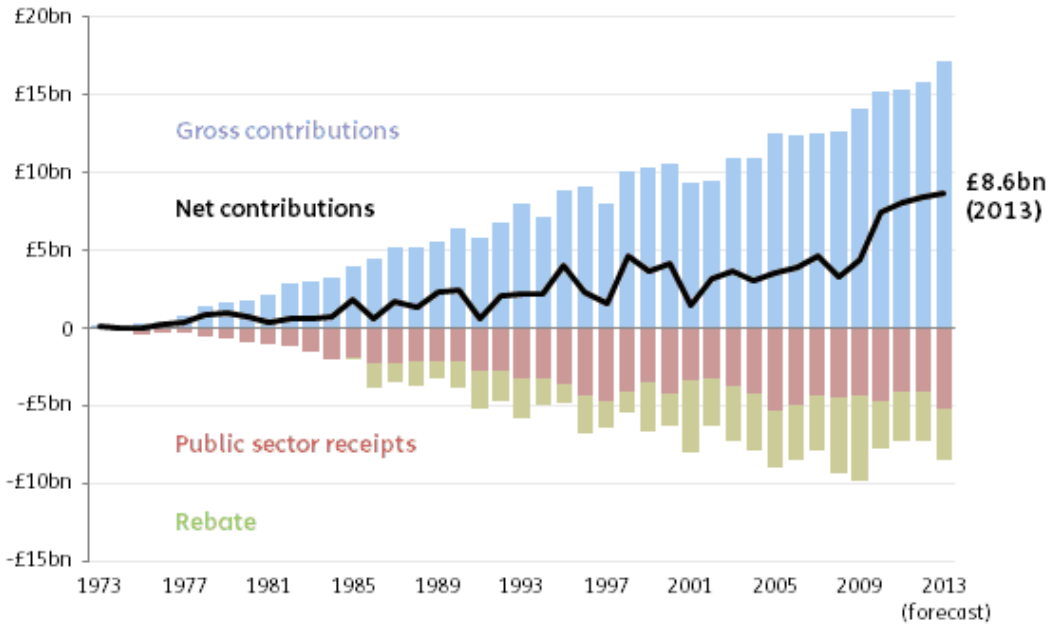

Figure 31 – Source: "The Economic Impact of EU membership on the UK", House of Commons Library Analysis

Another important indication concerning the lack of a comprehensive fiscal integration in the EU can be derived from the analysis of the participation to the EU Cohesion Fund approved in 2011. This fund aims at reducing budget inequalities within the European Union and helping at the same time those countries with fiscal deficits through development programs.

The positioning of the EU members within the table (see figure 32) is coherent with the fiscal balance ranking highlighted in the previous figures.

The EU contributions are represented by the blue bars. The major contributions (at the end of the table) come from northern European countries, which belong to the category of the "net contributors" in terms of participation to the EU federal budget, while the net beneficiaries (at the top of the table) reflect the classification presented in figure 30. Thus, the same practice of rebalancing between "net contributors" and "net beneficiaries" can be also observed in the participation to the EU Structural and Cohesion Fund.

Participation to the EU Cohesion Fund at a State Level

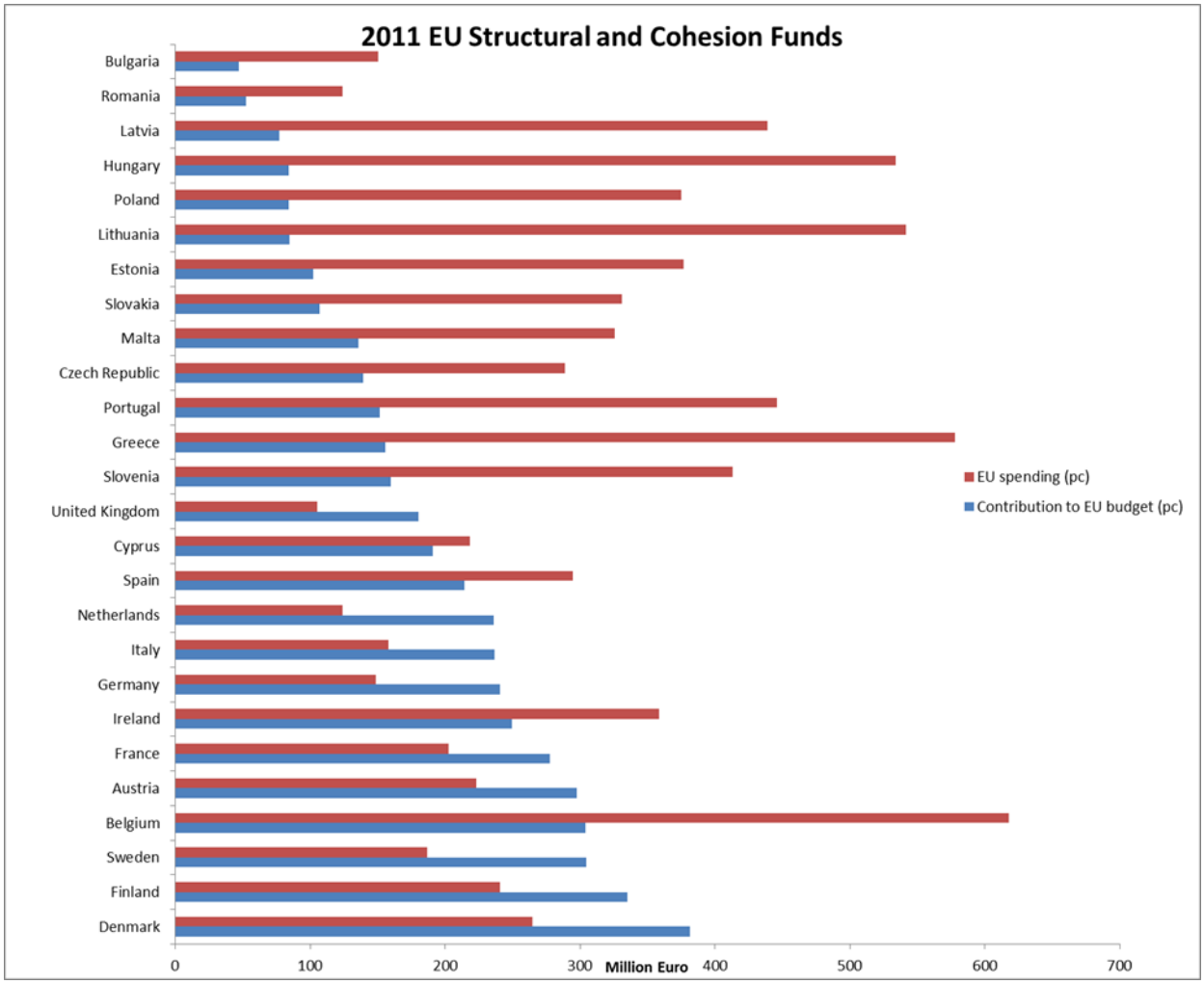

Figure 32 - Source: "More Commitment is Needed to Improve Efficiency in EU Fiscal Spending", *FREE Policy Brief*, May 2014

