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**Working Paper**

## Fiscal divergence, current account and TARGET2 imbalances in the EMU

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UNIVERSITÄT LEIPZIG

**Wirtschaftswissenschaftliche Fakultät**  
**Faculty of Economics and Management Science**

Working Paper, No. 105

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**Fiscal Divergence, Current Account  
and TARGET2  
Imbalances in the EMU**

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# **Fiscal Divergence, Current Account and TARGET2 Imbalances in the EMU**

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## **Abstract:**

The paper scrutinizes the reasons for the European debt crisis, the implications for TARGET2 imbalances and options for surplus liquidity absorption within an asymmetric EMU. It is argued that starting from the turn of the millennium diverging fiscal policy paths and diverging unit labour costs were the driving force of rising intra-European current account imbalances within the euro area. This was facilitated by post-2001 low interest rate policies and changing financing conditions for the German banking sector. The paper shows how since the outbreak of the crisis the adjustment of intra-EMU current account imbalances is postponed by a rising divergence of TARGET2 balances, as the repatriation of private international credit and deposit flight from the crisis economies is substituted by central bank credit. Given that this process has brought Deutsche Bundesbank into a debtor position to the domestic financial system, we discuss options for liquidity absorption by Deutsche Bundesbank to forestall asset price bubbles in Germany. We argue that economic recovery in periphery countries is key for a reduction of TARGET2 imbalances and therefore surplus liquidity in Germany.

*Keywords:* EMU, fiscal divergence, TARGET2, current account imbalances.

*JEL-Codes:* E42, E52, E58, F32

\* Disclaimer: The views expressed in this article are those of the authors and should not be reported otherwise.

## 1. Introduction

The ongoing European debt crisis is not only understood as a European sovereign debt crisis, but also as fundamental threat to the common European currency. Europe is subdivided into debtor and creditor countries, which struggle for the size and conditions of rescue packages to safeguard European financial stability. Whereas rescue packages negotiated by EU and IMF have become politically more and more tenuous and conditional, the TARGET2 balances of the Eurosystem have assumed the role of a quasi-unlimited financing mechanism for southern European current account deficits.

Sinn and Wollmershäuser (2011) have pioneered the discussion of if rising TARGET2 imbalances have assumed the role of perpetuating intra-European current account imbalances. They argue that rising TARGET2 claims of Deutsche Bundesbank versus the Eurosystem constitute a risk for German tax payers in the case of default of southern European banking systems and governments and therefore advocate a regulatory limit on TARGET2 liabilities. Whelan (2011) and Buiter et al. (2011) responded that the divergence of TARGET2 balances reflects more capital flight from crisis countries rather than the financing of current account balances. Bindseil and König (2011) argue that imposing a limit on intra-Eurosystem credit would be inconsistent with the existence and survival of the currency union. They argue that there is no systematic relationship between TARGET2 balances and current account positions.

We add to this discussion by putting the divergence of TARGET2 imbalances into a broader, historical context. We show how an unsustainable current account divergence in the euro area was triggered by diverging fiscal policy stances and enhanced by excessive monetary expansion after the burst of the dotcom bubble. We explain the divergence of national TARGET2 balances within the Eurosystem as the substitution of private capital flows to the crisis countries by a public quasi-unlimited credit mechanism, which prevents or cushions the adjustment of diverging competitiveness and current account balances. Finally, we show that capital and deposit flight from the crisis countries has brought Deutsche Bundesbank into a debtor position to the banking system. We explore different options to absorb surplus liquidity from the German banking system to forestall inflationary pressure in German goods markets and/or bubbles in German asset markets.

## **2. The Emergence of Financial and Current Account Imbalances**

After the turn of the millennium unprecedented current account imbalances between Germany and a set of countries at the periphery of the European monetary union emerged, which finally led into the 2009 to 2012 European sovereign debt crisis. The emergence of the current account imbalances is the outcome of asymmetric fiscal policies and diverging unit labour costs within the euro area. The asymmetries have been enhanced by several country- or union-specific shocks such as the long-term consequences of the German unification, the erosion of state guarantees for German Landesbanken, the euro introduction, the burst of the dotcom bubble and the resulting structural decline of global interest rates.

### **2.1 National Fiscal Policies and Diverging Financial Accounts**

The divergence of financial account balances in the euro area can be traced back to the year 1990, when the German unification constituted an asymmetric shock to Europe. Before the unification Germany generated (based on large and structural current account surpluses) substantial net capital exports. With the unification shock, German capital exports were redirected towards domestic investment and consumption, given the heavy investment needs in the new eastern part of unified Germany. While in Germany an exuberant boom evolved, the rest of Europe moved into recession as German capital exports dried up. When by the mid 1990s the unification boom had ended, German wages had substantially increased relative to productivity and the German Mark had in real terms substantially appreciated against the currencies of its European trading partners. General government debt had hiked to unprecedented levels and a historical peak in unemployment had been reached.

During the second half of the 1990s, consolidation efforts of the German government and the enterprise sectors started to set the stage for rising current account imbalances in Europe. The German austerity constituted a new asymmetric shock to Europe, which continued until the outbreak of the European sovereign debt crisis in 2008 (Schnabl and Zemanek 2011). The German public sector struggled on the back of the Maastricht Treaty for the consolidation of the general government deficit. Wage austerity and reforms in the social security sector (to curtail non-wage labour costs and to reduce unemployment) were regarded as pivotal roadway towards public consolidation. At the same time, the German industry aimed to regain international competitiveness by cutting real wages and increasing productivity. The private

and public attempts to moderate real wage increases were facilitated by the exceptional high level in the unemployment rate. In addition, wage competition from Central and Eastern Europe and East Asia eroded the bargaining power of trade unions. Reflecting the mood of austerity German domestic investment and consumption slowed down, while saving for a more uncertain future increased.

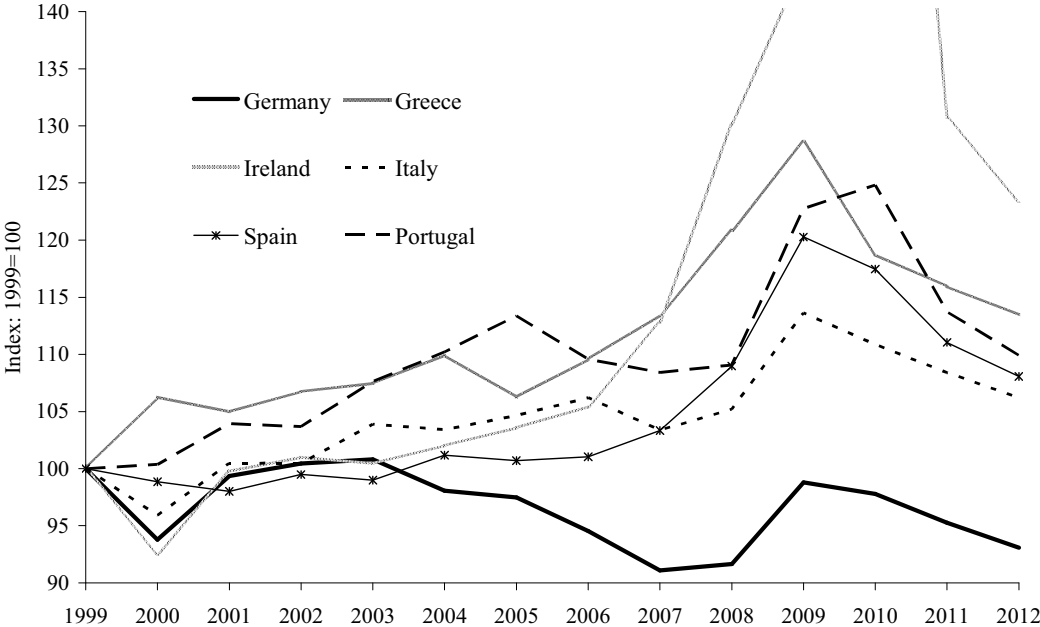
In contrast, in several eastern, western and southern periphery countries of the European Union economic activity was stimulated after the advent of the euro by more expansionary fiscal policies. In the second half of the 1990s the convergence process towards the European Monetary Union had led to a strong decline of nominal and real interest rates in the former high inflation countries. This only partially stimulated economic activity, because public expenditure was kept tight to comply with the fiscal Maastricht convergence criteria. With the introduction of the euro in the year 1999, in particular real interest rates in the European periphery countries further declined. Fiscal expansion in the euro periphery stimulated economic activity and slowly pushed up national inflation rates, while the one-size monetary policy of the European Central Bank kept interest rates low.

