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The Eurosystem's asset purchase programme and TARGET balances

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Abstract

TARGET balances have risen during the period of the Eurosystem's asset purchase programme (APP). The APP gives rise to substantial cross-border flows of reserves at the time of asset purchases and beyond, reflecting the interaction of decentralised monetary policy implementation and the integrated euro area financial structure. This financial structure, in which only a handful of locations act as gateways between the euro area and the rest of the world, leads to rising TARGET balances at the time of APP purchases and the persistence of TARGET balances in the context of subsequent portfolio rebalancing. TARGET balances per se are not necessarily an indicator of stress in bank funding markets, financial market fragmentation or unsustainable balance of payments developments.

Keywords: TARGET2, financial structure, asset purchase programme, excess liquidity, balance of payments

JEL classification: E58, G02, F32

Non-technical summary

TARGET balances are intra-Eurosystem assets and liabilities on the balance sheets of central banks resulting from net cross-border payments in the form of central bank reserves via the TARGET2 payment system. TARGET2 is the real-time gross settlement system (RTGS) owned and operated by the Eurosystem and it settles euro-denominated payments continuously on an individual transaction-by-transaction basis without netting.

Intra-system balances are an inherent feature of any decentralised monetary union (i.e. one in which banks of the monetary area have their central bank accounts spread across several central banks that together constitute the monetary union's system of central banks). The strong increase in excess liquidity during the period of the Eurosystem's asset purchase programme (APP) has coincided with a renewed increase in TARGET balances.

Increasing excess liquidity is a prerequisite for large increases in TARGET balances, which essentially emerge when the amount of reserves created by one national central bank (NCB) does not equate with the amount of reserves deposited at that NCB. Given the decentralised implementation of monetary policy in the euro area, each Eurosystem central bank creates reserves on its own balance sheet in order to fund purchases under the APP. In the context of an integrated financial market, however, these reserves frequently flow across borders.

APP implementation and subsequent portfolio rebalancing result in a concentration of reserve flows to particular locations that act as financial gateways between the euro area and the rest of the world. The result is an increase (decrease) in the TARGET claims (liabilities) of countries that host such gateways and vice versa.

Although the total TARGET balance during the APP period has come to surpass the level reached during the sovereign debt crisis, the drivers and the interpretation of the increase in TARGET balances differ notably. Excess liquidity creation today is mainly supply-driven in the context of the APP and is therefore independent of conditions in bank funding markets. By contrast, the increase in excess liquidity during the previous episode of rising TARGET balances in 2011-12 was almost entirely demand-driven, as banks opted to substitute market-based funding with central bank credit due to deteriorating conditions in bank funding markets and fragmentation.

The current increase in TARGET balances largely reflects the cross-border payments that arise in the context of the APP in an integrated euro area financial market and is not indicative of increased financial market stress, rising fragmentation or unsustainable balance of payments developments.

1 Introduction

At the height of the sovereign debt crisis that hit the euro area in 2011-12, a relatively arcane accounting topic started to gain prominence, entering the public debate: TARGET balances. A lively controversy around the interpretation and the economic consequences of TARGET balances emerged. On one side of the debate stood those who argued that TARGET balances were a stealth bail-out mechanism (e.g. Sinn, 2012; Sinn and Wollmershäuser, 2012), designed to support weak sovereigns and banks. On the other were those who argued that TARGET balances had to be seen as a side product of unconventional monetary policy measures that accommodated the increased demand for central bank intermediation in the face of severe financial market stress (Bindseil and König, 2011; Cour-Thimann, 2013b; Whelan, 2014), emphasising that TARGET balances are part and parcel of a monetary union with decentralised monetary policy implementation. Common to both sides of the debate was the clear characterisation of TARGET balances as a symptom of financial market stress. When stress levels subsided, TARGET balances started to decline and so did academic and public interest in the topic.

In June 2014 the ECB embarked on a wave of additional monetary policy measures aimed at fending off deflationary pressures that threatened the outlook for price stability. Later in 2014 the Eurosystem started to conduct asset purchases on a relatively small scale under the third covered bond purchase programme and the asset-backed securities purchase programme (CBBP3 and ABSPP). In March 2015 the Eurosystem also began purchasing euro area government bonds under the public sector purchase programme (PSPP), significantly expanding the scale of its APP. Simultaneously, TARGET balances started to rise again. With the re-emergence of TARGET balances, academic and public interest in the topic returned. The key economic questions asked in recent contributions to the subject revolve around the interpretation of TARGET balances in the present day. Do they continue to indicate financial market stress like they did in 2011-12? What are the main driving factors of TARGET balances? What is their relationship with the balance of payments?

This paper aims to shed light on these questions. It shows that the recent build-up in TARGET balances is closely associated with the decentralised implementation of the APP in conjunction with the financial structure of the euro area and the concentration of international banking activities in particular financial centres. Importantly, the re-emergence of TARGET balances during the period of the APP does not signal increases in financial market stress or fragmentation, nor does it signal unsustainable balance of payments developments.

2 TARGET balances: origin, characteristics and accounting

TARGET balances are intra-Eurosystem claims and liabilities that arise from net cross-border payments in the form of central bank reserves (henceforth "reserves") via the TARGET2 payment system.[1] Reserves are the euro that Eurosystem counterparties (henceforth "banks") hold in their accounts with their respective NCB. TARGET2 is the financial market infrastructure that settles on these accounts euro-denominated payments related to monetary policy operations, interbank payments, payments by banks on behalf of clients and transactions related to the settlement of other financial market infrastructures like payment systems, securities settlement systems or central counterparties (i.e. ancillary systems[2]).

TARGET2 is integral to the monetary union as it ensures that the reserves of banks held with the Eurosystem are fully fungible across euro area member countries. As noted by Bindseil and König (2012, p. 138), the payment system "is the backbone of the operational side of the currency union" and is necessary for its functioning and stability. Intra-system balances are actually an inherent feature of any decentralised monetary union, i.e. one in which banks of the monetary area have their central bank accounts spread across several central banks that together constitute the monetary union's system of central banks.[3]

TARGET balances can be viewed through the lens of accounting relationships since they are an item on either the assets or the liabilities side of the balance sheets of the central banks that participate in TARGET2, thus connecting these balance sheets with one another. Consequently, changes in TARGET balances of euro area countries are also reflected in the balance of payments, which records all transactions between residents of a country and the rest of the world.

2.1 TARGET balances and access to TARGET2

TARGET, the first-generation RTGS owned and operated by the Eurosystem, went live on 4 January 1999 with three main objectives:

- to serve the needs of the Eurosystem's monetary policy;
- to increase the efficiency of intra-European cross-border payments; and

1 "TARGET" stands for "Trans-European Automated Real-time Gross settlement Express Transfer system".

2 An ancillary system is one in which payments or securities are exchanged and/or cleared, while the ensuing monetary obligations are settled in another system (e.g. TARGET2). See also ECB (2009a).

3 A prominent example is the United States, where the Federal Reserve System also uses intra-system balances to account for reserve flows across districts. See Section 2.3 for a detailed comparison of intra-system balances in the Federal Reserve System and the Eurosystem.

- to provide a reliable and safe mechanism for the settlement of cross-border payments.[4]

TARGET2 is the second-generation RTGS, fully replacing the first generation of TARGET on 19 May 2008. While TARGET2 ushered in a technical consolidation of the payment system, enhanced service harmonisation and contributed to further integration of euro area financial markets, the relationships remained between counterparties and their local central banks.[5] The balances accumulated by central banks in both generations are referred to as "TARGET" balances.[6]

TARGET balances result from net cross-border payments between the central banks that participate in TARGET2.[7] All of the Eurosystem's central banks (i.e. the ECB and the euro area NCBs) participate in TARGET2 alongside the non-euro area NCBs of most other EU Member States.[8] As an interbank system, TARGET2 participation is open to banks established in the European Economic Area (EEA), as well as banks established outside the EEA, provided that they act through a branch established in the EEA. Some other entities may also be accepted as participants in the system (e.g. entities operating ancillary systems).[9]

Banks that are eligible for direct participation typically open a TARGET2 account with their local NCB.[10] In cases where the local central bank does not participate in TARGET2 (e.g. in the United Kingdom (UK)), a bank chooses a participating NCB at which to open a TARGET2 account. Alternatively, banks eligible for direct participation can enter into a contract to send and receive TARGET2 payments via another direct participant (i.e. indirect participation).

Banks established outside the EEA cannot participate in TARGET2 unless they act through a branch established in the EEA. These banks, as well as direct participants' branches outside the EEA, can send and receive payments via a direct participant. A bank that directly participates in TARGET2 and which makes and receives payments in TARGET2 on behalf of another entity (e.g. a bank based in the UK) acts as a correspondent bank for that entity with respect to TARGET2. Correspondent banks are usually financial institutions with a global reach and tend to be based in financial centres.[11]

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4 See ECB (2001).

5 See ECB (2009b) and Kokkola (ed., 2010).

6 References to the payment system, however, are specific to TARGET or TARGET2.

7 For example, a payment from an account at the Deutsche Bundesbank to an account at De Nederlandsche Bank constitutes a euro cross-border payment. A payment from the ECB to an account held at the Deutsche Bundesbank also constitutes a cross-border payment from the perspective of TARGET2 even though both are located in Germany.

8 These include Bulgaria, Croatia, Denmark, Poland and Romania. In contrast to Eurosystem central banks, non-euro area NCBs that participate in TARGET2 are required to maintain a positive (end-of-day) balance.

9 A detailed discussion of the TARGET2 participation guidelines is outside the scope of this paper. For more complete information, see Decision of the European Central Bank ECB/2007/7.

10 Credit institutions cannot open TARGET2 accounts at the ECB; the ECB may only accept central banks and European international organisations as customers.

11 In 2016, TARGET2 had 1,076 direct participants and 701 indirect ones, as well as 49,126 banks accessing TARGET2 via correspondent banks. See ECB (2017a).

After TARGET became active in 1999, a broad and open access to the system was pursued and this practice has also been followed in TARGET2. Broad access facilitates banks' participation in Eurosystem operations, as well as banks' benefiting from settlement in reserves. In addition, the participation of ancillary systems facilitates final settlement in reserves and access to a large number of direct participants.[12] As many ancillary systems serve the whole euro area, they can also generate cross-border transactions and thus contribute to the distribution of central bank liquidity.[13]

2.2 TARGET balances and the central bank balance sheet

Throughout the business day, participants in TARGET2 make both domestic and cross-border payments for a variety of purposes. In 2016 TARGET2 settled, on average, 342,008 transactions and €1,735 billion each day. Of such payments, approximately 38% in volume and 45% in value were cross-border, which corresponds to an average daily amount of €776 billion.

While the individual payments settled in TARGET2 are final and irrevocable, at the close of each business day, the position derived from all cross-border payments that were sent from accounts at one central bank to accounts at all other participating central banks are, in central bank accounting terms, netted out with the position derived from all payments that this central bank had received from all other participating central banks. This leaves each central bank with either a net inflow, a levelled in- and outflow or a net outflow. The daily net position is then aggregated into the accumulated net positions since the start of TARGET. The accumulated position for each central bank can either be a positive balance (i.e. a TARGET claim), a balance of zero or a negative balance (i.e. a TARGET liability) vis-à-vis the ECB. The total TARGET balance is the sum of all TARGET claims, which according to accounting principles equals the sum of all TARGET liabilities: the sum of claims and liabilities in the system is zero. Compared with the gross cross-border value of payments, the total TARGET balances are rather small. For example, the total cumulated TARGET balance since the start of TARGET2 stood at €1,068 billion at the end of 2016, while in comparison TARGET2 settled €18,489 billion of cross-border payments in December 2016 alone. The multi-directionality of TARGET2 cross-border payments is a consequence of the high level of financial integration in the euro area.

Viewing TARGET balances from the perspective of NCBs' balance sheets facilitates an understanding of the mechanics of these balances as well as their dynamics. **Figure 1** shows a stylised NCB balance sheet. In addition to reserves, *net autonomous factors* are among the main items on the liabilities side. Autonomous factors are items on the central bank balance sheet which are unrelated to monetary

12 At the end of 2016 a total of 80 ancillary systems were settling in TARGET2. See ECB (2017a).

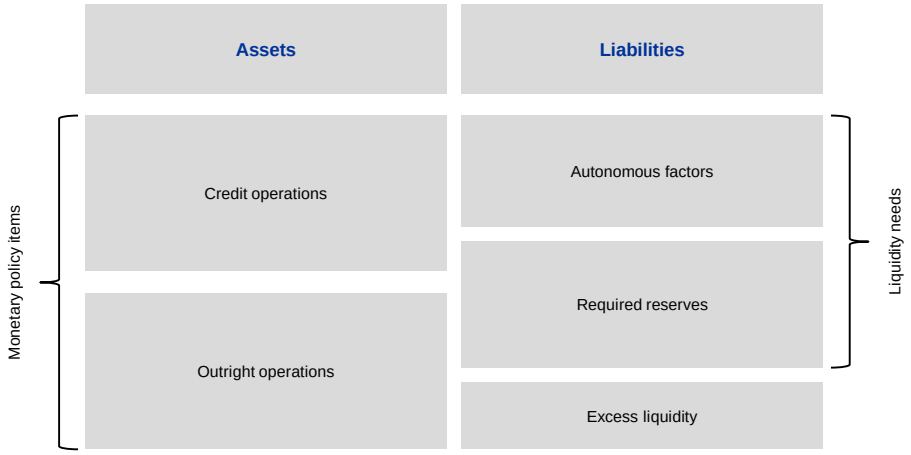
13 In June 2015 TARGET2-Securities (T2S) went live, further shaping the European financial structure by supporting borderless settlement of securities and thus contributing to further integration. This is an example of a market infrastructure change that facilitates cross-border flows and impacts the structure of cross-border flows in TARGET.

policy. These include both liquidity-providing and liquidity-absorbing factors, which appear on the balance sheet as assets and liabilities, respectively.[14] In the euro area, net autonomous factors are liquidity-absorbing and are therefore represented as a net liability of the central bank. Net autonomous factors, together with reserve requirements, constitute the liquidity needs of the domestic banking system.