On the basis of the data analysis presented above we can conclude that while in the US the State through its fiscal policy transfers real resources from surplus to deficit regions, netting out the assets and liabilities arising from trade imbalances, this kind of redistribution is almost absent in the EU.

In the next paragraph we examine whether this difference in the fiscal architecture could make for US the issue of the relevance of trade imbalances different from the Euro area.

5.5 THE RELEVANCE OF TRADE IMBALANCES IN US AND EMU

The analysis conducted has highlighted that the US management of trade imbalances through the monetary policy seems to be not so distant from the European one: if the interbank market experiences a slowdown, the Federal Reserve intervenes in order to finance trade imbalances among US States through the ISA system, exactly as ECB finances trade imbalances through Target 2. However, from the quantitative perspective, the size of ISA balances is considerably lower than that of Target 2. This can be explained by the fact that in US another rebalancing mechanism is at work: the redistributive fiscal policy, which, as seen in the previous section, is almost absent in the European Union. Indeed, the US fiscal rather than monetary architecture seems to be the most significant difference between the two Unions considered: unlike the Euro area, in US the fiscal policy rebalances resources from surplus to deficit US States, allowing deficit areas to repay the debts arising from their trade deficits.

Thus, while the Euro area has only the monetary policy, US have both fiscal and monetary instruments for rebalancing trade divergences among its members. Comparing the two policy interventions, we can add an important qualification to the reasoning previously conducted. In fact, in the previous chapters we have analyzed the issue of the relevance of trade imbalances within the particular context of the Euro area. On the basis of the above, we can analyze in which terms the issue of the relevance can be different between the Eurozone and the US, where the monetary union is combined with a fiscal one.

As regards their impact on trade imbalances, the main differences between the monetary intervention and the fiscal policy can be resumed in the following table (figure 33). We can observe that the monetary policy diverges from the fiscal one not only for the subject implementing the policy (Central Bank rather than Government), but also for the nature of the intervention. The Union Central Bank (through Target 2 or ISA system) gives a loan to the banking system of the deficit Country which, acting as intermediary, will finance the debts of some agents. As widely analyzed in Chapter 3, this kind of intervention will ultimately produce a change in the creditor (for the European case ECB instead of foreign commercial banks), without eliminating the debts originating from the trade deficits.

The impact of the monetary and fiscal policy on trade imbalances

	MONETARY POLICY	**FISCAL POLICY**
Subject	Central Bank	Government
Nature of the intervention	Loan	Unilateral transfer
Consequences on trade imbalances	Change of the creditor	Elimination of the debts

Figure 33

Vice-versa, the fiscal policy consists in unilateral transfers to indebted agents. As widely explained before (paragraph 5.3), only a fiscal policy conducted in a context in which surplus and deficit regions lie under the same jurisdiction could eliminate the assets and liabilities arising from trade positions, while outside a fiscal union a similar intervention would only produce a shift of the debt among subjects in the deficit economy, without erasing it.

In this sense, the lack of integration from a fiscal perspective could bring into question the relevance of imbalances within the European Monetary Union. This was the warning of the 1977 MacDougall report, which stressed the importance of the role of public finance within the Euro area. It is surprising that even though this report dates back in the early 1977, it was so visionary in anticipating the main problems connected with the building of the European Monetary Union:

> a member of the community [...] might, because of absence of any substantial compensation through the Community finances, find its balance of payments so seriously in deficit that the difficulty of meeting the situation by borrowing could force upon it a reduction of income larger than the initial fall in export earnings. This absence between Community members of the substantial compensatory public finance mechanism that works between regions inside integrated states is thus of great importance as an obstacle to fuller Community integration (European Commission, 1977, p. 35).

These considerations could lead to misleading conclusions, such as to assume that in the Euro area (which lacks of a full fiscal integration) trade imbalances are still relevant, unlike US.

Actually, it is important to stress that under the current operation of Target 2 system, the ECB intervention does not appear so distant from a fiscal policy. In fact, as shown in Chapter 3, so far the loans provided by ECB have not been repaid and this element makes Target 2 financing similar to unilateral transfers provided by Government. As observed in the same chapter, this similarity might have led the German economist Sinn to conceive Target 2 as a fiscal rather than a policy measure (*stealth bailout*).

Thus, only if Target 2 changed the rules of its operation, for example by limiting the size of Target 2 balances (which would mean asking a periodical settlement of Target 2 liabilities), the difference between the two policies would come to surface and the relevance of trade imbalances in the Euro area could be put into question.

Anyway, it is important to stress that neither the monetary policy nor the fiscal one are able to correct internal imbalances in the union, but Target 2 intervention makes trade imbalances sustainable among Euro area countries, exactly as a redistributive fiscal policy makes among regions of a single State.

CONCLUSIONS

The analysis of the causes of the current economic crisis within the European Monetary Union for a long time has been focusing on problems of public finances, and the proposed solutions usually include the application of strict measures of fiscal austerity. However, as explained in this research, it is currently debated whether the underlying reasons for the European crisis must be sought rather in the imbalances accumulated since the outset of the monetary union, in particular in the current account deficits and surpluses recorded by the different members of the Euro zone.

This view was quite unexpected, since the process towards the European Monetary Union was associated with the idea that one of the major effect of the single currency would have been the disappearance of any balance of payments constraint (European Commission, 1990). Also in the economic literature it was argued that after the introduction of the Euro the external positions would have become irrelevant among its members, as regions of a single State (Ingram, 1973; Palley, 1997).

