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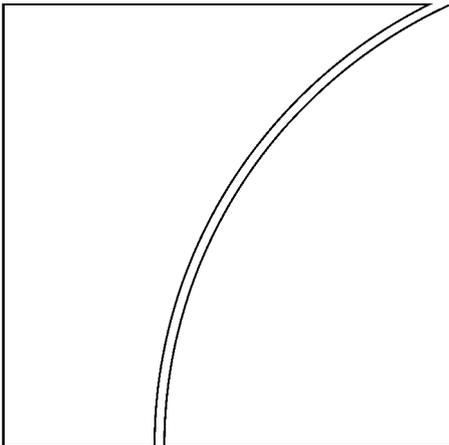
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Interpreting TARGET2 balances

by Stephen G Cecchetti, Robert N McCauley and
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Monetary and Economic Department

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Keywords: payment system, financial crisis, monetary policy,
international lending.

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Interpreting TARGET2 balances

Stephen G Cecchetti, Robert N McCauley and Patrick M McGuire*

Abstract

The increase in the TARGET2 balance for the Bundesbank has led to a debate in Germany about the appropriate interpretation and policy response, if any. In this paper we review the evidence for the current account financing interpretation, and find it wanting in explaining the data in 2012. BIS international banking data, by contrast, point to the importance of TARGET2 balances as a symptom of a reduction by core European banks of credit previously extended to borrowers in peripheral Europe. These same data suggest that banks headquartered outside the euro area, particularly UK banks, boosted TARGET2 balances by hedging redenomination risk. As such, TARGET2 balances reflect not only concern regarding actual credit exposures but also potential currency exposures.

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Keywords: payment system, financial crisis, monetary policy, international lending

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Table of contents

1.	Introduction	1
2.	Changes in TARGET2 balances before and after the crisis	2
3.	Changes in TARGET2 balances: financing current account deficits	6
4.	Changes in TARGET2 balances: shifting stocks of financing.....	7
5.	Changes in TARGET2 balances: hedging redenomination risk	9
6.	Policy issues.....	12
6.1	Financing versus adjustment of current accounts	12
6.2	Public assumption of private credit exposure: a credit reversal reversed?	13
6.3	Discouraging positioning for redenomination risk.....	14
7.	Conclusions.....	14
	References	15

1. Introduction

The existence of a substantial German claim on the Eurosystem is well known. As shown in Graph 1, since the beginning of the financial crisis in August 2007, claims of the Deutsche Bundesbank on the Eurosystem through the TARGET2 system have gone from basically zero to more than €700 billion.¹ This has led to a debate over what this accumulation means and what, if anything, should be done about it.

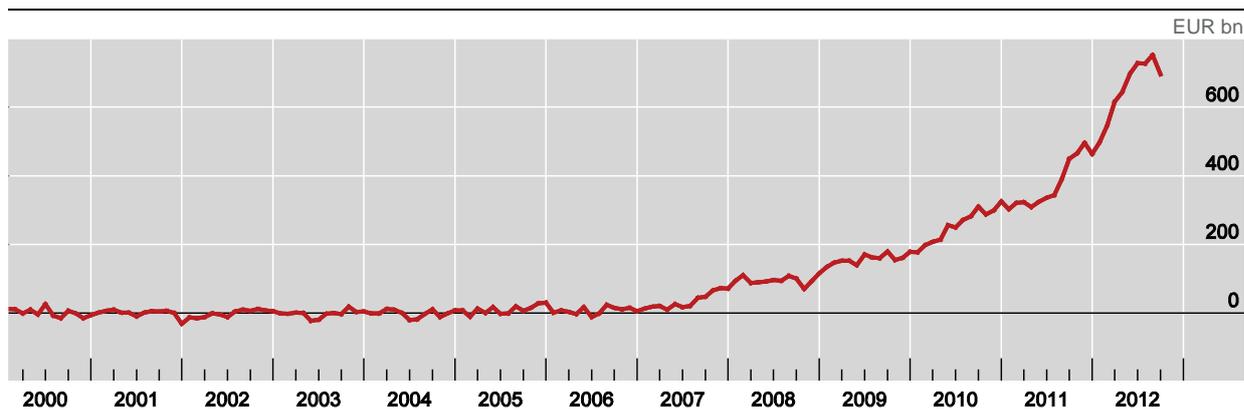
Interpretations of this and other TARGET2 balances fall into two camps. The first, judged a minority view by Auer (2012), is that these balances correspond to current account financing. We label this the *flow* interpretation. Proponents have included most prominently Sinn and Wollmershäuser (2012), whose views originally appeared as a working paper a year ago (Sinn and Wollmershäuser (2011)).² Fahrholz and Freytag (2012) take the view that the current account imbalance will create persistent TARGET2 balances.

The second camp, including Buitert et al (2011), Mody and Bornhorst (2012), Bindseil and König (2012), and Cecioni and Ferrero (2012) interprets TARGET2 balances as a “capital account reversal”.³ That is, they see this as one symptom of a balance of payments crisis. Bindseil and König (2012) argue that the Eurosystem full allotment refinancing operations should be seen as financing the reversal of an outstanding stock of cross-border claims while the TARGET2 payments system merely records the results. We label this the *stock* interpretation, and trace it originally to Garber (1999).

The members of the European Economic Advisory Group (2012) take an intermediate position. They read Sinn and Wollmershäuser (2011) as arguing that Greece and Portugal financed their current account deficits in 2008 to 2010 through TARGET2, while Ireland’s TARGET2 balance was associated with a capital outflow and Spain’s TARGET2 balance financed only a quarter of its cumulated current account. Italy is identified as a case of “capital flight” in late

The TARGET2 claims of the Deutsche Bundesbank

Graph 1



Source: Deutsche Bundesbank.

¹ TARGET2 is the abbreviation for the Trans-European Automated Real-time Gross settlement Express Transfer system 2. It is the large-value cross-border payments and settlement system for the Eurosystem.

² Their views have evolved and they have recognised that capital account transactions are important in some countries, as discussed by the European Economic Advisory Group (2012) below.

³ This is the term of Mody and Bornhorst (2012).

2011. More formally, Auer (2012) uses panel regressions to find that the TARGET2 balances track both current accounts and bank flows from Q3 2007 to Q1 2012.

Our work is most closely related to that of Auer (2012).⁴ Like him, we juxtapose TARGET2 balances with both current account and capital flow data, using BIS banking data. The new element in our work is that we distinguish between capital flows motivated by concerns over creditworthiness and those motivated by the low probability of redenomination.