Via liquidity-providing monetary policy operations, which are the main assets of the central bank, reserves are provided to enable banks to cover their aggregate liquidity needs.[15] Hence, there is an inherent link between monetary policy operations and reserves, and as explained below, there is also a tight link between the liquidity needs of the banking system, the quantity of reserves in the system and TARGET balances.

Figure 1

Stylised NCB balance sheet



Source: ECB.
Notes: Credit operations refer to all Eurosystem refinancing operations, including non-standard variants like the targeted longer-term refinancing operations (TLTROs). Outright operations refer to transactions in which the central bank buys or sells assets in the market for monetary policy purposes. The relative size of the components of the stylised balance sheet is not indicative of the relative size of the balance sheet items; total assets equal total liabilities.

14 The main liquidity-absorbing autonomous factors are banknotes in circulation and government deposits. Liquidity-providing autonomous factors include net foreign assets and domestic assets held for non-monetary policy purposes (e.g. financial assets held for investment purposes). Items in the course of settlement (also known as "float") are a (small) autonomous factor that can be either liquidity-providing or liquidity-draining and the overall net position can thus appear as an asset or a liability on the Eurosystem balance sheet.

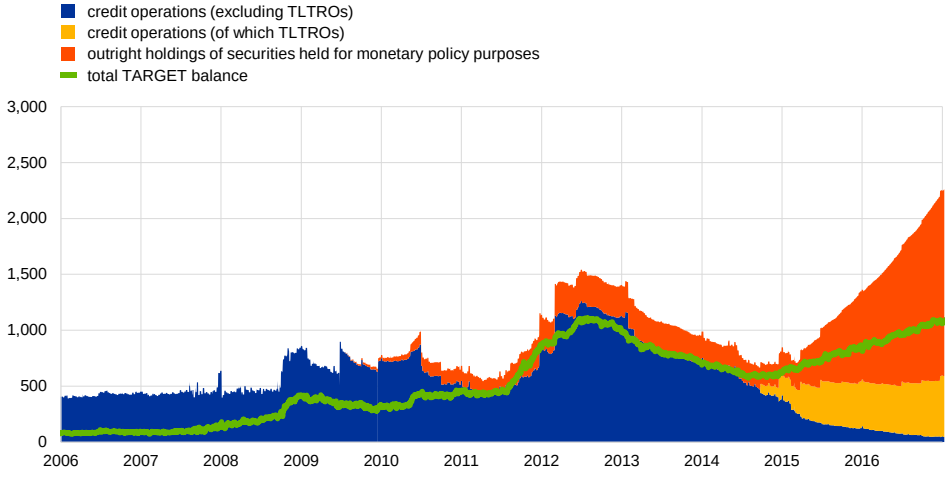
15 For further discussion of Eurosystem liquidity management, see Eser et al. (2012). For simplicity of exposition, we assume that there are no structural liquidity-providing factors, but in practice NCBs' holdings of gold and securities for non-monetary policy purposes reduce the amount of liquidity that the Eurosystem needs to provide through monetary policy operations. Besides monetary policy operations, there are other ways in which central bank liquidity can be provided to the banking system. Participants in TARGET2 that are eligible counterparties of the Eurosystem can draw on fully collateralised intraday credit. The amount of intraday credit that has not been reimbursed by the closure of TARGET2 is transformed into overnight credit under the terms applicable to the marginal lending facility on that day. In addition, liquidity can be exceptionally provided by NCBs via emergency liquidity assistance (ELA) in cases where a solvent credit institution lacks sufficient eligible collateral to participate in Eurosystem refinancing operations (i.e. main refinancing and longer-term refinancing operations).

Monetary policy implementation in the Eurosystem is mainly decentralised, meaning that reserves are created at the level of the NCBs.[16] *Credit operations* in the form of repurchase agreements were the main liquidity-providing monetary policy instrument until early 2015 (**Chart 1**) and are the focus of discussion in this sub-section. Their implementation (i.e. settlement) is TARGET balances-neutral because they involve no cross-border payment. The liquidity-providing NCB creates reserves, which are credited to the account of the bank participating in the operation at that very same NCB (**Figure 2**).

Chart 1

Decomposition of the consolidated Eurosystem balance sheet (items related to monetary policy)

(EUR billions, daily data)

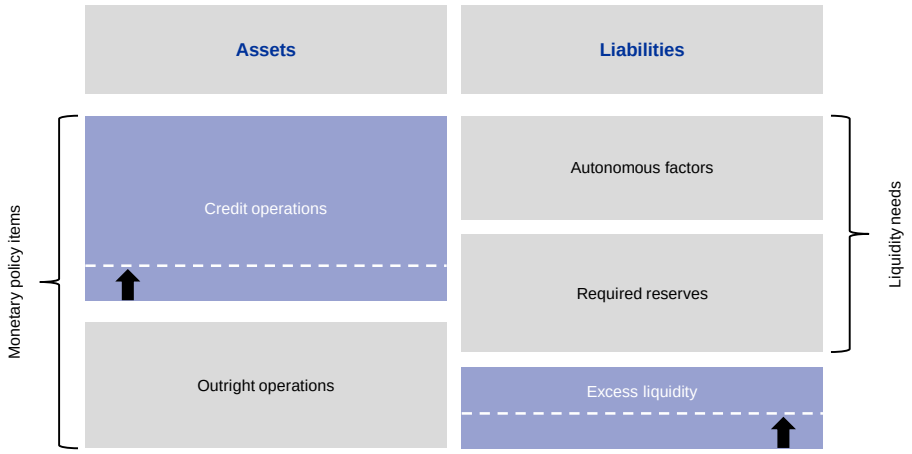


Source: ECB.
Notes: TLTROs refer to the ECB's targeted longer-term refinancing operations. Credit operations encompass euro-denominated monetary policy operations (including recourse to the marginal lending facility). Outright holdings include the securities purchased for monetary policy purposes (e.g. under the Securities Markets Programme, the covered bond purchase programmes, the public sector purchase programme, etc.). For more details, see the user guide on the Eurosystem consolidated balance sheet, available at https://www.ecb.europa.eu/press/pr/wfs/html/wfs-userguide.en.html.

[16] The asset purchase programmes, however, can entail implementation by the ECB as well. For example, the ECB purchases securities under the PSPP and thereby creates reserves. As reserves can only be held by banks at NCBs, the discussion and examples in this sub-section focus on NCBs' balance sheets.

Figure 2

Stylised NCB balance sheet: impact of the implementation of credit operations



Source: ECB.
Notes: Credit operations refer to all Eurosystem refinancing operations, including non-standard variants like the TLTROs. Outright operations refer to transactions in which the central bank buys or sells assets in the market for monetary policy purposes. The relative size of the components of the stylised balance sheet is not indicative of the relative size of the balance sheet items; total assets equal total liabilities.

The claims on credit institutions that arise on the assets side of an NCB's balance sheet via monetary policy operations remain on that NCB's balance sheet until their maturity.[17] On the liabilities side, however, the reserves created by one NCB can flow to another via cross-border payments in TARGET2. When the amount of reserves held at an NCB does not match the amount of reserves created by that NCB, a balancing item is required so that its assets and liabilities match. TARGET balances serve as this balancing item: an NCB records a TARGET liability when the reserves on the liabilities side of its balance sheet are below the value of reserves that it originated and it records a TARGET claim (i.e. an asset) when the reserves on the liabilities side of its balance sheet exceed the value of reserves that it originated.

Thus, although credit operations do not affect TARGET balances at implementation, they can have a subsequent impact on TARGET balances if and when the corresponding reserves are used to make cross-border payments in TARGET2 by the borrowing bank. If, for instance, a cross-border payment is made from one bank to another, the NCB of the sending bank debits the account of the bank making the payment, while the NCB of the receiving bank credits the account of the bank receiving the payment. The two NCBs' TARGET balances will change as a result of the cross-border payment, ceteris paribus, in order to keep their respective assets equal to their respective liabilities (**Figure 3**).[18] Assuming the sending NCB begins with a negative TARGET balance and the receiving NCB begins with a positive TARGET balance, the cross-border payment results in an increase in the sending

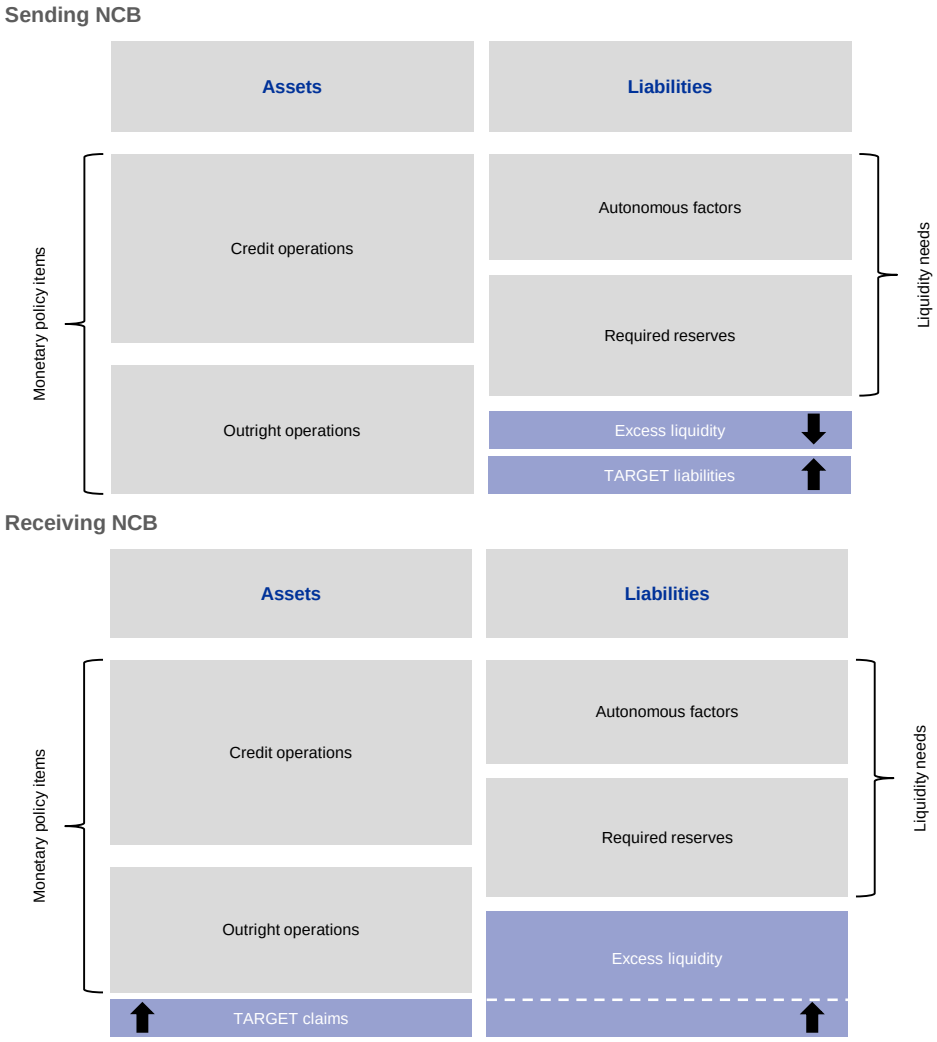
17 i.e. the claims remain until the maturity of the credit operation or the maturity of the security held outright. Securities held for monetary policy purposes are valued at amortised cost and an impairment test is conducted annually.

18 If there were a centralised holding of all TARGET2 accounts at the ECB, no balances would arise.

NCB's negative balance (i.e. an increasing TARGET liability) and an increase in the receiving NCB's positive balance (i.e. an increasing TARGET claim).[19]

Figure 3

Stylised NCB balance sheets: impact of a cross-border payment



Source: ECB.
Notes: Credit operations refer to all Eurosystem refinancing operations, including non-standard variants like the TLTROs. Outright operations refer to transactions in which the central bank buys or sells assets in the market for monetary policy purposes. The relative size of the components of the stylised balance sheet is not indicative of the relative size of the balance sheet items. This example assumes that the sending NCB had a negative TARGET balance (i.e. a TARGET liability) at the time of the payment, while the receiving NCB had a positive TARGET balance (i.e. a TARGET claim) at the time of the payment. This particular example results in a lengthening of the balance sheet of the receiving NCB, but no change in the balance sheet size of the sending NCB. If the sending NCB, however, has a TARGET claim, this claim would decline on the assets side of its balance sheet, while excess reserves decline on the liabilities side, shrinking its balance sheet. See footnote 19 for other examples.

