

TARGET2 and Central Bank Balance Sheets

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November 19, 2012

Abstract: The Eurosystem's TARGET2 payments system has featured heavily in academic and popular discussions in recent years. Much of this commentary had described the system as being responsible for a "secret bailout" of Europe's periphery which has led to huge credit risks for the Bundesbank should the euro break up. This paper discusses the TARGET2 system, focusing in particular on how it impacts the balance sheets of the central banks that participate in the system. It concludes that the TARGET2 is largely innocent of the charges that have been levelled against it. Arguments that TARGET2 facilitated a bailout of the periphery or that the system is playing a key role in facilitating peripheral current account deficits turn out to be wide of the mark. Risks to Germany due to the loss of TARGET2-related revenues for the Bundesbank after a euro break-up turn out to be relatively small because these revenues are limited and because there are potentially large gains from new seigniorage revenues in this scenario. Many criticisms involving TARGET2 turn out, on closer examination, to be criticisms of the ECB's core principle of treating credit institutions across the euro area in an equal manner. Proposals that the ECB adopt procedures that discriminate between banks in different countries (or that restrict the operation of payments systems in certain countries) are likely to be incompatible with the continuation of the euro as a common currency.

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1. Introduction

One of the key challenges facing macroeconomists these days is understanding the roles played by central banks in a world where their involvement in the economy has moved far beyond the limited set of tasks prescribed for them by standard pre-crisis macro theory. A good illustration of these challenges is the ongoing debate in recent years about the euro area's TARGET2 real-time electronic payments system and its implications for central bank balance sheets.

The accounting system used by the Eurosystem for processing payments through TARGET2 has resulted in large claims and liabilities being recorded on the balance sheets of various euro area national central banks. In particular, the Bundesbank's balance sheet has changed dramatically as it has built up a so-called "Intra-Eurosystem" credit of equivalent to about one quarter of German GDP.

The balance sheet changes associated with TARGET2 transfers have provoked a huge outpouring of opinion pieces as well as articles by academics. Many of these contributions have contained provocative language or dire warnings. For instance, Hans-Werner Sinn (2011) has labelled the operation of the TARGET2 system a "secret bailout" of the Eurozone's periphery and has often characterised the system as playing a key role in enabling these economies to run large current account deficits. Another common theme has been the idea that Germany would face a huge bill should there be a break-up of the euro, with Michael Burda (2012), for example, warning that the TARGET2 system has made Germany "a hostage to the monetary union". The English translation of the title of Sinn's recent German-language book on this subject is *The Target Trap: Dangers for our Money and our Children*.

As a result of the perceived problems with the current system, Sinn (2011, 2012b) has proposed a series of policy changes relating to how the Eurosystem deals with the balances generated by TARGET2 operations. Included among these proposals have been restrictions on the operation of the TARGET2 payments system as well as a requirement for annual settlements of the balances generated by this system.

This paper aims to provide a relatively non-technical description of the macroeconomic implications of the TARGET2 system's operations, of the allocation of risks presented by these operations and the various policy issues raised by them. I argue that a number of the contributions relating to TARGET2 have been based upon misunderstandings of important aspects of Eurosystem central bank operations. As a result, some of the common claims about stealth bailouts and enormous risks for Germany are either incorrect or substantially over-egged.

The paper emphasises a number of themes. First, the liabilities incurred by national central banks due to TARGET2 operations are routinely presented as a form of bailout for peripheral Eurozone states. However, the process by which these liabilities are incurred does not change the net asset position of central banks because they either replace existing liabilities or are combined with the addition of new assets. Rather than an external bailout, in practice, the increase in TARGET2 balances reflects the ability of national central banks in the Eurosystem to create money to lend to banks experiencing funding problems and so, if anything, these balances reflect countries "bailing out themselves".

Second, the large changes in Intra-Eurosystem balances in recent years are the result of capital flight from the periphery rather than the accumulation of current account deficits. These balances have evolved due to the monetary policy strategy agreed by the ECB's Governing Council and because of the free movement of capital guaranteed by the European Union rather than because of any special features of the TARGET2 payments system. Indeed, the paper describes how large changes in Intra-Eurosystem balances would have occurred due to capital flight even if electronic bank transfers via TARGET2 had been shut down and only cash payments allowed.

Third, the increasing risks for Germany associated with the Bundesbank's TARGET2 balance have been offset to a large extent by a significant decline in private German bank exposures to the periphery. Furthermore, in the event of a full uncooperative euro breakup, the underlying costs to German taxpayers will be far lower than the regularly-cited full value of the TARGET2 balance. This is partly because the rest of the Eurosystem has a large claim of about €200 billion on Germany relating to banknote issuance and partly because the seigniorage powers of a post-breakup Bundesbank are likely to be considerably higher than at present.

Finally, I argue that the Eurosystem should consider proposals for annual settlement of TARGET2 balances with settlement taking place using assets acquired during monetary policy operations. Such a settlement procedure would see TARGET2 balances reset to zero each year. While this proposal would imply a change in the Eurosystem's accounting procedures for dealing with balances owed between its members, it would not change the daily operations of the TARGET2 payments system nor would it change the nature of risk-sharing on monetary policy operations currently in place for euro member states.

In contrast, Hans-Werner Sinn's proposal to limit TARGET2 balances (Sinn, 2011) would imply an effective end to the euro as a common currency while his proposal for annual settlement of balances using state-owned real estate or senior rights to future tax revenue (Sinn, 2012b) would represent a significant change to current risk-sharing arrangements in relation to monetary policy operations and would likely undermine the operation of a common monetary policy. Neither of these proposals are likely to be consistent with a continuation of the euro as a common currency.

The contents of the rest of the paper are as follows. Section 2 provides a description of how the TARGET2 payments system operates and how it impacts the balance sheets of Eurosystem central banks. Section 3 presents evidence on the evolution over time of the so-called Intra-Eurosystem balances that are influenced by the operations of the TARGET2 system. It discusses various interpretations of the balance sheet entries relating to TARGET2 and describes the relationship between these entries and current account balances. Section 4 provides an assessment of the risk exposures associated with the balances generated by TARGET2 transfers, focusing on various scenarios ranging from sovereign defaults, to a single country exit to a complete break-up. Section 5 discusses proposals for new settlement procedures for TARGET2 balances.

2. TARGET2 and National Central Bank Balance Sheets

Like the Federal Reserve System, the euro area's system of central banks (known as the Eurosystem) has a hub-and-spoke structure with a centralised body (the ECB) working together with a group of decentralised district banks (the pre-existing national central banks or NCBs). There are some similarities in how tasks are assigned in these two systems but there are also important differences.

Like the Fed's district banks, the NCBs are charged with printing currency and operating payments systems. However, unlike the Fed, the legal statute underlying the Eurosystem requires that "to the extent deemed possible and appropriate" tasks should be decentralised to the existing NCBs.² This means that the NCBs undertake monetary policy operations, as directed by ECB policy and get to keep the assets acquired via these operations. Despite monetary union, the NCBs retain their distinct national identities and in many cases have additional powers relating to financial regulation or financial stability. Importantly, the NCBs, while required to be independent from national governments, are still expected to hand over their surplus profits to the fiscal authorities and are examined each year by national government auditors.

This section presents a basic description of central bank balance sheets. It then discusses the TARGET2 payments system and how these payments impact the balance sheets of the NCBs.

2.1. *Central Bank Balance Sheets*

Unlike Milton Friedman's helicopter drop story, central banks create money either by issuing loans to banks or via open market operations to purchase financial assets. This means that central banks build up large stocks of assets over time.

At any point in time, the value of a central bank's assets may exceed the amount of money they have created when acquiring these assets. This may be because acquired assets have risen in value, because some of the profits generated from the bank's assets have been retained rather than passed over to governments or because the bank may have received assets independent of money creation.

To communicate their financial position to the public, central banks release a balance sheet that summarises the assets they own and the money they have issued. In a stylized example, such as the one below, assets are shown on the left-hand side while the right-hand side lists the amount of money that has been created as "Liabilities". The difference between the current value of assets and liabilities is labelled "Capital".

² See http://www.ecb.int/ecb/legal/pdf/en_statute_2.pdf

Table 1: Stylized Central Bank Balance Sheet

<i>Assets</i>	<i>Liabilities and Capital</i>
Assets acquired by making loans and buying securities	Money created by making loans and buying securities
	Central Bank Capital

It is worth emphasising that a central bank's "liabilities" are quite different from the liabilities of a private bank or indeed any private business. When a central bank operates a non-fiat currency regime such as the Gold Standard, it agrees to have sufficient "hard assets" of a particular kind so that it can swap its currency for these hard assets at an agreed conversion rate. However, it is ultimately the choice of the central bank to run such a regime and there is no inherent requirement that a central bank be willing to swap its currency for a pre-specified amount of gold or any other hard asset. In modern fiat currency system, there is no promise to redeem notes for any particular amount of gold or other assets. The "liabilities" are essentially notional in this case.

While the idea of creating money creation conjures up images of printing of bank notes for most people, the reality is that most money creation in modern economies takes the form of the addition of credits to a bank's reserve account. These reserve accounts can be used by banks to make orders for cash to be used in ATM machines, which in turn can be withdrawn by the public. For this reason, changes in the amount of currency in circulation generally does not affect the total amount of central bank liabilities because (in terms of the slightly less stylised balance sheet below) these changes just produce a reallocation of central bank liabilities away from reserve accounts and towards currency in circulation.

Table 2: Slightly Less Stylized Central Bank Balance Sheet

<i>Assets</i>	<i>Liabilities and Capital</i>
Assets acquired by making loans and buying securities	Reserve Accounts
	Currency in circulation
	Central Bank Capital

2.2. TARGET2

All commercial banks in the euro area are legally required to maintain a reserve account with their national central bank. This makes the Eurosystem the ideal body to handle large payments between banks because it can apply credits and debits to these reserve accounts to settle payments.

TARGET2 is the second version of the Eurosystem's real-time settlement system for payments between banks.³ ECB (2012) reports that the system handles over 90% of the total amount large-value euro payments. In 2011, the system handled an average of 348,505 daily transactions in 2011 with an average daily value of €2.4 trillion, equivalent to over one quarter of annual Euro-area GDP. TARGET2 payment transactions are settled one by one on a continuous basis in "central bank money" i.e. credits and debits to reserve accounts.

Because reserve accounts are recorded as liabilities on central bank balance sheets, transfers implemented by TARGET2 impact these balance sheets. For example, consider the case in which Mr. A who has a bank account with Santander in Spain requests that €100 be transferred to Mr. B who has an account with Commerzbank in Germany.

Santander records a €100 reduction in its liabilities to Mr. A and also records a €100 reduction in its assets, as it informs the Banco de España to deduct this amount from its reserve account.

Commerzbank sees its assets increase by €100 as its reserve account with the Bundesbank is credited and its liabilities increase by €100 as it adjusts Mr. B's deposit account upwards by this amount.

If this is all that happens, then the net capital positions of the Banco de España and Bundesbank will have changed as a result of this transaction. The Banco de España would have the same asset position as before but its liabilities will be lower by €100. In contrast, the Bundesbank would have higher liabilities and unchanged assets.

Changes of this type could also affect the net profits made by these central banks. Central banks pay interest on various types of liabilities. Specifically, Eurosystem central banks pay interest on reserves up to the legal reserve requirement and they can also pay interest on money lodged in its deposit facility. Thus, without some compensating adjustments, Mr. A's transfer of money to Mr. B could result in higher income for the Banco de España (meaning higher dividends for the Spanish government) and lower income for the Bundesbank (meaning lower dividends for the German government).

Because TARGET2 is intended to facilitate private sector payments without causing any gains or losses to the various public organisations involved, it is necessary to offset these changes in the net capital position of the central banks. One method that would achieve this outcome would be for the Banco de España to transfer some financial assets to the Bundesbank, so that its lower liabilities are matched by a decline in assets and the Bundesbank's increased liabilities are matched by an increase in its net financial assets.

³ TARGET stands for Trans-European Automated Real-time Gross settlement Express Transfer system.

A complication with a procedure of this type is it would require a protocol on which kinds of assets could be used in these transfers. Perhaps for this reason, the Eurosystem does not implement direct asset transfers. Instead, the system works by providing NCBs with credits and debits in the form of a bilateral position vis-à-vis the ECB, usually recorded on the balance sheets as either “Intra-Eurosystem Claims” or “Intra-Eurosystem Assets”. Specifically, at the end of each day, all TARGET2 transactions are aggregated and netted out and each NCB has its position vis-à-vis the ECB adjusted.

This means that Eurosystem NCBs either have balance sheets that look like this.

Table 3: Stylised Balance Sheet of Central Bank with Negative Intra-Eurosystem Position

<i>Assets</i>	<i>Liabilities</i>
Assets acquired by making loans and buying securities	Central Bank Capital
	Money created by making loans and buying securities
	<i>Of which:</i>
	Reserve Accounts
	Bank Notes
	Intra-Eurosystem Liabilities

Or else they look like this

Table 4: Stylised Balance Sheet of Central Bank with Positive Intra-Eurosystem Position

<i>Assets</i>	<i>Liabilities</i>
Assets acquired by making loans and buying securities	Central Bank Capital
Intra Eurosystem Assets	Money created by making loans and buying securities plus money created elsewhere and transferred into the country.
	<i>Of which:</i>
	Reserve Accounts
	Bank Notes

Figure 1 summarises the full set of transactions that occurs when Mr. A transfers money to Mr. B, using a flow chart while Table 5 reports how each participant's balance sheet has changed. Crucially, the only participants who have had a change in their net asset position are Mr. A (who is €100 poorer) and Mr. B (who is €100 better off).

While this example provides a description of the mechanics of TARGET2, it is worth describing a slightly more complicated transaction that fits better with recent developments. The transaction just described could be occurring because Mr. B has provided Mr. A with goods and services. More recently, however, we have seen money moving out of countries like Spain due to deposit flight or the unwillingness of bond market investors to continue financing Spanish banks due to fears of bank failure or a Spanish exit from the euro. In many cases, Mr. A and Mr. B have been the same entity, with money simply being moved from a person's bank account in one country to the same person's account in another country.

The magnitude of the loss of funding for banks in Spain, Italy, Ireland and elsewhere has made it essentially impossible for banks in these countries to honour these liability withdrawals without seeking replacement funding from their central bank. Without such replacement funding, it is likely that banks in Spain and elsewhere would have had to engage in asset fire-sales that would have damaged their solvency and perhaps lead to large losses for bank creditors.

