Interpreting TARGET balances in the European Monetary Union

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Abstract This article analyses the role displayed by TARGET balances in the European Monetary Union (EMU). In the context of the European financial crisis, very large TARGET unbalances became crucial, reflecting funding stress in the banking systems of most crisis-hit countries. The increase in TARGET balances in this period was triggered by a replacement of private sector funding of banks by central bank funding. By contrast, the more recent increases in TARGET balances are largely attributable to the implementation of the asset purchase programme (APP) by the European Central Bank (ECB), also known as a quantitative easing (Qe) monetary policy. Anyway, too much large TARGET balances continue to be a signal of underlying tensions among EMU member countries. This situation calls for macroeconomic imbalances to be addressed, trust in banking systems to be re-established, and the institutional foundations of EMU to be strengthened.

Keywords European financial crisis, banking crises, sovereign debt crisis, TARGET, EMU.

1 Introduction

Cross border payment flows between banks are a normal feature of a financially integrated area. Their settlements in the euro area create TARGET balances for each national central bank (NCB). TARGET balances are the net claims and liabilities of the euro area NCBs vis-à-vis the European Central Bank (ECB). They arise through cross-border payments settled in central bank money (CBM) of the respective national banking sectors, or the NCBs themselves, and are executed via the common euro area payment platform known as TARGET.[2]

When a bank makes a payment to another bank via TARGET, the current account of the payer's bank at its NCB is debited and the current account of the recipient bank at its NCB is credited. If both banks hold their current accounts at the same NCB, there is no net impact on the aggregate account of banks at the NCB, and there are no implications for TARGET balances. However, in the case of cross-border

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[2] TARGET is the Eurosystem's Real-Time Gross Settlement (RTGS) system, and stands for Trans-European Automated Real-time Gross settlement Express Transfer system. It commenced operations on 4 January 1999, following the lunch of the euro. The initial TARGET system was then built by linking together the different RTGS structures that existed at the national level. It was replaced by the Eurosystem's TARGET2 platform in November 2007. During the transition period, which lasted until May 2008, all national structures were replaced by the single platform. For convenience, both TARGET and TARGET2 are here referred to as "TARGET".

transactions, the NCB of the paying bank sees a reduction in that bank's account at the NCB, and the NCB of the recipient bank sees an increase in the recipient bank's account. In the balance sheet of the ECB, such positions are balanced by a TARGET liability for the first NCB and a TARGET claim for the second one.

TARGET liabilities and claims also result from cross-border transactions by NCBs themselves, such as the purchase or sale of securities held for investment purposes. At the end of each day, such intra-Eurosystem claims and liabilities are aggregated and netted out throughout the Eurosystem. This leaves each NCB with a single net bilateral position vis-à-vis the ECB, in the form of a positive or negative TARGET balance. By design, these balances reflect the decentralized nature of the Eurosystem's operational framework, and all the TARGET balances (including the ECB's balance) add up to zero (ECB 2015, p. 42).

TARGET balances can be a consequence of the injection of large amounts of excess liquidity by the euro area's decentralized central banking systems. They emerge when the central bank reserves created in one jurisdiction, say Italy for instance, flow to another, say Germany. During the sovereign debt crisis, there was a "demand-driven" increase in excess liquidity as banks substituted Eurosystem funding for market-based funding that had dried up. Although the initial provision of liquidity via refinancing operations was TARGET-neutral, TARGET balances increased as this liquidity subsequently flowed from vulnerable to less-vulnerable countries in the context of severe market stress.

Since the start of the expanded asset purchase programme (EAPP) on the midst of 2014, however, the renewed increase in excess liquidity has been predominantly "supply-driven", resulting from asset purchases by NCBs and the ECB rather than stress-related recourse to refinancing operations (Eisenschmidt et al 2017).[3] The EAPP – and in particular the public sector purchase programme (PSPP) – gives rise to increasing TARGET balances by inducing large cross-border liquidity flows. These flows arise, first, during EAPP implementation and, second, via further portfolio rebalancing (ECB 2017b, pp. 21-22). As regards the first case, it is important to stress that the financial structure of the euro area contributes to the current increase in TARGET balances because cross-border payments are an inherent feature of decentralized EAPP implementation in an integrated market. EAPP implementation is distinct from that of refinancing operations because it can entail immediate cross border payments, as purchases are not limited by national borders.

About the second case, it is evident that payments related to subsequent portfolio rebalancing are also affected by the financial structure and keep TARGET balances elevated. Since the launch of the EAPP, there has been a broad-based rebalancing towards non-euro area debt securities in the whole euro area, which has been driven to a significant extent by the persistently negative interest rate differentials between euro area bonds and bonds issued by other advanced economies

[3] Around 85% of the increase in liquidity provided through euro-denominated open market operations between the end of February 2015 (i.e. prior to the commencement of the PSPP) and 31 March 2017 was due to the EAPP. All of the increase in recourse to Eurosystem refinancing operations over the same period reflected participation in targeted longer-term refinancing operations (T-LTROs). Participation in T-LTROs should not be interpreted as a sign of stress-related recourse to Eurosystem refinancing, as the very attractive pricing of these operations was a key motive for participation. See ECB (2017b, p. 22).

(ECB 2017a, pp. 41-45). Euro area residents' net purchases of non-euro area debt securities in this period have consisted almost exclusively of debt securities issued by other advanced economies, in particular the United States. Such international portfolio rebalancing usually takes place through actors located in major euro area financial centers, thereby contributing to the accumulation of reserves in particular locations and to the persistence of TARGET balances (ECB 2017b, p. 24).

Therefore, the underlying factors driving the current increase in TARGET balances are of an intrinsically different nature to those in previous episodes of rising balances. The increase in TARGET balances in the period from mid-2011 to mid-2012 was triggered by a replacement of private sector funding of banks by central bank funding in a period of stressed bank funding conditions. By contrast, the more recent increase in TARGET balances, beginning since mid-2014, is largely attributable to the interplay between the decentralized implementation of the EAPP and the financial structure of the euro area (ECB 2017b, p. 26).

This article is organized as follows. Section 2 deals with the time evolution of TARGET balances, and section 3 with the accumulation of TARGET imbalances during the crisis. In section 4, the critics to TARGET imbalances that emerged during the crisis are analyzed. In section 5, we explain the link of TARGET balances with the balance of payments, while, in section 6, we comment the responses to the crisis among euro area governments and argue that these have been insufficient. Section 7 is devoted to the new accumulation of TARGET imbalances during the more recent quantitative easing (Qe) monetary policy period, and, finally, section 8 concludes.

2 The time evolution of TARGET balances

Table 1 summarizes the evolution of TARGET balances since 2009. From the table, we can see that there are three major countries with TARGET claims. They are: Germany (DE) with 906.9 €/b credit at the end of December 2017, Luxembourg (LU) with 192.1 €/b, and The Netherlands (NL) with 71.0 €/b. On the other side, there are also three major countries with TARGET liabilities, which are Italy (IT) with -439.0 €/b of debit position, Spain (ES) with -373.7 €/b, and Portugal (PT) with -81.2 €/b, at the same date. After the beginning of the Asset Purchase Programme (APP), initiated in mid-2014, also the European central bank (ECB) has a negative position, which reached -222.8 €/b at the end of December 2017. The total sum of positive and negative positions, including ECB', in each point in time amounts to zero.

Net TARGET positions at the end of December 2017 are also depicted in Figure 1, where the differences between the three major credit countries (where the central bank money is accruing), and the three major debit countries (where the central bank money is created), is emphasized.

The decentralized distribution of central bank liquidity within the Eurosystem provides stability, because it allows financially sound banks, including those in countries under financial stress, to cover their liquidity needs, thereby contributing to the effective transmission of the ECB's interest rate decisions to the wider euro area economy, and facilitating the aim of maintaining price stability in the euro area over the medium term (ECB 2013, p. 103).

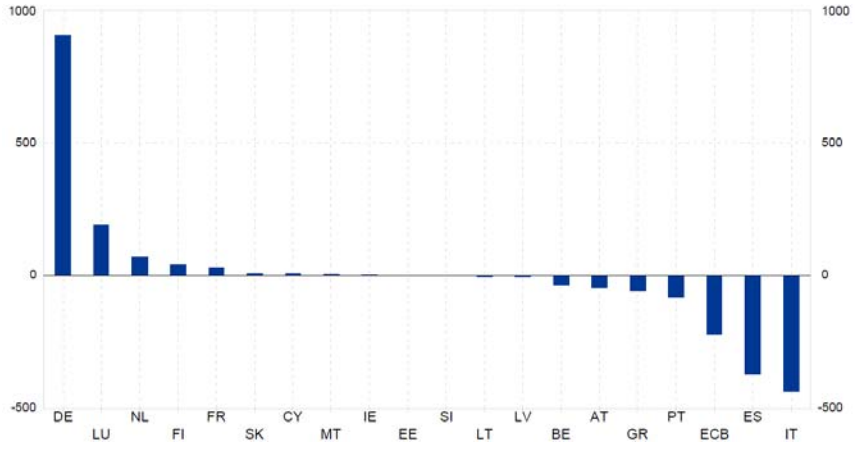
Table 1 – *TARGET balances of the participating NCBs Countries*
(EUR billions: outstanding amounts at end of period)

