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2. July 2011

Online at <http://mpra.ub.uni-muenchen.de/31937/>

MPRA Paper No. 31937, posted 3. July 2011 13:49 UTC

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**01.07.2011**

## **Abstract**

This paper analyses the implications of a continued divergence of TARGET2 balances for monetary policy in the euro area. The accumulation of TARGET2 claims (liabilities) would make ECB's liquidity management asymmetric once the TARGET2 claims in core countries have crowded out central bank credit in those regions. Then while providing scarce liquidity to banks in countries with TARGET2 liabilities, the ECB will need to absorb excess liquidity in countries with TARGET2 claims. We discuss three alternatives and its implications to absorb excess liquidity in core regions: (1) Using market based measures might accelerate the capital flight from periphery to core countries and would add to the accumulation of risky assets by the ECB. (2) Conducting non-market based measures such as imposing differential (unremunerated) reserve requirements would distort banking markets and would support the development of shadow banking. (3) Staying passive would lead to decreasing interest rates in core Europe entailing inflationary pressure and overinvestment in those regions and possibly future instability of the banking system.

**JEL:** E42, E52, E58, F32, F36

**Keywords:** TARGET2 balances, monetary policy, euro area, Eurosystem, excess liquidity

## 1. Introduction

A paper by Sinn (2011b) on the stealthily financing of euro area current account deficits by the ECB has opened up a controversial debate on the offspring, development and broader implications of TARGET2 (im-)balances<sup>1</sup>. Individual TARGET2 positions, which are recorded in the balance sheets of Eurosystem's national central banks, began to diverge with the outbreak of the financial crisis back in 2007. Until today, the Deutsche Bundesbank (BB) has accumulated claims (against the GIPS's central banks<sup>2</sup>) of more than 300 billion euros.

Sinn (2011a and 2011b) argues that such imbalances are the reflection of an interim and secret bailout by the ECB of the countries grouped under the 'GIPS' acronym. By increasing BB's claims over time, GIPS's (Greece's in particular) net imports are being supported and intra-Euro current account imbalances are being perpetuated (*current account view*). However, as Buiter et al. (2011) and Bindseil and Koenig (2011) note, TARGET2 imbalances are just the result of capital movements between each pair of countries settled through the Eurosystem's payment clearing system (*financial account view*). The policy relevance gained by the TARGET2 mechanism stems from the disruption and prolonged malfunctioning of interbank funding markets in Europe.

Since the financial crisis started, a number of national banking systems (Irish, Greek and Portuguese banks in particular) have been progressively excluded from the interbank lending markets over growing concerns about their solvency. The Eurosystem had to step in as a market-maker, providing unlimited lending to GIPS's banks. TARGET2 (im-)balances began reflecting GIPS's net capital outflows as refinanced by the Eurosystem. Note that only the Irish banking system has lost about 140 billion euro of foreign deposits since 2007, with German banks becoming the main beneficiaries of capital-repatriating flows currently underway. Furthermore, TARGET2 balances will keep diverging for as long as foreign (and even domestic) bank deposits in crisis countries are transferred to other banking systems which are perceived as safer by depositors.

In this context, Sinn and Wollmershäuser (2011) argue that the total stock of central bank money poses a hard limit to TARGET2 (im)balances. However, we show that –far from being any hard limit- TARGET2 balances might be unlimited. That said, further extensions of TARGET2

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<sup>1</sup> TARGET2 is Eurosystem's real-time gross payment (and securities) settlement system. The 'Eurosystem' comprises the ECB and the Eurozone's national central banks.

<sup>2</sup> 'GIPS' stands for Greece, Ireland, Portugal and Spain.

claims (liabilities) in the euro area's core (peripheral) economies might be at odds with maintaining a common monetary policy within the currency union.

Increasing BB's TARGET2 claims above autonomous liquidity demand<sup>3</sup> would lead to excess liquidity in Germany (as well as in other TARGET2-creditor countries), which –as we will see – would pose a threat to the “common” nature of monetary policy in the euro area. Note that, in order to maintain a single interest rate for the whole union, the ECB needs to provide liquidity to banks in the GIPS countries (TARGET2 debtors) while simultaneously absorbing excess liquidity from the Eurozone's core countries (TARGET2 creditors). In this paper, we look at the different alternatives for liquidity management within the euro area and show that policy-making might become quite uncomfortable for European central bankers.