Fiscal policies in the periphery countries could become more expansionary after the euro area had been entered and government bond yields had declined to historical lows. The (despite further rising government debt) declining government bond yields of the later crisis countries had two dimensions. On the supply side, weak economic activity in Germany combined with historically low ECB interest rates after the burst of the dotcom bubble encouraged the hunt for yield by German financial institutions. They invested in EU periphery countries to participate in real estate, financial market or simply consumption booms. On the demand side, accelerating growth and rising incomes suggested higher future tax revenues of the later crisis countries, which made euro periphery government bonds a valuable and seemingly risk free investment.

The divergence of fiscal policy stances between Germany and the GIIPS countries is shown based on primary expenditure (fiscal convergence indicator) in Figure 1. Primary expenditure is indexed based on spending in 1999 (euro introduction). The evolvement of primary expenditure relative to 1999 provides an insight into changing spending behaviour from a single and cross-country perspective. The fiscal policy stance of Germany was relatively

restrictive, as primary spending tended to slightly decline.<sup>1</sup> In contrast, Greece and Portugal indulged from 1999 in more public (primary) spending. Ireland, Italy and Spain followed Germany in the first years of the monetary union, but embarked on more expansionary fiscal policies starting from 2003. By the year 2009 when the crisis started, a considerable gap between the spending behaviour of Germany and the GIIPS countries had emerged, encouraged by rising tax revenues from unsustainable consumption and speculation booms. The exuberance in public spending had become particularly pronounced in Greece and Ireland, where the crisis hit first.

Figure 1: Fiscal Divergence Indicator: Nominal Expenditure of GIIPS and Germany



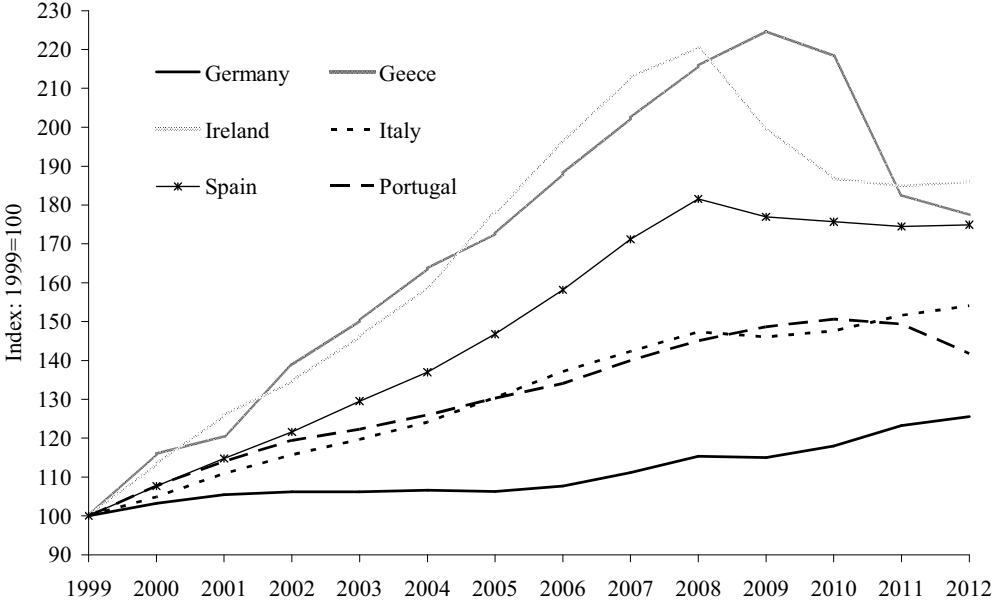
Source: Thompson Reuters Datastream.

Diverging fiscal policy stances in Germany and the GIIPS countries, in particular after 2003 were strongly linked to diverging wage policies as shown in Figure 2. In Germany nominal wage austerity in the private sector was translated into real wage austerity despite rising productivity. Wage austerity in Germany was contrasted by generous wage increases in the GIIPS countries, in both the public and the private sector. These wage increases were particularly pronounced in Greece and Ireland. Divergent wage and price developments became reflected in divergent de facto monetary policy stances in different corners of the euro area. Despite or even due to a common monetary policy price levels in different parts of the

<sup>1</sup> This does not exclude that Germany violated the Stability and Growth Pact, as the positive growth impulse of wage austerity was only generated with a substantial lag, mainly becoming visible during the recovery after the subprime crisis.

monetary union diverged, with the common monetary policy generating different real interest rates.

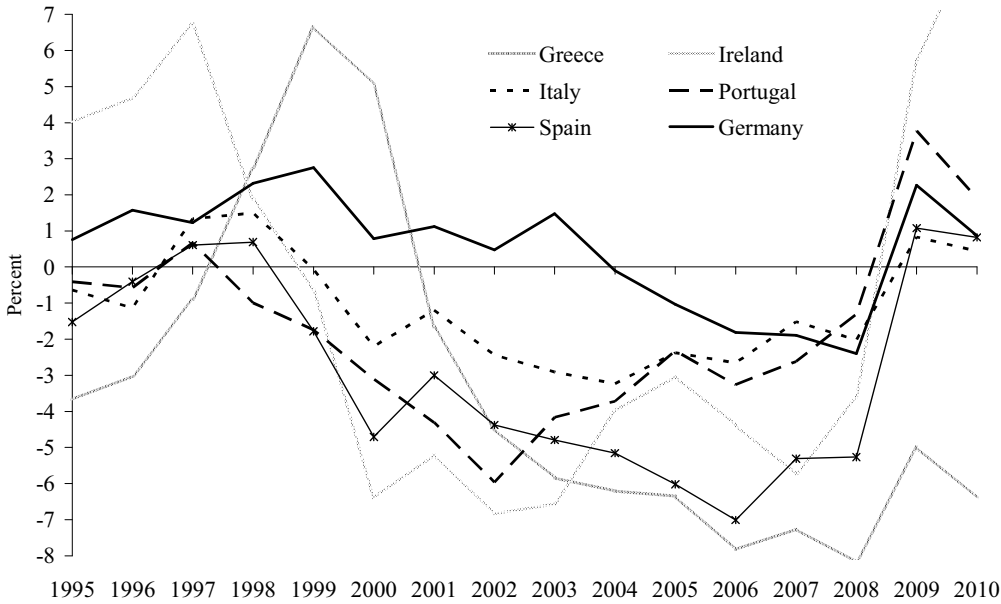
Figure 2: Wage Divergence Indicator: Nominal Wage Levels of GIIPS and Germany



Source: Thompson Reuters Datastream.

Figure 3 visualizes the diverging de facto monetary policy stances in the European Monetary Union before and after the advent of the euro in the later crisis countries and Germany.

Figure 3: Taylor-Rule Divergence Indicator: GIIPS and Germany



Source: IMF: WEO, IFS, national sources, own calculations.



To create an inflation-neutral benchmark we calculate a Taylor (1993) rule for every single country assuming a national inflation target of 2%. The inflation-neutral target interest rate for single members of the monetary union is calculated based on the realized national inflation rates and the national output gaps. From this Taylor rule-based national benchmark interest rate the policy rate set since 1999 by the European Central Bank is subtracted. A negative value indicates a too expansionary monetary policy stance.