Anyway, the advent of the single currency changed the attitude towards this issue: few years after its introduction, the Monetary Union was no more considered *per se* sufficient to remove the relevance of trade imbalances, while the *persistent* rather than *temporary* nature of imbalances became fundamental in order to evaluate their importance within the Euro area. In this way, trade imbalances were implicitly assumed to be relevant and the discussion moved towards their ability to last or not over time. In particular, a first article by Blanchard and Giavazzi (2002) reassured economists and institutions about the benign nature of imbalances: trade deficits would have had a temporary nature and would have shrunk as soon as peripheral countries would have been able to repay the debt by exporting to core countries.

Nevertheless, it was not the case. After 2002, trade imbalances continued increasing rather than shrinking and this pushed one of the author of the first article to provide explanations of such an unexpected phenomenon. According to a study conducted by Giavazzi and Spaventa (2010), the persistence of the trade deficits within the Euro area could be explained with an unproductive destination

of capitals coming from abroad: foreign capitals would have been addressed towards the production of non-tradable goods and services, preventing deficit countries from running the necessary trade surplus for netting-out the initial deficit. In this way, the issue of the relevance of trade imbalances among countries belonging to a same monetary union ended to be treated in the same way as if they were outside.

According to us, after the advent of the monetary union the issue of the relevance of trade balances has been blurred and has turned to be an implicit assumption of the economic literature. Based on these premises, the purpose of this research has been that of trying to remove some opacity in the debate and bring again the question of the relevance to the surface. Specifically, we have tried to explain whether and why trade imbalances should be considered relevant within the European Monetary Union.

We have based our line of reasoning upon the assumption that the level of income is not fixed, but it rather depends on the level of aggregate demand. Through the theoretical analysis it has been possible to pass from the macroeconomic to the microeconomic implications of the presence of structural trade deficits: we have highlighted that when a country runs a trade deficit, the country as a whole will record net liabilities to surplus countries; in particular, we have observed that in areas characterized by current account deficits some of its agents necessarily fall into debt to other ones in surplus countries, and its banking system will be necessarily involved as intermediary of these positions. We have also pointed out that the agents falling into debt do not necessarily coincide with the importers: who falls into debt is the one who suffers the reduction in the sale of product caused by addressing abroad part of domestic demand.

Thus, the persistence of a trade deficit, leading to a continuous growth of some agents' debt relative to their income, could expose agents and, in turn the banking system, to insolvency risks. We have also observed how such an important implication does not depend on being part of a currency union. In this sense, even within a Monetary Union trade positions among its members do still matter and the establishment of the single currency cannot by itself be considered sufficient to remove any relevance of trade imbalances.

However, we have also highlighted that the European Monetary Union is not only a fixed exchange rate system but it is characterized by a single institution which governs assets and liabilities arising respectively from trade surpluses and deficits. In particular, through the analysis of the institutional framework in which the European Central Bank operates, we have found that Target 2 system is not only an instrument aimed at governing payments among countries belonging to the Euro area, but also a channel through which the ECB monetary policy has been implemented.

Through a deep analysis of Target 2 operations, we have observed that it has been the instrument through which the European Central Bank ultimately financed banks of deficit countries, enacting a policy consistent with its regulatory guidance. The fact that the European Central Bank has replaced commercial banks in financing current account deficits makes intra Euro area trade imbalances substantially different from those arising outside a currency union: as long as the European Central Bank allows Target 2 balances to grow without any restriction, trade imbalances are made sustainable within the Euro area.

Thus, although the persistence of a trade deficit could possibly expose agents and in turn banks of deficit economies to insolvency risks, as long as the European Central Bank, through Target 2 system, indefinitely finances banks of deficit countries without demanding the repayment of its loans, it prevents imbalances among Euro area members from manifesting problem of sustainability. This kind of intervention, being absent outside a currency union, makes the issue of the relevance of imbalances in the Euro area radically different from that arising outside a currency union.

Therefore, we argue that the Monetary Union by itself does not automatically remove the relevance of trade imbalances within its members, as maintained by Ingram (1973) and others: according to our analysis, it is rather a discretional intervention by the European monetary authority to make them sustainable. In other words, although trade imbalances can be considered still relevant within the European Monetary Union, the ECB intervention through Target 2 system makes them sustainable among Euro area participants.

Finally, we have compared how internal imbalances are governed with both fiscal and monetary instruments in the Euro area and in US: we have found

that what distinguishes the European Monetary Union from the other most extended currency area, is that in US the rebalancing mechanism of trade positions passes not only through the monetary policy, but through the fiscal one too.

In fact, although the Federal Reserve has historically called for some forms of settlement of ISA balances, the US counterpart of Target 2 balances, after the eruption of the financial crisis its monetary policy has not appeared so distant from that conducted by ECB, allowing ISA balances to grow without restrictions. The only difference can be found in the size of the two interventions: from the quantitative perspective, the size of ISA balances is considerably lower than that of Target 2. This can be explained by the fact that in US another rebalancing mechanism is at work: the redistributive fiscal policy between surplus and deficit regions, which is almost absent within the European Union. Thus, the fiscal rather than monetary architecture of US represents the main difference between the two currency unions.

Actually, the two policy interventions have some different implications for the relevance of trade imbalances: while the central bank (ECB or Federal Reserve) provides a *loan* to commercial banks and, in turn, to individuals of deficit countries, the fiscal policy results in *unilateral transfers* to indebted agents. This means that while the monetary policy intervention only produces a change in the creditor (for the European case, ECB in place of foreign commercial banks), the fiscal policy, operating an income redistribution from surplus to deficit countries, eliminates the debts originating from trade deficits. We have also stressed how only a fiscal policy conducted in a context like US, in which surplus and deficit regions lie under the same jurisdiction, is able to rebalance income between deficit and surplus regions and remove assets and liabilities arising from trade positions; vice-versa, outside a fiscal union a similar intervention would only produce a shift of the debt among subjects in the deficit economy, without erasing them.

Anyway, under the current regulatory guidance of Target 2 system, the European monetary intervention through Target 2 and the US fiscal policy do not appear so distant from each other, as long as the European Central Bank provides loans without asking for them to be repaid. This aspect makes the monetary

intervention very similar to the unilateral transfers provided by US Government through its fiscal policy. However, it is important to stress that neither the monetary policy nor the fiscal one are able to correct internal imbalances in the union, but both policies act in order to make them sustainable.

