IDENTIFYING TARGET 2 DETERMINANTS IN THE LONG RUN: STRENGTH AND LIMITS OF BALANCE OF PAYMENTS ACCOUNTING IDENTITIES

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Abstract:

Target2 (T2) balances in the Eurozone are again in a divergent trend after the pandemic shock. The recent financial literature seems to have reached a consensus about the need to characterize such phenomena under specific monetary policy configurations variable in time. T2 balances can be decomposed by using the balance of payments (BoP) identities. Indeed, proving a strong causality link from data that have to fulfill an accounting identity can be challenging, since the closer the data are to an accounting identity, the less information on causal relation can be inferred from econometric techniques. Nevertheless we believe that useful information can be extracted from the analysis of accounting correspondences. In this perspective, both long-term and short-term BoP decompositions are performed for Italy and Germany under different regimes of monetary policies in the Euro Area.

Keywords: capital flows, payment system, financial crisis, quantitative easing, interbank lending

JEL codes: E42, E44, E52, E58, F32, F34

1. Introduction

In this work we study the dynamics of Eurozone Target2 (T2) imbalances and their consequences by performing a decomposition of the T2 balances through the analysis of the financial accounts of the balance of payments (BoP) which track all incoming and outgoing capital flows from the country of reference (see also on the application of this methodology, Minenna et al. 2018). T2 is the current Trans-European Automated Real-time Gross settlement Express Transfer system, i.e., an intra-European funds transfer system run on a single shared IT platform, the settlement net values of which are calculated daily on a bilateral or multilateral gross basis. In June 2020, the Eurozone's Target2 (T2) net balances have continued to diverge, reaching record levels never experienced before: for Italy, -€ 536 billion, -€ 462 billion for Spain, while Germany records a huge surplus of € 995 billion, well above the peaks registered during the 2011-2012 Eurozone crisis in peripheral countries. The ECB has also seen its deficit widen to € -260 billion due to the standard (PSPP) and pandemic emergency purchases programs (PEEP). Around 10 per cent of purchased assets are risk-shared between Eurozone countries and thus are accounted as an ECB "debt" towards National Central Banks (NCBs).

This unusual accounting confirms the complex technicalities that are involved and that continue to veil a clear explanation of the driving components of this accounting method employed by European central banks.

Academic research on the importance of T2 balances has progressed considerably since the disputed work of Sinn (Sinn/Wollmershäuser 2012), who attempted to shed light on the relationship between the current accounts and the T2 balances of Eurozone countries. A surplus in the current account should lead to a positive T2 net balance, and vice versa. Within this perspective, Sinn considers that T2 balances are a "stealth bail-out" of peripheral countries by the creditor central banks. Indeed, a subsequent default of the debtor central bank would turn into a net loss for the Eurosystem, to be absorbed jointly by all the remaining members (risk mutualisation or risk-sharing). Whelan (2012 and 2014) contested this view, pointing out that any central bank can always operate with "negative equity", i.e., it could offset losses by "printing money", without fiscal transfers from the taxpayers. Szécsényi (2015) concludes that T2 assets and liabilities could eventually lead to losses in the extreme case of a Euro break-up, but these should be much lower than what the raw net imbalances suggest. Nonetheless, a part of the academic and financial community seems to acknowledge that diverging net balances from 2014 are driven mainly by financial transactions (Borio/Disyatat 2015). We agree with Terzi (2018) interpretation of the presence of two different regimes of monetary policies in the period 1999-2018 under which the T2 balances have displayed different patterns (see § *Target2 balances before the financial crisis: BoP reconstruction from 2001 to 2008* and § *T2 balances after the financial crisis: BoP reconstruction till 2020 for Italy and Germany*).

From a general perspective, T2 decomposition reveals accounting correspondence, not causality. Indeed, as pointed out by Auer (2014) and Eisenschmidt et al. (2017), the closer the data are to an accounting identity, the less information on causal relation can be inferred from econometric exercises. For this reason, we did not run any panel-data econometric regressions or causality tests, preferring to provide a comparative analysis of the Target2 and BoP data as regularly done in this stream of literature (see again e.g. Sinn and Wollmershaeuser 2011 a,b, 2012a,b; Buiter et al. 2011a,b,c; Bornhorst and Mody 2012; Jobst et al. 2012; Bindseil et al. 2012; and the BoP analyses regularly published by the Bank of Italy[1]).

[1] Banca d'Italia (2017) - I saldi TARGET2 e i movimenti dei capitali. Link: https://www.bancaditalia.it/media/views/2017/target2/

The co-movements between T2 balances and BoP cumulative flows cannot be completely disconnected and they convey a certain amount of useful information in the long run, especially for evident cases such as the German current account surplus with respect to the Eurozone, as well as to the rest of the world.

2. How Target2 works

The Gross Settlement system Target2 is the operating arm of the European financial system which allows to efficiently regulate interbank credit. This is a technical tool which, through subsequent compensations, allows the quick transfer of financial flows between the different countries of the Eurosystem.

The nodes are the central banks of European countries which choose to adhere to the Eurosystem: basically, if a German bank needs to settle a credit with an Italian bank, it may access an intraday cash account at the Bundesbank and obtain an anticipated payment, while the Italian bank will settle its own balance with the Bank of Italy. At this point, the German central bank will record a credit against the Italian central bank in its accounting books, and vice versa. The credit is not compensated through the direct transfer of flows between the two national central banks because in practice they are nothing more than "branches" of the European Central Bank.

3. The decomposition of T2 balances

To shed light on the direction and magnitude of financial flows, the net balance of T2 can be analyzed as the result of movements in the accounts of the BoP[2], which track all incoming and outgoing capital flows from the country of reference. Since the BoP net value must be zero at all times, the T2 balance will vary in response to a variety of cross-border financial transactions carried out by banks, government and the non-financial private sector.

In more formal terms, given the general structure of the BoP at a generic time $t \in (0, T)$:

$$CA_t + CapA_t - CF_t + ErrO_t = 0 \quad (1)$$

where:

CA_t is the Current Account Balance

$CapA_t$ is the Capital Account Balance

CF_t is the Financial Account

$ErrO_t$ are the *Errors and Omissions*

Considering the position of the ΔT2 component (i.e. the T2 net balance variation between two consecutive accounting periods *t* and *t-1*) inside the Financial Account:

$$CA_t + CapA_t - \left(CF_{noT2_t} + \Delta T2\right) + ErrO_t = 0 \quad (2)$$

[2] The International Monetary Fund states in its *position manual* that the Target2 net balance has to be accounted inside the section *Financial account – Other investments.* See also Annex 3 A3.*46 Intra-CUNCBs and CUCB balances*. Link: https://www.imf.org/external/pubs/ft/bop/2007/pdf/bpm6.pdf

It follows that:

$$CA_t + CapA_t - CF_{noT2_t} + ErrO_t = \Delta T2 \quad (3)$$

where now CF_{noT2} represents the sum of all the sub-accounts of the Financial Account purified of the ΔT2 component.