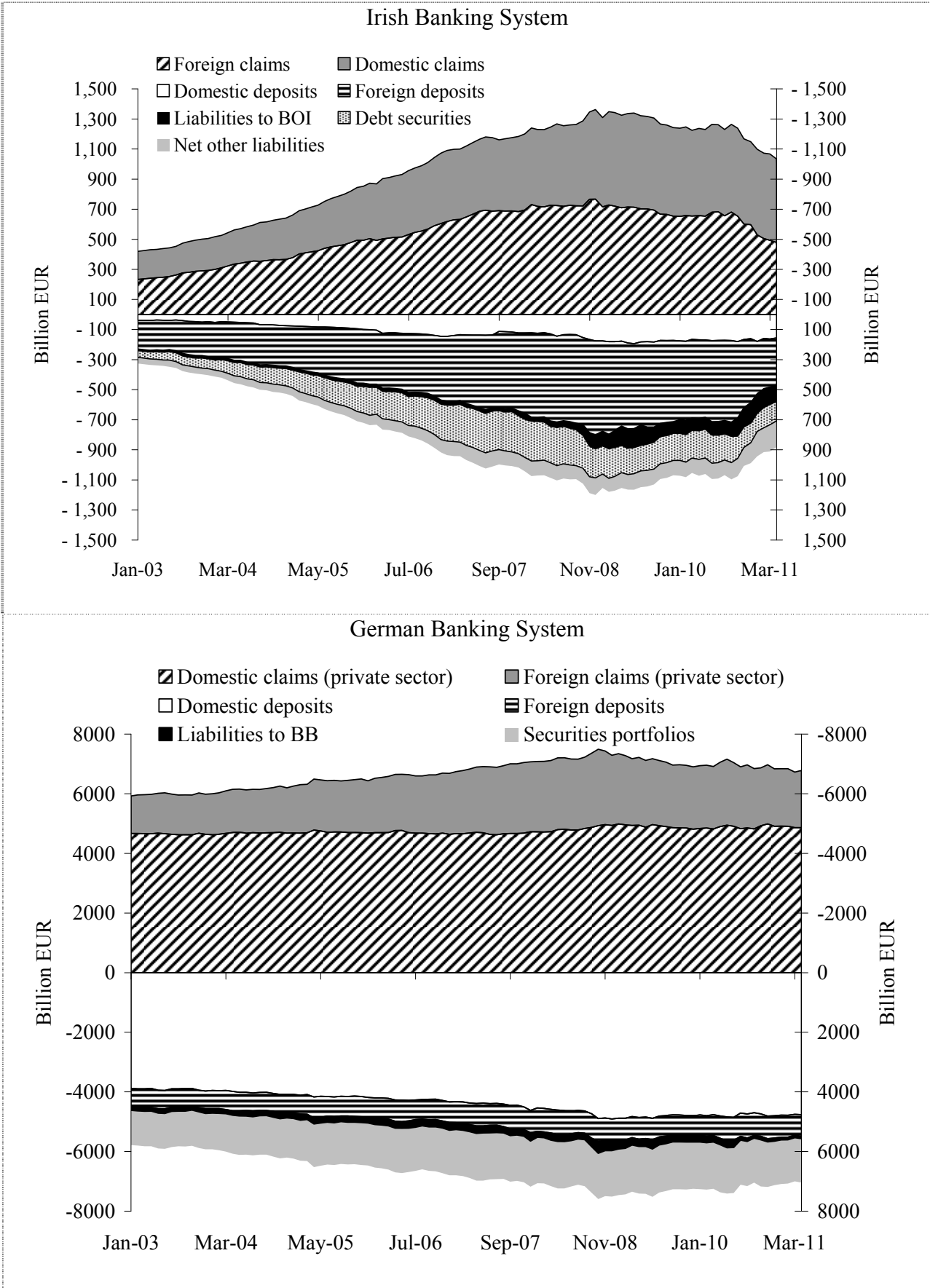
## **2. The ECB as a Market-Maker of Last Resort. Or How TARGET2 is Financing Intra-Euro Area Capital Flights.**

In order to draw a stylized picture of how TARGET2 is supporting capital flights we assume the euro area as a currency union consisting of two countries -Germany and Ireland. Before the crisis, the German banking system massively accumulated foreign claims –in our 2 country world– against Irish banks, therefore playing an active role in the build-up of the Irish boom. However, the financial crisis brought the boom to a sudden end. German investors' risk-aversion (against Irish assets) increased and German financial institutions started to repatriate their investments. Funds started to leave Ireland and to flow back into Germany. Figure 1 shows the balance sheets of the Irish and the German banking systems. Until the crisis, the increase of the Irish banking system's balance sheet was mainly driven by *foreign deposits* which were used to finance investments both inside and outside Ireland. With the outbreak of the 2007/2008 financial crisis, this funding source started to decline, specially in the second half of last year (see upper panel of Figure 1). In Germany this development was mirrored (in absolute terms) by a rise of foreign claims before the crisis and its reversal after the collapse of Lehman Brothers (see lower panel of Figure 1).