	ECB	BE	DE	EE	IE	GR	ES	FR	IT	CY	LV	LT	LU	MT	NL	AT	PT	SI	SK	FI	U4 [1]
2008	234.9	-104.2	115.3	-	-44.4	-35.3	-35.0	-117.7	22.9	-6.5	-	-	42.1	-0.7	-18.8	-35.7	-19.0	-3.6	-	5.2	0.4
2009	4.0	-42.5	177.7	-	-53.5	-49.0	-41.1	-62.0	54.8	-7.1	-	-	52.5	-0.8	15.4	-19.6	-23.4	-3.3	-14.5	9.5	3.2
2010	-22.4	-13.9	325.6	-	-145.2	-87.1	-50.9	-28.3	3.4	-6.4	-	-	67.9	-1.2	40.5	-27.5	-59.9	-2.1	-13.3	19.7	1.1
2011	42.2	-52.9	463.1	0.6	-120.4	-104.8	-175.0	-77.4	-191.4	-7.9	-	-	109.4	-0.4	152.8	-34.6	-60.9	-2.7	-13.6	66.0	7.9
2012	-2.2	-38.2	655.7	1.7	-79.3	-98.4	-337.3	-54.8	-255.1	-7.5	-	-	106.2	-0.2	120.8	-39.9	-66.0	-4.4	0.9	70.6	27.4
2013	-6.7	-15.5	510.2	1.8	-55.1	-51.1	-213.7	-16.2	-229.1	-6.8	-	-	103.7	-0.7	46.1	-39.2	-59.6	-1.0	2.7	22.2	8.0
2014	-23.6	-12.4	460.8	3.2	-22.7	-49.3	-189.9	-17.0	-208.9	-2.5	-0.8	-	105.1	-1.9	19.4	-30.1	-54.6	2.4	2.2	19.7	0.9
2015	-83.8	-7.7	584.2	2.8	-3.0	-94.4	-254.1	-29.2	-248.9	2.4	-1.3	0.2	147.6	-0.9	54.7	-29.2	-61.7	0.2	0.5	20.1	1.5
2016	-159.7	-18.6	754.3	0.9	-1.0	-72.3	-328.1	-13.8	-356.6	5.9	-5.3	-3.6	187.4	1.0	87.0	-31.2	-71.6	-1.2	-5.1	22.0	9.5
2016 Q3	-141.5	-10.4	715.7	1.3	2.2	-77.3	-319.7	-37.0	-353.9	5.1	-4.9	-1.9	164.9	0.4	103.6	-37.1	-65.6	0.7	-4.6	57.1	3.0
Q4	-159.7	-18.6	754.3	0.9	-1.0	-72.3	-328.1	-13.8	-356.6	5.9	-5.3	-3.6	187.4	1.0	87.0	-31.2	-71.6	-1.2	-5.1	22.0	9.5
2017 Q1	-183.0	-14.6	829.8	0.5	3.4	-75.4	-374.6	-0.6	-419.8	5.6	-5.9	-3.3	189.2	2.6	102.2	-40.9	-74.8	-0.5	-7.7	65.0	2.9
Q2	-201.8	-13.4	860.8	0.1	8.2	-76.0	-371.1	5.1	-413.9	5.9	-5.7	-2.1	191.1	3.3	78.9	-43.1	-76.3	-0.5	-8.5	56.1	2.7
2017 Aug.	-212.9	-22.1	852.5	0.0	5.8	-67.0	-384.4	9.3	-414.2	6.2	-6.5	-2.4	183.5	3.4	107.5	-38.0	-79.0	-0.6	-9.7	65.5	3.1
Sep.	-215.3	-15.5	878.9	0.1	5.2	-64.2	-373.4	-7.1	-432.5	6.2	-6.7	-3.4	190.3	3.5	84.9	-37.2	-76.8	0.1	-9.8	68.6	4.1
Oct.	-223.9	-7.7	848.4	0.2	2.7	-61.5	-361.9	-28.2	-412.4	6.3	-6.0	-3.2	183.7	3.9	109.4	-35.0	-82.3	-0.7	-8.6	72.5	4.3
Nov.	-229.9	-3.4	855.5	-0.2	4.9	-60.6	-367.3	-27.0	-435.9	6.2	-6.9	-4.0	197.7	3.7	104.1	-37.8	-83.9	-0.9	10.3	71.4	3.9
Dec.	-222.8	-36.1	906.9	0.9	1.9	-59.4	-373.7	30.0	-439.0	7.4	-6.3	-4.0	192.1	4.3	71.0	-45.9	-81.2	-1.4	9.0	40.4	6.1
2018 Jan.	-236.1	-19.5	882.1	0.2	1.8	-57.6	-399.0	-8.9	-433.2	7.2	-6.6	-4.4	195.2	3.7	114.1	-38.0	-83.1	-0.1	10.3	67.7	4.2

1) Extra euro area aggregate (changing composition): since 1 February 2016, the extra euro area countries of which the NCBs participate to TARGET2 are Bulgaria, Croatia, Denmark, Poland and Romania. Lithuania was also participating as an extra-euro area country with its NCB until 31/12/2014, Latvia until 31/12/2013, Estonia until 31/12/2010 and Slovakia until 31/12/2008. Individual TARGET balances of euro area NCBs are not provided for dates before the accession of their countries to the euro area.

Source: ECB, *TARGET Balances*, available via
https://www.ecb.europa.eu/stats/policy_and_exchange_rates/target_balances/html/index.en.html

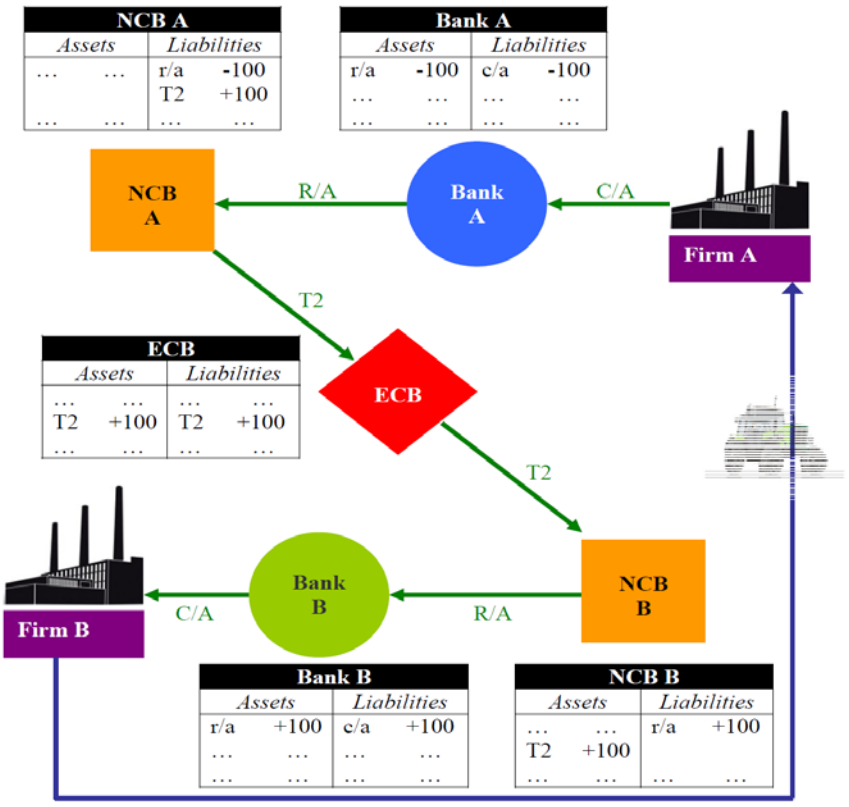
Fig. 1 - *TARGET balances at end December 2017*
(EUR billions)



Source: ECB, *TARGET Balances*, available via
https://www.ecb.europa.eu/stats/policy_and_exchange_rates/target_balances/html/index.en.html

Let us better explain how TARGET claims and liabilities arise with an example. «Cross-border transactions always involve the ECB as the central counterpart of the system. A bank that transfers funds to a counterparty located in another country of the area records a reduction in its deposits with its country's NCB, the accounts of which in turn record a TARGET liability towards the ECB. Conversely, a bank that receives funds records an increase in its deposits with its country's NCB, the accounts of which record a TARGET claim toward the ECB. At close of business, each day, the credit or debit positions resulting from all the transactions are netted out, and the NCBs record, on the asset or liability side of their balance sheets, the TARGET balance, which shows a credit or a debit vis-à-vis the ECB» (Cecioni and Ferrero 2012, p. 5). This can be illustrated with the help of Figure 2.

Fig. 2 – *Purchase of goods by firm A located in country A from firm B located in country B, both within the euro area*



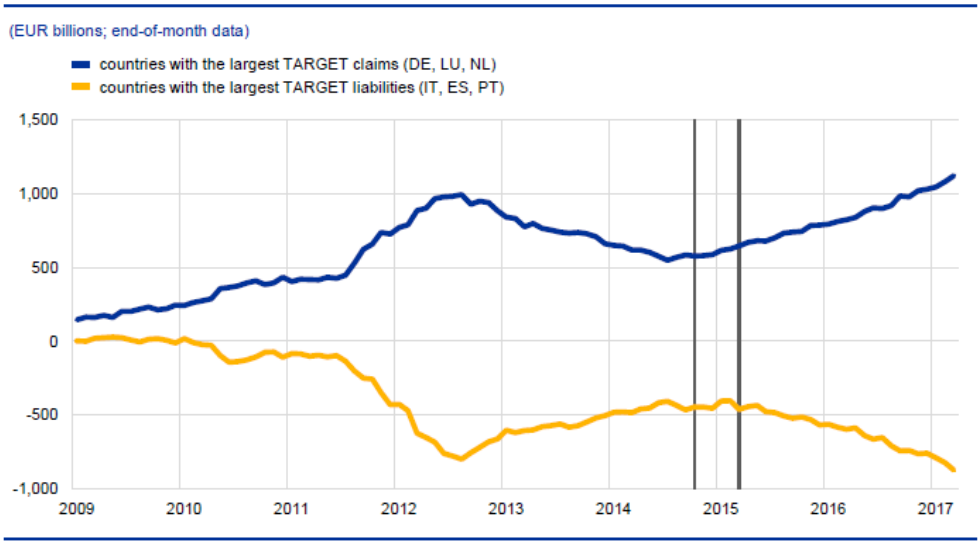
Source: Cecioni and Ferrero (2012).