Given that $\Delta T2 = T2_t - T2_{t-1}$, the *T2* balance at the generic time *t* is trivially reconstructed by the sum of the ΔT2 variations over the reference period $(0, T)$ plus an initial value $T2_0$. i.e.:

$$T2_t = T2_0 + \sum_{t=1}^{T} \Delta T2$$

This means that:

$$T2_t = T2_0 + \sum_{t=1}^{N}\left(CA_t + CapA_t - CF_{noT2_t} + ErrO_t\right) \quad (4)$$

$$T2_t = T2_0 + \sum_{t=1}^{N}(CA_t) + \sum_{t=1}^{N}(CapA_t) - \sum_{t=1}^{N}\left(CF_{noT2_t}\right) + \sum_{t=1}^{N}(ErrO_t) \quad (5)$$

In other words, the T2 net balance at a time *t* is reconstructed by building and summing the cumulative flows of the BoP accounts.

Now, the sub-accounts that compose the entire Financial Account CF_{noT2_t} (that now exclude the ΔT2 net balance variation) contain a large set of information about the origin and directions of financial flows. In detail it's possible to disaggregate the data by highlighting the economic sector of reference (*government sector*, *central bank*, *monetary and financial institutions, private non-financial sector*) and the typology of the financial transactions involved. For the scope of this paper, the following categories have been considered that correspond to an medium-high level of detail:

Accounts	*Data collected*
Direct Investment	*Net Value*
Portfolio Investment - Equity and investment fund shares/units	*Assets & Liabilities*
Portfolio Investments – Debt Securities	*Assets & Liabilities*
Portfolio Investments – Other Investment	*Assets & Liabilities*

By properly aggregating the different sub-accounts along the cited macro-categories it's possible to build quantities that have a precise meaning from a financial point of view. The following table reports the set of aggregations of the *Financial Account* sub-accounts used in this work to decompose the ΔT2 net balance variation to highlight its main financial and economic determinants.

Table A

FINANCIAL ACCOUNT (SUB-ACCOUNTS)	DATA	ECONOMIC SECTOR	FINANCIAL MEANING
Direct Investments	*Net Value*	*Total Economy*	*Foreign Direct Investments*
Portfolio Investment - Equity and investment fund shares/units	*Net Value*	*Central Bank*	*Central Bank foreign investments and other liabilities*
Portfolio Investments – Debt Securities			
Portfolio Investments – Other Investment			
Portfolio Investment - Equity and investment fund shares/units	*Asset*	*Government*	*National government foreign investments*
Portfolio Investments – Debt Securities			
Portfolio Investments – Other Investment			
Portfolio Investment - Equity and investment fund shares/units	*Liabilities*	*Government*	*Foreign investments in national assets – Public sector*
Portfolio Investments – Debt Securities			
Portfolio Investments – Other Investment			
Portfolio Investment - Equity and investment fund shares/units	*Asset*	*Monetary and Financial Institutions*	*Foreign deposits, loans and investments of national banks*
Portfolio Investments – Debt Securities			
Portfolio Investments – Other Investment			
Portfolio Investment - Equity and investment fund shares/units	*Liabilities*	*Monetary and Financial Institutions*	*Foreign deposits, loans and investments in national banks*
Portfolio Investments – Debt Securities			
Portfolio Investments – Other Investment			
Portfolio Investment - Equity and investment fund shares/units	*Asset*	*Other Sectors*	*Foreign deposits, loans and investments of the non-financial private sector*
Portfolio Investments – Debt Securities			
Portfolio Investments – Other Investment			
Portfolio Investment - Equity and investment fund shares/units	*Liabilities*	*Other Sectors*	*Foreign investments in national assets – Non-financial private sector*
Portfolio Investments – Debt Securities			
Portfolio Investments – Other Investment			

In the following the T2 net balances of Italy, Germany and France are decomposed for the corresponding BoP flows.

4. T2 balances before the financial crisis: BoP reconstruction from 2001 to 2008 for Italy and Germany

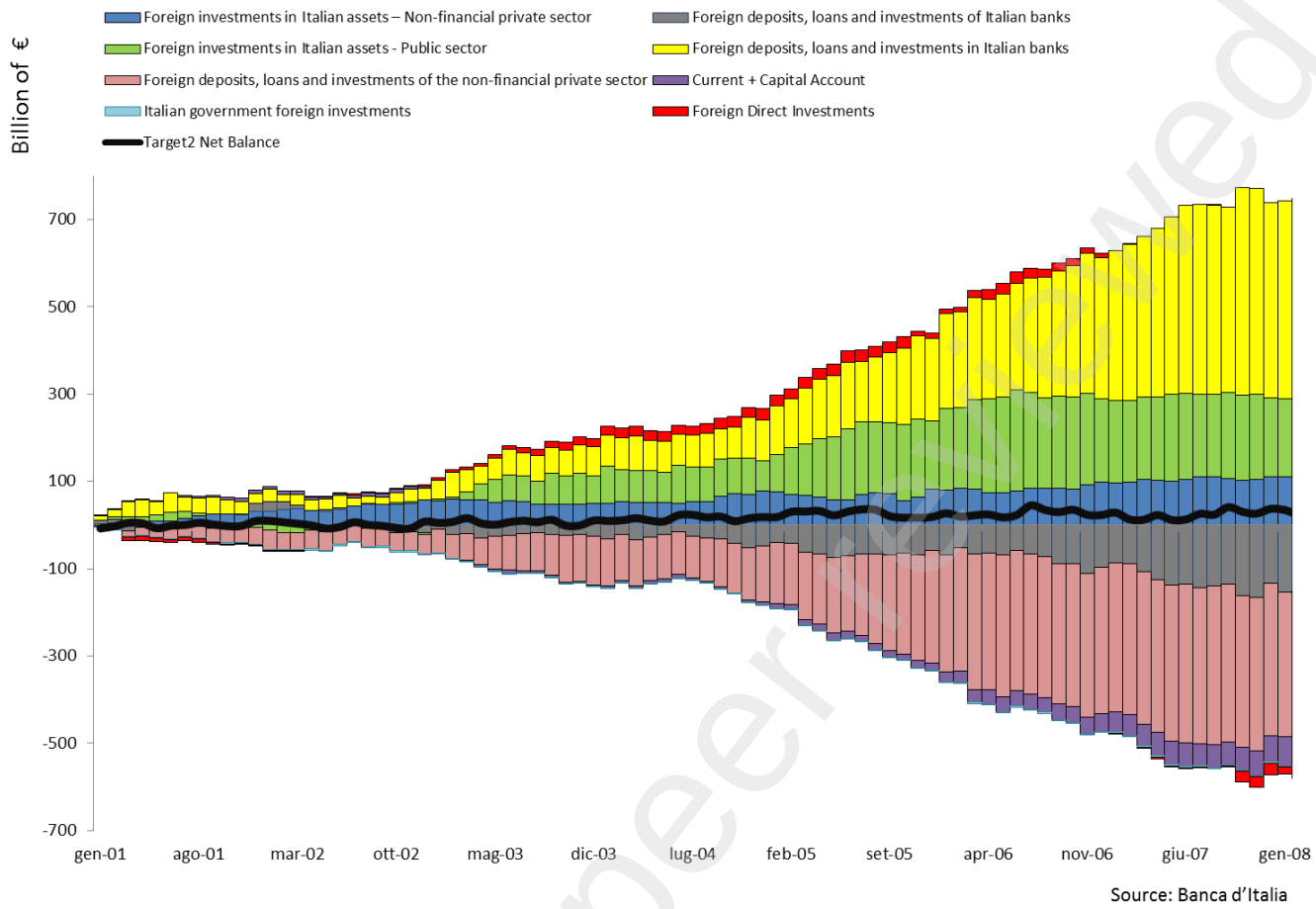
In this section we investigate by means of a long-term BoP reconstruction for Italy and Germany, how the BoP capital flows have evolved and their relationship with the T2 balance in the two different regimes of monetary policies starting from 2001: the first regime runs up to 2008, the second from the end of 2008 with the start of the Great Financial Crisis (GFC) up to the end of the data sample. The Figures reveal a regime shift in 2007-2008 that can be identified without recurring to more complex econometric tools, which as recalled before have well identified limits when identities are involved.

