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Target Loans through the Eurosystem –The Bundesbank Statements – What are the Target Balances? – Credit Shifts in the Euro Zone – Economic Interpretation of the Credit Shifts – Current Account Balances, Capital Flight and Target Loans – Five Minutes to Midnight – Target Balances in the USA – Appendix: Reply to the Critics

Abstract

The European Monetary Union is stuck in a severe balance of payments crisis. Greece, Ireland, Portugal and Spain in particular have suffered from balance of payment deficits whose accumulated value, as measured by the Target balances in the national central banks' balance sheets, was 314 billion euros in March 2011. The national central banks of these countries covered the deficits by creating and lending out additional central bank money that flowed to the euro core countries, Germany in particular, and crowded out the central bank money resulting from local refinancing operations. Thus the ECB forced a public capital flow from the core countries to the peripheral countries that partly compensated for the now reluctant private capital flows.

JEL codes: E50, E58, E63, F32, F34.

Keywords: currency union, balance of payments, bailout, payment system.

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Executive Summary

The European Monetary Union is stuck in a severe balance of payments crisis. The extent of accumulated payment deficits, as measured by the so-called Target liabilities of the GIPS countries (Greece, Ireland, Portugal and Spain), amounted to 314 billion euros in March 2011. This is the additional central bank money that their corresponding National Central Banks (NCBs) have loaned in excess of the money needed for domestic purposes to pay for a net inflow of goods and assets such as companies, stocks, government bonds or other banking claims from other countries.

- The GIPS share in the overall stock of Euroystem's central bank credit was 66% in March 2011, although these countries account for only 18% of the euro zone's economic activity.
- Fully 90% of the refinancing loans granted to the GIPS commercial banks by their central banks were Target loans, i.e. money created and loaned by the respective NBCs to cover a deficit in the balance of payments and that left the jurisdiction to circulate elsewhere.
- 88% of the current account deficits of the GIPS over the past three years were balance of payment deficits financed by money printing.

When the financial crisis hit and the private capital markets were no longer willing to provide unlimited credit to the countries on Europe's periphery, the European Central Bank (ECB) stepped in to fulfil that role. It tolerated the credit creation of the NCBs and also actively supported it by accepting collateral of ever lower quality for the refinancing operations. The ECB acted correctly when the crisis began, the parliaments had no time to react, and the collapse of various economies had to be averted. But this nonetheless was de facto a massive bailout, a fiscal measure that does not constitute monetary policy. There has by now been ample time to hand the issue over to the parliaments of Europe.

The funds flowing from the GIPS to the core euro countries that are reflected by the Target imbalances have led to a retrenchment of the refinancing operations with the commercial banks in the latter, because the demand for liquidity was limited. The empirical facts we show here are very clear on this point. As the additional money created by the NCBs of the GIPS for the net acquisition of foreign goods and assets in other euro countries has neither altered the trend of the monetary base nor its allocation to the various parts of the euro area, it led in its entirety to a reduction in central bank credit (refinancing operations) in the core euro countries. The shift in credit from the core to the GIPS over the past three years amounted to about 100 billion euros annually.

The German Bundesbank was involved inasmuch as most of the money freshly "printed" in the GIPS flowed into its jurisdiction and crowded out its refinancing operations one to one. Germany was involved through foreign trade and as a safe haven for fleeing capital in uncertain times. As a compensation for the credits that it could have given to the German commercial banks, and thus indirectly for the export of goods and assets from Germany, the Bundesbank did acquire a corresponding claim on the Eurosystem.

The financing of the countries in the euro zone's periphery through the shift of central bank credit from the core countries cannot be sustained much longer, as it is will meet its natural end when the stock of central bank credit in the core countries is exhausted. According to our estimates, that would occur in 2013 should the volume of credit shifting continue at its current pace.

The European Stability Mechanism (ESM) planned to start operating in 2013 will therefore come at the right time, and the political rationale for it probably ran precisely along those lines: The ESM must come because the ECB's potential for shifting credit to the

periphery to compensate for the balance of payment deficit would otherwise be depleted soon.

Should the ECB nevertheless continue its policy of special loans for the countries in the periphery and deplete the stock of refinancing loans in the core countries, it would either have to accept an inflationary expansion of the monetary base, or the core countries' NCBs would have to sterilise the inflowing money with gold sales or bond issues. In any case, the ECB would then lose the possibility to directly influence the economies of the core countries via its interest policy. The main refinancing rate would merely be relevant for the GIPS, and in the core countries a lower interbank lending rate would emerge.

It is open to debate what effect the 314-billion credit shift to the GIPS has had and will continue to have on the economies of the core countries. In any case, for all practical purposes, this was a real loan to the GIPS from the euro community, which, like any other loan, made it possible for them to purchase more goods and assets abroad than would otherwise have been the case. In terms of liability, the international distribution of the monetary base, the international payment flows, the credit relations among the countries and the transfer of resources actually involved, the operation is comparable to a special form of jointly and proportionately guaranteed Eurobonds to finance credit to the GIPS that are sold by a central European institution to the German state, for whose acquisition the German state borrows in the capital market. The fact that in the case of real Eurobonds the credit would flow directly to the states, while in the case of credit granted through the Eurosystem it flows to the corresponding NCBs and from them to the local commercial banks that transfer it on, be it to the government, if the commercial banks purchase government bonds, or to the private economy through regular loans, is from an economic perspective not really much of a difference. It is also economically irrelevant that the Bundesbank received the Target claim instead of the sovereign, since the Bundesbank is owned by the latter anyway. The only difference with real Eurobonds is the fact that the GIPS commercial banks could dispose of such credit at their leisure as long as they offered collateral, and that the NCBs of the core countries could not refuse to accept the purchase of the implicit Eurobonds. Whichever effects the credit shift has had on the economies of the countries involved, and whatever the risks for the creditor countries are: they are identical in the case of a credit shift through the Eurosystem to the ones that would arise from the emission of jointly guaranteed Eurobonds.

The possibility of taking on Target loans at the ECB interest rate is a fundamental and systemically risky design flaw of the euro as a common currency that came to light first through the sovereign debt crisis. It encourages a self-servicing attitude among the weaker members of the euro zone at the expense of the economically stronger ones, leads to hefty foreign debts and undermines the ability of the ECB to influence with its interest-rate policy the economies of the countries where the surplus money is flowing to. This is why the US Federal Reserve system has endeavoured to make these loans unattractive. In the US, the Interdistrict Settlement Account (the US equivalent to the Target system) must be settled in April of every year with gold-backed securities or other marketable assets that bear the usual market rate of interest. In the US, a Federal Reserve district (there are 12 altogether) is allowed to print more money than needed for its domestic circulation only if it hands over genuine, marketable assets to other districts.

A district that wishes to import more goods than it exports must receive private credit from another district or its district Fed must hand over marketable assets so that its capital import takes place at market conditions, and a district that wishes to acquire net assets from other districts must export more goods than it imports. It is not allowed to fulfil its wishes by simply cranking up the money-printing press as in the euro zone.

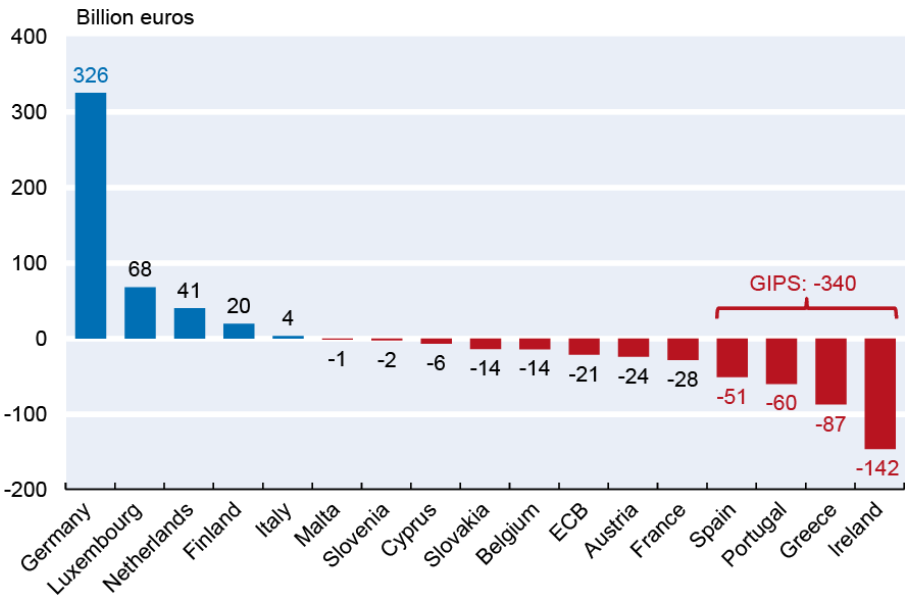
We advise the European Union to adopt the US rules in this respect, applying a transition rule for the over-indebted countries. We also urge the euro community to keep a tight rein on its bailout systems and to make sure that they won't be abused by turning them

into a policy of soft budget constraints. We are not against bailout systems, however; in fact, we think it was wrong for the Maastricht Treaty not to have specified them for the case a crisis occurs. In this respect, we concur with the recommendations of the European Economic Advisory Group at CESifo contained in their 2011 Report on the European Economy. They propose a detailed procedure for coping with a crisis that involves creditors bearing part of the burden.

Target Loans through the Eurosystem

Before and alongside the official support actions of the euro-zone countries for Greece, Ireland and Portugal, significant credit flows have taken place through the European interbank payment settlement system known as Target. The credit flows came through refinancing operations and emergency loans (Emergency Liquidity Assistance, ELA) that far exceeded the funds necessary to settle these countries' internal transactions. Officially, these credits are known as Target balances, but they were in effect, as we will show below, loans that, from an economics perspective, are comparable to short-term Eurobonds and that have a fiscal character. Germany, for instance, had accumulated 326 billion euros in Target claims on the Eurosystem[2] to the end of 2010, while the aggregate liabilities of the GIPS, that is, Greece, Ireland, Portugal and Spain, to the Eurosystem had risen to 340 billion euros by that time, as shown in Figure 1.

Figure 1: Target Balances in the Euro Zone (end of 2010)



Sources: German Bundesbank, "The dynamics of the Bundesbank's TARGET2 balance", *Monthly Report* 63 (3), 18 March 2011, p. 35; J. Whittaker, "Intra-eurosystem Debts", Lancaster University Management School, 30 March 2011, p. 1; H.-W. Sinn, "Neue Abgründe", *Wirtschaftswoche*, No. 8, 21 February 2011, p. 35; calculations by the authors.

[2] The Eurosystem is made up of the European Central Bank (ECB) and the 17 National Central Banks (NCBs) in the euro zone.

Ireland alone had accumulated 142 billion euros, and Greece 87 billion, in liabilities. Since the NCBs belong to their sovereigns and given the fact that they have transferred only certain activities to the ECB, which they established jointly, the Target imbalances are in effect claims and liabilities of the respective sovereigns. They bear the same interest rate as the ECB's main refinancing rate at which the commercial banks can obtain central bank credit in the form of newly created money.[3]

The Target imbalances went unnoticed for a long time, because they are not shown on the ECB's balance sheet. They can be found, somewhat laboriously however, in the NCBs' balance sheets. They can be reconstructed from the tables published there.[4] Furthermore, they can be found in the balance of payment statistics, where they are shown as an item in the financial account under the "Other Financial Transactions with Non-residents" position of the respective NCBs and as a stock figure in the external position of the respective NCBs as "Assets/Liabilities within the Eurosystem".[5]

Many think that the Target imbalances are a normal side-effect of the euro-zone payment system, as they are wont to occur in a currency system. This assessment is contradicted, however, by the dramatic evolution shown in Figure 2. The Target imbalances evidently started to grow by mid-2007, when the interbank market in Europe first broke down. Before that they were virtually zero. German claims, for instance, were only 5 billion euros in 2006. It is striking that a strong, albeit not perfect, correlation exists between the rise of the German Target claims and the rise in the Target liabilities of the GIPS. Other countries were involved, but their significance was small, as shown in Figure 1. The creditor countries included Luxembourg and the Netherlands, while on the debtor side France and Austria also stand out somewhat.[6] But the key players are, evidently, the GIPS and Germany.

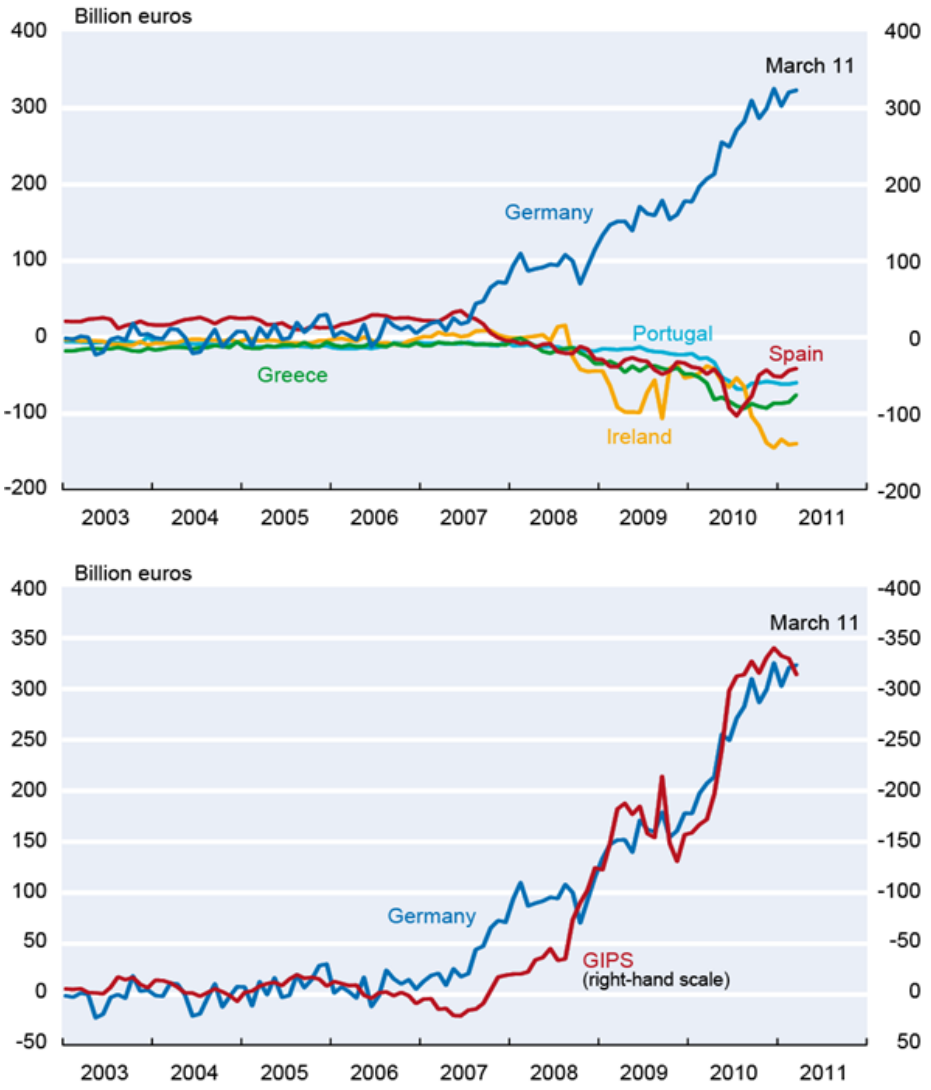
[3] German Bundesbank, letter to the Ifo Institute dated 18 March 2011; cf. German Bundesbank, "Annual Report", 2010, p. 170.

[4] In the case of the Bundesbank, the Target balances are contained under the position "Other Assets" in the Consolidated Balance Sheet of its Monthly Report (Bundesbank database, series TUB618). At the end of 2010, the figure for Other Assets amounted to 355.9 billion euros, whereas at the end of 2006 it had been only 24.8 billion. The Bundesbank's Annual Report breaks down these assets into more detail. In addition to the claims within the Eurosystem, which include the Target claims as well as the Bundesbank's participating interest in the ECB and the claims arising from the transfer of foreign reserves to the ECB, this involves coins, tangible and intangible fixed assets, other financial assets, off-balance-sheet instruments, revaluation differences, accruals and prepaid expenses, and sundry items. The Bundesbank claims within the Eurosystem at the end of 2006 were 18.3 billion euros, of which 5.4 billion were accounted for by Target claims and the rest by the Bundesbank's participating interest in the ECB and the claims arising from the transfer of foreign reserves to the ECB. The remaining positions in the Other Assets accounted then for 6.4 billion euros. At the end of 2010, the claims within the Eurosystem amounted to 337.9 billion euros, and the participating interest (including the transfer of foreign reserves) amounted to 12.3 billion euros, which translates into a Target balance of 325.6 billion euros. The remaining positions under Other Assets amounted then to 18 billion euros.

[5] The claims listed in the external position of the Bundesbank within the Eurosystem (after deducting the Bundesbank's participating interest in the ECB and the claims arising from the transfer of foreign reserves to the ECB) rose from 5.4 billion euros at the end of 2006 to 325.6 billion euros at the end of 2010 (Bundesbank database, series EU8148). This refers again to the Target balance, as can be calculated from the Bundesbank's balance sheet. The cumulative capital exports of the Bundesbank in the financial accounts (subcategory Bank deposits, Bundesbank database, series EU4678) amounted to 319.3 billion euros from 2007 to 2010 and were thus practically as high as the difference in the Bundesbank's Target claims between the end of 2010 and the end of 2006, namely 320.2 billion euros.

[6] The Target liabilities also include 21 billion euros in net debts of the ECB. They are the counterpart to claims of the NCBs on the ECB, which were acknowledged in the exchange against securities that were acquired by these NCBs on account of the ECB and that were transferred to the latter. See European Central Bank, Annual Report 2010, Frankfurt 2010.