The balance of this paper is organised in five parts. First, using T-account examples, we set out the simplest possible representation of payments flows through TARGET2 before and after the crisis. Second, we examine the evidence for the current account financing interpretation of the increase in German TARGET2 balance. Third, we marshal evidence for the interpretation that TARGET2 balances reflect a shift of international financial intermediation between Germany and peripheral Europe from the private sector to the public sector. Fourth, we interpret international banking data for the first time as reflecting the hedging of redenomination risk by banks headquartered outside the euro area. Fifth, we consider policies that might affect TARGET2 balances touching on current accounts, creditworthiness and redenomination risk. Finally we conclude.

2. Changes in TARGET2 balances before and after the crisis

The best way to understand how the TARGET2 mechanism works is to look at balance sheets and identities. Start with a simple current account transaction: someone in euro area Country 1 purchases a good or service from someone in euro area Country 2. Think of a Spaniard purchasing a BMW manufactured in Germany. The buyer needs to make the payment to the seller. Graph 2 shows the payment, the transfer of 100 from one customer deposit to another.

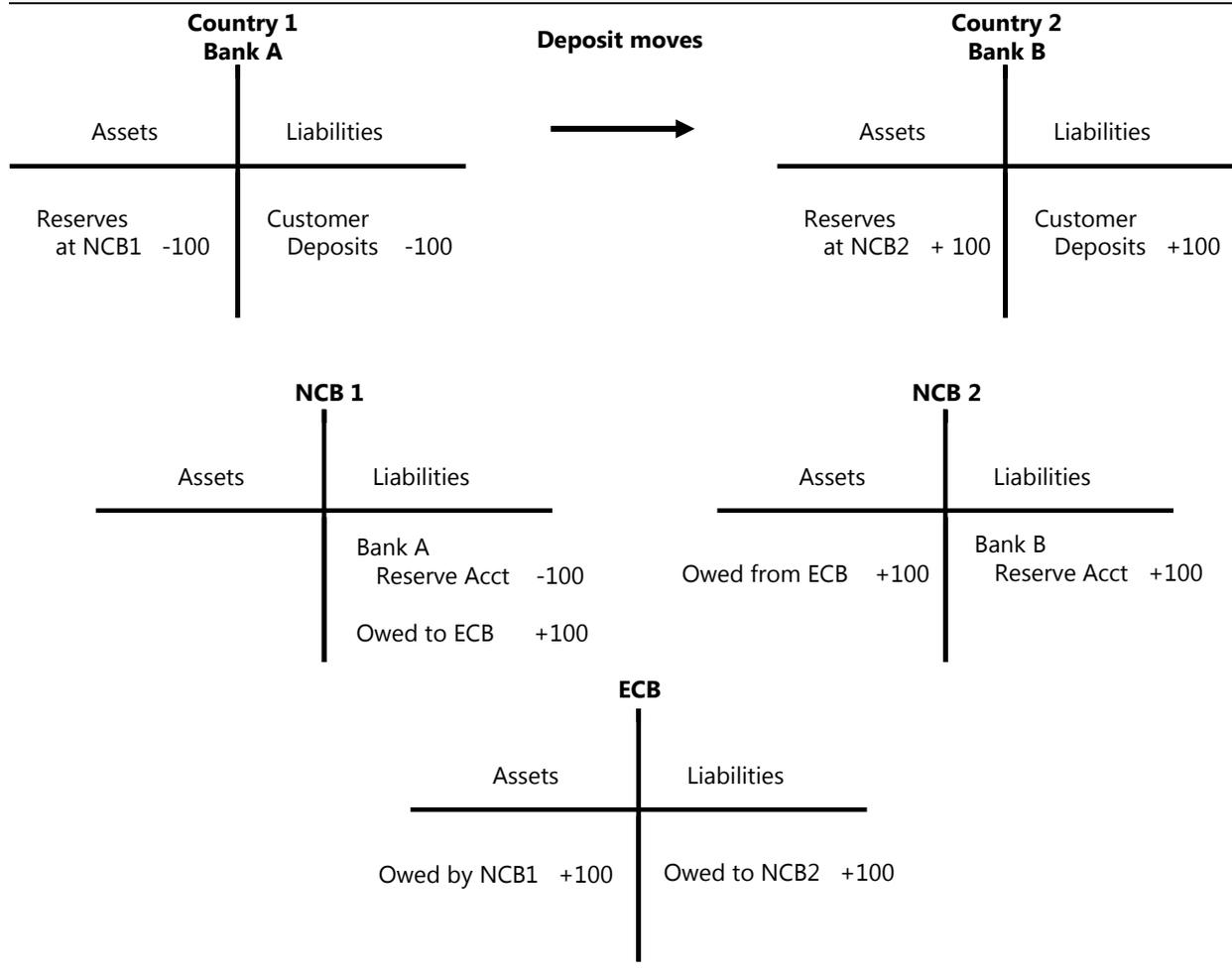
But this can't be the end of the story. Because this is an interbank transaction, somewhere a central bank is involved. And, because it is a cross-border transaction, at least two central

Current account transaction

Graph 2

Country 1 Bank A		Deposit moves	Country 2 Bank B	
Assets	Liabilities	→	Assets	Liabilities
Reserves at NCB1 -100	Customer Deposits -100		Reserves at NCB2 +100	Customer Deposits +100

⁴ Unlike Auer but like Cecioni and Ferrero (2012), we break up the post-August 2007 period into sub-periods and allow the 2012 data to speak separately. Conceptually, we part company in our aggregation of BIS data. Auer nets German-bank reported claims on the rest of the world against the rest of the world's bank claims on Germany. For Auer's purposes, it is not clear why he relies on BIS consolidated banking statistics, which are based on the *nationality* rather than the *location* of the reporting banks. Even given that choice, he defines net banking claims globally, so that German and Spanish banks' claims in the United States and Latin America, even those denominated in dollars, are included in their respective nets. If the measure for financial flows is noisy, then standard errors in variable analysis would suggest that the coefficient on bank flows would be biased toward zero and small relative to the coefficients on current accounts. Below, we instead examine gross claims of German banks on borrowers in the periphery, interpreting their change as reflecting credit concerns, and gross claims of various nationality of banks on the German public sector, interpreting their change as motivated by redenomination risk.