For both countries, BoP accounting identities show indeed that in the period 2001-2008 massive capital shifts between Euro Area (EA) countries were happening without an appreciable impact on T2 balances. Investments in foreign assets by the private sector (grey and pink areas in Figures 1 and 2, mainly financial in Germany, non-financial in Italy) were compensated by a corresponding growth in the external liabilities of banks (yellow area). This interpretation is in line with Terzi (2018) who suggested that "*over any given period, if the value of net payments made (or received) by the residents of one EA country […] This was the ordinary scenario before 2007 in the EA: a zero (or close to zero) T2 balance position for each NCB was consistent with any balance of payments position with the RoEA.*"

Italy

For what regard Italy, by looking carefully at Figure 1 is possible to discern the gradual emergence of three phenomena that impacted on the Italian BoP in the early 2000s: on the one hand, the growth of investments by the Italian non-financial private sector abroad (pink bars) which follows until 2008 a trend not so different to the one experienced more recently from 2014 onwards. It could be argued that, even before the GFC, the Italian private sector therefore was diversifying its investments abroad in search of more attractive yields given the widespread belief in the unshakable solidity of the European banking system. At the time there was no concerns in the markets about the financial health of the system (default or redenomination risks).

Figure 1: Italy – T2 balance and its BoP reconstruction (2001-2008, cumulative flows)



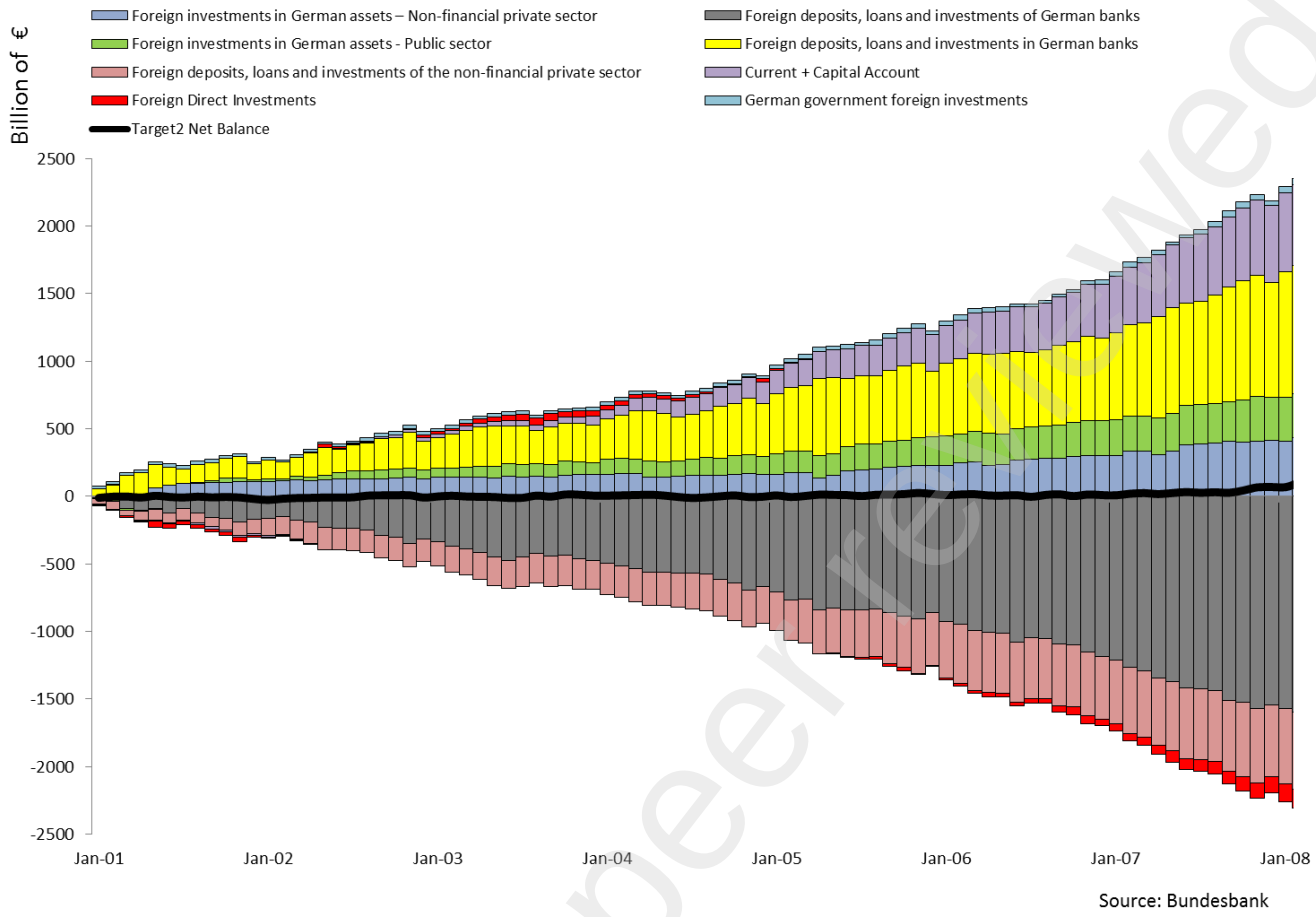
Source: Banca d'Italia

This growing flow of investments, however, was financed differently w.r.t. the recent praxis. While since 2014 the phenomenon has been driven by the liquidity injected into the system by the ECB, in the early 2000s it was financed by growing credit inflows from abroad; in fact, starting from 2003 to 2006 it is possible to appreciate an explosion of foreign investments in Italian public securities (green bars) and of cross-border borrowing by Italian banks (yellow bars). In other words, the growing financial integration guaranteed by converging interest rates and the freedom of capitals' movements in the EA facilitated the entry of financial capital into the country. Till 2008 these inflows substantially offset the outflows due to the diversification of investments abroad pursued by the private sector and, to a lesser extent, by national banks. For this reason, the T2 balances, which roughly measure the balance between outgoing and incoming flows, remained around zero despite the growing importance of these phenomena in terms of cumulative flows.