Figure 2: Net claims of the NCBs resulting from transactions within the Eurosystem (TARGET)



Sources: Germany: Bundesbank database, series EU8148 (See Footnote 5); Spain: Monthly Balance Sheet of the Banco de España; remaining countries: IMF, *International Financial Statistics* (Target claims = Net claims on the Eurosystem less the intra-Eurosystem claims related to the issuance of bank notes); calculations by the authors.

The volume of credit granted by Germany (and the other countries with positive Target balances) to the GIPS through the Target system far exceeds the official loans given to the afflicted countries by the EU member countries. Greece received, until May 2011, 38 billion euros under the Greek Loan Facility agreed to in April 2010; Ireland so far has received 11.7 billion euros within the framework of the European Financial Stabilisation Mechanism and the European Financial Stability Facility (EFSF). Even if all the credit available were paid out, which amounts to 172 billion euros including the financial assistance agreed for Portugal in May 2011, the rescue facilities agreed to officially by the community would be only half as large as the credit given through the central banks' payment system.

The Bundesbank Statements

After H.-W. Sinn brought the Target imbalances to public attention with articles in the German papers *Wirtschaftswoche*, *Süddeutsche Zeitung* and *Frankfurter Allgemeine Zeitung*, pointing out the risks they involved,[7] the Bundesbank reacted with various, nearly identical statements. One day after the first publication by H.-W. Sinn on 21 February 2011, while confirming the figure calculated by the Ifo Institute of 326 billion euros in net claims of the Bundesbank to the end of 2010,[8] it tried to play down the importance of the issue in its press release and other statements. In essence, it said:[9]

[7] See H.-W. Sinn, "Neue Abgründe", *Wirtschaftswoche*, No. 8, 21 February 2011, p. 35, published also in German and English as, same author, "Abgründe", *ifo-Standpunkt* No. 122, 29 March 2011, and "Deep Chasms", *ifo Viewpoint* No. 122, 29 March 2011. A number of editorials were published subsequently alluding to these columns: K. Handschuch, "Versteckte Krisenhilfe", *Wirtschaftswoche*, No. 8, 21 February 2011, p. 8; H. Krumrey, "Am Bundestag vorbei", *Wirtschaftswoche*, No. 9, 28 February 2011, p. 26; and M. Fischer, "Große Summen", *Wirtschaftswoche*, No. 9, 28 February 2011, p. 26. One day after the international publication of the translation into English of the *Wirtschaftswoche* article of 21 February as an *ifo Viewpoint*, a similar statement was published by J. Whittaker, "Intra-eurosystem Debt", Lancaster University Management School, 30 March 2011. The Joint Forecast of the German Economics Institutes made a short mention of the issue, without going into detail: Projektgruppe Gemeinschaftsdiagnose, "Aufschwung setzt sich fort – Europäische Schuldenkrise noch ungelöst", *ifo Schnelldienst*, 64 (8), 20 April 2011, p. 50. Two earlier articles by a Deutsche Bank official dealing with the Target issue were made available to us by Thomas Mayer, Chief Economist at the Deutsche Bank, on 9 May 2011: P. M. Garber, "Notes on the Role of Target in a Stage III Crisis", *NBER Working Paper* 6619, June 1989, analysed the protecting function of the Target system against possible speculative attacks during the transition from the virtual (1999) to the physical (2002) introduction of the euro. Furthermore, there is another text by the Deutsche Bank, to the best of our knowledge an internal paper that has not been published, P. M. Garber, "The Mechanics of Intra Euro Capital Flight", Deutsche Bank, *Economics Special Report*, 10 December 2010, in which the problems associated with the Target system were addressed very clearly. An early warning of internal imbalances in the euro zone was expressed by K. Reeh, "Zahlungsbilanzausgleich in der Währungsunion. Viele Frage, aber noch keine Antworten," in H.-J. Stagermann and O. Steiger, eds, *Herausforderung der Geldwirtschaft*, Metropolis Verlag 1999, pp. 295 – 328; same author, "Das Eurosystem: Von einem Behörden- zu einem Bankensystem? ", in H. Schmidt, E. Ketzel, and S. Prigge, eds, *Wolfgang Stützel – moderne Konzepte für Finanzmärkte, Beschäftigung und Wirtschaftsverfassung*, Mohr Siebeck 2001, p. 333 – 349. In H.-W. Sinn, "Tickende Zeitbombe", *Süddeutsche Zeitung*, No. 77, 2 April 2011, p. 24, a figure was named for the risk for Germany represented by the Target imbalances and by other rescue systems of the euro countries and the IMF. An editorial comment on it was written by M. Beise, "Die Wahrheit über den Euro", *Süddeutsche Zeitung*, No. 83, 9 April 2011, p. 23. In H.-W. Sinn, "Die riskante Kreditersatzpolitik der EZB", *Frankfurter Allgemeine Zeitung*, No. 103, 4 May 2011, p. 10, as well as, same author, "Target-Salden, Außenhandel und Geldschöpfung", *ifo Schnelldienst* 64(9), 2011, the payment procedure was first interpreted in the context of current account imbalances. See also same author, "Die heimlichen Kredite", *Handelsblatt*, No. 88, 6/7 May 2011, p. 72, also published as "The ECB's Secret Bailout Strategy", *Project Syndicate*, April 2011. Much attention attracted, same author, "The ECB's Stealth Bailout", *VOX*, 1 June 2011, www.voxeu.org.index.php?q=node/6599, as well as an article in the *Financial Times* commenting on a lecture given by H.-W. Sinn on 19 May 2011 at the Munich Economic Summit. See M. Wolf, "Intolerable Choices for the Eurozone", *Financial Times*, No. 37,632, 1 June 2011, p. 9**.** An extended version of the VOX article in German was published as H.-W. Sinn, "Das unsichtbare Bail-out der EZB", *Ökonomenstimme*, 11 June 2011, http://www.oekonomenstimme.org/artikel/2011/06/das-unsichtbare-bail-out-der-ezb/. In, same author, **"**Eine Einladung zur Selbstbedienung**",** *Handelsblatt*, 14 June 2011, p. 9, as well as in, same author, "On and off Target", VOX, 14 June 2011, http://www.voxeu.org/index.php?q=node/6644**,** an attempt was made to clear some misperceptions and wrong interpretations on the issue that have been widely publicised on the Internet. Further literature will be cited later on in this paper.

[8] H.-W. Sinn, "Neue Abgründe", *Wirtschaftswoche*, op. cit.; German Bundesbank, "TARGET2-Salden der Bundesbank", Bundesbank press release of 22 February 2011. (On its website, the Bundesbank press office had misdated this press release at least until these lines were written, to 21 January 2011, i.e. one month before Sinn's article was published in *Wirtschaftswoche*).

[9] German Bundesbank, "TARGET2-Salden der Bundesbank", press release of 22 February 2011, and German Bundesbank, "The dynamics of the Bundesbank's TARGET2 balance", *Monthly Report* 63 (3), 2011, p. 34.

1. The Target balances are of no consequence, since they net each other out within the euro zone.

2. Germany's risk does not reside in the Bundesbank's claims, but in the liabilities of the GIPS countries. Germany is liable only in proportion to its share in the ECB, and if it had been other countries instead of Germany that had accumulated Target claims, Germany would be liable for exactly the same amount.

3. The balances do not represent any risks in addition to those arising from the refinancing operations.

Point 1 is correct, but irrelevant. In the case of the official loans given by the euro countries to Greece (the Greek Loan Facility) the balances also net out within the euro zone, but that does not make the creditor countries feel any more at ease.

Point 2 is correct. Indeed, Germany has a claim on the Eurosystem, and the Eurosystem one on the NCBs of the GIPS countries. Should the latter default and the collateral that they committed for the refinancing credit they obtained, which is made up mostly of government bonds, lose its value, Germany would be liable in proportion to its capital share in the ECB, namely about 33% of the 340 billion euros in GIPS liabilities, i.e. around 114 billion euros. This was the figure calculated and published by one of us on 2 April.[10] No speculation regarding the likelihood of such a scenario was made. We consider it small. The issue is the value-at-risk.

The Bundesbank's claims themselves would be directly exposed in the case of a demise of the euro, something that has been considered by Anglo-Saxon economists as possible if not probable,[11] inasmuch as it cannot be taken for granted that the former members of the euro community would choose to honour their Target debts in such a case. Legally, this is a grey area. It cannot be ruled out that Germany in this scenario would have to write off its currently more than 320 billion in euro claims.

We consider this scenario neither probable nor desirable. For many reasons, we are convinced that the euro is indispensable for furthering Europe's economic and overall integration. We hope that the current difficulties are just part of the new currency's teething problems, and that Europe can master the challenges they pose. But this also involves achieving complete clarity on the nature of the Target problem.

The statement made in point 3 is, in a strict sense, correct, but it obscures more than it illuminates the problem, hiding the fact that the Target balances measure deficits in the intra-euro balances of payments. It is true that the Target imbalances arise essentially through the Eurosystem's normal refinancing operations, if we neglect the ELA loans that some NCBs

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German Bundesbank, letter to the Ifo Institute of 18 March 2011. Similarly, S. Ruhkamp, "Misstrauen lähmt den Geldverkehr", *Frankfurter Allgemeine Zeitung*, No. 92, 19 April 2011, p. 11.

[10] See H.-W. Sinn, "Tickende Zeitbombe", op. cit. 33% of Germany's 326 billion claims would amount to 108 billion euros.

[11] P. Krugman, "The Euro Trap", *New York Times*, 29 April 2010, http://www.nytimes.com/2010/04/30/opinion/30krugman.html?ref=paulkrugman; M. Feldstein, "The Political Economy of the European Economic and Monetary Union: Political Sources of an Economic Liability", *The Journal of Economic Perspectives* 11(4), 1997, p. 23-42; M. Friedman, "Why Europe Can't Afford the Euro – The Danger of a Common Currency", *The Times*, 19 November 1997; same author, "Auf Kosten Dritter", *Capital*, Heft 12, 11 July 2002, p. 18. Friedman says there: "Der Euro wird in 5 bis 15 Jahren auseinanderbrechen." ("The euro will collapse in 5 to 15 years"). See also, same author, "Ich sage, der Euro wird bald wieder auseinanderbrechen" ("I say that the euro will break up soon"), *Die Presse*, 12 December 1997, p. 23.

granted of their own accord against little collateral. But they do reflect an additional granting of credit that goes far beyond a country's normal stock of money balances, that has a fiscal character and that would not have been possible at the central bank's refinancing rate under the conditions imposed by the US monetary system. This point will be elucidated below.

What are the Target Balances?

TARGET is a catchy term with several meanings that are not all connected with each other at first glance.

1. The term TARGET is an acronym that stands for *Trans-European Automated Real-Time Gross Settlement Express Transfer*. This refers to the European transaction settlement system through which the commercial banks of one country make payments to the commercial banks of another country.

2. Target balances are claims and liabilities of the individual central banks of the euro area vis-à-vis the European central bank system that are booked as such in the balances of the NCBs.

3. Target balances measure deficits and surpluses in the single euro countries' balances of payments with other euro countries. Target liabilities are the portion of the original central bank money created by a given NCB that exceeds the stock of central bank money available in that NCB's jurisdiction and that was employed for the net acquisition of goods and assets from other euro countries. Correspondingly, Target claims measure the surplus of the stock of central bank money circulating in one country above the original central bank money created there, which arose from the net sale of goods and assets to other euro countries.[12]

From an economic point of view, the third definition is particularly relevant for an assessment of the Target balances, because it shows that the Target balances measure intra-euro balance of payments problems. The designation "original" in the third definition is applied to the stock of central bank money created in a country via an NCB's foreign currency purchases, gold purchases and refinancing operations, as opposed to the "secondary" stock of central bank money that arises in the process of settling transactions within the framework of the Target system. The term "assets" refers to everything that is usually grouped under private and public capital transactions, i.e. stocks, bonds, real estate, enterprises, but above all claims of all types such as deposits, bonds or bills of exchange. This does not include the Target claims themselves.

Central bank money is the term for the money that the commercial banks hold in their accounts at the respective national central banks and cash that they have on hand for the cash withdrawals of their customers or that is in circulation among the customers or generally among the private non-banks. Since Keynes, the term M0 is generally used here.

[12] To the best of our knowledge these definitions were used for the first time in: H.-W. Sinn, "Die riskante Kreditersatzpolitik der EZB", *Frankfurter Allgemeine Zeitung*, No. 103, 4 May 2011, p. 10. In addition to the stock of money balances drained to other countries, the liabilities also include interest on earlier outflows.

Alternatively, economists refer to the “monetary base”. In addition to the “monetary base” there is also deposit money that the commercial banks create in proportion to the monetary base via the granting of loans and that they make available to their customers as deposits. When the terms money, money demand and money supply are used in this article, we always mean central bank money without further specification. The relationship of deposits to the money base is usually relatively constant since it mainly results from the obligation of the commercial banks to keep a specified portion of their deposits as minimum reserves in their accounts at the respective NCBs. In times of crisis, however, when bank failures or even currency union exits are feared, this relationship can weaken.

We emphasise that all data we employ is from the official statistics and that we regard the national stock of money balances that is booked to the respective NBC balance sheet as the actual stock of money circulating in a country. To our knowledge there are no data on international cash circulation outside of the banking system. Nobody knows how many suitcases full of cash cross the borders surreptitiously. Since there are no restrictions on international bank transfers in Europe but there is an obligation to declare larger cash transports, we presume that this portion was rather insignificant in the time window we have examined.

In order to understand how the various Target definitions are related, it is necessary to understand how the payment transactions between banks are carried out. When a bank customer effects a transfer from one commercial bank to another, it is fundamentally central bank money that flows between the commercial banks. If a Greek purchaser of a good transfers money from his checking account to the checking account of a vendor at another Greek commercial bank, money is debited from the central-bank account of his bank and credited to the central-bank account of the vendor’s bank. The bank that pays out in turn charges the checking account of the customer, and the recipient bank credits the amount of payment to the checking account of the vendor.

If the bank of the vendor is in another euro country, Germany for example, the procedure is similar, only that now the payment flows via the Target system of the ECB. When the Greek central bank debits the account that the commercial bank of the Greek customer has with it, it takes money out of the Greek economy and destroys it. The Bundesbank instead creates new money and credits it to the account of the vendor’s commercial bank. In exchange the Greek NBC is debited a liability to the ECB, and the Bundesbank is credited a claim against the ECB.

Since the payments between the countries flow in both directions, they normally net themselves largely out as regards the Target balances booked in the balance sheets of their NCB at the end of the year, This is also the case when a country has net imports of goods and in exchange exports a net amount of assets, or simply takes on a loan, which can be interpreted as the “sale” of a certificate of debt. What is booked then are only the outstanding balances, which are added annually to the balances and the corresponding interest accumulated from the previous years.

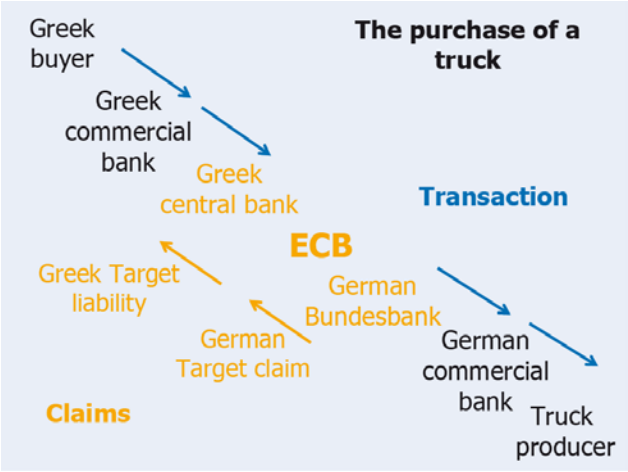
When the Target system was established, it was assumed that the balances would be insignificant. As insiders have reported, the belief prevailed at the time that the balances would virtually net out daily, and it was thus not considered necessary to put a cap on them. They were to have the character of short-term checking account credits to smooth out the peaks in monetary transactions. And in actual fact, the balances were very small, as Figure 2 shows, up to the outbreak of the financial crisis in summer 2007. Dramatic developments occurred only thereafter.

When the euro system started to operate, only large amounts were channelled via the payment system of the ECB. In addition to TARGET, the banks of the respective national countries had their own, private payment systems through which most payments were executed and netted out. Since payments from country A to country B are mostly offset by payments of country B to country A, the Target system of the ECB was in fact only needed to smooth out the peaks between the private payment systems. This changed, however, with the establishment of the TARGET2 system in 2007. Since then, smaller payments are also increasingly carried out directly via the Target accounts of the ECB. Recently, two-thirds of the Target transactions had a volume of less than 50,000 euros, and the median value of the payments was only 10,000 euros.[13] This alteration did have a considerable influence on the transaction volume of the Target system, but the balances now booked there annually were not affected. From the very beginning, they included the net deficits and net surpluses in the money transfers between the banks of the individual euro countries. As a result, a consistent interpretation of the time series, as shown for example in Figure 2, is possible, and the rise of the Target balances shown in the figure since 2007 is not a statistical fluke.

An example of a payment transaction in which a Target balance arises is shown in Figure 3. A Greek transportation company buys a German truck. With the bank transfer the money flows to the Greek central bank and ceases to circulate in Greece; i.e. it is destroyed there. Conversely, the Bundesbank must carry out the transfer and to do this it creates new money that flows to the manufacturer via its commercial bank. A Target liability is assigned to the Greek central bank on the amount of the transfer request vis-à-vis the ECB, and conversely the Bundesbank receives a Target claim on the ECB.

In the booking of the payment transactions it does not matter what the Greek company buys in Germany. Instead of a truck it could also be a German asset, for example a plot of land, a company, bonds or some security. Also the mere opening of a German bank account onto which a Greek national wishes to transfer his money because he distrusts his own banks leads basically to the same payment transaction.