Table 6 thus describes the alternative set of balance sheet changes that occur when Santander have to obtain a loan from the Banco de España to come up with the funds to honour Mr. A's request to have his money moved to Germany. Again, the only people who experience a change in net asset position are Mr. A and Mr. B. However, instead of having its balance sheet shrink, Santander's total amount of assets remains unchanged. And instead of seeing the size of its balance sheet remain unchanged, the Banco de España sees its balance sheet expand as it takes on a new asset (its loan to Santander) to match its new Intra-Eurosystem liability.⁴

⁴ Bindseil and König (2011) provide a more detailed examples of how balance sheets are altered by transfers via TARGET2.

Figure 1: Example of a Payment Going from Spain to Germany

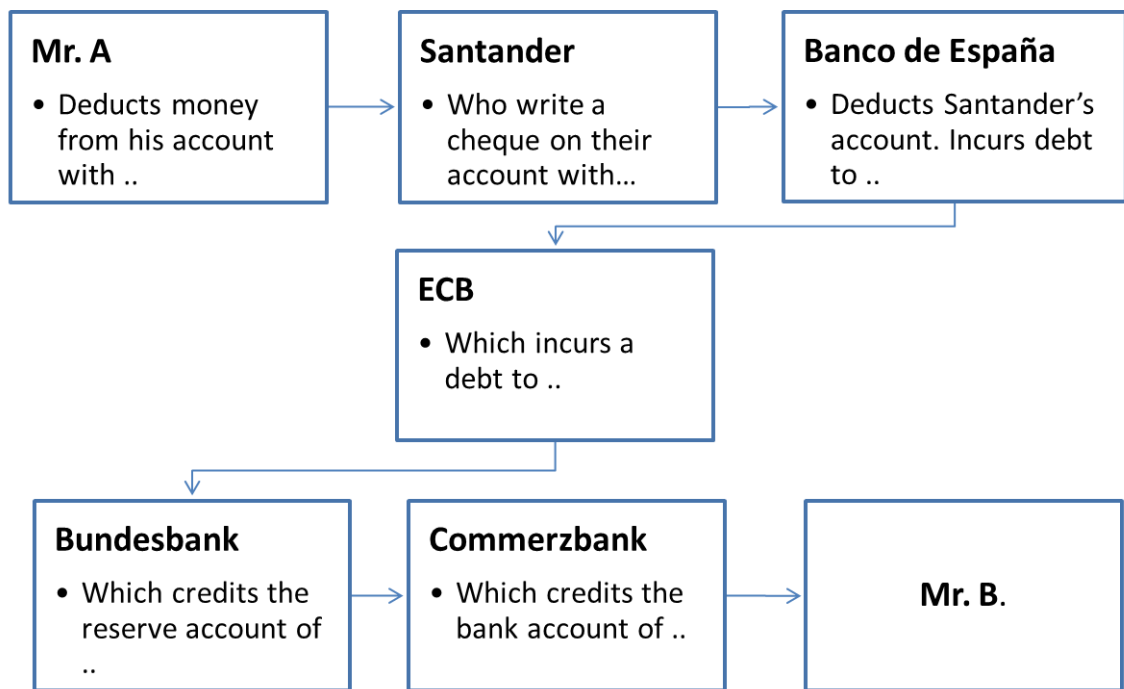


Table 5: Impact of TARGET2 Transfer on Balance Sheets

Mr A	<ul style="list-style-type: none"> • Reduced assets of €100
Santander	<ul style="list-style-type: none"> • Reduced liabilities to Mr A of €100 • Reduced reserve assets at Banco de España of €100
Banco de España	<ul style="list-style-type: none"> • Reduced Liabilities to Santander of €100 • Increased Intra-Eurosystem liabilities of €100
Bundesbank	<ul style="list-style-type: none"> • Increased Intra-Eurosystem assets of €100 • Increased reserve liabilities to Commerzbank of €100
Commerzbank	<ul style="list-style-type: none"> • Increased reserve assets at Bundesbank of €100. • Increased deposit liability to Mr B of €100.
Mr B	<ul style="list-style-type: none"> • Increased assets of €100

Table 6: Example of Payment Going to Germany from Spain Using Central Bank Financing

Mr A	<ul style="list-style-type: none"> • Reduced assets of €100
Santander	<ul style="list-style-type: none"> • Reduced liabilities to Mr A of €100 • Unchanged reserve assets at Banco de España • Increased liabilities to Banco de España of €100
Banco de España	<ul style="list-style-type: none"> • Increased assets via €100 loan to Santander. • Increased Intra-Eurosystem liabilities of €100
Bundesbank	<ul style="list-style-type: none"> • Increased Intra-Eurosystem assets of €100 • Increased reserve liabilities to Commerzbank of €100
Commerzbank	<ul style="list-style-type: none"> • Increased reserve assets of €100. • Increased deposit liability to Mr B of €100.
Mr B	<ul style="list-style-type: none"> • Increased assets of €100

2.3. Characteristics of TARGET2 Balances

The Intra-Eurosystem assets and liabilities generated by TARGET2 have no maturity associated with them: There is no date set by which these claims need to be settled. Rather the TARGET2 liabilities are honoured by making interest payments that are charged at the same rate the ECB charges to banks in its Main Refinancing Operation (MRO). These interest payments are collected by the ECB and redistributed proportionately to those central banks that have positive TARGET2 claims.

The receipt of these interest payments ensures that central banks that incur new reserve account liabilities do not lose money because of the interest paid on these reserves. Indeed, because the Eurosystem only compensates reserve balances (at the MRO rate) up to the legally required amount and compensates funds in its deposit facility at a rate below the MRO rate (zero at the time of writing) NCBs that increase their TARGET2 claims due to deposit inflows will receive a small boost to their profitability.

Finally, it should be emphasised that TARGET2 claims do not have any collateral associated with them. They are a claim on the ECB, which has a legal right to create euros and so collateral is not considered necessary. Thus, there is no basis for the position of Steinkamp and Westermann (2012) that TARGET2 liabilities are collateralised by government bonds that banks pledge to NCBs and thus these liabilities represent a form of “senior lending” to governments, equivalent to IMF loans.⁵

⁵ Steinkamp and Westermann (2012) state “Through regular open market operations, a part of government bonds ends up as collateral on the national central banks’ balance sheets. This collateral is likely to be

3. The Evolution of TARGET2 Balances

Having described how TARGET2 operates and how these operations affect the balance sheets of the central banks participating in the Eurosystem, this section outlines how these balance sheets have changed in recent years and then discusses various interpretations of these balances.

3.1. Data on TARGET2 Balances

For figures that have been so widely discussed in recent years, the TARGET2 balances of Eurosystem central banks are surprisingly difficult to track down. They are not reported in the ECB's weekly or monthly statistical releases. In fact, the only way to obtain consistent point-in-time balances for all seventeen NCBs is to go to the end-of-year financial accounts provided in annual reports. Even then, the specific TARGET2 figures are often subsumed amongst other Intra-Eurosystem assets or liabilities in the reported balance sheets and may or may not be reported separately in the accompanying notes.

These other Intra-Eurosystem assets and liabilities have received very little attention in the debate about TARGET2 but they are relevant to these debates. This is because the winners and losers from an un-cooperative euro breakup would be determined not just by TARGET2 balances but by a number of factors:

- *Banknote-Related Claims:* The printing of banknotes is a highly profitable business. The Eurosystem enforces rules that sees these profits shared among its members according to a strict formula. The "banknote allocation key" provides the ECB with an 8 percent share of banknote revenue with the remaining 92 percent allocated to the NCBs in proportion to their ECB capital subscription key (i.e. the fraction of the ECB's capital that they have provided). As with TARGET2 transfers, the re-allocation of revenues associated with banknote production takes the form of interest-bearing claims and liabilities rather than settlement via exchanging of assets.⁶
- *Foreign Exchange:* After the introduction of EMU, the NCBs transferred large amounts of foreign exchange reserves to the ECB. These are recorded as Intra-Eurosystem assets by the NCBs and as Intra-Eurosystem liabilities by the ECB and are also remunerated at the MRO rate.
- *Ownership of the ECB:* The NCB's each record their ECB capital contribution as an asset.

considered senior lending by the markets, once the new money created is transferred abroad, and the collateral given to the NCB is then used as collateral of the Target claims of another country." These statements misrepresent the role of collateral pledged by banks to NCBs. Banks pledging government bonds to NCBs as collateral for loans retain beneficial ownership and continue to be counted on the balance sheets of these banks. There is no mechanism by which a central bank could be required to hand over these bonds to settle TARGET2 claims.

⁶ See ECB (2011) for a description of the rules related to sharing of revenues related to banknote issuance. See also Whittaker (2011) for more details on this topic.

Table 7 provides a full description of the Intra-Eurosystem positions of the various NCBs as well as the ECB for the years 2006, 2010 and 2011 with all figures taken directly from the annual financial accounts. The year 2006 is chosen as a pre-crisis benchmark for these positions.

TARGET2 balances among participating central banks sum to zero. The TARGET2 balances of the NCBs and ECB summed to zero in 2006 but were non-zero in later years because countries outside EMU joined TARGET2, using it to process euro-denominated payments.⁷ The various other Intra-Eurosystem balances in each year sum to slightly more than zero because of the positive claims for each NCB on the ECB's capital. In 2006, the variation in these other Intra-Eurosystem balances was larger than for the TARGET2 balances, mainly because Germany had a large liability relating to banknote issuance, while France had a large claim relating to this same item.

By the end of 2010, the magnitude of TARGET2 balances had increased substantially in a number of countries, with a positive German claim of €325 billion being offset by liabilities of €145 billion from Ireland, €87 billion from Greece, €60 billion from Portugal and €51 billion from Spain. The balances widened further during 2011, primarily because Spain and Italy began to build up particularly large liabilities while countries such as Luxembourg, Netherlands and Finland joined Germany in further building up large claims.

Higher frequency data for TARGET2 positions and other Intra-Eurosystem liabilities are only available for some countries. For example, the Banque de France publishes a monthly balance sheet as part of its sectoral financial accounts release but the format of this balance sheet differs from the format of the accounts published in the annual report, so only crude proxies for the TARGET2 positions are available for this and other countries. Thankfully, the Bundesbank and each of the so-called GIIPS countries (Greece, Ireland, Italy, Portugal and Spain) each publish either the TARGET2 balance or figures that are very close to them.

Figure 2 shows monthly developments from January 2010 up to the end of September 2012 for these six countries.⁸ Germany's TARGET2 balance continued to increase for most of 2012 but has stabilised in the couple of months up to September, by which point it stood at €695 billion. At the same time, the Bundesbank's Intra-Eurosystem liabilities relating to excess banknote issuance have also been steadily increasing in recent years. Standing at €192 billion at the end of September 2012, these liabilities represent a significant offset to Bundesbank's TARGET-related liabilities.

The TARGET2 liabilities of the GIIPS countries have increased and then stabilised at different times over the past few years.

⁷ ECB (2012) report that, at present, the central banks from six countries from outside the Eurozone use TARGET2 to process euro-denominated payments: Denmark, Poland, Latvia, Lithuania, Bulgaria and Romania.

⁸ The figures for Spain are an average of monthly balances rather than an end of month balance. The Banco de España publishes an end of month balance sheet but, at the time of writing, does not release a time series of these data or even make historical versions of this balance sheet available. The figures for Ireland are arrived at by making an adjustment to the series "Other Liabilities". This series includes the liabilities related to banknote issuance and I have subtracted off the end-2011 value of these series to arrive at an estimate of the TARGET2 balance.

- The Irish liability, the biggest in the Eurosystem for much of 2010 and 2011, peaked in late 2010 and has gradually declined since, though at €107 billion, this balance is still equivalent to about two-thirds of Irish GDP.
- The Italian TARGET2 balance had been positive as late as June 2011 but then turned into a large liability of €270 billion by March 2012 and has remained at about that level since.
- Spain's TARGET2 liability fluctuated between various values under €100 billion for the period between 2009 and late 2011 and then exploded from November 2011 onwards, reaching a peak of €428 billion in August 2012 and is now by far the largest in the Eurosystem.

Figure 3 shows that, taken together, the TARGET2 liabilities of the GIIPS central banks tracked the increase in the Bundesbank's claim very closely from mid-2010 until mid-2011. Since then, the combined GIIPS balances have increased more than the Bundesbank's claim, peaking at almost €1 trillion in August 2012. This reflects ongoing increases in the claims of other central banks such as those of Luxembourg, Netherlands and Finland.