Germany

In the German experience (see again Figure 2) three main regimes can be easily identified: before the GFC, the T2 balance remains flat due to the concomitant strong growth of German banks' exposure, both in assets (gray bars - German banks' investments abroad) and liabilities (yellow bars, cross-borders interbank loans). In this first phase, foreign investments by the non-financial private sector (pink bars) and the positive current account (violet bars) also contributed marginally to capital outflows.

Figure 2: Germany – T2 balance and its BoP reconstruction (2001-2008, cumulative flows)



5. T2 balances after the financial crisis: BoP reconstruction till 2020 for Italy and Germany

After 2008, T2 balances began to diverge, on the positive side for Germany, and the negative one for Italy. A common phenomenon that is reflected in both reconstructions is the persistent deleveraging of the banking sector, with a marked reduction of both assets and liabilities. These items never recovered their pre-crisis levels. This is coherent with the mutated configuration of monetary policy that reduced the weight of the interbank market for banks' funding needs in favor of NCB liquidity. For Italy, also the non-financial private sector was reducing its foreign liabilities (until 2014). From 2014 the supply-side shock related to the monetary expansions of the ECB (T-LTRO[3] loans and APPs[4]) is connected with the recovery of Italy non-financial private sector foreign investments. For Germany, one cannot ignore the acceleration impressed to the cumulated current account surplus by the APPs and by the consequent Euro devaluation; this capital inflow is not completely matched by the outflows of funds from the private non-financial sector and this is reflected (in an accounting perspective) by the increase in German T2 balance.

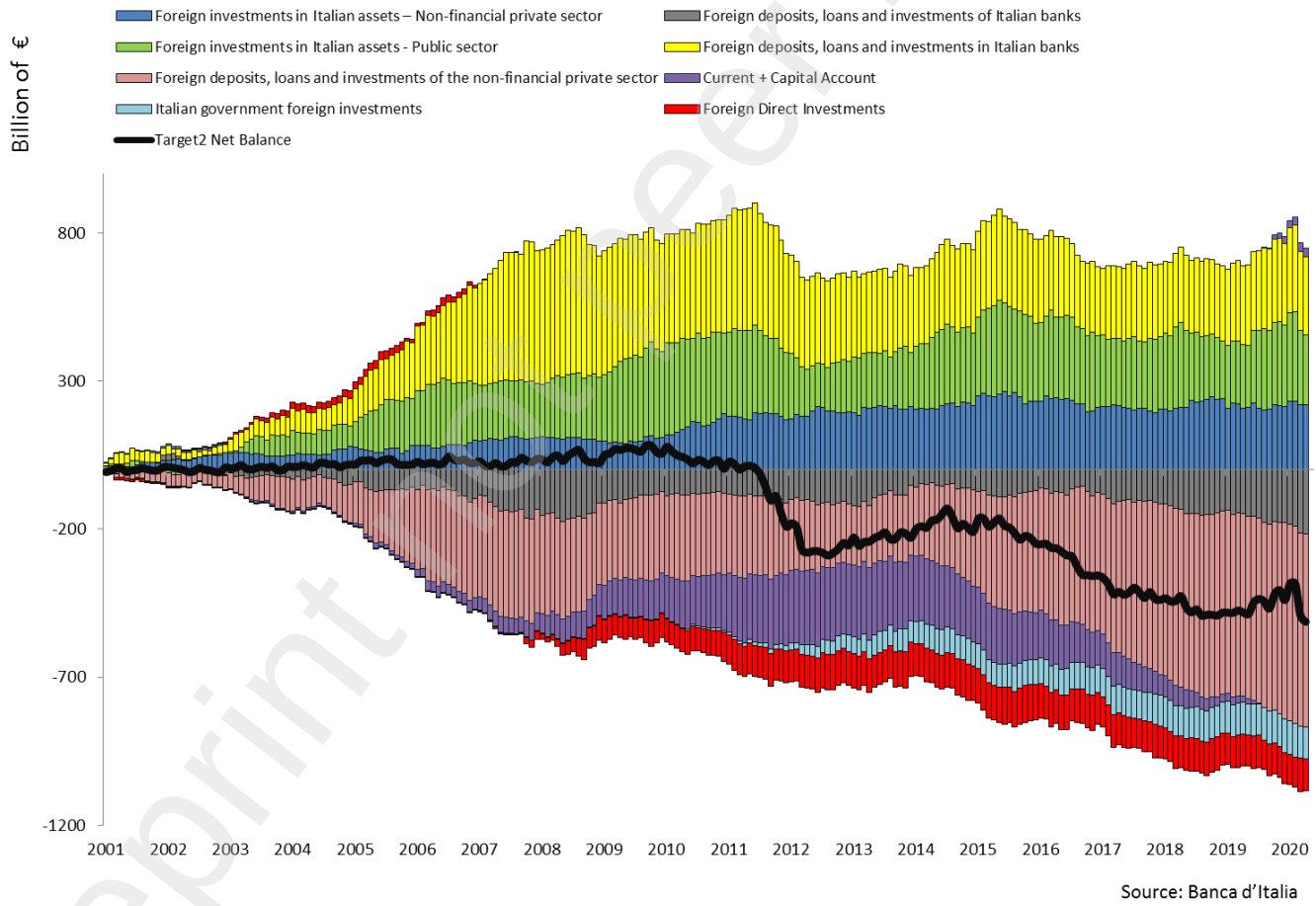
Italy

[3] Targeted Long Term Refinancing Operations.

[4] Asset Purchase Programmes.

From 2008 to 2011, although Italy's T2 balance did not undergo appreciable changes, profound shifts in the structure of the BoP were taking shape. The GFC reduced investment by the non-financial private sector and banks abroad due to increased risk aversion; this reduction in capital outflows was being partially offset by the slowdown in the growth of foreign exposures to Italy (both in the public and in the banking sectors). The most substantial change, however, concerned the worsening of the current account balance (violet bars), due to the sudden collapse in exports in 2008 and the subsequent slow recovery. In fact, with the economic recovery of 2010, the country's current account did not improve but underwent a further deterioration caused by the resumption of imports on one hand and the stagnation of exports on the other. The structural worsening of the current account in a phase of economic deceleration was an additional element that contributed to the unfolding of a very unfavorable macroeconomic scenario for Italy in 2011. In the second half of 2011 the slowdown in world GDP growth and the shift of the ECB towards a more tight monetary policy stance ignited in Italy a severe BoP crisis, paired with a confidence crisis in government debt's solvency. Abrupt outflows of funds were reflected by the sudden, unprecedented worsening of the T2 balance.