As shown in Figure 3, the interest rate in most GIIPS countries was on average above the Taylor rule based interest rate by 1998, but the gap gradually was turned negative during and after the entry to the European Monetary Union (EMU). After the turn of the millennium – when interest rates were slashed in response to the burst of the dotcom bubble – the EMU money market rate in the GIIPS countries further fell substantially below the interest rate suggested by the Taylor-rule. After 2004, both monetary conditions in Germany and the GIIPS countries seem considerably too loose, with the GIIPS countries being substantially looser.

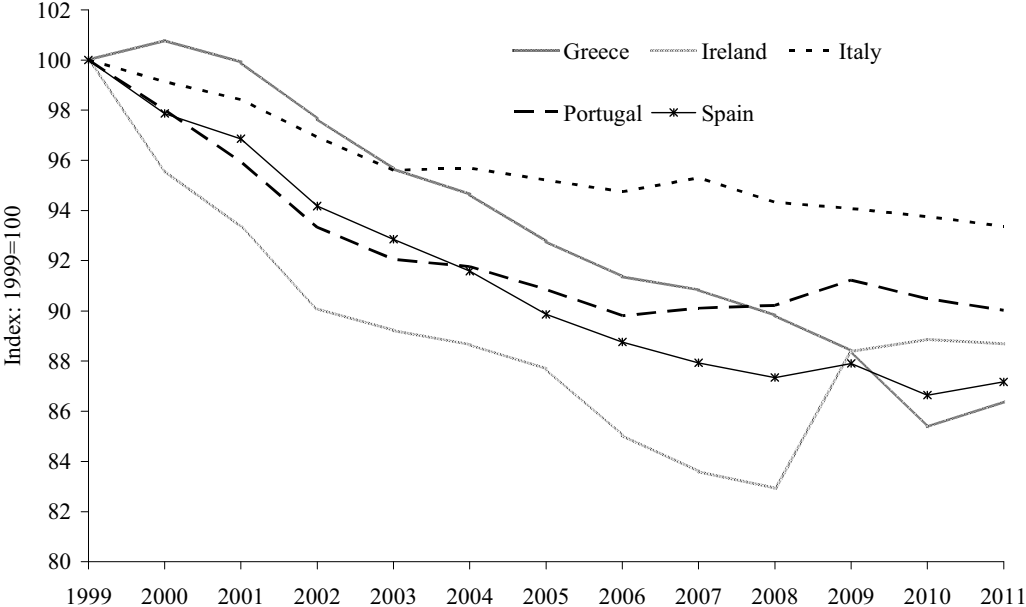
A (for all countries) too loose ECB monetary policy after the burst of the dotcom bubble can be assumed to have enhanced the divergence of wage and price movements within the monetary union for two reasons. First, the expansionary ECB monetary policy stance compressed risk premiums on financial markets, including risk premiums on government bonds. Financial institutions in creditor countries had an incentive to ignore the risk linked to purchases of government bonds of (potential) high debt countries. Second, the ECB expansionary monetary policy encouraged – linked to buoyant capital inflows – speculation booms in the periphery of the euro area, which made via wealth effects governments and private agents feel and look richer.

In particular in Spain and Ireland, real estate and/or financial market booms stimulated economic activity and tax revenues. Given that the additional tax revenues were generated by speculative booms and consumption rather than by domestic capital formation these revenues can be ex post regarded as unsustainable. Capital inflow driven booms would have needed to be seen as the pre-stage of large adjustment costs, once these speculation booms were to end with large busts. Thus, during the capital inflow driven booms, forward-looking governments would have been obliged to reduce expenditure for two reasons. To moderate the speculative

booms, and to save for the upcoming costs of crisis. Instead government expenditure was gradually lifted as shown in Figure 1.<sup>2</sup>

Given the missing anti-cyclical behaviour of periphery fiscal policies, real exchange rates within the euro area gradually diverged. Whereas the German euro depreciated in real terms based on wage austerity in both the public and the private sector, the currencies of the GIIPS countries moved upwards a real appreciation path on the back of capital inflows, generous government expenditure, wage increases and rising prices. Figure 4 shows the gradual appreciation of the currencies of the crisis countries versus Germany based on the relative price level developments.

Figure 4: Relative Price Level Developments

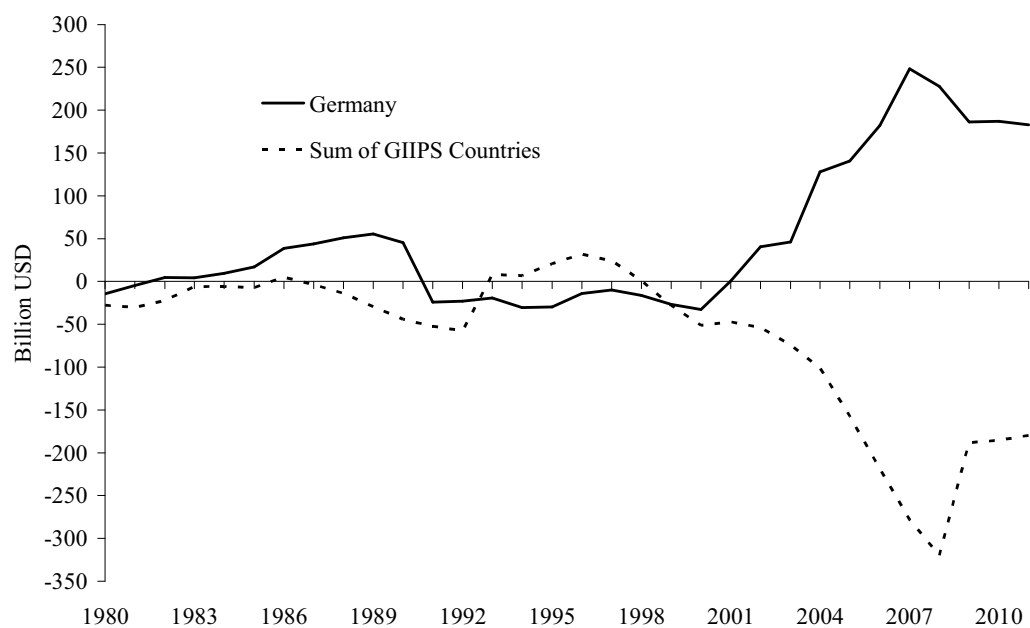


Source: Thompson Reuters Datastream, own calculations.

The divergence of the real exchange rates within the euro area can be seen as the transmission mechanism between asymmetric economic developments in the euro area and intra-euro area current account imbalances, which started to diverge dramatically from the year 2001 as shown in Figure 5. Whereas the German current account surplus (and financial account deficit) surged, the current account balances (financial account balances) of the GIIPS countries turned strongly negative (positive). Note that similar patterns emerged between Germany and the central and eastern European countries, and Germany and the US, i.e. independent from membership in the euro area.

<sup>2</sup> This assessment is only evident ex post.

Figure 5: Current Account Balances of Germany and GIIPS Countries



Source: IMF.

The current account and financial account imbalances within Europe – i.e. current account deficits in the south and surpluses in the north – have been a persistent phenomenon in Europe before the German unification. Nevertheless, Figure 5 suggests a structural break in 2001, as the German pre-1991 current account surplus not only re-emerges, but reaches an unprecedented level. This can be attributed to two reasons. First, as suggested by Berger und Nitsch (2010) the euro introduction reduced the transaction costs for intra-euro area capital flows (which would imply a structural break in 1999). Second, the burst of the dot-com bubble in the year 2000 was the starting point for surging financial account imbalances, as German austerity continued and the burst of the dotcom bubble eliminated German stock markets as an important domestic German investment target. In addition, the burst of the dotcom bubble triggered strong interest rate cuts in the US and the euro area, which depressed risk premia in financial markets and therefore encouraged intra-euro area capital flows into countries with higher (but hidden) default risk.<sup>3</sup>

<sup>3</sup> Hoffmann and Schnabl (2011) argue based on the monetary overinvestment theories of Hayek and Mises that interest rates below what Hayek and Mises call natural interest rates encourage overinvestment and speculation booms.