Figure 3: The origin of the Target balances (example)



Source: Own depiction.

[13] European Central Bank, *Target Annual Report 2010*, Frankfurt 2010; European Central Bank, *The Payment System – Payments, Securities and Derivatives, and the Role of the Eurosystem*, Frankfurt 2010.

It lies in the nature of the transfer procedure that the Target balances are not merely balance-sheet clearing items but actual claims and liabilities with loan characteristics and that accrue interest. On the one side of the transaction, the Bundesbank had to create money without receiving a claim, as is usually the case, against a German commercial bank. On the other side of the transaction, the Greek central bank destroyed the money without its claims on the Greek banking system becoming any smaller. The Target debt vis-à-vis the ECB is the counterpart of the missing claim reduction.

An even clearer picture emerges if one looks directly at the balances of the NCBs as schematised in Figure 4 (with unrealistic numbers).[14] Basically, in the balance sheet of an NCB, the gold and foreign currency reserves as well as the loans granted to the commercial banks are on the left-hand side among the assets, while the money it has created is on the right-hand side among the liabilities. Usually central bank money is further divided into cash and deposits of the commercial banks at the NCB, but this is not relevant here. Both forms of money combine into the above-mentioned monetary base (M0). In the schematic balances it is assumed that the gold and foreign currency reserves of the Greek central bank amount to 5 monetary units and that in addition it loaned 15 units to the commercial banks. Since gold and foreign currency were acquired in return for self-created euros, the monetary base equals 20. The same holds for the Bundesbank, only all numbers in the example are assumed to be ten times larger.

Figure 4: The Target balances in the balance sheets of the central banks (example)

Greek central bank				*German Bundesbank*			
Assets		Liabilities		Assets		Liabilities	
Gold and foreign currency	5			Gold and foreign currency	50		
Loans to banks	15	Base money	20	Loans to banks	150	Base money	200
		Base money	- 1			Base money	+ 1
		Target liabilities to ECB	+ 1	Target claims on ECB	+ 1		
Loans to banks	+ 1	Base money	+ 1	Loans to banks	- 1	Base money	- 1

Source: Own depiction.

Let us now look at the possible payment transactions starting with the portion above the lower of the two dashed lines. We will examine the portion below this in the next section. If a monetary unit is transferred from Greece to Germany, the monetary base in Greece decreases by this unit and it increases correspondingly in Germany. The changes of the balance-sheet item are displayed in red in the schematic drawing. Since the Greek balance contracts and the German balance lengthens, the Target balances are booked as clearing items,

[14] For the structure of the central bank balance sheets, see J. Hawkins, "Central Bank Balance Sheets and Fiscal Operations," *BIS Paper* 4, 2010. For a similar depiction of the posting operations, see P. M. Garber, "Notes on the Role of Target in a Stage III Crisis", op. cit.

i.e. as a liability of the Greek central bank and as a claim of the Bundesbank, in both cases vis-à-vis the ECB.

The correctness of booking the Target balances as claims and liabilities follows however not only from some kind of booking mechanism, but from an economic perspective primarily from the fact that economic goods have moved from one country to another – in the above example a truck – without a movement of another good or asset in return. The claim that Germany receives through its Bundesbank on the ECB and that the latter has on the Greek NCB is the compensating instrument in the example.

In actual fact the Target balances arise initially directly between the participating central banks. There is however an agreement, as the Bundesbank has reported, presumably between the individual central banks, whereby at the end of the business day the balances are transformed into claims and liabilities vis-à-vis the Eurosystem as a whole. This procedure corresponds to the joint liability for losses on Target loans, as pointed out in Section 2.[15] As we will explain below, with this the central bank system has virtually created a kind of Eurobond.

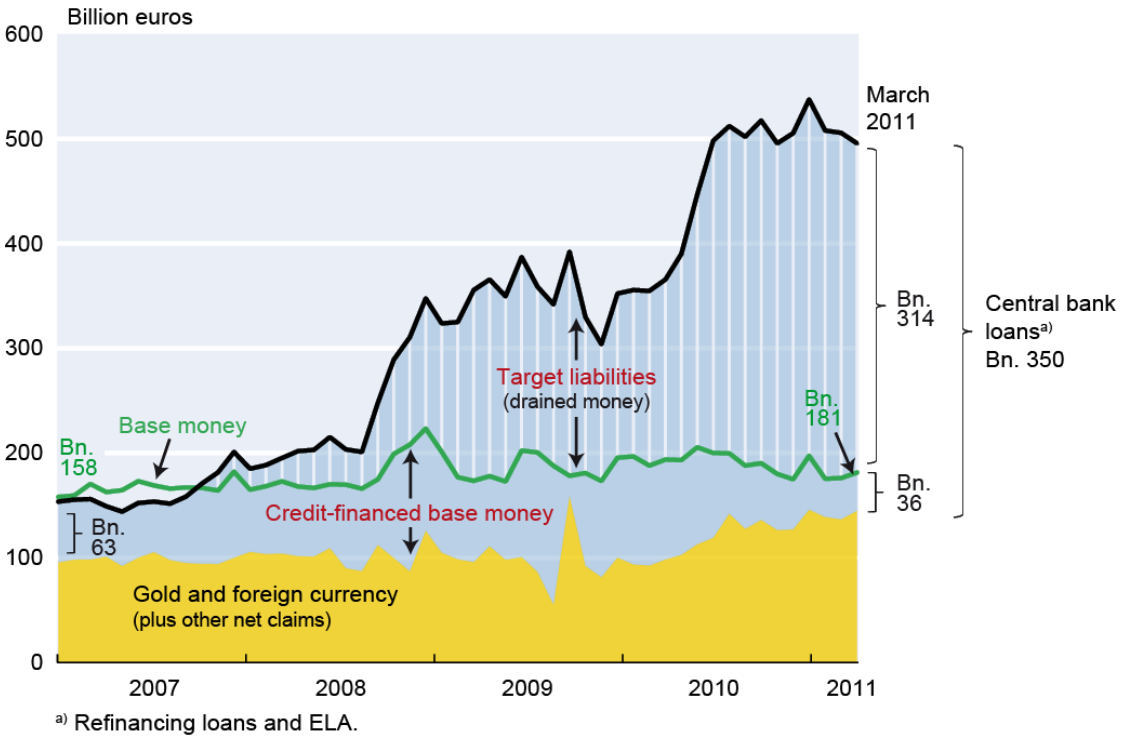
Basically, the Target balances arise from transfer transactions as described above. It must be kept in mind, however, that stocks and not flows are depicted in the balance sheets. As already mentioned, the balances of each year are carried forward, interest applied and added together. Thus, the balances listed in the balance sheets measure the balance of payment deficits and the balance of payment surpluses, or the monetary outflows and inflows between the euro countries, that have accumulated since the introduction of the euro, including the corresponding interest and compound interest.

Credit Shifts

The payment procedure described in the example that leads to the formation of the Target balances apparently shifts the monetary base, taken by itself, from Greece to Germany. If that had been the main element behind the accumulation of Target balances shown in Figure 2, then the monetary base of the GIPS countries should have disappeared long ago. At the beginning of 2007, before the Target balances had started to rise, their monetary base was only 158 billion euros, whereas by March 2011 their Target liabilities to the rest of the Eurosystem had increased to 314 billion euros. In truth the monetary base of the GIPS countries has not changed appreciably since the beginning of the crisis and during the accumulation of the Target balances; it even increased somewhat, from 158 billion euros to 181 billion euros. This is shown in Figure 5 below.

[15] Bundesbank, " The dynamics of the Bundesbank's TARGET2 balance", op. cit.

Figure 5: Domestic money, drained money and central bank credit of the GIPS countries



Note: The monetary base was calculated as the sum of the actual bank notes placed in circulation by the NCBs, the deposits of the commercial banks on their accounts at their NCB (including minimum reserves) and the deposit facility. The banknotes that are actually put in circulation by the NCBs consist of the "statutory" banknote circulation calculated according to the NCB's capital share in the ECB and the intra-Eurosystem liabilities from the issuance of banknotes. The refinancing loans comprise the main refinancing operations, the longer-term refinancing operations, the marginal lending facility and other liquidity-providing operations. The ELA credits are emergency loans (Emergency Liquidity Assistance) of the Irish central bank. Gold and foreign currency (including other net claims) contain, in addition to stocks of gold and foreign currency, also the balance of the remaining assets and liabilities that are listed in the balance sheets of the NCBs. On the asset side this includes, for example, the securities of residents in the euro area that were not acquired within the framework of the normal refinancing operations. On the liability side, we have above all the capital and the reserves of the NCBs and liabilities in foreign currency. In the case of the GIPS countries, there is a net claim amounting to an average of 75 billion euros in the period depicted.

Sources: Refinancing operations, deposits of the commercial banks, deposit facilities, banknote circulation, intra-Eurosystem claims related to the issuance of banknotes: Liquidity statistics or monthly balance-sheet statements of the NCBs; emergency loans of the Central Bank of Ireland (ELA): monthly balance sheet, other assets; gold and foreign currency: Eurostat, Official Foreign Reserves including Gold; Target claims: see Fig. 2; calculations by the authors.

The money flowing out of the GIPS countries via payment transactions was thus completely offset by the creation of new money. In principle, new money can arise from gold and foreign currency purchases and from credits of the central bank to the commercial banks (refinancing operations and ELA). It is evident in the chart, however, that the increase of the gold and foreign currency stocks of the GIPS countries only made a small contribution here. The lion's share of the additional money creation apparently came about as the result of loans granted by the central banks. Stated the other way around, in the period under observation the NCBs of the GIPS countries issued a huge amount of new money through credits, which

primarily flowed abroad as it was used for the purchase of foreign goods and assets. Only a small portion of this money remained at home as part of the monetary base.

The share of the credit-created central bank money that remained at home is only one tenth (36 billion euros). Nine-tenths (314 billion euros) is circulating abroad.

Relative to the monetary base originating from the GIPS (495 billion euros), the money circulating abroad is 63%. This is reminiscent of the proportion of dollars circulating outside the US, which at the end of 2001 was estimated to be somewhat more than half of the monetary base[16]. It is significantly more than the share of deutschmark circulating outside Germany in the mid-1990s, which was somewhat less than a third of the monetary base.[17]

In March 2011 the monetary stock in the euro zone that originally arose as the result of loans issued by the NCBs of the GIPS countries amounted to 350 billion euros. This is 66% of the total credit-financed monetary base of the euro system, which amounts to 529 billion euros, although these countries only account for 18% of euro-zone GDP.

This has given rise to the unusual situation that now prevails in the euro area. The monetary base in the GIPS countries, as is usual in closed currency areas, consists of one component that arose from gold and foreign currency purchases, and another that resulted from loans of the central bank to the commercial banks. However, in other euro countries, particularly Germany (see Figure 1) there is in addition secondarily created money that flowed in via the Target accounts. The central banks of these countries had to create this money because they had to fulfil the transfer orders. Above, we designated the first two components of the monetary base as the "original" monetary base and the third as the "secondary" monetary base.

The reason for the excessive credit and money creation in the GIPS was obviously the financial crisis. Under the euro regime, and also as a result in part of an overly weak banking regulation, capital flowed for years without hesitation to the southern and western periphery of the euro area, triggering an inflationary boom in the GIPS countries.[18] But the flow of capital ran dry, and even partly reversed itself, when the American financial crisis prompted investors there and in Europe to revise their risk assessment.[19] Market interest rates for the GIPS rose because investors demanded high risk premiums compared to safe German government bonds. In this situation, the possibility for the GIPS banks of getting credit at low interest rates from their respective NCB became much too inviting. It saved the GIPS the need to take measures to recapitalise their banks. The ECB itself encouraged borrowing by reducing its main refinancing rate from 4.25% in October 2008 to just one percent in May

[16] United States Treasury Department, "The Use and Counterfeiting of United States Currency Abroad, Part 2", March 2003.

[17] F. Seitz, "Der DM-Umlauf im Ausland", German Bundesbank Diskussionspapier 1/95, 1995; see also H.-W. Sinn and H. Feist, "Eurowinners and Eurolosers: The Distribution of Seignorage Wealth in EMU", *European Journal of Political Economy* 13, 1997, pp. 665-689. To be sure, the difference is that the monetary creation gain (seignorage) in the form of interest yields on the newly created and loaned money is socialised in the Eurosystem, while in the case of currency circulating outside the jurisdiction of the note-issuing central bank a regular income in the form of interest yield on the externally circulating currency remains at that bank.

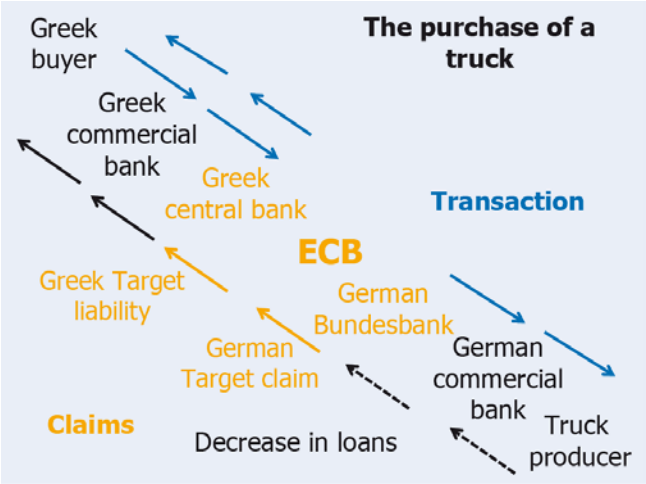
[18] See H.-W. Sinn, T. Buchen und T. Wollmershäuser, "Trade Imbalances – Causes, Consequences and Policy Measures: Ifo's Statement for the Camdessus Commission", *CESifo Forum* 12 (1), 2011, p. 47-58; H.-W. Sinn, "Rescuing Europe", *CESifo Forum Special Issue,* August 2010; European Economic Advisory Group, "A New Crisis Mechanism for the Euro Area", in: European Economic Advisory Group, *The EEAG Report on the European Economy*, CESifo, Munich 2011, Chapter 2, p. 71–96.

[19] See C. Klepsch and T. Wollmershäuser, "Yield Spreads on EMU Government Bonds – How the Financial Crisis Has Helped Investors to Rediscover Risk", *Intereconomics / Review of European Economic Policy* 46(3), 2011, p. 169-176.

2009, and adopting a full-allotment policy as early as October 2008. Full allotment means that the ECB was willing to grant the commercial banks credit in any amount they wished with maturities of up to one year. In addition, the ECB successively reduced its quality requirements on the collateral that the banks had to commit against their borrowing, and successively extended the deadline for returning to normal collateral requirements.

Taking this into consideration, the example of the Greek buyer of a truck must be modified. He obviously does not pay for his truck with money he possesses, but he borrows it from his bank, and the bank, because of the difficulties of raising funds in the interbank market, borrows it from its NCB. The Greek NCB thus creates the money that the haulage firm needs for the transfer to Germany. The related, now expanded, payment process is shown in Figure 6.

Figure 6: Credit creation and Target balances (example)



Source: Own depiction.

In Greece, money is now created, lent, destroyed when transferred via the Target system, and then created anew in Germany by the Bundesbank, which transfers it to the account of the commercial bank of the truck producer. In comparison to Figure 3 the chain of claims between the central banks and the ECB is extended by the claim of the Greek central bank against the commercial bank, which in turn has a claim against the transportation firm.

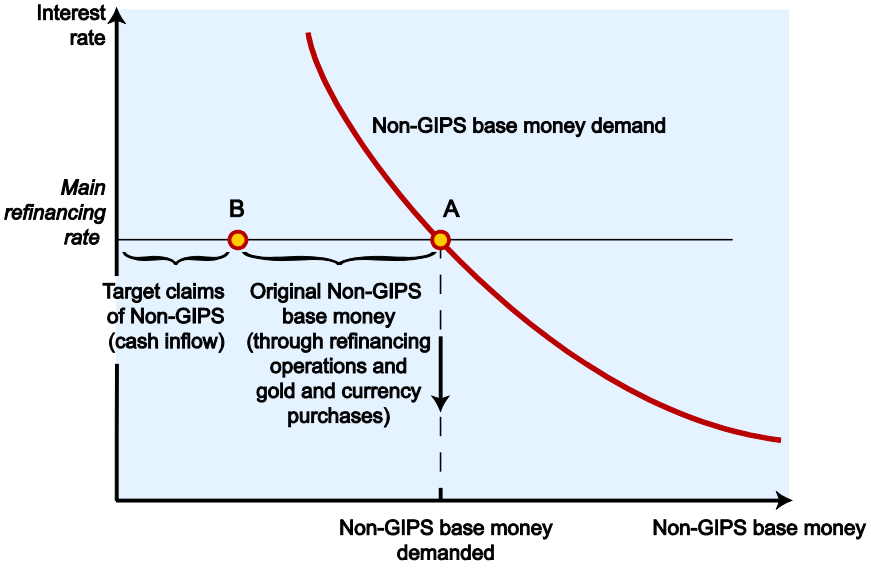
But this does not end the payment processes, as the commercial banks of the exporting country, in our example Germany, and their private customers really do not need the additional money that they receive through the transfer. To be sure, a company needs the money in the sense of a unit of account and a claim on economic resources, but no one needs the extra liquidity for their daily transactions that the incoming money provides. Banks do not hold excess liquidity, because it involves interest costs, and their customers also try to keep their liquidity low in order to save on interest costs. That is why the German commercial banks will only borrow a correspondingly lower amount of central bank money from the Bundesbank when money flows in through the international Target payment system. The stock of credit-created original central bank money is crowded out by secondary central bank

money created by the Bundesbank by way of carrying out the international transaction and for which it receives a Target claim, as explained above. The decline of Bundesbank loans to the commercial banks is shown by the dashed arrows in the lower part of Figure 6. Overall, there is a relocation of central bank loans from Germany to Greece, without a concurrent change in the monetary base either in Greece or Germany.