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<sup>3</sup> Autonomous liquidity demand is equivalent to the sum of autonomous liquidity absorbing factors on the liability side of the central banks balance sheet. This –in case of the BB - is mainly explained by currency in circulation. See ECB (2011), p.115.

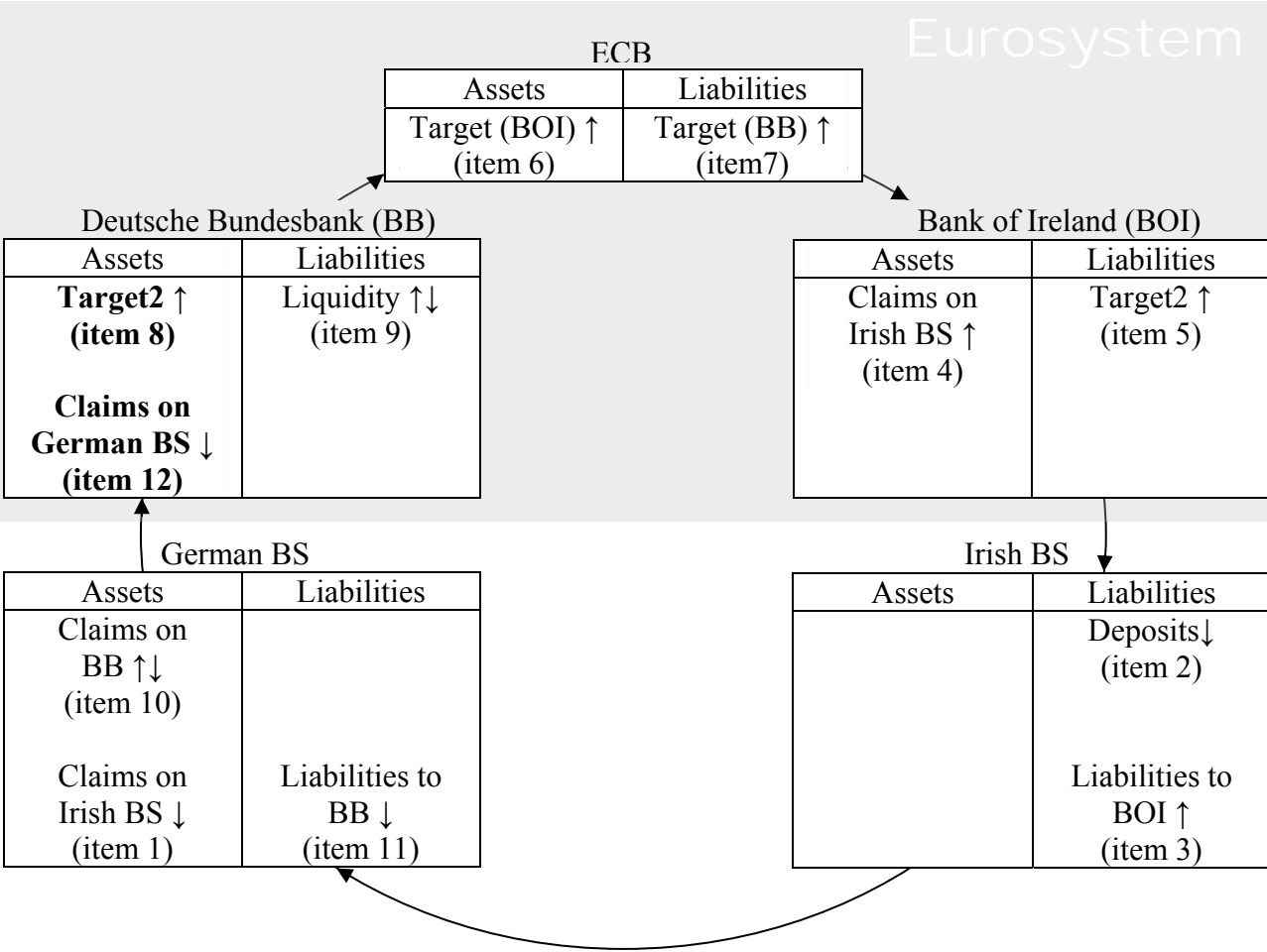
Figure 1: Banking System Balance Sheets



Source: National Central Banks, IMF: IFS.