## 2.2 Microeconomic Policies and German Banks as Quasi Primary Dealers

The macroeconomic reasons for the divergence of intra-European current account imbalances were underpinned by microeconomic reasons originating in the role of German banks as quasi primary dealers in the euro area financial market. German state owned banks (Landesbanken) enjoyed up to the year 2001 the privilege to borrow on relatively better terms than their European peers. Public guarantees allowed state-owned banks (who account for half of total loans provided to the German private sector) to issue bonds at a premium (Broadbent et al. 2004).

A lower cost of capital for German state owned banks can be associated with a larger credit volume and higher domestic investment. A higher level of investment can be associated with a lower average return on capital. The combination of a relatively lower cost of capital and relatively lower returns on capital kept average profits of German non-financial corporations depressed.<sup>4</sup> As the implicit guarantees were regarded as a distortion of competition in the European banking sector, the European Commission (EC) made Germany to gradually abolish the indirect subsidies for Landesbanken starting from the year 2001.

Broadbent et al. (2004) argue that the resulting increase of the cost of capital had two major macroeconomic effects. It increased financing costs of German enterprises and thereby slowed down investment activity in Germany. Instead the upward pressure on interest rates provided an incentive for more saving. The gap between saving and investment increased, which is in an open economy equivalent to a rising current account surplus and rising net capital exports. Given the rising gap between the cost of capital and the still low domestic private sector's profitability, capital outflows increased chasing for higher returns outside Germany.<sup>5</sup>

The Basel regulations further accelerated the capital outflow from Germany to other euro area countries, as the financial sector regulatory capital requirements were more closely linked to (visible) risk. The risk was assessed by private ratings agencies, with government bonds not requiring any capital provision. In effect Basle regulations necessitated capital requirements

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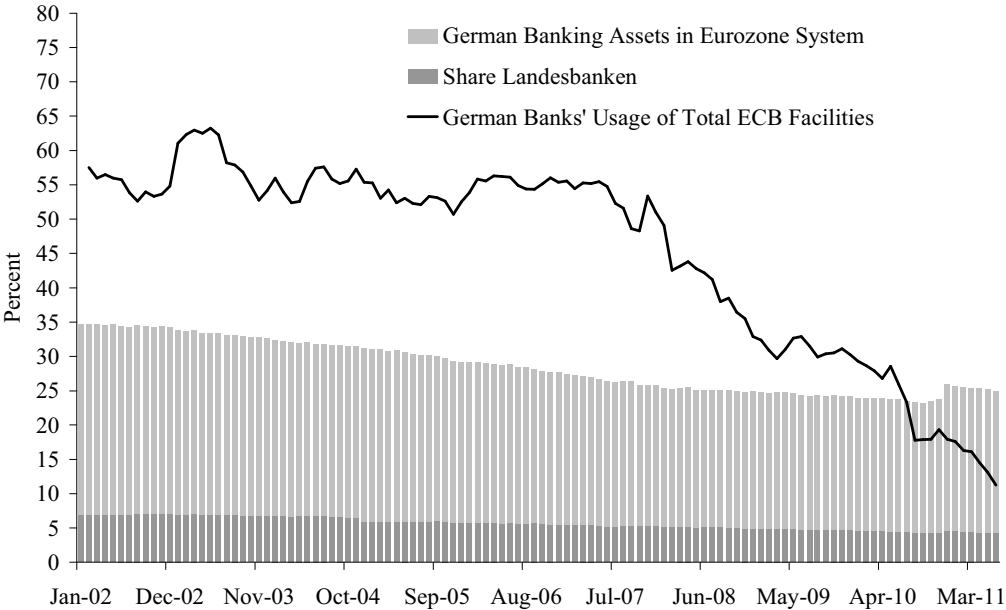
<sup>4</sup> Broadbent et al. (2004) estimate a gap of 2 percentage points in the German banks' pre-EMU cost of capital and report non-financial corporations' pre-EMU profits as being 2.5 percentage points lower than the European average.

<sup>5</sup> Decreasing domestic investment raises the domestic return on capital over time, which is in line with gradually rising competitiveness of the German industry after the end of the reunification boom (Daly 2011).

for credit to German non-financial corporations, whereas capital requirements for governments bonds of investment grade were zero. This provided an incentive for German banks to substitute credit to private non-financial corporate sector by government bond purchases. As the German fiscal policy was restrictive compared to fiscal policies of many euro area periphery countries, rising German savings were redirected (inter alia) towards the government bonds of euro area periphery countries.

German banks made easy profits by borrowing at low costs from the ECB while investing in euro area government bonds. This made German banks the most important users of ECB liquidity facilities. Whereas the assets of the German banking sector accounted for around 30 percent of euro area banks in the years before 2007, their share over ECB funding was almost 60 percent (Figure 6). German banks acted as quasi-primary dealers channelling funds throughout the euro area (and beyond).

Figure 6: German Usage of Total ECB Main Refinancing Facilities, 2002 – 2011



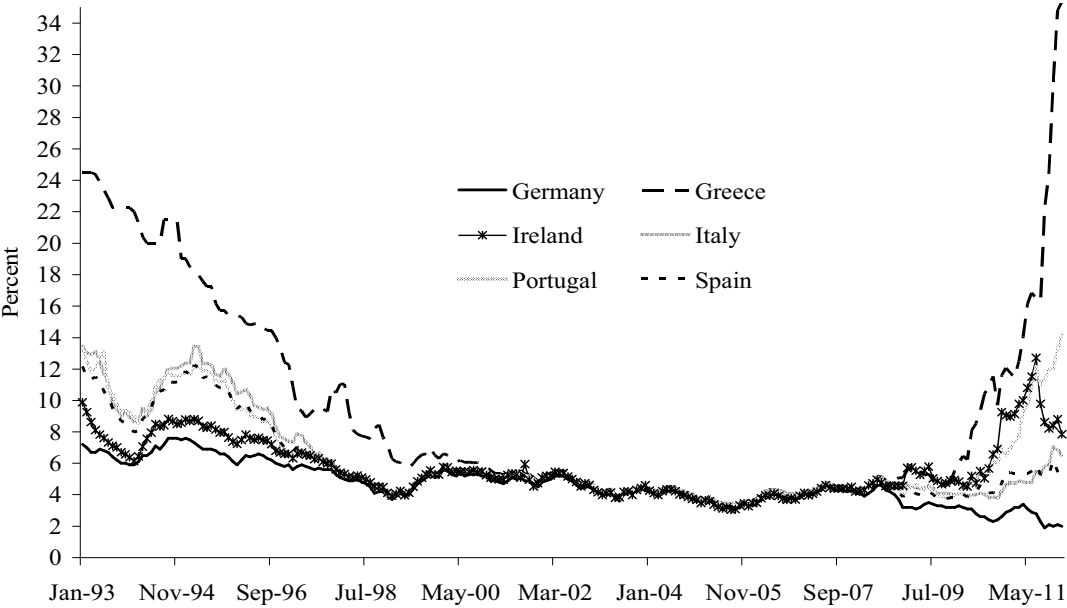
Source: Deutsche Bundesbank, ECB.

**3. The Crisis, Capital Flight, and TARGET2 Balances**

The financial crisis was triggered in 2007 by the US subprime crisis. European banks, in particular German Landesbanken, realized losses on asset-backed securities. German banks had to reassess risk, reduce their credit exposure and repatriate capital. The private capital

flows from Germany to the GIIPS countries dried out. At the end of 2009, first concerns about Greece’s credit worthiness emerged and the risk premium on Greek government bonds increased, followed by rising risk premiums on government bonds of Ireland, Portugal, Spain and Italy (Figure 7). The fear of contagion to the euro area banking system with the risk of a systemic crisis appeared. Only rescue packages by European Commission, IMF and euro area countries, ECB government bond purchases, and particularly central bank liquidity provision via the TARGET2 system helped to calm markets.