Given the magnitude and the unconditional nature of Target 2 intervention we have argued that within the current operation of the European Monetary Union it is improper to speak of a European balance of payments crisis. In fact, the interbank market breakdown triggered by the Lehman crash, cannot manifest in a balance of payments crisis, as long as Target 2 financing replaces (without limit and at better conditions) the interbank market loans.

We conclude that as long as the European Central Bank does not set limits to Target 2 positions, the European Monetary Union can sustain persistent balance of payments imbalances among its internal members. The important role of Target 2 in preserving the stability of the Euro area as a whole has been universally recognized and so far the possibility for limiting its balances has not seriously called into question.

This result appears extremely important, since the growing consensus on the relevance of trade imbalances within the European currency union has shifted the attention of the policy makers on the necessity of reducing current account imbalances as a way out of the current economic crisis.

So far, the reduction of imbalances has been pursued through austerity measures. Although austerity was initially implemented with the purpose of containing the rise in credit spreads, it was progressively addressed to the reduction of imbalances too. Indeed, fiscal restrictions were expected to reduce imbalances through two channels: from a supply-side point of view, these measures should improve net exports by the restoration of price competitiveness, based on ULC and REER; from a demand-side point of view, austerity should reduce income and, in turn, imports.

Although Maastricht Treaty already provided for strict fiscal discipline (3% deficit/GDP and 60% debt/GDP criteria), since 2009 fiscal restriction has been

exacerbated by the Euro Plus Pact[37] (2011) and the European Fiscal Compact[38] (2012).

As a matter of fact, since the outbreak of the financial crisis in 2008, imbalances have progressively shrunk. However, we have seen that a recent study conducted by the European Commission (European Commission, 2010) observes how the recent adjustment in current account positions must be mainly ascribed to the demand side effect of austerity policies, i.e. to the drastic fall in domestic demand. Indeed, most of the member states which had an improvement of their current account since the beginning of the crisis have also experienced a significant contraction in domestic demand.

The negative impact of austerity measures on aggregate demand, has led some scholars to advance alternative proposals in order to reduce European imbalances. If policies to reduce wages provoke a generalized reduction in growth rates, it would actually aggravate the structural problem of shortage of demand which the European economy has been facing. Therefore, according to some authors, the resolution of current imbalances should not come only from the side of the deficit countries, trying to regain competitiveness through wage restraint, but also from the side of the surplus countries.

Among them, Brancaccio (2011) believes that the increase in nominal wages in countries where labour productivity is higher is a more suitable solution for reducing current account imbalances. The rise in wages would produce two benefits, depending on the change of the price level. On the one hand, if associated with an increase in price levels, it would balance out Euro area members' competitiveness. On the other hand, if not associated with an increase in price levels, the rise in wages would reduce profit margins. Since it is acknowledged that the propensity to consume out of wages is higher than out of profits, a change in income distribution in favor of wages would increase aggregate demand and consequently imports in surplus countries.

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[37] "Euro Plus Pact" (the so called "Competitiveness Pact") has been subscribed in March 2011. It is a package of measures adopted by the Euro area as a whole in order to strengthen the economic governance and competitiveness of the Euro area. The bases of this agreement were both fiscal consolidation and structural reforms.

[38] "European Fiscal Compact" was signed in March 2012 by Euro are countries which decided to adopt a set of rules intended to foster budgetary discipline.

Also Febrero et al. (2011) seem to share this view, since they consider the general lack of aggregate demand driven largely by the deterioration of income distribution as the main cause of the current economic crisis.

Moreover, there are some authors who propose an intermediate solution. Given the difficulty encountered by peripheral countries to achieve internal real depreciation, a combination of deflation in deficit countries and inflation in surplus countries would be a suitable solution for sharing the cost of the adjustment (Mayer, 2011).

However, the analysis conducted in our thesis and the availability of the European monetary institution to finance trade imbalances appears in contrast with the necessity of restrictive policies aimed at reducing trade imbalances. According to our line of reasoning, under the current framework of the Euro area this intervention is not necessary, as long as the ECB monetary policy automatically sustains imbalances through Target 2 financing.

We can conclude that the stability of the Euro area does not depend on the size of European imbalances, but on the availability of the European Central Bank to provide unconditional and unlimited financing to deficit countries.

Following this line of reasoning, we argue that economic policies aimed at reducing imbalances through deflationary measures are not only unnecessary, but they could also produce negative effects on the total level of activity, both in surplus and in deficit countries. In fact, the general approach of these proposals is clearly focused on the supply side, when the main constraint facing the European economies is the shortage of demand. Under the assumption that the level of income depends on aggregate demand, limiting imports in deficit countries would not only depress the economic activity in these countries, but it would also deprive surplus countries of a significant source of demand to drive growth. Only assuming that demand will eventually adapt passively to the aggregate supply conditions on which it is intended to act and disregarding the negative effects of deflationary measures on the level of aggregate demand, painful adjustment programs to restore competitiveness in deficit countries could be conceived as a suitable policy for achieving a more balanced situation.

APPENDIX: TARGET 2 BALANCES SOURCES

There is no a single database grouping together the Target 2 balances of all NCBs. Indeed, liabilities or claims on Target 2 do not appear in the European Central Bank balance sheets, because they sum up to zero. This might explain why it took time before Target 2 balances attracted public attention.

Target 2 data can be found in the single national central banks' balance sheet. Nevertheless, the organization of the Target 2 statistics varies widely across the 17 central banks. Most of the central banks publish them as a part of their annual, quarterly, or monthly financial statements. In addition, Target 2 positions lie behind different classifications: in most cases the relevant positions are called "Intra-Eurosystem Claims/Liabilities", in other cases "Other Liabilities/claims of Euro area residents" or "Deposits/Liabilities of/to other Euro area MFI's". Thanks to the collaboration of the Bank of Italy, providing suggestions about the different denominations under which Target 2 positions are hidden, it was possible to find Target 2 data. Another difficulty of picking up data form every single balance sheet is about their treatment: in fact, data are not available in a well behaved format (e.g. csv or xls extension), consequently in most cases it has required manual data collection.