In a world without a lender of last resort, the ‘bank run’ on Irish banks triggered by the flight of foreign (German) deposits would have ended up in the collapse of the Irish banking system while, in Germany, banks would have realized massive losses as the capital flight would have been limited by the sequential-service constraint<sup>4</sup>. Not so within the Eurosystem: Since the start of the financial crisis, Irish banks have been progressively excluded from interbank lending as German banks reduced their exposure to them on the back of concerns over their solvency. The ECB had to act as a ‘market-maker of last resort’ in order to avoid a potential systemic event. The TARGET2 system guaranteed Irish banks unlimited<sup>5</sup> credit lines from other Eurosystem central banks at the ECB’s refinancing rate, eliminating the sequential-service constraint for German banks.

Figure 2: Financing of Intra-Euro Area Capital Flight via the TARGET2



<sup>4</sup> Due to term transformation only the first-movers would have saved their deposits. That was the case of Iceland, where, as capital left the country, many ‘slow’ foreign investors based in the UK and the Netherlands lost theirs.  
<sup>5</sup> Providing Irish banks provided sufficient collateral.

Figure 2 shows the dynamics of the TARGET2 mechanism and the flight of German capital out of Ireland (flowing back into Germany).<sup>6</sup> Firstly, German banks reduce their exposure to Ireland. Foreign claims (item 1) of the German banking sector are declining, mirroring a reduction of foreign liabilities in the Irish banking sector's balance sheet (item 2). While also reducing their domestic and foreign claims, Irish banks fill the gap left by the reduction in (foreign) financing sources by (over-)relying on central bank credit (item 3). As a result, open market operations increase (item 4) in the asset side of the Bank of Ireland's (BOI) balance sheet, and a similar increase in TARGET2 liabilities (item 5) follow. As the ECB intermediates the transfer of bank deposits -via TARGET2- to the BB, ECB's TARGET2 liabilities to BB increase (item 7).<sup>7</sup> In its turn, BB books TARGET2 outflows among its assets (item 8) and credits the proceeds on the account of the recipient German bank (item 9). The German banking system, whose claims on the central bank have increased (item 10) now holds liquidity in excess of their reserve requirements. In order to minimize low-remunerated 'excess' liquidity (item 10), German banks reduce their reliance over refinancing operations at the BB (item 11), which is equivalent to declining claims of BB on German banks (item 12) and a reduction of liquidity (item 9).

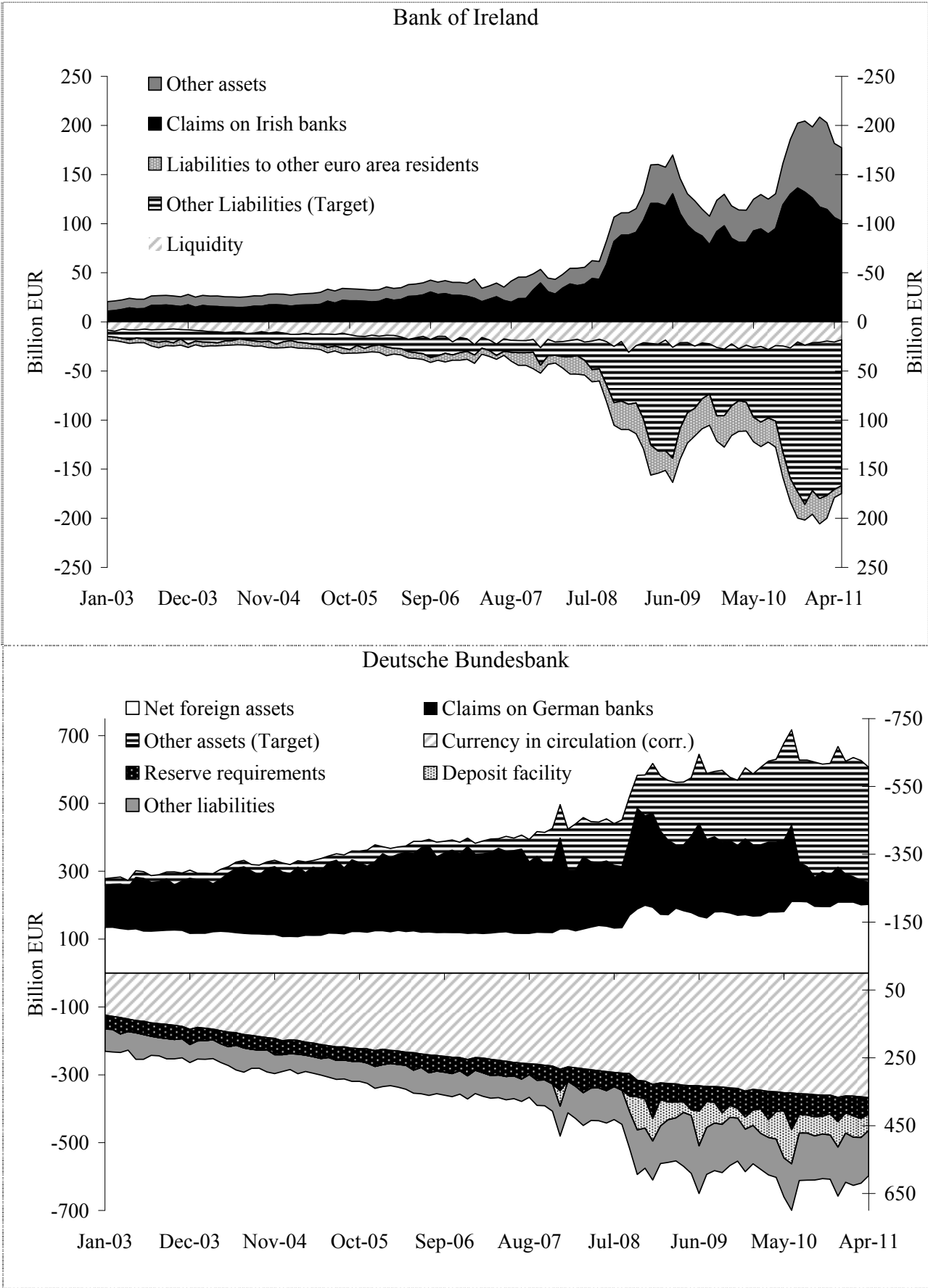
The stylized chart of liquidity flows described in Figure 2 shows up in the balance sheets of both the BOI and BB (Figure 3). Since the start of the crisis, claims on Irish banks (as well as TARGET2 liabilities in the BOI balance sheet) have sharply increased. This increase has been mirrored by an increase of TARGET2 claims (substituting previous claims on German banks) in the BB's balance sheet.