Figure 7: 10-Year-Government Bond Yields of GIIPS Countries and Germany



Source: IMF, IFS.

**3.1 The Impact of the Financial Crisis on TARGET2 Balances**

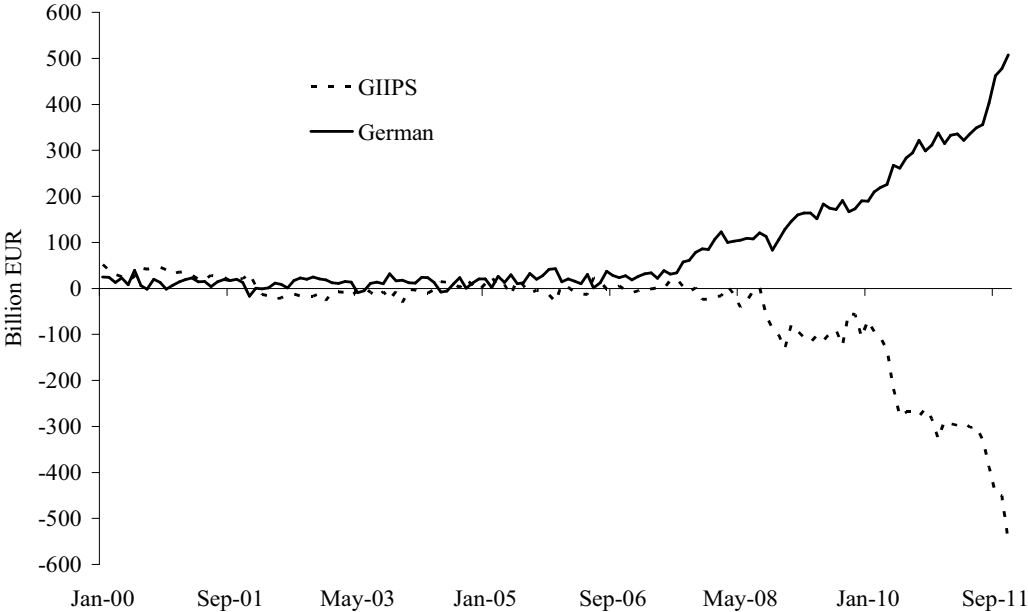
During the crisis, banks in GIIPS countries lost access to the money market as foreign banks stopped lending and started to withdraw credit. Due to declining claims on periphery countries German banks required less ECB funding, whereas banks of GIIPS countries started to rely on the ECB lending facilities to meet their liquidity demand. Figure 6 shows that the share of German banks on the usage of total ECB funding is on gradual decline since the start of the crisis in 2008/09.

The asymmetric reliance on ECB funding during the crisis started to affect the TARGET 2 balances in national central banks’ balance sheets. A monetary union implies the same monetary policy stance in each of the member countries. With the ECB targeting short-term

money market interest rates, liquidity supply has to be perfectly elastic to commercial banks' demand at the respective policy rate. The TARGET2 system ensures an efficient monetary policy transmission within the EMU, i.e. an unlimited supply of liquidity at the prevailing interest rate to all euro area commercial banks with sufficient collateral (ECB 2011).

Restricting TARGET2 balances for a specific crisis country of the European Monetary Union in the face of capital flight from a crisis country would be equivalent to restricting the supply of central bank liquidity to one specific part of the monetary union (Bindseil and König 2011). Limiting central bank liquidity quantitatively would provoke frictions in the payment system and an uncontrolled rise of short-term interest rates in the crisis countries would cause a collapse of the local banking systems with repercussions on the creditor banks in the non-crisis regions. Furthermore, diverging money market rates would not be in line with a monetary union.

Figure 8: Target2 Balances of GIIPS and Germany



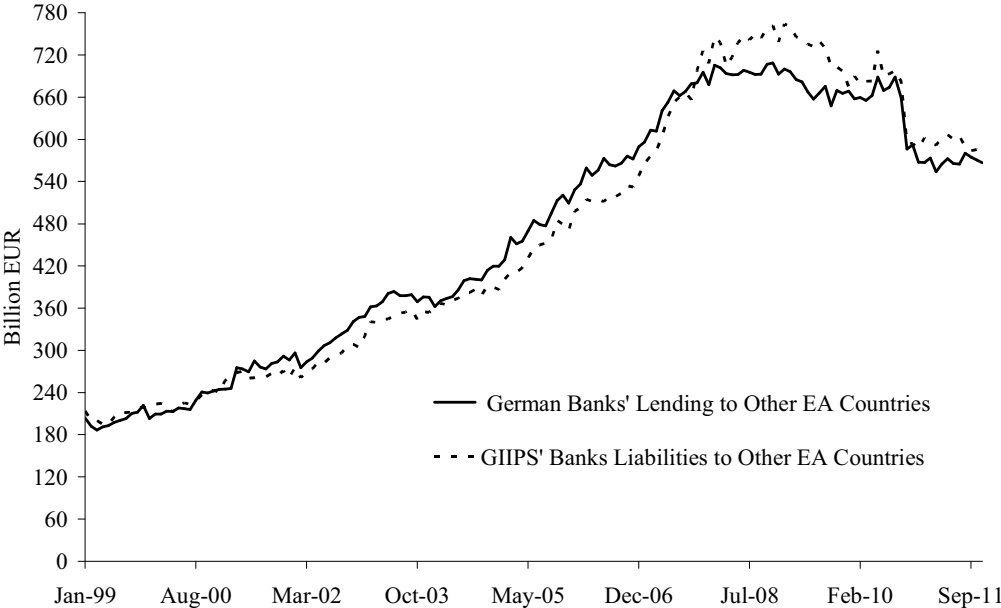
Source: National Central Banks.

A ceiling for TARGET2 balances for specific countries would be equivalent to a return towards national monetary policies under the umbrella of a common currency. The upshot is that, as financial conditions strongly diverge in different parts of the monetary union, the national TARGET2 balances continue to diverge as shown in Figure 8.

### 3.2 Repatriation of Credit and Deposit Flight

To shed light on the reasons for divergent TARGET2 balances we assume that the euro area consists of two regions: the GIIPS countries (periphery) as crisis countries and Germany (core) as the safe haven. Before the crisis, the German banking system – participating in the E(M)U periphery boom – accumulated foreign assets versus banks and governments in the later crisis countries. With the financial crisis this process stopped. The German banking system became risk-averse with respect to foreign assets and started to repatriate credit. Capital started pouring back from the periphery to Germany. In addition, for instance Greek agents, fearing a Greek euro exit and/or default of Greek banks, started to transfer their savings from Greece to Germany (deposit flight) thereby enhancing capital outflows from the crisis countries. Figure 9 shows the flight of credit from GIIPS countries since 2008 and the reduction of German banks exposure towards the euro area periphery.

Figure 9: Capital Flight from GIIPS Countries to Germany



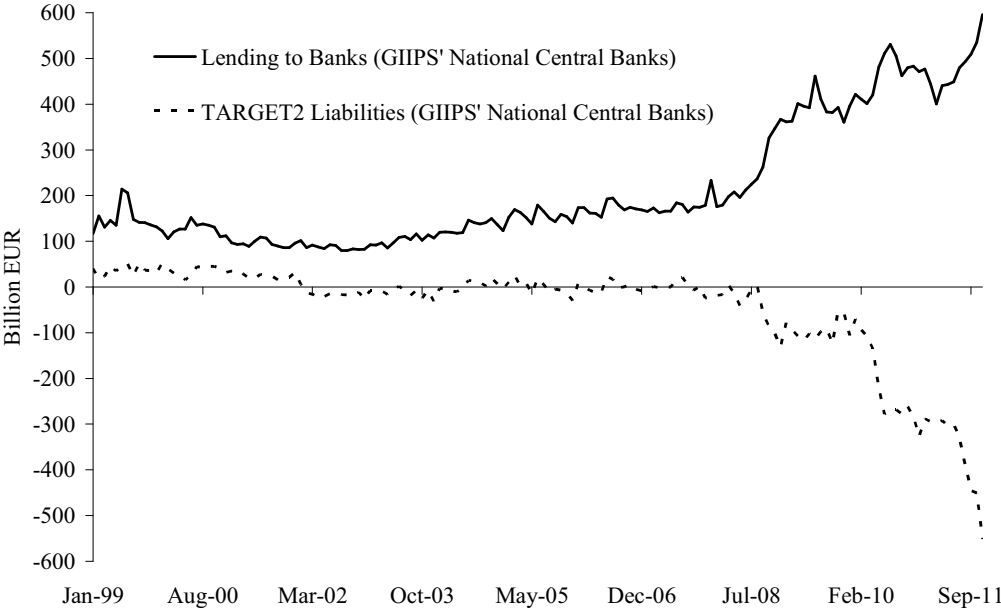
Source: National central banks.