Figure 3: Italy – T2 balance and its BoP reconstruction (2001-2020, cumulative flows)



Source: Banca d'Italia

The green bars in Figure 3 show that between 2011 and 2012, at the height of the Italian crisis, foreign banks sold a significant amount of Italian government bonds on the secondary market due to the augmented perception of credit risk. The sale of an Italian financial asset from abroad represents a capital outflow for Italy, which is recorded with the sign (-) in the T2 balance. Italian government bonds were then re-purchased at low

prices by Italian banks thanks to the huge flows of liquidity that they were borrowing via LTROs loans from the ECB. This operation succeeded in securing the refinancing of the Italian government debt, but at the cost of the internalizing the sovereign credit risk within the Italian financial system.

At the same time, German and other Northern European banks were reducing their long-term commercial credits towards peripheral countries. This phenomenon is captured by the negative growth of yellow bars representing the cumulated interbank lending of Italian banks. In 2011-2012, this lending was decelerating, due to the substantial reduction in the deposits held by foreign banks at Italian banks and the lack of renewal of existing credit lines.

Hence the combined effect of the fire sale of government bonds by foreign investors to Italian banks (green bars) and the contraction of interbank credit (yellow bars) fully explains the explosion of the T2 balance up to -€ 280 billion at the end of 2012.

In 2013, when LTRO repayments began, the ECB's balance sheet gradually deflated together with the T2 balances of all major Eurozone countries. The divergence of T2 balances resumed in June 2014 when the ECB launched a new loan program for European banks aimed this time at increasing corporate credit (T-LTROs).

However, the divergence process in T2 balances accelerated considerably after the launch of the APPs in March 2015, briefly discontinued only between January and November 2018. As of June 2020, total purchases had already exceeded € 2.775 billion. Moreover, from March 2020 the new *Pandemic emergency Purchase Programme* (PEEP) has added €453 billion to the ECB balance sheet.

In sync with the launch of APPs in 2015, the reallocation of non-financial private sector wealth from government bonds to foreign bonds, mutual funds and shares (pink bars in Figure 3) has become the main cumulated flow linked with the deterioration of the Italian T2 balance. From March 2015 to April 2020, almost € 400 billion were reinvested by non-financial Italian enterprises in vehicles with legal residence in Luxembourg, the Netherlands and Germany. Only 20% of these can be attributed to Italian entities (through "round trip" funds). A good chunk of these transactions were allowed by the open-market operations of the Bank of Italy, which purchased government bonds from private investors, thus providing the necessary financial resources. For what regards the causal relationship between the ECB asset purchase programmes and the BoP movements, see § 6.

Figure 4 offers an alternative view of the main cumulative flows of Italy Bop in the period 2001-2020.

Figure 4 - Selected Entries of Italy BoP and Target2 Net Balance (2001-2020, cumulative flows)

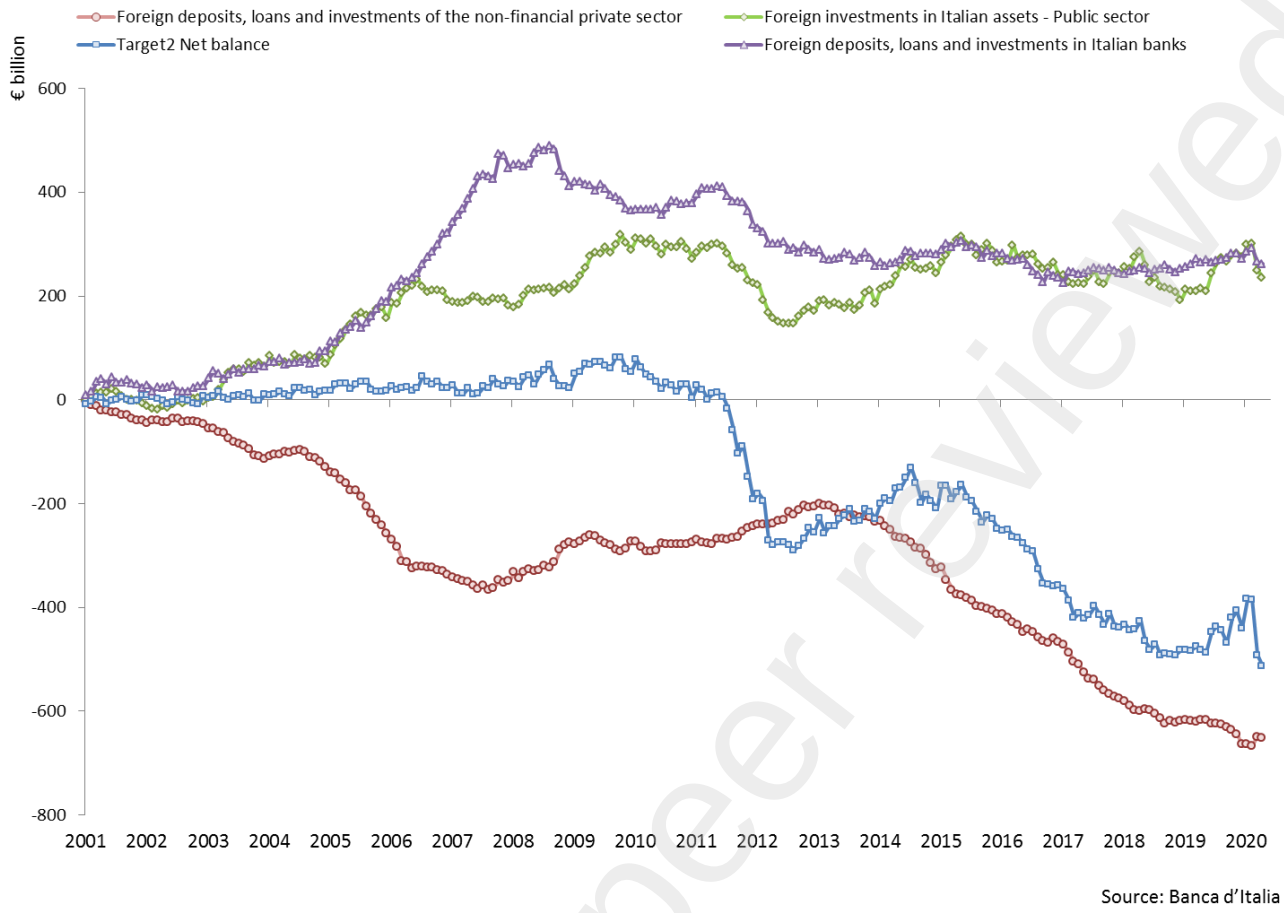
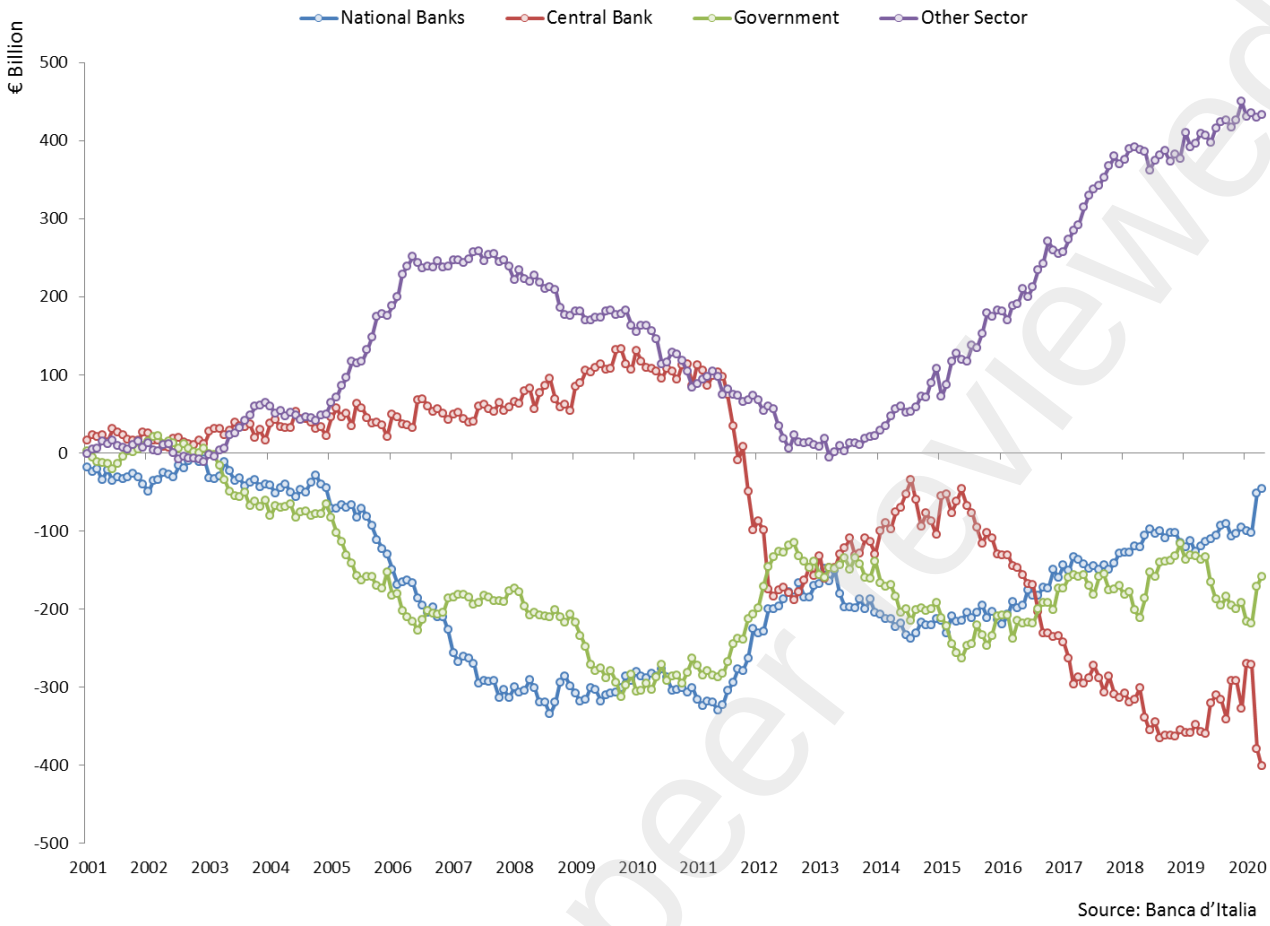