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<sup>6</sup> A broadly similar approach is described in Buiters et al. (2011) and Bindseil and Koenig (2011).

<sup>7</sup> There is no 'world' liquidity effect as TARGET2 claims and liabilities sum up to zero at the ECB level.

Figure 3: Central Bank Balance Sheets



Source: National Central Banks, IMF: IFS.



### **3. Unlimited TARGET2 Balances – The Emergence of Creditor and Debtor Central Banks**

According to Sinn and Wollmershäuser (2011), the resulting increase in TARGET2 liabilities (claims) at the BOI (BB) would crowd central bank credit out in Germany (see item 8 and 12 in Figure 2 and the horizontal dashed area substituting the black area in the lower panel of Figure 3). While this situation might be possible, the implications that Sinn and Wollmershäuser (2011) derive are not straightforward. They argue that the Eurosystem would need to sell its (gold and foreign exchange) reserves when the supply of liquidity due to the accumulation of TARGET2 claims exceeding autonomous liquidity demand. While theoretically possible, it is not very likely. Instead, the BB would (be inclined to) absorb liquidity by issuing debt instruments which would be recorded on its balance sheet's liability side.

However, this –in our view- more realistic scenario would lead to a paradoxical situation. In general, a textbook central bank holds a monopoly over the issuance of base money and provides liquidity wherever it is scarce at the policy rate (*creditor central bank*). In contrast, due to the accumulation of large stocks of foreign reserves, most emerging market central banks are facing surplus liquidity in their domestic banking systems (*debtor central bank*). By expanding longer-term liabilities to the domestic banking system, debtor central banks structurally absorb liquidity (Loeffler et al. 2010).

The increase of TARGET2 claims above liquidity demand at the BB would have a similar effect to the accumulation of FX reserves in emerging-market central banks. In fact, the BB would become a debtor central bank towards the German banking system! At the same time, national central banks building up TARGET2 liabilities -such as the BOI- would remain as classical creditor central banks. That is, while the ECB would need to provide liquidity to one region of the euro area, it would also have to reduce liquidity in countries with TARGET2 claims. As a result, liquidity management in the euro area would become asymmetric.

To get a sense of how the balance sheets of creditor (BOI) and debtor central bank (BB) would differ, Figure 4 zooms into Figure 2 for that purpose. With constant liquidity demand in Germany, the continued increase of TARGET2 claims would lead to an oversupply of liquidity. In order to absorb the excess liquidity, BB would have to offer debt instruments to German banks (item 13). In contrast, the BOI would have to expand its open market operations on the

asset side of its balance sheet in order to meet the increasing liquidity needs of the Irish banking system.