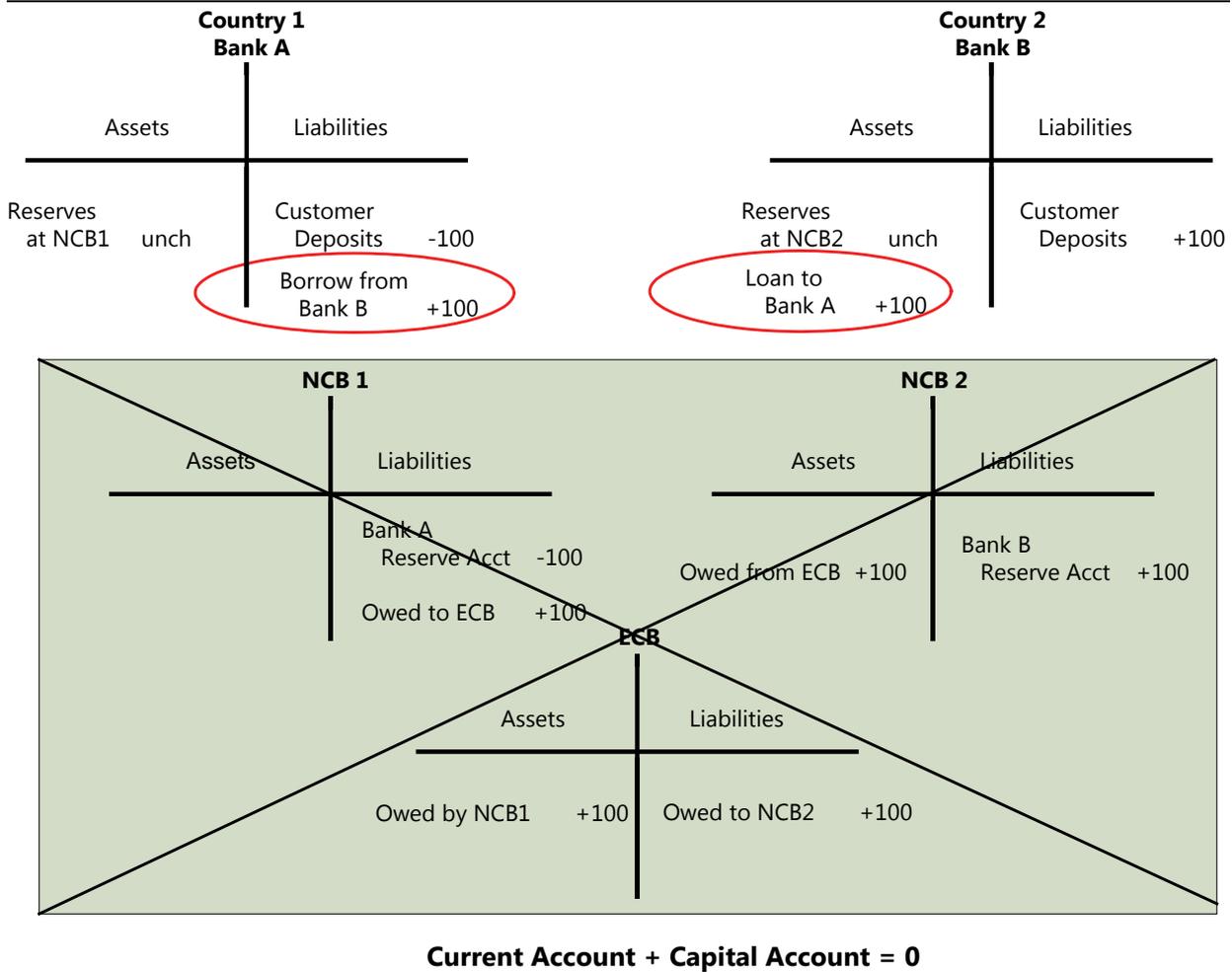


banks (NCBs) are involved. The full transaction is in Graph 3. The payee bank's (Bank A) reserve account with its NCB (Country 1) falls. On the other side, the recipient bank's (Bank B) reserves at its NCB (Country 2) rise. There's more because the two central banks need to settle their accounts with each other. This is done on the ECB's balance sheet, which is shown as the T account at the bottom of Graph 3. When the transaction is settled, NCB1 – the central bank on the payee side – owes more to the ECB; while the ECB owes more to NCB2.

At this point, Bank A, the payee bank, has suffered a deposit outflow and a corresponding reserve loss. Bank A has a number of options. It can try to attract a deposit, it can borrow on the interbank market, it can sell an asset, or it can go to the central bank. Before it does any of these, it is important to note that TARGET2 balances are not zero, nor is the balance of payments.

For the moment, assume that Bank A responds by borrowing on the interbank market. And, for simplicity, assume that the loan is from Bank B. The results are shown in Graph 4. This is a straightforward, cross-border capital account transaction. And, it takes the ECB and the NCBs out of the picture. That is, the reserves of the two commercial banks are unchanged since Bank B funds the deposit outflow from Bank A.

This is the pre-crisis mechanism. But with the onset of the crisis, interbank borrowing became increasingly difficult. As a result, the avenue for meeting a funding deficiency depicted in Graph 4 disappeared. It was at this point that the ECB began its full allotment refinancing operations. With full allotment, Bank A could count on being able to replenish its reserve



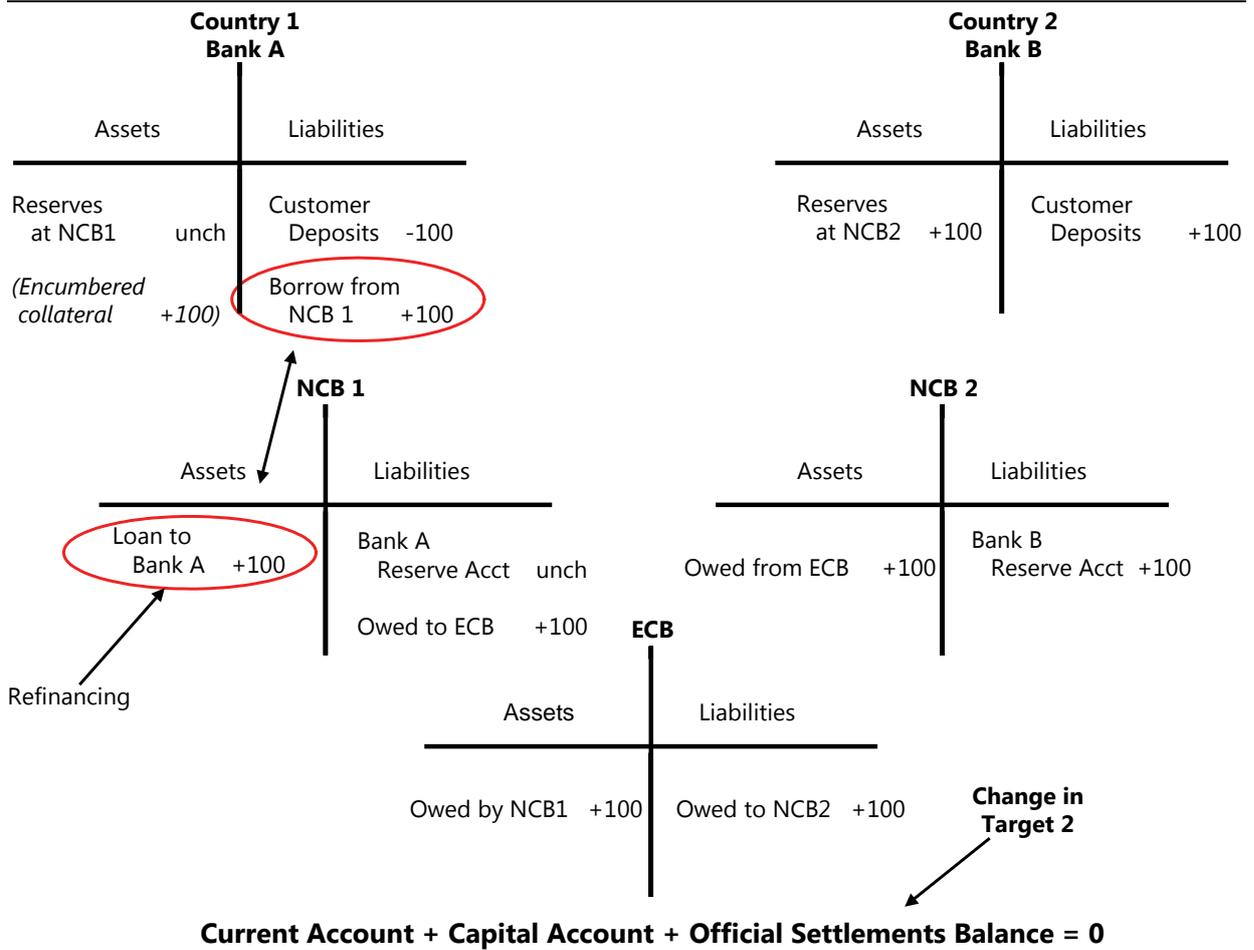
shortfall by going to the central bank for funds over a given term. This is the case shown in Graph 5. Here things are quite a bit more complicated, as Bank A's participation in the refinancing operation changes the two NCBs' balance sheets, and also the ECB's balance sheet. And, TARGET2 balances do the job previously done by the interbank capital flow and the capital account.