Given the laborious procedure in order to get these data, Sinn and Wollmershäuser (2011) adopt an alternative methodology, the same as that used by the ECB itself (2011). ECB explains that an imperfect proxy on Target 2 balances can be calculated on the basis of the IMF's International Financial Statistics. It can be obtained as the sum of "net claims on the Eurosystem" minus the "Intra-Eurosystem claims related to banknote issuance". The latter is the difference between "currency issued" (which is an NCB's share in banknote issuance based on its share in the ECB's capital) and "currency put in circulation" (which is the amount of banknotes issued by an NCB).

Sinn and Wollmershäuser used the same methodology for all European countries, except for Germany, Italy and Spain. For these countries, they directly downloaded data from the database of their respective NCB's balance sheets.
The more laborious procedure has been used by the Bank of Italy (Cecioni and Ferrero, 2012), and by the Institute of Empirical Economic Research of

Osnabrück University, who collected data on Target 2 positions directly from NCB's balance sheets.

Observing the data on Target 2 collected under the two procedures, we can note that the methodology used by Sinn and Wollmershäuser underestimates both claims and liabilities of the European countries. However, this discrepancy is recognized by the authors themselves.

Only in September 2015 (while the writing of this thesis was still in progress) the European Central Bank in its *Economic Bulletin*[39] announces the publication in its website[40] of the database of monthly Target 2 positions collected from each National Central Bank's balance sheet. However, for finding Target 2 data from the original data base, we provide a table describing the sources and the exact positions of Target 2 data in every single country's Balance Sheet. Moreover, following the link in the table, Target 2 data can be easily found (see TABLE A.1).

In addition, we provide a table (TABLE A.2) with data on Target 2 positions found according to the sources described in TABLE A.1. It is possible to observe that in most cases data are available since 1999, but Target 2 data are available only starting from 2001 for Greece and starting from 2003 for Ireland. As expected, Target 2 data collected following this procedure are the same as those found in the ECB website. Only for Ireland and Spain, given a little discrepancy between the two sources, we present data collected from the ECB.

It is important to observe that in the ECB website two sets of time series are provided: one contains end-of-month values, the other one monthly averages. The time series with end-of-month values cover all participating NCBs as of May 2008, while the time series with monthly averages starts from January 2001. Moreover, for January 2016 there are only provisional values.

[39] Box entitled "Publication of TARGET balances" Economic Bulletin, ECB, September 2015.
[40] http://sdw.ecb.europa.eu/browse.do?node=9689638

Table A.1: Target 2 sources

Country	***Source***	***Position***	***Link***
Italy	*Bank of Italy Balance Sheet*	- ASSETS: "Intra-Eurosystem Target Claims" - LIABILITIES: "Intra-Eurosystem Target Liabilities"	- For assets: http://bip.bancaditalia.it/4972unix/homebipentry.htm?pvTavola=TAB00100&lang=eng - For liabilities: http://bip.bancaditalia.it/4972unix/homebipentry.htm?pvTavola=TAB00200&lang=eng
Spain	*Economic Bulletin*	Section 8.1.b, Column 21, "Counterparts, Intra ESCB, Target"	http://www.bde.es/bde/en/secciones/informes/boletines/Boletin_economic/anoactual/
Portugal	*Statistical Bulletin*	Table B.2.4, Assets and Liabilities of the Banco de Portugal vis-à-vis nonresidents, Column 8: "liabilities - Monetary and financial institution-Euro area countries"	https://www.bportugal.pt/en-US/Estatisticas/PublicacoesEstatisticas/BolEstatistico/Pages/BoletimEstatistico.aspx
Greece	*Bank of Greece Balance Sheet*	"Claims/Liabilities on MFIs, Other euro area countries"	http://www.bankofgreece.gr/Pages/en/Statistics/monetary/nxi.aspx

Country	***Source***	***Position***	***Link***
Ireland	*Money and Banking Statistics*	Table A.2. (Financial Statement of Bank of Ireland) - "Other Assets/Liabilities"	http://www.centralbank.ie/polstats/stats/cmab/Pages/Money%20and%20Banking.aspx
France	*Bank of France Balance Sheet*	"Liabilities, Other Euro Area Countries – Deposits"	http://www.banque-france.fr/fileadmin/statistiques/gb/base/csv/mi.m.fr.n.n.l20.a.1.u5.0000.z01.m.e.b.x.csv
Germany	*German Bundesbank Time series database*	Time series BBK01.EU8148B - External position of the Bundesbank since the beginning of EMU / Claims within the Eurosystem / TARGET 2 (net)	http://www.bundesbank.de/Navigation/EN/Statistics/Time_series_databases/Macro_economic_time_series/its_details_value_node.html?tsId=BBK01.EU8148B
Netherlands	*Balance sheet of the Nederlandsche Bank*	Monetary presentation, Table 5.1: "Loans/Deposits to/of euro area residents, MFI, of which: Target2 balance"	http://www.statistics.dnb.nl/index.cgi?lang=uk&todo=Bankbedr

Table A.2. – Target 2 balances for seven European Countries
(Monthly data, € millions)

