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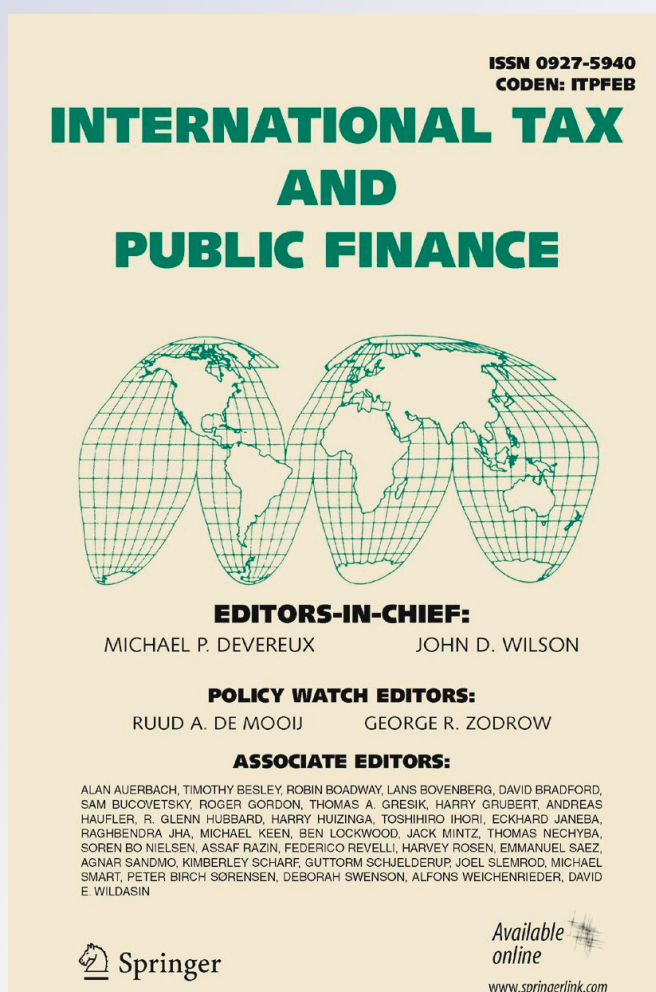
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Target loans, current account balances and capital flows: the ECB's rescue facility

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Abstract This paper presents the first comprehensive Target database of the Eurozone and interprets it from an economic perspective. We show that the Target accounts measure the intra-Eurozone balances of payments and indirectly also international credit given through the Eurosystem in terms of reallocating the ECB's net refinancing credit. We argue that the Euro crisis is a balance-of-payments crisis similar to the Bretton Woods crisis, and document to what extent the Target credit financed the current account deficits and outright capital flight in Greece, Ireland, Portugal, Spain and Italy. To prevent the ECB from undermining the allocative role of the capital market, we propose adopting the US system of credit redemption between the District Feds.

Keywords Currency union · Balance of payments · Bailout · Eurosystem · Target

JEL Classification E50 · E58 · E63 · F32 · F34

1 Introduction

This paper investigates the Target balances, an accounting system hidden in remote corners of the balance sheets of the Eurozone's National Central Banks (NCBs), to analyze the Eurozone's internal imbalances. It presents the first comprehensive Target database by collecting and reconstructing information from the NCB balance sheets and IMF statistics, a method subsequently also adopted by the ECB itself, and shows that the Target surpluses and deficits basically have to be understood as

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classical balance-of-payments surpluses and deficits as known from fixed-exchange-rate systems. To finance the balance-of-payments deficits, the European Central Bank (ECB) tolerated and actively supported voluminous money creation and lending by the NCBs of the periphery at the expense of money creation and lending in the core of the Eurozone. This has shifted the Eurozone's stock of net refinancing credit from the core to the periphery and has converted the NCBs of the core into net debtors of their banking systems, institutions that mainly borrow and destroy euro currency rather than print and lend it. The reallocation of refinancing credit was a public capital flow through the ECB system that helped the crisis countries in the same sense as the official capital flows through the formal euro rescue facilities (EFSF, EFSM and the like) did, but it actually came much earlier, bypassing the European parliaments. It was a rescue program that predated the rescue programs.

As we will show, by replacing stalling capital imports and outright capital flight, Target credit financed substantial portions, if not most, of the current account deficits of Greece and Portugal during the first three years of the crisis, and a sizeable fraction of the Spanish current account deficit. In the case of Ireland, they financed a huge capital flight in addition to the country's current account deficit. Beginning with the summer of 2011, they have financed an even more vigorous capital flight from Italy and Spain. With the Italian capital flight, the Target credits have reached a new dimension and the ECB has entered a new regime, whose implications for the survival of the Eurozone should be discussed by economists. We can only touch upon the upcoming issues in this introductory piece.¹

2 Target loans through the Eurosystem

The Target claims and liabilities that had accumulated in the NCBs' balance sheets until December 2011 are shown in Fig. 1. Germany, by that time, had claims on the Eurosystem amounting to 463 billion euros, and the GIIPS (Greece, Ireland, Italy, Portugal and Spain) in turn had accumulated a liability of 650 billion euros. The Target liabilities of Ireland and Greece alone amounted to 120 and 104 billion euros, respectively.

¹This is an updated and abbreviated version of an earlier CESifo discussion paper of 24 June 2011 (Sinn and Wollmershäuser 2011a, also published as NBER working paper, 2011b) presented as a plenary lecture to the August 2011 IIPF Congress in Ann Arbor, Michigan, which itself is a scholarly extension of shorter pieces by Sinn (2011a, 2011b) which pointed to the liability and balance-of-payments implications of the Target balances. These writings triggered a vast debate in newspapers, internet forums and scholarly papers. The CESifo discussion paper includes a more complete set of references and a reaction to early criticism that had resulted largely from misunderstandings (see also Sinn 2011c). We thank the referees as well as commentators to public lectures H.-W. Sinn gave on the subject, including Mario Draghi (Banca d'Italia, 22 April 2011), Michael Burda (Humboldt University Berlin, 9 May 2011), and Martin Wolf (Munich Economic Summit, 19 Mai 2011). An online video of the Berlin presentation is available at: http://www.cesifo-group.de/portal/page/portal/ifoHome/c-event/c3individualevents/_event_20110509. We moreover thank Otmar Issing, Georg Milbradt, Christian Thimann, Gertrude Tumpel-Gugerell and Jean-Claude Trichet for in-depth conversations, and Helmut Schlesinger for bringing the Target issue to our attention. Useful comments were also received from Wilhelm Kohler, Thomas Mayer, Jim Poterba, Alfons Weichenrieder, Frank Westermann and John Whittaker. We thank Wolfgang Meister, Julio Saavedra and Christoph Zeiner for careful technical support.

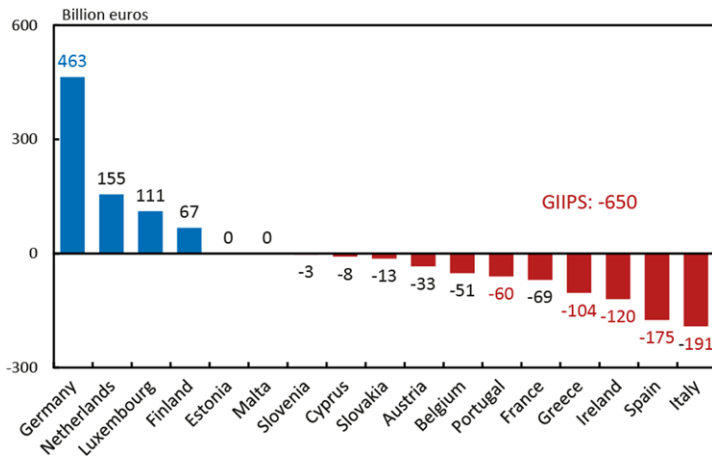


Fig. 1 Target balances in the Eurozone (end of 2011). Note: The data are directly drawn from the balance sheets of the NCBs or calculated as proxy from the International Financial Statistics of the IMF, as explained in detail in the [Appendix](#). Source: Own calculations

The Target claims and liabilities are interest-bearing.² Their interest rate equals the ECB's main refinancing rate. However, interest revenues and expenses are socialized within the Eurosystem. The Target liabilities constitute net foreign debt and, as such, they enter (negatively) into a country's net foreign asset position. By the end of 2011, for Greece this debt amounted to 48 % of GDP, for Ireland to 77 %, for Italy to 12 %, for Portugal to 35 %, and for Spain to 16 %.

The Target imbalances went unnoticed for a long time because they are not shown on the ECB's balance sheet, given that they net out to zero within the Eurosystem.³ They can be found, however, if somewhat laboriously, in the NCBs' balance sheets under the "Intra-Eurosystem Claims and Liabilities" position. Furthermore, they can be found in the balance-of-payments statistics, where they are shown as a flow in the financial account under the "Other Financial Transactions with Non-residents" position of the respective NCBs and as a stock labelled "Assets/Liabilities within the Eurosystem" in the external position of the respective NCBs. Interestingly enough, the ECB revealed in October 2011, in its first publication on the issue, that it does not possess a reporting system of its own, but constructed the missing data from the IMF statistics, thus following the method we had introduced in the June 2011 version of this paper. The details are spelled out in the appendix to this paper.⁴

Many think that the Target imbalances are a normal side effect of the Eurozone payment system, as they are wont to occur in a currency system. This assessment is

²Bundesbank answer 2011/003864 to letter of Ifo Institute dated 11 March 2011, and ECB reply to Ifo Institute dated 15 March 2012, referring to article 2,1 of the non-public decision ECB /2007/NP10 on the intra-Eurosystem Target balances. See also Deutsche Bundesbank (2011b, p. 170).

³Precisely speaking, they net out among the euro countries, the ECB and those EU member countries that also use the Target payment system. The latter cannot have a negative Target balance as they are not allowed to create euros.

⁴European Central Bank (2011b, footnote 3). Cf. Sinn and Wollmershäuser (2011a).

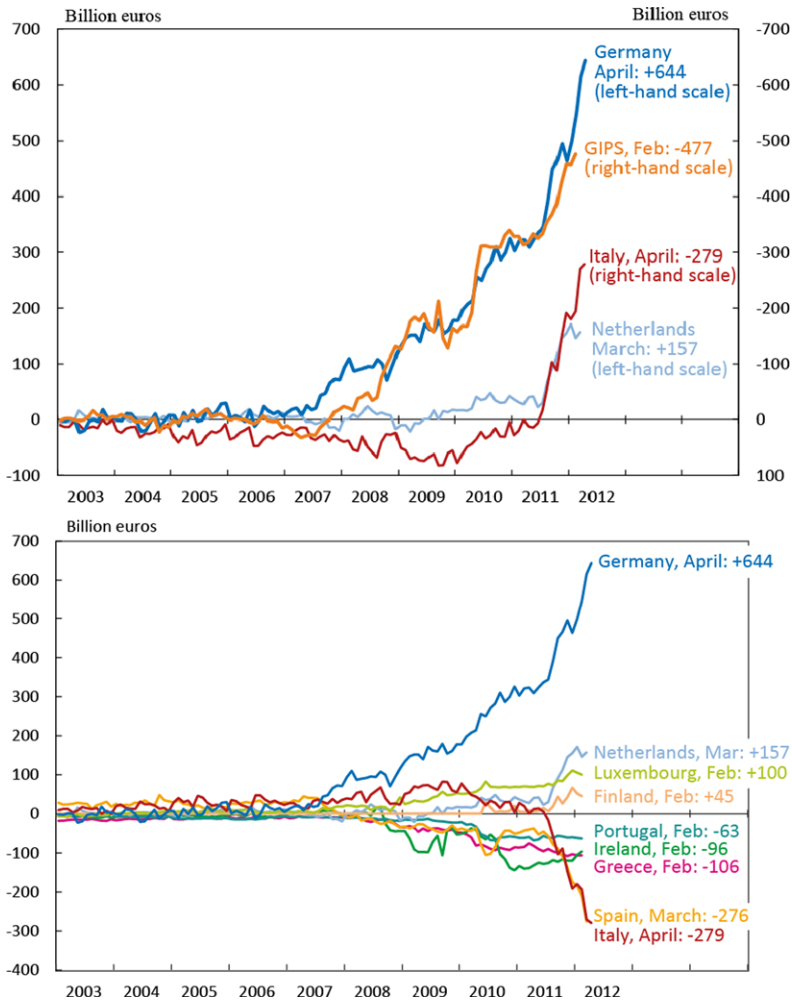


Fig. 2 Net claims of the NCBs resulting from transactions within the Eurosystem (TARGET). Sources: Own calculations; see the [Appendix](#)

contradicted, however, by the dramatic evolution shown in Fig. 2, which, as we will show below, in all likelihood would not have been possible in the US system. The Target imbalances evidently started to grow by mid-2007, when the interbank market in Europe first seized up. Before that they were close to zero. German claims, for instance, which by April 2012 had climbed to 644 billion euros, amounted to barely 5 billion euros at the end of 2006.