Table 7: Intra-Eurosystem Net Positions (Billions of Euros)

	2006			2010			2011		
	Target	Other	Total	Target	Other	Total	Target	Other	Total
<i>Austria</i>	-21.2	17.0	-4.2	-27.5	26.2	-1.3	-34.6	34.1	-0.5
<i>Belgium</i>	-45.3	23.8	-21.5	-13.9	20.1	6.2	-52.9	18.0	-34.9
<i>Cyprus</i>	N/A	N/A	N/A	-6.4	0.4	-6.0	-7.9	0.7	-7.2
<i>Estonia</i>	0.1	0.0	0.1	0.1	0.0	0.1	0.6	1.7	2.3
<i>Finland</i>	1.2	4.7	5.9	19.7	4.2	23.9	66.0	4.3	70.3
<i>France</i>	10.6	71.9	82.5	-28.4	86.0	57.6	-53.2	87.6	34.4
<i>Germany</i>	5.3	-71.4	-66.1	325.5	-144.8	180.7	463.3	-157.9	305.4
<i>Greece</i>	-8.2	-0.1	-8.3	-87.1	-6.4	-93.5	-104.8	-16.9	-121.6
<i>Ireland</i>	-2.5	-8.8	-11.4	-145.2	-14.2	-159.4	-120.4	-14.6	-135.1
<i>Italy</i>	22.8	-6.2	16.6	3.4	1.3	4.7	-191.4	1.3	-190.1
<i>Luxembourg</i>	5.2	-39.7	-34.5	67.9	-64.9	3.0	109.3	-69.9	39.4
<i>Malta</i>	N/A	N/A	N/A	-1.2	-0.1	-1.3	-0.4	-0.1	-0.5
<i>Netherlands</i>	9.9	11.0	20.9	40.2	25.6	65.8	152.5	30.0	182.5
<i>Portugal</i>	-6.6	10.8	4.2	-59.9	20.2	-39.7	-60.9	23.0	-38.0
<i>Slovakia</i>	N/A	N/A	N/A	-13.3	2.3	-11.0	-13.6	1.5	-12.1
<i>Slovenia</i>	0.0	1.9	1.9	-2.1	2.7	0.6	-2.7	2.7	0.0
<i>Spain</i>	25.1	-19.4	5.7	-50.9	20.9	-29.9	-174.8	32.2	-142.6
<i>ECB</i>	3.5	10.5	14.0	-21.2	27.0	5.7	49.4	30.8	80.2
<i>Total</i>	0.0	6.0	6.0	-0.3	6.7	6.4	23.4	8.4	31.8

Figure 2: TARGET2 Claims and Liabilities for Selected Countries Since 2010

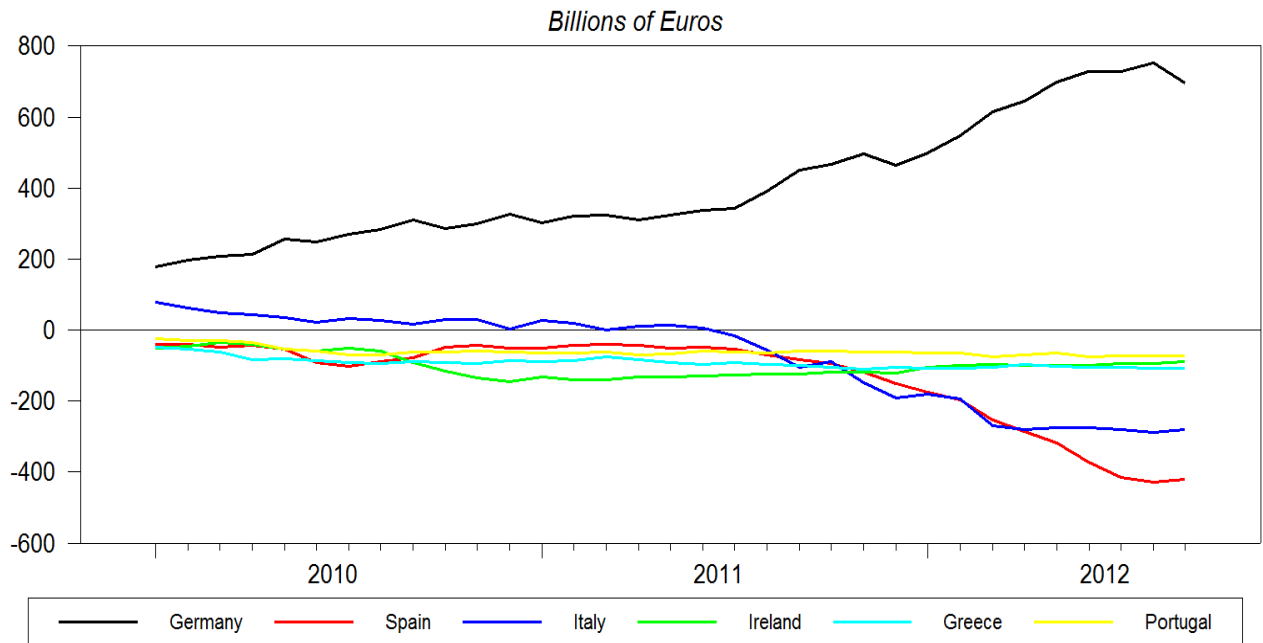
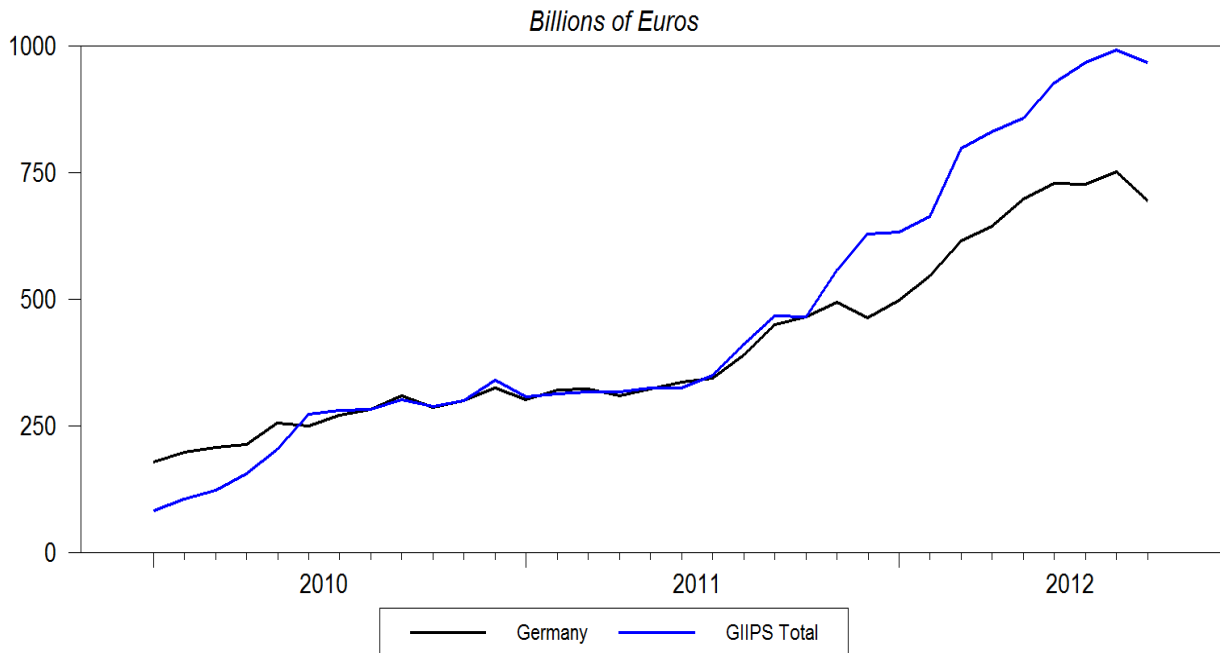
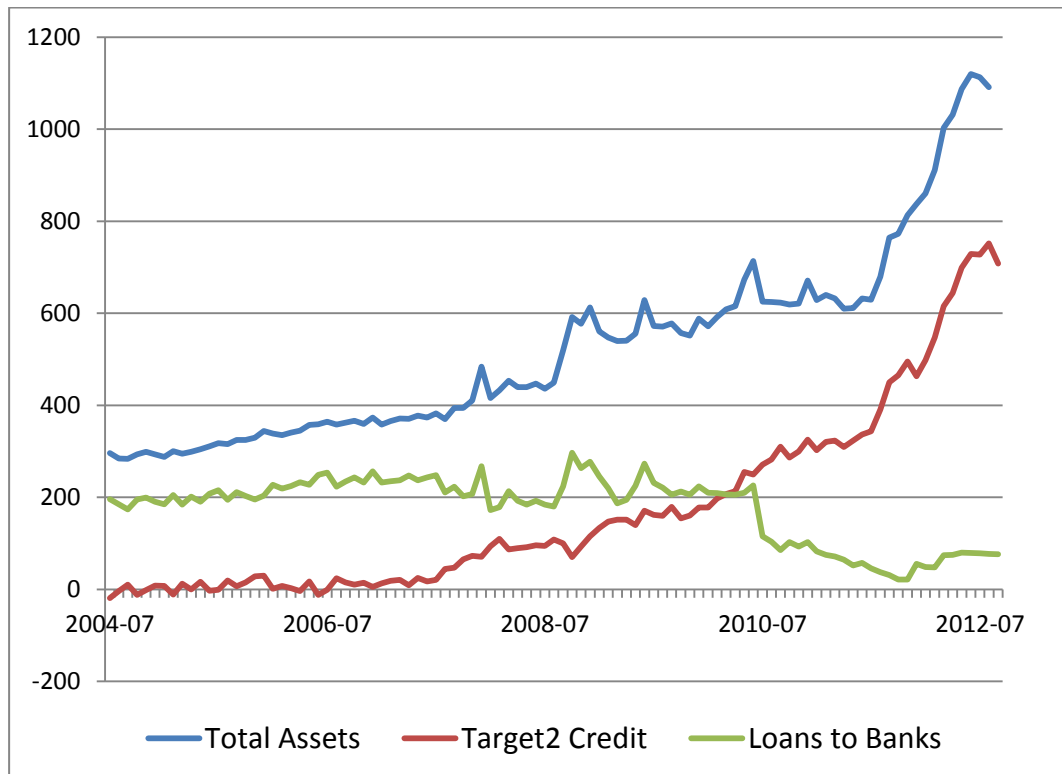


Figure 3: TARGET2 Claims of Germany & Combined Liabilities of GIIPS NCBs



These developments have resulted in a dramatic change in the balance sheet of the Bundesbank. As Figure 4 illustrates, the TARGET2 claim has grown to the point where it accounts for the majority of the assets of the Bundesbank. In contrast, loans to German banks, which had accounted for the majority of the Bundesbank's assets until recent years, have fallen noticeably.

Figure 4: The Bundesbank's Balance Sheet



3.2. A Stealth Bailout?

Hans-Werner Sinn (2011) has argued that the increase in TARGET2 balances in recent years have represented a “stealth bailout” of the periphery while Tornell and Westermann (2011b) have characterised the build-up of the balances as reflecting the Bundesbank “lending funds to strapped governments”.

While it is true that the Eurosystem does a poor job in presenting data on TARGET2 claims and liabilities, providing some credence to the “stealth” accusation, the substantive idea that increases in these balances represent a bailout of cash-strapped governments is not reflective of reality.

The traditional interpretation of a bailout is the provision of emergency loans, perhaps at preferential rates, to a recipient that has run out of other sources of funding. The recipient incurs new debts to the provider of the bailout funds. In contrast, as described above, the process of changing TARGET2 balances never produces changes in the net capital positions of the central banks that take part in the system. In particular, a central bank that creates money to allow a bank to honour capital flight out of the country ends up with an equal-sized increase in its assets and liabilities.

Figure 5 shows that this is the relevant case for central banks that have run up large TARGET2 liabilities in recent years. The TARGET2 liabilities in Spain and Italy have tracked very closely with increased lending by the Banco de España and the Banco d’Italia to banks in those countries. Rather than going into large amounts of net debt and being “strapped for cash”, these two central banks have created money to accumulate large quantities of collateralised loans that have essentially matched their accumulation of TARGET2 liabilities. As I discuss later, these central banks would have no difficulty settling their TARGET2 liabilities immediately if this was required. For these reasons, the build-up of TARGET2 obligations is quite different from other kinds of official sector bailouts.

Sinn and Wollmershäuser (2012) have also popularised the use of the phrase “TARGET loans” to describe the Bundesbank’s claims. While this may simply be a matter of a choice of terminology, I think this phrase does not provide a useful description of the nature of these claims. A bank that makes loans receives a certain quantity of funding and then has to choose how to allocate that funding. Absent an increase in funding, an increase in a certain type of loans must come at the expense of a reduction in other asset holdings. In reality, the Bundesbank’s increased TARGET2 claims have represented an expansion of its balance sheet and have not required a reduction in other asset holdings.

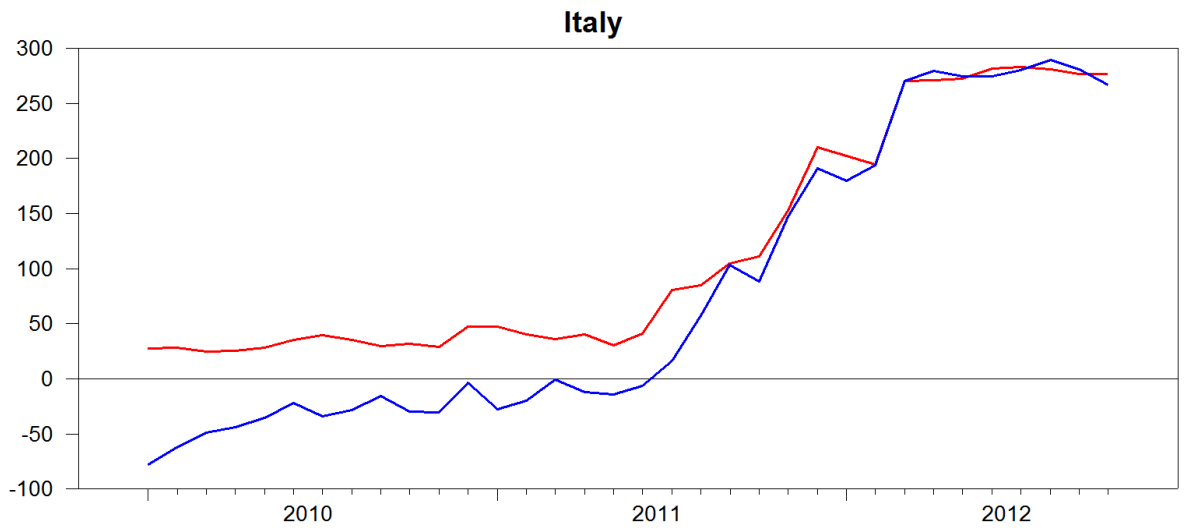
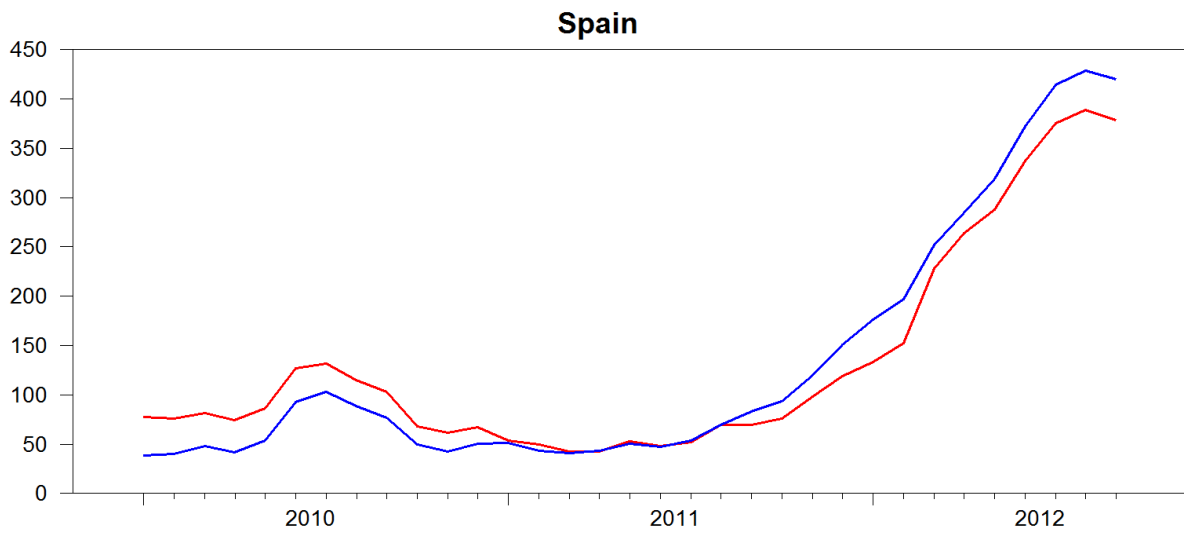
It is perhaps the widespread use of the phrase “TARGET loans” that has led to a popular belief that the Bundesbank’s TARGET2 claim has been funded by selling off other assets. For example, Tornell and Westermann (2011b) have stated that GIIPS central banks have needed to borrow funds from the Bundesbank to lend to their commercial banks and that Bundesbank has had to sell its holding of assets to fund these loans. These claims are not true. No central bank in the Eurosystem needs to borrow funds to make loans to their commercial banks because each NCB has the power to create money. Nor has the Bundesbank needed to sell any assets to “fund” its TARGET2 claims.