In the system of accounts shown in Figure 3, the credit shift implies a lengthening of the Greek central bank's balance sheet and a reduction of the Bundesbank's balance sheet, as shown below the dashed line. In Greece, the central bank lends the banks an additional unit of money, and in Germany, the Bundesbank lends one unit less. Once again, the monetary base in both countries remains unchanged, but the credit given by the Bundesbank declines by one unit, while it rises by one unit at the Greek central bank.

The shift of central bank credit from Germany to the GIPS has been wildly misunderstood in the public discussion triggered by our various publications. In particular, it has been alleged that this statement was based on the implicit assumption that the ECB, instead of pursuing a full-allotment policy, limits the money supply, which of course it does not do.[20] Such an implicit assumption was never made. It is not the money *supply* that is limited, but the *demand* for money. At a given interest rate, there is a natural limit to *money demand* which is determined by the economic activity and the payment habits prevailing in the country, and this is the reason for the retrenchment, which we described as crowding out, of central bank credit.

Figure 7: Non-GIPS money demand, full allotment, and the crowding out of central bank credit



Source: Own depiction.

Figure 7 provides a theoretical depiction of this relationship, in which the demand for central bank money is presented as a declining function of the interest rate, where other determinants like GDP or payment habits are assumed as given. The lower the interest rate, the higher the money demand, as the interest rate measures the opportunity cost of holding money. The demand for money may be understood best as the stock of central bank money that banks

[20] See the Reply to the Critics in the Appendix.

hold as liquidity and minimum reserves and which private non-banks keep on average for normal payment processes. Not meant is the demand for credit that represents the desire for enjoying economic resources in advance that forces someone else to forego consumption or investment. It is truly money in the sense of a non-interest-bearing asset held by banks and their customers in addition to stocks, securities or real assets, instead of exchanging it for goods or interest-bearing assets because it provides liquidity services and facilitates transactions.

Let us assume that the ECB follows a full-allotment policy. The banks, and indirectly the other economic agents supplied by them, may borrow as much central bank money as they wish to. But at the given refinancing rate they only want to realise point A and therefore demand only the amount of money that is shown horizontally below it. The position of point A is not constant: over the course of time it moves to the right with the money demand curve when there is real economic growth and inflation. It may also move to the right in times of crisis, when asset owners distrust other forms of investment. Still, given all the other determinants and given the interest rate, point A occupies only a given position.

If as a result of the payments flowing via the Target system the NCB is forced to deliver new money to the banks outside the refinancing operations, i.e. to create secondary money, this automatically reduces the original monetary base generated through refinancing operations. After all, the size of the stock of money desired, at least in the case of banks and firms, does not depend essentially on whether they borrow money to carry it in their pockets or forgo lending the money they already have. As the stocks of gold and foreign currency are determined by the policies of the central banks, the inflow of money from abroad in fact displaces the central bank credit. It declines in about the same amount as flows in via transfers from abroad.

In view of these findings, it is not surprising that the German commercial banks have lately taken almost no refinancing loans from the Bundesbank. The Deutsche Bank, for instance, has not participated for months in refinancing operations, since it has enough liquidity as a result of the payments of its customers flowing in from abroad. That is the mechanism through which the crowding out of refinancing credit occurs.

The situation would not be much different if the ECB controlled the money supply, as it did before the outbreak of the financial crisis by way of variable-rate tenders, as used to be standard at the Bundesbank, and as would the case approximately be if the ECB were to intervene secretly in order to prevent an excessive expansion of the monetary base. In that case the monetary base would not be affected by the inflow via the Target accounts, and the central bank credit would also be crowded out as a result. In a certain sense this is the trivial case. But it is not the case that we assume or that was assumed by H.-W. Sinn in his earlier writings.[21]

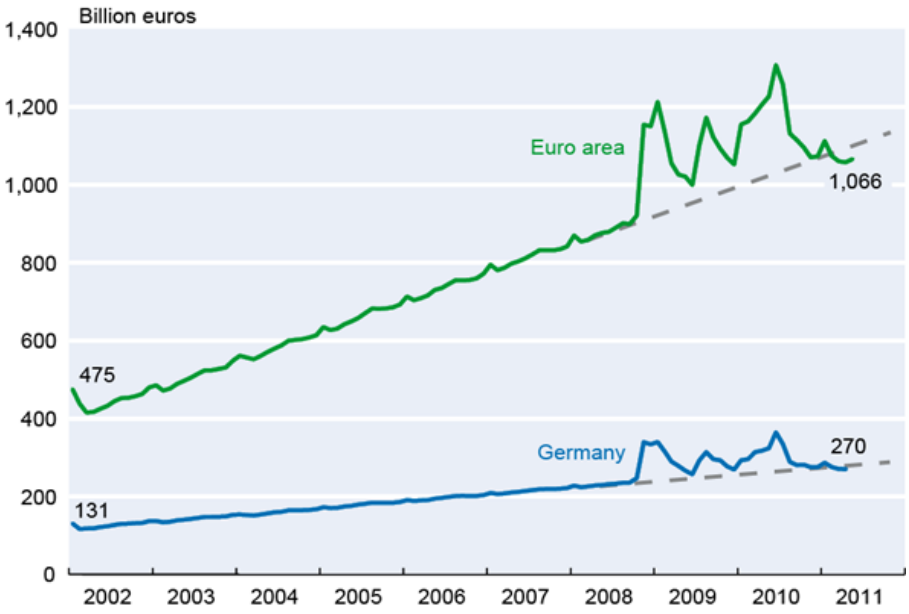
This process is not only theoretically to be expected; it also agrees with the facts, as shown in the two following figures. Figure 8 shows the evolution of the euro zone's monetary base. It is obvious that the stock of money balances grew excessively during the financial crisis: In 2009, the year of the crisis, the demand for money evidently increased because some commercial banks, fearing a continuation of the crisis, preferred to exchange short-term claims on other banks for claims on the ECB, i.e. into central bank money including the deposit facilities (which are part of the monetary base). In the meantime this stage of the crisis has passed and the demand for money again follows the trend. The massive shift of the stock

[21] That this would be a misinterpretation was already discussed in: H.-W. Sinn, "Eine Einladung zur Selbstbedienung", op. cit., as well as in: H-W. Sinn, "On and off Target", VOX, 14 June 2011, http://www.voxeu.org/index.php?q=node/6644.

of central bank money across European borders, as measured by the Target balances, is not reflected in the growth of the money aggregate. It may be assumed, therefore, that in a comparison of scenarios at present with and without Target balances, no effect of the massive money inflows from abroad on the monetary base of the money-receiving countries would be visible. Since, furthermore, the share of the monetary base created by the acquisition of gold and foreign exchange has hardly changed, a nearly complete crowding out of central bank credit by the money inflows can be observed.

A similar statement is also true for Germany, as the figure shows. The German monetary base is again following its trend despite the massive money inflows via the Target system. This contradicts the frequently heard presumption that the inflow of money via the Target system had on balance led to an expansion of the monetary base in Germany.[22]

Figure 8: Monetary base in the euro zone



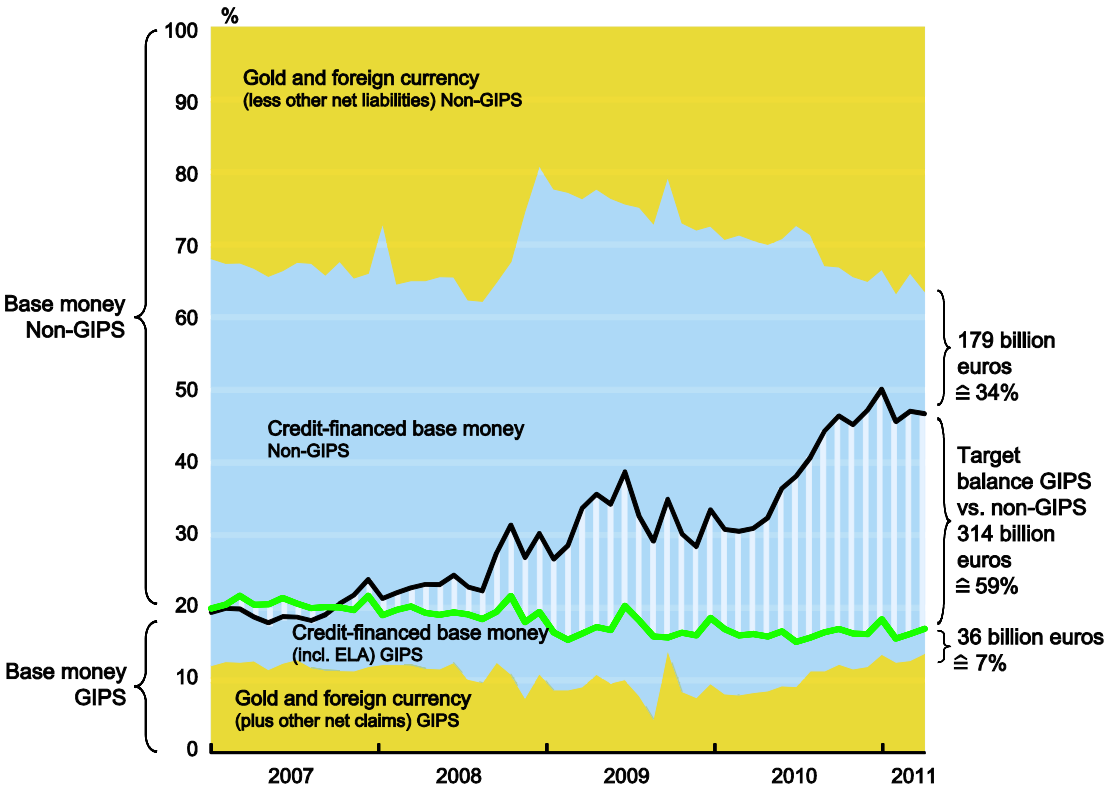
Sources: European Central Bank, Statistical Data Warehouse, Economic Concepts, Monetary Operations, Minimum Reserves and Liquidity; German Bundesbank database, EMU, Monetary aggregates, Overall monetary survey in the euro area, Banking system's liquidity position, series AU1735.

The composition of the monetary base hardly changed during the period under consideration. This applies to the distribution among the country groups as well as to the breakdown of the euro monetary base into the origins of its components. This is shown in Figure 9, where the entire euro monetary base is set equal to one hundred per cent. The thick green line, which starts at 20% on the left-hand side, is the borderline between the monetary base of the GIPS countries (measured from below) and the monetary base of the remaining euro countries (measured from above). It can be seen that in the years in which the Target balances were built up, the proportions of the monetary base held in the GIPS countries and the rest of the euro area hardly changed. The share of the GIPS countries declined only marginally, from 20% to 17%, a proportion in line with their share in the euro-zone GDP, which most recently amounted to 18%, as mentioned earlier. The shares of the GIPS countries

[22] See for instance Th. Mayer, "Mit Wunderkräutern gegen die Blinddarmentzündung", *Handelsblatt*, 15 June 2010, p. 9.

and the other countries in the stocks of gold and foreign exchange, represented by the gold-coloured areas, also fail to show a trend.

Figure 9: Origin of the monetary base in the Eurosystem (shares)



Note: The Target balance corresponds to the Target liabilities of the GIPS NCBs to the Eurosystem as well as the Target claims of the remaining countries' NCBs (including the ECB) on the Eurosystem. It measures the central bank money that flowed from the GIPS to the other countries of the euro area via international transactions..

Sources: See Fig. 5; calculations by the authors.

The changes in the composition of the credit distribution across countries were gigantic, however. While the total share of central bank credit fell slightly (at the start of 2007 it amounted to 56% of the entire monetary base, and in March 2011 to 50%),[23] the share of the GIPS rose from 13% to 66% during the same period. This increase was caused almost exclusively by the Target credits, which surged from zero to 59% of total credit. Since, at the same time, the entire monetary base of the euro zone stayed nearly on trend, as explained in Figure 8 above, the central bank credit of the non-GIPS countries was crowded out in the full amount of the Target credits.

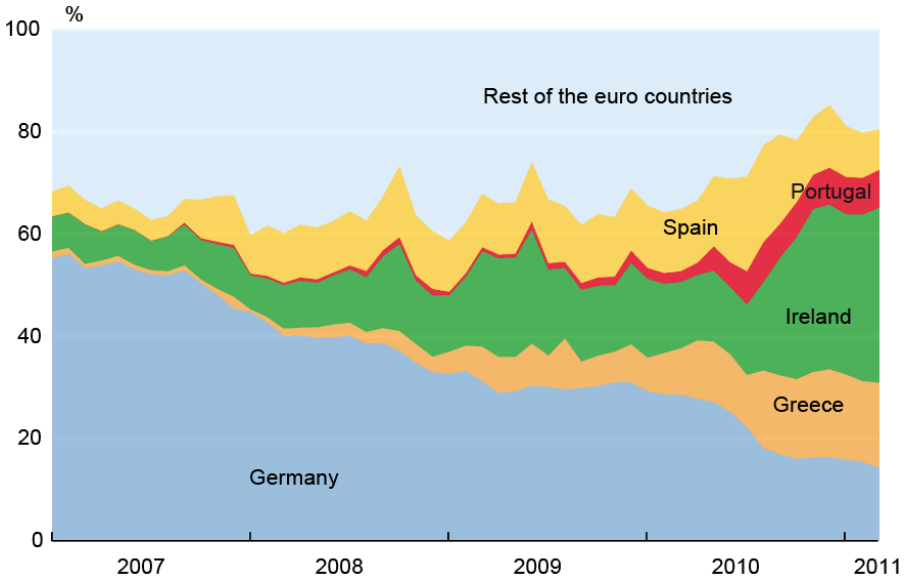
[23] This decline of the share of central bank credit in the entire monetary base in the euro zone is primarily due to the Covered Bonds Purchase Program, which had a volume of 60 billion euros and thus amounted to almost 6% of the monetary base. This program is reflected in Figure 9 in an expansion of the gold-coloured areas, entailing thus a decline in the share of central bank credit. Purchases of government bonds within the Securities Markets Program, amounting at present to 74 billion euros, have no effect on the gold-coloured areas, as their effect on the monetary base is neutralised by the acquisition of time deposits in the same volume.

The fact that the central banks of the other countries, especially the Bundesbank, were given Target claims against the ECB was presented to us in an exchange with an Irish colleague as the conscious investment preference of the Bundesbank. While other central banks held their assets created by money creation in the form of gold or claims against the commercial banking system, it was supposedly the preference of the Bundesbank to build up claims against other central banks instead. This assessment of things does not do justice to the facts, however. As explained above, the Bundesbank was not able to refuse the transfer demands and to resist the creation of new money outside the refinancing operations with commercial banks. For this reaction it automatically received claims on the Eurosystem. There was no conscious investment decision at all.

Figure 9 shows only the crowding out of credit between the GIPS and the other euro countries as a group. The distribution among the individual countries is shown in Figure 10, where the Eurosystem's total central bank credit is set equal to one hundred per cent, and the coloured areas show the shares of the individual countries in this total without a distinction being made between Target credits for transfers abroad and normal credits for the domestic provision of money. It can be seen that the GIPS lending is wedged in-between the credits. The crowding out took place primarily at the expense of Germany, as was to be expected, since the central bank money created in the GIPS countries flowed primarily here.[24] The German share of credit declined from 55% at the start of 2007 to just 14% in March 2011. The total for the other euro countries outside Germany and the GIPS also declined (against the trend), but the decline was clearly less pronounced, at 13 percentage points, than in Germany.

[24] On average for the years considered in the chart, Germany accounted for about 29% of the euro-zone's GDP. Thus, the credit share of Germany before the outbreak of the financial crisis was way above its economic weight. Because of the great proliferation of Pfandbriefe in Germany, which is a triply-secured kind of mortgage-backed instrument, the cost of procuring liquidity at the central bank was lower in Germany than in many other countries of the euro zone (see A. Chailloux, S. Gray and R. McCaughrin, "Central Bank Collateral Frameworks: Principles and Policies", *IMF Working Paper* No. 222, 2008). German commercial banks therefore provided other commercial banks within the euro area with central bank money in considerable amounts (see German Bundesbank, "The dynamics of the Bundesbank's TARGET2 balance", op. cit.). As this concerned private capital exports, which corresponded to a current account surplus or other capital imports, there was no noticeable build-up of Target balances before the onset of the financial crisis. Other reasons could have been that Germany's payment transactions are very cash-intensive compared to other countries like France, that Germany has many foreign workers who make remittances in euros, and also that the Bundesbank has rather small stocks of gold and foreign exchange relative to the size of its monetary base, so that a larger part of the monetary base was created via lending.

Figure 10: Shares of the euro countries in the Eurosystem's total central bank credit



Note: The central bank credits include the refinancing operations (main refinancing operations, longer-term refinancing operations, the marginal lending facility and other liquidity-providing operations) of the NCBs and the ELA loans of the Central Bank of Ireland.

Sources: See Fig. 5; calculations by the authors.

The shift in money-creation credit to the GIPS most likely led to a clear degradation of the quality of the collateral offered. The troubled commercial banks of the GIPS countries found it increasingly difficult to provide securities bearing small risks of default. The dramatic situation of some banks in Ireland even made it impossible for them to participate in normal open-market operations due to a lack of suitable collateral. For this reason, the Central Bank of Ireland (CBI) provided short-term emergency loans to these banks (Emergency Liquidity Assistance, or ELA) that recent estimates put at 54 billion euros. Since their interest rate lies 2% to 3% above the current interest rate of the marginal lending facility,[25] the taking on of these loans can only be explained with a clear lowering of the collateral requirements on the part of the CBI ELA loans are largely outside the control of the otherwise powerful Central Bank Council of the Eurosystem, but the liability for these loans rests firstly only with the NCBs and their sovereign.[26] The other NCBs in the Eurosystem are only liable for ELA loans in case of sovereign default. The ELA loans as a whole, however, do not amount to even one-fifth of the Target credits given to the GIPS countries. The lion's share of the Target credits was issued via normal refinancing operations and represents a direct default risk for the other euro countries if the safety-margin deductions that the ECB required of its NCBs proved insufficient, which is generally presumed to be the case for the GIPS countries.[27]

[25] As the *Irish Independent* has written: "the interest rate paid by Irish banks on ELA is in the 'ball park' of 2pc-3pc, informed sources said. The rate is based on the ECB's marginal lending facility of 1.75pc, plus a 'penalty' reflecting the emergency nature of the aid." See http://www.independent.ie/business/irish/banks-pay-less-than-3pc-interest-on-euro51bn-of-emergency-funding-2529378.html.