To see what is happening, it is useful to recall the balance of payments identity:

$$\text{Current account} + \text{Capital Account} + \text{Official Settlements Balance} \equiv 0.$$

This is an identity; not an equality. The last term in the identity is important if you have a gold standard or other fixed exchange rate regime. For Hong Kong SAR, for example, this is where changes in foreign exchange reserves show up. It is also where changes in TARGET2 balances show up. That is, TARGET2 is a balance of payments equilibrating mechanism inside the common currency area.

With the current operational framework of the Eurosystem, with full-allotment refinancing and given collateral rules, this official settlements balance is going to move automatically. In particular, if the capital account should go into reverse, then this reversal forces this term in the balance of payments identity to be even more positive.



We can contrast this mechanism with the one in place in a typical, textbook balance of payments crisis. When a country starts to experience a capital flow reversal arising from some combination of a loss of investor confidence and an attack on its currency, the outflows are limited by the size of the country's foreign exchange reserves. Once its reserves are exhausted, the country is forced to adjust. In the case of the Eurosystem, TARGET2 does a job similar to creating foreign exchange reserves for the country that is suffering the balance of payments crisis. The only limit on capital outflows, and the only limit on the liability that the country's central bank can amass with respect to the remainder of the Eurosystem, is the collateral that the country's banks have available to bring to the refinancing operation. But since the system operates automatically, there is no natural break.

3. Changes in TARGET2 balances: financing current account deficits

As the discussion thus far suggests, TARGET2 balances can arise from either current account or capital account transactions. In the introduction, we referred to these as the flow and stock interpretations. We now proceed to assess the strengths and weaknesses of the flow interpretation. That is, that TARGET2 balances reflect the financing of current account surpluses and deficits within the euro area.

To examine the case, we split the sample into three parts: 2002 to mid-2007, mid-2007 to end-2009 and 2010 to 2011.⁵ (We look at the most recent period in Section 4.) In Graph 6 we plot the cumulative current account deficit or surplus on the horizontal axis against the change in TARGET2 for the same period for the euro area countries. For the pre-crisis period shown in the red line of Graph 6 there is clearly no relationship.⁶

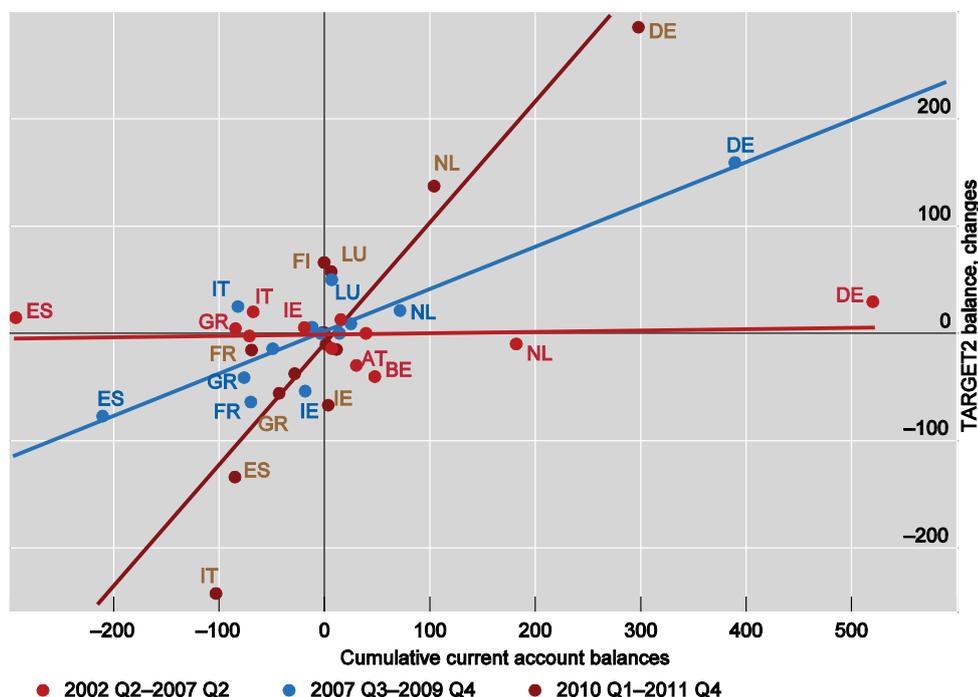
With the onset of the global financial crisis, as euro area interbank markets became less and less liquid, euro area banks became partially dependent on the recycling of surpluses through the Eurosystem. As we would predict, a relationship starts to emerge as shown in the blue line of Graph 6. The blue least squares line has a slope of 2/5. That is, through 2009, private flows continued to finance (or to recycle) three-fifths of the current account imbalances.