There is another piece of terminology used by Sinn (2012a) that is closer to being accurate, which is the idea that TARGET2 balances reflect GIIPS central banks “borrowing the printing press” from other central banks. The ability of the GIIPS central banks to create money to loan to banks has indeed been crucial in facilitating the deposit transfers that have generated the increased TARGET2 balances. In fact, rather than an external bailout, the process that generated increased TARGET2 balances is perhaps most accurately seen as a “self-bailout” of the periphery’s commercial banks by its central banks.

The “borrowing the printing press” phrase is only partly accurate however. The printing press for creating euros is actually jointly owned by all seventeen participating euro area member states and policy for how this printing press is used is set by the ECB Governing Council, which contains the Governors of each of the participating central banks. And in contrast to Tornell and Westermann’s (2012) characterisation of the Eurosystem as a “tragedy of the commons” with each NCB making independent decisions about money creation, all rules about the provision of liquidity are made jointly by this Governing Council.

In particular, the key decision of the Governing Council that has resulted in the increase in TARGET2 balances—the decision to move to the provision of unlimited liquidity to banks, subject to collateral requirements—was taken unanimously. Similarly, the majority of decisions to ease collateral rules have also been unanimous. Thus, the actions of the Banco de España and the Banco d’Italia to create large amounts of money in recent years to lend to commercial banks have not reflected independent decisions by peripheral governments but rather the implementation by independent central banks of a jointly-agreed Eurosystem monetary policy.

**Figure 5: Target2 Liabilities (Blue) and Loans from Central Banks (Red)
Billions of Euros**



3.3. TARGET2 Balances and Current Accounts

While arguments that the build-up of TARGET2 balances represented a direct bailout of the periphery with funds channelled from the Bundesbank are inaccurate, there is a more subtle narrative about how the operation of the TARGET2 has provided a type of bailout for the periphery. This is the idea, popularised by Sinn and Wollmershäuser (2012), that the TARGET2 system has effectively financed current account deficits in the periphery in recent years.

The rationale for there being a relationship between TARGET2 balances and current account deficits is simple enough. If TARGET2 is used to process payments for goods and services and one country purchases more goods and services from another than it sells back, then *ceteris paribus* these transactions will lead to a change in Intra-Eurosystem balances.

This is a pretty limited argument, however. Private sector transactions rarely involve the provision of goods and services for free and the logic of balance of payments systems implies a set of offsetting financial transactions that accompany a current account deficit, involving either increased foreign claims on the deficit country or reduced claims of the deficit country on foreign assets. Indeed, a casual examination of the data on TARGET2 and current account balances reveals the lack of any clear relationship. As Figure 6 shows, during the period prior to the Eurozone debt crisis, the GIIPS countries had low TARGET2 balances despite the fact (with the partial exception of Italy) they were running large current account deficits. In contrast, the emergence of large TARGET2 liabilities occurred during a period when Spain, Greece and Portugal were lowering their current account deficits and Ireland had returned to surplus.⁹

The fact TARGET2 transfers can be used for any kind of financial transaction, including buying and selling securities and moving money between bank accounts in different countries, means that the balances generated by the system are most likely to show large swings during times of large-scale capital movements. The evidence on the evolution of TARGET2 balances in recent years confirm capital flight from the periphery as the key factor.

Figure 7 repeats and updates charts similar to some that are presented by Sinn and Wollmershäuser (2012) to illustrate the linkages between TARGET2 balances and current accounts. The blue lines show quarterly TARGET2 balances for Spain, Italy, Ireland and Portugal. The black lines show cumulated current account balances starting at zero at the end of 2006 and ending in 2012:Q2.¹⁰ As noted by Sinn and Wollmershäuser, by early 2012, the level of TARGET2 liabilities for Spain, Italy and Portugal are relatively close to the cumulated current account balances starting in 2007. However, this similarity largely reflects picking an arbitrary starting date and this conclusion would not hold if either earlier or later starting dates were chosen. On average, there is very little relationship between the movements in the TARGET2 balances and the cumulated current account series and, for Ireland, there is basically no relationship.

⁹ The figures for 2012 in Figure 6 are European Commission estimates taken from the AMECO database.

¹⁰ The quarterly current account figures come from the Eurostat database.

An examination of the timing of the movements in TARGET2 balances instead shows a clear linkage between these movements and events related to banking crises or fears related to the potential for a euro break-up.

- Portugal's TARGET2 liability recorded its big increase after April 2010 amid fears that the Greek crisis would spread to other European countries.
- Ireland's TARGET2 liabilities built up rapidly during late summer of 2010 through to the end of that year as international investors lost faith in the Irish government's abilities to rescue its banks, leading to deposit flight and a failure to roll over bond market funding.
- Spain and Italy's balances did not start to build up until the crisis intensified during the summer of 2011 amid widespread concerns that the Eurosystem would break up. There are some signs that actions from the ECB, such as the LTRO operation of early 2012 and the introduction of the OMT programme, are acting to reduce fears of a Euro break-up and leading to a stabilisation of the TARGET2 balances.

Some of the countries that have built up large TARGET2 liabilities release sufficiently detailed balance of payments data to allow for a decomposition of the factors driving the monthly movements in these balances. Figure 8 uses data provided by the Banco de España to decompose the three-month moving average of changes in Spain's TARGET2 liabilities, into the country's net borrowing from the rest of the world (shown as the financial account), three types of net financial flows (portfolio, direct, and other) and a residual item.¹¹

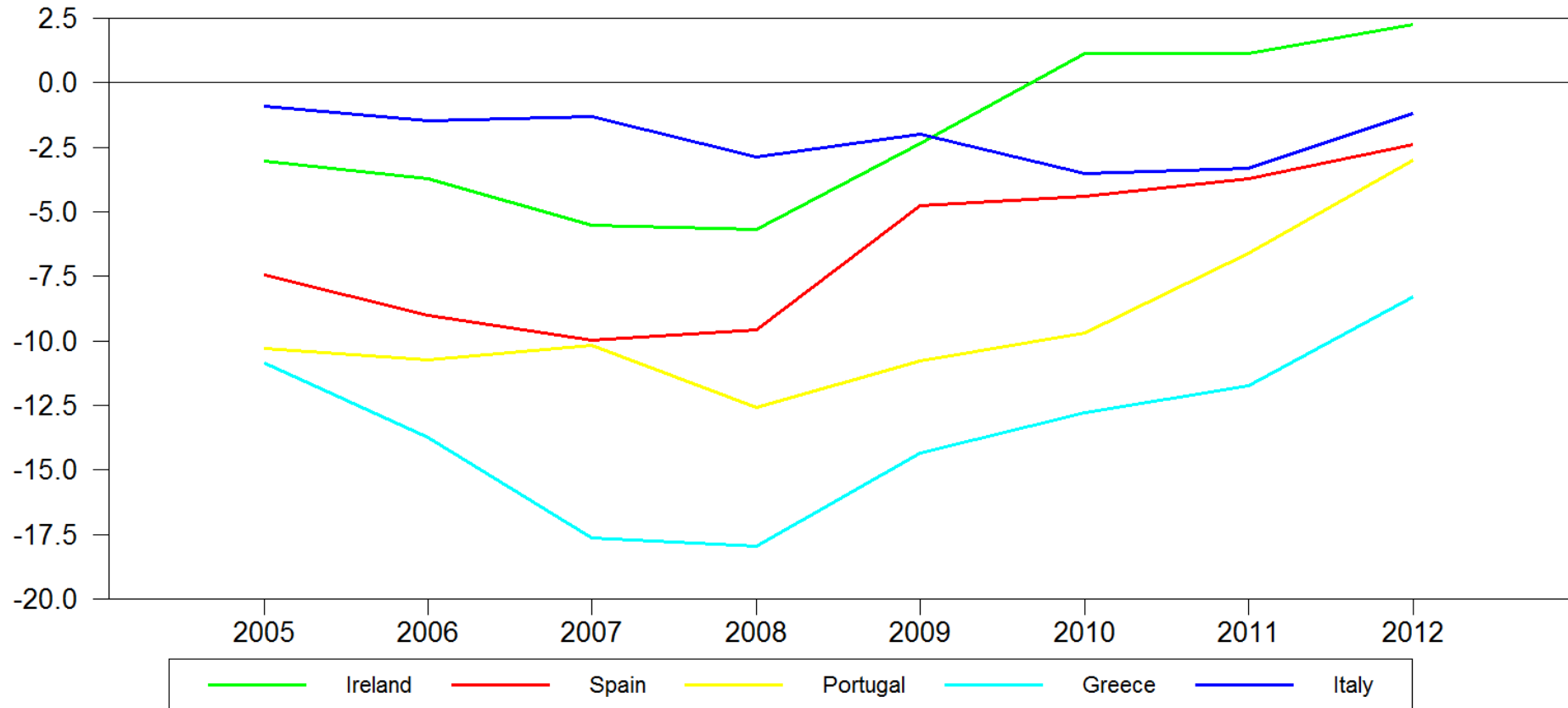
The figure shows the key driver of changes in the TARGET2 balance in Spain since mid-2011 has been the big reduction in net foreign holdings of "other investment", a category that is mainly accounted for by deposits. Until late Spring 2012, there was also a considerable contribution from a reduction in net foreign holdings of portfolio investment, meaning a sell-off of Spanish stocks and bonds.

A final illustration of the limited relationship between TARGET2 balances and current accounts comes from looking at certain bilateral current account figures. A common perspective on the build-up of Germany's TARGET2 claim is that it reflects Germany's large current account surplus, e.g. Sinn's (2012) description of how a German firm selling a tractor to Ireland results in increased TARGET2 balances. However, the Bundesbank releases figures on Germany's bilateral current account positions with other Euro area countries and these figures show a limited role for this mechanism: From the start of 2007 to 2012:Q2, The Bundesbank's TARGET2 claim increased by €723 billion even though its cumulative current account surpluses with the PIIGS countries over this period have equalled €193 billion.¹² These figures show that capital flight towards Germany, rather than current account surpluses and deficits, provides the explanation for most of the change in TARGET2 balances.

¹¹ These data are available at <http://www.bde.es/webbde/en/estadis/infoest/bolest17.html>

¹² These data are available at http://www.bundesbank.de/Navigation/EN/Statistics/Time_series_databases/Macro_economic_time_series/macro_economic_time_series_node.html?anker=AUSSENWIRTSCHAFTZAHL