[26] W. Buiter, J. Michels, and E. Rahbari, "ELA: At Emperor without Clothes?", *Citi Global Economics View*, 21 January 2011.

[27] See in particular M Brendel and C. Pauly, "Auf schmalem Grat", *Der Spiegel*, 23 May 2011, pp. 60ff. See also C. Fuest, "Die EZB ist zu weit gegangen", *Handelsblatt*, 15 June 2011, p. 56; P. Krugman, "The Euro Living Dangerously", *NY Times Blog*, 1 June 2011, http://krugman.blogs.nytimes.com/2011/06/01/the-euro-living-dangerously/.

Economic Interpretation of the Credit Shift

As explained above, the Target balances in the balance sheets of the NCBs appear as claims and liabilities, and in the balance of payments statistics as international capital transactions. These entries do not suggest something that is economically non-existent, as some commentators of the Target problem would recently have us believe (even those in high offices). They are also no irrelevant clearing balances. Instead, they measure the capital exports flowing through the ECB system from the core countries of the euro zone to the countries on the periphery, which during the financial crisis took the place of the vanishing private capital flows. These capital exports through the central bank system were coerced to the extent that they came about as a result of political decisions of the NCBs of the GIPS and they were tolerated by the ECB, while the core countries' NCBs were unable to independently influence their amount. They had to create the money in the course of international payments, and this money creation crowded out the lending to the private banking system, because its demand for central bank money was limited (Fig. 7). The core countries' NCBs could not have countered this even if they had wanted to.

Ultimately, the core countries' NCBs shifted the stock of credit, which they usually gave to their domestic commercial banks by providing the domestic monetary base, to the peripheral countries so that the economies of these countries were able to buy goods and assets from the core countries.

A loan shifts the right of disposition over real economic resources from the lender to the borrower up to the time that the loan matures, when the disposition right over these resources is returned with interest. With a loan, things can be purchased that otherwise couldn't have been, and the lender foregoes for a time the purchase of things of the same value.

In the case of a central bank loan, we could ask what the central banks of the core countries, in particular the Bundesbank, could have bought that they now cannot, because they have given a loan to other NCBs. The answer is: titles to claims on the commercial banks as they arise within the framework of the refinancing operations, and hence indirectly those titles to claims that the commercial banks must deposit as collateral for their refinancing activities. Whether a central bank grants a loan to a commercial bank that is now in a position to give a loan to a private customer in exchange for a debenture, or whether the central bank buys the debenture from the banks directly, does not make much difference. The liability is of course different, but the credit flow is the same. As Martin Wolf said in his FT column, "Let us call a spade a spade".[28]

He was referring of course to the many government bonds that the commercial banks from countries such as Greece or Portugal submitted to their central banks, and which at least in the case of Greece are no longer sufficient collateral because of the looming sovereign default.

The central bank credit that is no longer issued in Germany but in Greece serves in reality to finance the Greek state to a great extent. According to an estimate by J.P. Morgan, the share of government bonds in the collateral that the Greek commercial banks submitted to their central bank amounted to precisely one-third, and an additional 38% were government-

[28] M. Wolf, "Intolerable Choices for the Eurozone", op. cit.

backed bank bonds.[29] In reality, the European Central Bank thus allowed the Greek state to run its gigantic budget deficit, which in recent years amounted to about ten percent of GDP and more, by resorting to the European money-printing press. According to Article 123 of the consolidated EU Treaty, only the direct granting of a central bank loan to a state is prohibited.[30] Indirect financing, however, is not ruled out by the Treaty formulation. The Target credits to Greece are examples of such an indirect financing. As Figure 1 shows, by the end of 2010 as much as 87 billion euros in Target credits had been issued, i.e. loans that went beyond Greece's internal stock of money balances and that were used to buy goods and assets abroad.

These loans were withdrawn from those economic subjects whose securities the Bundesbank would otherwise have been able to accept as collateral for credits in the banking system. In Germany this could have been the state, but because of the much smaller German budget deficit it was more likely to have been firms in the private sector that normally obtain loans from the banks against bonds and other assets.

To use again the simple example from above, the investor from whom the credit was withdrawn could also have been a German transport contractor.[31] Since the Bundesbank did not issue the credit to a German transportation company via a German commercial bank but via the European central banking system and a Greek commercial bank to a Greek transportation company, the truck is delivered to a Greek instead of a German transportation company. For jobs at the German truck manufacturer both amount to the same thing, and also the amount of money that circulates in Germany after the transaction is the same. The only difference is that the truck now operates in Greece instead of Germany.

Of course it doesn't have to be a loan to a truck buyer in Germany that is withdrawn. It could be that loans to other investments in Germany are crowded out; it could also be that German capital exports to other countries are reduced, so that investment in those places is affected. Or it could be that in the end, the public capital flowing through the Eurosystem to Greece just turns around and flows back as capital flight, since the Greek NCB loans make it possible for wealthy Greeks to sell their government bonds to the banks and take their wealth out of the country, an issue that we will discuss below. It is difficult to pinpoint the exact location and type of the countertrade, which is in any case difficult to observe and track, since capital market countertrades are usually spread around numerous companies and countries. The fact is, in any case, that when a net capital flow to Greece occurs because the credit from the ECB does not finance solely capital flight from Greece, somewhere else another use of the credit must be crowded out when additional credit is given via the central bank system to the GIPS countries, because with the given stock of money and given savings, a loan for one use can only be provided at the expense of another use.

This is not meant to say that someone is credit-constrained, as some commentators have surmised; in other words, that someone cannot receive a loan that he wants at the given interest rate. Even in an ideal market, in which everyone can borrow as much as he or she wishes, a strict aggregate budget constraint applies in the sense that the sum of the investments that can be financed on credit (or other forms of capital, especially equity capital) is limited by the sum of savings. The existence and compliance with aggregated budget

[29] N. Panigirtzoglou, G. Koo, S. MacGorain and M. Lehmann, "Who are the Losers from a Greek Debt Restructuring?", *Flows and Liquidity, J.P. Morgan, Global Asset Allocation*, 6 May 2011.
[30] Consolidated Version of the Treaty on the Functioning of the European Union (TFEU), Article 123, Section 1.

[31] A similar example of a tractor in H.-W. Sinn's FAZ article ("Die riskante Kreditersatzpolitik der EZB", op. cit.) irritated some bloggers.

constraints is a key requirement for the functioning of a market economy that has nothing to do with rationing in the narrower sense. The aggregate budget constraint lead to a crowding out of one credit by another. This is basically the main law of capitalism. Since we don't live in paradise, we normally cannot obtain credit out of nothing. There is resource rivalry.

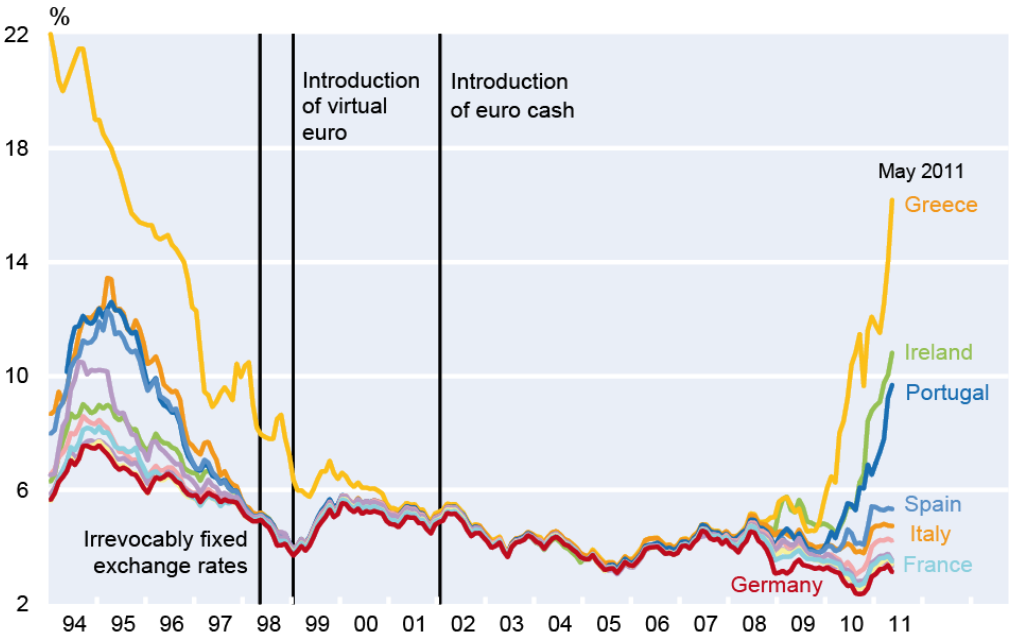
This assertion must be qualified for the case of Keynesian underemployment. If the crisis of the GIPS was induced by a collapse in demand, the rivalry of different uses of credit may not prevail. In Keynesian unemployment, an additional credit shifted from one country to another can trigger an investment boom in the recipient country with multiplier effects on GDP which, in line with the Keynesian proposition that "investment creates its own savings", creates exactly as much credit as the investment needs. In this case, there would be no resource rivalry. We do not want to rule out that this was temporarily so. This is one of the reasons why we considered the ECB policy correct during the acute phase of the crisis.

This phase is, however, already over, and it is now evident that the main problem in the GIPS resides in the fact that the overheating of their economies during the years before the financial crisis made them much too expensive, so that they are now in classical instead of Keynesian unemployment. Germany, in contrast, went into a boom after the financial crisis and already in 2010 was complaining of a skilled-labour shortage. In such a situation, there is undoubtedly a rivalry of resources in the goods and factor markets, so that the crowding out of credit, which as we showed is a fact at the central bank refinancing credit level, must also occur in the rest of the economy.

Even in this situation it is possible that instead of domestic investment capital export into another country is crowded out if the Target credits flow to the GIPS. However, this does not alter in any way the resource rivalry nor the fact that the Target credits, in the proportion that they did not just serve to finance the capital flight of asset owners, were prevented from serving other uses. And it is also not true that the financing burden disappears because it is distributed throughout the huge pool of global capital. This would only be the case if all capital investments were perfect substitutes, for example if there were no investment risks.

The world is indeed far removed from this, as the tremendous interest-rate spreads for the European countries now show, and which are illustrated in Figure 11. Because of the exchange rate risks, interest rates were widely spread before the irrevocable establishment of exchange rates (1998) in the euro zone, and they have spread again since the beginning of the crisis because investors reckon with different default probabilities among the euro countries. Exorbitantly high interest rates must now be paid by some GIPS countries.

Figure 11: Net yields of 10-year government bonds



Source: Reuters EcoWin, *Government Benchmarks, Bid, 10 year, yield, close*; Eurostat.

The interest-rate spreads show that the national capital markets, even in the euro area, are not as closely woven as the idea of a perfect global capital market would suggest. For this reason we can assume that it is not irrelevant from which country central bank credits are diverted and to which countries they flow. The more capital flows via public channels from the European core countries to the countries on the periphery, the smaller the interest spreads will be, which will mean higher rates for the former and lower rates for the latter than would be the case without such public channels. Higher rates for Germany, for example, are to be expected if public lending to other euro countries expands even further, because Germany's creditworthiness will suffer due to the risks associated with the granting of loans to the peripheral states. The more instruments of joint liability are introduced in Europe, the fewer the differences in the creditworthiness of the European countries as assessed by investors and their rating-agencies and the more the interest rates will be compressed to a uniform, average level. Moreover, the comparative lowering of interest rates that is linked to the granting of loans to the peripheral countries would induce the ECB in the medium term to raise its main refinancing rate because then fewer braking effects are to be feared in the peripheral countries.

In this respect it can also be assumed that the gigantic flow of Target credits has delayed the increase of the interest spreads. That in spite of this the large interest rate spreads were not kept at bay is presumably due to the Target credits being ultimately only available to a limited extent, as we will show in the next section. The fundamental imbalances in the euro zone are much too great for the ECB to offset with its own means.

It is true that Germany is currently benefiting from the interest spreads, but this is only a relative benefit. During the first stage of the euro, from the time it was announced in the 1990s, Germany's economy stagnated. There was mass unemployment, capital left the

country, Germany had the lowest investment share of all OECD countries, the second-lowest growth rate in Europe, falling real-estate prices, the lowest wage increases in the euro zone and a 20% real depreciation vis-à-vis its trading partners in the euro zone. Germany exported two-thirds of its savings abroad in recent years. After China, Germany was the world's largest capital exporter. German savings flowed to America, to Eastern Europe and to the countries on the European periphery. The balance-sheets of German banks and insurance companies, though not to the extent of those of their French counterparts, filled up with the government bonds of these countries because, according to the Basel regulations in force at the time, this did not have to be backed up with capital reserves. Then the financial crisis hit, and capital was reluctant to leave the country. This completely changed the basic situation in the capital markets. The growing supply of credit triggered an investment boom in Germany, leading in the short term to a strong upswing in economic activity and giving the country a favourable growth outlook for the coming decade. This forecast and interpretation of the events was first put forward by H.-W. Sinn in June 2010 and has now become widely accepted.[32] In this respect, Germany's present economic situation is certainly able to cope with the continuation of the public credit flow from the Bundesbank to the European periphery. This cannot be denied.

However, the credit flow through the ECB system undermines the necessary correction of the misguided developments in the years before the crisis. The decision of the markets not to send capital to the periphery in exorbitant amounts as was the case in the exuberant, carefree phase of the capital markets up to 2008, is being partly offset by the credit policy of the ECB. However one assesses this development, it is a fact. It will not put an end to the German boom. But it is clear that a strengthening of the rescue systems, be it via the ECB or the Luxembourg funds, will reduce the interest-rate spreads. This will at least partially revitalize the capital flows out of Germany, which had accorded Germany an extremely difficult decade before the crisis, and it will perpetuate the current account imbalances. As long as the overhang of imports over exports is financed, the imbalance will persist; it will disappear only when it can no longer be financed.

We want to emphasise it once again: the ECB was right in providing help during the acute phase of the crisis, easing the situation in the capital markets, which, seized by panic, stepped on the brakes too quickly. Thus we do not support the view that the ECB should never have permitted the Target credits to be granted. When the crisis erupted, it was necessary to act quickly – faster than the European parliaments could have responded. In light of this situation, the action taken by the ECB was justifiable and appropriate.

However, this policy has been in place for four years now and is in the process of becoming a permanent fixture. This is wrong and dangerous. In the meantime the European parliaments had numerous opportunities to consider the lending policy and the necessary relief measures.

Our view is that the parliaments could have been involved earlier because the Target credits were not of a monetary policy nature. The policy neither changed the entire monetary base of the euro zone, nor did it result in a different distribution amongst the individual

[32] See H.-W. Sinn, "Nachweisbare Wirkung", *Wirtschaftswoche*, 7 June 2010, No. 23, p. 39 (also published as "Reallocation of Savings in Europe", *Ifo Viewpoint* No. 115, 22 June 2010); H.-W. Sinn, "Rescuing Europe", *CESifo Forum*, Special Issue, August 2010, http://www.cesifo-group.de/DocCIDL/Forum-Sonderheft-Aug-2010.pdf; EEAG, *The EEAG Report on the European Economy*, CESifo, Munich 2011, http://www.cesifo-group.de/DocDL/eeag_report_chap2_2011.pdf.

countries. It was a purely fiscal measure which could have involved the parliaments in the process and been financed by the budgets of the euro countries.

In the Central Bank Council every country, whether large or small, has one vote and the majority rules. Malta has, in formal terms, the same voting rights as France. That is not a problem as long as the central bank restricts its activities to monetary policy. The Central Bank Council has not done this, however. It has instead used its power to provide excessive credit to the central banks of peripheral countries by repeatedly accepting yet another decline in the collateral standards for the refinancing operations. As a result, the provision of money in the peripheral countries far exceeded their own transaction needs, which led to the huge Target balances.

Whichever way the further economic effects of the credit shift through the Eurosystem are judged, whether one believes in the Keynesian miracle of credit creation out of nothing or rather a world with competition for resources: The Target credits that the central banks of the European core countries – first and foremost the Bundesbank – gave to the periphery are, in terms of the right of disposition over economic resources, payment flows, international distribution of central bank money, and the liability involved, essentially identical to jointly and proportionately guaranteed short-term Eurobonds that must be bought by the core euro countries, with the resulting revenue being lent to the peripheral countries that are unable to obtain the finance they need on the market or only at unfavourable terms. Eurobonds such as these shift the disposition of economic resources from the core countries to the periphery in the same way that the Target credits do. Credit and money flow from the core countries to the periphery, and money comes back to buy goods or assets. Such bonds would also not change the distribution of the monetary base in Europe, and they would also allocate credit and thus the disposition of economic resources to the recipient countries at the expense of the creditor countries. Even the liability would be identical. If the credit-receiving country went bankrupt, all euro countries would be liable in proportion to their capital shares in the ECB, which for each country is the average of the population size and share of GDP. Everything is the same as with Target credits.

That is probably why several European governments supported the introduction of Eurobonds in 2010 so vigorously. They were afraid of what would happen when the Target policy ended and logically wanted to continue – by way of a joint institution in Luxembourg and the issuance of Eurobonds – what the European Central Bank had been practicing for years.