Figure 5 highlights the trend of the main net flows of the BoP aggregated by reference sector. The cross-border investment cycle of the private non-financial sector is evident (violet line), with 2 phases of expansion: one between 2002 and 2008, financed through an increase in the foreign liabilities of the national banking sector (blue line) and an increase of foreign investments in Italian public securities (green line). A second between 2014 and 2020, offset by a corresponding increase in central bank liabilities (red line), which injected liquidity into the financial system through a widespread purchase of government bonds on the secondary market. In the same period, the blue line was steadily declining due to the progressive deleveraging of the banking sector from cross-border liabilities.

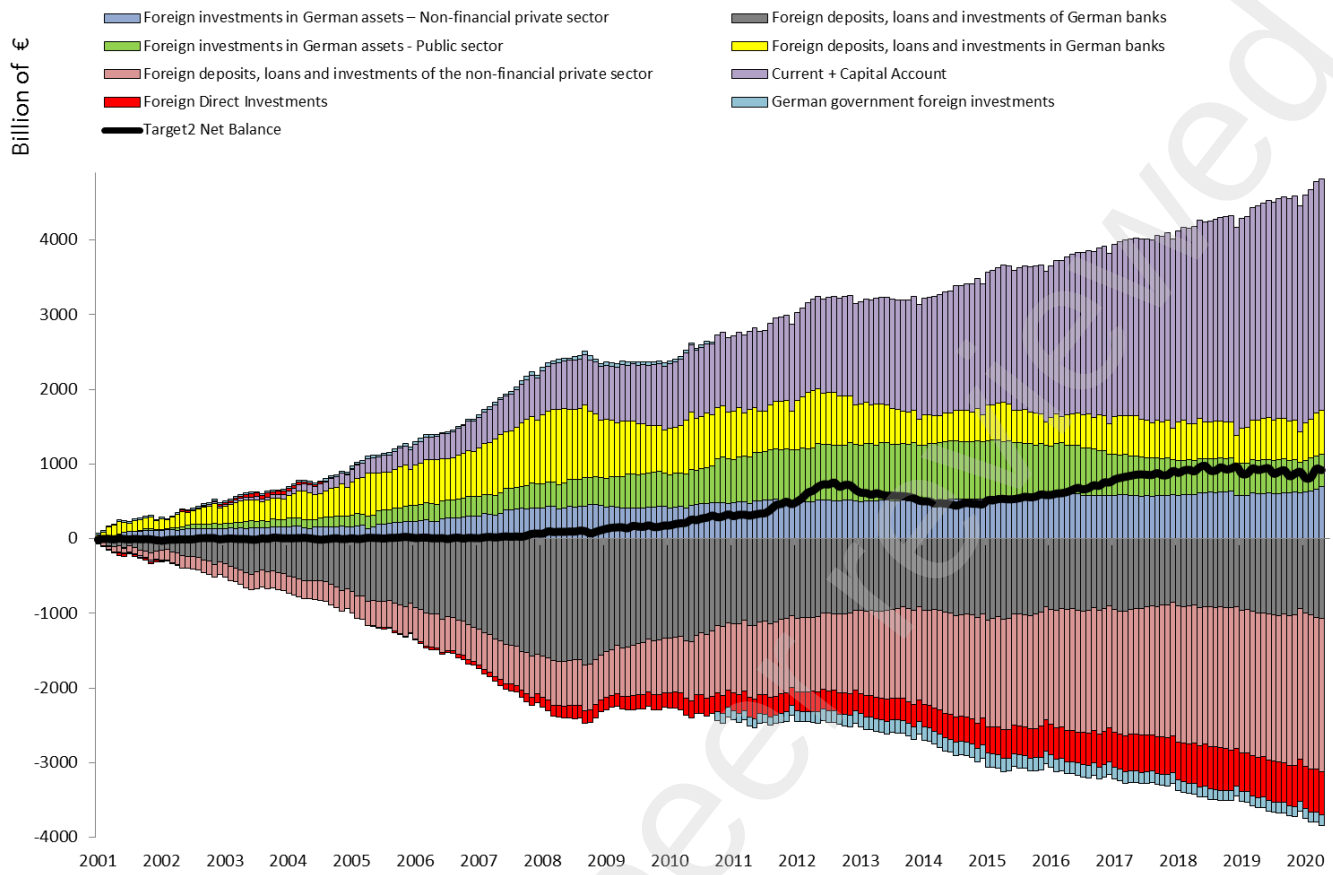
Figure 5 – Italy BoP – Portfolio Investments (2001-2020, cumulative flows)



Germany

If the same in-depth analysis is carried out on the German T2 balance (see Figure 6), clear structural similarities that are not characteristic of Italy but common to all of the Euro area emerge.