To the data through 2009, we add 2010–11 and plot the results in brown on Graph 6. The least squares line for this period has a slope of about one. That is, the cumulative current account deficits and surpluses for the eight quarters of the last two calendar years about match the change in TARGET2 balances. This supports the flow interpretation.

Euro area current accounts and changes in TARGET2 balances

In billions of euro, 2002–2011

Graph 6



Sources: Datastream, IMF, OECD, authors' calculations.

⁵ Cecioni and Ferrero (2012) break the sample into three crisis phases: August 2007-April 2010, May 2010-June 2011 and July 2011-May 2012.

⁶ Jobst et al (2012) notes that the expenditure of cash in Austria by tourists from the euro area gives rise to a chronic TARGET2 balance for Austria that has no relationship to the current account.

4. Changes in TARGET2 balances: shifting stocks of financing

We now turn to the stock interpretation. That is, we examine the possibility that, in addition to the financing of ongoing current account deficits and recycling of surpluses by central banks, commercial banks, among other private creditors, were shifting stocks of financing.

Such shifts can take two forms. First, banks in core Europe, including German banks, can reduce their outstanding claims on borrowers including banks in the European periphery. And, second, international banks can seek to protect themselves from redenomination risk by re-arranging their books within euro area countries, increasing liabilities in some countries and assets in others, in a way that leads to further growth in TARGET2 balances.

In the first case, banks in the periphery have financed the repayment by refinancing with their national central banks, creating excess reserves in the Eurosystem. Banks receiving repayments end up holding these reserves in their national central banks. In effect, core banks have redistributed a portion of the stock of their claims on the periphery onto the public sector, namely the Eurosystem.

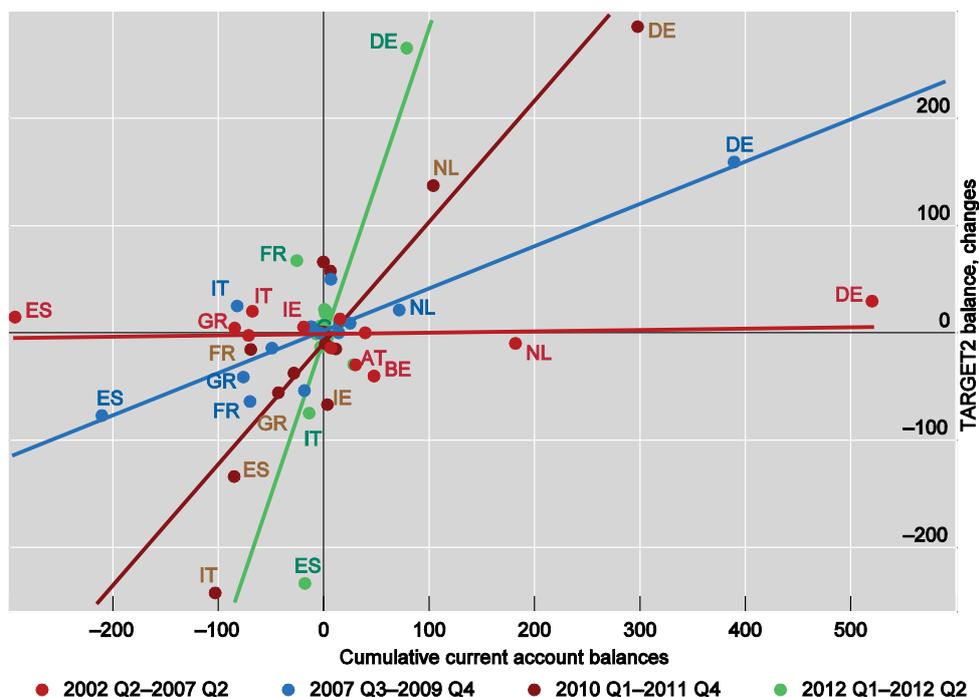
Before turning to evidence for each of these stock shifts, we consider the evidence for the necessity of a stock account by updating Graph 6 using data for the first half of 2012. We plot these data in green on top of the earlier data in Graph 7.

In the first half of 2012, the relationship between current accounts and TARGET2 clearly favours the stock interpretation. The line has steepened considerably: the changes in the TARGET2 balance substantially exceeded the value of current accounts. In fact, the increase in the Bundesbank's TARGET2 balance in the first half of 2012 was about three times Germany's current account surplus. And, for Spain, the TARGET2 change was about ten times the country's narrowing current account deficit. Something other than the financing of the flow of goods and services in the euro area was going on in the first half of 2012.

Euro area current accounts and changes in TARGET2 balances

In billions of euro, first half of 2012

Graph 7



One thing that has been happening for some years is the reduction of claims on the periphery by banks in core Europe. For instance, the stock of German banks' claims on peripheral Europe has fallen by roughly one half since their pre-Lehman peak, from just under €600 billion to €300 billion.⁷ In Graph 8 we show the change in the German banks' exposure to peripheral Europe from Q1 2008 to Q2 2012. The area of the circles in the graph is proportional to the quantity involved. Credit that had been extended by private parties in the core has been repaid thanks to the ECB's refinancing operations. The ability of banks in the periphery to draw on refinancing credit has had profound implications for the pace of current account adjustment in the periphery: without it, reduced credit amid high interest rates would have crushed economic activity in the periphery. In that sense, the broad association of Eurosystem credit and the more gradual rebalancing of current accounts is fair. That said, this is only a partial view. Eurosystem credit was and is doing more than simply financing ongoing deficits. It was also redistributing existing stocks of claims from the private sector to the public sector.

German banks' exposure to peripheral Europe

(change from Q1 2008 to Q2 2012 in billions of euro)

Graph 8



Source: BIS consolidated banking statistics (on an ultimate risk basis).

⁷ It should be noted that factors other than repayments can result in a decline in the stocks in Graph 8. If securities are held in banks' trading books, then declines in their market value can become important. Sales of securities to non-banks are also possible. In the case of Greece, the government debt exchange may have reduced bank-reported claims.

5. Changes in TARGET2 balances: hedging redenomination risk

But changing TARGET2 balances do not reflect only the stock adjustments of German banks. They also reflect banks' response to the risk of a re-emergence of national currencies, so-called redenomination risk. The response by some banks headquartered outside the euro area has been to exaggerate the pattern of financing of the peripheral deficits in the 2000s, which saw core Europe finance peripheral Europe's global deficits while the rest of the world accumulated claims on core European governments (Chen et al (2012) p 4).

Draghi (2012) interpreted yields in peripheral Europe in 2012 as reflecting not just the credit risk of strained sovereign and bank finances, but also redenomination risk.⁸ As market analysts subsequently pointed out, pinning down the redenomination risk in *prices* requires a host of heroic assumptions. These included, at least in the analysis by MacGorain (2012), the probability of exit, the scale of the subsequent depreciation, and the price of the bond in the new currency. Rather than enter into such calculations, we look for evidence in banking *quantities* during the first quarter of 2012.