It is striking that a strong, albeit not perfect, coincidence exists between the rise of the German Target claims and the rise in the Target liabilities of the GIPS (Greece, Ireland, Portugal, Spain). Other countries were involved, but with smaller amounts, as shown in Fig. 1. The creditor countries included Luxembourg, Finland and the

Netherlands, while the debtors included Austria, France, Belgium and Slovakia, and, in particular, Italy. But the key players are, evidently, the GIPS, Italy and Germany.

During the first three years of the crisis Italy was not involved. Figure 2 shows Italy among the countries having a Target claim until June 2011. However, from July 2011 on, when markets turned jittery about Italy, forcing the Berlusconi government to enact austerity measures, the country also became a Target debtor. The Target balance of the Bank of Italy fell by 197 billion euros in only six months, from +6 billion euros in June 2011 to −191 billion euros by the end of 2011, of which −87 billion euros were accumulated in August and September alone. By April 2012 the Italian Target debt had rocketed to 279 billion euros. Interestingly enough, the rise in the Italian Target debt coincides with the sudden rise of the Dutch Target claim since the summer of 2011.

By the end of 2011, the volume of Target credit drawn by the GIIPS (GIPS plus Italy) from the ECB system was 650 billion euros. It far exceeded the 172 billion euros in official aid given or promised to them by all the Eurozone countries combined.

3 The official Bundesbank and ECB statements

After one of us brought the Target imbalances to public attention, the Bundesbank and later the ECB reacted with various, nearly identical statements.⁵ In essence, both institutions said:⁶

1. The Target balances are statistical items of no consequence, since they net each other out within the Eurozone (Bundesbank).
2. Germany's risk does not reside in the Bundesbank's claims, but in the liabilities of the deficit 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 (Bundesbank and ECB).
3. The balances do not represent any risks in addition to those arising from the refinancing operations (Bundesbank and ECB).
4. A positive Target balance does not imply constraints in the supply of credit to the respective economy, but is a sign of the availability of ample bank liquidity (ECB).

All points are basically correct (and do not contradict what we said in previous writings), but they hide the problems rather than clarify them and deny the fundamental distortions in the euro countries' balances of payments which, as we will argue, are precisely measured by the Target balances.

Point 1 is true, but irrelevant. Between a debtor and its creditor the balances net out to zero, but that does not make the creditor feel at ease if he doubts the debtor's ability to repay.

⁵Sinn (2011a); Deutsche Bundesbank (2011a).

⁶Deutsche Bundesbank (2011a, 2011c). Deutsche Bundesbank, letter to the Ifo Institute of 18 March 2011. See also European Central Bank (2011b, p. 37).

Point 2 is true if a country defaults and exits the euro, while the Eurosystem as such survives. In this case, the Eurosystem is legally disconnected from the commercial banks of the defaulting country, while its Target claim against this country's NCB remains. If this claim cannot be serviced, the corresponding write-off loss is shared by all remaining NCBs in the Eurosystem according to their capital shares. Should the disaster hit all GIIPS, Germany, for example, would be liable in proportion to its (enhanced) capital share in the ECB, namely about 43 % of the 650 billion euros in GIIPS liabilities (by the end of 2011), i.e. around 277 billion euros. Similarly, France would have to bear 32 %, or 208 billion euros.

However, if Italy and Spain defaulted, this could mean the end of the Eurosystem. In this case, it cannot be taken for granted that the former members of the euro community would be willing to participate in sharing the write-off losses of the creditor countries. Legally, this is a gray area, and here the Bundesbank and the ECB are wrong, as the Bundesbank and the other NCBs with a positive Target balance would have claims against a system that no longer exists.

Point 3 is true, but misleading, as it hides the unusual size of the liability risk implied by the Target credit, even if no country defaults. To be sure, this credit materializes through the Eurosystem's refinancing operations (including emergency loans, so-called Emergency Liquidity Assistance, ELA, guaranteed by the respective sovereign that some NCBs granted on their own against no or only insufficient collateral). But it does measure, as we will show below, the additional refinancing credit an NCB issues to finance the country's balance-of-payment deficit with other Eurozone countries. As such it does imply more risk than in the case where the refinancing credit had been limited to the provision of a country's own money circulation. Point 3 is as true and meaningful as the statement that the crash of a Jumbo jet does not involve any risk beyond that of the mere crash of an airplane.

Point 4, finally, is true, insofar as a positive Target balance signals generous liquidity provision in a country. But, as we will show in Sect. 7, it is precisely this abundance of liquidity that implies a crowding-out of refinancing credit in Germany. The Target imbalances do measure an international capital export through the Eurosystem, and hence a public credit, mainly from Germany, to the GIIPS. This is not a *net* outflow of credit, private inflows and public outflows taken together, but in itself it is an outflow in the same sense as a public rescue credit from one country to another is such an outflow.

4 What are the target balances?

The term Target balances has created much confusion even among academics, because it is a catchy term with several meanings that are not obviously 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 Eurozone vis-à-vis the Eurosystem that are booked as such in the balance sheets of the NCBs.
3. Target balances measure accumulated deficits and surpluses in each euro country's balance 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 central bank money created "inside" this country, and which arose from the net sale of goods and assets to other euro countries. We call this surplus "outside money".⁷

From an economic point of view, the third definition is particularly relevant for an assessment of the Target balances, because it shows that the change in Target balances measures intra-euro balance-of-payments deficits and surpluses. The designation "inside" is applied to the stock of central bank money created via asset purchases and refinancing operations, as opposed to the "outside" stock that has flowed in via the Target accounts.⁸ Central bank money is the term for the money that the commercial banks hold in their accounts at their respective NCB and cash held by banks and the rest of the economy. Since Keynes, the term M0 is generally used in this case. Alternatively, this is called "monetary base" or "base money".

We emphasize that all data we employ are from official statistics and that we regard the national stock of central bank money booked in the respective NCB balance sheet as the actual stock of central bank money circulating in a country. To our knowledge there are no data on physical international cash circulation outside the banking system. Nobody knows how many suitcases full of cash are crossing 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 inconsequential 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, for example, a Greek purchaser of a good (or asset) transfers money from his checking account to the checking account of a vendor at another Greek commercial bank, base money is taken from the central-bank account of his bank and put on 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 payment amount to the vendor's checking account.

⁷To the best of our knowledge these definitions were used in this context for the first time in Sinn (2011b).

⁸Our definitions remind of the definitions used by Gurley and Shaw (1960). As will be discussed below, in principle, outside money can also stem from the conversion of non-euro currencies, but as that item is negligible, given that the ECB does not intervene in the exchange market, by "outside money" in this paper we mean only euros that were originally issued abroad.

If the bank of the vendor is located 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 NCB debits the account that the commercial bank of a Greek customer holds with it, it takes money out of the Greek economy and removes it from its balance sheet, indeed destroying it, and cables the payment order to the Bundesbank. Conversely, the Bundesbank follows the order, creates new money and credits it to the account of the vendor's commercial bank.⁹ A Target liability is assigned to the Greek central bank in the amount of the transfer vis-à-vis the ECB, because its liability with regard to the Greek commercial banking system is waived, and conversely the Bundesbank receives a Target claim on the ECB in exchange for "printing" the outside money that now circulates in its jurisdiction and accepting a liability with regard to the German commercial banking system.

Normally, the payments between the countries net out as they flow in both directions, and no Target balances accumulate. This is the case when a country that imports goods in net terms pays with money it receives from abroad through selling assets. The net sale of assets to other countries is a net capital import. It includes straightforward borrowing, because borrowing means "selling" debt certificates. Similarly, a country with an export surplus will use the money it earns abroad to buy assets from other countries (among which debt titles from the provision of credit are particularly important). Thus, normally, private capital flows finance the trade flows, and the balance of payments is in equilibrium. Target claims and liabilities build up if there is a net flow of euro money across the borders, because then trade and asset flows no longer net out to zero. They obviously imply that a stock of outside money has been accumulated in the recipient country.

In addition to asset flows resulting from the need to finance the trade flows, there are of course many cross-border asset flows in both directions. In fact, such flows constitute by far the largest fraction of international payment transactions. However, this does not in any way modify the statement about how the Target balances arise because the asset flows largely net out. Whatever the size of the gross cross-border capital transactions is, it remains true that Target balances arise to the extent trade and asset flows do not balance. A Target deficit by definition is a net outflow of money to pay for a net inflow of goods and/or assets (including debt redemption in the sense of repurchases of debt certificates).

The Target balances shown in the NCB balance sheets are stocks rather than flows. The balances of the previous year are carried forward, interest is applied and the new Target flows are added to the old stocks. Thus, the balances listed in the balance sheets measure the balance-of-payments deficits and the balance-of-payments surpluses that have accumulated since the introduction of the euro.

When the Target system was established, it was assumed that any imbalances would be insignificant. As insiders have reported, the belief prevailed at the time that the balances would virtually net out daily, and it was therefore not considered necessary to install a mechanism that would effectively avoid imbalances. The Target

⁹In this paper we also speak loosely of "printing" instead of "creating" money, even though in many cases the money printing occurs only virtually in computer accounts. After all, only a fraction of the central bank money consists of banknotes and coins.

credits were to have the character of short-term checking account credits to smooth out the peaks in monetary transactions. In fact, the credits were very small, as Fig. 2 shows, up to the outbreak of the financial crisis in summer 2007. Dramatic developments occurred only thereafter.

Initially, only large payments were channelled through the Target system. In addition to that system, the commercial banks of the respective national countries had their own, private clearing systems through which most payments were executed in the first place and netted out before international transfers were made. Since payments from country A to country B were mostly offset by payments from country B to country A within these private clearing systems, the Target system of the ECB was in fact only needed to transfer the international excess payments that could not be cleared. This changed, however, with the establishment of the Target-2 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.¹⁰ This modification did have a considerable influence on the Target system's transaction volume, but the net balances now booked there were not affected by the transaction volumes. From the very beginning, any change in the Target balances correctly showed the net 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 Fig. 2, is possible, and the rise of the Target balances shown in the figure since 2007 is not a statistical artefact. For that reason we speak of Target balances rather than Target-2 balances as is often the case.

5 Why the target balance measures credits or loans

It lies in the nature of the money transfers that the Target balances are not merely balance-sheet clearing items but actual claims and liabilities with credit or loan characteristics and which accrue interest. On the one side of the transaction in the above example, the Bundesbank had to create and credit central bank money without receiving a marketable asset or a claim against a German commercial bank, as is usually the case. Its Target claim on the ECB compensates for that. On the other side, the Greek central bank withdrew central bank money from a Greek commercial bank without its assets or claims on the Greek banking system becoming any smaller. The Greek Target debt vis-à-vis the ECB is the counterpart to the missing claim reduction. Thus the Target liability of a country *is* a public credit or loan provided to this country via the Eurosystem, and a Target claim of a country *is* a credit or loan given to the Eurosystem—a public credit enabling the beneficiaries to buy foreign assets or goods.

The provision of Target loans does not involve the lending of money, but it is a credit or loan inasmuch as that the Bundesbank carries out the payment, and accepts to bear a liability, on behalf of the Greek NCB. Suppose I bring my friend to the workshop to fetch his repaired car and pay the bill for him with my credit card, since

¹⁰European Central Bank (2010, 2011a).

Table 1 The Target balances in the balance sheets of the central banks (example)

Greek central bank				German Bundesbank			
Assets		Liabilities		Assets		Liabilities	
Marketable assets	5			Marketable assets	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

he forgot his at home. Then I grant him a loan or give him a credit in the same sense as the Bundesbank does to the Bank of Greece.

An even clearer picture emerges if one looks directly at the balances of the NCBs as schematized in Table 1 (with unrealistic numbers).¹¹ Basically, in the balance sheet of an NCB, the marketable assets (gold, government bonds etc.) as well as the loans granted to the commercial banks are booked on the left-hand side among the assets, while the central bank money it has created is booked 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. In the schematic balances it is assumed that the marketable assets of the Greek central bank amount to 5 monetary units and that in addition it lent out 15 units to the commercial banks. Since marketable assets 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 as large.

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 line in the next section. If a unit of money is transferred from Greece to Germany, the monetary base in Greece decreases by this unit and it increases correspondingly in Germany. The changes in the balance sheets are displayed below the first dashed line. Since the Greek balance sheet contracts and the German balance sheet lengthens, the Target balances are booked as clearing items, 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 also from an economic perspective, primarily from the fact that economic goods or assets have moved from one country to another without a movement of another good or asset in return. The claim on the ECB that Germany receives through its Bundesbank and that the ECB has on the Greek NCB compensates for the transfer of goods or assets.