Figure 4: The Emergence of Creditor and Debtor Central Banks

<i>Deutsche Bundesbank (BB)</i>		<i>Bank of Ireland (BOI)</i>	
Assets	Liabilities	Assets	Liabilities
<b>Target2 ↑ (item 8)</b>	Liquidity ↑↓ (item 9)  <b>Liabilities to German BS ↑ (item 13)</b>	<b>Claims on Irish BS ↑ (item 4)</b>	<b>Target2 ↑ (item 5)</b>

**4. Liquidity Management in an Asymmetric Monetary Union**

In light of these developments, the ECB will face three major alternatives for managing the excess liquidity we have already analyzed in our stylized 2-country monetary union. Firstly, the Eurosystem could conduct market-based measures such as selling bonds to German banks or using reverse repos to drain excess liquidity in the German banking system. Secondly, it could absorb excess liquidity through non-market based instruments such as to increase (unremunerated) minimum reserve requirements. Thirdly, the Eurosystem could (do nothing and) just offer German banks access to the ECB’s deposit facility which is remunerated at 0.5%, that is, 75 basis points below the marginal lending rate (currently at 1.25%).<sup>8</sup>

*(1) Market-based Liquidity Drain*

In order to encourage German banks investing in longer-term central bank debt, the Eurosystem could offer reverse repos at an interest rate close to the main refinancing rate. If excess liquidity is completely absorbed, this option would ensure a common monetary policy within the Eurozone as short-term rates would remain close to one another in all member countries. However, two main unintended consequences are likely to follow. Firstly, capital flight would likely accelerate as the TARGET2 mechanism would provides an incentive for German banks to withdraw their foreign deposits from Irish financial institutions and invest them into high yield central bank debt. The implications would be that German banks would be encouraged to even

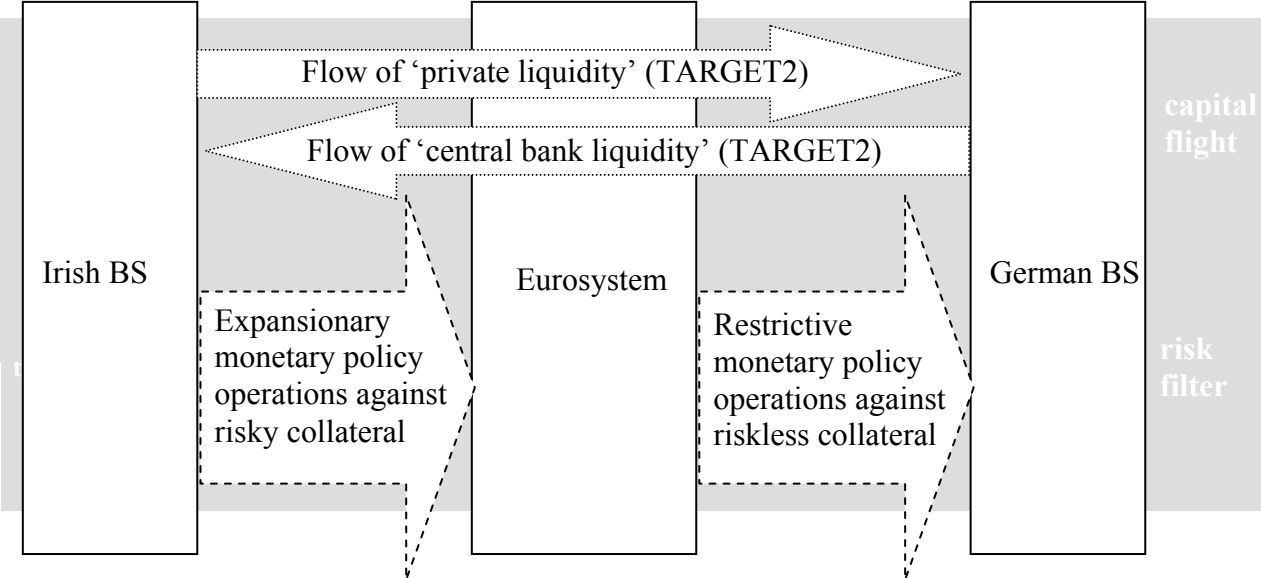
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<sup>8</sup> There is a fourth alternative which is ‘fiscal coordination’. Fiscal authorities might move bank deposits to the central bank. In this case, government deposits would become quasi-monetary policy operations for as long as the central bank is able to keep withdrawals under control. The mixture of fiscal debt management and monetary policy would call into question the ‘independence’ of the central bank at stake.

accelerate their disengagement in Ireland as the Eurosystem – due to the TARGET2 mechanism - would de-facto swap the risky exposure of German banks toward the Irish BS into riskless high yielding claims against their central bank. Secondly, issuing debt certificates at the policy rate could complicate liquidity management and discourage interbank lending as banks could overdemand liquidity knowing that, at the end of the day, they could reinvest it in market-based central bank debt at the policy rate.<sup>9</sup>

Figure 5 describes this mechanism. ‘Private liquidity’ flows via the TARGET2 system back to Germany leading to an increased demand on ‘central bank liquidity’ by Irish banks, which have to pay the policy rate for their increased reliance over Eurosystem lending. German banks are encouraged to remove their deposits as they can invest their repatriated deposits with the Eurosystem yielding at least the policy rate.