However the policy of the ECB is evaluated in the end, it is clear that all of its economic effects – whether strong or weak, whether beneficial or dangerous – basically correspond to the effects of short-term Eurobonds. Europe needs to discuss this issue openly.

Target Credit, Current Account Imbalances and Capital Movements

In order to capture the importance of the credit transfer to the GIPS by the ECB, it is useful to look again at the third definition of Target balances in the second section of this paper. According to it, a country's Target debt measures the accumulated balance of payment deficit with other euro countries, i.e., the accumulated net outflow of euro central bank money for the purchase of goods and assets from other euro countries (plus interest). Translated into the language of the foreign trade statistics, this means that the increase of a country's Target liability over one year equals the sum of (private and public) net capital exports and the current account deficit vis-à-vis other euro countries, as this is the size of the net outflow of euro central bank money to the other euro countries. A net capital export equals the net accrual of assets in other countries, and a current account deficit is basically defined as that part of the excess of imports of goods and services over exports that is not financed with transfers (gifts) from other countries. As explained earlier, in the foreign trade statistics the net outflow of central bank money, i.e. the increase in the national Target debt, is shown quite correctly as capital imports of the country via the central bank system. In the following, however, the terms "capital imports" or "capital exports" always correspond to the private and public sectors outside the central bank, unless otherwise noted. Analogously, we do not include changes in the stocks of foreign currency in our definition of capital flows.

Let's call the increase of a euro country's Target debt ΔT, its current account deficit vis-à-vis all foreign countries L, its current account deficit vis-à-vis other non-euro countries L_n, its net capital exports to all foreign countries K and its net capital exports to non-euro countries K_n. Then the increase of the country's Target debt is

$$\Delta T = L - L_n + K - K_n$$

$$= L + K - (L_n + K_n).$$

Here the term in parentheses in the second line of the equation measures the net acquisition of goods and assets from outside the euro zone, which is a net outflow of foreign exchange. In a system of fixed exchange rates, this term could have a considerable size, because the euro central banks would intervene in order to stabilise the exchange rates. For example, they could sell dollars for euros in order to permit euro citizens to acquire such goods and assets in net terms. But the European national central banks don't do this, or if they do, they do so in only a minute volume. It was and is the declared policy of the ECB to let exchange rates float freely. Private changes in foreign cash holdings were probably equally negligible. Thus, a euro country's current account balances vis-à-vis non-euro countries can be assumed to be offset by identical balances in the capital accounts vis-à-vis such countries, and the term in parentheses approximates zero. Thus the above equation simplifies to

$$\Delta T \approx L + K = L - Z,$$

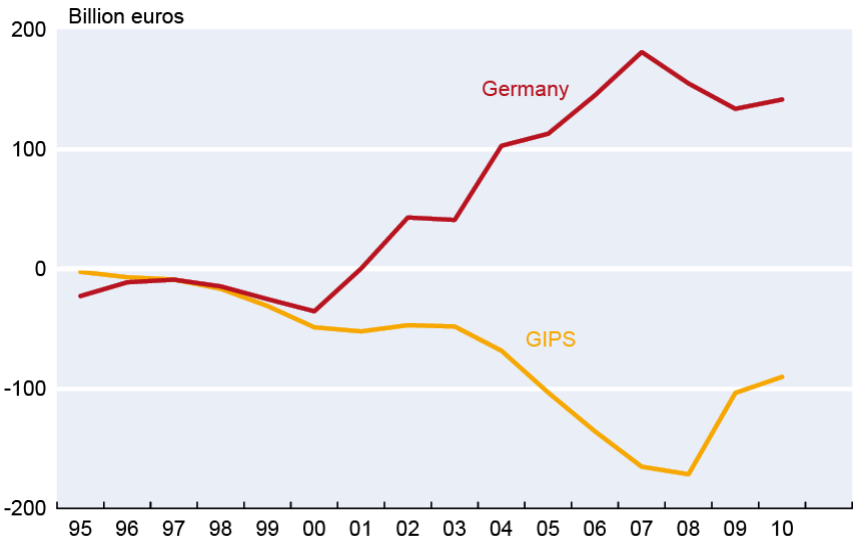
where Z is the euro country's net capital imports from all foreign countries. The first term on the right-hand side says that an increase of the Target debt of a euro country, in the case of lacking foreign exchange operations, equals the sum of the current account deficit vis-à-vis all foreign countries inside and outside the euro zone and the net capital exports to them. Equivalently, the second term says that the increase of the Target debt equals that part of a

euro country's current account deficit vis-à-vis all other countries that is not financed by (private and public) capital imports from the rest of the world. This is the definition that had already been supplied by H.-W. Sinn in his FAZ article, only here we distinguished explicitly between the euro area and the other countries.[33]

Figure 2 already showed that the Target balances of the GIPS countries were close to zero until 2007 inclusively, that is shortly before the outbreak of the financial crisis, and only surged thereafter. Until 2007 the GIPS capital imports must therefore have been as large as their current account deficits. All net purchases abroad were financed by a net inflow of capital. As public capital flows were minimal until then, the current account deficit was in fact financed with inflows of private capital. That is the normal case that is always expected when a country has a current account deficit.

As Figure 2 showed, the GIPS Target liabilities then rose dramatically to 340 billion euros to December 2010, while at the same time Germany accumulated Target claims worth 326 billion euros. The increase in the Target liability of the GIPS countries in these three years, from December 2007 to December 2010, amounted to 321 billion euros, while the increase in the Target claims of the Bundesbank amounted to 255 billion euros. The German Target claims had already risen markedly by the middle of 2007. The question now concerns the relationship of these figures with the current account balances over these three years. A look at Figure 12 may be useful for this purpose, as it shows the evolution of these balances.

Figure 12: Current account balances



Source: Eurostat, *Wirtschaft und Finanzen, Zahlungsbilanz, Zahlungsbilanzstatistiken nach Land*; Ifo Institute calculations.

Figure 12 shows that the current account deficit of the GIPS evolved almost like the mirror-image of the German current account surplus. While the German surplus reached a maximum of 181 billion euros in 2007, the deficit of the GIPS countries rose to 171 billion

[33] H.-W. Sinn, „Riskante Kreditersatzpolitik", *Frankfurter Allgemeine Zeitung*, op. cit. See also H.-W. Sinn, "The ECB's Stealth Bailout", *VOX*, op. cit.

euros a year later. The curves are so similar that they almost mirror each other. Christine Lagarde, the French Finance Minister, commented accurately: "It takes two to tango."

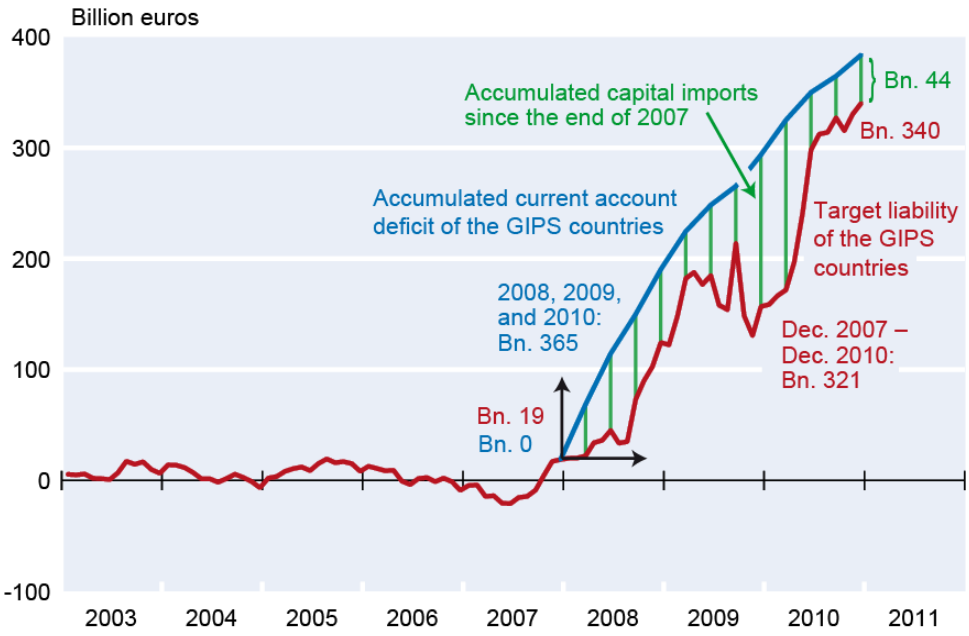
The current account deficits of the GIPS were considerable, exceeding 100 billion euros per year during and after the crisis. Together, they amounted to 365 billion euros for the three years from 2008 to 2010. That is higher by 44 billion euros than the 321-billion-euro increase in the Target liabilities of these countries over the same period. The conclusion is that the GIPS as a total still received 44 billion euros in capital imports, whereas the remainder of the foreign trade bill, i.e. 321 billion euros, was financed by Target credits, hence, ultimately, by the money-printing press.

Figure 13 clarifies this fact by comparing the curve of the accumulated current account deficits of the GIPS countries with the time series of their Target liabilities, familiar from Figure 2. The red curve shows the Target debt of the GIPS countries and the blue curve shows the current account deficits accumulated by these countries since the end of 2007. The starting point of the blue curve has been shifted to the value of the Target debt by the end of 2007, to be able to compare the accumulated sum of current account deficits with the increase in the Target debt since this point in time as, according to the above equations, the difference between these quantities is the sum of the capital imports of the GIPS countries accumulated since the end of 2007. We remind the reader of our definitions, according to which, unless otherwise stated, the capital imports meant here are only the private and public capital imports and not the capital import obtained via the central bank system as measured by the Target debt itself. The vertical distance between these two curves equals the accumulated capital imports.

To facilitate the interpretation of the curves we may perhaps formulate it as follows: If the blue curve of the current account deficits without the Target credits had developed the way it did (which surely would not have been the case), then the distance from the small horizontal auxiliary line to this curve would measure the accumulated capital imports since the end of 2007. With the Target debt that was built up, these capital imports were however diminished to the extent that Target debt became available. In other words, private capital imports were replaced by the forced capital imports through the ECB system, always assuming (falsely) that the current account deficits did not react to the ECB policies.

Although there was no statistical correlation between the movements of the two curves quarter on quarter, the figures were comparable. The curve of the accumulated current account deficits lies a bit above the curve of the Target debt. This shows that the accumulated capital imports were always positive. Toward the end of 2010 these accumulated capital imports amounted to the already mentioned 44 billion euros. This was 12% of the entire capital requirements created by the current account deficit. Fully 88% was evidently financed by the Target balances, i.e. by the money-printing press.

Figure 13: Financing the GIPS current account deficits via the Target system



Note: The Target liability level can be read directly from the left axis. In order to show which proportion of the current account deficits of the GIPS was financed through their Target liabilities, the current account deficits must be accumulated over time. This figure makes it possible to approximate the evolution of the GIPS liabilities to the rest of the world. While no conclusion can be derived from this regarding the absolute level of indebtedness, since it changes with the selection of the starting point and thus the number of years accumulated, it does make it possible to say something about the change in indebtedness between two points in time. For the accumulated current account deficit the starting point chosen was the end of 2007, since the systematic Target liabilities arose after that. Given that data on the current account balances of the GIPS are available only until the fourth quarter of 2010, the depiction of their Target liabilities also ends in December 2010. The difference between the current account deficits accumulated by the GIPS over the years from 2008 to 2010 (365 billion euros) and the change in their Target liabilities over the period December 2007-December 2010 (321 billion euros) measures ultimately the size of the accumulated private and public capital imports of the GIPS (excepting the capital imports through the central bank system) over the years from 2008 to 2010. It amounted to 44 billion euros.

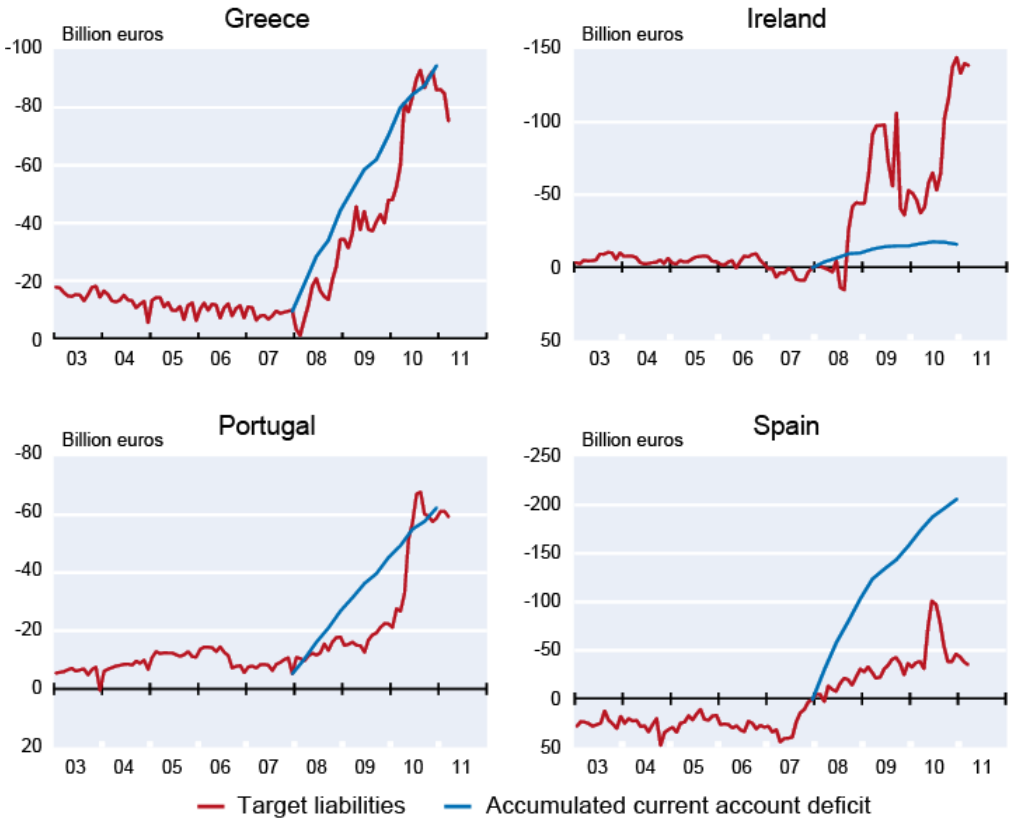
Sources: International Monetary Fund (see Figure 5) and Eurostat, Data set, *Wirtschaft und Finanzen, Leistungsbilanz nach Ländern*; Ifo Institute calculations.

Interesting is also the comparison with Germany. On the one hand, Figures 1 and 2 had already shown that the counterpart of the build-up of the Target debt of the GIPS countries was almost exclusively the Target claims of the Bundesbank. The rest of the euro countries contributed but little to the events. On the other hand, the Lagardian Tango diagram (Figure 12) shows that the German current account surpluses were the counterpart of the deficits of the GIPS countries. Total German current account surpluses during the past three years amounted to 430 billion euros, and the increase in Target claims during this time amounted, as mentioned, to 255 billion euros. This implies that in the period from 2008 to 2010 the Target credits granted by the Bundesbank to the GIPS via the ECB system amounted to 60% of the German current account surplus and nearly 70% of the current account deficits of the GIPS. In view of these figures, the impression that the Bundesbank has become a gigantic foreign trade bank that financed German exports to the European periphery is undeniable. In the final analysis a considerable share of the entire export surplus of the past

three years was paid for by newly printed money, for which the countries of the periphery at the expense of the Bundesbank – but also with its endorsement - got the printing permission from the ECB. The interest rate for the credit that the GIPS countries received was only 1%. Since it was below the market interest rate and below the inflation rate, this credit may also be considered an implicit export subsidy.

But let us return to the relationship between the current account balances and capital flows of the GIPS. Figure 13 only shows this relationship in the aggregate, i.e. for the total of the GIPS. It does not yet follow from this relationship, and that must be emphasised, that the balance looked similar for each individual country. This is shown in Figure 14, where the comparison between the Target debt and the accumulated current account deficits is broken down for the countries. The charts are basically drawn in the same way as Figure 13, only that the auxiliary coordinates are not depicted. The horizontal distance between the curves shows the net capital imports accumulated since the end of 2007 when the blue curve lies above the red one, or the net capital exports accumulated when the red curve lies above the blue one.

Figure 14: Current account and Target balances in detail



Sources: See Figure 13

It is easily noticeable that an approximate equality between the accumulated current account deficit and the Target debt only exists for Greece and Portugal. In these countries, the sum of the private and public capital flows during the past three years was virtually zero. The local NCB financed the current account deficit in its entirety. This does not mean, of course, that there is a correlation of the values in a statistical sense.[34] When the deficits had to be financed, private credit was available temporarily just to dry out again later on, and the central

[34] On this, see point 1 in the *Response to the critics* section.

banks had to help out. Later there were loans from the community of countries. There was a permanent to and fro, an interplay between the bull-headed capital markets and the NBCs that helped out whenever the capital flows were insufficient. Only in the sum of the three years can it be said that the increase in Target liabilities created by the additional creation of money in these countries was of a magnitude that financed the current account deficits.

For Ireland and Spain things were quite different, and in both directions. Spain evidently had still been able to attract private capital inflows to finance its current account deficit, so that the Spanish NCB only had to help out sporadically to pay for the excess imports. Total Target liabilities during the three years only increased by 46 billion euros, while the accumulated current account deficit came to 207 billion euros.