The Target balances initially arise directly between the participating NCBs themselves. There is, however, an agreement among the NCBs, as the Bundesbank has reported, whereby at the end of the business day the balances are transformed into

¹¹For the structure of the central bank balance sheets, see Hawkins (2003). See also Garber (1998, 1999).

claims and liabilities vis-à-vis the Eurosystem as a whole.¹² This procedure corresponds to the joint liability for losses on Target loans, as pointed out in Sect. 3, and the socialization of interest earned from refinancing operations. As we will show in Sect. 8 below, with this procedure the Eurosystem has virtually created a kind of Eurobond.

6 Reprinting money

The payment procedure described in the example of Table 1 that gives rise to Target balances apparently shifts the monetary base from Greece to Germany, if taken by itself. If nothing more had happened, the monetary base of the GIIPS should have disappeared long ago. In truth, however, the monetary base of the GIIPS has not changed appreciably since the beginning of the crisis and during the accumulation of the Target balances; it even increased somewhat, from 291 billion euros in the beginning of 2007 to 326 billion euros by January 2012. This is shown in Fig. 3.

The base money flowing out of the GIIPS via international transactions was thus completely offset by the creation of new base money by the GIIPS NCBs. In principle, new money that an NCB brings into circulation can arise from asset purchases and from credits of the central bank to the commercial banks (refinancing operations including ELA). The chart shows these two sources of base money creation. Obviously, only a small portion of this money remained at home as part of the monetary base. By January 2012, the share of self-created central bank money that had remained as inside money at home was only 34 percent, and 66 percent (637 billion euros out of 963 billion euros) was circulating abroad as outside money.¹³

The build-up of the Target balances has given rise to the unusual situation that now prevails in the Eurozone. The monetary base in the GIIPS, as is usual in closed currency areas, consists of one component that arose from asset purchases, and another that resulted from net refinancing operations of the central banks with the commercial banks. However, in other euro core countries, particularly Germany (see Fig. 1), there is in addition outside money that flowed in via the Target accounts. The central banks of these countries had to create this central bank money on behalf of the central banks of the GIIPS in order to fulfil their transfer orders.

The reason for the excessive creation of central bank money in the periphery was obviously the financial crisis. Because of the interest-rate convergence that the euro brought about, and also because the Basel system allowed commercial banks to hold government bonds at zero-risk weighting, i.e. without any equity backing, capital

¹²Deutsche Bundesbank (2011c).

¹³This 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. It is significantly more than the share of deutschmarks circulating outside Germany in the mid-1990s, which was a bit less than a third of the monetary base. See United States Treasury Department (2003), Seitz (1995), and Sinn and Feist (1997). Note, however, that unlike our Target money, which results exclusively from electronic money transfers via bank accounts and does not include cross-border banknote transfers for which there is no statistical information available, these numbers include banknotes.

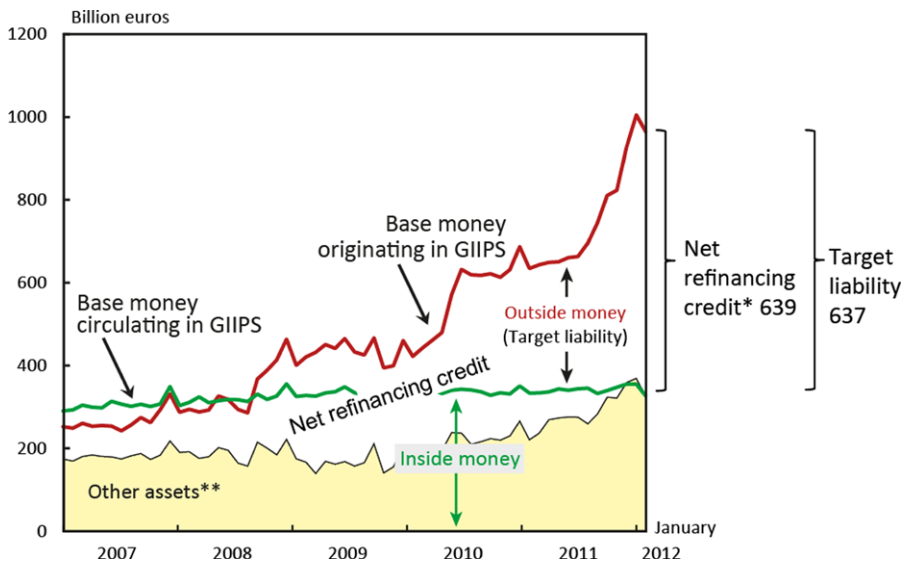


Fig. 3 Inside money, outside money and central bank credit of the GIIPS. Notes: We define inside money as the monetary base that circulates in a country or group of countries and originated there. Outside money is what is measured by the Target balance, i.e. the base money that does not circulate in the country where it originated, but swept away to other countries through bank transfers. We calculate the stock of inside money as the sum of the banknotes put in circulation by the NCBs of the GIIPS and the cash deposits of the commercial banks with their respective NCB (basically minimum reserves). (The cash deposits are officially, but misleadingly, called current accounts, a term already used in foreign trade statistics for another purpose.) * “Net refinancing credit” is the stock of refinancing loans (including ELA credits) that the NCBs gave to commercial banks, net of the funds the NCBs borrowed from commercial banks, i.e. net of the deposit facility and the time deposits commercial banks hold with their NCB, and net of other liquidity-absorbing operations. Refinancing loans comprise main refinancing operations, longer-term refinancing operations, the marginal lending facility and other liquidity-providing operations. ELA credits are emergency loans (Emergency Liquidity Assistance), primarily issued by the Central Bank of Ireland and the Greek central bank. ** “Other assets” comprise the net balance of the remaining assets and liabilities that are listed in the balance sheets of the NCBs, which when acquired put new central bank money in circulation. On the asset side this includes government bonds and securities 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. 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 (ELA) of the Bank of Ireland and the Bank of Greece: monthly balance sheet, other assets (see footnotes 16 and 18); gold and foreign currency: Eurostat, Official Foreign Reserves including gold; Target claims: see the Appendix; calculations by the authors

flowed for years without hesitation to the southern and western periphery of the Eurozone, triggering an inflationary boom in these countries.¹⁴ But then the US financial crisis swept over to Europe and led to a breakdown of the interbank market and a reallocation of wealth portfolios from the countries in the periphery to the core countries. The banks and insurance companies of the euro core countries were unwilling to increase their exposure to the financial institutions of the periphery, as they had

¹⁴See Sinn (2010a, p. 143; 2010d; 2011d); Sinn et al. (2011); European Economic Advisory Group (2011).

Table 2 ECB collateral requirements

	Date	Minimum credit rating threshold
	Until 24 October 2008	A-
	25 October 2008	BBB-
For debt instruments issued or guaranteed by the government	3 May 2010	Suspended for Greece
	31 March 2011	Suspended for Ireland*
Sources: European Central Bank, Press Releases	7 July 2011	Suspended for Portugal*

done for years. They even stopped rolling over short-term credit contracts and tried to get rid of the government bonds of the periphery countries that they held in their portfolios. Thus the flow of capital ran dry, and even partly reversed itself. Market yields on debt rose because investors demanded higher risk premiums compared to German government bonds or German interbank loans.¹⁵ In this situation, the possibility for the GIIPS banks of getting credit at low interest rates from their respective NCB became much too inviting.

The ECB itself encouraged borrowing from the respective member NCBs by reducing its main refinancing rate from 4.25 % in October 2008 to just one percent in May 2009. It also prolonged the maximum maturity of its operations from three months to one year. In December 2011 and February 2012 it even extended this period to three years. In October 2008, the ECB had adopted a full-allotment policy. Full allotment means that the ECB was willing to grant the commercial banks credit in any amount they wished provided they were able to offer suitable collateral. As the unusual extension of refinancing credit in the GIIPS meant that the commercial banks of these countries were running out of high-quality collateral, the ECB reduced the minimum quality from A- to BBB- and successively extended the deadline it had announced for returning to normal collateral requirements (see Table 2). Moreover, the ECB allowed banks to bundle their commercial credit claims into non-marketable ABS papers that they could use as collateral for refinancing credit, without the ECB being able to properly assess their quality. These ABS papers, often including credit claims the banks held mutually, explained substantial parts of the increase in refinancing credit during the crisis.

Even these provisions were not enough in the cases of Ireland and Greece. There, the demand for refinancing credit was so large that the troubled commercial banks in many cases were not able to provide collateral of sufficient quality. For this reason, the Central Bank of Ireland provided short-term emergency loans to these banks (Emergency Liquidity Assistance, or ELA) that it guaranteed itself. In December 2011 the stock of such ELA loans was about 44 billion euros.¹⁶ Since their interest rate was 1 to 2 percentage points above the main refinancing rate of 1 %, ¹⁷ the taking

¹⁵See Klepsch and Wollmershäuser (2011).

¹⁶See Central Bank of Ireland, *Financial Statement of the Central Bank of Ireland*, position "Other assets" (http://www.centralbank.ie/polstats/stats/cmab/Documents/ie_table_a.2_financial_statement_of_the_central_bank_of_ireland.xls).

¹⁷See *Irish Independent*, <http://www.independent.ie/business/irish/banks-pay-less-than-3pc-interest-on-euro51bn-of-emergency-funding-2529378.html>.

on of these loans can only be explained with a further lowering of the collateral requirements on the part of Ireland's NCB, below the already-reduced standards of the ECB. As ELA loans are largely outside the control of the ECB Council, their liability rests firstly only with the NCBs and their sovereign, with the remaining NCBs being liable only if the sovereign itself defaults. In summer 2011 Greek banks also started drawing ELA loans from their NCB. According to our estimates, they increased from virtually zero in June 2011 to 55 billion euros in December and skyrocketed to 110 billion euros in February 2012.¹⁸ The reason for this development in Greece was the rapid depreciation of the collateral accepted by the Bank of Greece that followed the parliamentary decisions about enforcing haircuts on Greek government bonds if necessary, which exposed the insufficiency of the ECB's securitization strategy.

Overall, the lowering of security standards led to a situation in which the President of the German Bundesbank, Jens Weidmann, felt forced to complain in a letter to the President of the ECB, Mario Draghi, that the extra refinancing credit reflected by the Target balances was not sufficiently secured, demanding guarantees for Germany's Target claims.¹⁹

Taking this into consideration, the example of the Greek buyer of a German good or asset must be modified. He obviously does not pay with money he possesses, but with money he borrows from his bank, and the bank borrows the money from its NCB. The Greek NCB thus creates the money that the Greek buyer needs for the transfer to Germany. 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 German goods producer's commercial bank account.

7 How the outside money crowded out the refinancing credit in the core

The creation of new credit in the deficit country does not end the payment processes, as the commercial banks of the exporting country, in our example Germany, and their private customers do not need the additional liquidity that they receive through the payment, given that the outflow of credit that had financed the Greek purchases has ceased to take place. Banks do not hold excess liquidity, because it involves interest costs, and their customers also try to keep their liquidity low, for the same reasons. Thus, German commercial banks will either borrow a correspondingly lower amount of central bank money from the Bundesbank when central bank money flows in through the international Target payment system, or they will place the unneeded liquidity on the ECB deposit facility or time deposit to collect interest. In either case the refinancing credit net of such interest-bearing deposits will fall by the amount of outside money coming in through foreign purchases of goods or assets. In the balance-of-payments statistics this phenomenon is officially counted as capital export from Germany to other Eurozone countries.

¹⁸See Bank of Greece, Balance Sheet of the Bank of Greece, position "Remaining Assets" (http://www.bankofgreece.gr/BogDocumentEn/Balance_sheet_BoG.xls).

¹⁹See Ruhkamp (2012).

In the exemplary system of accounts shown in Table 1, 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 second dashed line. In Greece, the central bank lends the commercial banks an additional unit of central bank money, while in Germany the Bundesbank lends one unit less. 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.

Note that the shift of central bank credit from Germany to the GIIPS is a result of a *limited demand* for central bank money by the commercial banks, *not a limited supply*. Given the main refinancing rate of the ECB, German base money demand is determined by the economic activity and the payment habits prevailing in the country. That is why the inflowing liquidity crowds out the refinancing credit.²⁰ Overall, there is a relocation of refinancing credit from Germany to Greece, without a concurrent change in the monetary base either in Greece or Germany, let alone in the aggregate.

The crowding out of refinancing credit is well known from the times when the Bretton Woods System forced the European central banks to maintain a fixed-exchange rate vis-à-vis the US dollar. At that time, the US had financed its current account deficit by printing and lending more dollars than the US needed for internal purposes.²¹ The dollars were flowing to, among other recipients, German exporters who had them exchanged by the Bundesbank for deutschmarks. The "dollar-deutschmarks" was outside money in the German system, crowding out the Bundesbank's inside money resulting from refinancing operations. The statistics at the time reported a public capital export from Germany to the US via the central bank system. Many observers had suspected that the Bundesbank tolerated this public capital export in order to help finance the Vietnam war.