Figure 6: Current Account Balances as a Percent of GDP



**Figure 7: Target2 Liabilities (Blue) and Cumulated Current Accounts from 2007 Onwards (Black)
Billions of Euros**

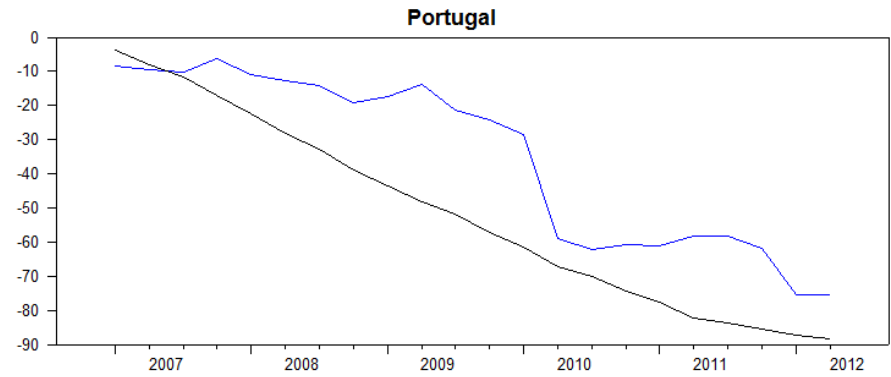
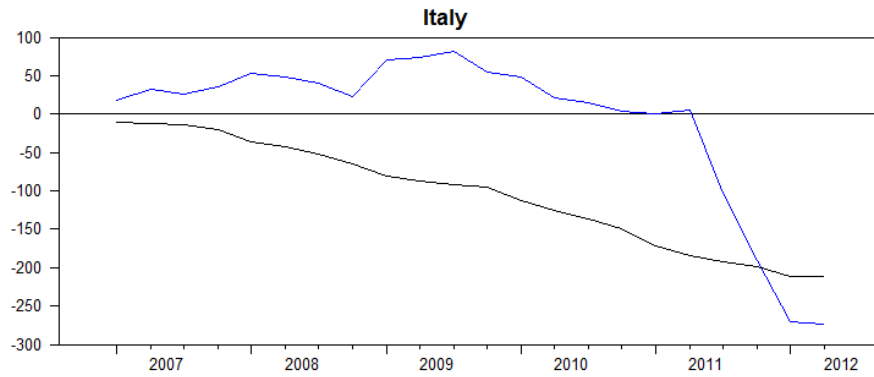
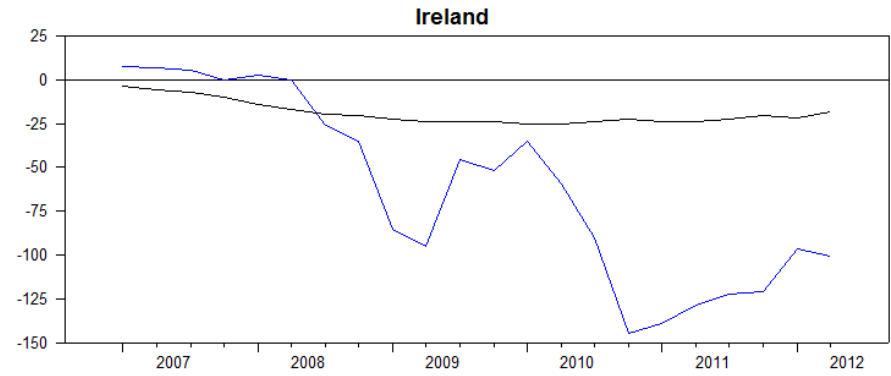
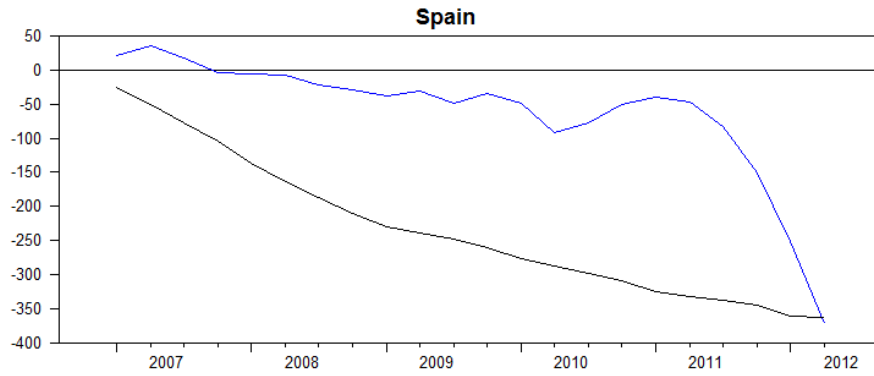
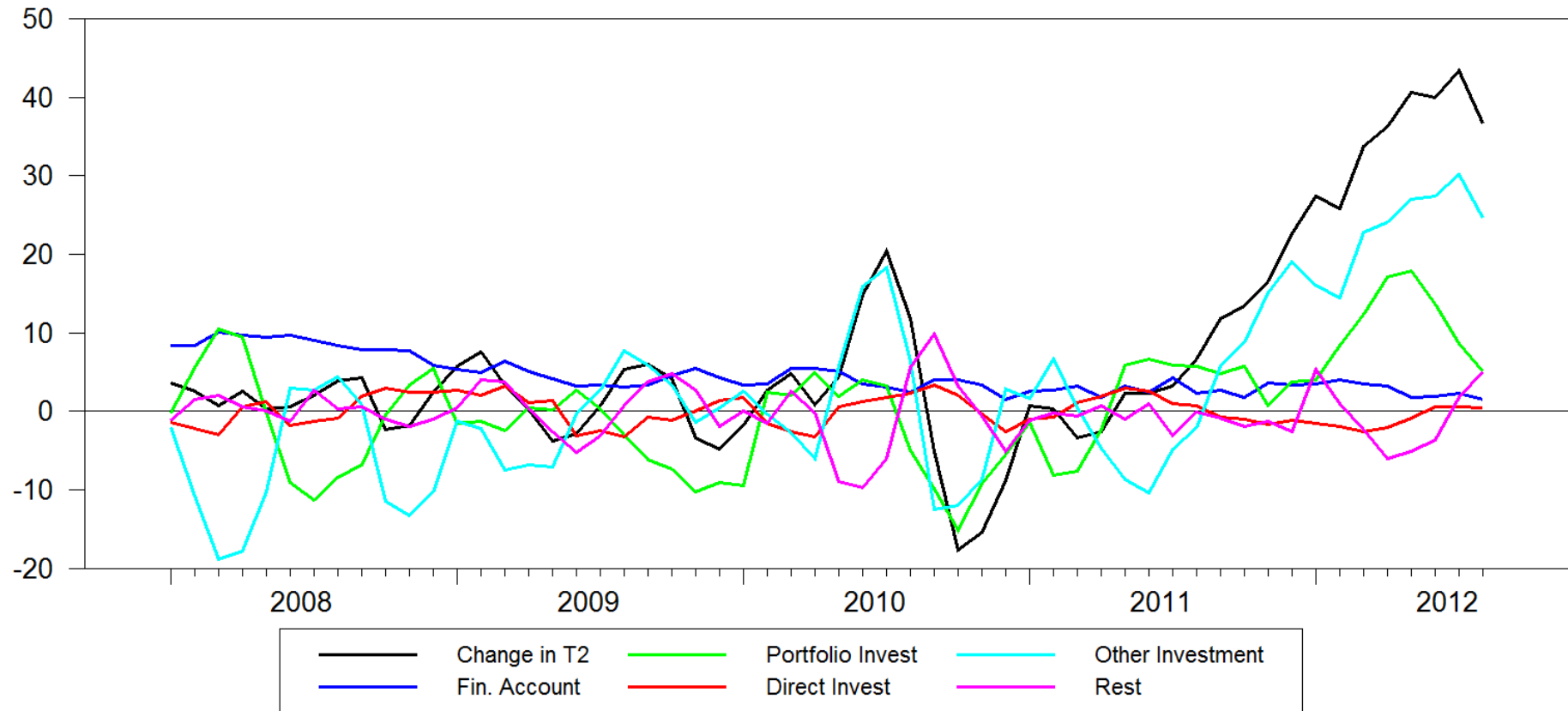


Figure 8: Contributions to Changes in Spanish Target2 Balance Up to August 2012

Billions of Euros, Three-Month Moving Average



3.4. Adjustment Without TARGET2

Even if there is no mechanical relationship between TARGET2 balances and current accounts, another common argument (see for instance, Tornell and Westermann 2011a) has been that the TARGET2 payments system has prevented necessary adjustments in current accounts in Europe's periphery. In other words, in the absence of the current TARGET2 operational procedures, these countries would have had weaker credit growth and lower current account deficits.

This argument seems to blame the TARGET2 system for outcomes that, in reality, reflect the workings of a monetary union with free movement of capital. (This pattern of blaming TARGET2 for events to which it is not related has become quite common. See the Box "Other Misplaced TARGET2 Blame") For example, consider the scenario in which, at some point in 2010, the Eurosystem decided to turn off the TARGET2 system, thus refusing to process large-scale electronic payments.

Even if a decision of this sort did not cause chaos (and it likely would) it would not have prevented a build-up of Intra-Eurosystem balances. Faced with the inability of their bank to use an electronic transfer facility to move money from Spain to Germany, depositors could simply have requested cash. If the Banco de España still agreed to follow the monetary policy laid down by the ECB Governing Council, thus lending to banks facing a deposit run, then this would have resulted in large-scale banknote issuance. The banknote issuance generated by this capital flight would still have generated a large Intra-Eurosystem liability for the Banco de España. This is because, as described above, the Eurosystem requires NCBs to share the proceeds associated with banknote issuance.

The argument that the TARGET2 system prevented a more rapid adjustment in the periphery appears to boil down to position the GIIPS central banks should not have been allowed to make such large quantities of loans to their commercial banks. The large amount of money creation involved in making these loans is sometimes presented as providing an artificial credit-fuelled stimulus to these economies. For example, Sinn (2011) argues that the continued "tolerance of the ECB with regard to money creation by a national central bank for the purpose of paying the import bill or accommodating capital flight ... distorts capital flows in Europe, shifts too much economic vigour to the GIPS, and defers their adaptation to the new reality."

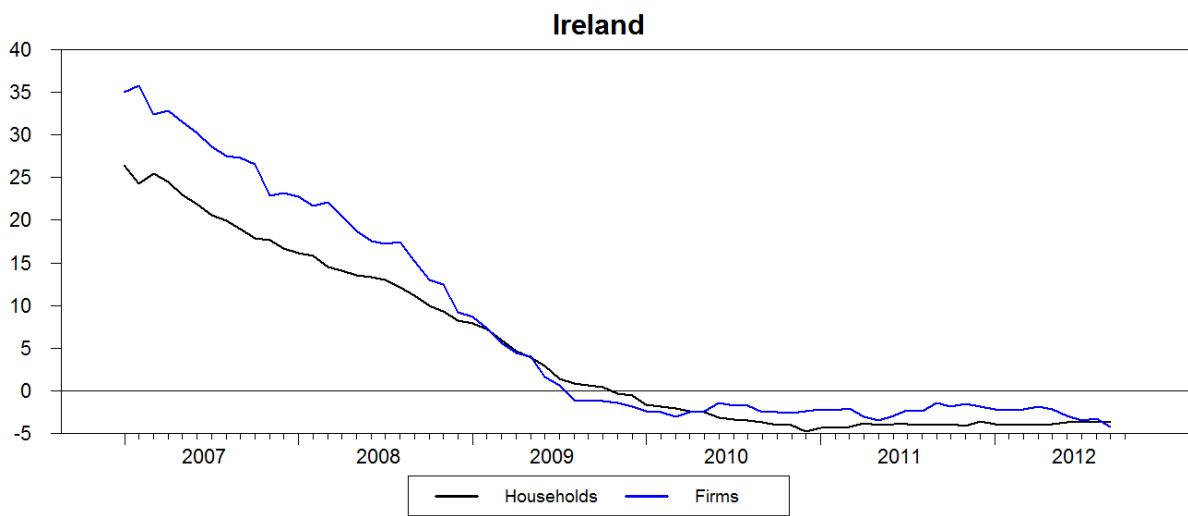
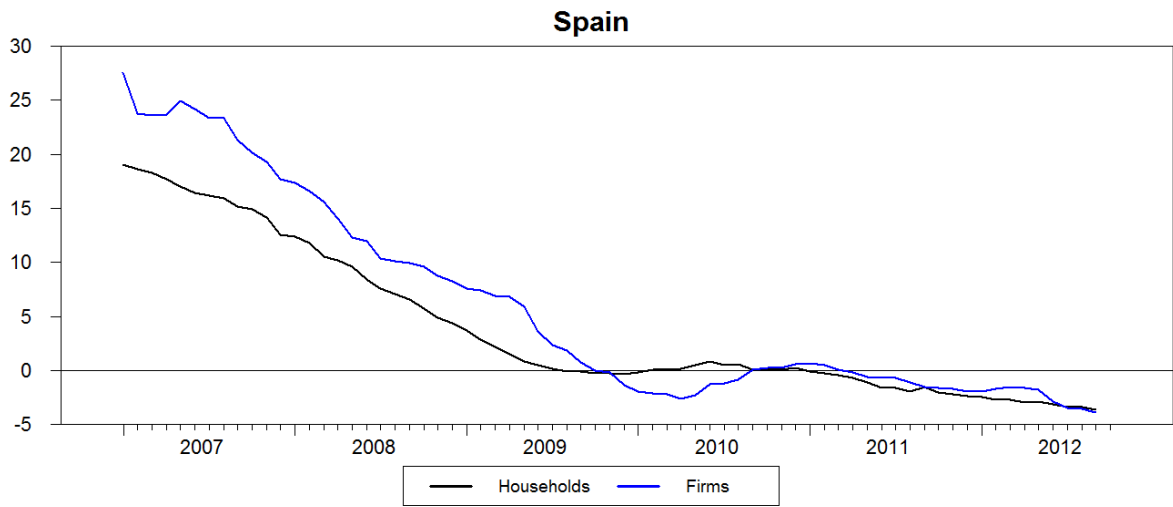
The actual new reality for the GIIPS countries is that economic vigour appears a long way away. While loans from central banks have replaced some of the funding that disappeared due to capital flight, banks in these countries are under pressure from the ECB to reduce their balance sheets and pay off their loans from central banks. Indeed, paying down Eurosystem loans is an explicit criteria in both the Irish and Spanish MOUs signed with the EU. As a result of these funding pressures and deleveraging targets, credit to the private sector has been extremely tight in all the countries that have experienced increased TARGET2 liabilities. Figure 9 shows, for example, that credit to firms and households in Ireland and Spain has been steadily contracting over the past few years.