The opposite occurred in Ireland. Ireland was affected by a massive capital flight, reflected in the fact that its cumulative current account deficit over the three years was only 16 billion euros, while its Target liabilities over the same period rose by 145 billion euros (to 142 billion euros). That was almost as much as Ireland's annual GDP, which recently amounted to 160 billion euros. In proportion to its size, the country has a gigantic banking system. For this reason, after the Lehman collapse in 2008 the government provided guarantees to the country's banks amounting to two-and-a-half times the nation's GDP.[35] These guarantees, however, evidently did not restore confidence. The banks and the other capital market operators that had congregated in Ireland decided to withdraw their capital from the country; they did this by selling their assets to the Central Bank of Ireland and seeking a safe haven for their cash elsewhere. At the same time, the commercial banks in other European countries either refused to provide further credit to the Irish banks or only at extremely high interest. The Central Bank of Ireland acted, in this case, as a rescuer in a life-and-death situation, stepping into the breach and cranking up its money-printing machine.

In a smaller measure, capital flight also occurred in Greece. Since the increase in Greece's Target liabilities was as large as its accumulated current account deficit despite the public rescue programmes agreed in 2010, the net capital flight must have been about as large as these rescue programmes were.

All in all, the accumulation of Target liabilities was enormous, with 46 billion for Spain, 54 billion for Portugal, 76 billion for Greece and 145 billion for Ireland in only three years, altogether 321 billion more than at the end of 2007.

The question arises as to what would have happened if the central banks of these countries had been unable to issue more money than the respective economies required for domestic circulation. Without a doubt, considerable defaults would have taken place and many banks would have collapsed, because the commercial banking systems would not have been able to refinance themselves. This is the reason why the ECB's bailout policy in the initial stage of the crisis was right, when a timely crafting of rescue packages by the parliaments was simply not feasible. We want to emphasise this position once again.

Further dramatic consequences could also be expected for the capital flows and the current account balances, since the dearth of credit would have pushed the interest rates even

[35] See *Casino Capitalism. How the Financial Crisis Came about and What Needs to Be Done Now*, Oxford University Press, Oxford 2010, p. 193.

higher than they already were, and the market would have forced the current account deficits to equal the capital imports. The current account deficits would perforce have diminished, because investors, faced with such high interest premiums, would have taken on far fewer loans. Both the demand and the supply sides would have worked to contract the economy: imports would have decreased, and the falling wages and prices would have stimulated exports.

But that would not have been all. The rising interest rates would have dampened down capital flight or would even have induced a capital import. That would have been positive for the afflicted countries. If no accessible credit is available domestically, real estate cannot be sold, and the banks would leave in the lurch investors in government bonds, which in fact they acquired in massive amounts thanks to the Target loans. The capital is practically confined to the country in which it finds itself. With higher interest rates, the price of assets would have plunged, effective yields would have increased, and at some point the prices would have been so low that capital gains could once again be expected. The capital would have stayed in the country, and even fresh capital would have started flowing in from abroad again. The capital market, in such a scenario, would have probably stabilised quite quickly.

To be sure, there would have been many bankruptcies, but a bankruptcy does not mean that the assets disappear, only that they change hands. A bit more courage to let the market processes run their course would have saved the ECB the huge problems posed by the stock of dubious collateral it now has to live with.

The cheap loans given by the NCBs made it possible for the much-derided capital flight to attain the volumes observed. When this aspect is taken into consideration, the largest beneficiaries of the ECB policy were most of all wealthy individuals in the GIPS who managed to shift their capital abroad to safety. But of course the beneficiaries also included the owners of the banks and insurance companies in the heart of Europe, in particular those in France but also in Germany. In the first quarter of 2010 French banks had invested twice as much, relative to the size of their country's economy, in government bonds as German banks, and they had invested mostly in the southern European countries. German banks had invested heavily in Ireland. They all managed to avoid, in the nick of time, massive write-off losses by selling their holdings to the local commercial banks, which then took refinancing loans from their NCBs. The bailout carried out by the ECB provided, as we now know, only temporary relief, since the interest premiums are now higher than ever before (see Figure 11). But for many real estate owners and government bond holders this policy meant salvation.

The ECB could have decided differently. Once the acute phase of the crisis was over, it could have handed the rescue function over to the parliaments and the markets, since, as explained above, it operated a bailout and thus adopted purely fiscal measures that bear little resemblance to monetary policy, in a strict sense of the word. That would have probably also been better for European economic development. It is not possible to intervene against market processes in an open-ended fashion; such interventions must run their course and then, when the direst immediate threats have been overcome, be wrapped up. The experience of many years of futile attempts by central banks to manipulate exchange rates should be more than sufficient proof of that. Instead of sinking immeasurable resources into interventions aimed at enforcing exchange rates way out of equilibrium, today's central banks have become tolerant and, with the exception of China and a couple of other countries, refrain from applying such policies. They have learned that fighting the markets does not get them very far, and that it is sometimes cheaper and more promising to let one side of Wall Street fight it out with the other side, instead of themselves stepping into the fray to try to impose market prices that they consider right.

Five minutes to midnight

The many inconclusive attempts to use central bank interventions to keep exchange rates from their equilibrium values have shown that gigantic volumes of capital are necessary and that the central banks may still be losers in the end. One of the most impressive lessons was the fight of the Bank of England against George Soros's short-selling in 1992. At the time, the Bank of England had tried to support the pound sterling by selling dollars, deutschmarks and francs out of its stocks. It lost the battle, because George Soros had calculated the size of the foreign currency reserves of the bank and knew how many pounds sterling he had to sell short in order to win over the Bank of England. He won, the pound sterling had to be devalued, and Great Britain failed to meet the entrance conditions for the European Monetary Union.

The situation of the ECB reminds of such futile attempts, as its stock of munitions is also limited. By relocating money creation to the GIPS it has defied the financial markets for three or four years. It offset Ireland's capital flight and financed the Irish current account deficit. In Spain it financed the portion of the current account deficit that the capital markets refused to finance. And for Greece and Portugal, where private capital funding has dried up, it almost fully financed current account deficits of 10% of GDP and more. In the aggregate of all the GIPS, it financed 88% of the current account deficits of the past three years.

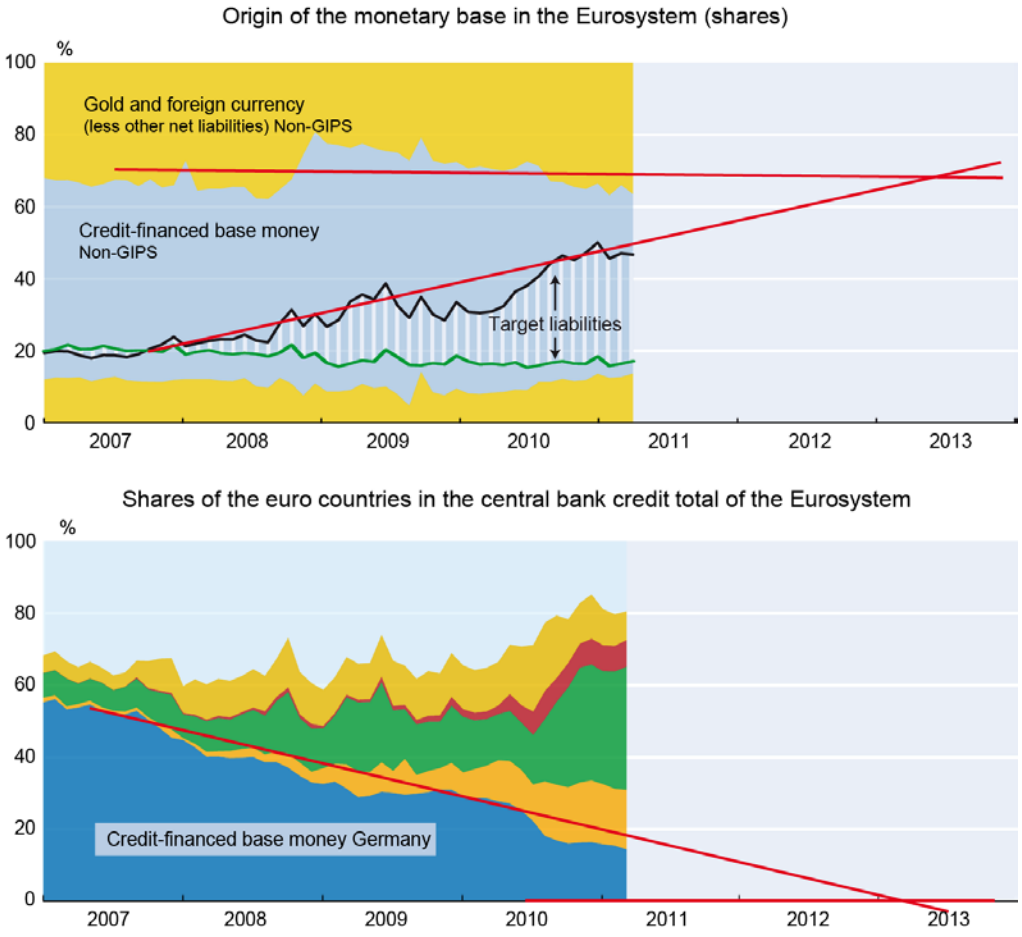
All of this has caused the portion of the monetary base originating in these countries that does not circulate there to surge from just 4 billion euros at the start of 2007 to 340 billion at the end of 2010.

As shown in the third section of this paper, the monetary base created by credit in these countries accounted for 66% of the Eurosystem's total credit by March 2011, although the GDP share of these countries amounts to only 18%. The additional money that the GIPS NCBs have lent to their businesses during the past three years in order to permit local firms, banks and citizens to finance net imports of goods and assets or, in other words, to live beyond their means and to move their assets to safe havens abroad, had already absorbed 59% of the total stock of central bank credit of the Eurosystem. At the same time, the central bank credit issued by the other countries declined from 87% of total central bank credit, or 387 billion euros, to 34%, or 179 billion euros, by March 2011. The Bundesbank was affected most. Refinancing loans fell from originally 55% (early 2007) to only 14%, or in absolute numbers from 246 billion euros to 76 billion. As the Target credits to the GIPS rose by more than 100 billion euros per year during the past three years, it is foreseeable that if the policy of credit shifting is continued, the remaining 179 billion euros of the other euro countries or the remaining 78 billion euros of the Bundesbank will be used up soon. The end of this policy is unavoidable. It may last for another two years, but then it will end.

Figure 15 illustrates the problem. It essentially combines Figures 9 and 10, which were explained in detail above. The upper chart shows a hypothetical projection, extending the evolution of the refinancing loans to the GIPS, including the Target credits. The lower chart shows another projection, extending the path of German refinancing loans. Both projections confirm the statement that if this trend continues, crowding out will lead to the end of the

credit replacement business of the ECB in about two years, i.e. in 2013, as there will be no more central bank credit in Germany or the other euro countries that could be shifted to the GIPS. This does not mean that the Eurosystem credit remaining at the core countries' NCBs despite the credit shifts will actually disappear soon. What it means is that the ECB is under enormous pressure to prevent this from happening.

Figure 15: End in sight



Sources: See Figures 9 and 10; calculations by the authors.

If the central bank credit in the Non-GIPS countries should be completely crowded out, the ECB would still be able to grant new money creation credit to the GIPS, but the automatic sterilisation of the increase in the money supply coming from the GIPS by reducing the refinancing operations in the core countries would no longer be possible.

This means either that the ECB would have to accept entering an inflationary regime in which the monetary base rises in the same amount as the annual increments of the Target liabilities of the GIPS, or that it would have to consciously adopt other sterilising policy measures. It could, for example, ask the national central banks to sell their gold stocks, as this will eliminate central bank money. In this way it could sterilise the additional money that is spent in the GIPS countries. But in fact this would imply financing the GIPS through the gold sales of the other NCBs. It is easy to imagine that the public might not like this. Or it can

itself issue bonds and thus run up debt in the market and so mop up the excessive money. But this, too, would be an unusual measure with scant chances of enjoying public acceptance. The ECB faces a dilemma.

The exhaustion of the stock of refinancing credit would also undermine the transmission of the ECB's monetary policy decisions. By changing the main refinancing rate it typically affects interbank lending rates and by this has an influence on the commercial banks' interest rates for new loans to firms and private households. As most banks of the core countries would abstain from participating in the ECB's refinancing operations, given that all the liquidity they need arrives through the transactions of their customers, the ECB's interest rate would no longer be able to directly affect the interbank lending rate in the core. The ECB rate would just be the rate at which the commercial banks of the GIPS countries can borrow, and in the rest of the Eurozone a separate, smaller short-term interest rate for interbank loans would develop. The main refinancing rate would just be a short-term rate for risky banks with dubious collateral, and apart from that there would be a well-functioning interbank market between safe banks with a correspondingly lower interest rate. This would be a disaster for the functioning of the ECB and its ability to carry out the policies to which it is legally obliged, in particular the ability to keep inflation under control.

This is probably the reason why in 2010 the ECB argued so vehemently in favour of the EMU member countries establishing the Luxembourg Rescue Fund EFSF (European Financial Stability Facility) and is now also voting for the ESM (European Stability Mechanism), intended to turn the EFSF into a permanent institution. The ESM is to help distressed countries by providing low-interest loans, relieving thus the ECB of this role, which is now in its fourth year.[36] Although the Fund may not issue Eurobonds, its activity closely approaches the issuing of such bonds. On the one hand it may go into debt itself and pass on the borrowed funds to the distressed countries. On the other hand, the euro countries are jointly liable in proportion to their capital shares, as they do with Eurobonds. In its core, in terms of credit flows and liability, the Fund is very similar to Target credits. That Target credits are in fact short-term Eurobonds was already shown above.

It is not really clear under which terms the Fund will grant its loans, whether it only represents the *ultima ratio* of assistance as is desired by Germany, or whether it will become a permanent institution providing its funds almost automatically up to the amount defined by the European Commission through its various debt limits, which would turn these limits politically into borrowing rights. In any case, the problem of increasing Target debt will be mitigated to the extent this Fund becomes active.

By itself, the money flowing into the GIPS banking system via the Fund will lead there to a build-up of Target claims on the ECB. In this way the Fund may slow down these countries' further build-up of Target debt or even stop or reverse it. The Fund is a perfect substitute for the Target credits and logically follows up where the ECB let off. Not much time remains for the establishment of this Fund, as shown in Figure 15, since in 2013 the remaining NBC credit of the other euro countries will no longer suffice for sterilisation. No wonder then that the start of the ESM is dated for 2013, the year in which the Target policy arrives at its logical end.

[36] Although the interest rate on credits is to exceed the interest rate on safe bonds by 1 to 2 percentage points, such an interest surcharge is considerably lower than that demanded by the financial markets. In May 2011, the average CDS insurance for government bonds of the GIPS countries, weighted by their Target credit shares, amounted to about 8%. For hedging the loan loss risk of the GIPS countries, the euro community would have to pay an interest surcharge of 8%.

This shows the whole extent of the muddled situation into which Europe has got itself with the euro. Initially the euro, by eliminating exchange rate risks, channelled huge private capital flows to the GIPS, which caused overheating there and made them too expensive. Then the capital market stalled, and the GIPS, burdened by excessive wages and prices, were left with a current account deficit that could no longer be financed. The ECB helped out with the money-printing press, creating huge Target debts because it facilitated capital flight and therefore permitted a good deal of the desired stabilisation effect to evaporate. Although the ECB prevented a collapse of the banking system, it also relieved these countries from having to push through the necessary domestic adjustments. Thus, Spain, Portugal and Greece have yet to start the necessary real devaluation by reducing wages and prices. Only Ireland has managed this. Its current account has shown a slight surplus since the second half of 2010.

Because the ECB carried out its measures for too long and to an excessive extent, it brought Europe into the tricky position from which politics now hopes to extricate itself only by throwing more and more good money after bad. This further delays the necessary devaluation of the southern countries, perpetuates their current account deficits and thus leads to a rapid exhaustion of the available funds. It is our fear that the ESM will also reach its limits after a few years and that Europe will once again find itself in a nearly hopeless position. Perhaps the capacity of the ESM will then be raised again. After that the Eurobonds will be introduced, as a huge liability union will have been established by then, or a voluminous transfer system will be created in Europe reminiscent of the intra-German transfer union or the Italian transfers to its Mezzogiorno. If this system is then extended to Eastern Europe, there will be a dozen Mezzogiorni in Europe, countries and regions that will permanently be on the drip of the stronger regions, become dependent on them and will never get back on their feet again.

In view of such horror visions one can only recommend European policymakers to introduce in time a policy of strict budget constraints. This includes the introduction of a crisis mechanism for the ESM that provides the available funds according to a well-defined procedure, but keeps them scant enough in order to force the concerned countries to make the necessary adjustments. The European Economic Advisory Group at CESifo has developed a proposal that distinguishes among a liquidity crisis, an impending insolvency and a full insolvency and then, on the one hand, activates well-metered assistance programs and, on the other hand, proposes the successively increasing participation of the banks and other investors. The proposal boils down to an insurance for investors against sovereign default, but that is not a full-coverage insurance: it includes a deductible that the investors themselves must bear. The proposal would retain the interest spreads in Europe, which have an important stabilising and disciplining effect on debtor countries, but would keep them within reasonable limits. The GIPS countries would benefit at once because they would again be able to tap the markets for fresh capital.

A policy of stricter budget constraints would further demand a renunciation of the reckless tolerance to Target credits. A look at the United States can show what the solution might look like.

Target Balances in the United States

Payment transactions in the United States are done via the Federal Reserve Wire Network (short: Fedwire) and operate in principle in a manner quite similar to that in the euro zone. For historical reasons the US currency area is divided into 12 Federal Reserve districts, whose borders are not identical with the borders of the federal states.[37] As a rule, the districts comprise several states, and in some instances a state may form part of two Federal Reserve districts. The size of the districts was fixed at the time the Federal Reserve System was founded in 1913 and depended on the distribution of the population at the time. From an economic perspective, the districts are comparable to the 17 states of the euro zone.