«In order to purchase a machinery from Firm B located in Country B, Firm A in country A asks Bank A to make a transfer from its current account (c/a) to the

current account of firm B in Bank B. Bank A reduces the c/a of Firm A by €100; at the same time the reserve account (r/a) of Bank A at the national central bank (NCB) of Country A is reduced by €100. TARGET liabilities of NCB A increases by €100 and the ECB's TARGET claims increase by the same amount. Conversely, Bank B, which receives the €100, records an increase in its r/a at its own NCB, whose accounts record an increase of €100 of TARGET claims on the ECB (which in turn records an increase of €100 of TARGET liabilities). Finally, Bank B increases the c/a of Firm B by €100» (Cecioni and Ferrero 2012, p. 6).

These TARGET balances constitute a normal feature of the decentralized implementation of monetary policy in the euro area. They reflect cross-border financial flows within the euro area, which arise from cross-border financial transactions largely initiated by private entities such as credit institutions, corporates or individuals and the resultant cross-border distribution of central bank liquidity. Individual TARGET claims and liabilities of the NCBs vis-à-vis the ECB, and of the ECB vis-à-vis the NCBs, have therefore existed since the start of Economic and Monetary Union (EMU). Anyway, before the sovereign debt crisis, the sum of all claims on the balance sheets of euro area NCBs stood very low, at around 100 €/b prior to mid-2007 (ECB 2015, pp. 42-43). They began to increase slowly after the blow up of the financial crisis in the United States in 2009 and, more rapidly, after the beginning of the public debt and banking crises in Europe in 2010, as documented by Figure 3.

Fig. 3 – *Sum of TARGET balances for the three NCBs with the largest claims and the three with the largest liabilities*



Source: ECB.
Notes: The three countries with the largest TARGET claims at the end of March 2017 were Germany, Luxembourg and the Netherlands, while the three with the largest TARGET liabilities were Italy, Spain and Portugal (although the ECB's liability is actually greater than that of Portugal). The vertical black lines mark the commencement of purchases under the APP and the PSPP in October 2014 and March 2015, respectively. The latest data are for March 2017.

Source: ECB (2017b, p. 22).

In Figure 3, it is depicted the evolution of the sum of TARGET balances for the three NCBs with the largest claims and the three NCBs with the largest liabilities, following the European public debt crisis beginning in 2009. Since then, we can identify three different periods, corresponding to three different phases of the evolution of TARGET balances.

The first period corresponds to the years of the public debt crisis, which begins in Greece in 2009 and culminates in mid-July 2012, when total TARGET credits of the three NCBs with the largest claims reached 1.000 €/b. The emergence of large TARGET balances during the crisis broadly reflected the distribution of non-cash central bank liquidity within the Eurosystem. This implemented its monetary policy in a decentralized manner, whereby the aggregate liquidity provision via the NCBs corresponded to the aggregate liquidity needs of the euro area banking sector.

Before the crisis, liquidity was regularly redistributed across banking sectors through the euro area interbank market. During the crisis, the liquidity needs of euro area banks increased significantly, with substantial dispersion across countries. At the same time, interbank markets dried up, which prevented the distribution of liquidity via private markets.[4] Anyway, from the start of the crisis, the Eurosystem accommodated the euro area banking sector's liquidity needs, providing ample extra liquidity through its refinancing operations. As of October 2008, the Eurosystem has fully satisfied banks' demand for central bank liquidity in fixed-rate full-allotment (FRFA) tenders subject to the availability of eligible collateral. The significant increase in the recourse to central bank funding during the crisis, and its uneven distribution across countries, were associated with a corresponding rise in TARGET claims and liabilities. These increased until mid-2012 as a result of banks in some countries facing net payment outflows in conjunction with reduced access to short-term funding markets, while banks in other countries benefited from large financial inflows (ECB 2015, p. 43).

The second period corresponds to decreasing TARGET balances, which lasts for two years, since July 2012 until July 2014. TARGET claims and liabilities stopped to increase after ECB's President, Mario Draghi, announced, at an investors' conference in London held in July 2012, that the ECB would have done "whatever it takes" to preserve the euro and fight the crisis.

[4] The crisis has not only had a strong impact on the financial situation of many European countries, but has also affected investors' and lenders' confidence and the effectiveness of the financial sector. The tensions in sovereign debt markets and within the banking sector have fed each other, creating severe funding problems for many borrowers. These developments have also led to the fragmentation of the financial system along national borders, with a retrenchment of financial activities to national domestic markets. The resulting limited or costly access to funding for many businesses and households wishing to invest has been a major obstacle to recovery across Europe. At the same time, high levels of indebtedness mean that many economic actors must reduce their financial exposure or increase their savings. Such deleveraging could also hamper recovery in the short term. The problems were particularly acute in the vulnerable euro area member states (See Moro 2016; Van Rixtel and Gasperini 2013; Al-Eyd and Berkman 2013; de Sola Perea and Nieuwenhuyze 2014; European Commission 2013).

Soon after this commitment, on September 6, 2012, the ECB approved the Outright Monetary Transactions (OMT) programme. Under this programme, the Bank promised to buy unlimited sovereign bonds of troubled countries in secondary markets, with a maturity of between one and three years. The program could be activated by the ECB only after an explicit request by the troubled country in which the latter agreed to accept the ECB's direct control and supervision of its financial and budgetary public policy. The purpose of this programme was, first, to reduce the spreads in the interest rates for public bonds of troubled countries with respect to German bonds, and, second, to safeguard the monetary policy transmission mechanism in all countries of the euro area, preserving the uniqueness of Eurozone monetary policy and ensuring the proper transmission of the policy stance to the real economy throughout the area (Altavilla et al 2014).

As shown in Figure 3, soon after Draghi's London speech, TARGET net positions stopped to increase and began to decrease towards lower levels. On December 2014, TARGET balances had fallen by half since July 2012 (Draghi 2015), and this meant that confidence was again growing in the euro system.

TARGET claims and liabilities widened again in the second half 2014, which corresponds to the beginning of a third period of newly increasing TARGET balances. This in part reflected the relatively higher participation of banks in some countries with TARGET liabilities in the Targeted Longer-Term Refinancing Operations (T-LTROs) launched in June 2014, as these operations tended to be more attractive for such counterparties. Furthermore, the expanded asset purchase programme (EAPP), usually known as the first quantitative easing (Qe1) programme, that started in March 2015, affected TARGET balances when the buying and selling parties are operating in different jurisdictions, which might explain more recent developments.

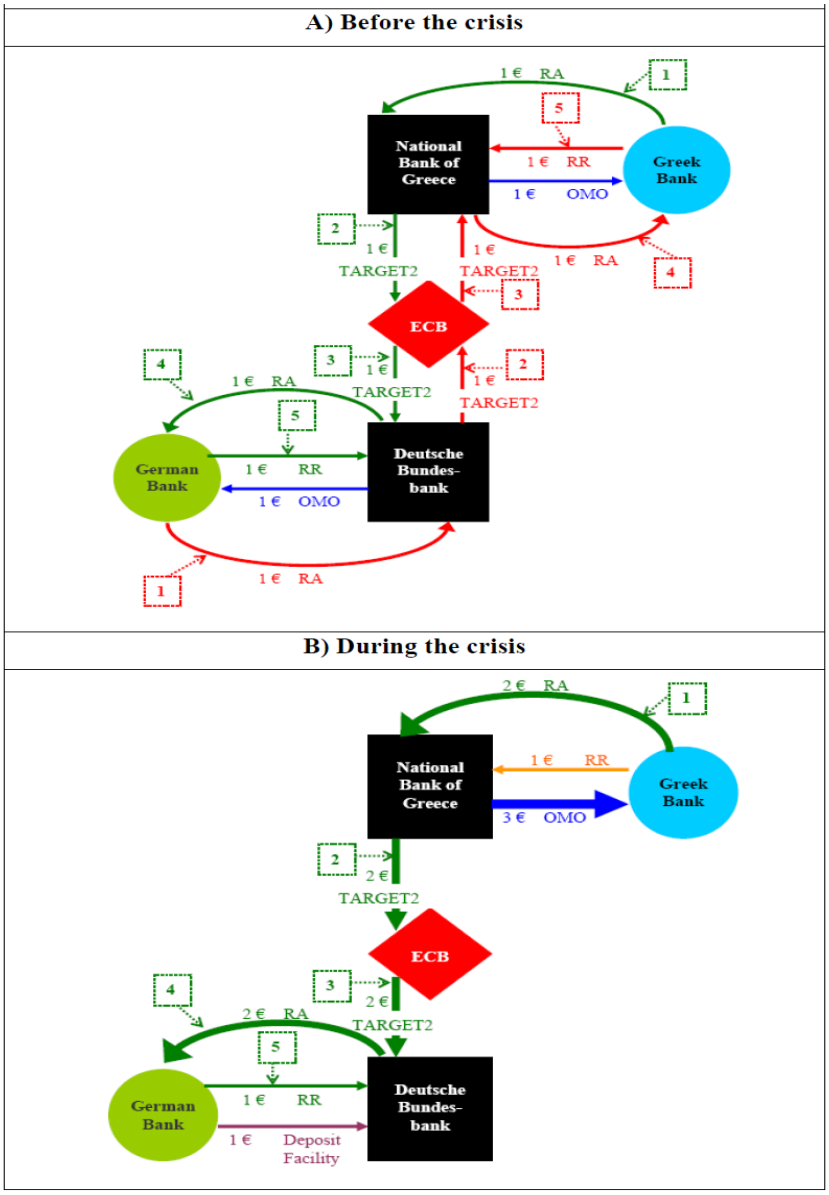
Anyway, interpreting TARGET balances within an integrated financial system like the euro area requires caution. For instance, these balances also reflect money transfers within large, cross-border banking groups where the central bank money (CBM) needed by the group is procured centrally at one NCB and then redistributed among group members via TARGET. These balances also reflect payment flows caused by remote participants. Other factors that highlight the need for caution include differing preferences between euro area countries regarding holding banknotes and access to the Eurosystem monetary policy instruments of banks outside the European economic area via subsidiaries in a country connected to TARGET. In addition, cross-country purchases of securities in the context of the EAPP may affect TARGET balances but do not indicate financial stress. Thus, TARGET balances do not, and are not meant to, provide a complete picture of the net financial flows between countries (ECB 2011, pp. 38-39; 2015, p. 44).