It is also likely that a policy of refusing to allow the GIIPS central banks to make loans to their commercial banks would have resulted in a full-scale bank run on the periphery and quite possibly the need to impose capital controls that could lead to the end of the euro (once such controls are

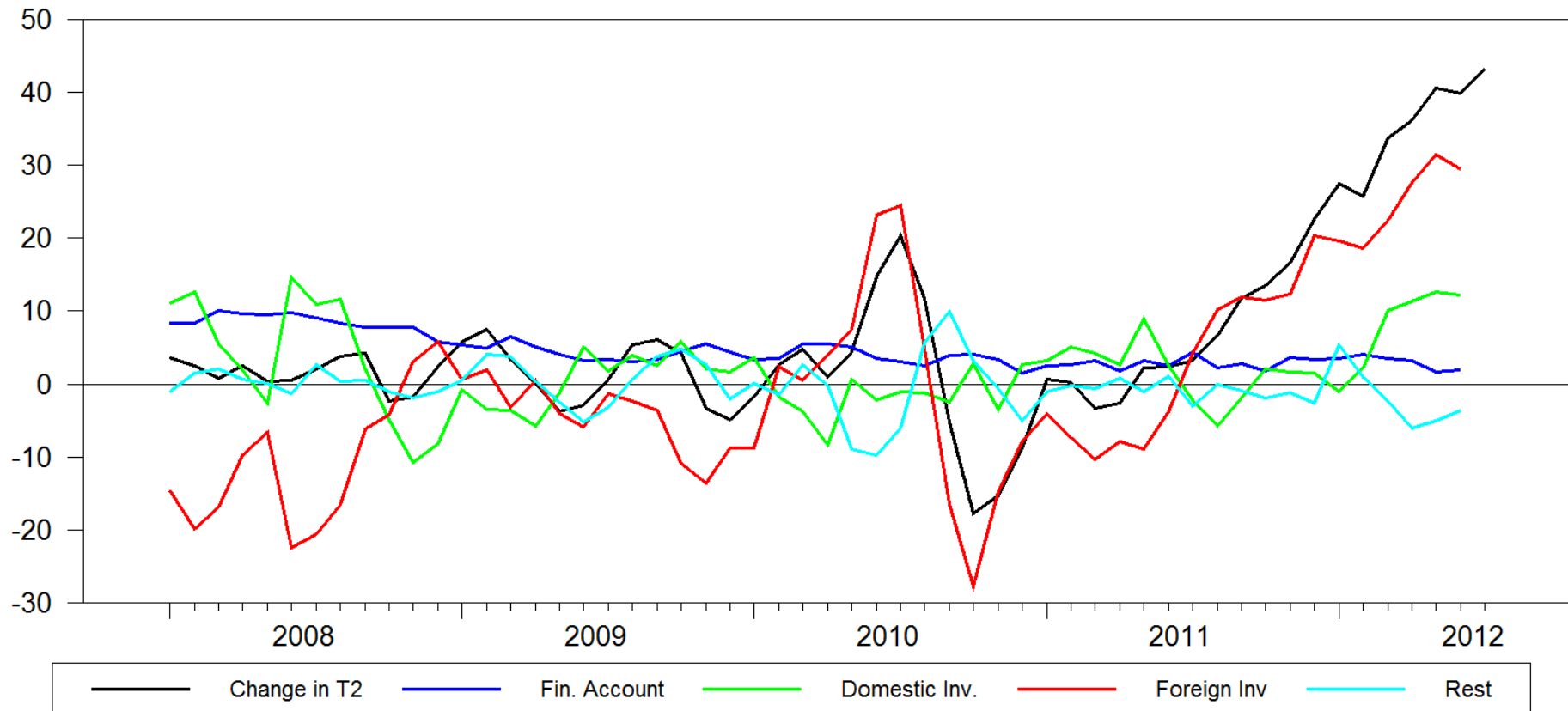
imposed, doubts will arise about the equality of euros lodged in bank accounts in different participating member states). This outcome would certainly have produced lower current account balances, since this is an integral feature of financial autarky. But the damage would not have been restricted to the citizens of the GIIPS countries.

For example, the Spanish balance of payments figures also allow for a breakdown of changes in the TARGET2 balance in terms of the contribution of the financial account as well as the capital movements of domestic and foreign investors. Figure 10 shows that the capital flight from Spain was mainly driven by foreign investors (with the TARGET2 balances telling us much of this money was moved to Germany). If a full-scale peripheral bank run and creditor write-downs had been allowed in 2011, investors from outside the GIIPS countries would have been hit hard.

**Figure 9: Year-over-Year Percentage Growth in Loans
to Households and Firms in Spain and Ireland**



**Figure 10: Contributions of Domestic and Foreign Investment Flows
to Changes in Spanish Target2 Balance Up to August 2012**
Billions of Euros, Three-Month Moving Average



Misplaced TARGET2 Blame

Aside from the main issues addressed in this paper, a substantial amount commentary about TARGET2 blames the system for problems that either don't exist or are unrelated to it. Consider two examples.

Sinn (2012) argues that "cheap Target credit ... may very well even have caused the capital flight that it is trying to compensate for" because banks may have chosen cheap central bank credit rather than expensive market funding. Whatever the merits of the argument that loans from central banks have crowded out private funding, the cost of funding for commercial banks has nothing to do with TARGET2. The Eurosystem operates monetary policy on a principle that "credit institutions must be treated equally irrespective of their size and location in the euro area."¹³ So if credit is cheap for German banks, it must also be cheap for Spanish banks. Decisions about how the Eurosystem runs its payments system or treats balances between its constituent members cannot override this principle.

Separately, Sinn and Wollmershäuser (2012) worry that Eurosystem monetary policy operations are changing the asset profile of German banks and the Bundesbank in a way that will lead to a loss of faith among savers. Specifically, they "foresee that the savers of the core countries will become increasingly concerned if they realize that their wealth is gradually being converted from marketable assets held by their savings institutions into mere claims against their NCBs, which are in turn backed only by Target claims against the ECB system."

There is little factual basis for the concern expressed here about the change in the asset composition of German banks are not particularly accurate. Bundesbank deposits (reserves, deposit facility, fixed-term deposits, deposits for margin calls) have risen from €47 billion in December 2006 €386 billion in September 2012. However, with total assets of the German banking sector rising from €7.2 trillion to €8.6 trillion over the same period, this represents a rise in the share of Bundesbank deposits in German bank assets from 0.7 percent to 4.4 percent. Moreover, the argument that the Bundesbank's TARGET2 assets are "only claims against the ECB" should perhaps be benchmarked against the fact that the coloured pieces of paper in European citizens' wallets are also only claims against the ECB but they seem to work well as a means of payment and a store of value.

¹³ See <http://www.ecb.europa.eu/mopo/intro/operational/html/index.en.html>

4. Risks to Germany

Having described how Germany's TARGET2 claim has built up, we now discuss the risks to German citizens represented by this claim. First, we look at how German exposure to the periphery has built up in recent years and consider the implications of sovereign defaults within the Eurozone. We then consider the implications for Germany's TARGET2 claim of a single country leaving the Eurozone before considering a full breakup scenario.

4.1. *Germany's Risk Exposure and Non-Breakup Scenarios*

As the Bundesbank's increasing TARGET2 claims began to be reported by the media in 2011, a number of articles appeared describing how Germany had very quickly built up a huge exposure to the risk of a euro break-up. A typical example was Peter Coy's article for Bloomberg Businessweek in December 2011 titled "Germany's Hidden Risk".¹⁴ The article described how Germany had been forced into "involuntary lending" to the periphery and how it now faced the decision of "whether to keep throwing good money after bad to keep the debtor afloat or pull the plug and suffer the consequences." The article cited Hans-Werner Sinn that "This may be the largest threat keeping Germany within the Eurozone", a sentiment echoed by Michael Burda (2012) who argued that "Germany has now become a hostage to the monetary union."

Despite the popularity of the idea that Germany has rapidly built up an exposure to the periphery that could be lost during a euro break-up, an examination of data on international investment positions that looks beyond TARGET2 balances reveals that the increase in German exposure has been fairly modest. There are two reasons for this.

The first reason is that much of the build-up of TARGET2 claims has been offset by falling claims of German banks on the Eurozone periphery, assets that would be at severe risk should the euro break up. According to data from the Bundesbank, claims of German banks vis-à-vis residents of the GIIPS countries declined from €538 billion in August 2008 to €296 billion in August 2012 as these banks gradually unwound their investments in these countries.¹⁵ The most notable declines over this period were a drop in claims on Spanish banks from €198 billion to €96 billion and on Irish banks from €157 billion to €65 billion.

The second reason is that the Bundesbank's liabilities to the rest of the Eurosystem in relation to banknote issuance make a non-trivial change to the assessment of the build-up of risk exposures. If one is assuming that a euro break-up scenario involves TARGET2 liabilities being reneged on, then consistency requires assuming the Bundesbank will also renege on these liabilities which have grown from €84 billion at the end of 2006 to €192 billion in September 2012.

¹⁴ Available online at <http://www.businessweek.com/magazine/germanys-hidden-risk-12142011.html>

¹⁵ These data are available at http://www.bundesbank.de/Navigation/EN/Statistics/Time_series_databases/Macro_economic_time_series/macro_economic_time_series_node.html?anker=AUSSENWIRTSCHAFTBANKEN

Figure 11: Total German Exposure to GIIPS\Euro Breakup
Billions of Euros

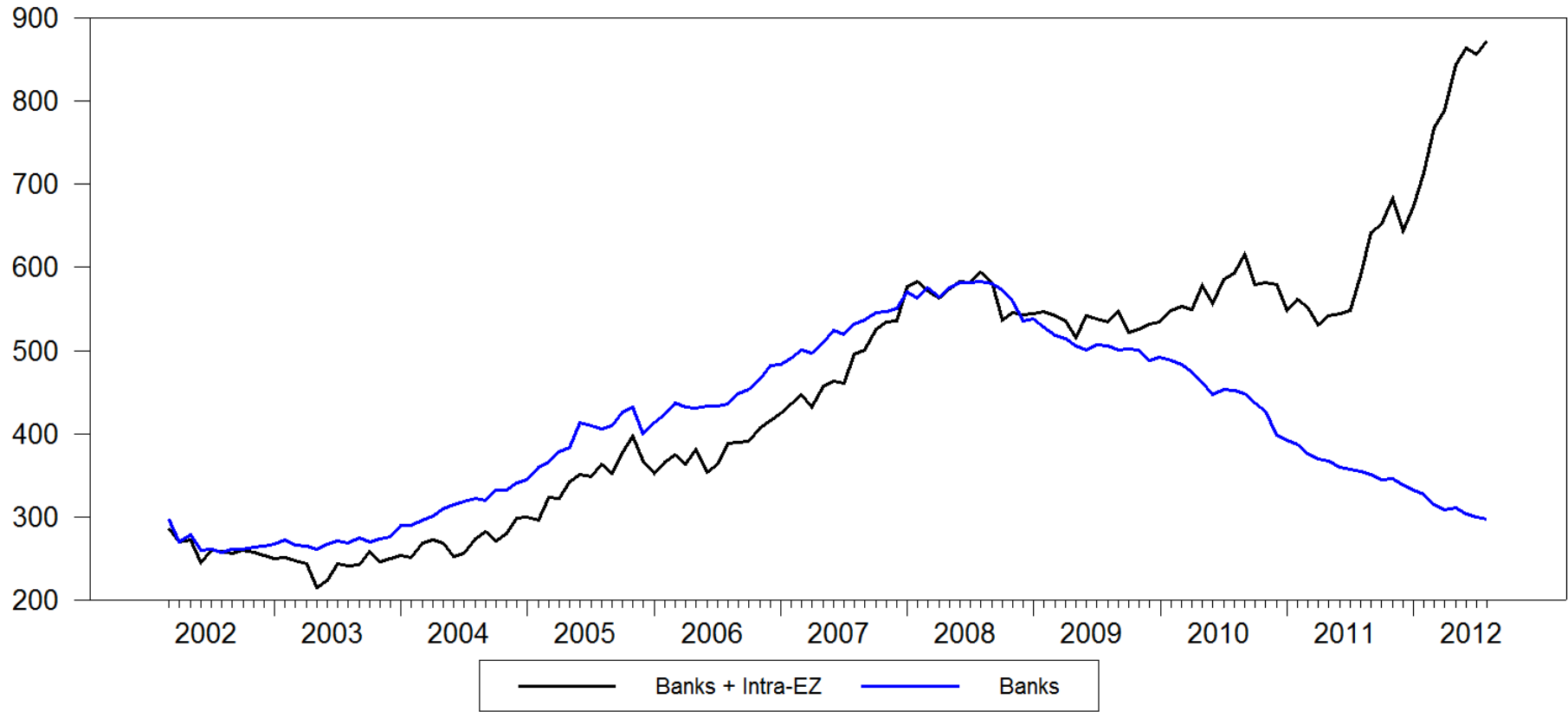


Figure 11 shows the exposure of German banks to the GIIPS countries (the blue line) and combines this with the Bundesbank's net Intra-Eurosystem position (incorporating TARGET2, banknote-related liabilities and some other elements) to obtain the black line as an estimate of the total exposure of German citizens to the Eurozone periphery and a break-up of the euro, whether it be via TARGET2 or via direct exposure of banks to the GIIPS.

Rather than going from zero to one-quarter of German GDP over a short period, as has commonly been presented, the combined exposures remained stable at about €600 billion from late 2007 until mid-2011, with the rise in Intra-Eurosystem liabilities almost exactly offsetting the decline in German bank liabilities. Only from mid-2011 onwards did the combined exposure start to rise and, as of September 2012, it stands about one-third higher than the level sustained from 2007 until 2011.

These calculations show that many German citizens have benefited from the process in which the GIIPS central banks have issued credit that facilitated capital flight. Without such loans, there would likely have been mass failure of peripheral banks and German financial institutions would have incurred large losses on their claims on these banks.

This is not to say that the Eurosystem's loans to peripheral banks represent no risk to Germany. Even in the absence of a break-up of the euro, these loans carry a certain amount of risk. Many of the loans are collateralised by sovereign debt, with relatively low haircuts applied. With the precedent of the Greek default that occurred while the country remained within the Eurozone, it is possible that the next few years could see significant losses made on monetary policy operations even without a breakup of the euro.

The Eurosystem has an agreed risk-sharing procedure so that losses on normal monetary policy operations are shared amongst the various NCBs according to their Eurosystem capital key. This means that Germany would take a 27 percent share in any losses incurred on these operations. However, for those German citizens who got their money out of the periphery in recent years, a socialised 27 percent loss represents a far better outcome than the direct losses they would have occurred during a peripheral banking meltdown.

4.2. A Single Country Exit Scenario

We now consider the case in which a single country exits the euro. To be concrete, we consider the case in which Greece leaves the euro. What are the implications of such an exit for the Bundesbank's TARGET2 claim?

In addition to its TARGET2 liabilities of €108 billion as of September 2012, the Bank of Greece also had a liability relating banknote issuance of €16 billion. Suppose Greece reneges on these Intra-Eurosystem liabilities after an exit. The first point to note is that because the Bundesbank's Intra-Eurosystem claims are on the ECB there would be no alteration of this claim after a Greek reneging on its liabilities. However, this development would have implications for the ECB's balance sheet as well as its profit and loss account. In terms of its balance sheet, writing off its Intra-Eurosystem claim on the Bank of Greece would result in the sum of its TARGET2 and banknote-related claims

and liabilities being negative rather than zero. In terms of its profit and loss account, the interest payments it receives from Intra-Eurosystem debtors would no longer cover its interest obligations to Intra-Eurosystem claimants.

At the end of 2011, the ECB has capital and revaluation accounts (representing increases over time in the value of its assets) of about €30 billion. The loss of its claim on Greece (equal to €124 billion at the end of September 2012) would see the ECB's liabilities exceed its assets. At the current MRO rate of 0.75%, the ECB would lose interest income of €930 million, which would have wiped out its 2011 profits of €728 million.