In each district a regional Federal Reserve Bank is responsible for the operational implementation of monetary policy. Payments between commercial banks of different districts are done via the Fedwire system and are settled via the accounts of the commercial banks at the corresponding regional Federal Reserve Bank. The payments are booked in an Interdistrict Settlement Account, the equivalent of Europe's Target real-time gross settlement system. In the same way in which in Europe all net payments between commercial banks of different countries are done via the Target system, the net payments between commercial banks of different districts are done in the U.S. via the Interdistrict Settlement Account.

While the Fedwire system operates basically in a way similar to the European Target system, there are several important differences.[38] First, the Fedwire system is a multilateral system of accounts in which each district's Federal Reserve Bank has a settlement account vis-à-vis each of the eleven other Federal Reserve Banks. As in the Eurosystem, payment inflows lead to a build-up of claims of the corresponding district Fed, which must settle the payments by creating central bank money. This claim, however, is not on the entire central bank system, but on the district Fed from which the payment order was initiated. This other district Fed is assigned a corresponding liability. Unlike in the euro zone, no interest is accrued from the claims or paid on liabilities; this, however, does not constitute a real difference, since this type of interest income and expenditure is anyway socialised in the Eurosystem.

The most important difference from the European system is that the liabilities booked in the Interdistrict Settlement Account of the district Feds that borrowed additional funds for their economy from other districts for net purchases of goods and assets must be settled in April of each year.[39] According to official statements of the Federal Reserve, the debts are paid with gold certificates and then cancelled. Gold certificates are securities collateralised by gold, issued by the US Treasury, that bear the right to be exchanged for gold on demand.[40] They are safe, marketable securities that cannot be created by the district Fed itself.

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[37] See K. Ruckriegel and F. Seitz, "The Eurosystem and the Federal Reserve System Compared: Facts and Challenges", *ZEI Working Paper* No. B02, 2002.

[38] See P. Garber, "The Mechanics of Intra Euro Capital Flight", op.cit.

[39] Payments are done only for deviations from average. If, for example, a regional Federal Reserve Bank A has accumulated claims on another Federal Reserve Bank B, these claims are reduced by the average balance of the Interdistrict Settlement Account of the past 12 months.

[40] In 1934 the entire gold stock of the Federal Reserve Banks was transferred to the US Treasury (Gold Reserve Act of 30 January 1934). In return the Federal Reserve Banks received gold certificates that bear the writing: "This is to certify that there are on deposit in the Treasury of the United States of America dollars in gold, payable to bearer on demand as authorized by law." Since that time no gold certificates have been issued and the Federal Reserve Banks no longer own gold of their own. See C.J. Woelfel, "Encyclopedia of Banking and Finance", 2002, 10th edition, Routledge.

When during the crisis a policy of credit easing was adopted, this practice was abandoned and US Treasury securities were permitted for settling the balances, accepting in the end even mortgage-backed securities. This still does not make the US system similar to the European one, as in the US case the target debt has to be redeemed with marketable securities bearing normal interest rates, a proposal that had also been made in Europe but did not find particular resonance.[41] They dissolve the debt relationship among the district Feds, and restore at each regional Fed that holds a claim the full availability of the assets. While this is analogous to the Target balances within one year, an accumulation of such balances over several years is not permitted.

It is correct that in the U.S. a district Fed may purchase the securities needed to settle the Target debt from the commercial banks with money it itself issued. This does not change the facts, however, as in this case, too, the district pays its bills with marketable securities bearing interest rates commensurate with the risk involved. By purchasing securities from its commercial banks, the district Fed reduces its potential for normal money creation through refinancing operations. Should it nonetheless print more money on balance, the excess money flows out to other districts, and new liabilities are created that must be settled. No matter how you look at it, the district must pay back its interdistrict debts each year with valuable, marketable assets. While that is still a capital import through the European central bank system, it occurs under normal market conditions. In the US a district is only permitted to print more money than is used internally if it transfers marketable and normal interest-bearing assets to other districts.

If such a system were introduced in the euro zone, the NCBs of the GIPS would no longer have an interest in overexerting their money-printing presses in order to satisfy internal credit demand, since the main advantage of such a policy as compared to financing through the capital market is the favourable interest rate, and such an advantage would no longer exist. This results from the fact that market instruments price the risk into the interest rate, while credit from the Eurosystem does not. The latter operates upon the fiction that all national monetary systems are equally safe, while the market evidently thinks otherwise, as shown in Figure 11.

A couple of examples may help to clarify this point.

1. Say, the Greek NCB pays its Target liabilities with an instrument bearing a default probability identical to the probability of default of the Greek NCB and of its collateral. Let us say that this instrument is a Greek government bond, and that the default probability is 5%. (In reality, the market estimates this default probability at a double-digit percentage.) If the interest rate for safe bonds, which may be equal to the ECB's main refinancing rate, is 1%, the interest rate for Greek government bonds would be 6%. If the Greek NCB redeems the Target liability bearing a 1% interest rate with a Greek government bond, it would take a 5% interest rate loss, just as much as the default probability.

2. The Greek NCB pays its Target liabilities with a safe instrument bearing 1% interest. In this case, at first sight it pays the same interest as for the Target loan, but due to the differing default probabilities this is only apparently so. In order to compare the interest rates, although they belong to different risk categories, it would be necessary to compare their mathematical expected value (i.e. the arithmetic mean of the various possible effective interest rates). For the default probability assumed, the mathematical

[41] See K. Reeh, "Zahlungsbilanzausgleich in der Währungsunion. Viele Frage, aber noch keine Antworten," loc. cit., p. 24.

expectation of the interest rate for the Target loan is - 4% (= 1% - 5%), and the mathematical expectation of the safe interest rate is 1%. Again, the redemption of the Target liability brings an interest rate loss of 5%, the default probability. Redeeming the Target loans with marketable assets would make these loans totally unattractive, since if market rates have to be paid for Target loans, then you might as well tap the capital markets.

In view of the political tour de force that would be necessary for introducing the US system in Europe, the question arises of whether the problem of overflowing Target loans could be solved by milder policy options. For example, a return to higher collateral demands for the refinancing operations would surely result in less central bank credit being granted in the GIPS countries. This would in fact have the desired effects if the collateral standards are set high enough. The problem with such a measure, however, is that it cannot be implemented credibly, as in any halfway-serious crisis the European Central Bank will again tend to ease its collateral standards. This problem can hardly be solved if the Governing Council, thanks to its present power structure, has the corresponding decision-making power.

A similarly pessimistic argument applies to a possible renunciation of the full-allotment policy. Even if the ECB were to limit the money supply by returning to the pre-crisis variable-rate tenders, it would not be able to prevent the least solid commercial banks from making the highest interest-rate offers because anything they offer is more favourable than the excessively high interest rates they have to offer private lenders.[42] The lion's share of the central bank credit would therefore still be created in the GIPS countries.

We consider such hopes and solution proposals moot, as there is, after all, a functioning system in the USA that Europe needs only copy. The Eurosystem could adopt the rules prevailing in the USA, according to which the Target debt has to be settled once a year with the transfer of marketable assets. Otherwise, huge capital flows will run through the Target system again and again, pushing the Eurosystem to its limits and creating political situations like the one in which the European Union and the euro in particular find themselves today. We cannot imagine that the European idea would survive this unscathed.

There is no denying that a country like Ireland, whose Target debt is about as big as its GDP, cannot be forced from one day to the next to repay its debt. A transition strategy must surely be defined. However, in the end, Europe has no option but to terminate its policy of soft budget constraints if it wants to have a future.

[42] See A. Chailloux, S. Gray and R. McCaughrin, "Central Bank Collateral Frameworks: Principles and Policies", op. cit..

Appendix

Reply to the critics

The controversy on the Target payment system has become more heated recently, and H.-W. Sinn has been criticised harshly. However, much of the criticism is based on misunderstandings, the origin of which in some cases we cannot fathom. Here, we reply to the points the critics have made.

From the large set of critics we want to single out Willem Buiter et al.[43] and Karl Whelan,[44] as their views and arguments are of a scholarly nature and are also implicitly or explicitly reflected in many critical bloggers' writings.

1. Net liabilities within the Target system do not represent financing of current account deficits of the respective countries (Buiter).

As explained by one of us in an article in *Frankfurter Allgemeine Zeitung* on 4 April 2011 and reiterated in this paper, by definition the increase in a country's Target liability equals the sum of the current account deficit and the private and public net capital exports or, equivalently, that part of a country's current account deficit that is not financed by private and public capital imports.[45] This was, to our knowledge, the first time this interpretation of the Target balances was presented, and we hope the critics acknowledge its correctness.[46] In this paper we specified this definition in more detail. This is not an inherently empirical question but one of economic theory and logic that re-interprets the Target balances. However, an empirical question is how small the capital inflows were, if any, and to what extent the increase in the Target debts approached the current account deficits. In Figure 13 we showed that both quantities were of similar size for the aggregate of the GIPS countries if summed and accumulated over the years 2008, 2009 and 2010. The accumulated sum of the GIPS Target debt was about nine tenths of the accumulated sum of GIPS current account deficits over that period. Thus, indeed, Target credit largely financed the current account deficits of this group of countries over that period.

This, of itself, is just a description of facts and no assertion regarding correlations or causality. In numerous articles on this issue, H.-W. Sinn has emphasized that Ireland took on more and Spain less Target debt than would have been necessary to fully finance their current account

[43] W. Buiter, E. Rahbari, and J. Michels, "TARGETing the Wrong Villain: Target2 and Intra-Eurosystem Imbalances and Credit Flows", *Citi Global Economics View*, June 9, 2011.
[44] K. Whelan: "Professor Sinn Misses the Target", *IIEA Blog*, http://www.iiea.com/blogosphere/professor-sinn-misses-the-target, June 7, 2011.
[45] H.-W. Sinn, "Die riskante Kreditersatzpolitik der EZB", *Frankfurter Allgemeine Zeitung*, op. cit. See also H.-W. Sinn. "Target-Salden, Außenhandel und Geldschöpfung", *ifo Schnelldienst*, op. cit., and H.-W. Sinn, "The ECB's Stealth Bailout", VOX, op. cit.
[46] U. Bindseil and P. J. König, "The Economics of Target2 Balances," *SFB 649 Discussion Paper* 2011-035, 14 June 2011, do not agree. On p. 24 they criticise a formulation of H.-W. Sinn that deals with the "current account deficit" and they accuse him of misunderstanding bank balance sheets. However, they assume that he means what in US English is understood as a checking account. Such is not the case, as H.-W. Sinn had told P. König in an earlier conversation. But they apparently still maintain this position. In another part of the paper they use the economic term, making a criticism similar to that of Buiter. We fail to understand their point.

deficits. In his first *Handelsblatt* article on 6 May, Sinn wrote concerning the comparison with current account deficits:[47]

"Bei genauerem Hinsehen stellt man freilich fest, dass Irland sich im Übermaß über die Target-Kredite verschuldet hat, während Spanien deutlich zurückhaltender war. Das könnte einer der Gründe sein, weshalb Spanien bislang noch nicht unter den Rettungsschirm gedrängt wurde. "

(At closer inspection, we find that Ireland ran up its debts excessively via Target credits, while Spain was more circumspect. This might be one of the reasons why Spain has not yet been pushed into the European Financial Stability Facility.)

Similarly, he wrote on 1 June in his first VOX article on the subject:[48]

"Although Spain took less and Ireland more than their respective current-account deficits, the ECB, and indeed effectively the Bundesbank, replaced private capital flows that would otherwise have been needed to finance the GIPS's current-account deficits."

We discussed this in more detail above in the context of Figures 13 and 14.

2. Target2 liabilities do not represent bilateral claims of the Bundesbank on other central banks – like claims on the Central Bank of Ireland (Whelan). The Bundesbank's stock of net Target claims does not reflect exposure to risk or potential financial losses, because risk and potential losses are shared within the Eurosystem (Buiter).

H.-W. Sinn never argued that other countries would not share the Bundesbank's Target risks. We discussed this point above in Chapter 2 in the context of the reaction of the Bundesbank. The first calculation by Sinn of the Bundesbank's risk was published in *Süddeutsche Zeitung* on 2 April 2011, stating that Germany is liable for the ECB's claims against the GIPS countries in proportion to its ECB capital share.[49] This is exactly the rule Buiter and Whelan say applies.

3. As the ECB does not target the money stock (Buiter and Whelan), but pursues a full allotment policy, money and credit stock are endogenously determined by money demand (Buiter).

So it is. H.-W. Sinn never said otherwise. The sentence that may have led to the misunderstanding, first in the German debate and then spilling over to the English-language one, [50] was perhaps the following, from the *Frankfurter Allgemeine Zeitung*[51]:

[47] H.-W. Sinn, "Die heimlichen Kredite", *Handelsblatt*, No. 88, May 6, 2011, p. 72.
[48] H.-W. Sinn, ibid.
[49] H.-W. Sinn, "Tickende Zeitbombe", *Süddeutsche Zeitung*, loc. cit.
[50] Cf. O. Storbeck, "Traktoren, Targetsalden, Trugschlüsse – HWS hat sich verrannt", *Handelsblatt Blog*, Juni 3, 2011, http://blog.handelsblatt.com/handelsblog/2011/06/03/traktoren-targetsalden-trugschlusse-hws-hat-sich-verrannt. And O. Storbeck, "The stealth bailout that doesn't exist: debunking Hans-Werner Sinn", June 6, 2011, http://olafstorbeck.com/2011/06/06/the-stealth-bailout-that-doesn%e2%80%99t-exist-debunking-hans-werner-sinn/. See also M. Schieritz, "Die Irrtümer des Hans-Werner Sinn (Folge II) ", *Zeit Blog*, 5. Mai 2011, http://blog.zeit.de/herdentrieb/2011/05/05/die-irrtumer-des-hans-werner-sinn-folge-ii_3004. An earlier version of this paper had a formulation that could have been misunderstood as saying that a blogger had mistranslated a particular sentence. That was not meant.

"Da nach der Überweisung (durch das Target-System) zu viel Zentralbankgeld in Deutschland in Umlauf ist, kann die Bundesbank nur entsprechend weniger an die deutschen Banken verleihen."

(Since too much central bank money is circulating in Germany after the swift transfer (through the Target system), the Bundesbank can only lend correspondingly less to German banks.)

This was never meant to say that the money supply was fixed. In his first VOX piece, to which Buiter and Whelan refer, Sinn made it clear that he meant *demand* rather than *supply* (even though he then also said that his statement would also hold if supply were fixed):[52]

"The crowding out will not necessarily occur, but it is the normal case to be expected as, given Germany's GDP and given Germany's payment habits, the commercial banks only need a certain amount of euros for circulation in Germany."

In his second VOX article, where he replied to the critics, he said:[53]

"Given the payment habits, economic activity and the ECB interest rate, only a given amount of central bank money is needed. Any excess liquidity brings no benefit and only involves interest costs. The German commercial banks can, at present, borrow as much money from the Bundesbank as they wish, but they do not want to."

This *does* mean that the money stock is endogenously determined. We specify this in more detail in Figure 7 above. What is determined is the *demand* for money, not the supply. Thus, the money flowing in through the Target balances crowds out money generated by the national central banks via credit (refinancing operations). As shown in this paper, this does imply that credit is being shifted from one country to another. We hope we have clarified this important point here. And we hope that it is also clear from the discussion in this paper that we never thought of credit constraints. We just talk of aggregate budget constraints, which are among the iron laws of economics.

4. The procedures of the Interdistrict Settlement Account in the US central bank system (Federal Reserve System) do not limit the flow of credit through the central bank system because the central banks of the individual districts can buy the securities with which they must pay for the interdisctrict balances with money that they create themselves (Buiter). The districts of the Federal Reserve System have no fiscal relationships to the states in the US. (Whelan).

We have quite a different view on this. The rules for the Interdistrict Settlement Accounts demand from each Fed branch that they settle the mutually build-up interdistrict balances in April of each year. There is no joint responsibility with a common liability-sharing rule as in Europe. Each district branch of the Fed must settle its interdistrict balances with marketable assets such as Treasury bonds. Although it is true that the Fed branches can buy these securities with central bank money created by them, as argued by Buiter, this is no help, as it still means that a district, that has an interdictrict debt must settle it by selling marketable assets bearing a normal interest rate. This makes excessive money and credit creation unattractive. The additional central bank money will either crowd out any other

[51] H.-W. Sinn, "Die riskante Kreditersatzpolitik der EZB", op. cit.
[52] H.-W. Sinn, "The ECB's Stealth Bailout", VOX, op. cit.
[53] H.-W. Sinn, "On and off Target", *VOX*, June 14, 2011, http://www.voxeu.org/index.php?q=node/6644.

money and credit creation in the district or, if it leaves the district, will generate a new interdistrict Target debt that will have to be settled again. While the possibility exists, as in Europe, to effect a capital import through the central bank system, in the US it would take place at normal market conditions instead of at a uniform main refinancing rate. Unlike in Europe, in the US low-interest capital imports cannot be exacted through the payment system of the central bank system. Of course, the districts of the US are not the same as the states of Europe. Yet, the economic situation with 17 euro countries and 12 US districts is certainly comparable.

5. There should be no cap on Target accounts, and Target accounts should not be settled each year, because Ireland would then have to repay a debt of 150 billion euros, as much as the Irish GDP (Whelan).

We understand of course that Ireland would have a huge problem if our proposal were implemented. Clearly, we cannot ask Ireland to repay its Target debt immediately. However, all debts need to be repaid or at least be serviced such that Ireland's debt-to-GDP ratio, including its Target debt, returns to reasonable levels. We agree that Ireland needs time, and we also acknowledge that Ireland has shown by far the largest progress of all the GIPS in trying to improve its competitiveness through a substantial real depreciation. Thanks to this, Ireland's current account has recently been moving towards the positive range. Still, we insist that Europe could develop a plan for moving towards the US type of settlement for Target debts. The current system is dangerous, because it is prone to a build-up of such gigantic external debts via the Eurosystem that it might one day grow out of control.