To define redenomination risk and to gain insight into its management, consider this from Barclays PLC's June 2012 interim report:

Redenomination risk is the risk of financial loss to the group should one or more countries exit from the euro leading to the devaluation of local balance sheet assets and liabilities. The group is directly exposed to redenomination risk where there is a mismatching between the level of locally denominated assets and funding.

During 2012, a series of mitigating actions has been taken to reduce local net funding mismatches including the drawdown of €8.2bn in the ECB's three year LTRO in Spain and Portugal and additional deposit-taking in Spain. As a result of these mitigating actions the Group reduced the aggregate net funding mismatch in local balance sheets from £12.1 billion to £2.5 billion in Spain and from £6.9 billion to £3.7 billion in Portugal during the six months to 30 June 2012.

In Italy, where the risk of redenomination is judged to be significantly lower, net funding by the Group as at 30 June 2012 is materially unchanged at £11.9 billion compared to 31 December 2011. Collateral is available to support additional secured funding in Italy should the risk of redenomination increase.

A highly stylised but useful way to think of this is that Bank A and B in the simple example in Section 2 are in fact members of the same banking group. In the past, members of the group would lend to each other – the German branch lending to the Spanish one – but no longer. This is not a matter of credit risk management – the UK bank retains its claim on a Spanish borrower. From the standpoint of the British bank, there is no additional *credit* risk in the claim on its Madrid affiliate. This is a capital flow reversal within the group that has led the Spanish affiliate to rely on the LTRO while the German one holds excess reserves in the Bundesbank. Shortening positions in the country with the presumed weak (proto-)currency and lengthening positions in the country with the presumed strong (proto-)currency is precisely how a bank manages (proto-)currency risk.

⁸ Draghi (2012): "Then there's another dimension to this that has to do with the premia that are being charged on sovereign states borrowings. These premia have to do, as I said, with default, with liquidity, but they also have to do more and more with convertibility, with the risk of convertibility. Now to the extent that these premia do not have to do with factors inherent to my counterparty – they come into our mandate."

We operationalise redenomination risk in the manner suggested by Barclays PLC's reported actions, namely as net local currency assets in a country. Such net assets generally require cross-border funding that is at risk of losses in the event of redenomination. BIS aggregate data for UK banks for the first half of 2012 show them making progress in reducing net local currency assets in Spain and Portugal. Graph 9 (left-hand panel), shows a decline of about €20 billion. Consistent with the Barclays report above, UK banks' net local euro assets in Italy held relatively steady in the first half of 2012.

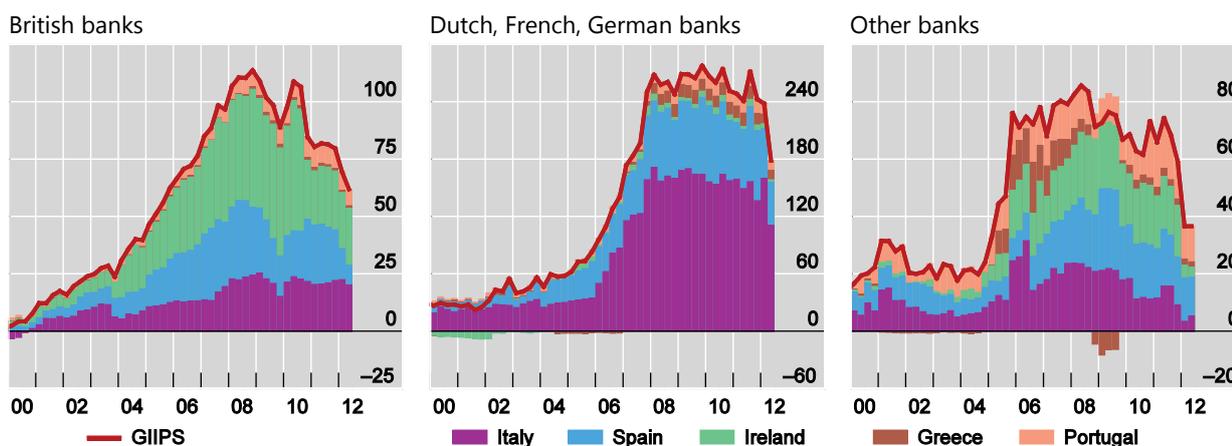
Banks from the euro area core also reduced their net assets in the peripheral countries (Graph 9, centre panel). In September 2012, BNP Paribas announced its intention to have its Italian subsidiary, Banca Nazionale del Lavoro, fund itself more completely in Italy and thus make it less reliant on cross-border inter-office funding.⁹ In the absence of shareholder reports like that of Barclays above, all we can say is that such reductions are consistent with euro area banks' hedging of redenomination risk.

While UK banks were cutting their exposure in the periphery in an effort to square their books and reduce their redenomination risk, they were increasing their net local positioning in Germany. In the first quarter of 2012, UK banks increased their claims on the German public sector, which includes both claims on the government and on the Bundesbank, by almost €100 billion. Significantly, the claims on the German public sector were booked mostly by their offices in Germany. The preference for locally booked claims may reflect fears that, in any

Net local euro-denominated assets in the GIIPS, by nationality of reporting banks¹

Amount outstanding, in billions of euro

Graph 9



¹ Difference between local claims in local currency and local liabilities in local currency.

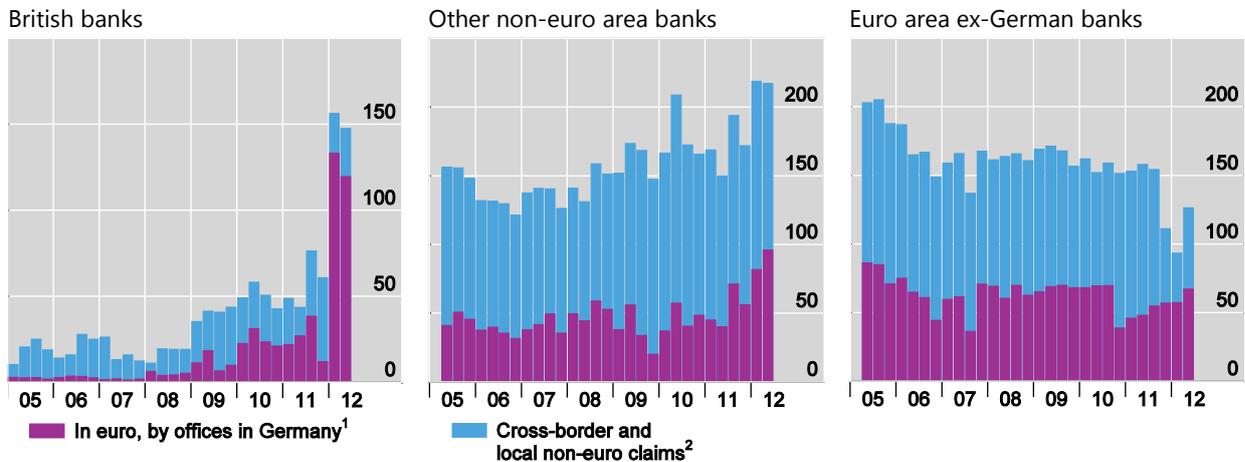
Source: BIS consolidated banking statistics (on an immediate borrower basis).