The question of what would happen after such a loss is a bit murkier than is often believed. While the ECB's legal statute outlines its initial capital amount and indicates that the ECB can retain some of the income related to banknote issuance to offset losses, it does not consider the case in which the ECB has assets that are lower than its liabilities. That said, the spirit of the statute would suggest that the NCBs would likely be called upon to recapitalise the ECB to compensate for the loss of its Greek TARGET2 claim. Because Germany has a 27% ECB capital key, this would imply a cost to that country of €33 billion or 0.13 percent of German GDP.

These calculations assume that countries that leave the euro will automatically exit the TARGET2 system and renege on their liabilities. It is not clear, however, this is the approach that exitors would take. Six countries that do not use the euro as their currency are current members of the TARGET2 system and meet the euro-denominated interest obligations implied by the balances owed to the Eurosystem by their central banks, so an exit from the system is not a mechanical result of leaving the euro. Moreover, Greece would still have a need to be able to settle international payments in euro after a new currency has been established.

Some commentators have focused on the size of Greece's TARGET2 obligations as implying an inevitable default after an exit. The Bank of Greece's assets would largely have been redenominated into the new currency and the TARGET2 debt would be over 50 percent of Greek GDP. Crucially, however, because there is no maturity date for TARGET2 liabilities, the claims can be honoured simply by making the necessary interest payments and the cost of making these payments would be relatively low even when adjusting for the decline in the value of Greek nominal GDP after a currency devaluation.

As Table 9 shows, at the current MRO rate and GDP level, these payments would cost Greece about 0.5 percent of its GDP. In the case of any exit, it is likely that Greece would need official external support from the IMF and EU to cope with a major balance of payments crisis. Honouring its TARGET2 interest obligations would be very likely to be a condition of such a programme.

On balance, the TARGET2-related risks to Germany associated with a Greek exit appear to be very low. They are likely to be far lower than the potential costs for Germany associated with the knock-on effects on the integrity of the euro as a single currency of proof that it is not a fixed and irrevocable union.

Table 8: End-2011 Intra-Eurosystem Balances and Interest as Shares of GDP**Interest Calculated at 0.75% Main Refinancing Rate**

Country	GDP (Billions)	Intra-Eurosystem Balance (Billions)	Interest (Billions)	Balances as Percent of GDP	Interest as Percent of GDP
Austria	309	-1	0.0	-0.2	0.0
Belgium	377	-35	-0.3	-9.3	-0.1
Cyprus	18	-7	-0.1	-40.6	-0.3
Estonia	17	2	0.0	13.8	0.1
Finland	195	70	0.5	36.1	0.3
France	2034	33	0.3	1.6	0.0
Germany	2646	305	2.3	11.5	0.1
Greece	195	-122	-0.9	-62.4	-0.5
Ireland	162	-135	-1.0	-83.2	-0.6
Italy	1566	-190	-1.4	-12.1	-0.1
Luxembourg	44	39	0.3	90.5	0.7
Malta	7	-1	0.0	-7.5	0.1
Netherlands	609	182	1.4	30.0	0.2
Portugal	166	-38	-0.3	-22.8	-0.2
Slovakia	73	-12	-0.1	-16.6	-0.1
Slovenia	36	0	0.0	0.0	0.0
Spain	1050	-143	-1.1	-13.6	-0.1

4.3. A Full Break-Up Scenario

This leaves the most complex case of them all: A full break-up of the euro. Again, it is possible that such a break-up could result in a co-operative agreement in which the former euro area states continue to use TARGET2 to settle payments and the central banks with liabilities generated by TARGET2 continue to pay interest on them. If some version of the European Union survives a complete euro break-up, one might hope that this type of co-operative solution emerges. If this outcome emerged, then the Bundesbank would continue to receive income from its TARGET2 claims and there would be no need to write down the value of this asset.

In truth, however, this outcome may be too much to hope for. While Germany, and possibly some other member states, could well continue to use the euro (effectively taking ownership of what's left of the ECB) and insist on being repaid in that currency, other states are likely to pass laws redenominating all assets and liabilities into their new currencies. Against such a background, the various central banks involved may insist that they owe liras, pesetas, punts etc.

The probability of this scenario is difficult to assess. For all the euro's problems, a full break-up of this sort is still a low enough probability event over the next few years that it is almost impossible to start making calls about how countries will behave during such an event. Still, let's consider for now the case in which such a break-up occurs and a lack of co-operation on TARGET2 balances leads to the loss of all or most of the Bundesbank's claim. What are the implications?

In discussing this issue, it is best to break the discussion into two parts. First, what is the impact of the loss of the Bundesbank's TARGET2 claim? Second, what other factors would influence the impact of a full break up on Germany?

4.3.1. Implications of the Loss of the TARGET2 Claim

When considering the loss of the Bundesbank's TARGET2 claim, it is important to distinguish between implications that matter and those that don't. Most of the commentary on this issue has focused on implications for the Bundesbank itself and the need for a hugely costly recapitalisation of the central bank. For example, Burda (2012) argues that "Germany has now become a hostage to the monetary union, since a unilateral exit would imply a new central bank with negative equity." However, there are a number of reasons why the capital position of the central bank is something of a red herring when considering a break-up scenario.

The first reason for this is that despite the common belief that central banks need to have assets that exceed their notional liabilities, there is no concrete basis for this position. Systems like the Gold Standard required a central bank to "back" the money in circulation with a specific asset but there is no such requirement when operating a modern fiat currency. A central bank operating a fiat currency could have assets that fall below the value of the money it has issued – the balance sheet could show it to be "insolvent" – without having an impact on the value of the currency in circulation. A fiat currency's value, its real purchasing power, is determined by how much money has been supplied and the factors influencing money demand, not by the central bank's stock of assets. As discussed in the attached box, close examination reveals little merit to the various arguments that are put forward for the idea that a central bank must have positive capital to achieve its goals.

Why Would Central Banks Need Positive Capital?

Three arguments tend to be put forward for why a central bank needs to have positive capital, meaning the value of its assets exceeds the value of the money they have created.

The first is an operational argument that the central bank needs to have a sufficient stock of assets that can be sold in order to conduct contractionary open market operations. This is not really an argument for the need for positive central bank capital but rather an argument about the need for asset holdings of a certain size, irrespective of liabilities. Moreover, the most detailed study on the operational implications of central bank capital, by Bindseil, Manzanares and Weller (2004) failed to find any evidence that negative central bank capital could prevent monetary policy from meeting its goal.¹⁶

The second argument was recently discussed by Buiter and Rahbari (2012b). They point out that fiat currencies only work as a medium of exchange because people have faith in their use as a store of value. They observe that a central bank having negative capital could trigger a loss of faith in the currency. The basis for this argument in economic theory is pretty weak. One could use the same logic to argue that central bankers need to be called Mario because the public loses faith in the currency if central bankers that aren't called Mario are appointed. Furthermore, as Goodhart (1998) discusses, the use of fiat currencies as a store of value largely reflects rules such as the need to pay taxes in the currency and the requirement to accept currency as legal tender.

The final argument, which Buiter and Rahbari advocate as a more convincing one, is perhaps best illustrated via an ongoing dispute between the ECB and the Czech National Bank. The Eurosystem has no legal requirement that its participating central banks have positive capital. Nonetheless, in its 2010 and 2012 Convergence Reports, the ECB has admonished the Czech National Bank because it has a negative capital position. Specifically, ECB (2010) recommends that the negative capital situation should be rectified "in order to comply with the principle of financial independence."

According to this argument, negative capital compromises a central bank's independence because it requires them at some point to request funds from the government to restore their positive capital position. Governments could then look for more influence over monetary policy in return for honouring this request. However, this is a completely circular argument. It relies on the assumption that positive central bank capital is required, so central banks must request recapitalisation and have their independence compromised. If positive capital is not required, then no request for recapitalisation is required and independence is not compromised.

Consistent with this point, the Czech National Bank has issued a statement (CNB, 2010) to say that it considers the ECB's statement "completely unacceptable". Specifically, it notes that "Throughout its existence, its capital position has never undermined its independence or limited its decision-making and operational capacity in any way. The CNB is therefore convinced that there can be no doubt about its legal and factual independence. Negative capital presents no problem for the CNB, and the central bank is able to meet its obligations."

¹⁶ The findings of the Bindseil, Manzanares and Weller study are worth quoting at length. After a series of exercises, they conclude that "central bank capital still does not seem to matter for monetary policy implementation, in essence because negative levels of capital do not represent any threat to the central bank being able to pay for whatever costs it has. Although losses may easily accumulate over a long period of time and lead to a huge negative capital, no reason emerges why this could affect the central bank's ability to control interest rates."

The second reason the focus on central bank capital is a red herring is that, even if it is decided after a break-up that Germany must recapitalise the Bundesbank, rather than being hugely costly, this recapitalisation would have no impact on either the net asset position of the German state or its budget deficit. Let's assume the German government recapitalises the Bundesbank by providing it with an interest-bearing government bond. While the government's gross debt will increase, the government bond becomes an asset of the Bundesbank, so the total public net debt does not change.¹⁷

Similarly, suppose the new debt provides interest payments of €3.9 billion (equal to the annual interest that would be generated by the September 2012 level of Bundesbank net Intra-Eurosystem claims). This payment would raise the profits of the Bundesbank by this amount, thus raising the amount the Bundesbank can return to the German government by the same amount, resulting in no change in the budget deficit.¹⁸

So the issue facing Germany in case of a loss of its Intra-Eurosystem claims is not the insolvency of the Bundesbank or the costs associated with recapitalising it. The real issue is simply that the Bundesbank had a large asset and this asset will have disappeared. Still, despite the eye-popping level of the Bundesbank's TARGET2 claim, the disappearance of the net income from the Intra-Eurosystem claims would have a very modest impact on the annual German budget. At an interest rate of 0.75 percent, the yield of €3.9 billion on the net Intra-Eurosystem claims of €516 billion as of the end of September represents only 0.15 percent of German GDP.¹⁹ Rather than a huge potential loss keeping Germany hostage within the Eurozone, I suspect this is a loss than many Germans would shrug off as perhaps being smaller than the likely costs associated with the sovereign bailout funds aimed at saving the euro.

4.3.2. Other Implications of a Full Break-Up

The projection of lost revenues from the Bundesbank just reported is a highly partial equilibrium calculation. It seems likely that higher seigniorage revenues for the Bundesbank will be an important offsetting factor in the case of a full euro break-up.

The euro has been a popular international currency since its introduction, generating substantial seigniorage profits for the central banks of the Eurosystem. As Buiter and Rahbari (2012a) point out, euro currency in circulation has increased from €300 billion in 2002 to €900 billion by 2012. Under current arrangements, the Bundesbank receives 25 percent of the profits from this €60 billion a year business.

¹⁷ The same argument would apply if the government issued a bond and used the proceeds to purchase other assets and then supplied these to the central bank.

¹⁸ The Bundesbank profit and loss account for 2011 shows a profit of €4.77 billion, so the Bundesbank would likely be making a profit even in the absence of income from its TARGET2 claims.

¹⁹ One could note that, should the Eurosystem stay together, the MRO interest rate on these claims would increase and this would increase the income from the claims. However, the higher interest rate would also increase the payments the Bundesbank makes on its liabilities. As of August 2012, for example, the Bundesbank had a TARGET2 claim of €727 billion but it also had a banknote-related liability of €188 billion and €442 billion in liabilities in reserve accounts, fixed-term deposits and its deposit facilities. The cost of most of these liabilities would go up in step with the MRO rate.

If the euro were to break up, leading to the re-introduction of 17 new national currencies or perhaps Germany and a small number of other countries being left running a “remains of the euro”, there is likely to be substantial re-allocation of the demand towards currencies that are seen as a good store of value. If the euro disappears altogether, it is likely that German public opinion will ensure that the new Bundesbank is a “hard money” currency that will be in popular demand outside Germany. Indeed, it is possible that in some countries, there may be serious problems restoring the new currencies as fully-functioning mediums of exchange after a break up, with partial-DM-ification a possibility. Even without the introduction of a new DM, the scenario in which a small number of countries continue to operate the euro would see Germany’s share of seigniorage profits for the new smaller euro be substantially increased.

The re-allocation of currency demand towards the new-DM or the legacy euro would not have to be large to produce an increase in Bundesbank revenues that would offset the loss of its net Intra-Eurosystem claim. For example, if the Bundesbank increased its share of the €60 billion per year banknote business by 10 percentage points, then this would more than offset the loss of Intra-Eurosystem revenues.

These calculations suggest that the loss of the Bundesbank’s TARGET2 credit after a euro break-up would not be nearly the disaster that has been commonly presented. The claim that it represents “a danger for Germany’s children” is certainly unjustified.

This is not to say at all that Germany has nothing to lose from a break-up. In fact, it is likely that Germany would face serious problems after a break-up because of the appreciation of its currency. Its export-oriented economy would suffer badly and many of its commercial banks would find that their assets—much of which would now be denominated in weaker foreign currencies—no longer cover their liabilities. German taxpayers would likely have to pay a serious price to maintain both a hard currency and a solvent private banking system. It is these genuine risks that German citizens and policy makers should be focusing on when debating the future of the euro, not TARGET2.

5. Proposals for Settling TARGET2 Balances

While the calculations just presented suggest that the risk to Germany associated with the potential loss of its TARGET2 claim are not as large as often presented, there are good reasons to re-consider the Eurosystem's approach to handling to Intra-Eurosystem balances. An approach that reduces the potential risks to TARGET2 creditors in the case of a break-up may be appropriate, not least because of the positive impact of a reduction in the number of articles suggesting the Eurosystem is engaged in a secret rip-off of German citizens.

Hans-Werner Sinn has recommended a number of proposals for changing the Eurosystem's TARGET2 procedures. I will focus here on two: Caps on TARGET2 balances and annual settlement of balances.

5.1. Caps on TARGET2 Balances

Sinn (2011) proposed putting a cap on TARGET2 balances, recommending this approach as a "fundamentally more appropriate policy to keep current-account deficits in check than the wage policies contemplated by the new Pact for the Euro."

If a cap on TARGET2 balances is intended to restrict private sector capital flows, then this proposal is likely to be illegal under European law, which ensures free movement of capital. However, even setting aside its legality and the absence of a clear relationship between TARGET2 balances and current accounts, this proposal is akin to using a sledgehammer to crack a nut. Efficiently functioning payments systems play a crucial role in keeping modern economies ticking. TARGET2 processes payments equivalent to one-quarter of the euro area's annual GDP each day and interfering with its functioning would be hugely damaging in a way that would greatly offset any perceived gains from reducing current account imbalances.