While the Bundesbank invested the dollars it received into US Treasury bills, the Banque de France insisted that the US government converts them to gold from Fort Knox. This destroyed the Bretton Woods system in the period 1968–1971. Today the Bundesbank converts the "GIIPS euros" into "German euros", which then crowd out the "refinancing credit euros" issued by the Bundesbank, and instead of foreign currency or foreign assets, the Bundesbank receives Target claims on the Eurosystem.

The fact that the Bundesbank holds large Target claims is sometimes interpreted as the conscious investment preference of the Bundesbank. While other central banks held their assets 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 misunderstands what was going on.

²⁰For the crowding out argument based on the assumption of a limited *demand* for liquidity see Sinn (2011b, 2011c). Surprisingly, this argument has often been misrepresented in secondary writings, because the term "crowding out" was interpreted as implying supply constraints. To understand the term better, the reader may think of the example of a product market where a new competitor crowds out the incumbent firms because demand is limited, or Friedman's seminal crowding-out example where free public school meals for children crowd out private meals. See Friedman (1962, Chap. VI). In both of these cases crowding out occurs because demand is limited and determined by the price, just as money demand is limited and determined by the ECB's interest rate.

²¹Reacting to an earlier draft of this paper Kohler (2011) drew the comparison with the Bretton Woods crisis and Tornell and Westermann (2011) with the Mexican Tequila Crisis.

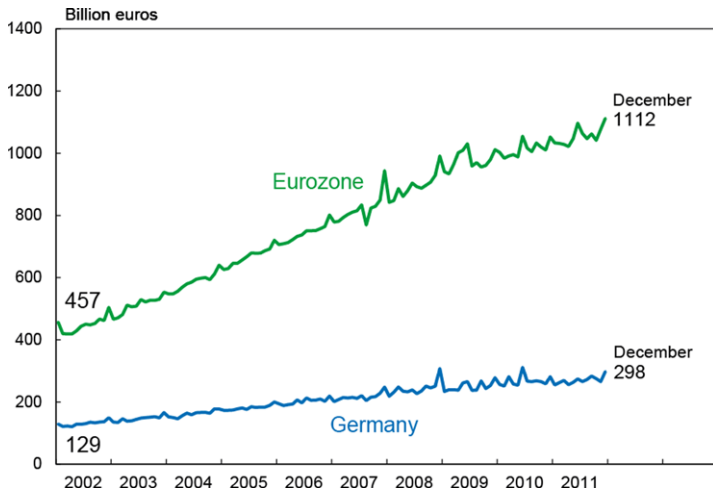


Fig. 4 Monetary base in the Eurozone. Note: The monetary base is defined net of (interest-bearing) deposit facilities. Sources: See Fig. 3; own calculations

The Bundesbank was unable to refuse the demands for carrying out payments to German recipients and the resulting creation of new base money outside the refinancing operations with commercial banks. For this creation of base money it automatically received claims on the Eurosystem. There was no conscious investment decision at all.

But of course, although imposed by the system, it was an investment nonetheless. The reallocation of refinancing credit from Germany to the GIIPS was a capital export through the Eurosystem, a credit the Bundesbank gave to the GIIPS, enabling the latter to buy more goods or assets in Germany than otherwise would have been the case.

Figures 4 and 5, which were drawn from the NCB's balance sheets, put real numbers to these general considerations. Figure 4 shows that, as predicted, neither the evolution of the Eurozone's aggregate monetary base nor the evolution of its national components was disturbed by the cross-border money flows as measured by the growing Target imbalances. The German monetary base stayed on trend as did the aggregate monetary base. Thus, the inflow of outside money due to the granting of Target credit to the GIIPS must indeed have crowded out the refinancing credit in Germany.²²

Figure 5 strengthens this conclusion by illustrating the crowding-out process more explicitly. The graph is similar to that in Fig. 3, but it shows percentages rather than absolute numbers and overlays it with another, inverted graph like the one shown there that represents the non-GIIPS. The entire euro monetary base is set equal to

²²It is obvious from Fig. 4 that the stock of base money became a bit more volatile during the financial crisis, but this had no lasting effect on the trend. In 2009 many commercial banks feared a continuation of the crisis and converted short-term claims on other banks into deposit facilities. This temporarily increased the monetary base if defined according to a broad concept including such facilities (see Sinn and Wollmershäuser 2011a, Fig. 8). However, the monetary base net of deposit facilities as defined here did not react significantly even at the peak of the crisis.

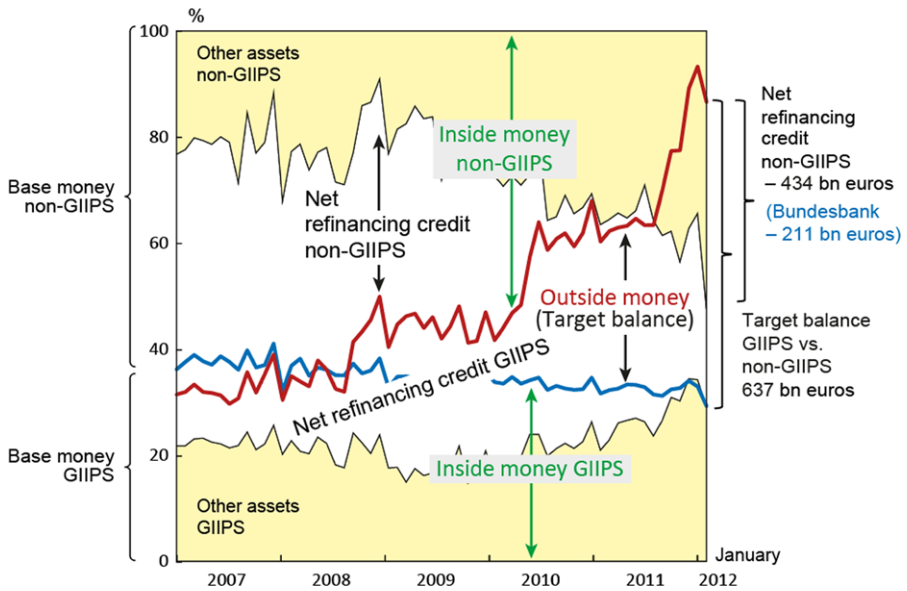


Fig. 5 Origin of the monetary base in the Eurosystem (shares). Note: The Target balance corresponds to the Target liabilities of the GIIPS NCBs to the Eurosystem as well as the Target claims of the remaining countries' NCBs (including the ECB) on the Eurosystem. It measures the central bank money that flowed from the GIIPS to the other countries of the Eurozone via international transactions. See also notes to Fig. 5. Sources: See Fig. 3; own calculations

one hundred percent. The gray areas show the portion of the monetary base that originated from NCB purchases of assets such as gold or government bonds, with the lower one referring to the GIIPS and the upper one to the non-GIIPS. The white region between the gray areas measures the refinancing credit net of ECB borrowing from commercial banks in terms of time deposits and deposit facilities.

The roughly horizontal broken line in the middle is the borderline between the monetary base circulating in the GIIPS (measured from below) and the monetary base circulating in the remaining euro countries (measured from above). The portion of the monetary base that by January 2012 was held within the GIIPS (29 %) was roughly in line with their corresponding GDP share in the Eurozone (34 %).

By contrast, the thick, upward-slanting line is the borderline between the monetary base originating in the GIIPS (measured from below) and the monetary base originating in the remaining euro countries (measured from above). The share of the stock of central bank money created by the GIIPS climbed from 31 % at the beginning of 2007 to 93 % by the end of 2011. At that time, only 7 % of the Eurozone's monetary base originated from non-GIIPS, even though these countries account for 66 % of the Eurozone's GDP.

The difference between the thick upward-slanting and the broken horizontal line gives the outside money, i.e. the central bank money that after being created in the GIIPS was cabled (destroyed and created anew) to the non-GIIPS for the net purchase of goods and assets (including debt redemption) and that crowded out the non-GIIPS in-

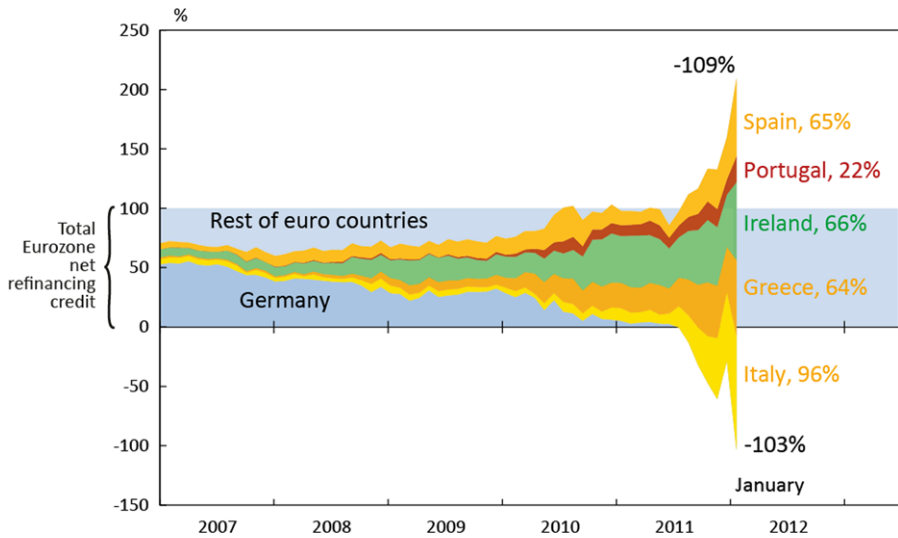


Fig. 6 Shares in the Eurosystem’s total net refinancing credit. Sources: See Fig. 3; own calculations

side money and net refinancing credit. As explained, this outside money is measured by the Target balance between the GIIPS and non-GIIPS.

The graph shows that the process of crowding out of the refinancing credit in the core went so far as to wipe out the entire net refinancing credit there by August 2011. As shown on the right-hand side of the graph, it reached a value of -434 billion euros by January 2012, of which -211 billion euros were accounted for by the Bundesbank. Thus, in the aggregate, the NCBs of the non-GIIPS stopped lending to commercial banks and became net borrowers of central bank money. By contrast, NCBs of the GIIPS continuously increased the stock of net refinancing credit given to their commercial banks, from 78 billion euros at the beginning of 2007 to 639 billion euros by January 2012. In the periphery countries, the electronic printing presses were overheating, while the core countries had to replace theirs with electronic shredders. As Figs. 2 and 8 (further below) reveal, this dramatic development was largely due to the capital flight from Italy and Spain that has taken place since the summer of 2011.

Figure 6 breaks down the time paths for net refinancing credit by country up to January 2012, showing how net refinancing credit of the GIIPS crowded out that of the other countries. In the figure, the Eurosystem’s total net refinancing credit is set equal to one hundred percent, and the middle areas show the shares of the individual countries in this total. It can be seen that the extra lending of the GIIPS drove an increasing wedge between the refinancing credit of the non-German non-GIIPS countries (comprising France, Belgium, the Netherlands, Austria, Finland, Slovakia, Luxembourg, Slovenia, Cyprus, Estonia and Malta) on the one hand (the area on top) and Germany on the other (the area at the bottom), wiping out their refinancing credit entirely and turning both the group of countries and Germany into net borrowers of central bank money in the Eurozone. By January 2012, net refinancing credit in the Eurozone as whole amounted to 205 billion euros, of which the commercial banks of the GIIPS had drawn 312 % and the commercial banks of the non-GIIPs had “drawn”

–212 %. In other words, the net refinancing credit of the Eurozone had gone exclusively to the commercial banks of the GIIPS and, in addition, these commercial banks had received 212 % of the total as refinancing credit backed by credit the non-GIIPS commercial banks gave to their respective NCBs. 103 percentage points of that credit stemmed from German and 109 percentage points from other commercial banks in the Eurozone's core.

8 Target loans and fiscal help

The crowding out of refinancing credit in the core countries did not bring about a political challenge to the ECB as we had thought in the working paper version of this text. The process of transition from a net creditor to a net debtor position of the core NCBs went surprisingly smoothly. As the time deposits and deposit facilities of commercial banks were gradually filled while the refinancing credit stocks shrank, the transition went more or less unnoticed. Only the above-mentioned "Target letter" of Bundesbank President Jens Weidmann to ECB President Mario Draghi can be interpreted as an alarm signal. Nevertheless, we foresee that the savers of the core countries will become increasingly concerned if they realize that their wealth is gradually being converted from marketable assets held by their savings institutions into mere claims against their NCBs, which are in turn backed only by Target claims against the ECB system: claims that are serviced at a rate below the inflation rate, which can never be called due and that may vaporize should the euro cease to exist. In April 2012, the portion of the wealth of the average German in employment converted to mere Target claims was already 15,674 euros; in March 2012, and in February 2012 the respective Dutch and Finnish figures were even 18,131 and 18,092 euros, respectively. Technically, this process can go on without limits, but politically it cannot.