Figure 6: Germany – T2 balance and its BoP reconstruction (2001-2020, cumulative flows)



Source: Bundesbank

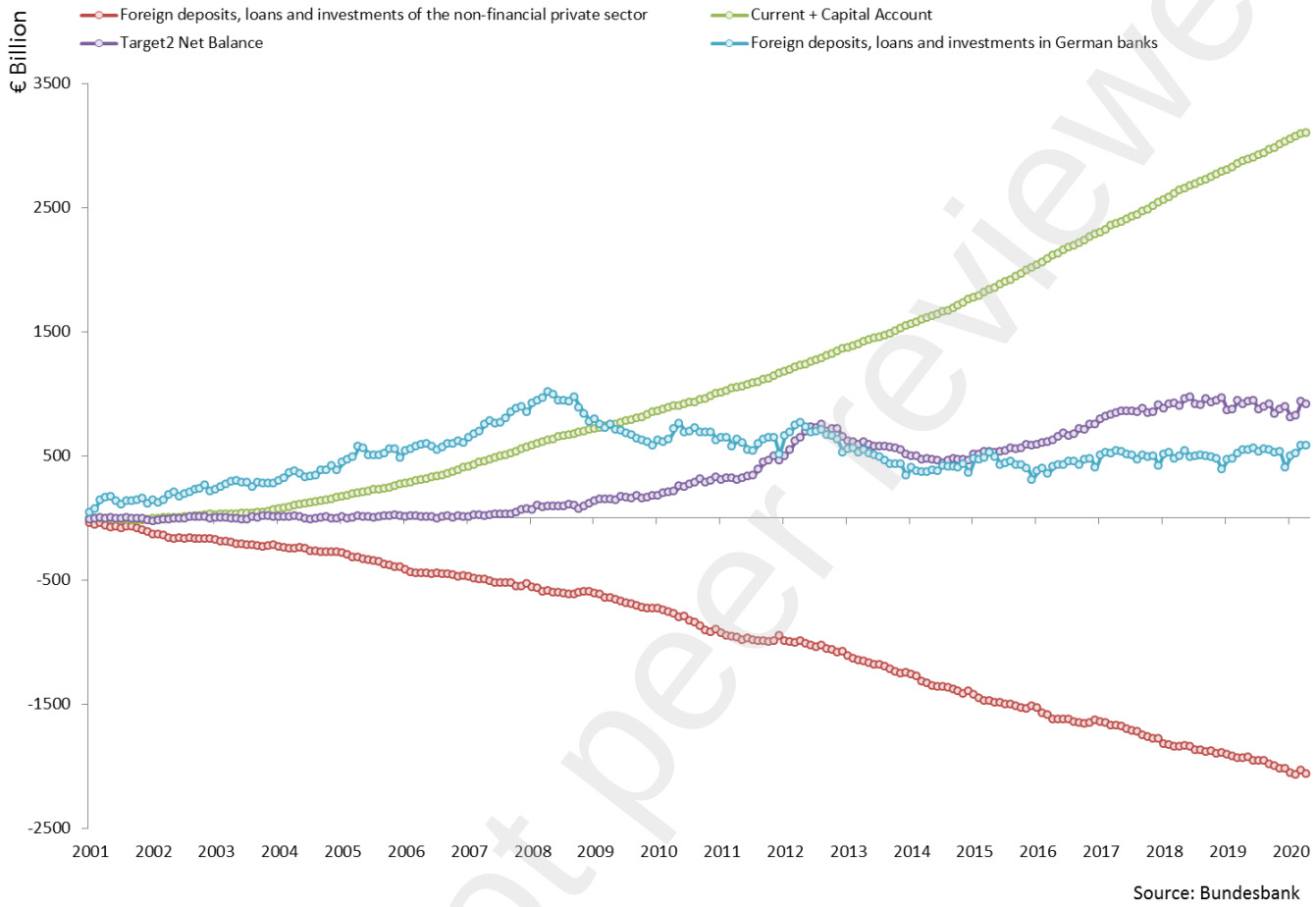
The Germany T2 balance started to diverge around 2008 due to the decline in bank exposures - evident on both liabilities and assets - and the growth of foreign investments in German public securities, which began to assume the role of safe haven that would become central during the crisis of the EA in 2011. After 2009, the gradual reduction of the weight of the banking sector in cross-border flows continued, while the weight of the cumulative balance of current account (violet bars) and of the foreign investments by the non-financial private sector (pink bars) increased. From 2008 till 2014 capital outflows became stationary, while inflows continued to grow, with liquidity incoming both from the surplus of the current account and the increase in investments in public securities (green bars). The synergy of these two forces is what caused the first peak of the German T2 balance in 2012.

The short fallback phase of 2013-2014 of the T2 balance can be explained by the sharp decline in interbank cross-border liabilities, due to the deveLeraging of German banks towards peripheral countries. This realignment was obtained through a sudden stop in new loans and the reduction of pre-existing credit lines. Foreign investment in *Bund* securities became stationary and this helped to stabilize liquidity inflows.

Since 2015, the APPs have allowed foreign investors to sell part of their Bund investments to the Bundesbank; hence green bars began to decline steadily. At the same time the ample liquidity available enabled the acceleration of cross-border investment of the private sector (pink bars). Nonetheless, total capital inflows continued their uninterrupted rise due to the overwhelming weight of the current account component (violet bars), that dragged the T2 balance towards record values extremely close to € 1.000 billion.

Figure 7 offers a better view of the main cumulative flows of Germany Bop in the period 2001-2020.