3 The accumulation of TARGET imbalances during the crisis

The emergence of large TARGET balances during the crisis broadly reflected the distribution of non-cash central bank liquidity within the Eurosystem. The Eurosystem implements its monetary policy in a decentralized manner, whereby the

aggregate Eurosystem liquidity provision via its NCBs corresponds to the aggregate liquidity needs of the euro area banking sector. Liquidity can be redistributed across banking sectors through the euro area interbank market.

Fig. 4 – *The circulation of central bank money*



Source: Cecioni-Ferrero (2012).

During the crisis, the liquidity needs of euro area banks increased significantly, with substantial dispersion across countries. At the same time, interbank markets dried up, which prevented the distribution of liquidity via private markets. From the start of the crisis, the Eurosystem accommodated the euro area banking sector's liquidity needs, providing ample extra liquidity through its refinancing operations (ECB 2015, p. 43).

TARGET imbalances are closely correlated to countries' recourse to Eurosystem refinancing operations through the NCB balance sheets, but they are not caused by these operations. The conventional monetary policy instruments, through which the Eurosystem provides central bank money, are the main refinancing operations (MROs), the longer-term refinancing operations (LTROs), and the marginal lending facility (ML). During the crisis, a regime of fixed-rate and full allotment (FRFA) procedure has been adopted for all refinancing operations, eligibility criteria for collateral have been widened and the maximum maturity of the LTROs has been progressively increased. Moreover, unconventional tools - the Covered Bonds Purchase Programmes (CBPP, CBPP2) and the Securities Market Programme (SMP) - were introduced to counter market impairments and to preserve the functioning of the monetary policy transmission mechanism. These exceptional measures determined a strong expansion of the Eurosystem's balance sheet.

Let us indicate with OMO (open market operations) the liquidity provided through MROs, LTROs, SMP and CBPPs, net of the liquidity absorbed through fixed term deposits. Figure 4 shows how the circulation of central bank money (CBM) between countries with positive TARGET balances and countries with negative balances occurred before and during the crisis. Without loss of generality, we consider only two countries (Germany for the first group of countries, and Greece for the second one), we assume that the net autonomous factors are zero in both countries, that the two banking sectors have the same size and that during the crisis the German banks' recourse to OMOs is zero (Cecioni and Ferrero 2012, p. 12).

Before the crisis (panel A), both banking sectors obtain €1 from their respective NCB in OMOs (blue arrow), deposit it in their reserve account, use their respective NCBs to settle payments through TARGET with the banking sector of the other country (red and green arrows 1, 2, 3 and 4) and use the reserves obtained through TARGET to satisfy the reserve requirement (red and green arrows 5). In particular, «the reserves used by the German banking sector to settle payments to Greece through TARGET (€1) gives rise to the following flows between the banks of the two countries, the respective NCBs and the ECB: (i) the German banks reduce by €1 their reserve account with the Bundesbank (red arrow 1), which, in turn, records a TARGET liability towards the ECB of the same amount (red arrow 2); (ii) conversely, the Bank of Greece records a €1 TARGET claim (red arrow 3) and transfers the same amount to the Greek banks reserve account (red arrow 4); (iii) the Greek banks use the €1 to satisfy their reserve requirement (red arrow 5); at the same time, the Greek banks use the reserve obtained in the OMO to settle transactions with their German counterparts, again involving the respective NCBs and the ECB as central counterpart (green arrows 1, 2, 3 and 4); the German banks use the reserves obtained through TARGET to satisfy their reserve requirement (green arrow 5). At

the end of the day, the flows on TARGET are balanced and no excess reserves are held either by Greek or German banks» (Cecioni and Ferrero 2012, pp. 12-13).

«With the outbreak of the crisis (panel B), the German banks scale back their transactions with their Greek counterparts. Reduction in the velocity of circulation needs to be compensated with an increase in quantities of money; this is what the ECB has been doing with the changes in the Eurosystem OMOs procedure (introduction of FRFA and enlargement of the eligible collateral). It allowed the Greek banks to increase their demand for funds in OMOs to €3 (blue arrow) and to use this liquidity to satisfy their reserve requirements (€1; orange arrow) and for payments to the German banking sector through TARGET (€2; green arrows 1, 2, 3 and 4). The German banks satisfy their reserve requirements (€1) with the funds received through TARGET (€2; green arrow 5) and keep the additional liquidity (€1) as excess reserves in the deposit facility or in term deposits (violet arrow). The Bank of Greece and the Bundesbank display, respectively, a debit and a credit position of €2 on TARGET towards the ECB» (Cecioni and Ferrero 2012, p. 13).

Three aspects need to be stressed regarding NCB balance sheets and the circulation of central bank reserves before and during the crisis. First, the changes in the circulation of central bank reserves observed during the crisis between banks of different nationality would have been observed also outside a monetary union, in an economy populated by "good" banks, with liquidity constraints not binding, and "bad" banks, with no access to wholesale markets. Also in this case the recourse of bad banks to refinancing operations would have increased, and unidirectional flows of reserves from the bad to the good banks would have occurred. In the Euro area this phenomenon is involving the banking sectors of specific countries as tensions originated in the sovereign debt market are transmitted rapidly to the banking sector (BIS 2012).

Second, the decision to adopt the FRFA procedure in refinancing operations and to enlarge the eligibility criteria for the collateral compensated for the reduction in velocity of circulation of central bank money. The rise of liquidity and the widening of the TARGET balances are a reflection of the financial market tensions. These unconventional measures have been necessary in order to counter the pressures on banks' liquidity and on financial markets caused by the massive disruption of interbank and capital markets at the peak of the crisis, which was undermining the functioning of the payment system and the uniform and smooth transmission of monetary policy.

Third, in countries not exposed to financial market tensions the reduced recourse to Eurosystem's refinancing operations reflected a smaller need for liquidity, as a consequence of the larger net inflows of central bank money from the crisis-hit countries. The fact that in some countries banks have substituted reserves obtained directly in OMOs with those obtained through TARGET has no consequences on their ability to finance the economy (Cecioni and Ferrero 2012, p. 13).

4 The critics to TARGET imbalances during the crisis

There is a field of research that criticizes the workings of TARGET balances by the ECB during the European public debt financial crisis. According to Sinn (2011, 2012a, b) and Sinn and Wollmershäuser (2011, 2012), by reducing the collateral requirements for the refinancing credits of Eurozone central banks, the ECB undercut market rates in the southern Eurozone countries. This enabled a huge asymmetric expansion of refinancing credit and money creation, compensating for stalling capital imports and outright capital flight.[5] The monetary expansion in the southern countries in turn enabled a net outflow of central bank money to other Eurozone countries by way of international payment orders for the purpose of buying goods and assets and redeeming foreign debt. Sinn and Wollmershäuser (2012) claim that this outflow is a classical balance of payments imbalance, and that its accumulated value is measured by the TARGET balances. In the surplus countries, commercial banks placed the funds they withdrew from the deficit countries in the deposit facility of their own central banks, which implied a sterilization of the inflowing liquidity. Because of this sterilization, the policy has not been inflationary, but for that same reason it can be considered as a pure fiscal credit transfer (a "stealth bailout") that resembles the official intergovernmental credit transfers (Sinn 2012b).