⁹ Jenkins and Daneshkhu (2012) report that BNL is funded by BNP Paribas from Paris in the amount of €18 billion. That a French bank, with regulatory authorities committed to the euro, was looking to reduce its net cross-border euro funding of assets in Italy suggests that market pressure, and not just regulatory pressure, was at work in the case of the UK banks' response to redenomination risks. For evidence of market pressure on the French banks, see *Financial Times* (2012a,b) and Moody's (2012): "Moody's believes that over time BNL may be required to reduce its use of parental funding, which may in turn create pressure to reduce its own balance sheet". BNP Paribas (2012) reported that its BNL subsidiary recorded a decline of loans outstanding by 4.7% and an increase in deposits outstanding of 3.5% in the four quarters to 30 September 2012, with corporate deposits rising by 16%. This left loans at the Italian subsidiary at €69.9 billion and deposits at €33.3 billion. The same bank's Belgian retail banking showed €102.5 billion of deposits and €84.4 billion in loans, provoking some discussion in Belgium about the bank's use of the excess deposits. Some reports suggest that assets might be rebooked from Italy to Belgium (Benedetti-Valentini (2012)).

Foreign claims on the German public sector, by bank nationality

In billions of euro

Graph 10



¹ Difference between foreign claims on the German public sector (ultimate risk) and the corresponding international claims (immediate borrower) assuming no sectorial risk transfers. ² Immediate borrower basis.

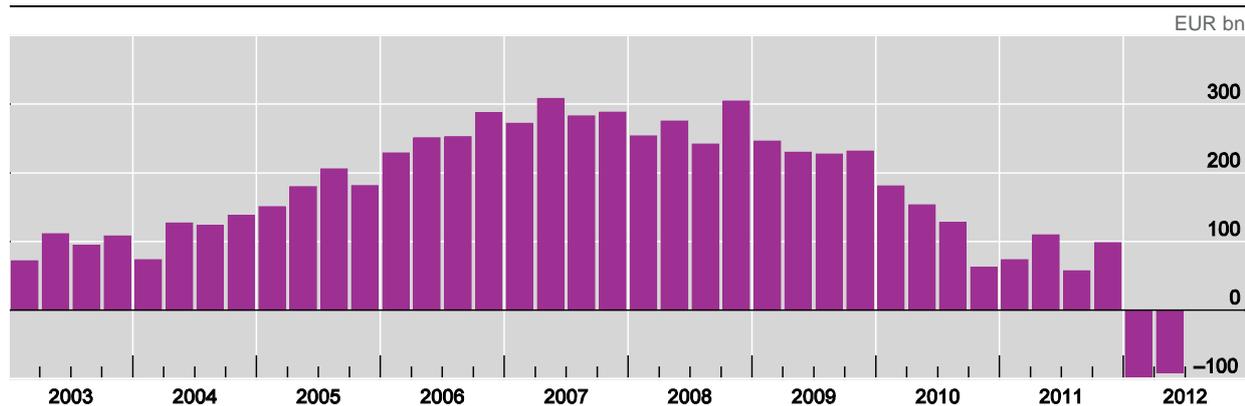
Source: BIS consolidated banking statistics (on an ultimate risk basis).

redenomination, cross-border claims might be treated differently.¹⁰ UK banks stand out among banks from outside the euro area, as well as from within the euro area (Graph 10).

The scale of the increase in claims on the German public sector is an order of magnitude larger than the scale of decrease in net local claims of UK banks in the Iberian peninsula. While it is instructive to think of banks in a single group reducing their net claims on Spain and increasing their net claims on Germany, this seems to be something else. Whatever the motivations of the shift of euros by UK and other banks into claims on the German public sector, the shift has resulted in an extraordinary development. In particular, banks in Germany, including offices of foreign banks, have flipped from providing euros to banks in the rest of the world to absorbing euros from banks in the rest of the world, as shown in Allen and Moessner (2012) and in Graph 11. Banks in Germany include both German-owned and foreign-owned banks, and the counterparties outside Germany include both affiliated and unaffiliated banks.¹¹ This is an extraordinary development for a creditor country – that its banks become net recipients of home-currency funding from banks in the rest of the world. While there has been much discussion of retail investors shifting their deposits into banks in Germany, the bank-to-bank channel shows a shift of hundreds of billions of euros.

¹⁰ DeGrauwe and Yi (2012) propose that Germany limit any losses from redenomination by treating cross-border bank liabilities differently from domestic bank liabilities in Germany. Such ideas may have led UK banks to locate the claims on the German public sector in Germany. Sinn (2012) argues that when non-resident bank deposits are used to buy bonds, equities or real estate, “it is impossible and illegal to disentangle the ownership claims generated in this way”.

¹¹ To the extent that German bank claims on banks in peripheral Europe are booked in Germany, some of the decline in Graph 11 is also captured in the data in Graph 8.



Source: BIS locational banking statistics by residence.

Whether UK banks have shifted euros from their operations in Spain, in Portugal or in France, or from all of them, the resulting increase in the TARGET2 balance reflects neither current account financing nor a reduction of pure credit exposures to borrowers in peripheral Europe. Putting together company reports, central bank reports and BIS data, it is clear that a substantial part of the increase in Germany's TARGET2 balance in 2012 resulted from international banks re-arranging their balance sheets to hedge the risk of redenomination, the possibility of a re-emergence of national currencies.

6. Policy issues

Our analysis puts us in a position to consider three policy issues raised by TARGET2. First is the old question of the appropriate balance between financing and adjustment. The second is the issue raised by official assumption of risks that were originally taken on by private creditors. The third is the question of policy, inside and outside the euro area, towards positioning against the euro by private parties. The first two are questions that have long been posed regarding IMF lending; the third is peculiar to the euro area.

6.1 Financing versus adjustment of current accounts

The essence of the Sinn and similar critiques is that Eurosystem collateral and refinancing policies have provided too much financing and required too little adjustment. TARGET2 is no more than a manifestation of the weight of finance over adjustment.