In order to fund payments in TARGET2, a bank requires sufficient reserves, which can be sourced from its account balances at the NCB, incoming payments or intraday credit. As explained below and in the literature (e.g. Cour-Thimann, 2013b; ECB, 2013), the quantity of reserves in the banking system has changed dramatically since the pre-crisis years, with notable implications for TARGET

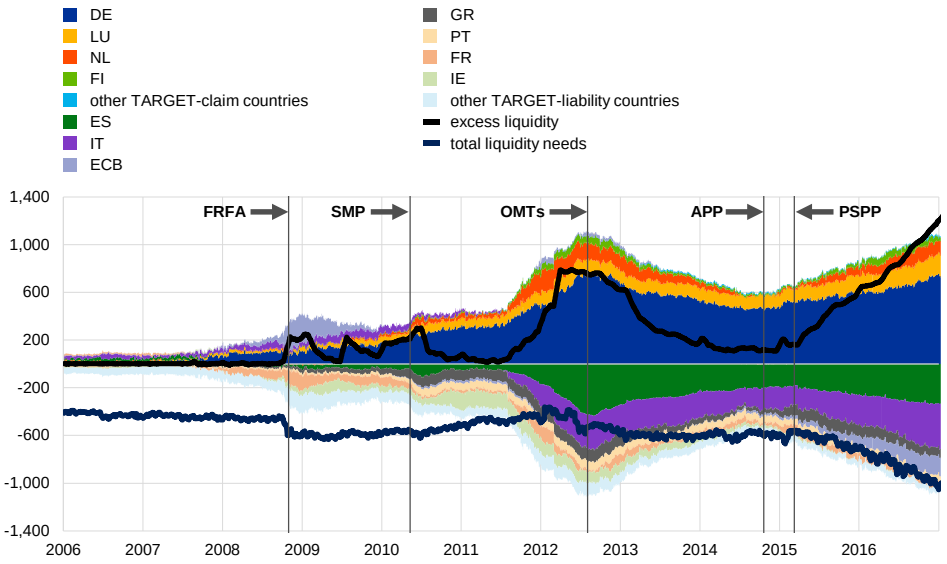
[19] If the sending (receiving) NCB's TARGET balance was positive (negative) at the time of the cross-border payment, it would record a reduction in its TARGET claim (liability).

balances. Prior to the financial crisis, liquidity provision was quantity-constrained such that the amount of reserves provided to the banking system at an aggregate level was calibrated to satisfy the system's liquidity needs on average over a maintenance period. In other words, liquidity conditions were balanced and "excess liquidity"[20], i.e. reserves in excess of the liquidity needs of the banking system, was practically zero.[21] Well-functioning money markets meant that banks with spare reserves lent to those in need of reserves and central bank intermediation was not required. TARGET balances existed, but were relatively small (**Chart 2**), reflecting for example the impact of banknote distribution.[22] The absence of large amounts of excess liquidity excluded the possibility of significant growth in TARGET balances.[23]

Chart 2

TARGET balances, excess liquidity and total liquidity needs

(EUR billions, daily data, 30-day rolling average of excess liquidity)



Source: ECB.
Notes: Excess liquidity reflects the sum of banks' account balances at their NCB and banks' recourse to the deposit facility, less the liquidity needs of the banking system. Liquidity needs are expressed as a negative number and reflect the sum of (net) autonomous factors and reserve requirements. FRFA stands for the fixed rate full allotment policy effective from 15 October 2008, SMP stands for the Securities Markets Programme launched in May 2010, OMTs stands for the Outright Monetary Transactions announced in August 2012, APP stands for the asset purchase programme that was initiated in October 2014 and PSPP stands for the public sector purchase programme that started in March 2015.

20 Excess liquidity is a concept different from excess reserves and is typically significantly larger. Before June 2012 excess liquidity could simply be measured as the average recourse to the deposit facility over the course of the maintenance period. Since June 2012 it has no longer been possible to distinguish excess reserves from excess liquidity.

21 Between 2004 and July 2007, for example, the maintenance period average of recourse to the deposit facility was around €190 million. Average excess reserves, which is the part of banks' current accounts not needed to fulfil reserve requirements, stood at €1.2 billion on average for the same period, reflecting institutional frictions and the desire on the part of banks to maintain some working balances in their current accounts, in particular for banks whose reserve requirements are small relative to their payment system activities.

22 For a discussion of how banknote distribution affects intra-Eurosystem balances, see Jobst et al. (2012).

23 In a situation without excess liquidity, TARGET balances are limited by the size of the aggregate liquidity needs of the banking system (see **Chart 2**). The maximum value of the total TARGET balance would be reached if all of the reserves in the system originated at one NCB but flowed to another, assuming that TARGET balances of both NCBs were initially zero. In this case, the total TARGET balance would equal the liquidity needs of the system less the reserve requirements of the banks at the NCB originating the reserves.

In October 2008 the Eurosystem abandoned quantity control in its regular provision of central bank reserves through the introduction of fixed rate full allotment tender procedures in all refinancing operations. The change in tender procedures was a response to the collapse of interbank markets in the wake of the failure of Lehman Brothers, which resulted in a reduction in demand for banks' liabilities (i.e. deposits and debt securities). As a consequence of this negative shock, banks opted to borrow from the Eurosystem to substitute for the loss in market-based funding, causing a surge in banks' demand for central bank credit. Instead of allotting a restricted quantity of reserves calibrated to fulfil the liquidity needs of the banking sector, the Eurosystem accommodated *all demand* for reserves subject to collateral availability.[24] As a result, excess liquidity started to emerge (**Chart 2**) as banks' aggregate demand for reserves exceeded the liquidity needs of the system. The intensification of bank funding pressures during the sovereign debt crisis and the loss of access to wholesale funding markets of entire national banking systems led to a renewed and significant increase in excess liquidity in 2011-12. In the context of pronounced market fragmentation, central bank funding was used to replace market funding that had dried up. This meant that the liquidity obtained by banks in credit operations from NCBs in vulnerable countries was largely used to fund cross-border payments to banks resident in non-vulnerable countries, leading to a build-up in TARGET balances.

The above discussion (which is summarised in **Figure 5** of the Annex) has made clear that excess liquidity at the Eurosystem level is a prerequisite for large TARGET balances. The sizeable increases in excess liquidity during the financial and sovereign debt crises, together with the concomitant rise in stress and fragmentation, occurred alongside pronounced growth in TARGET balances. For this reason, TARGET balances came to be viewed as an indicator of financial market frictions, severe fragmentation and external funding crises. However, excess liquidity may increase for reasons unrelated to these factors and, consequently, large and persistent TARGET balances do not necessarily reflect stress-related developments. This has been the case since the start of the APP and is discussed in more detail in Sections 3 and 4.

2.3 How do TARGET balances compare to the Federal Reserve's Interdistrict Settlement Account?

As noted at the beginning of Section 2, intra-system balances are not unique to the euro area and are an inherent feature of any monetary union that is based on reserve accounts held in a decentralised form. The Federal Reserve System of the United States of America is in many ways comparable to the Eurosystem.[25] Not surprisingly, the Federal Reserve System uses a balance sheet item very similar to TARGET claims and liabilities to account for reserve flows between the Federal

[24] For further discussion, see ECB (2013).

[25] For example, it comprises a number of independent reserve banks (the analogue to Eurosystem NCBs), each of which have their own balance sheet, and monetary policy decisions are taken by a committee whose members include presidents of the Federal Reserve Banks.

Reserve Banks (FRBs): the Interdistrict Settlement Account (ISA). The workings of ISA are almost identical to TARGET claims and liabilities: whenever central bank reserves flow from one Federal Reserve District to another, ISA balances of both FRBs will change to reflect this flow. From a conceptual point of view, the only difference is that the ISA balances are bilateral positions, i.e. they are not recorded as claims or liabilities against a central entity as is the case with TARGET claims and liabilities, which are all recorded against the ECB.[26]

Key differences between ISA and TARGET balances concern their history, origin and dynamics. ISA balances are subject to a fairly complicated annual rebalancing exercise (see Wolman, 2013, for a description of that process), while TARGET balances are not. The annual rebalancing of ISA positions across the Federal Reserve System is achieved by changing the shares of the System Open Market Account (SOMA), which is centrally held at the Federal Reserve Bank of New York (FRBNY), that correspond to each of the FRBs. The rebalancing exercise has its roots in a time when the Federal Reserve System was still operating on the gold standard.[27] Back then, a fixed gold conversion ratio created the need for redistribution of gold whenever reserves were flowing from one reserve bank to another. The rebalancing exercise was a means to guarantee that the ratio of gold or gold certificates to currency in circulation at each FRB would not fall under a certain threshold value.[28] The Federal Reserve finally gave up the gold backing in 1976. In the case of the euro, there has never been a fixed gold conversion ratio to back the currency and a recurring rebalancing exercise was therefore never perceived to be a necessity.

The centralised implementation of (large-scale) asset purchases by the FRBNY has been behind most of the dynamics of ISA positions on FRBs' balance sheets in recent years. After the purchase, the securities are apportioned according to a specific key to the FRBs. The central bank reserves created by the purchase stay mostly on the balance sheet of the FRBNY, increasing its ISA balance and decreasing the ISA balance of all other FRBs in the system until the yearly rebalancing takes place. In theory, flows of central bank reserves between FRBs could be expected to contribute to some rebalancing in the period between two rebalancing exercises but reserves tend to be concentrated at the FRBNY even after

[26] By convention, ISA positions are recorded on the assets side of the balance sheet and can be either positive or negative.

[27] See Eichengreen et al. (2014). During this time, ISA balances were not yet in existence and the rebalancing items were inter-reserve bank loans. The gold conversion was first abolished in the US in 1933, reintroduced after the Second World War and then finally given up in October 1976.

[28] Interestingly, the introduction by the Federal Reserve of interest on excess reserves (IOER) in October 2008 has somewhat revived the economic case for ISA rebalancing as it guarantees a broad alignment of each FRB's assets with the reserves depository institutions hold at each FRB. From an income perspective, such alignment of (interest-bearing) assets and liabilities is important because the IOER implies that reserves held at an FRB are now generating interest expenses for this FRB. Alternatively, introducing remuneration of ISA positions, as in the case of TARGET balances which are remunerated at the MRO rate and hence do not affect the distribution of monetary income, would solve potential earnings shortfalls at the level of the FRBs.

the initial settlement of the Federal Reserve's asset purchases, reflecting the fact that New York is a financial centre.[29]

2.4 TARGET balances in the balance of payments

As mentioned before, changes in TARGET balances of euro area countries reflect the net cross-border transfer of reserves and are hence recorded in euro area countries' balance of payments (BoP) at the end of each month. If a euro area country sends more funds abroad via TARGET2 than it receives, this will be offset by an equally-sized liability of the respective NCB vis-à-vis the ECB in the country's financial account of the BoP.[30] According to the BoP identity, it holds that:

$$CA + KA + EO = FA \tag{1}$$

where *CA* stands for the current account balance (the trade balance as well as cross-border factor income and transfers), *KA* for the capital account balance (which comprises mainly capital transfers and payments related to EU structural funds), *EO* for errors and omissions (capturing any statistical discrepancy) and *FA* for the financial account balance. The financial account balance in this equation is defined in terms of net financial outflows, i.e. the net purchases of foreign assets by domestic residents minus the net incurrence of liabilities by domestic residents vis-à-vis foreign residents.[31] The financial account reflects financial transactions of domestic residents (banks, other financial institutions, non-financial corporations, the official sector and households) with foreign residents. It can be decomposed into the following main financial instruments: foreign direct investment *FDI*, portfolio (equity and debt) investment *PI*, derivatives *DER*, other investment (comprising largely cross-border loans and deposits) *OTH* and reserve assets *RA*.[32] Thus,

$$FA = FDI + PI + DER + OTH + RA \tag{2}$$

TARGET balances are recorded at a monthly frequency as part of other investment in equation (2) under the item "other investment – national central bank". In terms of sectors, other investment can be divided into:

$$OTH = OTH(NCB) + OTH(GOV) + OTH(MFI) + OTH(PRV) \tag{3}$$

29 See Wolman (2013, p.130) for a short discussion on the distribution of reserves in the system after the initial round of purchases and Cour-Thimann (2013a) for a discussion of New York's role as a financial centre in the context of ISA balances.

30 Of course, if changes in a country's TARGET balance are transitory such that over a given month they return to their starting point, no changes in the TARGET balance will be recorded in that country's BoP.

31 The BoP identity of a given country holds in terms of total transactions vis-à-vis the rest of the world, but does not need to hold in bilateral terms. For instance, a euro area country with an intra-euro area current and capital account deficit does not need to record offsetting intra-euro area net financial inflows in its financial account.

32 With the exception of reserve asset flows, all components of the financial account are expressed in net terms, such that a positive number indicates net financial outflows.

where *OTH (NCB)* includes changes in the NCB's TARGET balance,[33] flows of the general government (*GOV*) are mainly related to EU/IMF or other official programmes, and *MFI* and *PRV* record other investment flows of the banking sector and other private entities, respectively. Combining equations (1) and (2) and solving for the current account balance yields:

$$CA = FDI + PI + DER + OTH + RA - KA - EO \quad (4)$$

Simplifying further, one can combine FDI, portfolio investment, derivatives and the private sector components of other investment in the "private" financial account, while the "official" financial account comprises other investment of the NCB and the general government. The other items (i.e. errors and omissions, the capital account and reserve asset flows) are included in the residual category in equation (5).[34]

$$CA = FA(private) + FA(official) + Residual \quad (5)$$

Thus, assuming a residual of zero, a euro area country's current account deficit (surplus) with the rest of the world is matched by private or official net financial inflows (outflows). In "normal" times, net private financial flows account for the bulk of the external financial transactions of euro area countries. When financial markets function smoothly, banks and other domestic residents can replace any loss of liquidity by borrowing from foreign residents, for instance via the interbank market.

During the sovereign debt crisis, however, several euro area countries with current account deficits experienced a sudden stop of private financial inflows. In a sudden-stop episode, foreign residents refrain from lending to domestic residents, exposing unsustainable BoP developments.[35] In such a situation a country would need to rapidly reduce domestic demand and cut imports to improve its current account position. This strategy is usually combined with a sharp adjustment of private financial flows (for instance by liquidating foreign assets). Moreover, a country in need of external funds can obtain official financing to the general government, for instance via EU/IMF financial assistance programmes. In the specific situation of the euro area, the banks of a euro area country can receive liquidity from the Eurosystem's refinancing operations via its NCB. If this liquidity is subsequently used for cross-border payments via TARGET, e.g. because banks of the country use the funds obtained from the central bank to repay cross-border bank loans, TARGET balances can arise (as outlined in Section 2.2).[36]

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33 Changes in TARGET balances have generally been the most important component of *OTH (NCB)* for euro area countries. However, *OTH (NCB)* also includes additional items such as foreign deposits, which have risen in recent years, for instance in the case of the Deutsche Bundesbank, where central banks outside the Eurosystem increased their deposits (Deutsche Bundesbank, 2017) in the context of excess liquidity.

34 Reserve asset flows are very small in the case of euro area countries, while they tend to be sizeable for some emerging market economies.

35 External funding crises tend to occur mainly in countries with current account deficits. However, a country with a current account surplus can also face a crisis if net financial outflows exceed the inflows stemming from current account transactions, thus leading to an external funding gap.

36 See also Cour-Thimann (2013a).

An increase in TARGET liabilities necessarily implies, according to BoP accounting, that a current account deficit or private net financial outflows are in some part funded by rising TARGET liabilities of the NCB: [37]

$$\Delta TARGET = CA - FA(private) - OTH(GOV) - Residual \quad (6)$$

Thus, changes in TARGET balances – no matter if they originate from a demand-induced provision of reserves (such as during the sovereign debt crisis) or from a supply-driven injection of reserves (such as under the APP) – must be mirrored in other components of the BoP according to equation (6). Developments in specific other components of the BoP, however, are not necessarily mirrored in changes in TARGET balances, as shown in Section 4.2.