Sinn and Wollmershäuser (2012) also argued that this policy was defensible at the time of the Lehman crisis, but has meanwhile begun to undermine the allocative function of the capital market by offering credit at conditions that do not take idiosyncratic country risks into account and undercut the market rates. They also maintain that the TARGET debts impose risks on the rest of the Eurozone countries in proportion to their share in the ECB capital, should the deficit countries default and leave the Eurozone. In the case of a breakup of the Eurozone, the surplus countries' TARGET claims themselves would be at risk. They note, moreover, that saying that the current-account deficits were sustained with the extra refinancing credit behind the TARGET balances does not equate to claiming that current account deficits and TARGET deficits were positively correlated. On the contrary, to the extent that the ECB helped slow down the adjustment of pre-crisis current account deficits despite the reversal of private capital flows, the correlation should have been small if not zero, while the correlation between private capital imports and TARGET deficits was strongly negative. This means that the ECB's extra refinancing credit, which resulted in TARGET debt, helped provide the funds needed to finance the current account deficits. This conclusion, according to Sinn and Wollmershäuser, is confirmed by the definition of a country's budget constraint, according to which the sum of TARGET balances, private and intergovernmental international capital flows, and current account imbalances is zero. The policy implication of this interpretation of TARGET balances is that, when exchange rate adjustments are impossible, the accumulation of credit and debit positions in TARGET balances needs to be limited and imbalances of cross-border payment flows must be accommodated officially on a annual basis (Moro 2016, p. 110).

These arguments were rebutted by many authors (Whelan 2011, 2012; Buiter et al 2011; Buiter and Rahbari 2012; Bindseil and Konig 2011; Cecioni and Ferrero

[5] On this argument, see Moro (2014, 2016).

2012; Deutsche Bundesbank 2011; ECB 2011; and Banca d'Italia 2012), whose main conclusions can be summarized as follows.

The fact that for some banking systems, such as Germany's, the refinancing obtained from the Eurosystem, net of the funds placed with the reserve account and the deposit facility, is negative in no way limits the ability of the Eurosystem to control the monetary base. What is important for the transmission of monetary policy is the net liquidity provided to euro-area banks, not how it is distributed. More generally, the increase of TARGET imbalances does not interfere with the conduct of monetary policy or the objective of price stability within the area. In particular, the existence of a large positive TARGET balance in some euro-area countries does not entail a risk of inflation. The Eurosystem maintains its ability to mop up all the excess liquidity with appropriate instruments whenever changes in economic and financial conditions make this necessary (Moro 2016, p. 110; Cecioni and Ferrero 2012, pp. 7-9). Moreover, in the Eurosystem the increase of TARGET imbalances does not create any specific risk not already contained in monetary policy refinancing operations, which in any case for the NCBs is managed and mitigated by the threshold for the quality of collateral accepted in refinancing operations and the system of haircuts. Also, it is shared across the Eurosystem according to the ECB's capital key and thus independent of the credit or debit TARGET position of each single NCB (Moro 2016, p. 111).

All Eurosystem credit is given to counterparties only against eligible collateral, to protect the central bank against losses arising from the potential default of a counterparty. In principle, the list of eligible collateral is uniform throughout the euro area and encompasses a wide range of assets. The value of collateral posted by counterparties is calculated daily and haircuts are applied to safeguard against possible liquidation losses should a counterparty default. These measures are important elements of the Eurosystem's risk control framework (ECB 2013, p. 111).[6]

In conclusion, taking into account the mechanics of the transactions and the economic factors behind these imbalances, and looking at balance of payments (BOP) identities, we can argue that TARGET imbalances are correlated to the recourse to monetary policy refinancing operations, via NCBs' balance sheets, but they are not caused by them. Adopting the fixed-rate full allotment (FRFA) procedure in the refinancing operations and expanding the list of eligible collateral countered the pressures on banks' liquidity and on financial markets, which originated from the massive disruption of interbank and capital markets at the peak of the crisis and to the drying up of cross-country flows. These measures played a key role in preserving the

[6] In the event of a counterparty's default on an obligation arising from Eurosystem credit operations, the collateral is seized and sold in the market to mitigate potential losses. In general, if the anticipated cash receipts linked to the collateral are insufficient to cover the counterparty's obligation, then at the time of the default each euro area NCB records a provision equal to its share in the total amount of that expected loss. This share is determined according to the capital key prevailing at the time of the default. These provisions are reviewed and adjusted accordingly at the end of each financial year by the Governing Council of the ECB. An exception to this Eurosystem risk-sharing practice is the framework for Emergency Liquidity Assistance (ELA). The use of ELA by counterparties is subject to comprehensive and regular evaluation by the Governing Council of the ECB and is only available for solvent institutions (ECB 2013, p. 111).

functioning of the payment system and the financial stability of the euro area, with the implication that the resulting increase in central bank's reserves was accompanied by the widening of the TARGET balances (Moro 2016, p. 111).

5 The link of TARGET balances with the balance of payments

The increase in TARGET imbalances has been closely linked to balance of payments (BOP) imbalances. During the crisis, trade balance deficits were neither necessary nor sufficient conditions for the increase in TARGET imbalances. BOP financial account imbalances, instead, were a necessary condition.[7] Before the crisis, both the BOP current account and the trade balance of the countries under stress were in deficit, with the exception of Italy where they were approximately balanced. These deficits were funded mostly from foreign investments in domestic securities and in the interbank market. The capital flowing in and out of the countries was almost completely netted out, leaving small average net balances for the individual items of the BOP financial account (Cecioni and Ferrero 2012, p.16).

It is important to remember that, inside the EMU, an increase in TARGET balances for a member country is equivalent to an increase in foreign reserves, while a decrease is similar to a reduction of foreign reserves. For instance, a capital flight to abroad determines a reduction of TARGET balances (which means a smaller credit position or a greater debt position of the involved NCB with respect to the ECB), instead of a reduction in foreign reserves. This means that any movement in TARGET balances changes the net foreign position of the country.

During the crisis, the absolute size of individual items in the EMU countries' BOP increased and its composition changed significantly. The main changes were in the financial accounts. In crisis-hit countries, the reversals of foreign investments in domestic securities and of liabilities issued by domestic monetary and financial institutions (MFIs) were not matched by a similar increase in disinvestments of domestic capital previously invested abroad.[8] As a consequence, net outflows in the financial accounts of the BOP were compensated by a considerable increase in the respective NCB's TARGET liabilities with the ECB.

The timing of these changes was uneven across countries. During the global financial crisis (August 2007–April 2010) and in the first phase of the sovereign debt crisis (May 2010–June 2011), Italy's and Spain's financial accounts remained almost unchanged while those of Greece and Portugal showed the largest adjustments. In the latter countries, foreigners disinvested from the interbank and the securities markets, and some signs of deposit flight from domestic banks by residents appeared. In the second phase of the sovereign debt crisis (July 2011–May 2012), access to international financial markets by the Italian and Spanish governments and MFIs was

[7] On this argument see also Moro (2016) and Cecioni and Ferrero (2012, p. 15-19).

[8] In fact, what happened in the periphery countries was a twin crisis as described in Kaminsky and Reinhart (1999), as the financial crisis stopped the capital inflows ('sudden stop'), producing both a banking crisis (as banks could not be financed, here the causality is double, as the bad performance of banks is also responsible for the stop in inflows) and a current account crisis (as the capital inflows helped to finance the current account).

also impaired. During this period, Italy and Spain recorded net outflows from the MFIs, respectively, of 118 and 182 €/b, and net outflows of portfolio investments. In Italy, in particular, net outflows of portfolio investments largely corresponded to a willingness in non-residents not to roll over maturing sovereign debt securities and, to a lesser extent, to sales by non-residents of sovereign debt securities on the secondary market (Cecioni and Ferrero 2012, pp. 18-19).

Correspondingly, at the end of 2012, TARGET liabilities increased for Italy and Spain to approximately 255 €/b and 337 €/b, respectively (see Table 1). As to the implications for the monetary policy transmission and the risks for the balance sheet of the Eurosystem, the main conclusion was that the ECB's unconventional monetary policies contrasted the risks of segmentation in the money markets along national borders with the aim of preserving the transmission of the unique monetary policy. Any institutional change that would limit the flow of payments through TARGET would have a pro-cyclical effect, by tightening further liquidity conditions in troubled countries, and it would increase asymmetries within the euro area, undermining the existence of the unique monetary policy.

Furthermore, when evaluating the cross-country risks, it should be taken into account that member states' net external positions had not changed because of the widening of TARGET balances. Rather, private credit (debit) positions had been substituted by NCBs' credit (debit) TARGET positions vis-à-vis the ECB. Therefore, the risks that before the crisis were entirely borne on the private sector of creditor countries after the crisis were mainly shared across Euro system's NCBs.[9]

Nevertheless, in general the banking system cannot permanently rely on central bank funds for its main source of funding. In the medium term, peripheral countries cannot continue to substitute inflows of foreign private sector liquidity with TARGET liabilities. Stressed countries must return to private markets and attract funds from the rest of the area. This required the restoration of confidence in both the banking sector and in the sustainability of public finance.

Similar conclusions are reached by Whelan (2012, 2014), who first argued that the process by which TARGET liabilities were incurred does not change the net asset positions of central banks, because they either replace existing liabilities or the latter are combined with the addition of new assets. According to Whelan, rather than an external bailout, in practice the increase in TARGET balances reflected the ability of national central banks in the Eurosystem to create money to lend to banks experiencing funding problems and so, if anything, these balances reflected countries "bailing out themselves".

[9] Auer (2014) examines the extent to which changes in national TARGET balances can be statistically associated with cross-border private capital flows and current account (CA) balances. His first conclusion from this analysis is that since TARGET imbalances were caused by a sudden stop and were unlikely to grow without bounds, as Eurozone CA imbalances were currently diminishing at a rapid pace, there was no evidence that the institutional set-up of the European monetary union needed to be reformed fundamentally. A further conclusion relate to how the current system transfers risks across the currency union. Limiting or settling TARGET balances are not viable options. Rather, policies must be geared to limiting the implicit risk transfer from the private to the public sector within TARGET creditor nations, which is facilitated by the current system as it may change the incidence of euro break-up risk.