Time	GREECE	ITALY	IRELAND	PORTUGAL	SPAIN	GERMANY	NETHERLANDS
31/01/1999		11.673		-4.458		17.529	10.344
28/02/1999		-14.112		-4.549		12.142	12.976
31/03/1999		-2.811		-7.528		15.735	12.348
30/04/1999		10.452		-4.772		15.572	5.773
31/05/1999		-5.526		-3.940		7.085	-285
30/06/1999		15.880		-5.407		7.916	7.487
31/07/1999		8.416		-7.524	22.786	-5.769	6.091
31/08/1999		-7.040		-9.538	23.464	3.851	4.977
30/09/1999		15.188		-8.903	15.358	22.183	-1.735
31/10/1999		-11.559		-14.653	27.867	7.281	-2.032
30/11/1999		-7.237		-12.398	31.893	26.776	5.583
31/12/1999		-11.293		-6.942	26.167	35.442	3.668
31/01/2000		9.995		-3.780	22.477	9.209	3.059
29/02/2000		2.275		-6.899	23.750	10.637	4.315
31/03/2000		-1.827		-6.408	21.966	2.329	9.356
30/04/2000		-14.688		-4.837	20.976	13.038	2.082
31/05/2000		-21.525		-6.075	24.712	10.466	4.526
30/06/2000		-4.655		-9.747	24.355	28.240	3.156
31/07/2000		2.816		-4.616	23.955	5.887	2.908
31/08/2000		3.680		-6.905	24.482	-5.651	3.333
30/09/2000		-2.858		-5.318	30.173	8.199	4.487
31/10/2000		-6.077		-4.872	33.855	-10.800	1.302
30/11/2000		-14.023		-5.527	38.553	-15.296	3.425
31/12/2000		-17.765		-4.766	42.739	-6.847	16
31/01/2001	-112	-3.715	-2.984	-6.354	40.955	638	2.721
28/02/2001	-3.649	4.249	-4.317	-5.088	32.959	5.714	-4.204
31/03/2001	-6.111	1.998	-3.890	-4.803	23.676	9.159	-2.228
30/04/2001	-8.415	3.552	-3.493	-5.395	24.550	870	6.458
31/05/2001	-10.800	-4.975	-4.743	-5.462	24.456	1.567	8.852
30/06/2001	-11.892	13.581	-4.833	-6.300	25.981	-9.844	6.213
31/07/2001	-13.260	9.709	-4.593	-5.885	26.325	773	-6.418
31/08/2001	-9.826	6.382	-5.563	-5.221	25.268	5.337	-4.833
30/09/2001	-10.187	1.651	-6.579	-5.877	26.825	3.726	3.573
31/10/2001	-9.038	-764	-5.979	-6.801	28.529	6.149	-3.934

Time	GREECE	ITALY	IRELAND	PORTUGAL	SPAIN	GERMANY	NETHERLANDS
30/11/2001	-9.490	-331	-2.981	-6.512	27.644	-250	1.010
31/12/2001	-8.092	10.707	-3.614	-4.989	23.439	-30.852	-1.823
31/01/2002	-12.609	11.703	-5.031	-6.177	26.614	-13.059	1.885
28/02/2002	-12.494	7.194	-5.189	-6.437	20.925	-14.617	4.214
31/03/2002	-12.294	6.241	-5.778	-7.432	21.226	-12.419	4.061
30/04/2002	-12.935	-2.820	-6.157	-6.552	22.882	-1.624	6.252
31/05/2002	-13.072	-4.564	-5.304	-6.311	23.692	-4.837	-97
30/06/2002	-13.887	6.698	-5.352	-7.152	23.721	-12.230	-2.485
31/07/2002	-16.293	8.338	-4.149	-6.396	19.849	3.690	-2.931
31/08/2002	-15.125	1.465	-3.510	-6.758	20.029	9.436	-1.171
30/09/2002	-15.939	-3.257	-3.225	-8.045	21.636	6.172	-1.534
31/10/2002	-16.716	-4.638	-2.502	-5.670	24.127	11.527	-5.017
30/11/2002	-17.049	650	-3.079	-6.971	23.634	7.223	-657
31/12/2002	-17.411	-2.173	-1.385	-5.784	22.660	4.817	-3.888
31/01/2003	-18.836	9.370	-4.238	-7.075	20.939	-1.229	-8.085
28/02/2003	-18.508	12.674	-5.020	-7.218	20.511	-2.465	-6.710
31/03/2003	-16.924	12.507	-5.068	-7.536	20.803	1.385	-6.596
30/04/2003	-15.810	3.720	-6.791	-8.235	23.939	30	-5.457
31/05/2003	-15.566	8.344	-5.567	-8.591	24.442	-22.683	13.878
30/06/2003	-16.251	17.750	-4.660	-7.664	25.645	-19.130	5.733
31/07/2003	-16.030	14.118	-7.128	-8.087	23.541	-2.757	1.057
31/08/2003	-14.015	12.081	-9.201	-8.370	11.568	125	341
30/09/2003	-15.605	14.968	-8.980	-6.215	15.599	-3.565	-1.345
31/10/2003	-17.881	-1.572	-9.534	-8.077	17.669	18.327	-4.115
30/11/2003	-18.175	8.091	-7.858	-8.871	21.156	3.274	-1.411
31/12/2003	-15.353	-1.943	-6.879	-830	16.766	4.478	-974
31/01/2004	-16.473	19.715	-8.714	-7.543	16.088	-734	-4.731
29/02/2004	-15.467	23.477	-6.754	-8.218	15.961	-1.728	363
31/03/2004	-13.892	15.555	-7.268	-8.778	16.682	11.112	-1.290
30/04/2004	-13.714	13.047	-6.546	-9.316	20.115	10.265	-6.220
31/05/2004	-14.356	12.516	-6.636	-9.508	23.470	-302	1.866
30/06/2004	-16.032	31.579	-4.715	-9.847	24.367	-20.892	1.116
31/07/2004	-14.406	24.600	-3.639	-9.715	26.029	-18.950	1.752
31/08/2004	-13.390	25.161	-2.946	-9.324	22.733	-3.466	794
30/09/2004	-10.534	21.946	-3.315	-10.725	18.003	10.483	-3.867
31/10/2004	-11.890	13.375	-4.488	-9.958	23.012	-12.200	-1.265
30/11/2004	-12.605	15.398	-3.894	-11.046	26.391	-1.708	4.122