[37] For simplicity, the assumption is made that both net other investment flows of the general government and the residual amount to zero. Note that in equation (6) the residual also includes net flows in other investment of the NCB which are not changes in TARGET balances.

3 TARGET balances and the Eurosystem's asset purchase programme

The Eurosystem's APP generates substantial excess liquidity in the banking system, providing the necessary condition for large TARGET balances to (re-)emerge. In contrast to demand-driven liquidity provision, supply-driven liquidity provision can affect TARGET balances in a way that is independent of conditions in bank funding markets, reflecting decentralised monetary policy implementation in conjunction with an integrated financial market structure.

The integrated financial market structure of the euro area greatly influences the way in which the APP affects TARGET balances both during its implementation (see Section 3.1) and thereafter (see Section 3.2). APP implementation can directly affect TARGET balances by giving rise to substantial cross-border flows of reserves during the settlement process, i.e. when securities are exchanged for payment. Beyond the implementation of the APP, payments related to subsequent portfolio rebalancing on the part of the underlying owners of the securities purchased by the Eurosystem can further affect TARGET balances. These payments are subject to the same integrated financial market structure that influences the settlement location of the initial APP purchases by central banks. The financial structure thereby fosters a concentration of reserves in particular countries, which is amplified by the fact that banks with business models that attract the largest excess liquidity holdings are predominantly located in those countries.

3.1 The impact of APP implementation on TARGET balances

Similar to the implementation of credit operations described in Section 2.2, the APP is predominantly implemented in a decentralised manner. For example, in the case of the PSPP, which constitutes the bulk of the APP, purchases are conducted by NCBs according to their share in the ECB's capital key. At the same time, and unlike with credit operations, the ECB also directly participates in APP implementation.

While the implementation of the APP is predominantly decentralised, the market for financial services in Europe is integrated such that securities holdings and transactions are not limited by national borders. As a result, the securities purchased by NCBs are, more often than not, sourced from counterparties[38] located in another jurisdiction. Around 80% of APP purchases by volume have been from non-domestic counterparties (i.e. counterparties located in a jurisdiction other than that of the

[38] APP counterparties are the set of financial institutions from which the Eurosystem purchases securities. Although these counterparties can sell securities on their own behalf, they usually act as intermediaries for the underlying security owners.

purchasing central bank, including other euro area countries), while around 50% of APP purchases by volume have been from counterparties that are resident outside the euro area, most of which are concentrated in the UK.

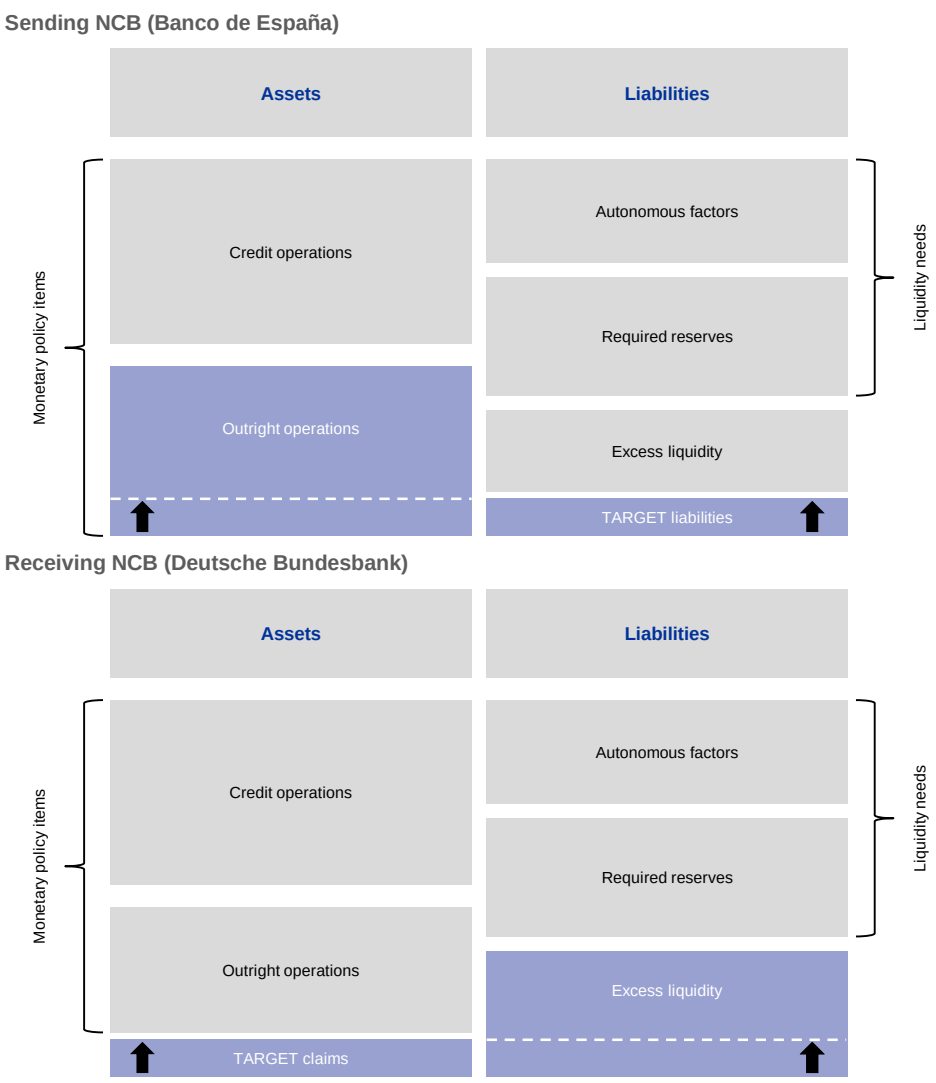
The location of the purchasing central bank's counterparty strongly influences how APP implementation affects TARGET balances. As noted in Section 2.1, euro area banks participate in TARGET2 via their local NCB, while banks located outside the euro area access TARGET2 via a branch or subsidiary in the euro area or via a correspondent bank. Hence, central bank purchases from non-domestic counterparties – regardless of whether they are located in another euro area country or outside the euro area – are likely to result in cross-border payments during APP implementation.

In implementing the APP, the purchasing central bank creates reserves in order to pay for the acquired securities. Whenever the payment is made to a TARGET2 account at another central bank, the TARGET balances of the respective central banks are directly affected, ceteris paribus. For example, the purchase of a security by the Banco de España from a counterparty that accesses TARGET2 via the Deutsche Bundesbank (e.g. a German counterparty or a UK-based counterparty that uses a German correspondent bank) leads to a payment flow from Spain to Germany, which would in the example increase the Banco de España's TARGET liability and increase the Deutsche Bundesbank's TARGET claim (**Figure 4**).[39] The total TARGET balance would also increase because the sending NCB has a TARGET liability while the receiving NCB has a TARGET claim (see Section 2.2).

[39] The case of the ECB provides an extreme example: because banks (including APP counterparties) are only permitted to access TARGET2 via NCBs, each unit of reserves created by the ECB for the securities it purchases flows across borders. As a result, the ECB has recorded a steady increase in its TARGET liability since the start of the APP (**Chart 2**) that is in line with its purchases.

Figure 4

Stylised NCB balance sheets: impact of APP implementation when payment is made to a TARGET2 account in another jurisdiction



Source: ECB.
Notes: Credit operations refer to all Eurosystem refinancing operations, including non-standard variants like the TLTROs. Outright operations refer to transactions in which the central bank buys or sells assets in the market for monetary policy purposes. The relative size of the components of the stylised balance sheet is not indicative of the relative size of the balance sheet items. This example assumes that the sending NCB had a negative TARGET balance (i.e. a TARGET liability) at the time of the payment, while the receiving NCB had a positive TARGET balance (i.e. a TARGET claim) at the time of the payment. See footnote 19 for other examples.

The location through which non-euro area banks have chosen to access TARGET2 has remained stable since TARGET2 went live in May 2008. UK banks in particular have historically accessed TARGET2 via the Deutsche Bundesbank and, to a lesser extent, De Nederlandsche Bank.[40] In other words, such access has always been through countries which, during the sovereign debt crisis, came to be viewed as less

[40] Either by opening an account directly with one of the two central banks or through a correspondent bank with an account at one of the two central banks.

vulnerable.[41] A consequence of this is that APP implementation results in structural payment flows to particular locations.[42]

Throughout history, banking and financial services activities have clustered in particular locations that are known in the literature as financial centres.[43] Cassis (2016, p. 293) refers to these as "nerve centres of financial activity" which can be defined as a grouping together "of a certain number of financial services, or, in a more functional way, as the place where intermediaries coordinate their financial transactions and arrange for payments to be settled". The agglomeration of financial activities has benefits in terms of economies of scale and network effects (see Kindleberger, 1974), but requires an environment that is conducive to such activities (e.g. highly-skilled labour, a favourable regulatory climate, technological infrastructure, a well-developed legal system, etc.[44]).

Financial centres are heterogeneous and can be classified according to different schemas. Reed (1981), for example, classifies financial centres into host international, international and supranational centres, while Roberts (1994) distinguishes between domestic, global, regional and offshore centres. A report by Europe Economics (2011) summarises the specialisations in financial activities taking place in eight European cities: Amsterdam, Dublin, Frankfurt, London, Luxembourg, Madrid, Milan and Paris (**Table 1**).

Table 1

Overview of European financial centres

City	Specialisation
Amsterdam	Pension management; financial logistics
Dublin	Fund management and administration; aircraft leasing
Frankfurt	International banking; insurance; derivatives exchanges; fund management
London	International banking; fund management; trading in securities; derivatives and commodities; private equity and hedge fund management; carbon markets; maritime finance
Luxembourg	International banking; fund management
Madrid	Stock exchange; links with Latin America
Milan	Banking
Paris	Insurance; commodity exchanges

Source: Europe Economics (2011, p. 8).

From the perspective of understanding TARGET2 balances during the period of the APP, however, it is the financial centres which act as gateways between the euro area and the rest of the world that are particularly relevant. The locations of these financial centres determine the locations of the central banks through which international banks access TARGET2 and offer their services. While Germany and

41 Analysis of interbank transaction data from the first-generation TARGET payment system for the year 2000 indicates that Germany and the UK were major financial centres well before the onset of the global financial crisis (Cabral et al., 2002). Although the UK participated in TARGET, it does not participate in TARGET2.

42 See also Deutsche Bundesbank (2016).

43 See Cassis (2010) for a discussion of the evolution of different financial centres since the late 18th century.

44 See, for example, Dufey and Giddy (1978) and Falzon (2001).

France are the locations of large custodian banks, it is Germany and the Netherlands which attract many reserve inflows as banks in both countries have historically been used by non-euro area banks to access TARGET2 and a large fraction of assets sold to the Eurosystem under the APP was owned by and/or intermediated via entities outside the euro area. As such, these two countries are gateways for the financial centre of London with respect to euro-denominated business in central bank money. Other important locations that serve as financial gateways to (and from) the euro area are Luxembourg, which has a fund management industry with a significant euro area investor base, and Finland, which has close ties to Nordic banks.[45]

A simulation of the payment flows arising during the settlement of APP purchases shows that the implementation of the APP would give rise to sizeable changes in TARGET balances and an increase in the total TARGET balance. In other words, reserves created through purchases by a central bank with a negative TARGET balance flow to central banks with a positive TARGET balance (**Chart 3**). The simulation illustrates how the total TARGET balance would have evolved if the only cross-border payments in the system since the start of the PSPP were those resulting from APP implementation. The impact of implementation is simulated using the APP purchase data and information on the location of the TARGET2 account used by the APP counterparty.[46] **Chart 3** indicates three things:

1. since the start of the PSPP and for the euro area overall, there are no substantial net payment flows from liability to claim countries beyond the amount that would result from the implementation of the APP;

2. some net flows from claim to liability countries occurred (reflected by the fact that the increase in the total TARGET balance since the start of the PSPP is below the increase implied by the estimated impact of settlement); and

3. without the APP the total TARGET balance would be at a much lower level.

While manifold other high-value cross-border payment flows occur which can impact TARGET balances, such as the substitution of more expensive market-based funding with the attractively priced funds from the targeted longer-term refinancing operations (TLTROs), the analysis suggests that these flows are largely bi-directional and similar in amounts, and that the increase in reserves at central banks with a TARGET claim is mainly related to the APP. In other words, the latter appears to be the main factor behind the upward trend in TARGET balances at the aggregate level during the APP period, while the majority of cross-border flows did not give rise to a further increase in the total TARGET balance.

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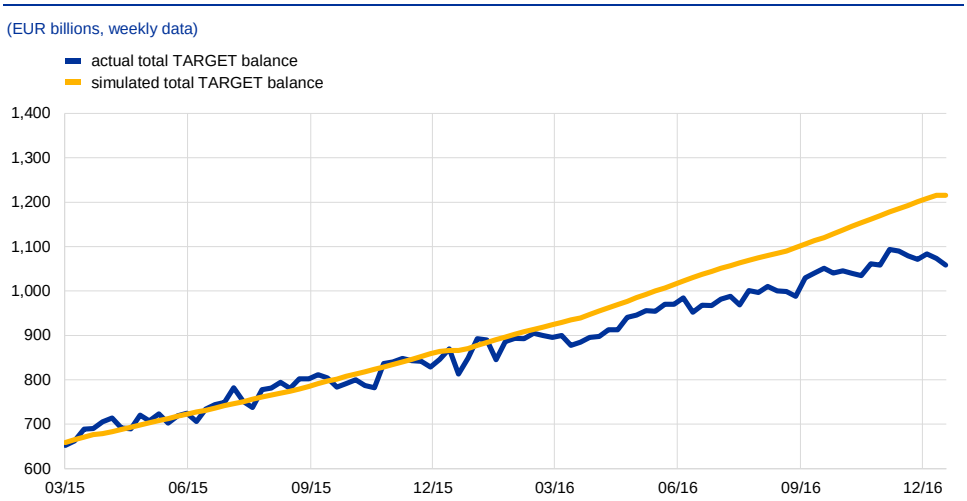
[45] Ireland, on the other hand, has a fund management industry that is more focused on non-resident customers and it therefore does not serve as a major gateway.