Caps of this sort would effectively trigger the end of the euro as a true common currency. If residents of one country are told they cannot use the money in their bank accounts to make payments to residents of another country because their country's TARGET2 balance has reached its cap, then they will realise that a euro in an Irish or Spanish bank account is inferior to a euro in a German bank account because restrictions are placed on its usage. While restrictions on TARGET2 could prevent people from moving money out of peripheral bank accounts, new income earned from abroad by residents of these countries would likely be lodged into foreign bank accounts and the result could be a financial disintegration of the euro area.

5.2. Annual Settlement

A more constructive proposal for reducing the size of TARGET2 balances, discussed in Sinn and Wollmershäuser (2012), is to settle the liabilities generated by the system each year by debtor central banks handing over assets to creditor central banks. Sinn and Wollmershäuser note that there is a precedent in the Federal Reserve System for this approach.

Payments between banks in the US are handled by the Federal Reserve District Banks using the Fedwire payments system. This process generates Interdistrict Settlement Accounts that play the same role as TARGET2 balances in the Eurosystem. In April of most years, these accounts have been settled by re-allocating the ownership of the Fed's securities in its Systems Open Market Account (SOMA) among the various District Banks.²⁰ For example, the Fed's H.4.1. statistical release shows that the New York Fed had built up an Intradistrict Settlement Account credit of €188 billion on April 11, 2012. On April 18, the New York Fed's Intradistrict credit had fallen to €1.4 billion and its ownership share of the system's assets had increased, with the largest transfer coming from the Richmond Fed.

I agree that the Fed's Intradistrict Settlement procedures provide a potentially superior alternative to the Eurosystem's current procedures. However, I do not agree with a number of the claims made by Sinn (2012b) and CESifo (2012) about how the Fed's procedures affect District Bank behaviour and how they would affect the behaviour of Eurosystem NCBs if adopted. Furthermore, Sinn and Wollmershäuser's recommendations for how to adapt the Fed's procedures to the Eurosystem are also flawed.

5.2.1. Implications of Annual Settlement for Central Bank Behaviour

Sinn (2012b) has argued that the annual settlement of Intradistrict accounts influences the credit creation activities of District Banks and its adoption in the euro area would have a similar effect. Specifically, he argues that "it is not attractive to take on Interdistrict Settlement Account liabilities, which prompts the deficit District Feds to try to reduce their liabilities in order to avoid, come April, losing part of their titles in the Fed's clearing system." Similarly, Sinn (2012c) argues that "there is quite a penalty for District Feds that create and lend out more than their fair share of the monetary base. This is the reason why a TARGET-like problem has never arisen in the US to this day."

In reality, the Fed's District Banks have no control over their liabilities. Only the New York Fed carries out open market operations. These operations implement the instructions of the Federal Open Market Committee (FOMC) aimed at influencing the national supply of liquidity. They do not distinguish between counterparty banks on the basis of which Fed district they are based in and so make no attempt to control the allocation of the monetary base to different districts.

Even if the regional Feds had some control over their liabilities, the net asset position of these banks are not affected by Intra-District Settlement transfers, just as changing TARGET2 balances do not affect the capital position of Eurosystem NCBs. And even if these transfers did have an impact on their capital position, the Fed's District Banks have no fiscal link with the states in their regional area and so there is no incentive for the Presidents of the these banks to operate in a way intended to maximise gains or minimise losses.

Since the regional Feds do not, in fact, control Intradistrict balances via altering credit creation, the Intradistrict settlement rules cannot be the explanation for the absence of Euro-style increases in these balances. A more likely explanation is the widespread belief that the "dollar area" is fixed and

²⁰ See König (2012) for a detailed discussion of how Interdistrict Settlement Accounts work.

irrevocable so the risk of bank accounts being redenominated into a new currency is zero. These conditions do not prevail in the euro area today.

As with the implications drawn about how annual settlement affects credit creation in the US, some of the claims made for the potential effects of annual settlement in the euro area are mistaken. For example, CESifo (2012) advocates that an annual settlement procedure “is likely to create a disincentive for countries to draw Target credit.” However, just like the district Feds, the Eurosystem’s NCBs have essentially no control over their TARGET2 balances. Their membership in the Eurosystem requires them to operate the agreed monetary policy set by the ECB Governing Council. This policy determines the amount of money created in their country via open market operations and, as we have seen in Figure 5, it is these operations that are driving TARGET2 balances.²¹

One possibility is that those who advocate that annual settlement will change the behaviour of NCBs believe that this type of settlement will lead to NCBs placing limits on TARGET2 balances by preventing transfers. However, as discussed above, such limits would be illegal and would have extremely negative consequences.

5.2.2. Which Assets for Annual Settlement?

The vast majority of assets in the Fed’s SOMA account have been built up over time via money-creating open market operations. The sharing of ownership of these assets sets a clear model that the Eurosystem could follow for settlement of TARGET2 balances.

Each NCB has a defined portfolio of assets associated with its monetary policy operations. These assets are mainly collateralised loans to banks but also include government bonds purchased in the Securities Market Programme (these bonds have been purchased roughly in proportion the banknote allocation key.) Each year, the NCBs with positive net Intra-Eurosystem liabilities could hand over the legal ownership of some of these assets to the ECB to settle these positions. The ECB would then re-allocate them proportionately to TARGET2 creditors. This would see all TARGET2 balances set to zero each year.

At first sight, it might appear that this settlement process would increase the exposure of the Bundesbank to credit risk associated with loans to Spanish or Italian banks. However, because these assets have been generated via agreed Eurosystem monetary policy operations, the usual risk-sharing rules would apply. In other words, while the Bundesbank would own these assets and receive interest income from them, it would only be exposed to 27 percent of the credit risk.

²¹ The idea that NCBs have independent control of money creation and TARGET2 balances is a recurring theme in Hans-Werner Sinn’s commentary. For example, Sinn (2011) praises then Banca d’Italia governor Mario Draghi because he “kept his central bank’s lending under tight control throughout the crisis. Although it must have been sorely tempted, Italy did not accumulate Target deficits. It opted for virtuous abstention.” The truth is that the Banca d’Italia was simply implementing Eurosystem monetary operations and Target2 transfers according to the same rules as other participants. Mr Draghi’s ability to resist temptation had little to do with it.

Of course, if there were to be a Eurosystem break-up, then it is likely that the Bundesbank would be left holding loans to Spanish and Italian banks that have been redenominated into a new depreciated currency. While this could lead to credit losses for the Bundesbank, their outcome is still likely to be better than would occur in the case of an un-cooperative euro break-up in which the various NCBs refuse to honour any of their TARGET2 liabilities. All told, I believe this alternative approach has a number of benefits. It cannot rule out Bundesbank credit losses in the case of a euro break-up but it would likely reduce them in this scenario. Importantly, it would also help to focus debate on the relevant question of the impact of credit losses incurred on monetary policy operations in various scenarios and away from the inaccurate idea of TARGET2 as a type of bail-out mechanism.

It is perhaps with a euro break-up in mind that Hans-Werner Sinn has made an alternative proposal for settling annual balances. While Sinn (2012c) has recommended that Europe should “copy the rules of the US”, the actual proposal presented in that article and in Sinn and Wollmershäuser (2012) differs fundamentally from the US approach. Specifically, the proposal recommends annual settlement via bonds that Sinn (2012c) describes as “collateralised by each corresponding government with state-owned real estate or senior rights to future tax revenue.”

It is worth teasing out the implications of this proposal by revisiting our earlier example of Misters A and B and money being sent from Spain to Germany. Table 9 shows how such a proposal would affect the balance sheets of all parties after the annual settlement via a collateralised government bond. An additional player becomes involved in the form of the government of Spain. The gross public debt of Spain increases but the net debt of the public sector is unchanged because the Central Bank has increased its net capital position by taking on a new asset (the loan to Santander) without increasing its liabilities.

Table 9: Balance Sheet Implications of Settlement with Government Debt

Mr A	<ul style="list-style-type: none"> Reduced assets of €100
Santander	<ul style="list-style-type: none"> Reduced liabilities to Mr A of €100 Unchanged reserve assets at Banco de España Increased liabilities to Banco de España of €100
Banco de España	<ul style="list-style-type: none"> Increased assets via €100 loan to Santander.
Government of Spain	<ul style="list-style-type: none"> Increased liabilities via €100 collateralised bond.
Bundesbank	<ul style="list-style-type: none"> Increased assets via €100 collateralised Spanish bond. Increased reserve liabilities to Commerzbank of €100
Commerzbank	<ul style="list-style-type: none"> Increased reserve assets of €100. Increased deposit liability to Mr B of €100.
Mr B	<ul style="list-style-type: none"> Increased assets of €100

This proposal would likely have extremely negative immediate implications for TARGET2 debtor states. It would result in many of these countries experiencing a large rise in their gross government debt. As shown on Table 8, Ireland's debt-GDP ratio would increase by over 80 percentage points, Greece's by over 60 points, Cyprus's by over 40 points and Portugal's by over 20 points.

Of course, the public sectors in these countries would also have gained offsetting assets in the form of additional loans to banks that total the same amount. However, these assets would carry credit risk while the collateralised senior debt would be designed to be honoured even in the case of a default (or at least honoured as long as the country remained a member of the Eurosystem.) Sovereign bond investors would view the bonds issued by these countries as having greatly increased their loss-given-default because they would be moved significantly further back in the queue. Indeed, the issuance of this much senior debt would likely guarantee a sovereign default in Ireland and Portugal.

The requirement to issue senior government debt to settle TARGET2 balances would put serious pressures on the ability of the ECB Governing Council to continue running a common monetary policy in the euro area. States with central banks that were required to provide large amounts of loans to their banks would see their sovereign credit risk rising because of the need to issue new senior government debt. The ECB Governing Council issuing instructions that lead to automatic issuance of senior debt that puts pressure on sovereign credit assessments would likely be another factor putting pressure on states to leave the euro.

It is also questionable whether the senior debt proposal would necessarily provide Germany with a better outcome during an uncooperative euro break-up. Why should we assume that states would walk away from their TARGET2 liabilities and yet honour what may well be seen as "odious" debts issued to settle these same liabilities? These instruments seem designed to make a euro break-up less cooperative rather than more.

6. Conclusions

Despite its new-found celebrity status as a threat to German money and children, closer examination of the TARGET2 payments system generally reveals it to be innocent of its accused crimes. It has not been used to bail out cash-strapped peripheral governments and an examination of the link between TARGET2 balances and current accounts discredits narratives that focus on TARGET2 allowing peripheral economies to live beyond their means. TARGET2 has not flooded Europe's periphery with cheap credit. Indeed, the reality is the private sectors in these economies are undergoing a quick and nasty deleveraging. And the much-discussed risk to Germany represented by the Bundesbank's TARGET2 claim turns out to be something of a damp squib rather than a trap designed to prevent a German exit from the euro.

Many of the criticisms involving TARGET2 balances turn out, on closer examination, to be criticisms of the implementation of a common monetary policy across the Eurosystem. While the ECB may operate on a principle that credit institutions must be treated equally irrespective of their location, the reality of the provision of large amounts of credit to weak peripheral banks on the same terms as German banks with much of the credit risk shared by Germany was unlikely to be universally

popular. Still, proposals that the ECB adopt procedures that discriminate between banks in different countries (or that restrict the operation of payments systems in certain countries) are likely to be incompatible with the continuation of the euro as a common currency.

A final conclusion is that the debate about TARGET2 has exposed a number of weaknesses in the communications strategies of the ECB and its affiliated national central banks. Their failure to make data on Intra-Eurosystem balances easily and regularly available in a harmonised fashion has contributed considerably to the flawed “secret bailout” story, with those who complain about the dangers of the balances viewed as intrepid outsiders reporting facts the ECB would prefer you didn’t know. Rectifying this mistake would take little time and should be done as soon as possible.

Finally, while Europe’s central bankers are loath to ever talk about the break-up of the euro, their reluctance to do so has allowed others to fill the gap and there has been a strong demand for stories of massive TARGET2-related losses for Germany in a break-up scenario. A willingness to address these arguments and to provide a greater focus on the real and significant risks associated with a euro break-up would be welcome.

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Data Appendix

Sources for the 2011 National Central Bank balance sheets are as follows.

Belgium	http://www.nbb.be/doc/ts/Publications/NBBReport/2011/EN/T2/report2011_T2_H2.pdf
Germany	http://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Annual_Report/2011_annual_report.pdf
Estonia	http://www.eestipank.ee/sites/default/files/publication/ep2011_5.pdf
Ireland	https://www.centralbank.ie/publications/Documents/Central%20Bank%20Annual%20Report%202011.pdf
Greece	http://www.bankofgreece.gr/BogEkdoseis/Summary_Annrep2011.pdf
Spain	http://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesAnuales/InformesAnuales/11/Fich/balancee.pdf
France	http://www.banque-france.fr/fileadmin/user_upload/banque_de_france/publications/accounts-of-the-Banque-de-France-2011.pdf
Italia	http://www.bancaditalia.it/pubblicazioni/relann/rel11/rel11en/en_rel_2011.pdf
Cyprus	http://www.centralbank.gov.cy/media//pdf/ENGLISH_ANNUALREPORT_2011_.pdf
Luxembourg	http://www.bcl.lu/en/publications/rapports_annuels/Annual_report_2011/188214_BCL_ANNUAL_REPORT_2011_EN.pdf
Malta	http://www.centralbankmalta.org/updates/downloads/pdfs/AR-2011.pdf
Netherlands	http://www.dnb.nl/en/binaries/AR2011_tcm47-270450.pdf
Austria	http://www.oenb.at/en/img/ar_2011_screen_tcm16-247638.pdf
Portugal	http://www.bportugal.pt/en-US/Publicacoes/Intervencoes/Banco/RelatConselhoAdministracao/Tumbnails%20List%20Template/Activities%20and%20Financial%20Statements%202011%20%28Complete%20version%29.pdf
Slovenia	www.bsi.si/library/includes/datoteka.asp?Datotekald=4740
Slovakia	http://www.nbs.sk/_img/Documents/_Publikacie/AnnualReport/ARNBS11.pdf
Finland	http://www.suomenpankki.fi/en/julkaisut/vuosikertomus/Documents/vk_2011_en.pdf
ECB	http://www.ecb.int/pub/pdf/annrep/ar2011en.pdf