Time	GREECE	ITALY	IRELAND	PORTUGAL	SPAIN	GERMANY	NETHERLANDS
31/12/2004	-6.546	7.346	-3.360	-7.847	25.025	8.014	-3.594
31/01/2005	-13.959	28.996	-5.495	-11.875	24.869	7.386	-6.544
28/02/2005	-14.809	40.708	-3.400	-14.041	25.560	-11.132	-3.049
31/03/2005	-14.689	29.675	-3.438	-13.289	22.619	12.627	-3.268
30/04/2005	-12.025	33.946	-4.789	-13.631	16.576	-159	-4.976
31/05/2005	-13.511	18.088	-5.185	-13.538	16.757	16.510	4.413
30/06/2005	-10.855	46.103	-5.336	-13.529	18.552	-2.861	433
31/07/2005	-10.711	41.484	-6.465	-12.954	13.372	-649	5.542
31/08/2005	-11.918	28.539	-6.982	-12.362	10.398	19.457	-1.454
30/09/2005	-6.988	20.780	-7.101	-12.895	10.124	6.742	2.598
31/10/2005	-11.991	23.302	-7.588	-14.002	14.554	14.838	3.567
30/11/2005	-12.712	18.806	-6.373	-12.328	12.652	28.481	9.669
31/12/2005	-7.217	7.662	-3.919	-12.082	12.806	30.079	-976
31/01/2006	-11.231	35.264	-5.375	-14.752	13.117	1.560	1.934
28/02/2006	-13.336	32.144	-2.121	-15.582	17.199	7.505	2.110
31/03/2006	-10.799	23.050	-2.763	-15.491	18.756	2.598	2.834
30/04/2006	-13.025	18.907	-2.680	-15.251	21.598	-3.339	10.628
31/05/2006	-12.618	13.515	-5.159	-13.965	24.623	17.005	17.045
30/06/2006	-8.122	47.569	-5.652	-15.574	29.058	-11.820	6.250
31/07/2006	-11.676	47.059	-7.197	-13.666	29.170	-1.092	2.814
31/08/2006	-13.091	36.084	-8.000	-12.562	28.013	23.995	1.255
30/09/2006	-8.872	29.563	-10.233	-8.221	24.925	15.310	3.978
31/10/2006	-11.152	33.536	-10.291	-8.890	25.416	10.469	-994
30/11/2006	-12.254	27.033	-8.688	-9.129	25.443	14.601	2.804
31/12/2006	-8.184	22.841	-6.126	-6.626	23.622	5.399	9.931
31/01/2007	-12.059	27.113	-5.803	-8.630	21.929	13.000	3.288
28/02/2007	-11.647	27.459	-2.312	-8.942	21.757	18.704	2.702
31/03/2007	-7.386	18.439	-1.549	-8.199	20.944	20.940	3.099
30/04/2007	-8.863	13.730	99	-9.382	26.000	9.084	5.146
31/05/2007	-9.140	14.052	8	-9.436	33.132	25.224	-6.202
30/06/2007	-7.671	32.828	-1.600	-9.219	34.802	17.598	-5.838
31/07/2007	-8.883	36.396	-990	-7.352	27.106	20.588	-9.782
31/08/2007	-10.588	30.450	2.557	-9.434	24.045	44.130	-7.415
30/09/2007	-9.771	26.157	4.691	-10.141	17.216	47.462	-762
31/10/2007	-10.117	38.202	6.373	-11.136	5.911	65.455	-16.201
30/11/2007	-10.543	27.716	7.216	-11.707	-291	72.607	-15.467
31/12/2007	-10.797	35.755	441	-6.206	-4.467	71.046	-21.949

Time	GREECE	ITALY	IRELAND	PORTUGAL	SPAIN	GERMANY	NETHERLANDS
31/01/2008	-4.270	39.564	-5.181	-11.836	-5.449	93.688	-1.469
29/02/2008	-2.137	37.479	-498	-11.431	-7.985	109.906	-1.568
31/03/2008	-7.409	53.443	-338	-10.710	-6.426	87.014	6.872
30/04/2008	-12.601	56.465	-2.028	-12.298	-12.728	89.665	1.869
31/05/2008	-19.258	29.858	-2.789	-13.285	-13.950	91.759	10.213
30/06/2008	-21.796	48.879	-4.986	-12.606	-11.894	95.535	21.912
31/07/2008	-17.524	58.404	-13.491	-13.371	-19.917	94.241	13.329
31/08/2008	-15.552	67.574	-15.055	-16.503	-25.539	108.085	7.273
30/09/2008	-14.497	39.720	-25.833	-14.221	-23.970	99.958	10.416
31/10/2008	-21.272	255.816	-42.265	-17.153	-18.330	70.196	7.088
30/11/2008	-26.018	26.800	-45.093	-18.670	-26.461	93.377	5.097
31/12/2008	-35.348	22.919	-44.364	-18.953	-34.989	115.295	-18.786
31/01/2009	-35.311	50.650	-44.751	-15.974	-32.550	133.692	-11.971
28/02/2009	-31.968	54.902	-64.050	-16.378	-37.522	147.304	-11.798
31/03/2009	-36.852	70.016	-92.054	-17.169	-32.140	151.681	-23.477
30/04/2009	-46.775	67.300	-98.158	-16.070	-25.762	151.774	-8.309
31/05/2009	-38.535	72.635	-98.332	-15.926	-26.939	139.664	-8.674
30/06/2009	-44.722	73.591	-98.794	-13.662	-35.260	171.052	-1.469
31/07/2009	-38.129	66.968	-72.579	-17.892	-39.275	161.956	-958
31/08/2009	-36.093	61.438	-56.360	-19.636	-45.375	159.718	14.559
30/09/2009	-38.655	82.168	-50.264	-20.292	-47.376	179.035	2.104
31/10/2009	-40.832	81.503	-41.106	-22.210	-41.217	154.346	13.246
30/11/2009	-37.870	59.995	-36.567	-23.517	-29.554	160.780	11.101
31/12/2009	-49.036	54.753	-53.519	-23.436	-41.135	177.723	15.429
31/01/2010	-48.233	77.579	-51.575	-22.176	-37.405	177.760	14.480
28/02/2010	-53.455	62.104	-47.040	-28.636	-41.703	197.483	14.952
31/03/2010	-60.919	48.702	-38.063	-27.712	-43.305	207.418	13.636
30/04/2010	-82.604	43.915	-41.816	-33.791	-35.739	213.678	17.713
31/05/2010	-79.500	35.073	-58.472	-52.814	-78.141	255.465	38.988
30/06/2010	-84.712	21.839	-65.666	-58.087	-105.618	249.417	33.182
31/07/2010	-90.783	33.601	-53.636	-68.158	-102.066	271.225	35.479
31/08/2010	-94.044	28.136	-65.159	-68.860	-84.097	282.599	46.192
30/09/2010	-87.868	15.459	-103.698	-61.293	-59.131	309.980	32.543
31/10/2010	-91.573	29.943	-116.649	-60.513	-43.038	286.664	28.146
30/11/2010	-93.537	30.524	-138.507	-58.620	-42.956	299.445	28.584
31/12/2010	-87.088	3.410	-145.185	-59.912	-50.923	325.556	40.500
31/01/2011	-87.309	27.700	-134.150	-62.189	-48.086	302.630	34.419