One of the reasons why savers were not concerned is the economic boom that some of the core countries, Germany in particular, experienced after the first wave of the financial crisis, from about the summer of 2009. This boom resulted from the relocation of savings from the periphery back to the core countries and hence from exactly the same process that caused the troubles in the periphery. German wealth owners in particular sought safe domestic investment opportunities, a process that increased house prices, reduced interest rates and triggered investment demand.²³ The same forces that crowded out the net refinancing credit of the Bundesbank—the abundance of private savings that did not dare leave the home harbour—resulted in an economic boom and increasing employment that dwarfed long-term wealth considerations.

However, this does not detract from the fact that through the ECB's policy actions some, if not most, of the savings of the core countries that were reluctant to go to the periphery and had preferred to stay in the seemingly safe home haven, in the end nevertheless were being channelled abroad, because the core countries' taxpayers insured them by bearing the Target credit risk of their NCBs. The Target credits certainly did not mean that there was an additional net outflow of capital from the

²³See Sinn (2010b, 2010c).

core, if private capital, intergovernmental credit, and Target credit are taken together. However, they do mean that the ECB organized a capital outflow from the core that went contrary to market capital inflows.

If we define fiscal support as a transfer of the command over real economic resources, and monetary policy as a change in the aggregate stock of central bank money balances or its distribution over space, the ECB policies that led to the Target balances clearly constituted fiscal support rather than monetary policies. After all, as we showed, the policies neither changed the Eurozone's monetary base time path nor its distribution between Germany, the biggest Target credit provider, and the rest of the Eurozone (Fig. 4). But, as also shown, the ECB policy did make real resources available to the crisis countries that would not have been available had they been restricted to the inflow of private capital.

In fact, the possibility of drawing public credit through the Eurosystem amounted to a rescue facility before the 'official' rescue facility existed—i.e. a public credit helping the crisis-stricken countries that came before the official credit provision on which the parliaments of Europe decided in 2010 and 2011 (EFSF, EFSM and first Greece package). In terms of the right of disposition over economic resources, payment flows, international distribution of central bank money, and the liability involved, it was essentially identical to proportionately guaranteed short-term Eurobonds that must be bought by the core euro countries, with the resulting revenue being lent to the peripheral countries. While the ECB policy as such was carried out in the open (with the exception of the ECB's not revealing which collateral it accepted from which country under what conditions), its international dimensions have not been revealed by the ECB. In that sense it was a secret bail-out activity that the parliaments of the Eurozone were unaware of when they decided on the open rescue programmes.

From a legal perspective, the similarity with Eurobonds is of course limited. But from an economic perspective the similarity is striking. Eurobonds shift the disposition of economic resources from the core countries to the periphery in the same way that the Target credits do. With Eurobonds, both credit and money flow from the core countries to the periphery, and money comes back to buy goods or assets. With Target credit, money does not flow from the core to the periphery, but as the stock of money generated in the core shrinks to the extent that money is generated in the periphery, the implications for the allocation of the circulating money stocks and the allocation of purchasing power are the same. This is even the case when the core NCBs destroy the extra money generated in the periphery by borrowing from their domestic banks. While Eurobonds result in international money lending, Target credit means an international lending of the (electronic) printing press, a difference which, from an economic perspective, is irrelevant.

Eurobonds would even involve the same liability risk for the creditors. If the credit-receiving country should go 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 basically the same as with Target credits.

Given the similarity between the ECB policies and Eurobonds, the usual considerations and concerns about government intervention in market economies apply. If the private capital market was wrong, the ECB policy was right, but if the private capital

market was right, the ECB policy was wrong. In our judgment, there are reasons to believe that the ECB policy was right in the short term because markets were dysfunctional in the autumn of 2008, but there is also a case for fearing that it was and will be wrong in the long term as markets correctly assess that the GIIPS suffer from structural current account deficits stemming from wrong prices for goods, labour and assets that built up during the pre-crisis bubble. In the end, the main theorems of welfare economics suggest that markets are able to allocate capital efficiently among competing uses and do not need a central planning agency for correction, be it called ECB, EFSF, Eurobonds or whatever.

And if one mistrusts markets even in the long run, the necessary correction of market failure should arguably be carried out by elected parliaments rather than the ECB Council, in which every country, whether small or large, has the same voting power. In our opinion, by allowing the Target imbalances to rise to their by now truly alarming magnitude, year after year, and even though the world economy recovered so strongly in the years 2010 and 2011, the ECB Council may have overstepped its mandate.

9 Target credit, current account imbalances and capital movements

We now turn to the meaning of the Target credit in the context of the Euro countries' balance of payments. According to the third definition given in Sect. 4, a country's Target debt measures the accumulated balance-of-payments deficit with other euro countries, i.e., the accumulated net outflow of central bank money for the net purchase of goods and assets from other euro countries (plus interest). Thus, the increase of a country's Target liability over one year, i.e. its Target deficit, 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 central bank money to the other euro countries. A net capital export may result from purchases of marketable assets abroad, lending to foreigners, voluntary or enforced redemption of foreign debt (because of the breakdown of the interbank market), foreign direct investment and the like. A current account deficit, in turn, is basically defined as that part of the excess of imports of goods and services and of net interest paid to foreigners over exports that is not financed with transfers (gifts) from other countries. As was mentioned above, in the balance-of-payments statistics the net outflow of central bank money from a country (the Target deficit) is labelled quite correctly a capital import through the central bank system, i.e. it is a public credit between central banks. In the following, however, the terms "capital imports" or "capital exports" are meant to refer to credit flows between the private and public sectors not including the central bank, unless otherwise noted. Analogously, we do not include changes in the stocks of foreign currency in our standard definition of capital flows.

Let us call a euro country's Target deficit (i.e. the annual increase in its Target liability T) 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 for-

eign countries K and its net (private and public) capital exports to non-euro countries K_n . Then the country's Target deficit satisfies the following budget constraint:²⁴

$$\begin{aligned}\Delta T &= L - L_n + K - K_n \\ &= L + K - (L_n + K_n).\end{aligned}$$

Here the term in parentheses in the second line of the equation measures the net acquisition of goods and assets from outside the Eurozone, which corresponds to a net outflow of foreign exchange. In a system of fixed-exchange rates, this term could have a considerable size, because the Eurozone's NCBs would intervene in order to stabilize 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 Eurozone's NCBs do not 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.²⁵ The budget constraint then 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 equals the sum of the current account deficit vis-à-vis all foreign countries inside and outside the Eurozone and the net (private and public) 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.

Figure 2 showed that the Target balances of the GIPS were close to zero until 2007, i.e. until shortly before the outbreak of the financial crisis, and only surged thereafter. Until 2007 the GIPS capital imports must therefore have been about as large as their current account deficits. All net purchases of foreign goods were financed by a net inflow of capital, and since intergovernmental financial help up to that point played no particular role, this was in effect a net inflow of private capital. That is the normal case when a country has a current account deficit.

As explained, the situation changed after the temporary breakdown of the inter-bank market in August 2007, which meant that the import of new foreign capital stalled and that existing capital fled. Figure 7 illustrates the extent to which the GIPS current account deficits were financed with Target credits, i.e. ultimately with the printing press. It compares the time series of the accumulated current account deficits of the GIPS countries (upper curve) with the time series of their Target liabilities

²⁴This definition was first given in Sinn (2011b, 2011c) and Sinn and Wollmershäuser (2011a). For a thoughtful explanation see also Homburg (2011). Cf. moreover Kohler (2011) and Mayer (2011).

²⁵The term does include, however, the official accumulation of euro base money in the balance sheets of those non-Eurozone EU countries that participate in the Target2 transactions system (Bulgaria, Denmark, Latvia, Lithuania, Poland and, since July 2011, Romania). Cf. ECB (2011b, p. 36, footnote 2) and the Appendix to this paper.

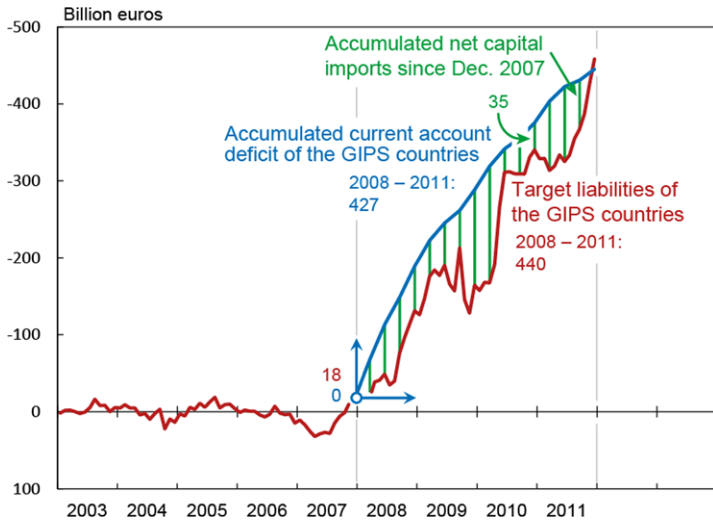


Fig. 7 Financing the GIPS current account deficits via the Target system (December 2002–December 2011; excluding Italy). Note: The ordinate shows the Target liability of the GIPS, not including Italy. It contains a further auxiliary coordinate system starting on the Target curve by the end of 2007 to measure the accumulated current account and Target deficits, respectively. Sources: See the Appendix; Eurostat, Database, *Economy and Finance, Balance of Payments Statistics, Balance of Payments by Country*; National statistical agencies; calculations by the authors

(lower curve), familiar from Fig. 2. The starting point of the upper 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 accumulated sum of Target deficits (the increase in the Target debt) since this point in time. The small coordinate system starting at that point measures the accumulated balances on both accounts. According to the above equations, the vertical distance between the two curves equals the accumulated normal capital imports (excluding the Target credit). For example, by the end of 2010 these net capital imports were 35 billion euros, as the figure shows.

Interestingly enough, by the end of 2011 the two curves just happen to coincide. Thus, aggregated over the entire four-year period and the four GIPS countries, apart from Target credits there was hardly any net capital flow; to be precise, a small net outflow of 13 billion euros. Over this period, the GIPS financed their current account deficits with the printing press and lost to capital flight not only all public credit they received from other countries (EFSF, Greek Loan Facility, IMF, EFSM, government bond purchases by other Eurozone countries), but an additional 13 billion euros on top of all that.

As to the interpretation of the two curves, note that they both measure stocks rather than flows. The flows, i.e. the current account deficits and the Target deficits (the annual change in the Target liabilities), are given by the slopes of the two curves. Obviously, these slopes are not closely correlated over time. Before the Lehman collapse (September 2008), the Target curve was flatter than the current account curve, indicating private capital inflows. Then, until spring 2009 the slopes were similar, indicating that the current account deficits were financed with Target credits, with

no private capital flows contributing to their financing. From spring 2009 to autumn 2009, private capital flowed again, reducing even the Target stocks: more capital was temporarily coming in than needed to finance the current account deficits. However, in autumn 2009 the capital markets again became jittery and shied away from the GIPS. With interruptions, from then through to the end of 2011 the Target deficits exceeded the current account deficits, accommodating a private capital flight from the GIPS to other Eurozone countries.

It is useful to confront this information about current accounts and Target balances with the situation in Germany, which according to Fig. 2 mirrors the GIPS Target balances. Germany's Target claims increased by 392 billion euros over the four years from 2008 to 2011, while its total current account surplus amounted to 593 billion euros. This implies that 66 % of the German current account surplus (total capital export) was used by Germany to provide Target credit to other countries through the ECB system. While a country normally uses its entire current account surplus to acquire marketable claims against other countries, Germany received such marketable claims for only 34 % of its current account surplus.

It is even more striking to compare the additional Bundesbank Target claims (the 392 billion euros) with Germany's current account surplus with the rest of the Eurozone over the four years, which was 314 billion euros.²⁶ The comparison shows that the rest of the Eurozone paid for its current account deficit with Germany exclusively with newly printed central bank money, and in addition financed a net capital flow to Germany, on the order of 78 billion euros, in the same way. There is hardly any other fact that could better explain the size of the intra-Eurozone balance-of-payments disequilibrium than this one.

This information does not mean that both the Target credits and the current account figures result from a bilateral relationship between Germany and the GIPS countries. After all, only 5 % of Germany's exports go to these countries. The current account and Target balances rather show the inflows from, and outflows to, big markets to which many countries are linked. Thus, for example, if Greek buyers of French products had replaced Italian credit with new money printed by their NCB, because the Italian banks needed their money to repay interbank loans they had received from Germany, neither the French nor the Italian Target balances would have changed, but the Greek central bank would have developed a Target deficit and the Bundesbank a Target surplus. Thus, in practice, it would have been the Bundesbank that provided the credit for the Greek to import those French goods.