[46] The location of the counterparties' TARGET2 accounts in the case of around 99% of the purchases by value could be determined using TARGET2 data and staff assumptions. In practice, APP implementation usually entails delivery versus payment (DvP) settlement via securities settlement systems rather than a direct payment from the purchasing NCB to the TARGET2 account of the APP counterparty (DvP is a securities settlement mechanism which links a securities transfer and a funds transfer in such a way as to ensure that delivery occurs if, and only if, the corresponding payment occurs). Such cases still result in net cross-border liquidity movements, but in the case of batch processing (i.e. a group of orders processed together) the resulting payouts to TARGET2 accounts may be mixed with other and possibly subsequent securities investments.

Chart 3

Total TARGET balance since the launch of the PSPP and a simulated balance estimating the impact of APP implementation



Sources: ECB, TARGET2 and ECB calculations.
Notes: The simulated TARGET balance is calculated using APP transaction data and information on the location of APP counterparties' TARGET accounts (the ECB's balance is treated separately from balances of non-euro area countries). The simulated balance shows how the total TARGET balance would have evolved since March 2015 if the only cross-border payments in the system were the liquidity flows from central banks to counterparties' TARGET2 accounts resulting from APP purchases. The last data point is December 2016.

3.2 Beyond APP implementation: the persistence of TARGET balances

Although the payment flows originating during APP implementation give rise to changes in TARGET balances, the fact that balances have remained elevated after the settlement of central bank purchases indicates that, in the aggregate, there are only some net payment flows back to TARGET-liability countries from TARGET-claim countries. In other words, reserves created across the Eurosystem during APP implementation often flow to and remain in or circulate among the particular financial centres described in Section 3.1. The persistence of TARGET balances is consistent with the portfolio rebalancing observed so far at the euro area level, and is related to the financial structure described above, which further affects the allocation of reserves resulting from reinvestments of APP proceeds.[47] The low interest rate spreads and increasing regulatory costs of interbank lending, together with high levels of excess liquidity, limit the incentives for a redistribution of reserves to banks in TARGET-liability countries.

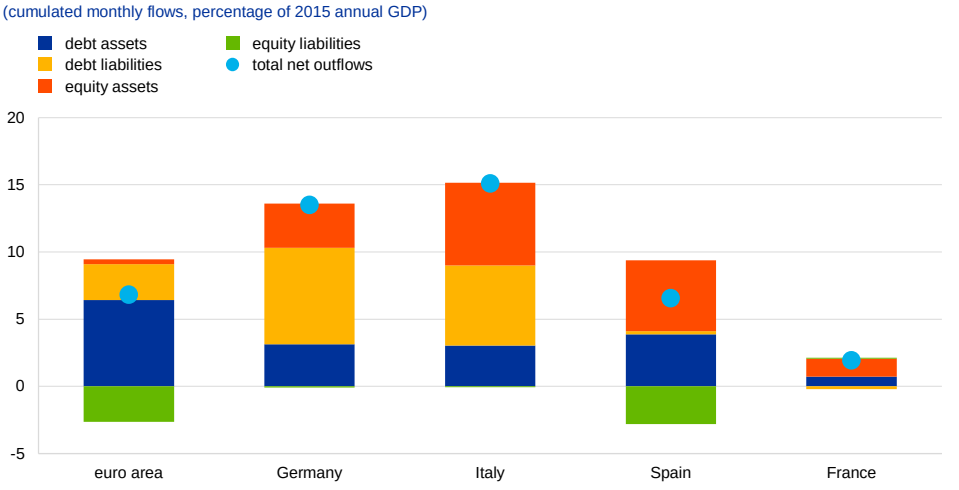
47 Note that the analysis of the impact of the APP on TARGET balances applies only to the phase of net purchases. Once net purchases have ended and only reinvestment activity remains, different dynamics may ensue, depending on the ownership and holding structure of securities purchases under the reinvestment policy.

3.2.1 Further portfolio rebalancing and the associated payment flows

Since the launch of the APP, there has been a broad-based rebalancing towards non-euro area debt securities in the euro area as a whole as well as across euro area countries as reported in BoP statistics (**Chart 4**).[48] International portfolio rebalancing is a normal feature of sizeable central bank asset purchase programmes[49], which, in combination with the underlying financial structure of the euro area, has contributed to the persistence of TARGET balances following the immediate impact of APP implementation.

Chart 4

Breakdown of net portfolio investment flows between March 2015 and December 2016



Source: ECB.
Notes: For assets, a positive (negative) number indicates net purchases (sales) of foreign securities by domestic investors. For liabilities, a positive (negative) number indicates net sales (purchases) of domestic securities by foreign investors. For net flows, a positive (negative) number indicates net outflows (inflows) from (into) the relevant country/the euro area. Equity includes investment fund shares.

In the APP period, euro area residents have made sizeable net purchases of non-euro area debt securities. These have consisted almost exclusively of those issued by other advanced economies, in particular the United States. In addition, non-residents reduced their holdings of euro area debt instruments, particularly in the form of government bonds mainly reflecting PSPP-related sales. This is a mechanical feature of the PSPP due to the relatively large share of foreign investors in holdings of euro area government bonds (Cœuré, 2017). The resulting net portfolio investment outflows from the euro area are largely driven by the persistently negative interest rate differentials between euro area debt securities and debt securities issued by other advanced economies. With respect to equity investment, country-level BoP data for the largest euro area economies point to substantial intra-euro area cross-border flows into investment funds concentrated in Luxembourg, which to a significant extent invest in non-euro area securities.

48 See ECB (2017b).

49 See, for example, Cœuré (2017).

The payments related to the net rebalancing towards non-euro area securities likely occur via euro area financial centres acting as gateways between the euro area and the rest of the world. In such centres, entities specialising in international banking channel the payments towards non-resident investors. This typically occurs via correspondent banking relationships, which connect the banks of euro area investors with those of non-euro area investors. While rebalancing towards non-resident securities can be observed across the euro area, the main gateways are concentrated in a few locations. This implies that those locations receive, directly or indirectly, funds from across the euro area. The vast majority of intra-euro area payments between banks are typically settled in TARGET2.[50] This results in an increase in the TARGET claim position of NCBs in countries which have gateway centres, mirrored by commensurate increases in the TARGET liabilities of NCBs in other euro area countries.

Analysis of the evolution of euro area banks' net external asset positions is consistent with the mechanism described in the previous paragraph. The analysis of banks' net external assets is useful to this end because – reflecting banks' intermediation function – it mirrors the interaction of the resident non-bank sector with the rest of the world.[51] As such, it allows a comparison of the movements in the BoP with the intermediation channels through which payments are made. Changes in banks' net external asset positions are decomposed into those reflecting TARGET flows and other flows. This is done for two country groups: the three euro area countries with the largest TARGET liability positions and the three countries with the largest TARGET claim positions. This is juxtaposed with the monetary presentation of the BoP, which provides a breakdown of the BoP items mirroring the change in the banks' net external asset position.

The comparison reveals that, both in countries with large TARGET liabilities and with large TARGET claims, the decline in net external assets of banks reflects an increased net asset position of non-banks with respect to the rest of the world, particularly driven in the APP period by portfolio investment (see left panel of **Chart 5** and **Chart 6**). It also shows that in countries with large TARGET liability positions, the payments related to financial investments abroad (or disinvestments by foreigners) have been mainly channelled via TARGET2 (see right panel of **Chart**

50 See ECB (2017a) and ECB (2017d).

51 The overall net external position of a country's banking system changes every time a non-resident sends/receives a payment to/from a resident non-bank as long as the traded item is not an instrument issued by a resident bank. In addition, it also changes every time a resident bank purchases or sells an asset issued by a resident non-bank, as is for instance the case when the Eurosystem acquires euro area government securities previously held by non-residents. For more details on the mechanics and implications of changes in the net external assets of monetary financial institutions (MFIs), see, inter alia, Bê Duc et al. (2008) and ECB (2008).

5).[52] By contrast, in the three countries with the largest TARGET claim positions (which coincide with those countries hosting gateway financial centres), the decline in banks' net external assets has not been driven by TARGET flows, but by the other components, which include correspondent banking relationships and other equivalent channels (see right panel of **Chart 6**). Moreover, the large increase in payments channelled through means other than TARGET mirror the sustained increase in TARGET inflows observed since the beginning of the APP. In other words, reflecting their intermediation role, banks in gateway centres receive payments in TARGET2 from across the euro area and channel them to the rest of the world via other financial arrangements.[53] Overall, this evidence is in line with the hypothesis that financial flows between the euro area and the rest of the world are channelled through specific financial centres operating as gateways. The payments related to net portfolio outflows directed to countries outside the euro area from euro area countries with no such centres would be directed via TARGET2 to central banks in gateway centres (giving rise to TARGET balances) from where they are available to non-resident investors.

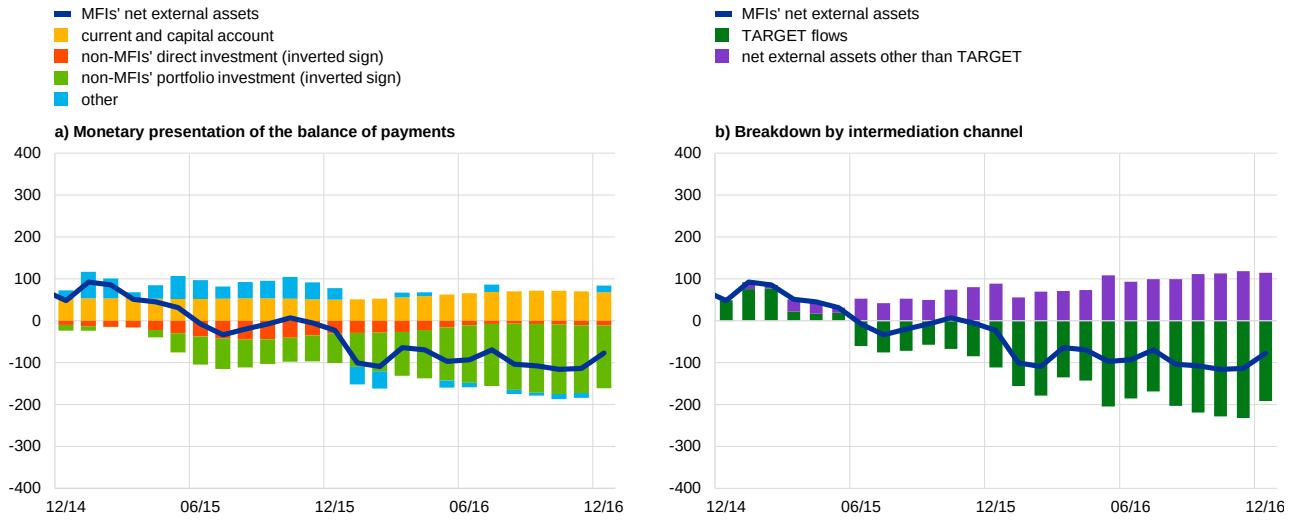
52 Country-level MFIs' net external assets have been calculated by aggregating MFIs' positions vis-à-vis non-euro area residents, and those vis-à-vis residents in other euro area countries (the latter include inter-NCB positions, which mainly reflect TARGET balances). Increases in "net external assets other than TARGET" reflect, inter alia, monetary inflows channelled via correspondent banking relationships or increases in the positions of NCBs vis-à-vis extra-euro area entities. MFI balance sheet data have been complemented with BoP data in order to account for reductions in the holdings of long-term domestic bank bonds by non-domestic investors. This factor has been particularly relevant in the PSPP period, as in an environment of ample central bank liquidity banks have reduced their reliance on market-based funding. As in countries with large TARGET liability positions repayments to non-domestic investors are assumed to be typically channelled via TARGET, this creates an increase in the net external position of the redeeming banks offset by a commensurate increase in the TARGET liability position of the respective central bank. This effect is estimated to have accounted for about 50% of the increase in "net external assets other than TARGET". Such an increase should not be understood as reflecting a monetary inflow into the country.

53 This may consist of bilateral agreements simply reflected in cross exposures on the balance sheets of the gateway bank and the non-euro area bank or may involve more sophisticated arrangements. Such arrangements may also include the involvement of a non-euro area central bank and the NCB of the country where the euro area gateway bank operates, e.g. via the use of swap lines. Whichever the arrangement, the settlement of the payment between the euro area gateway bank and the non-euro area bank will result in a change in the net external asset position of the banking system of the euro area country in which the gateway bank is operating. This change will be reflected in positions other than TARGET.

Chart 5

Decomposition of the net external asset position of MFIs in TARGET-liability countries

(EUR billions, 12-month flows)

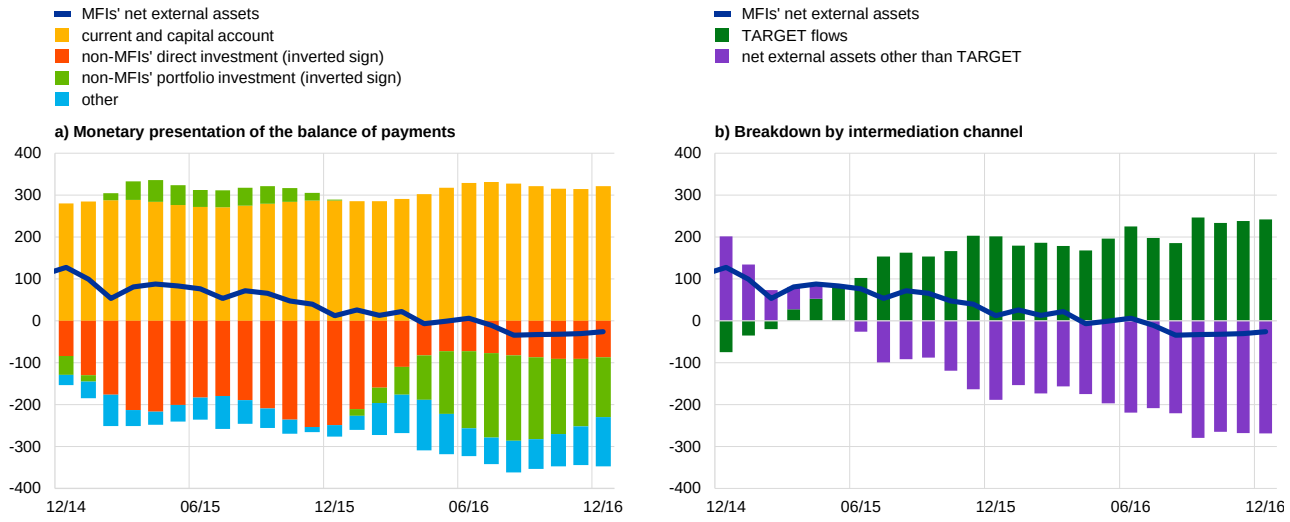


Sources: ECB and ECB staff calculations.
Notes: Aggregate of the three countries with the largest TARGET liabilities (IT, ES, PT). Country-level net external assets have been adjusted to account for the impact of non-domestic holdings of long-term bank bonds. About 50% of the increases in net external assets other than TARGET reflect reductions in holdings of domestic bank bonds by non-domestic investors, which should not be understood as reflecting a monetary inflow into the country (see footnote 52 for further details). The latest observation is for December 2016.