Figure 5: Free Lunch for German Banks



While claims against the Eurosystem (reverse repos) are riskless<sup>10</sup>, funds deposited at Irish banks are (perceived as) much riskier<sup>11</sup>. The Eurosystem as a whole would be accumulating riskier assets as a by-product of its monetary policy operations with the Irish banks (lower part of Figure 5). The default risk of holding such riskier assets posted as collateral by Irish banks would be born by the ECB and, ultimately, by the individual national central banks in accordance to

<sup>9</sup> Under ‘normal’ conditions overdemanding liquidity is not ‘costless’ as lending the excess liquidity in the interbank market would lead to a downward pressure on interbank rates while reinvesting it in central bank debt would be possible only at the deposit interest rate.

<sup>10</sup> In order to ensure the attractiveness of those investments the default risk would have to remain at the ECB.

<sup>11</sup> Note that, while it could be argued that ‘deposit insurance’ makes deposits risk-free, this depends –in its turn- on the Government’s creditworthiness. Once this is lost, concerns over the higher risk of funds deposited at domestic institutions would be justified.

their capital key. Overall, this first option would represent a ‘free lunch’ for the German banking sector.

### *(2) Non-market Based Liquidity Drain*

In order to absorb excess liquidity in the German banking system, the Eurosystem could also impose differential unremunerated required reserves (DeGrauwe 2010). In contrast to market based measures in which banks are free to invest on its own initiative, minimum reserve requirements are imposed by legal force. An increase of binding unremunerated<sup>12</sup> required reserves on German Banks would force them to increase their deposits at the Eurosystem.<sup>13</sup> BB’s longer-term liabilities to the German BS (item 13 in Figure 4) would increase and –therefore- the (over)supply of liquidity would fall.

The very serious drawbacks of absorbing liquidity by legal force are at least twofold: (1) Mixing up interest rate policies with quantity restrictions would probably induce higher interest rate volatility as monetary policy can only choose between two instruments: Either targeting prices (interest rates) and leaving quantities react endogenously or targeting quantities and accepting an endogenous determination of prices. Therefore, minimum reserve requirements would not be able to absorb peaks of excess liquidity without causing extreme interest rate swings in the interbank market.<sup>14</sup> (2) As reserve requirements are not mandatory for all financial institutions, but just to depository banks, the quasi-tax nature would hinder fair competition. In this case, monetary policy would support the emergence of unregulated financial products and institutions.

### *(3) Deposit facility – No Active Liquidity Drain*

This option -in our view, the most likely one- would be equivalent to a decrease of the money market interest rate in Germany. Since Irish banks are virtually excluded from the Euro interbank lending market, excess liquidity in the German banking system would lead -due to the lack of alternative investment opportunities with a better risk-return profile- to additional pressure on

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<sup>12</sup> Currently, minimum reserves in the Eurosystem are remunerated by the average interest rate of ECB’s main refinancing operations during a month. Therefore, although banks are not free to invest in required reserves, an increase of remunerated reserve requirements would have a similar impact as that of using market based measures to absorb surplus liquidity.

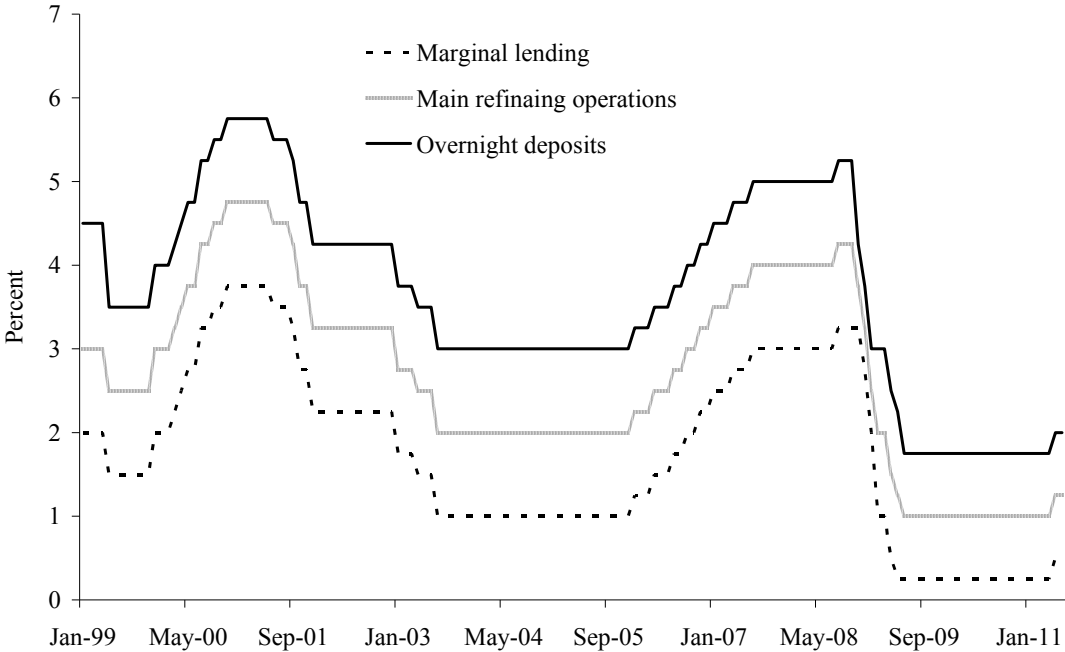
<sup>13</sup> In practice, minimum reserve requirements would need to be increased in all euro area countries which are interconnected with the German banking system through the interbank market.