Whelan agreed that the large changes in intra-Eurosystem balances during the crisis were the result of capital flight from the periphery rather than the accumulation of current account deficits. These balances had evolved due to the monetary policy strategy agreed by the ECB's Governing Council and because of the free movement of capital guaranteed by the EU rather than because of any special features of the TARGET payments system. Indeed, he described how large changes in intra-Eurosystem balances would have occurred due to capital flight even if electronic bank transfers via TARGET had been shut down and only cash payments allowed.

The increasing risks for Germany associated with the Bundesbank's TARGET balance had been offset to a large extent by a significant decline in private German bank exposures to the periphery. Therefore, also in the extreme event of a full uncooperative euro breakup, Whelan (2012, 2014) argued that the underlying costs to German taxpayers would have been far lower than the regularly cited full value of the TARGET balance.[10]

Finally, Whelan argued that the Eurosystem should consider proposals for annual settlement of TARGET balances with settlement taking place using assets acquired during monetary policy operations. Such a settlement procedure would see TARGET balances reset to zero each year, which is a procedure somewhat similar to the annual liquidation of the 12 Federal Reserve districts balances in the US. For Whelan, while this proposal would imply a change in the Eurosystem's accounting procedures for dealing with balances owed between its members, it would not change the daily operations of the TARGET payments system nor would it change the nature of risk-sharing on monetary policy operations in place for euro member states.

In practice, both Sinn's and Whelan's proposals are not viable. While Sinn's (2011) proposal to limit TARGET balances would imply an effective end to the euro as a common currency, also Whelan's proposal for annual settlement of balances using state-owned real estate or senior rights to future tax revenue (Sinn, 2012a) would represent a significant change to current risk-sharing arrangements in relation to monetary policy operations and therefore would undermine the operation of a common monetary policy (Bindseil and König, 2011). Therefore, neither of these proposals are consistent with a continuation of the euro as a common currency.

In fact, the TARGET balances of euro area NCBs reflect the uneven distribution of central bank money (CBM), or liquidity, within the Eurosystem. As there can be no upper limit on the value of payment flows within a single currency area, there can be no upper limit on the TARGET balances of NCBs. Limiting the size of TARGET balances would be inconsistent with the concept of a currency union.

Similarly, in the United States, there are no limits on payment flows within the currency area formed by the 12 Federal Reserve districts. Interdistrict balances emerge from such payment flows, which are not more constraining than the TARGET balances are in the Eurosystem. The mechanism used in the United States to readjust interdistrict balances once a year has no influence on cross-border payment flows and

[10] This is partly because the rest of the Eurosystem had a large claim of about €200 billion on Germany relating to banknote issuance, and partly because the seigniorage powers of a post-breakup for the Bundesbank were likely to be considerably high. Whelan's conclusion is shared by De Grauwe and Ji (2012) who argued that, also in the extreme case of a euro break up, the risk of losing TARGET claims for surplus countries did not exist. A similar interpretation is also given by Buiter and Rahbari (2012).

essentially leads to the adjustment of the key used for the allocation of profits and losses of the US Federal Reserve System to the 12 district Reserve Banks (ECB 2013, pp. 112-14).[11]

To conclude on this point, it is important to stress further that in the EMU a claim in TARGET does not, in itself, reflect the relevant NCB's exposure to financial risk. The risk exposure of the central banks forming the Eurosystem relates to the monetary policy operations themselves, not to the associated TARGET balances. In general, we know that a central bank faces counterparty risk when implementing monetary policy, and the risk associated with the provision of central bank liquidity as part of the implementation of monetary policy is mitigated by a risk management framework.[12] Therefore, as long as the EMU is regularly working and considering the irreversibility of the euro, we can conclude that for a complete functioning of the EMU it is not necessary an annual liquidation of TARGET balances from debit to credit countries.

6. Insufficient responses to the crisis among euro area governments

The European crisis has highlighted that international financial integration will not automatically lead to an efficient allocation of capital. The Stability and Growth Pact (SGP) belief in the ability of free markets to efficiently allocate capital and discipline governments was certainly not warranted. What we have seen instead is that unrestricted financial integration in the euro area contributed to the development of unsustainable imbalances and bubbles. While financial markets underpriced sovereign risk in the euro's first decade, the pendulum has swung back and after 2010 gave way to excessive pessimism about the periphery countries' ability to repay their debt (Moro 2016, p. 115; Cecioni and Ferrero 2012).

The European countries facing the crisis have experienced what a large number of developing and emerging countries went through over the past decades: a period of strong yet unsustainable output growth fuelled by capital inflows comes to a halt at some point, leading to a "sudden stop" or reversal of capital flows (Moro 2016, p. 116; Kaminsky and Reinhart 1999; Reinhart and Reinhart 2009; Moro et al 2015).

[11] As a result of payment flows between the Federal Reserve districts, surpluses or deficits naturally emerge in interdistrict balances. These balances enter the Interdistrict Settlement Accounts, which are settled once a year, in April. The annual settlement is based on each Reserve Bank's average interdistrict balance during the preceding 12 months (April to March), so that it does not generally bring the balances back to zero. The settlement mainly consists in adjusting the relative shares of the 12 Reserve Banks in the securities holdings in the Open Market Account of the Federal Reserve System. See ECB (2011, p. 39).

[12] The Eurosystem's collateral framework is based on a public list of securities fulfilling the relevant eligibility criteria, together with risk control measures. In particular, securities pledged as collateral are valued on a daily basis, at market prices (where available) or using conservative valuation methods, with haircuts also being applied. The residual risk associated with the provision of central bank liquidity that may emerge despite the risk mitigation measures is, as a rule, shared among the NCBs of the Eurosystem in accordance with their respective shares in the ECB's capital and is not related to the TARGET positions of individual central banks (ECB 2011, pp. 39-40).

This pattern, which has often been repeated in the modern era of global finance, and now once more in Europe, should give pause to seriously reconsider the costs and benefits of international financial integration (Moro 2016, p. 116; Lama and Rabanal 2012). Fortunately, the Great Crisis have not only given impetus to fresh academic thinking on this matter, but also led the IMF to reconsider its position on capital account management and regulation of international capital flows (IMF 2012; Ostry et al 2010, 2011). However, even the Fund was unprepared for the possibility of balance of payments (BOP) crises in the euro area. In their surveillance work during the period 1999-2009, IMF staff never raised the possibility of major sovereign or BOP crises in the euro area despite their intimate knowledge of crises elsewhere and potential parallels with the euro area that should have drawn their attention, in particular consumption booms, real exchange rate appreciation and large current account deficits, which are typical in countries before a BOP crisis (Moro 2016, p. 116; Pisani-Ferry et al 2011).

«We also must recognize that, if the Great Crisis became particularly serious in the euro area, it is also because of the design flaws in economic and monetary European Union (EU). The euro was built on an imperfect institutional framework, envisaged by the 1992 Maastricht Treaty and the 1997 Stability and Growth Pact (SGP). The Commission and the ECB were also unprepared. What was not well understood was that euro area countries could face BOP problems like emerging countries. A BOP crisis happens when private markets stop financing viable borrowers because of the country they belong to. Because it is within the confines of its jurisdiction, the State, as the ultimate insurer of private agents, that risks incurred by households, companies and banks tend to concentrate. Banks with assets that are not diversified internationally also concentrate risks resulting from the potential insolvency of private agents as well as of the sovereign» (Moro 2016, p. 116; Pisani-Ferri et al 2013).

«As they rely on the state as their backstop, they transfer the risk to it. Finally, because in the euro area the state issues debt in a currency over which it has no control (De Grauwe 2011), it is vulnerable to liquidity crises. This perspective in turn weakens private agents that hold large quantities of government paper. This web of interdependence between the state, banks and non-financial agents may lead markets to price country risk and, in the extreme, to shun all agents located in a particular country, irrespective of their individual financial health.[13] After the Lehman Brothers collapse, financial markets reassessed their exposure to euro-area countries that had accumulated large current account deficits and net external investment positions before the financial crisis. They concluded that country risk existed in a monetary union and suddenly stopped the capital flows to those countries. The result was extreme pressure on the most vulnerable euro area countries» (Moro 2016, p. 116-7; Pisani-Ferri et al 2013).

«But a classical currency crisis, which would have meant the partial disintegration of the monetary union, was avoided thanks to the provision of ample liquidity by the Eurosystem (reflected in TARGET balances). The private sector

[13] Allen and Moessner (2012) examine the liquidity effects of the euro area sovereign debt crisis, including its effects on euro area banks as a group, on intra-euro area financial flows, on the supply of and demand for collateral, and on international liquidity.

could and did lose access to private funding. Yet, this did not lead to a lack in funding because the Eurosystem through its liquidity operations replaced outflowing liquidity. The private capital flow reversals led to acute liquidity shortages in the banking systems of the countries concerned. Therefore, the ECB provided liquidity to the banks of crisis hit countries instead. It did so in the framework of its Long-Term Refinancing Operations (LTRO) as well as the Main Refinancing Operation (MRO). This is in contrast to typical currency crises, in which national central banks cannot replace the withdrawal of foreign-currency financing, which then leads to a crisis» (Moro 2016, p. 116-7; Pisani-Ferry and Wolff 2012).

«Nonetheless, sovereigns in affected countries did face a payment crisis. Because they had lost access to private markets or at least because they were facing escalating borrowing costs, governments in Greece, Ireland and Portugal had no choice but to seek foreign assistance to fill their financing gap» (Moro 2016, p. 117). As the sovereign debt crisis emerged in these countries, starting in spring 2010, the segmentation in funding markets for banks became more marked along national borders.