It is certainly true that the workings of the euro area monetary system have relieved the European periphery from much of the pressure that countries with floating exchange rates have felt in crises. Mexico in 1996 and Korea in 1997–98 endured wrenching changes in their current account deficits as the countries found it impossible to refinance maturing debts. In particular, the Korean current account swung from a deficit of 4.4% of GDP in 1996 to a surplus of 12.7% of GDP in 1998 (Cho (2002)). By contrast, Spain's current account deficit has shrunk from 9.6% of GDP in 2008 to 4.4% of GDP in 2010 (when bond spreads began to widen substantially), and is expected to shrink further to 2.4% in 2012 and to 0.5% in 2013 (European Commission (2012) p 191).

Thus, contrary to what would have happened had there been a sudden reversal of capital flows to an economy with an independent currency, the availability of Eurosystem credit to peripheral Europe has allowed for a more gradual adjustment of current accounts. It is as if, in the mid-1990s, the Mexican economy had been completely dollarised and Mexican banks had enjoyed access to the Federal Reserve discount window.¹² It is evident that access to cross-border central bank credit by banks in peripheral Europe has financed capital outflows, kept interest rates down and supported economic activity.

Nevertheless, current account adjustment has occurred in the periphery and more is expected. Indeed, taking a global perspective, the euro area as a whole is shifting from a surplus of 0.3% of GDP in 2010 and 2011 to 1.1% in 2012 and 1.5% in 2013 (European Commission (2012) p 203; Mayer (2012)).

Policy could encourage more adjustment and less financing. Sinn and Wollmershäuser (2012) originally proposed to cut off peripheral Europe from easy central bank credit to force adjustment of current accounts there.¹³ A later version of their proposal would cap further TARGET2 balances, while another would demand settlement of the balances with government bonds collateralised by real estate assets. Bindseil and König (2012) suggest that the balance toward adjustment could be shifted, at the appropriate time, by such policies as imposing charges for extended use of Eurosystem credit, or tightening collateral requirements.

So where does this leave us? In the future, if market forces turn against a country running a current account deficit, it is hard to see how the euro area monetary system would not serve again to cushion adjustment. This would put the onus on the new European Union procedures to restrain “excessive” deficits *ex ante*.

6.2 Public assumption of private credit exposure: a credit reversal reversed?

Graph 9 suggests that Eurosystem credit has to some extent allowed the public refinancing of private credit that was originally extended by German banks.¹⁴ Of course, credit to the periphery from the public sector has also allowed other euro area-headquartered banks, especially from France, and those outside the euro area, especially the United Kingdom, to reduce their exposures.

The implementation of, and perhaps simply the prospect of, outright monetary transactions by the Eurosystem could lead banks to reinvest in the periphery. If policy conditions were met, or could plausibly be met, the possibility of ECB purchases of short-dated sovereign bonds could induce global investors and European banks to buy such debt. Such a reflow of foreign investment into government bond markets would tend to reduce TARGET2 balances.

In the long run, there is a moral hazard risk that bankers will look back and perceive a euro area umbrella, leading them to be less cautious in extending credit. Private sector losses on Greek bonds will, as intended by the European authorities, help to limit that risk.

¹² See Bindseil and Winkler (2012) for a comparison of central bank credit operations under different monetary standards.

¹³ Whelan (2012a, b) argues that to prevent a cheque drawn on a peripheral bank from being accepted by a core bank would be inconsistent with a single currency. Bindseil and König (2012), Jobst et al (2012) and Ulrich and Lipponer (2012) argue against the notion that Germany is at risk for the whole Bundesbank claim on the Eurosystem, since the risk of the German TARGET2 balance is shared across the NCBs, with Germany responsible for only about a quarter of the total TARGET2 balances of about €1 trillion. Buiter and Rahbari (2012) go through a number of scenarios to argue that the Bundesbank’s TARGET2 balance is not an appropriate measure of credit exposure.

¹⁴ Gros and Mayer (2012) take the German government assumption of previously private risks as a given, and propose policies to improve the risk-return trade-off for Germany.

6.3 Discouraging positioning for redenomination risk

The entry into market participants' thinking and the positioning of redenomination risk raises policy issues for the euro area authorities and for authorities outside the euro area. The former intend to eliminate such risk. In the meantime, they might wish to discourage such a positioning. Authorities outside the euro area could face a tension between protecting their banks and not acting in a manner that exacerbates the challenge faced by euro area authorities.

Euro area authorities could change policies to make it more expensive for banks to arrange liabilities in the periphery and assets in the core of the euro area using the Eurosystem. This is already a negative spread proposition. It costs the difference between the ECB's refinancing rate and its deposit rate, currently 75 basis points, and more if other liabilities are raised in peripheral countries and possibly more if other assets are acquired in the core.¹⁵

Consolidated banking organisations that have both liabilities to the Eurosystem and deposits with it could be paid a lower deposit rate (negative in the current environment) on the minimum of borrowing and deposits. The intended effect would be to widen the spread paid to maintain this position, and thereby induce a reduction of the position. Thus, the intended outcome would be reduction of the TARGET2 balances.

Consolidated banking organisations could be expected to try to maintain the position in effect, while not paying the wider spread. However, lending euros to a bank in the country where a claim is currently held on the central bank introduces unwelcome credit risk into the position. Buying short-dated core government bonds is another way around the policy, but it would involve interest rate risk, and could involve a wider cost of carry if the yields were, as they have been at times, negative.

Authorities outside the euro area have faced a dilemma. To the extent that their banks have used cross-border funding to finance euro-denominated assets in the periphery, their banks are at risk and prudence requires that the risk be managed. Yet management of the risk, and public highlighting of the risk by the authorities, can make the risk worse. This is particularly the case if positions put on to hedge the redenomination risk are widely misinterpreted, as we judge that they have been.

7. Conclusions

The debate over the appropriate interpretation of the TARGET2 balances has involved the analytic question of whether such balances are best associated with ongoing current account balances or whether they reflect a capital account reversal that is motivated by credit concerns. We recognise both but our analysis of the first half of 2012 data emphasises the importance of positioning against redenomination risk. The European Economic Advisory Group (2012, p 62) states, "In the past interest rates diverged due to the fear of depreciation; now they do so because of the fear of default." Our identification of capital flows as motivated by redenomination risk implies that interest rates diverged into 2012 on fears of depreciation, or hopes of appreciation. Flows of funds suggest that 2012's last leg up in TARGET2 balances reflected something more akin to a currency attack than current account financing or credit reversal.

¹⁵ It should be noted that, if UK banks have driven up Germany's TARGET2 balance, then it is not German residents that are ultimately earning the low return associated with the TARGET2 balance. Indeed, the Bundesbank is to some extent funding itself at zero from foreign banks and earning 75 basis points on the corresponding TARGET2 balance – a positive carry. This reminds us that, in a world of multinational banking, net international investment positions are not necessarily a guide to domestic risks and returns.

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