In a world without a lender of last resort, the quasi-bank run on periphery countries’ banks would have ended up in the collapse of the periphery banking systems. In Germany (or other creditor countries such as France or Austria), banks would have realized painful losses as the



capital flight would have been limited by the sequential-service constraint.<sup>6</sup> Not so within the Eurosystem: Since the start of the financial crisis, commercial banks of crisis countries lost their access to interbank lending as – among others – German banks reduced their exposure on the back of concerns over their solvency. Instead the ECB started to act as a ‘market-maker of last resort’ to avoid a potential systemic crisis. The Eurosystem guarantees via the TARGET2 system to periphery banks unlimited<sup>7</sup> credit lines at the ECB main refinancing rate. Periphery commercial banks substitute private foreign credit by liquidity demand from the Eurosystem. As indicated in Figure 10 open market operations – together with TARGET2 liabilities – sharply expanded in the central bank balance sheets of periphery central banks. The ECB becomes the main funding source of periphery banks’ loans to the private sector. Periphery central banks’ net liabilities to the Eurosystem (TARGET2 net liabilities) are mirrored in net claims of the Deutsche Bundesbank to the Eurosystem (TARGET2 net claims).

Figure 10: Refinancing of Private Credit by TARGET2 Credit



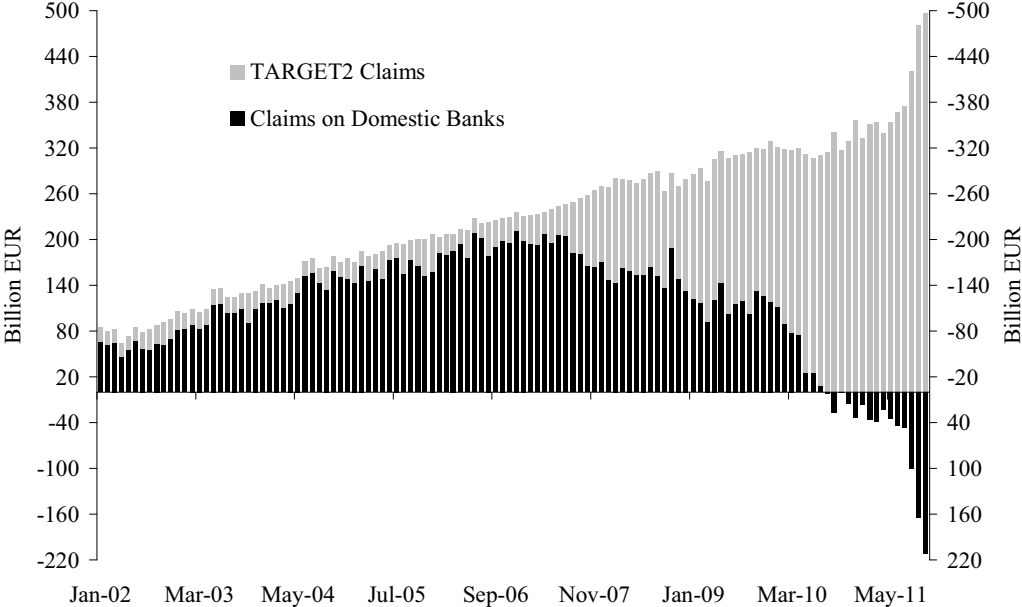
Source: National central banks.

Ceteris paribus the increase of TARGET2 claims on the asset side of the Deutsche Bundesbank’s balance sheet would be linked to liquidity expansion in the German banking system, but German commercial banks’ central bank liquidity needs currently decrease. With

<sup>6</sup> Due to term transformation only the first-movers can save their assets. That was for instance the case in Iceland, where, as capital left the country, many ‘slow’ foreign investors based in the UK and the Netherlands were faced by default of Icelandic debtors.  
<sup>7</sup> Provided periphery banks have sufficient collateral.

outstanding credit to the periphery countries being reduced and deposits of citizens of crisis countries rising the participation of German banks in the refinancing operations of the Eurosystem declines as shown in Figure 6. Figure 11 reflects the changing structure of the balance sheet of Deutsche Bundesbank. On the asset side of the central bank balance sheet lending to domestic banks declines, whereas TARGET2 claims on the ECB increase.

Figure 11: Deutsche Bundesbank – Target Claims and Net Lending to Banks

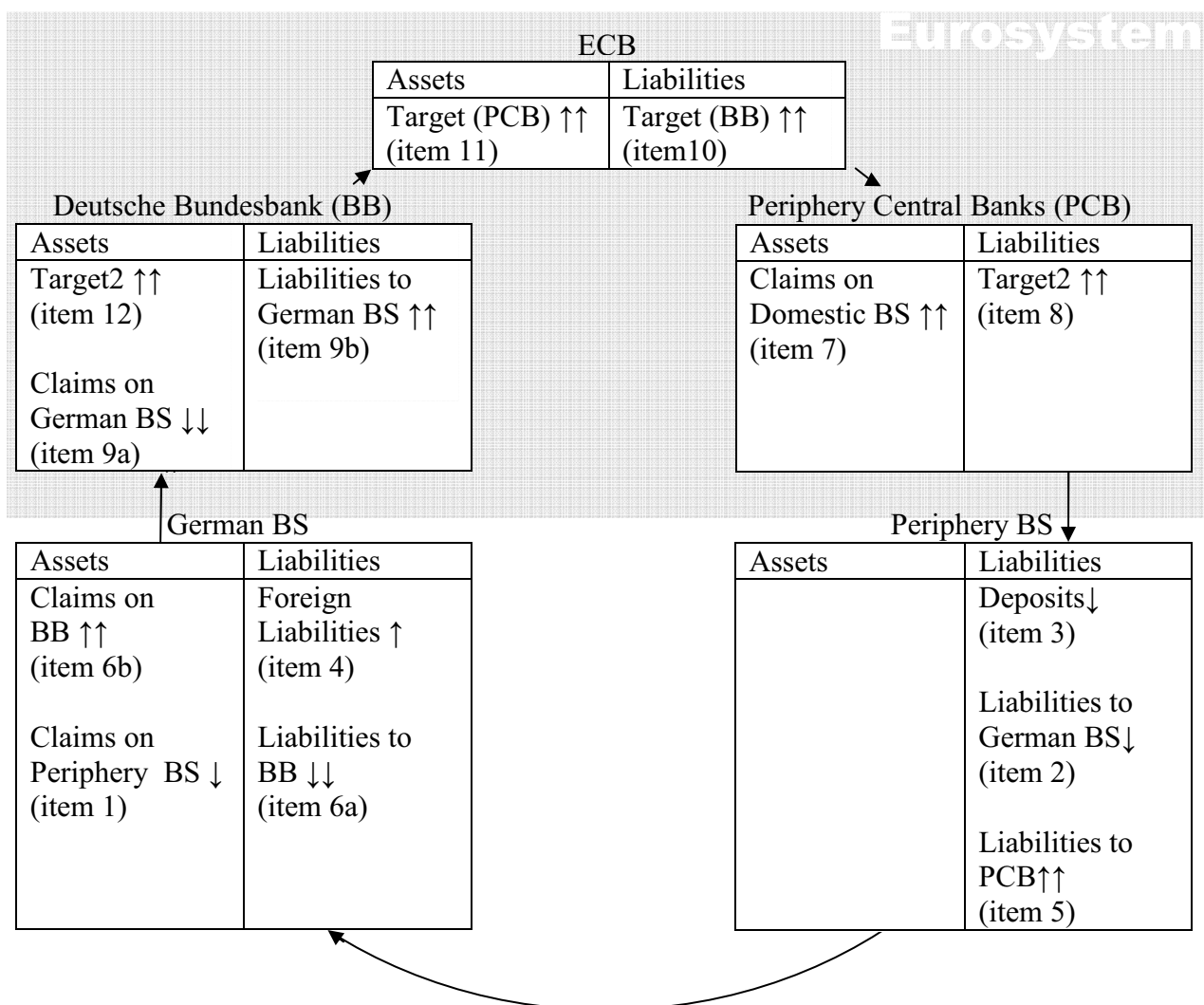


Source: National central banks.