The central bank intermediation allowed the banking systems in those countries to withstand the withdrawal of private capital and the reversal of cross-border capital flows. The recourse to central bank funding is therefore closely linked to the emergence of significant TARGET liabilities for countries most affected by the crisis and, on aggregate, at the euro area level.

The sovereign debt crisis and resulting bank funding market segmentation also led to a flow of capital into the more resilient countries, resulting in significant amounts being directed towards the central banks' liquidity absorbing facilities, for example via use of the deposit facility or via counterparties accruing amounts in excess of their reserve requirements in their current accounts at the central bank. In particular, the repatriation of previous investments and the lack of renewed lending to banks in crisis-hit countries led to significant net payment inflows, a concurrent increase in the TARGET claims of the NCBs in the more resilient countries and an increase in liquidity in the banking systems of those countries.

In the second half of 2011 and the first half of 2012 the sharp increase in TARGET liabilities and claims was also due to concerns about the integrity of the monetary union. A number of banks from resilient countries had decided to replace head office funding for subsidiaries in financially stressed jurisdictions with local funding. This meant that borrowing from the Eurosystem replaced inter-group funding from resilient countries. This behavior was in some cases encouraged by national banking regulators aiming to safeguard their domestic banking system (ECB 2013b, pp. 107-8).

7. The accumulation of TARGET imbalances during the Qe period

The crisis has caused significant disruptions to the functioning of the banking system and the financial markets within the euro area. The process of financial integration and convergence towards a single financial market that had been under way for a number of years was abruptly halted by the crisis, triggering a reversal of the

integration process, which was then reinforced by the re-emergence of country risks within the euro area and by the related and perverse bank-sovereign feedback loop.

European leaders agreed during the 29 June 2012 summit to build a banking union that would include a single banking supervisor housed within the ECB, a common deposit insurance for households and a common bank resolution rule. However, the lack of progress on the banking union and doubts about the financial strength of the banks in crisis-hit countries were hindering cross-border lending. So, the fragmentation of the financial system along national borders and the retrenchment of financial activities to national domestic markets persisted during 2013 and the first half of 2014.[14] Therefore, to definitely contrast the crisis, in the second half of 2014 the ECB decided to promote a stronger unconventional quantitative easing (Qe) monetary policy.

As a consequence of this decision, beginning on July 2014, TARGET net claims and liabilities stopped to converge, and began to diverge again (see Figure 3). Anyway, these new divergences were not correlated with unbalances in the foreign current accounts. What was really happening since the midst of 2014 was very different from what happened in 2012, and did not reflect a "flight to safety" as it did back then. In fact, the new divergence was a consequence of the announced ECB's asset purchase program (APP), usually known as the quantitative easing (Qe) programme, which was announced in June 2014, as well as of the following current very low levels of policy interest rates set by the bank: the interest rate on the MROs was fixed at 0.05%, while the interest rates on the marginal rate facility and the deposit facility were fixed at 0.3% and -0.2%, respectively. For the first time in the euro area one of the ECB's key policy interest rates was set negative.[15]

This set of unconventional monetary policy measures is commonly known as the first phase of ECB's quantitative easing monetary policy (Qe1). On March 2015, the Eurosystem expanded its existing purchase programmes for asset-backed securities (ABSPP) and covered bonds (CBPP3), that had been up and running since the autumn of 2014, through the addition of a public sector purchase programme (PSPP). The purpose of this new programme was to purchase bonds issued by euro-area central governments as well as by agencies and supranational European institutions. The total purchase volume of the expanded asset purchase programme (EAPP) amounted to roughly 60 €/b per month in 2015, with the PSPP thus far accounting for the bulk of acquisitions at around 85% of this total.

Further, on March 2016, the ECB started a second phase of quantitative easing (Qe2). The interest rate on the MROs of the Eurosystem was decreased to zero, while the interest rate on the marginal lending facility was decreased to 0.25%, and the interest rate on the deposit facility, after an intermediate decrease to -0.3% in October 2015, was definitely decreased to -0.4%. The monthly purchases under the EAPP was expanded from 60 to 80 €/b, and investment grade euro-denominated

[14] The financial crisis also led to a systematic divergence in credit spreads for financial firms across national boundaries. This divergence in cross-country credit risk increased further as the European debt crisis has unfolded since 2010. Since that time, credit spreads for both non-financial and financial firms increasingly reflected national rather than euro area financial conditions (Gilchrist and Mojon 2014).

[15] On the implications of setting one of the ECB's key policy rates to negative territory, see Demiralp et al (2017).

bonds issued by non-bank corporations established in the euro area were included in the list of assets that were eligible for regular purchases.

A new series of four targeted long-term refinancing operations (T-LTRO II), each with a maturity of four years, was launched, starting in June 2016. Borrowing conditions in these operations could be as low as the interest rate on the deposit facility (-0.4%), which means that banks who borrow from the ECB to finance new investments of firms receive a premium of 0.4% instead of paying an interest rate.[16]

At the December 2016 meeting, the ECB's Governing Council decided to strengthen the convergence of inflation rates towards 2% over the medium term. For this to happen, financing conditions would have to remain supportive. Therefore, the bank decided to safeguard the amount of monetary easing for the period ahead, and to extend the asset purchase programme beyond March 2017, with the intention of conducting purchases until the end of December 2017 or beyond, if necessary.

The ECB continued to purchase assets at a monthly pace of 80 €/b until March 2017. Starting from April 2017, the net asset purchases dropped again to a monthly pace of 60 €/b, further reduced to 30 €/b in January 2018. Anyway, in June 2017 the ECB decided to maintain unchanged interest rates on MROs (0%), marginal lending facility (0.25%) and deposit facility (-0.4%) even after the conclusion of the EAPP. Finally, at the March 2018 meeting, the ECB's Governing Council decided to go on buying 30 €/b monthly at least until September 2018, and to maintain unchanged official key interest rates at the levels mentioned above, if necessary for a long time even after that date.

Therefore, central bank money (CBM) provision via the various purchase programmes has very much elevated the amount of excess liquidity in the Eurosystem. At the same time, the total sum of TARGET claims and liabilities in the Eurosystem has sharply risen again up to the levels reached on mid-2012 during the more acute phase of the financial crisis commented in section 3. At the end of January 2018, the total of TARGET positions of the three major credit countries (DE, LU, and FI) was 1,191.4 €/b, while the total of TARGET positions of the three major debit countries (IT, ES, and PT) was -915.3 €/b (see Figure 3).

Anyway, in contrast to previous periods of rising TARGET balances, changes in the TARGET balances immediately after EAPP purchases are a direct consequence of the implementation of the above mentioned unconventional monetary policy decisions, rather than a symptom of renewed stress in financial markets. The increases in TARGET balances from mid-2011 to mid-2012 were rooted in the market stress and fragmentation that resulted from the financial and sovereign debt crises. As banks lost access to market-based funding, they replaced private sources of funding with central bank liquidity obtained from their NCBs through repurchase operations.

Those repurchase operations had no immediate impact on TARGET balances, as they were settled domestically, but the subsequent redistribution of liquidity, influenced by market stress and fragmentation, did have an impact. The link between the implementation of monetary policy decisions and TARGET balances was

[16] Alvarez et al (2017) provide a comprehensive overview of the use of the Eurosystem's monetary policy instruments and the operational framework from the third quarter of 2012 until the first quarter of 2016.

therefore indirect. With the EAPP, however, there is a direct link, since central banks are initiating cross-border payments in order to pay for securities purchased under the various programmes. The ensuing upward trend in TARGET balances largely reflects the settlement of these cross-border transactions by central banks and, therefore, does not signal renewed stress in financial markets (ECB 2016, pp. 3-4). It is therefore reasonable to assume that the recorded increase in the TARGET balances in this recent period (since the second half 2014 until the first months 2018) is connected with the ECB's quantitative easing policy correlated to the EAPP (ECB 2016, pp. 3-4; Eisenschmidt et al 2017).

There are some technical reasons why this is so. In fact, almost 80% of the bonds that are being purchased by NCBs within this programme are sold by parties that do not reside in the same place as the purchasing NCB, and roughly half of them accessed the TARGET system via the Bundesbank. It seems that the bulk of the sellers of bonds to the NCBs are clients of German banks, or banks in non-euro countries that are using German banks as correspondent banks.[17] So, German banks settle the bonds for their clients, credit the account of their clients, and their liquidity balance goes up. Because liquidity is more than those banks need, most of them have no borrowing needs, and any excess liquidity is hardly loaned to other banks (Martínez Pagés 2016).

Under conditions of ample liquidity, those few banks that need liquidity have two options: 1) borrow in the interbank overnight market for liquidity, where the interest rate is negative (around -0.3% in the first months of 2018), or 2) borrow at weekly ECB auctions at 0% interest rate. What happens is that banks in the "periphery" would only be willing to borrow from German banks with ample liquidity at a cost that is negative. Banks in the "core", however, still perceive a counterparty risk on banks in the periphery, although much less dramatic than in 2011-12. And as long as their lending premium is high enough to make borrowing from the Eurosystem a more convenient option, banks in the "periphery" borrow directly from the Eurosystem. Therefore, the result is that positive TARGET balances in "core" countries go up, while negative TARGET balances in the "periphery" go down.

In conclusion, the Qe liquidity largely goes from banks located in the periphery to banks located in the core countries, and sits there. This also means that core banks are the ones most penalized by negative rates.