Time	GREECE	ITALY	IRELAND	PORTUGAL	SPAIN	GERMANY	NETHERLANDS
28/02/2011	-85.860	19.634	-140.993	-62.212	-42.966	320.710	29.146
31/03/2011	-76.455	823	-139.624	-60.316	-40.028	323.229	25.392
30/04/2011	-83.037	12.018	-132.674	-68.844	-37.533	309.107	38.408
31/05/2011	-91.350	13.866	-125.680	-66.538	-53.063	323.641	39.838
30/06/2011	-96.802	5.997	-128.649	-57.259	-45.361	336.541	20.541
31/07/2011	-91.202	-16.312	-126.586	-61.945	-56.671	343.662	27.802
31/08/2011	-97.450	-57.469	-119.204	-62.536	-78.224	390.424	64.750
30/09/2011	-100.754	-103.512	-123.321	-57.235	-88.620	449.613	88.705
31/10/2011	-105.688	-88.598	-117.072	-58.732	-108.488	465.518	110.093
30/11/2011	-109.315	-147.535	-120.322	-61.719	-137.178	495.164	143.058
31/12/2011	-104.750	-191.379	-120.434	-60.923	-174.979	463.134	152.783
31/01/2012	-107.427	-180.130	-106.283	-62.646	-183.786	498.131	168.883
29/02/2012	-107.267	-194.082	-96.733	-63.978	-211.425	547.047	143.766
31/03/2012	-103.736	-270.408	-96.001	-74.538	-276.033	615.592	154.905
30/04/2012	-98.047	-279.379	-98.688	-68.810	-302.841	644.182	136.050
31/05/2012	-101.554	-274.626	-97.204	-62.690	-345.106	698.567	142.511
30/06/2012	-105.987	-274.291	-100.092	-74.324	-408.420	728.567	123.299
31/07/2012	-105.044	-280.093	-94.064	-72.515	-423.272	727.206	130.420
31/08/2012	-107.876	-289.320	-91.409	-72.027	-434.428	751.449	124.968
30/09/2012	-107.840	-280.768	-84.413	-71.723	-400.141	695.458	119.481
31/10/2012	-108.396	-266.742	-84.845	-69.601	-380.437	719.352	117.921
30/11/2012	-108.460	-246.955	-83.046	-66.609	-366.048	715.124	118.630
31/12/2012	-98.355	-255.102	-79.259	-66.026	-337.344	655.670	120.772
31/01/2013	-87.022	-228.163	-70.867	-62.923	-309.414	616.937	124.930
28/02/2013	-78.140	-256.397	-67.923	-63.369	-297.128	612.572	121.103
31/03/2013	-71.400	-242.939	-60.060	-63.225	-296.902	588.722	82.766
30/04/2013	-73.546	-242.311	-67.854	-66.271	-289.121	607.866	85.660
31/05/2013	-65.451	-228.910	-61.596	-63.186	-284.901	589.189	75.645
30/06/2013	-59.307	-222.986	-57.003	-62.947	-282.599	575.477	74.225
31/07/2013	-53.329	-211.123	-55.463	-64.745	-281.424	576.469	61.684
31/08/2013	-53.840	-233.786	-57.040	-64.398	-281.588	573.628	53.439
30/09/2013	-52.381	-233.786	-56.598	-68.364	-268.525	570.368	62.880
31/10/2013	-49.665	-210.894	-57.371	-69.564	-264.184	561.497	63.006
30/11/2013	-48.429	-215.477	-54.059	-61.185	-241.256	544.488	59.106
31/12/2013	-51.116	-229.128	-55.117	-59.565	-213.685	510.201	46.115
31/01/2014	-51.489	-199.411	-51.886	-59.070	-221.096	500.357	44.157
28/02/2014	-51.929	-190.217	-50.516	-55.989	-232.098	499.232	41.633

Time	GREECE	ITALY	IRELAND	PORTUGAL	SPAIN	GERMANY	NETHERLANDS
31/03/2014	-46.145	-195.480	-46.062	-58.360	-227.049	470.075	41.407
30/04/2014	-39.156	-171.193	-44.261	-56.583	-230.521	477.689	31.286
31/05/2014	-35.996	-168.338	-34.237	-57.374	-224.837	466.862	29.510
30/06/2014	-30.496	-149.402	-29.157	-56.027	-209.470	461.817	8.891
31/07/2014	-31.620	-130.295	-27.178	-59.912	-216.437	443.548	1.655
31/08/2014	-36.420	-160.597	-25.195	-58.114	-213.302	464.303	4.592
30/09/2014	-34.636	-197.410	-23.422	-53.996	-211.653	479.920	-901
31/10/2014	-38.462	-181.919	-22.134	-59.429	-201.470	468.708	-3.985
30/11/2014	-41.709	-195.458	-13.507	-56.658	-192.275	467.866	4.964
31/12/2014	-49.319	-208.945	-22.736	-54.591	-189.865	460.846	19.412
31/01/2015	-75.994	-164.474	-15.172	-47.504	-191.917	515.266	-7.127
28/02/2015	-91.157	-164.565	-14.793	-44.035	-192.417	513.366	8.010
31/03/2015	-96.428	-191.510	-18.463	-55.358	-212.377	531.701	3.122
30/04/2015	-98.770	-177.232	-13.531	-56.927	-207.439	532.193	19.090
31/05/2015	-100.316	-163.994	-9.667	-55.744	-212.015	526.191	40.794
30/06/2015	-107.702	-188.630	-11.183	-59.433	-227.487	531.074	33.140
31/07/2015	-106.127	-195.221	-8.311	-59.053	-227.689	542.585	41.866
31/08/2015	-101.645	-214.593	-5.896	-59.706	-229.663	561.284	54.233
30/09/2015	-104.920	-235.655	-2.981	-56.382	-228.279	555.175	53.070
31/10/2015	-103.047	-223.031	-2.327	-59.854	-227.156	562.818	41.650
30/11/2015	-97.255	-229.595	-4.139	-58.957	-241.015	592.518	49.856
31/12/2015	-94.387	-248.859	-3.037	-61.687	-254.115	584.210	54.727
31/01/2016*	-94.615	-251.264	-710	-60.460	-248.258	587.000	60.627

*Provisional values

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