Figure 12 models the dynamics of the flight of German capital out of periphery countries back into Germany.<sup>8</sup> The German private banking sector (BS) decreases the claims on the periphery countries banking sector (item 1). This mirrors a reduction of foreign liabilities in the periphery countries’ banking sector’s aggregated balance sheet (item 2). Simultaneously, for instance Greek citizens reduce their deposits at Greek banks (item 3) and increase their deposits at German banks, where foreign liabilities increase (item 4). Periphery banks fill the financing gap resulting from deposit flight and foreign credit crunch by increasing their reliance on central bank credit (PCB) (item 5). In Germany, declining claims on foreign banks and rising foreign deposits reduce the need for refinancing at the central bank. Liabilities to Deutsche Bundesbank decline (item 6a).

<sup>8</sup> The approach follows Abad et al. 2011, Buiters et al. (2011) and Bindseil and Koenig (2011).

Figure 12: Financing of Intra-Euro Area Capital Flight



At the periphery of the Eurosystem the volume of open market operations increases on the asset side of the periphery central banks' (PCB) balance sheet (item 7, matching item 5). As the increasing liquidity demand is provided by the ECB, on the liability side of the periphery central bank balance sheet TARGET2 liabilities increase (item 8, matching item 11). In Germany the declining refinancing needs make the claims of Deutsche Bundesbank on the German banking sector shrink (item 9a, matching item 6a). As the ECB intermediates via the TARGET2 system the transfer of capital to Deutsche Bundesbank, ECB's TARGET2 liabilities to Deutsche Bundesbank increase (item 10, matching item 12). Within the Eurosystem TARGET2 balances start to diverge. Both liabilities of the crisis countries (item 8) and assets of safe haven countries such as Germany (item 12) rise. Once this process has reached a point, where claims of Deutsche Bundesbank on the German banking sector have

reached zero, the build up of TARGET2 assets (item 12) has to be matched by liquidity absorption of Deutsche Bundesbank (item 9b).

The upshot is that given reduced credit exposure of the German banking sector in periphery countries and capital flight from periphery countries to the safe haven, Deutsche Bundesbank is transformed from a central bank which provides – in net terms – credit to the domestic banking sector, into a debtor central bank, which absorbs liquidity from markets.<sup>9</sup> The German banking system, whose claims on the central bank have increased (item 6b) now holds liquidity in excess of their reserve requirements (item 9b). In the crisis countries, the national central banks are transformed into unconditional lender of last resort.

The effect of this capital flight on the financial account (and thereby on the current account) is zero. Private German claims to crisis countries are substituted by public (i.e. TARGET2) claims to crisis countries. The adjustment of the current account deficits of crisis countries is postponed and the international liabilities of crisis countries continue to persist. While the crisis countries are stabilized, as public claims are less sensible to changes in risk perception, the international liabilities of the crisis countries remain or even increase. This implies rising risks for tax payers in Germany and other TARGET2 creditor countries, if – in the case of a euro area exit – the crisis countries default on their TARGET2 liabilities.

#### **4. Asymmetric Liquidity Management in a Heterogeneous Eurosystem**

The increase of TARGET2 claims above the liquidity demand of the German banking sector has prompted that monetary policy of Deutsche Bundesbank now occurs on the liability side of the balance sheet. While Deutsche Bundesbank has been turned into a debtor position towards the German banking system, other national central banks within the Eurosystem – such as the periphery central banks accumulating TARGET2 liabilities – remain creditors to the domestic banking sector. The Eurosystem provides liquidity to one region of the euro area and absorbs liquidity from other parts of the monetary union, in particular Germany. As a result, liquidity management in the euro area has become asymmetric with the surplus liquidity in Germany possible constituting a threat to German price and financial stability.

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<sup>9</sup> For a more detailed distinction of creditor and debtor central banks see Löffler, Schnabl and Schobert (2010).

There are four major alternatives for the ECB to deal with the liquidity surplus in the German banking system. First, – as it is currently the case – (do nothing and) just offer German banks access to the ECB deposit facility as long as German banks deposit liquidity deliberately at the central bank. Second, the ECB could conduct market-based liquidity absorbing measures such as selling bonds to German banks or using reverse repos to drain surplus liquidity from the German banking system. Third, surplus liquidity could be absorbed through non-market based instruments such as (unremunerated) minimum reserve requirements. Forth, the ECB could move from a corridor system to a floor system by providing liquidity at the same interest rate paid on the deposit facility.<sup>10</sup>

#### **4.1. Deposit Facility – No Active Liquidity Drain**

Since periphery banks are virtually excluded from the euro area interbank money market, excess liquidity in the German banking system leads to pressure on short-term interest rates. Interbank interest rates in Germany dropped to the Eurosystem's overnight deposit facility, which is remunerated at 0.25%, (that is 75 basis points below the main refinancing rate, currently at 1 %). At this rate, banks are principally indifferent between investing their excess liquidity with other commercial banks and investing it at the Eurosystem's deposit facility. As long as banks distrust each other, they will prefer the Eurosystem deposit facility.

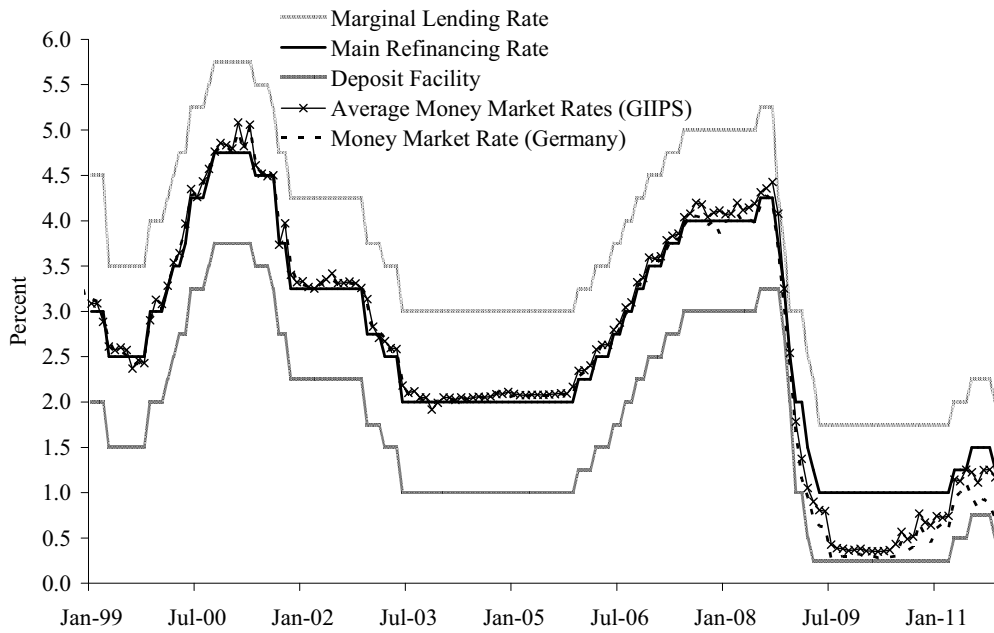
Thus, as long as the euro area wide interbank market is disturbed, the effective money market rate is higher in crisis countries than in the boom countries such as Germany as shown in Figure 13. In addition to the depressed yields on government bonds in Germany (see Figure 7) compared to other EMU countries a lower de facto policy interest rate could foster overinvestment in Germany and other save haven countries, as soon as surplus deposits are transformed into rising credit to the private sector. Inflationary pressures, together with the usual hazards associated with excessive and/or riskier lending in Germany could be two possible outcomes.<sup>11</sup>

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<sup>10</sup> There is a fifth alternative, which is 'fiscal coordination'. Fiscal authorities 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, however, would call into question the 'independence' of the central bank at stake.