Chart 6

Decomposition of the net external asset position of MFIs in TARGET-claim countries

(EUR billions, 12-month flows)



Sources: ECB and ECB staff calculations.
Notes: Aggregate of the three countries with the largest TARGET claims (DE, LU, NL). Country-level net external assets have been adjusted to account for the impact of non-domestic holdings of long-term bank bonds. The latest observation is for December 2016.

3.2.2 Other contributing factors

The accumulation of excess liquidity in particular banks can be seen as the residual by-product of a cascade of trades following the original injection of reserves through the APP.[54] As explained in Section 3.2.1, the financial structure further reinforces the build-up of reserves in financial centres, especially those which are used as access points for TARGET2. The concentration of market infrastructures and banks with business models that structurally attract more excess liquidity in certain locations imply that these locations act as a magnet for reserves. Large holders of excess liquidity are banks specialised in the intermediation of trading activities of institutional investors (Demiralp et al., 2017), such as custodian and investment banks. In fact, banks operating these business models have increased their excess liquidity holdings relative to all other banks since the start of the APP (see Table 1 in Demiralp et al., 2017).

Importantly, there is no reason for the reserves created under the APP to be distributed among NCBs in any particular way (e.g. uniformly or according to GDP) and unless interest rate spreads are sufficiently attractive to induce interbank lending in the overnight market or demand for interbank borrowing is high, reserves are likely to remain in the location in which they end up after APP implementation and all of the ensuing rounds of subsequent portfolio rebalancing. The overnight market is the most relevant market segment with respect to the trading of reserves because, by definition, excess liquidity in the banking system has an overnight maturity.[55] The historically narrow width of the corridor between the main refinancing and deposit facility rates – which has ranged between 25 and 40 basis points in the APP period to date – reduces price incentives for banks with excess liquidity to lend in the market. This, in turn, contributes to the persistence of TARGET balances. The ECB's corridor establishes a theoretical floor and ceiling within which unsecured overnight interbank interest rates should trade (Whitesell, 2006)[56]; as documented in the literature, the narrower the width of the corridor, the lesser the incentives for interbank activity (e.g. Bindseil and Jabłecki, 2011) as the opportunity costs of holding onto excess liquidity are reduced.

Although levels of excess liquidity differ notably across countries, interest rate differentials in the unsecured overnight interbank market are limited, thereby dis-incentivising a redistribution of reserves from countries with large amounts of excess liquidity to those with smaller amounts. Low rate spreads especially deter interbank activity in the new regulatory environment, which has increased the costs of transacting in the market.[57] **Chart 7** shows a stylised relationship between the overnight (O/N) interbank interest rate and the aggregate level of excess liquidity in a

54 For further discussion of excess liquidity distribution, see Baldo et al. (2017).

55 i.e. banks' current accounts and recourse to the deposit facility both have overnight maturities.

56 The ECB's deposit and marginal lending facility rates are the floor and ceiling, respectively, for unsecured overnight interbank interest rates. In the context of abundant excess liquidity, however, the deposit facility is a more loosely binding constraint. This is due to excess liquidity being distributed, in part, among entities that lack access to the ECB's deposit facility (e.g. MFIs outside the euro area) and for which the deposit facility rate (DFR) is therefore not an effective opportunity cost. As a result, these entities can end up placing deposits with MFIs at rates below the DFR.

57 See Box 4 in Alvarez et al. (2017).

corridor system. The greater the aggregate level of excess liquidity, the closer the O/N rate is to the deposit facility rate (DFR). Conversely, the lower the excess liquidity, the closer the O/N rate should be to the rate of the main refinancing operations (MRO rate). The market rate should not exceed the marginal lending facility rate (MLF).

In principle, such a relationship exists for each country. In a perfectly functioning money market without any fragmentation, country-level rates should depend only on the aggregate level of excess liquidity and rates should be equal across countries. If O/N rates at the country level display a stronger correlation with domestic excess liquidity levels than with the aggregate level of excess liquidity, this can be seen as a sign of persisting fragmentation (and vice versa).

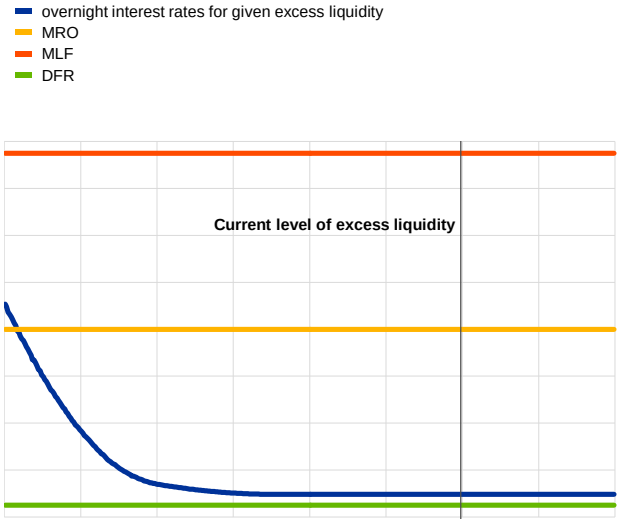
Given the current level of excess liquidity, country-level O/N rates that are correlated with aggregate excess liquidity levels should all be close to the DFR (i.e. as shown by the blue area in the stylised **Chart 8**). Based on domestic O/N unsecured interbank interest rates inferred from TARGET2 payment system data, over 97% of the euro area banking sector trades O/N liquidity at rates equal to or below the rate that would be expected from the aggregate level of excess liquidity (**Chart 9**).[58] This suggests not only a low level of fragmentation, but in the context of this section, it illustrates the low price incentives in the market for reserves to be redistributed via the interbank market.

[58] These rates are identified from TARGET2 transaction data using the method described by Frutos et al. (2016).

Chart 7

Stylised relationship between aggregate excess liquidity and the unsecured overnight interbank interest rate in the euro area

(x-axis: aggregate excess liquidity; y-axis: unsecured overnight rate)

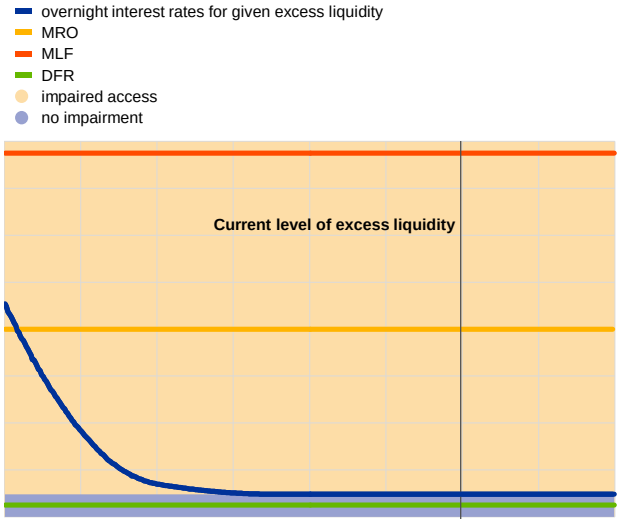


Sources: TARGET2, ECB and ECB calculations.
Notes: This is a highly stylised chart that illustrates a symmetrical standing facility corridor. The same broad concepts apply to an asymmetrical corridor. MLF, MRO and DFR stand for the rates that apply to the marginal lending facility, the main refinancing operations and the deposit facility, respectively.

Chart 8

Expected country-level rates for overnight interbank trades depending on degree of fragmentation at current level of excess liquidity

(x-axis: aggregate excess liquidity; y-axis: unsecured overnight rate)

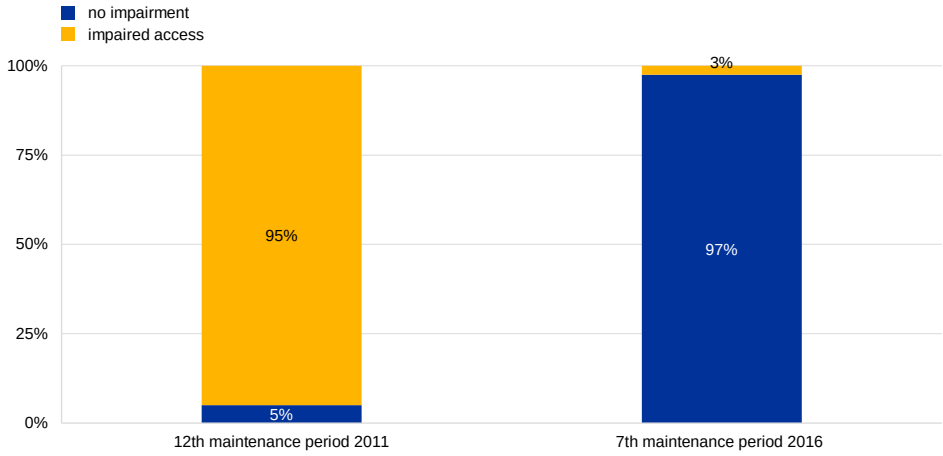


Sources: TARGET2, ECB and ECB calculations.
Notes: This is a highly stylised chart that illustrates a symmetrical standing facility corridor. The same broad concepts apply to an asymmetrical corridor. MLF, MRO and DFR stand for the rates that apply to the marginal lending facility, the main refinancing operations and the deposit facility, respectively. In the absence of any fragmentation, rates across countries should be within the range denoted by the shaded blue region.

Chart 9

Share of countries with impaired and unimpaired access to the unsecured overnight interbank market

(share of euro area countries with impaired access, weighted by banking sector assets)



Sources: TARGET2, ECB and ECB calculations.
Notes: 12 countries are included: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain. Other euro area countries are excluded because of data considerations. The 12th maintenance period of 2011 corresponds to 14 December 2011-17 January 2012. The 7th maintenance period of 2016 corresponds to 26 October 2016-13 December 2016.

4 Interpreting the increase and persistence of TARGET balances during the APP period

While TARGET balances have increased sharply since the start of the APP, the increase is not symptomatic of renewed frictions in bank funding markets, increasing fragmentation or unsustainable BoP developments (e.g. sudden stops and capital flight), as was the case during the sovereign debt crisis. Hence, although TARGET balances can – under certain conditions – be indicative of these factors, currently they are not. This also implies that TARGET balances are not in and of themselves an indicator of financial market stress.

4.1 TARGET balances, frictions in financial markets, fragmentation and monetary policy transmission

The current main driver of the expansion in the Eurosystem balance sheet, and consequently in the level of excess liquidity which underlies the increase in TARGET balances, is the APP (**Chart 1**). This is an important point for the interpretation of the current increase in TARGET balances: unlike during the sovereign debt crisis, when banks were substituting market-based funding that had dried up with funding obtained in Eurosystem refinancing operations (Section 2.2), the main balance sheet item corresponding to the increase in TARGET balances since the start of the APP is the item recording securities held for monetary policy purposes. This reflects the predominantly supply-driven, as opposed to demand-driven, injection of reserves in the APP period, which is independent of bank funding conditions.[59]

Although the total TARGET balance reached a new high at the end of 2016, indicators of financial market stress, like credit default swaps, in the euro area were well below the levels reached during the sovereign debt crisis when TARGET balances were at similar levels (**Chart 10**).[60] Fragmentation measures, too, remained well below those reached during the sovereign debt crisis in terms of funding costs for banks and the real economy (**Chart 11**), as well as in the overnight unsecured interbank money market (**Chart 9**). Hence, TARGET balances per se are not an indicator of stress or fragmentation.

---

59 From end-February 2015 (i.e. prior to the commencement of the PSPP) to end-December 2016, lending to euro area credit institutions related to monetary policy operations denominated in euro increased by €107 billion, whereas the securities held for monetary policy purposes (which reflect the APP) increased by €1,420 billion. Of note, all of the increase in recourse to euro-denominated refinancing operations reflects participation in the TLTROs (as shown in **Chart 1**). A key motive for participation in these operations was the price attractiveness (see ECB, 2017e, p. 27); hence, participation per se does not reflect a lack of access to market funding.

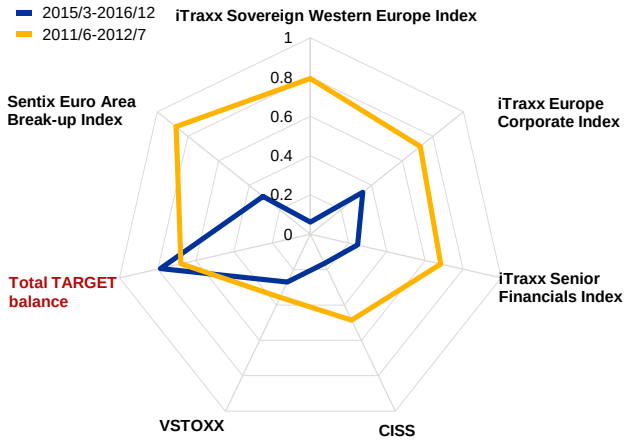
60 While many commonly used measures of financial market stress are likely to be affected by the APP and are thus biased to the downside, the overall situation in financial markets in 2017 is undoubtedly much better than in 2011 or 2012.