Let us now dig deeper into the issue by looking at the GIPS countries one by one, and now including Italy. Figure 8 gives an overview of the details. The single charts show basically the same kind of graphs as those depicted in Fig. 7, but they break the information down to the single countries. Again, the vertical distance between any pair of curves shows the net capital import (current account curve above Target curve) or net capital export (current account curve below Target curve) accumulated since the end of 2007, respectively.

It is easily apparent that an approximate equality between the accumulated current account deficit and the Target debt only existed for Greece and Portugal. In these

²⁶Deutsche Bundesbank, Time series database, series EC1804, accessed on 7 May 2012.

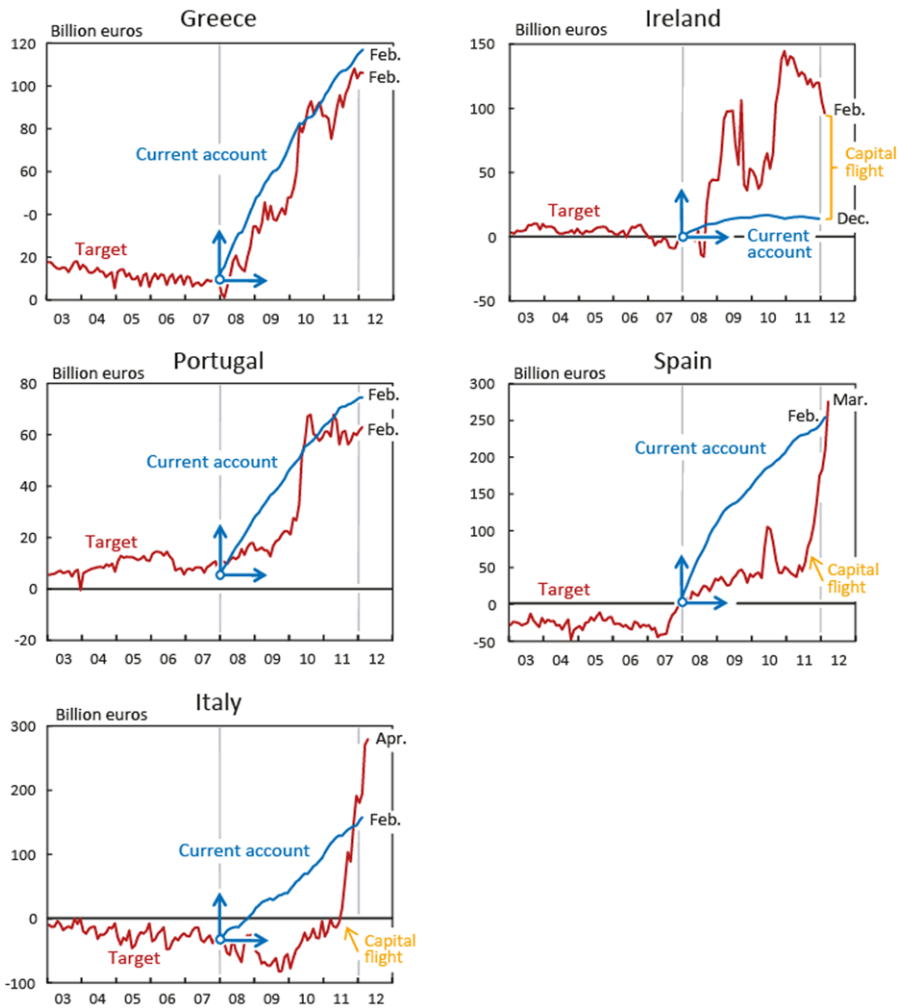


Fig. 8 Current account and Target balances in detail (2008–2012). Sources: See Fig. 7

countries, the sum of the ordinary net capital inflows (private capital imports plus official public aid) during the three years from 2008 to 2010 was nearly zero. As of December 2010, in Greece 91 % of the current account deficit accumulated in these three years, and in Portugal 94 %, was financed with Target credit. As private capital shied away, the two countries financed almost their entire current account deficits with the printing press. Allowing this to happen by reducing its collateral requirements meant indeed, as was argued above, that the ECB had put together a rescue programme well before the official rescue programmes were even discussed. However, while Greece resorted to substantial Target funding even in 2011, when the rescue operations were running at full speed, Portugal managed to not increase its Target debt further in that year. Overall, from 2008 to 2011, 90 % of the Greek and 80 % of the Portuguese current account deficit were Target-financed.

For Ireland and Spain things were quite different, and in both directions. In the first three years of the crisis Spain evidently was still able to attract private capital to finance its current account deficit, so that the Spanish NCB only had to help out sporadically to pay for the excess imports. During the three years, its total Target liabilities increased by 48 billion euros, whereas the accumulated current account deficit came to 203 billion euros. Thus, only about a quarter of the current account deficit was Target-financed. However, since the summer of 2011 Spain has suffered from a bout of capital flight that more or less absorbed the entire capital import during the previous three years. In total, during the period 2008–2011, 71 % of the Spanish current account deficit was Target-financed. The situation has continued to deteriorate rapidly thereafter. By March 2012, the last data point available at this writing, the Spanish Target debt had reached 276 billion euros, which likely means that the entire capital import accumulated since the beginning of 2008 was wiped out by a capital flight and a subsequent provision of Target credit, implying that Spain's entire current account deficit was ultimately Target-financed.

Such a capital flight occurred in Ireland much earlier and much more dramatically. Ireland's cumulative current account deficit over the four years was only 14 billion euros, but its Target liabilities over the same period rose by 120 billion euros (from approximately zero by the end of 2007). That was about 77 percent of Ireland's GDP in 2011 (156 billion euros).

In proportion to its size, Ireland 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.²⁷ These guarantees, however, failed to restore confidence. Foreign banks and financial institutions that had gathered in Ireland, such as special purpose vehicles for off-balance sheet operations, decided to withdraw their capital from the country and seek a safe haven elsewhere. The Central Bank of Ireland then acted as a lender of last resort, stepping into the breach and cranking up its money-printing machine.

The last chart in Fig. 8 refers to Italy. Obviously, scarcely any Target balances built up in 2008, 2009 and 2010. The Italian current account deficit during this period was chiefly privately financed, and until the autumn of 2009 Italy even enjoyed capital imports beyond what was needed to finance its current account deficit, as shown by the fact that its Target liability became more and more negative while the curve showing the accumulated current account deficit was rising. Then the sign of the Target curve's slope changed, and from autumn 2009 until the first half of 2011 it was roughly as steep as the current account curve, indicating that Italy did not enjoy further capital imports to finance its current account deficits, but used the electronic printing press instead. However, Italy started from having a stock of Target claims, and was able to draw from this stock until July 2011, when the stock ultimately changed sign and turned into a liability. In August and September, the liability even increased steadily, since all of a sudden a huge capital flight had got under way, whose momentum is unbroken at this writing and quickly consumed the stock of net capital imports built up in 2008 and 2009. In fact, while the Italian current account deficit was just 5.0 billion euros in August, the country's Target balances deteriorated by 41

²⁷See Sinn (2010a, p. 193).

billion euros in that single month. From August to December 2011, the Italian Target debt increased by 175 billion euros, while its current account deficit in this period was only 14 billion euros. By December 2011, Italy's four-year increase in Target debt exceeded its accumulated four-year current account deficit by 47 billion euros. The last data point available, referring to April 2012, shows an Italian Target debt of 279 billion euros.

Taken together, the increase of the Spanish and Italian Target debt from August 2011 to March 2012 was 473 billion euros, of which 141 billion euros stemmed from March alone. It dwarfs the increase of the Greek, Portuguese and Irish Target debts since beginning of the crisis (about 250 billion euros) and reflects a capital flight whose vigour and drama surpasses the most pessimistic expectations and fears. The most recent increase is particularly disturbing inasmuch as many commentators argued that the ECB's bazooka policy of providing more than 1,000 billion in fresh long-term loans to Europe's banking system would calm the markets and put an end to capital flight. Given the data, it seems fair to say that the intra-Eurozone capital flight has gone out of control in the meantime and could potentially destroy the Eurozone politically.

10 The causality question

The above discussion has shown to what extent the Target credit has replaced the private capital imports (largely interbank credit) in financing current account deficits and capital flight in the sense of withdrawals of capital stocks. The statements made concerned accounting proportions in a country's aggregate budget constraint, not causality or correlation.²⁸ These statements are true regardless of the causal interactions between the terms involved. Nevertheless, such causal interactions are of course present.

Politicians sometimes give the impression that they consider both the current account deficits and capital flight as being exogenously determined, forcing the ECB to step in to fill the financing gap without being able to influence the process. This view is not very convincing, because the Target balances resulted from the ECB's liquidity and collateral-requirement policies and were as such controllable by the ECB council, as explained in Sect. 6. If the ECB had not helped out, by the force of aggregate budget constraints either the current account or the capital movements would have had to react. Thus, relative to a more restrictive policy that avoided Target imbalances, the actual ECB policy must have either facilitated the capital flight it pretends to merely have been compensating for, or preserved the current account deficits about which it keeps complaining.

²⁸Some of our critics had read into our writings statements about a correlation between current account deficits and Target balances. (See *Reply to the Critics* in the Appendix to Sinn and Wollmershäuser 2011a.) Given that the current account deficit had to be financed with either capital imports or Target debt, it makes sense to indicate to what percentages this deficit was financed from the two sources without explicitly or implicitly claiming a correlation. No one would suspect, for example, that the statement that x percent of the government expenditure over the last four years was debt-financed, perhaps because tax revenue deteriorated, was meant to say that the time series of debt and expenditure were correlated in an econometric sense.

In fact, it seems obvious to us that, together with the intergovernmental aid programs, the ECB credit has contributed to preventing the current account deficits of the crisis countries from improving via a process of real devaluation. Had the additional ECB credit that led to Target imbalances not been available, the crisis countries would have had to pay higher interest rates, and would therefore have had more difficulties financing their current account deficits. A more rapid contraction of the economy, with declining prices, would have resulted, stimulating exports, reducing imports and lowering the current account deficits. This is what actually occurred in Ireland during the crisis, and what began after the bursting of the housing bubble in 2006, long before the ECB took any action. From Q4 2007 to Q4 2011, its GDP deflator declined by 13 % relative to the Eurozone average, and Ireland eliminated its sizeable current account deficit. But in the other crisis countries not the slightest sign of a similar development is evident. In fact, in the period in question Greece's relative GDP deflator increased by 4.5 % (which is more than the 3.5 % VAT increase) and Italy's by 2 %, while Portugal's decreased by merely 0.1 %, and Spain's by 0.6 %.²⁹ In our opinion, the downward-rigidity of goods prices, whether caused by fundamentals or ECB policies, is the greatest challenge for the viability of the Eurosystem.

Moreover, there are at least two mechanisms by which the ECB may have facilitated the reversal of capital flows, or even capital flight.

First, as the ECB offered its refinancing credit without a risk premium, at conditions that obviously undercut the market conditions, commercial banks in the core countries were unable and unwilling to compete with the printing press. Or, to see it from the debtors' point of view: the cheap refinancing credit that was available without burdensome collateral requirements induced commercial banks to take the opportunity to redeem their foreign debt rather than asking their creditors to renew or roll-over agreements.

Second, private capital owners from the periphery countries would have been unable and unwilling to flee if the banking sector had not been able to buy their assets, government bonds in particular, with the newly printed base money that it could borrow from its NCB. Asset prices would have fallen rapidly, and an equilibrium would have emerged that would have made it sufficiently attractive for capital to stay or for new capital to come from abroad. Today, market agents know that asset prices are above their long-run equilibrium and fear that they will fall as soon as the pockets of rescuers have emptied or the rescuers have lost patience. This one-sided downward risk is reason enough to keep the investment capital in safe havens, away from the countries that urgently need it.

In summary, this suggests to us the following interpretation of the crisis and the ECB's actions. After cheap credit inflated the periphery countries and gave rise to huge current account deficits, investors shied away from those countries and tried to return to safe havens in the core countries. This fuelled a boom in the core and caused a recession in the periphery. Just like the open fiscal rescue operations, the ECB tried to counteract this process by escorting the savings capital back to the periphery by loading the investment risk on the core countries' tax payers. Although much of the

²⁹See European Commission, *Price and Cost Competitiveness—Data Section* (http://ec.europa.eu/economy_finance/db_indicators/competitiveness/data_section_en.htm).

escorted capital quickly seeped back to the core through capital flight, this sort of funding eased the situation in the periphery and prevented the current accounts of the southern Eurozone countries from improving via a process of real devaluation. The ECB eases the pain, but it also undermines the allocative function of the capital market and preserves the periphery's wrong set of goods, factor and asset prices, with the result of unremitting financial needs and rising foreign debt levels that eventually might become unsustainable.

The next section looks into an alternative way of dealing with interregional imbalances in another monetary system, which might be used to draw lessons for a potential reform of the European one.