<sup>11</sup> The anticipation of the higher capital requirements of Basel III and the necessary write-downs of non-performing loans counteract this scenario.

Figure 13: ECB Policy Rates and Money Market Rates in Germany and GIIPS



Source: ECB, IFS.

#### 4.2. Market-Based Liquidity Drain

To discourage German banks from financing risky investment, the Eurosystem could drain liquidity from the German banking sector by reverse repos at an interest rate close to the main refinancing rate. If German excess liquidity is completely absorbed, this option would ensure a common monetary policy within the euro area. But there are two main unintended consequences. Firstly, capital flows from crisis countries to Germany could accelerate as the opportunity to invest in high yield central bank debt instruments would provide an incentive for German banks to withdraw even more credit from the crisis countries.

The Eurosystem is likely to further accumulate risky assets, as private capital flowing back to Germany leads to increasing demand for central bank liquidity by periphery banks. To guarantee that the supply of central bank liquidity is perfectly elastic at the ECB's policy rate eventually collateral requirements have to be further eased. The default risk of riskier assets would be born by the ECB and, ultimately, by the individual national central banks in accordance to their capital key. In addition issuing debt certificates at the policy rate would discourage interbank lending and hamper the reactivation of the euro area interbank market.

### **4.3. Non-Market-Based Liquidity Drain**

To absorb excess liquidity only from the German banking system (without triggering capital outflows from crisis countries), the Eurosystem could impose differential unremunerated required reserves (De Grauwe 2010). In contrast to market based measures (banks are free to invest on their own initiative) an increase of binding low or unremunerated<sup>12</sup> required reserves on German banks would force them to hold deposits at the Eurosystem. Excess liquidity, which could be otherwise used for speculative investments, would be absorbed.<sup>13</sup>

Apart from the fact that the principle of a common monetary policy within the currency union would be undermined, the outcome of absorbing liquidity by legal force are twofold: First, combining interest rate policies with quantity restrictions contributes to higher interest rate volatility as monetary policy can only use one instrument: Either targeting prices (interest rates) and leaving quantities react endogenously or targeting quantities and accepting an endogenous determination of interest rates. Binding low or unremunerated minimum reserves would not be able to absorb peaks of excess liquidity without causing large interest rate swings in the interbank market.<sup>14</sup>

As due to this quasi reserve tax credit expansion via deposit funding for German banks would become less attractive, deposit demand and thereby deposit interest rates would decline. Because deposit rates, however, are already near the zero bound, the reserve tax is likely to be shifted to higher lending rates, thereby worsening credit conditions in Germany. As reserve requirements are not mandatory for all financial institutions, but just to depository banks, the quasi tax nature would support the emergence of unregulated financial products and institutions, i.e. the emergence of a shadow banking system.

### **4.4. Floor System**

Finally, instead of charging a higher interest rate in the main refinancing operations than paying on banks' reserves, which includes excess reserves, minimum reserves and reserves

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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. Although banks are not free to invest in required reserves, an increase of remunerated reserve requirements would have a similar impact as market based liquidity absorption.

<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 been compared to cutting a diamond with a sledgehammer.

invested in the deposit facility, the ECB could conduct deposit taking and liquidity providing at the same interest rate. This would change the current corridor system to a so-called floor system. The advantage of the floor system is that the monetary policy stance is separated from the liquidity management (Keister et al. 2008, Loeffler and Schobert 2012). The ECB would have two independent policy tools, the amount of liquidity supplied (financial stability purpose) and the interest rate (monetary policy stance).

In the floor system the money market rate would necessarily be equal to the policy rate in all EMU countries and cannot fall below the announced target in the surplus liquidity regions, i.e. at the lower bound within the corridor system (see Figure 13). Under the assumption that the interest rate paid on banks' reserves is increased to the interest rate on the main refinancing operations, the higher de facto interest rate would contribute to a tightening of credit conditions in Germany, and therefore would help to counteract inflationary pressure and/or asset price bubbles in Germany.

Then, however, an interbank market would become obsolete because banks would have no (or little) opportunity costs<sup>15</sup> to hold high precautionary excess reserves.<sup>16</sup> The hoarding of reserves could inflate the balance sheet of the ECB. While banks would nearly costless be insured against liquidity shortfalls, the risk borne by the ECB increases with the increasing stock of risky assets.

## **5. Economic Policy Implications**

Sinn and Wollmershäuser (2011) have triggered a controversial discussion on the role of TARGET2 imbalances to perpetuate intra-European current account imbalances. We have shown that the European debt crisis was caused by divergent intra-European fiscal policy stances and diverging unit labour costs, which have contributed to rising intra-EMU current and financial account imbalances and crisis-prone international liability positions. The repatriation of German private credit and the deposit flight from the crisis countries have been

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<sup>15</sup> The level of precautionary excess reserves would be limited only because banks would need to pledge collateral to receive central bank funds.

<sup>16</sup> Rochet and Tirole (1996) argue that a vivid interbank market guarantee a sounder banking business and thereby financial stability. Because banks have to monitor each other, banks' business is more transparent and sustainable. The financial turmoil, however, may prove the opposite as interbank markets obviously were not transparent. The abrupt collapse of the market even has amplified the liquidity crisis. In addition, the complex network of interbank trading supports the emergence of 'systemic relevant banks', which then are likely to take higher risks in anticipation of an implicit bail out guarantee.



matched by rising TARGET2 deficit positions of the European crisis countries. The TARGET2 system has buffered the adverse impact of the deposit flight and has helped to prevent a full-scale banking- and financial crisis in the debtor and, possibly, the creditor countries. The downside is that the TARGET2 payment system indirectly helps to postpone the necessary adjustment of fiscal balances and unit labour costs, which would reduce current account imbalances in the euro area to sustainable level.

Facilitated by the TARGET2 system, rising deposits of the German banking sector at the Deutsche Bundesbank imply an inherent risk for undue credit growth and therefore inflationary pressure or asset price bubbles in Germany. Alternatively, German banks could start a new hunt for yield and participate in asset price bubbles abroad. We have also shown that the TARGET2 system contributes to the nationalization of intra-euro area private asset and liability positions. This implies rising risk for the European Central Bank and its independence (when losses on high risk assets are realized and capital is eroded) as well as rising risk for European tax payers (when the European Central Bank has to be recapitalized or central bank losses lead to lower future seigniorage income).

To mitigate this risk, an adjustment of these policies is necessary, which have caused the divergence of current account imbalances in Europe. Fiscal policies in crisis countries have to be stabilized towards a sustainable level and diverged wages need to be adjusted to productivity. Complementary, structural reforms of rigid labour markets as well as slightly rising wages in Germany could enhance the adjustment of macroeconomic imbalances. If economic growth picks up in the euro area periphery and investors' confidence in crisis countries revives, TARGET2 liabilities in periphery central banks will decline as periphery countries' banks need less central bank refinancing when domestic and foreign savings restock banks' deposits.

If, however, a timely economic recovery and the reestablishment of confidence fail, TARGET2 imbalances will remain and therefore the risks for the Eurosystem and ultimately the European tax payer.

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