With respect to the transmission of monetary policy, there is no evidence that elevated TARGET balances and the associated concentration of reserves in particular locations have had a detrimental impact. This is evident by looking at the improvement in bank lending rates since the beginning of the ECB's credit easing measures in June 2014. **Chart 12** shows these improvements for the largest four euro area countries and the euro area overall. In fact, bank lending rates for lending to non-financial corporations declined most in countries with the lowest build-up of excess liquidity (e.g. Spain and Italy; see **Chart 13**).[61] Likewise, credit to the private sector improved steadily and at a comparable pace across these four countries.[62]

Chart 10

Total TARGET balance versus indicators of financial stress in the euro area

(average over the period relative to the peak level since 2008)

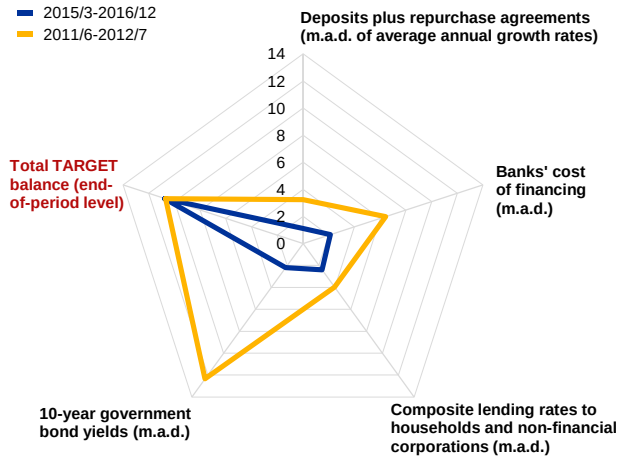


Sources: Bloomberg, ECB, Markit, Sentix and ECB calculations.
Notes: The average level of the variables during the respective periods is shown relative to the maximum value of that variable since 2008 (2010 in the case of the iTraxx Sovereign Index). The composite indicator of systemic stress (CISS) reflects stress in the euro area financial system, as described in Holló et al. (2012).

Chart 11

Total TARGET balance versus indicators of financial fragmentation in the euro area

(median absolute deviation (m.a.d.) and end-of-period levels)



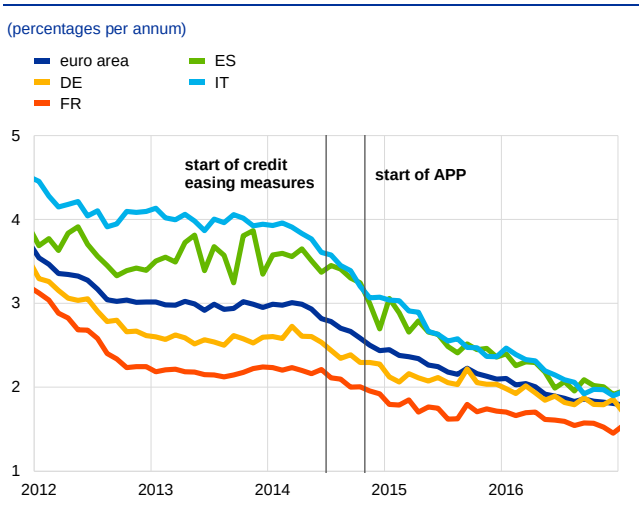
Sources: Bloomberg, ECB, Merrill Lynch Global Index and ECB calculations.
Notes: The m.a.d. is computed across selected euro area countries for which historical data are available and reflects the cross-country dispersion of the averages in the respective periods. The dispersion measure for banks' cost of financing and the composite lending rates to households and non-financial corporations are scaled by 10.

61 The same observation can be made for lending rates to households (see ECB, 2017c, p. 31).

62 See ECB (2017c), pp. 28-29.

Chart 12

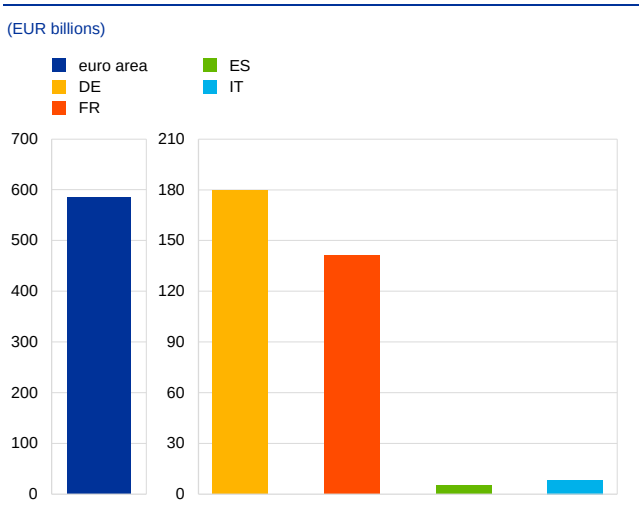
Composite bank lending rates to non-financial corporations



Source: ECB.
Notes: The indicator for the total cost of lending is calculated by aggregating short- and long-term rates using a 24-month moving average of new business volumes. The credit easing measures started in June 2014 when the first series of targeted longer-term refinancing operations was launched. The APP began in October 2014 when the ECB started purchases under CBPP3.

Chart 13

Average excess liquidity across euro area countries since the beginning of the APP



Source: ECB.
Notes: Excess liquidity is reported as the average between October 2014, when the APP was initiated with the launch of CBPP3, and December 2016.

4.2 Empirical evidence on TARGET balances and the balance of payments

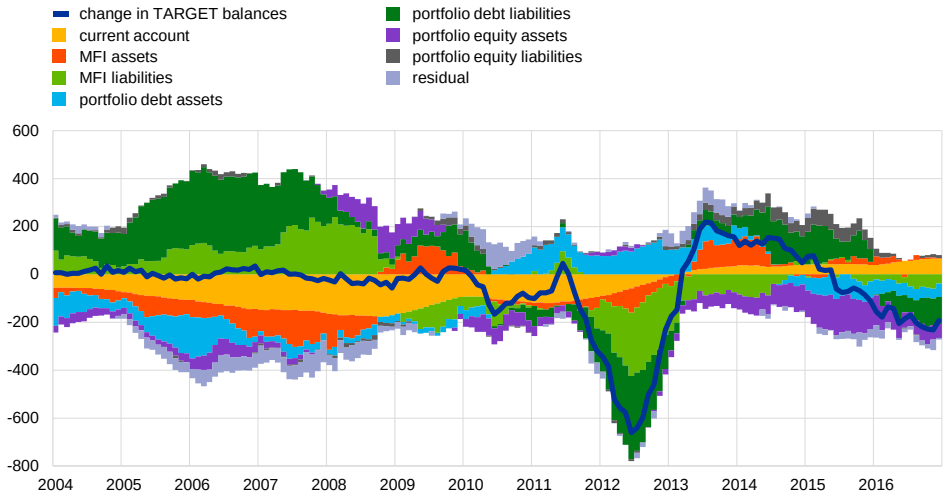
Prior to the financial crisis, when liquidity conditions in the euro area were neutral and TARGET balances were relatively small, very large flows in the other BoP components were observed without notable changes in TARGET balances. This is illustrated in **Chart 14**, which is based on annual changes in the TARGET balance and 12-month moving sums of BoP flows aggregated for the three countries with the largest TARGET liabilities at the end of 2016 (Italy, Spain and Portugal). The decomposition in **Chart 14** follows equation (6) and includes both the current account balance as well as the main components of "private" financial flows, namely portfolio investment and other investment (i.e. loans and deposits) of MFIs. The decomposition further distinguishes between investment abroad by domestic residents (asset flows/gross outflows) and investment by non-residents in the domestic economy (liability flows/gross inflows).[63] The countries with the largest TARGET liabilities at the end of 2016 recorded large BoP flows prior to the crisis – partly stemming from current account deficits, but mainly from private financial flows – without significant movements in the TARGET balance.

[63] As is common in the literature, the term "gross inflows" means "net acquisition of domestic assets by foreign residents". This reflects the fact that what is usually loosely referred to as a "gross" flow is from a statistical perspective a net concept as it refers to the difference between purchases and sales of cross-border assets by residents of a different jurisdiction.

Chart 14

Changes in TARGET balances and main components of the balance of payments in the countries with the largest TARGET liabilities at end-2016

(12-month changes; 12-month moving sum of monthly flows; EUR billions)



Source: ECB.
Notes: TARGET-liability countries include Italy, Spain and Portugal. Decomposition based on equation (6). "Assets" refer to gross outflows, i.e. investment abroad by domestic residents, while "liabilities" refer to gross inflows, i.e. investment by non-residents in the domestic economy. A negative value for assets indicates a net increase in foreign assets by domestic residents. A negative value for liabilities indicates a net reduction of domestic assets by foreign residents. A positive value for the current account indicates a surplus. Last data point is December 2016.

Hence, **Chart 14** shows that there is no constant relationship between specific components of the BoP and changes in TARGET balances. Rather, the relationship between TARGET balances and other BoP components evolves over time, depending on the implementation of the Eurosystem's monetary policy measures as well as the extent of financial stress and external imbalances.[64] This is also evident in a panel-data econometric exercise replicating and extending the analysis of Auer (2014), which estimates

$$\Delta Target_{i,t} = \alpha + \beta BoPflow_{i,t} + \varepsilon_{i,t} \quad (7)$$

and focuses on the original eleven euro area countries and Greece. The analysis is run at a quarterly frequency over the period from 1999 to 2016, thereby extending Auer's analysis by four years. In particular, it comprises one-by-one panel estimations, regressing the quarterly change in a country's TARGET balance on a set of quarterly BoP flows, namely the current account balance, gross portfolio investment inflows and gross other investment inflows to MFIs which largely consist of loans and deposits. Such an econometric analysis – involving two items of the BoP identity – cannot establish causality, but determines if the respective time series are statistically significantly correlated and whether the correlations change over time.[65] In line with Auer's analysis, mainly random-effects panel estimation

64 Similarly, Whelan (2014) points out that it would be misleading to assign a special role to, for instance, the current account as the key factor driving changes in TARGET balances.

65 According to Auer (2014), the estimation results reflect the endogenous response to economic shocks of both changes in TARGET balances and the specific private flows examined. Understanding the difference in endogeneity across different types of private flows and over time helps to illuminate the factors driving TARGET balances.

techniques are used. However, country fixed-effects estimation yields equivalent results for the full sample period, highlighting that the random-effects results are not driven by time-invariant country-specific factors (columns 1 and 2 in **Table 2**).[66]

For the full sample period from the second quarter of 1999 to the fourth quarter of 2016, significant positive coefficients are obtained for the current account and gross other investment inflows to MFIs (columns 1 and 2). One further observes that these results are driven by the crisis period (column 4, spanning from the third quarter of 2007 to the third quarter of 2012, including both the global financial crisis and the sovereign debt crisis), while in the pre-crisis period there had been no statistically significant link between these BoP components and changes in TARGET balances (column 3). Moreover, gross portfolio investment inflows are also found to be significantly correlated with changes in TARGET balances during the crisis period. These results point to the fact that the crisis period was exceptional as, in an environment of current account deficits and collapsing private financial inflows in some euro area countries, the liquidity banks obtained via the Eurosystem's refinancing operations was subsequently to some extent used for cross-border transactions, thereby giving rise to increases in TARGET liabilities.[67]

The period from the fourth quarter of 2012 – following the ECB's announcement of Outright Monetary Transactions (OMTs) – to the final quarter of 2014, i.e. before the launch of the PSPP, is shown in column 5. In this period, the only significant correlation with changes in TARGET balances is found for the current account balance, but now with a negative coefficient, implying that countries with current account deficits (or smaller surpluses) experienced a reduction in TARGET liabilities.

Finally, column 6 focuses on the PSPP period, starting in the second quarter of 2015. In this time frame, there is no significant correlation between changes in TARGET balances and either the current account balance or gross portfolio investment inflows. There is, however, as during the crisis period, a significant positive correlation between gross other investment inflows to MFIs and changes in TARGET balances, albeit with a smaller coefficient. This suggests that banks in TARGET-liability countries have partly used the additional liquidity provided by the PSPP (as well as from the ECB's TLTROs) to reduce their cross-border interbank funding, in the context of a general deleveraging process of the banking sector (see also Martínez Pagés, 2016).

66 A formal Hausman test confirms that it is appropriate to employ a random-effects model.

67 Conversely, countries with a current account surplus and gross private financial inflows (such as Germany) experienced an increase in their TARGET claims during this period.

Table 2

Panel regression analysis

Dependent variable: change in TARGET balance

(EUR billions)

	(1)	(2)	(3)	(4)	(5)	(6)
Period	99Q2 - 16Q4	99Q2 - 16Q4	99Q2 - 07Q2	07Q3 - 12Q3	12Q4 - 14Q4	15Q2 - 16Q4
Estimation	RE	FE	RE	RE	RE	RE
Current account	0.291***	0.213**	0.021	0.779***	-0.448***	0.266
	(0.044)	(0.093)	(0.023)	(0.102)	(0.094)	(0.164)
Observations	841	841	373	252	108	84
R-squared	0.01	0.01	0.00	0.01	0.00	0.00
Gross portfolio investment inflows	0.108	0.109	0.010	0.244**	0.078	0.033
	(0.086)	(0.093)	(0.027)	(0.110)	(0.082)	(0.085)
Observations	822	822	354	252	108	84
R-squared	0.03	0.03	0.00	0.08	0.02	0.01
Gross MFI loans and deposits inflows	0.120***	0.120***	0.007	0.161***	0.131	0.129***
	(0.034)	(0.034)	(0.013)	(0.051)	(0.098)	(0.040)
Observations	795	795	327	252	108	84
R-squared	0.05	0.05	0.00	0.09	0.02	0.14

Notes: Panel analysis including the 11 initial euro area countries and Greece, with random effects (columns 1, 3 to 6) or country fixed effects (column 2) and standard errors clustered at the country level. RE and FE refer to random-effects and country fixed-effects estimations, respectively. *** p<0.01, ** p<0.05, * p<0.1.