11 Target balances in the United States

The possibility of taking on Target loans at the ECB interest rate distinguishes the Eurosystem sharply from the US Federal Reserve System, whose Target analogue is called "Interdistrict Settlement Account" (ISA). While the ISA system does allow for Target-like balances resulting from the creation of outside money, i.e. money used for acquiring a net inflow of goods and/or assets from other districts, it has to the best of our knowledge never experienced excessive flows comparable to those now taking place in the Eurozone as a result of the European sovereign debt crisis. This is reason enough to go into the details and try to understand what factors might have been responsible for this.

In the US, payment transactions are done via the Federal Reserve Wire Network (short: Fedwire) and operate in principle in a manner quite similar to that in the Eurozone. 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.³⁰ As a rule, the districts comprise several states, and in some instances a state may form part of two Federal Reserve districts. The sizes of the districts were fixed at the time the Federal Reserve System was founded in 1913 and depended on the distribution of the population at the time, and they are roughly comparable to those of the 17 states of the Eurozone. However, unlike the Eurozone's NCBs, which are state-owned institutions, the regional Federal Reserve Banks, in short "District Feds", are private institutions, belonging to the respective districts' commercial banks. This aspect protects them from becoming self-service institutions for state finance.

Each District Fed is responsible for the operational implementation of monetary policy in its area. 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 District Fed. The payments are booked in the ISA, which is a real-time gross settlement system like the European one.

Despite the similarities between the two systems, there are several important differences.³¹ First, the ISA System is multilateral. Each District Fed has a settlement

³⁰See Ruckriegel and Seitz (2002).

³¹Cf. Garber (1999, 2010).

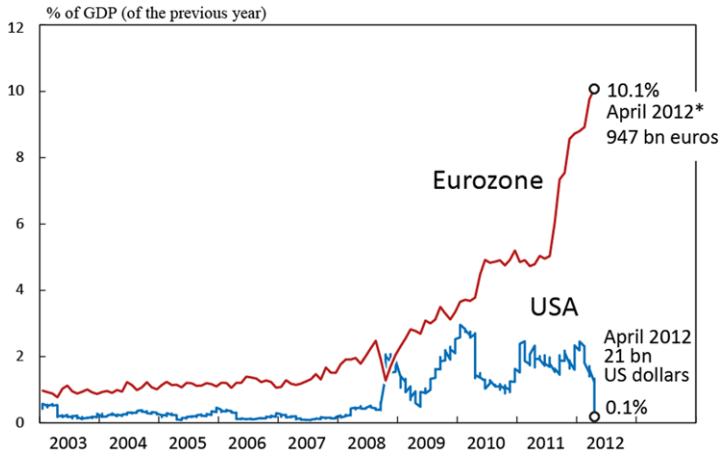


Fig. 9 Gross Target claims and gross ISA claims relative to the corresponding GDP. Source: Sinn (2012), updated. * Germany: April; Netherlands: March; Luxembourg, Finland, and Estonia: February. Sources: Board of Governors of the Federal Reserve System, Data Download Program, Principal Economic Indicators, Factors Affecting Reserve Balances; Bureau of Economic Analysis, U.S. Economic Accounts, Gross Domestic Product; Target balances of the Eurozone countries: see the Appendix; Eurostat Database, Economy and Finance, National Accounts; calculations by the Ifo Institute

account vis-à-vis each of the eleven other District Feds. As in the Eurosystem, a District Fed has to carry out payment orders from other District Feds and is assigned compensating claims that are shown in its balance sheet. A compensating claim is, however, not held against the entire central bank system, but against the respective District Fed that ordered a payment. While no interest is accrued from the claims or paid on liabilities within a year, the annual average increases in the ISA balances must be settled in April of each year with marketable assets. As in Europe, a District Fed does have the right to print more money to finance a net acquisition of assets or goods from other districts. But instead of simply booking a liability in its balance sheet and paying the main refinancing rate, it must hand over tangible assets to redeem its debt. Technically, this is done by the Fed by varying the ownership shares in a clearing portfolio of marketable and interest-bearing assets that it supervises on behalf of the District Feds.

While the exact compensation formula used in the US system does allow for some remaining balances after the redemption date if the balances were increasing relative to the annual average towards the redemption date, as a matter of fact, as shown in Sinn (2012), the US rules did reduce the ISA balances significantly either by changing the District Feds' refinancing policies in anticipation of the redemption date or by the redemption of debt itself. Figure 9 gives an updated version of Sinn's Target-ISA comparison, showing the respective sum of gross balances relative to GDP. It is clearly visible that before April 2009 the District Feds in deficit had taken action, probably reducing their stock of refinancing credit, to limit the transfer of marketable assets to the District Feds in surplus, while by April 2010 they had actually redeemed substantial amounts of ISA debt (190 billion dollars). The graph also shows that some discretionary change may have been made to the rules, since in April 2011 there was

no visible redemption, while most of the ISA debt was redeemed by April 2012, with only a tiny remainder of 21 billion dollars left. At that time the Eurozone's gross Target debt was 10.1 % of its GDP while the respective figure in the US was only 0.1 %, one hundredth of the European figure. This difference is remarkable in light of the fact that the financial crisis originated in the US rather than in Europe, and that some US states had come dangerously close to bankruptcy.

Originally, the assets whose ownership shares are transferred were gold certificates. Gold certificates are securities collateralized by gold, issued by the US Treasury, that bear the right to be exchanged for gold on demand.³² Thus, the US was organized internally in a manner similar to traditional gold standard systems, which always required balance-of-payments deficits to be gold-financed. As argued above, even the Bretton Woods system was based on the idea of settling the balance-of-payments deficits with gold transfers.

However, the practice was later abandoned and a settlement using other US government securities was allowed. Moreover, during the crisis even some mortgage-backed securities were accepted for settlement. This still does not make the US system similar to the European one, though. For one thing, the ownership title refers to tangible assets that retain their value even if the District Fed that created the outside money flowing to other districts goes bankrupt. For another, the assets concerned earn the market rate of interest for the respective risk category.³³

If such a system were introduced in the Eurozone, the NCBs of the GIIPS would no longer have an interest in overexerting their money-printing presses in order to satisfy their internal credit demand, since there would be no advantage to such a policy over a direct financing of liquidity needs through the capital market. In either case marketable debt instruments bearing the normal rate of interest be turned over to obtain the required liquidity. As in the US, only limited Target balances would be piling up.

However, the implication of doing so would be that the Bundesbank and the Dutch NCB would have the right to receive marketable assets on the order of hundreds of billions of euros from other Eurozone NCBs.³⁴ If the other NCBs had to pay the Bundesbank with assets they do not have, this could pose an unbearable hardship for some of them, driving them into bankruptcy overnight and destroying the Eurosystem. The situation would be quite similar to 1968, when General De Gaulle hastened the demise of the Bretton Woods system by sending warships to the US to convert the dollar claims of the Banque de France, the equivalent of the Bundesbank's Target claims, into gold from Ford Knox. Thus, a grandfathering rule would be useful for a conversion of the existing Target claims, stretching the US-like payment with marketable assets over considerable periods of time.

³²In 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 Woelfel (2002).

³³In the discussions about the construction of the Eurosystem Reeh (1999, p. 24) had proposed to charge the market rate of interest for internal Eurozone imbalances.

³⁴See Sinn (2012).

For the time being, the debtor NCBs could at least secure their Target liability by handing over the collateral they received from their private banks when lending out the newly printed money. However, due to the low quality of the existing collateral and the fact that the interest on the collateral belongs to the private banks that provided it, the mere transfer of collateral would not eliminate the incentive to solve the payment difficulties by resorting to the printing press, unless the debtor NCBs pay an interest premium above the ECB's main refinancing rate, as proposed by ex-Bundesbank President Helmut Schlesinger (2011) in a reaction to our working paper.

An arguably better way to ensure that the Target credit ceases to be more attractive for the debtor countries than market credit is the US solution, i.e. the redemption of the Target debt by handing over marketable assets to the creditor countries. These could be national government bonds backed by real estate property. As the recipients could sell these bonds in the market and convert them to any sort of preferred assets, the public international credit transfer through the Eurosystem could effectively be avoided.³⁵

In view of the political tour de force that would be necessary for such solutions in Europe, the question arises of whether the problem of overflowing Target loans could not 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 GIIPS. This would indeed have the desired effects if the collateral standards were 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 Council will again tend to ease its collateral standards, given that the countries benefiting directly and indirectly from such policy hold the majority in it. The problem is well-nigh impossible to solve under the current one-country one-vote majority voting system of the European Central Bank Council.

A similarly pessimistic argument applies to a possible renunciation of the full-allotment policy. Even if the ECB were to limit the base 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 the more solid banks would be able to refinance themselves more cheaply in the capital market. A sort of Gresham's law would therefore operate, shifting the credit to the most risky banks in Europe whose collateral just manages to comply with the collateral standards set by the ECB.³⁶ The lion's share of the central bank credit would therefore still be created in the GIIPS.

Thus, Europe might wish to think about adopting the US monetary union rules. After all, these rules have evolved in a two-hundred-year historical trial-and-error process. It is not always necessary to re-invent the wheel.

12 Conclusions

This paper has tried to shed light on the European balance-of-payments crisis by drawing on a hitherto little known accounting system embedded in a non-transparent

³⁵Reacting to our working paper this was proposed by the European Economic Advisory Group (2012).

³⁶See Chailloux et al. (2008).

way in the balance sheets of the Eurozone's National Central Banks (NCBs): the Target balances. While Target balances at first glance seem to be inconsequential technicalities of an interbank settlement system, we demonstrate that they indeed measure the Eurozone's internal balance-of-payments surpluses and deficits, and hence capital flows and credit shifts through the Eurosystem. In our opinion the Target statistics provide the most accurate seismograph of the shockwaves that were sent through the Eurozone during the global financial crisis.

The Target data show that the Eurozone until 2010 built up extremely large distortions in the balances of payments among the euro countries that raise deep questions about its viability. By March 2012, the accumulated payment imbalance between Germany and the Netherlands on the one hand and the rest of the Eurozone on the other had grown to 773 billion euros, constituting more than half of these two countries' net foreign wealth.

During the financial crisis, an increasing share of the Eurozone's stock of central bank refinancing credit has gradually been relocated from the core to the periphery to compensate for the now meagre or nonexistent private capital flows and also for outright capital flight. In the meantime, the Eurosystem's entire stock of net central bank credit has been relocated to the periphery, and the core's NCBs have become net borrowers of central bank money, sterilizing the huge inflow of money that has been printed and lent out by their partners in the periphery. By the end of 2011, 93 % of the Eurosystem's stock of central bank money originated from only five euro countries (Greece, Ireland, Italy, Portugal and Spain) that constitute just 34 % of the Eurozone's GDP.

We showed that the current account deficits of Greece and Portugal were almost entirely financed by Target credit during the crisis, and Ireland in addition accommodated a major capital flight that way, a policy that Italy and Spain copied in the summer of 2011. Germany, on the other hand, was paid for its current account surplus with the rest of the Eurozone with Bundesbank Target claims on the ECB. German, Dutch and Finnish savers had to accept a swap of marketable foreign assets for mere Target claims to the tune of 16,000 to 18,000 euros per working person, respectively.

These are all symptoms of a deep balance-of-payments crisis that resembles in many respects the fatal crisis of the Bretton Woods system. The cheap credit that the euro made possible for the periphery countries led to inflationary bubbles and huge current account deficits, as in the USA during the Sixties. The deficits in Europe's periphery were first financed by private capital flows, but when the global financial crisis swept over Europe in 2007, capital shied away and the ECB stepped in by allowing the NCBs of the periphery to finance the deficits with the money-printing press, just as the Fed had done before the breakdown of the Bretton Woods system. In the same way as the dollars that in that system flowed from America to Europe were converted into European currencies and crowded out the central banks' refinancing credit, the extra money recently printed in the Eurozone's periphery flowed to the core's NCBs and crowded out the refinancing credit there. By relocating refinancing credit from the surplus to the deficit countries, public capital flowed through the Eurosystem and replaced private capital flows. Under the Bretton Woods system, this process of shifting the refinancing credit proved unsustainable and a balance-of-payments crisis resulted, which finally led to the collapse of the system.

The European system may prove more robust than the Bretton Woods system, given that the national central banks of the Netherlands, Finland, Luxembourg and Germany, which accumulated Target claims instead of dollar claims, will be unable to follow General De Gaulles's example and convert their claims into gold. After all, their Target claims are intangible financial claims that cannot be called due without a fundamental change in the ECB's policy. Thus, year after year, the periphery's current account deficit and capital flight may continue to be financed with the printing press, and the core can continue to shred the base money flowing in as payment for goods and assets sold to the periphery.

However, one can doubt whether such a solution would really be sustainable. We see at least four types of risk.