[17] See Deutsche Bundesbank (2016, pp. 53-56), Eisenschmidt et al (2017), and Terzi (2015). According to Mario Draghi, «it is true that TARGET balances have gone up, but they started going up since the beginning of our asset purchase programme, and there are some technical reasons why this is so, namely almost 80% of the bonds that are being purchased by national central banks within this programme are sold by parties that do not reside in the same place as the purchasing national central bank, and roughly half of them accessed the TARGET system via the Bundesbank. And so naturally you see TARGET balances going up in Germany. But there is also another reason, namely that the purchasing of assets induces portfolio rebalancing effects on the part of the sellers of these assets, and in recent times, some of them have sold bonds and are buying other securities, not the domestic securities but other securities, or other forms of investment. So we see the TARGET balances going up, but I would not say that this has something to do with the experience we had in 2012. The two phenomena are inherently different, there is no crisis of trust in the euro at the present time that would justify such increase in target balances» (Committee on Economic and Monetary Affairs 2016, p. 14).

8. Conclusions

Let us summarize how the liquidity is created and destroyed by the NCBs in the euro area as follows. The liquidity, or central bank money (CBM), is created by NCBs whenever they finance the banking system with refinancing operations (MROs, LTROs, and T-LTROs) in a temporary exchange with securities, or when they definitively buy public or private bonds inside the EAPP. For a single country, TARGET balances reflect the sum of the BOP's current account and the capital account, plus the financial account. The CBM so created increases the total amount of money in circulation inside the EMU.

Whenever the CBM comes back to the NCB that issued it (at the end of the temporary refinancing operations, or when the NCB sells the bonds previously purchased inside the EAPP), it disappears from the NCB's balance sheet. The CBM can be created only in exchange of a financial activity (loans, bonds, securities, etc.), so the total amount of CBM must be backed by a corresponding amount of financial activities. When these activities will be repaid (the commercial bank repays the loan to the NCB, or the Treasury reimburses the public bond), the CBM returns to the NCB that created it and disappears, in the sense that it is cut off from the balance sheet of this NCB.

Inside the EMU, an increase in TARGET balances for a member country is equivalent to an increase in foreign reserves, while a decrease is similar to a reduction of foreign reserves. For instance, a capital flight to abroad determines a reduction of TARGET balances (which means a smaller credit position or a greater debt position of the involved NCB with respect to the ECB), instead of a reduction in foreign reserves. This means that TARGET balances inside the Eurosystem have the same role as foreign reserves, and any movement in TARGET balances changes the net foreign position of the country in the same way as foreign reserves.

When a capital flight determines an increase of the TARGET debt position of a country, its NCB destroys a corresponding amount of CBM, while at the same time the NCB of the country that receives the foreign capital creates a corresponding amount of CBM. So, the CBM that is destroyed in the first country is exactly re-created in the country where the capital flight is moving to. Therefore, the liquidity (CBM) created by countries with negative TARGET balances (by MROs, LTROs, and T-LTROs, or by the purchase of bonds inside the EAPP) naturally accrue to countries with positive TARGET balances (as a consequence of a surplus in the foreign current account, or of a net import of capital, or of a net selling of bonds inside the EAPP). To some extent, TARGET balances constitute a substitute provided by the ECB for what would normally be private claims among commercial banks, with associated implications in terms of risk shifting from the private sector to the balance sheet of the Eurosystem.

Anyway, inside the EMU, a claim in TARGET does not, in itself, reflect the relevant NCB's exposure to financial risk. The risk exposure of the central banks forming the Eurosystem relates to the monetary policy operations themselves, not to the associated TARGET balances. These balances can increase without limits and their size does not pose additional risks to the Eurosystem or to the NCBs, given the irreversibility of the euro and the integrity of the Eurosystem. Therefore, any measures designed to contain the size of TARGET balances are not allowed inside the

EMU, because they would imply the introduction of other policy objectives alongside the Eurosystem's primary objective of price stability (ECB 2013, p. 112). And this would imply a change of Maastricht Treaty and the ECB's Statute.

In conclusion, TARGET balances will naturally go on increasing as long as the EAPP will continue, and will decrease gradually after the expected tapering policy will be activated, that is when the ECB will stop the EAPP and, maybe, begin to sell the bonds purchased inside the Qe program, re-absorbing the excess of liquidity at the European level. The liquidity will also be re-absorbed any time a bond held by a NCB is reimbursed by the Treasury on maturity.

Now, credit countries banks have an excess of liquidity, which they deposit in the deposit facility of the ECB, paying a negative interest rate. They do not need further liquidity, just because their liquidity is in excess. Therefore, as long as the EMU is regularly working, and due to the irreversibility of the euro, it is not necessary an annual settlement of TARGET balances from debit to credit countries, as proposed by Whelan.[18] The only case when a member country will be required to settle its TARGET debt is if this country decides to quit the EMU. According to the ECB's President, Mario Draghi, «If a country were to leave the Eurosystem, its national central bank's claims on or liabilities to the ECB would need to be settled in full» (Draghi 2017).[19] But he did not specify how this settlement should be done.

In fact, the only way for an EMU's member country to settle its negative TARGET balances is to sell the bonds that back the liquidity created by its NCB and, in so doing, cancel the total of CBM that it issued until the moment this country is leaving the EMU. In doing so some losses could arise because of a possible devaluation of the guaranteeing bonds, which in turn should be redistributed among the NCBs of all EMU member States.[20] But this scenario is only hypothetical, because of the fact that it is not contemplated by the Maastricht Treaty, nor is it by the ECB's Statute, both of which state the irreversibility of the euro and of the EMU.

Anyway, also excluding this hypothetical extreme breaking scenario, too much big TARGET balances[21] are a manifestation of underlying tensions among member countries in the EMU, highlighting a situation of prevalent one-way direction of the liquidity (CBM) from NCBs with TARGET liabilities to NCBs with TARGET claims. This situation suggests the need for macroeconomic imbalances[22] to be

[18] See the conclusions of the previous Section 5.

[19] This was the answer by Draghi given in response to a question posed by two members of the European Parliament, Marco Zanni and Marco Valli, who asked to ECB's President how the TARGET balances «would, technically, be settled, especially those in net debtor countries, should a Member State participating in the system decide to quit the single currency?». The complete answer by President Mario Draghi to the two members of the EP is available via http://www.europarl.europa.eu/sides/getDoc.do?type=COMPARL&reference=PE-595.479&format=PDF&language=EN&secondRef=01

[20] See footnotes 6 and 12 on this point. Anyway, it is not clear how much losses in this exceptional case should be shared by all member States according to the ECB's capital key, or most of them will be attributed only to the quitting country, as it happens for losses due to the Emergency Liquidity Assistance (ELA) quoted in footnote 6.

[21] The biggest net positions at the end of 2017 are: +906.9 €/b of credit position for Germany, -439 €/b of debit position for Italy, and -373.7 €/b of debit position for Spain. See Table 1.

[22] One of the major macroeconomic imbalances refers to public debt sustainability in the medium and long term, which has become a subject of public debate among EMU's countries.

addressed, trust in banking systems to be re-established, and the institutional foundations of EMU to be strengthened. The EMU continues to suffer from critical weaknesses that are the result of a poorly designed fiscal and financial architecture, but its members are divided on how to address this problem. Maintaining the status quo or setting for marginal changes would be a serious mistake, because big TARGET unbalances are a clear manifestation of these weaknesses, including financial fragility, suboptimal conditions for long-term growth, and deep economic and political divisions (Bénassy-Quéré et al, 2018a). At the root of the problem there is a correct balance to reconcile risk sharing and market discipline among euro area member States in the euro area.[23] But this is a different story from interpreting EMU's TARGET balances, which deserves a new article.

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The growth of public debt over GDP ratio in some countries (at the end of 2017, it was over 180 percent in Greece, 131 in Italy, 100 in Spain, and 97 in France) poses many treats to this sustainability and to the possibility of maintaining sound public balances in these countries. On this argument, see ECB (2012) and Teică (2012).

[23] Bénassy-Quéré et al (2018a) summarize this problem as follows: «The 'doom loop' between banks and sovereigns continues to pose a major threat to individual member states and the euro area as a whole. An incomplete banking union and fragmented capital markets prevent the euro area from reaping the full benefits of monetary integration and from achieving better risk sharing through market mechanisms. Fiscal rules are non-transparent, pro-cyclical, and divisive, and have not been very effective in reducing public debts. The flaws in the euro area's fiscal architecture have overburdened the ECB and increasingly given rise to political tensions. The euro area's inability to deal with insolvent countries other than through crisis loans conditioned on harsh fiscal adjustment has fuelled nationalist and populist movements in both debtor and creditor countries. The resulting loss of trust may eventually threaten not just the euro, but the entire European project». A comprehensive document by the same Authors proposes to address to Eurosystem's member countries a package of the following six main elements: first, breaking the vicious circle between banks and sovereigns through the coordinated introduction of sovereign concentration charges for banks and a common deposit insurance; second, replacing the current system of fiscal rules focused on the 'structural deficit' by a simple expenditure rule guided by a long-term debt-reduction target; third, allowing orderly sovereign debt restructuring of countries whose solvency cannot be restored through conditional crisis lending – and hence a more credible no bailout rule; fourth, creating a euro area fund, financed by national contributions, that helps participating member countries absorb large economic disruptions; fifth, an initiative to create a synthetic euro area safe asset that would offer investors an alternative to national sovereign bonds; and sixth, a reform of the euro area institutional architecture (Bénassy-Quéré et al, 2018b).

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