The analysis of various BoP components also provides insights into whether or not large changes in TARGET balances of euro area countries are associated with crisis-related external transactions. During the sovereign debt crisis, there were indications of unsustainable BoP developments in the three euro area countries with the largest TARGET liabilities at the end of 2016 (Italy, Spain and Portugal). In the period from mid-2011 to mid-2012, TARGET-liability countries experienced a sudden stop in private gross foreign financial inflows (see **Chart 15**).[68] In particular, foreign inflows to the domestic banking system and bond markets came to a halt as foreign residents were cutting interbank funding and selling off government bonds on a large scale (see **Chart 16**). At the same time, there was evidence of capital flight by domestic MFIs into foreign safe-haven deposits and a retrenchment by residents from foreign securities to repatriate liquidity. The external funding needs were exacerbated by the fact that TARGET-liability countries were running a combined current account deficit. Thus, during the sovereign debt crisis, a substantial part of the liquidity provided by the Eurosystem to banks in TARGET-liability countries was used for external transactions related to the current account deficits and the collapse in private financial inflows, thereby leading to an increase in TARGET liabilities. Correspondingly, the euro area countries with the largest TARGET claims (Germany, Luxembourg and the Netherlands) received foreign inflows to domestic MFIs and financial instruments, while recording a surplus in the current account (see **Chart 17**).

[68] The approach of identifying sudden stops focuses on gross financial inflows following Forbes and Warnock (2012). See the notes to **Chart 15** for further details.

By contrast, since the launch of the PSPP in March 2015, there have been no indications of unsustainable BoP developments in euro area countries as developments in the BoP of the euro area countries with the largest TARGET liabilities and those with the largest TARGET claims have differed markedly from the developments observed during the sovereign debt crisis. In fact, BoP developments have followed broadly similar patterns in both groups (see **Chart 16** and **Chart 17**). While foreign investors have reduced their exposure to debt securities in TARGET-liability countries, this has been on a markedly smaller scale than during the sovereign debt crisis and in a similar fashion to that seen in TARGET-claim countries. Moreover, residents from both country groups have rebalanced towards foreign debt and equity securities, while recording inflows into domestic equities.[69] Importantly, the resulting net portfolio investment outflows since the launch of the APP – which are observable across both country groups – are not reflective of crisis-induced external flows indicating sudden stops or capital flight.[70] In addition, following the external adjustment process in TARGET-liability countries over recent years, the current account has registered a surplus since the start of the PSPP, as has continued to be the case in TARGET-claim countries.

To sum up, this sub-section highlights that there is no time-invariant causal link between changes in TARGET balances and specific components of the BoP. Moreover, it shows that certain empirical regularities between specific BoP items and changes in TARGET balances were present during the crisis period, but not before or afterwards. Thus, the analysis of BoP developments during the PSPP period shows that large changes in TARGET balances per se are not an appropriate individual indicator to detect crisis-related external flows.

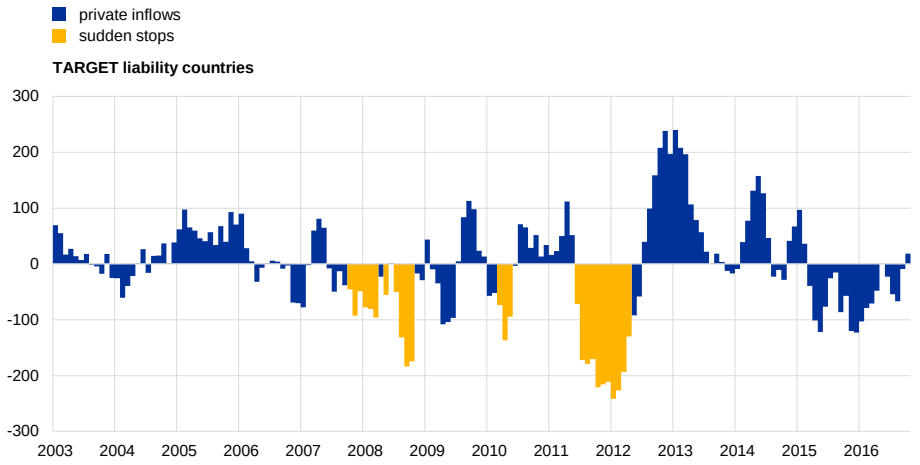
69 The large inflows to foreign equities in TARGET-claim countries reflect the important role of Luxembourg as a domicile for the investment fund industry.

70 Cross-border banking flows have been relatively subdued since the launch of the PSPP, with MFIs in both country groups slightly reducing their foreign assets in terms of loans and deposits. In TARGET-liability countries, MFIs recorded a reduction in cross-border banking liabilities in the context of a general deleveraging process, while these increased somewhat in TARGET-claim countries. The latter suggests that non-resident APP counterparties accessing TARGET via euro area financial centres deposited some of the proceeds obtained under the APP with MFIs in TARGET-claim countries (Deutsche Bundesbank, 2017).

Chart 15

Identifying sudden stops

(year-on-year changes in rolling three-month sums of private financial inflows, EUR billions)

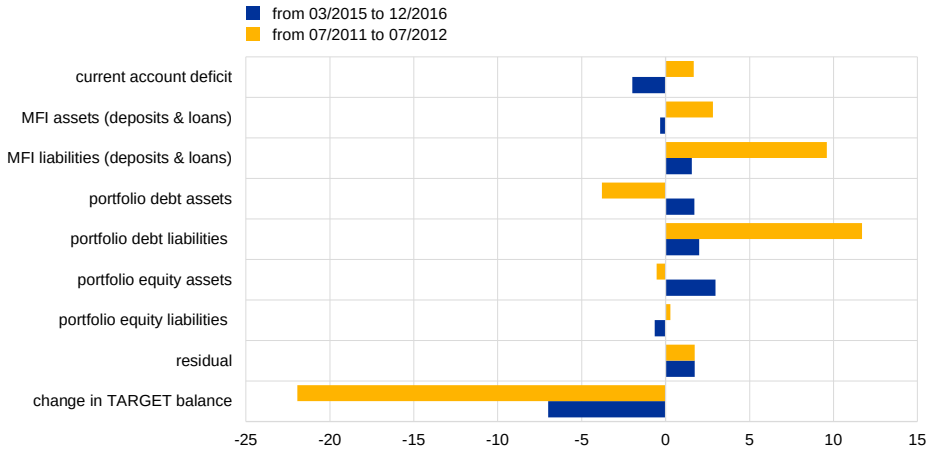


Source: ECB.
Notes: TARGET-liability countries include Italy, Spain and Portugal. Following Forbes and Warnock (2012), sudden stops (marked in yellow) are defined as a sharp fall in private gross financial inflows. For sudden-stop episodes, two criteria need to be met: (1) year-on-year changes in private gross financial inflows must be more than two standard deviations below the expanding historical average during at least one month; and (2) the episode lasts for all consecutive months for which the year-over-year change in gross private financial flows is more than one standard deviation below the expanding historical average. The latest observation is for December 2016.

Chart 16

Changes in TARGET balances and selected balance of payments developments in TARGET-liability countries

(cumulated monthly flows, percentages of GDP)

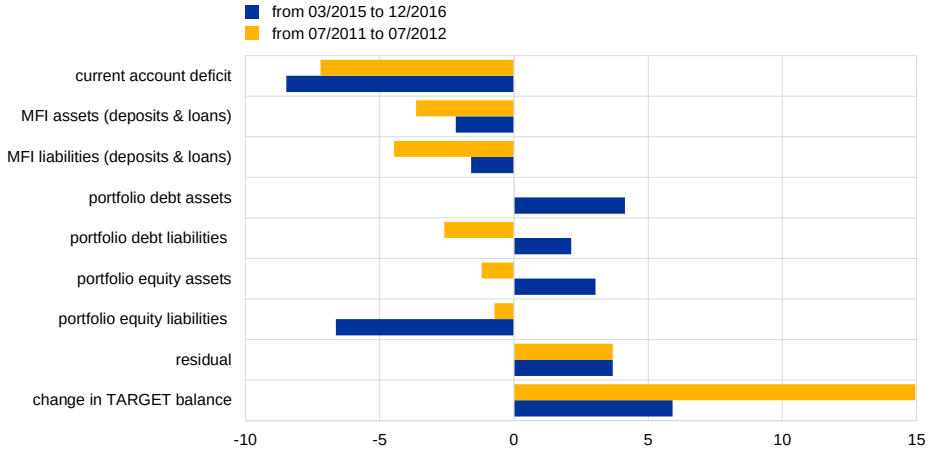


Sources: ECB, TARGET2 and ECB calculations.
Notes: TARGET-liability countries include Italy, Spain and Portugal. In line with BoP accounting, all items with a positive value are funded by the items exhibiting a negative value. Residual includes all BoP items not shown in the chart. For assets a positive (negative) value indicates net purchases (sales) of foreign assets by domestic residents, while for liabilities a negative (positive) value indicates net purchases (sales) of domestic assets by foreign residents. A positive (negative) value for the current account deficit refers to a deficit (surplus). GDP is converted to a monthly frequency.

Chart 17

Changes in TARGET balances and selected balance of payments developments in TARGET-claim countries

(cumulated monthly flows, percentages of GDP)



Sources: ECB, TARGET2 and ECB calculations.
Notes: TARGET-claim countries include Germany, Luxembourg and the Netherlands. In line with BoP accounting, all items with a positive value are funded by the items exhibiting a negative value. Residual includes all BoP items not shown in the chart. For assets a positive (negative) value indicates net purchases (sales) of foreign assets by domestic residents, while for liabilities a negative (positive) value indicates net purchases (sales) of domestic assets by foreign residents. A positive (negative) value for the current account deficit refers to a deficit (surplus). GDP is converted to a monthly frequency.

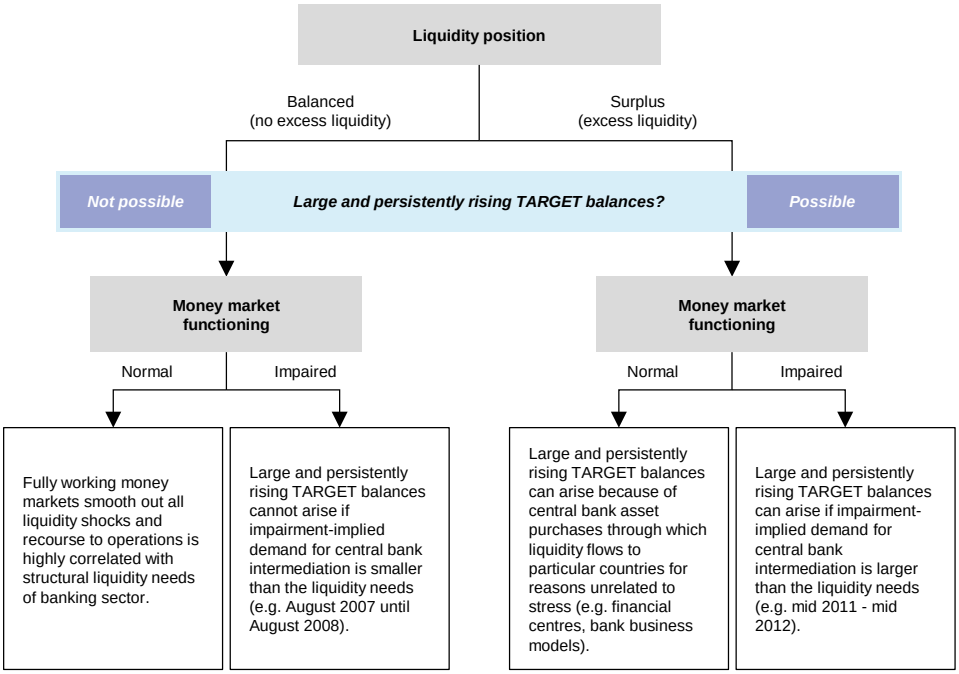
5 Conclusion

The factors driving the increase in TARGET balances during the APP period are of an intrinsically different nature to those in previous episodes. It is noteworthy that the increase in excess liquidity underlying the current increase in TARGET balances is mainly supply-driven and therefore exogenous to conditions in bank funding markets. This sharply contrasts with previous episodes of rising TARGET balances, when excess liquidity was demand-driven as banks' opted to substitute market-based funding with central bank credit in the context of frictions in bank funding and interbank money markets. The APP gives rise to substantial cross-border flows of reserves during its implementation and beyond, reflecting the interaction of decentralised monetary policy implementation and the integrated financial structure. This structure, in which only a handful of locations act as financial gateways between the euro area and the rest of the world, leads to rising TARGET balances at the time of APP purchases and persistence of TARGET balances in the context of international portfolio rebalancing. Looking ahead, a normalisation of central bank balance sheets and the ensuing reduction in the level of excess liquidity should naturally bring about a significant retrenchment of TARGET balances.

Annex

Figure 5

Summary of conditions necessary for large and persistently rising TARGET balances



Source: ECB.
Note: Under balanced liquidity conditions, excess liquidity is not necessarily zero as institutional frictions and banks' demand for working balances can result in a small positive reserve buffer (see footnote 21).

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Abbreviations

Terms

ABSPP	Asset-backed Securities Purchase Programme
APP	Asset Purchase Programme
BoP	balance of payments
CA	current account
CBPP3	Third Covered Bond Purchase Programme
DER	derivatives
DFR	deposit facility rate
DvP	delivery versus payment
ECB	European Central Bank
EEA	European Economic Area
EO	errors and omissions
EUR	euro
FA	financial account
FDI	foreign direct investment
FRBNY	Federal Reserve Bank of New York
FRBs	Federal Reserve Banks
FRFA	fixed-rate full-allotment
GOV	general government
ISA	Interdistrict Settlement Account
KA	capital account
MFI	Monetary Financial Institution
MLF	marginal lending facility rate
MRO	main refinancing operation
NCB	national central bank
O/N	overnight
OMT	Outright Monetary Transactions
OTH	other investments
PI	portfolio investment
PRV	private entities
PSPP	Public Sector Purchase Programme
RA	reserve assets
RTGS	real-time gross settlement
SMP	Securities Markets Programme
SOMA	System Open Market Account
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer system
TLTRO	targeted longer-term refinancing operations

Countries

DE	Germany
ES	Spain
FR	France
IT	Italy
LU	Luxembourg
NL	Netherlands
PT	Portugal
UK	United Kingdom

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