First, even as commercial banks in the core lend to the ECB, while the monetary base remains unchanged, they nevertheless become more and more liquid. After all, they can withdraw their deposit facilities with the ECB at any time and convert them to true central bank money on demand. They can always use their time deposits with the ECB as collateral for private credit they can take in the market. True, sterilizing the resulting liquidity by issuing ECB bonds is technically feasible.³⁷ However, there is reason to doubt that the majority in the ECB will ever be willing to cut their respective countries off from the easy-funding drug they have been able to get from the Eurosystem, preferring rather a policy of shaking off their Target debt with inflation.

Second, since commercial banks from the core are unwilling to compete with the printing press, private capital will continue to shun the periphery unless Eurobonds and similar subsidy schemes for capital flows to the periphery are introduced, an option that would undermine the allocative function of the capital market even further.

Third, as explained, the ongoing rescue operations obviously preserve the wrong, bubble-driven prices for goods, labour and capital that have undermined the competitiveness of the GIIPS and resulted in huge current account deficits.

Fourth, the ECB policy prevents the flight capital from returning because it also maintains the asset prices above their market clearing level, making investors fear that prices will fall once the tolerance of the core countries for further rescue operations dwindles. The ECB policy reminds us of the many ineffectual attempts to use central bank interventions to keep exchange rates away from their equilibrium values. These attempts have shown that gigantic intervention funds are necessary and that the central banks may still be the losers in the end.³⁸ With regard to exchange rates, central banks have learned by now that it is futile to defend wrong prices for ever. It remains to be seen how long European politicians will need to heed that lesson.

Our most serious concern relates to the second of these points. The Target imbalances show that a system with idiosyncratic country risks and international interest

³⁷Thimann (2012).

³⁸One 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.

spreads for public and private bonds is incompatible with a monetary system that allows countries to finance their balance-of-payments deficits with the printing press, without having to pay for the extra money-printing with marketable assets as is the case in the USA. Such a system will always induce the less-solid countries to draw Target credit to avoid the risk premium that the market demands, leading eventually to a balance-of-payments crisis.

To avoid this problem, Europe has only two options. Either it socializes national debts in order to eliminate the international differences in interest rates (by creating a uniform default risk for all countries), limiting excessive borrowing through the imposition of politically mandated constraints. Or it ensures that the Target balances are redeemed annually with marketable assets, keeping the debt burdens within the national responsibility and allowing for country defaults and interest differentials.

The US obviously chose the second route. States can go bankrupt, excessive capital flows are prevented by state-specific interest spreads, and the Target balances are unattractive, since they have to be settled with marketable assets. This system is stable, because it avoids excessive capital flows between the states and thus excessive US-internal trade imbalances.

By contrast, Europe is currently drifting in the other direction. On the horizon a system can be divined where states are protected from bankruptcy, Eurobonds eliminate interest spreads, political constraints attempt to limit excessive capital flows, and the right to cover balance-of-payment deficits with the printing press remains undisputed. This system will be vulnerable to political pressure and manipulation by the debtor countries, even if Europe finds the strength to eliminate local fiscal autonomy and create a fiscally unified nation-state.

Our scepticism with regard to the path that the Eurozone has chosen does not mean that we would prefer countries that run into trouble be left to fend for themselves. In fact, we would support a change of article 125 of the EU Treaty to make interstate bail-out activities legal. However, we would place the emphasis on a parliamentary process with liquidity help and piecemeal haircuts by maturity, coupled with common guarantees for newly issued bonds such as the one proposed by the European Economic Advisory Group (2011).

In our opinion, the reason why Europe is drifting in the direction of Eurobonds lies in the path-dependence resulting from the prior decision to set up a Eurosystem that provides the right to settle balance-of-payments deficits by creating money without having to pay for the extra money creation with marketable assets. This decision has provided a sufficiently generous self-service rescue facility to render the public Eurozone rescue facilities that have subsequently been set up dispensable for the first phase of the crisis, and this facility is in principle still available today as a fall-back option to the public rescue programmes. If the distressed countries do not receive help or do not deem the rescue operations offered to them generous enough, they always have the option of printing the money they need to settle their foreign bills. The potential threat posed by a printing press in the basement is an argument for the socialization of government debt that even the more sceptical European policymakers will not be able to counter. That will set the European disaster in motion.

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Appendix: Data sources for target balances

Time series from national central banks

For Germany, Italy and Spain, the Target time series can be downloaded from the databases of the respective NCBs.³⁹ All other data are calculated from IMF statistics as will be explained below.

Our procedure is basically the same as that used by the ECB itself. As the ECB revealed in its October 2011 publication on the Target data, it does not possess a reporting system of its own, but also constructs its data from the IMF statistics. It writes⁴⁰:

“There is no single database grouping together the TARGET2 balances of all NCBs, but an imperfect proxy can be calculated on the basis of the IMF’s International Financial Statistics as the sum of the monthly series “net claims on the Eurosystem” minus the difference between “currency issued” (which represents an NCB’s share in banknote issuance based on its share in the ECB’s capital) and “currency put in circulation” (which is the actual amount of banknotes issued by an NCB).”

This is exactly the method we used in June 2011 in Sinn and Wollmershäuser (2011a) for those NCBs that do not publish their Target balances directly, and that we also pursue here.

Even the published national Target data are often somewhat hidden in the balance sheets. Only the Spanish NCB publishes them explicitly under this name. In the case of the Bundesbank, for example, the Target balances are contained under the position “Other Assets” in the Consolidated Balance Sheet of its Monthly Report (Bundesbank database, series TUB618). For example, by 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 (i.e. its equity share) 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. In the case of Italy, the Target data can be inferred by a similar procedure from the published balance sheets.

³⁹The Bank of Greece also publishes its Target balances in its monthly financial statements, which are however only available as pdf documents and cannot be downloaded as complete time series.

⁴⁰European Central Bank (2011b, p. 37, footnote 5).

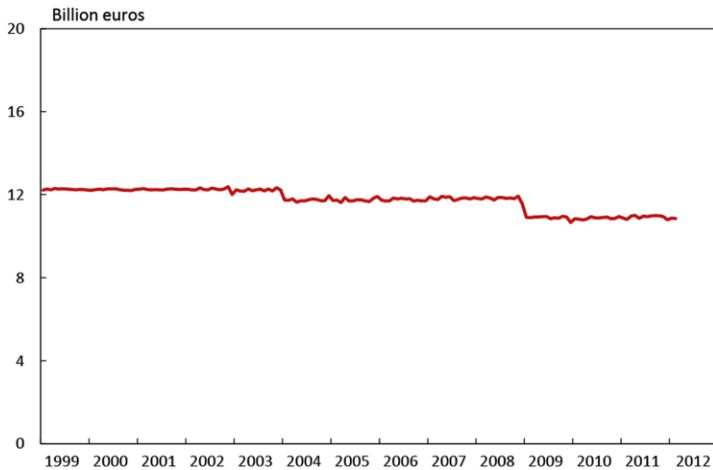


Fig. 10 Measurement error—excess of IMF proxy for German Intra-Eurosystem claims over actual Bundesbank data

Time series from the international financial statistics of the IMF

For all remaining NCBs, which in the summer of 2011 accounted for about 50 percent of the Target balances, we calculated a proxy for the Target balances with data from the IMF's International Financial Statistics. The 'Target claims' are computed as the difference between 'Net claims on Eurosystem' (IFS code xxx12e0szkm) and the 'Intra-Eurosystem claims related to banknote issuance'. The latter is calculated as the difference between 'Currency issued' (IFS code xxx14a00zkm) and 'Currency put into circulation' (IFS code xxx14m00zkm).⁴¹

Apart from the 'Target claims/liabilities' and the 'Intra-Eurosystem claims/liabilities related to banknote issuance', the position 'Net claims on Eurosystem' consists of 'Participating interest in the ECB' and 'Claims equivalent to the transfer of foreign reserves to the ECB', both of which are positive claims for all NCBs. Thus, our proxy for the Target 2 balances is biased upwards by the latter two positions. In other words, the true Target liabilities of the crisis countries may even be a bit larger than those we report. However, this bias should be almost constant over time since these two positions only change, as a general rule, when the Eurosystem's capital key is modified or when the ECB's capital is raised. In the case of the Bundesbank, where we have both the actual Target 2 data from the Bundesbank database and the proxy calculated on the basis of the IMF data, Fig. 10 shows that this bias is indeed almost constant over time and currently amounts to 11 billion euros. Since we are mainly interested in the change of the Target balances over time (above all since the outbreak of the financial crisis), the measurement error should leave our interpretation

⁴¹'Currency put into circulation' is the actual value of banknotes issued by an NCB. 'Currency issued' refers to the statutory value of banknotes that is booked on the liability side of the NCB's balance sheets and that is calculated as a fixed share of the total value of banknotes issued by the Eurosystem as a whole. The share is equal to the NCB's share in the ECB's capital.

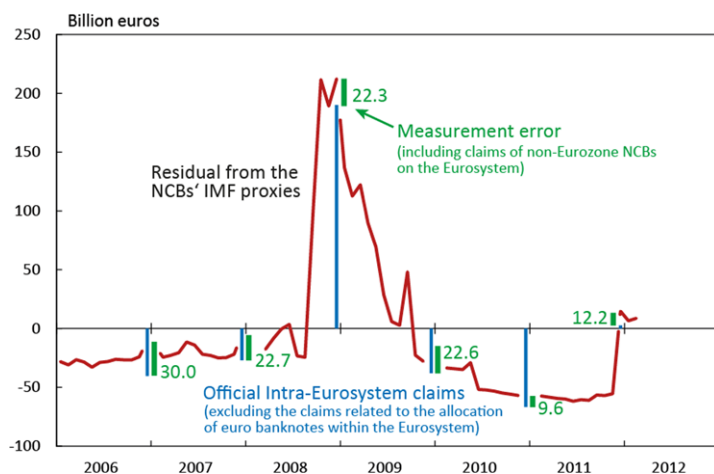


Fig. 11 ECB—Intra-Eurosystem claims. Sources: European Central Bank, Annual Report, various issues

of the Target balances in the main text unaffected. We repeat that this is only meant to demonstrate the measurement procedure we used for some of the other Eurozone countries for which we do not have balance-sheet data. The data for Germany, Italy and Spain that we use in this paper all stem directly from the balance sheets of the respective NCBS and are no proxies.

The Target balance for the ECB including claims of non-Eurozone NCBS on the Eurosystem is calculated as a residual, based on the assumption that the sum of all balances (calculated on the basis of the IMF's International Financial Statistics) should equal zero.

In the IFS statistics there is no position 'Net claims on Eurosystem' for the ECB or the non-Eurozone NCBS. Since the ECB itself does not publish its Target balances in its regular (weekly) financial statements, the only official data available are from the year-end accounts published in the ECB's Annual Report. For 31 December 2010 the official Target liability (which is actually denoted as 'Other liabilities within the Eurosystem (net)') of the ECB was 21 billion euros. The ECB's liabilities against the Eurosystem resulting from the transfer of foreign reserves amounted to 40 billion euros and the ECB's capital was 5 billion euros. Both positions should be the sum of the NCBS' corresponding claims. Thus, while the official net liabilities of the ECB against the Eurosystem (excluding the 'Claims related to the allocation of euro banknotes within the Eurosystem') amounted to 66.7 billion euros, the residual from the IFS proxy was only 41.8 billion euros. The gap between both figures is the error that we make when using the IMF proxy. A certain part of this gap may be explained by Target claims of non-Eurozone NCBS on the Eurosystem. These NCBS can also elect to connect to the Target payment system. Given that they are not part of the currency area, these NCBS have to maintain a positive balance vis-à-vis the ECB.⁴²

Figure 11 shows the residual from the NCBS' IMF proxies (line) and the official Intra-Eurosystem claims (bars). The difference between these values as given by the

⁴²European Central Bank (2011b, footnote 2).

dashed bars is rather constant over time and amounts to 20 billion euros on average. Since it is always positive, a large part of the measurement error is probably explained by the non-Eurozone NCBs' claims on the Eurosystem. The sharp increase of the Intra-Eurosystem claims at the end of 2008 was mainly due to back-to-back swap transactions conducted with NCBs in connection with US dollar liquidity-providing operations. These claims were continuously reduced in the course of 2009. In 2010 the net claim of the ECB vis-à-vis the NCBs related to Target transactions turned into a net liability for the first time since 1999. This liability was due mainly to purchases of securities under the covered bond purchase program and the Securities Markets Programme in 2010, which were settled via Target accounts. For the latest increase no official statements have so far been given by the ECB, but it can be presumed that the renewed intensification of the crisis has led the ECB to react in a way similar to 2008/2009.

Other data sources: balance of payments statistics

Apart from the balance-sheet statistics of the central banks, the Target balances can also be found in the balance-of-payments statistics, where they are shown as a flow in the financial account under the 'Other Financial Transactions with Non-residents' position of the respective NCBs and as a stock in the international investment position of the respective NCBs as 'Assets/Liabilities within the Eurosystem'.

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.

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