<sup>14</sup> Managing liquidity through reserve requirement adjustments has sometimes been compared to cutting a diamond with a sledgehammer. The ECB required reserve ratio is 2 percent of overnight deposits as well as deposits and debt securities with a maturity up to 2 years and has not changed since the beginning of EMU.

short-term interest rates. Interbank interest rates would fall to the Eurosystem’s overnight deposit rate<sup>15</sup>, currently 75 basis points below the main financing rate (Figure 6). At this rate, banks would be indifferent between investing their excess of liquidity with other commercial banks and rather investing it at the Eurosystem’s riskless deposit facility. Thus, building on the deposit facility, the effective money market rate would be higher in crisis countries -like Ireland- than in the boom ones –like Germany.

Apart from not being in line with a common monetary policy, the ‘do nothing’ option would foster overinvestment in Germany. In order to avoid investing the ‘free’ liquidity into the low-yielding deposit facility, German banks would have the incentives to search for higher-yielding investment projects. Inflationary pressures, together with the usual hazards associated with excessive and/or riskier lending in Germany, would be two likely outcomes. However, there is also a point in favor for the deposit facility solution. The lack of investment opportunities could also discourage German banks from removing their foreign deposits<sup>16</sup>. That would lower the pressure on the TARGET2 mechanism as well as on monetary policy.

Figure 6: Euro Area Policy Rates



Source: ECB.

<sup>15</sup> The overnight deposit rate is the relevant policy rate in an environment of excess liquidity.  
<sup>16</sup> Which would also be the case when absorbing excess liquidity non-market based.

## 5. Conclusion

This paper has looked at the implications of an ongoing divergence of TARGET2 balances for monetary policy in the euro area in the case of a prolonged capital flight from the periphery to core countries. We show that the “common” nature of monetary policy within the Eurozone could be called into question if TARGET2 claims lead to rising liquidity in the core regions. Should that be the case, the Eurosystem would need to provide liquidity to banks in countries with TARGET2 liabilities while absorbing excess liquidity in countries with TARGET2 claims to maintain a common interest rate for the euro area.

The strategies available at hand for absorbing excess liquidity are limited and neither of their outcomes will be optimal from the Eurosystem’s perspective. Using liquidity-absorbing market-based measures might even accelerate the capital repatriation process and would provide core banks with a ‘free lunch’. Imposing unremunerated reserve requirements on core banks might hamper (or even break) the interest-rate transmission channel and encourage the emergence of shadow banking. Finally, even a ‘do nothing’ scenario would likely cause inflationary pressures, together with the hazards associated with excessive and/or riskier lending in core countries.

Whether a credit-driven boom in core Europe’s domestic economies would provide a 'way out' of the current crisis remains uncertain. By driving an overinvestment cycle in core Europe (in particular in Germany), GDP growth and asset prices would pick-up. Domestic demand would start rising possibly with positive spillover effects to periphery countries. The boom would improve the asset side of German banks’ balance sheets so their restructuring would also be quicker. A likely increase of liquidity demand by German banks could lead to a reduction of excess liquidity, although it could also accelerate the deposit drain to fund investments in Germany. Overall, relying on a bubble for boosting short-term growth would be sowing the seeds of the next crisis.

The best scenario we conceive is one in which TARGET2 balances do not unlimitedly diverge. However, to reach that goal, the euro area interbank money market would need to be fully restored so as to improve the liquidity allocation process. Since this cannot be safely achieved by the usual stabilisation policies at hand, we urge policymakers at speeding up the restructuring process currently underway in many European banking sectors and to meet the fiscal consolidation targets in place to regain the trust of financial markets.

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