Figure 7 - Selected Entries of Germany BoP and Target2 Net Balance (2001-2020, cumulative flows)



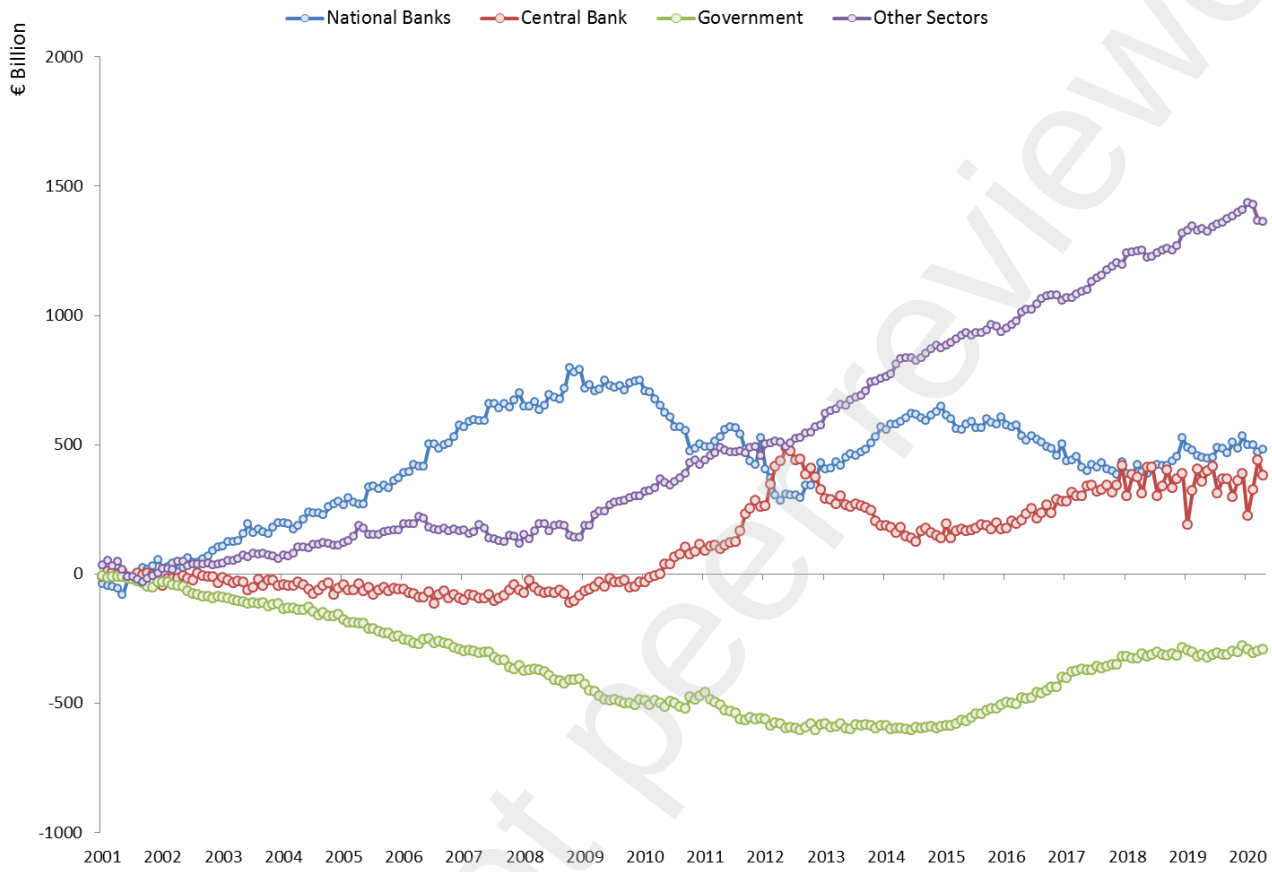
Source: Bundesbank

Figure 8 offers instead a different view on the trend of some net flows of the BoP aggregated by reference sector. As for Italy, since 2001 foreign investment by the private banking sector seem to have followed 2 different cycles of expansion/contraction, reflected in specular movements of the central bank accounts. For German banks, the strong growth in foreign exposure in the 2001-2007 period (blue line) was followed by sustained deleveraging until 2012, followed by a new cycle (weaker than the previous one) which appears to have reached already a peak in 2015 in correspondence with the start of the APPs. Since then the German banking system has returned to deleveraging mode.

Foreign investments by the private sector (purple line) instead show a regular linear growth with a regime change (reflected in an acceleration of the trend) after the GFC period. This pattern seems to correlate well with the growth in the cumulative current account surplus. Quite predictably, German firms have re-invested a sizable part of their trade and capital account surpluses in foreign financial assets. The behavior of cross-board investment in the government sector (green line) is characterized by a constant growth of foreign holdings of German government bonds. The architecture of the EA has allowed the *Bund* to gradually ascend to a safe asset status for the entire monetary union, in the absence of credible alternatives. A visible turnaround in *Bund*

foreign holdings started from 2015, mainly due to the ECB's "drainage" action on the secondary market (€ 640 billion of German *Bund* purchased via APPS and PEEP as of 06/30/2020).

Figure 8 – Germany BoP – Portfolio Investments (2001-2020, cumulative flows)



Source: Bundesbank

6. The debate around the role of ECB APPs in influencing T2 balances

Recent findings[5] have linked the launch of the APPs with the resumption of the T2 balance divergence process in the EA, after a period (2012-2014) of relative reduction. Also the ECB considers the APPs as the main driver of the divergent T2 balances among EA countries. In an official bulletin (ECB 2016), the ECB highlights the linear relationship between the liquidity injected into European financial systems through the purchase of government bonds and the corresponding increase in T2 balances, negative for the peripheral central banks and positive for Germany and satellite core countries. The dynamics of the T2 balances for other primary economies such as France and Austria seem instead stationary and not correlated with the ECB's monetary expansion.

Apparently, the dynamics of T2 balances reveal that all the new liquidity injected in the financial systems of the peripheral countries have been drained to northern Europe, giving rise to the perception for the general public of a "capital flight", amplified by media and different political parties across the EA. According to the ECB, such

[5] See Dor (2016), Meijers/Muysken (2016), European Parliament (2017), Dosi/Roventini/Minenna(2018).

patterns are only apparent and depend mainly from the mechanic of the APPs. Indeed, according to the APPs engagement rules, EA national central banks acquire government securities from both domestic and foreign entities. When the *Bank of Italy* – for example – buys an Italian government bond from a German enterprise, liquidity flows directly into the German financial system and is negatively/positively accounted for in the T2 balance of the *Bank of Italy*/*Bundesbank*. Moreover, the *Bundesbank* (or the Dutch and Luxembourg central banks) also intermediates the operations of banks outside the Euro area that tend to use their local subsidiaries to make purchases (e.g., a British bank involved in purchasing Italian government bonds passing through its German subsidiaries). The ECB Bulletin reports that at the aggregate level, 80 per cent of all purchases were made through cross-border operations of national central banks with foreign entities, while approximately 50% of securities purchases within the APPs involved residents outside the EA, thus fueling the growth[6] of T2 balances in Germany, the Netherlands and Luxembourg.

However, we suspected the influence of other determinants different from the NCBs purchases of securities from non-EA countries (Minenna et al. 2018). This is in line with Baldo et al. (2017) and Alves et al. (2018) who suggest that the persistent capital outflows from peripheral countries has to be framed "*in a context of differing yields on national debt, investors' risk aversion, and a domestic bias in banks' investment strategies*". In fact, the aggregate numbers published by the ECB are not representative of what has happened in the large economies of Italy and Spain, where the government debt tends to be predominantly held by domestic investors (in Italy about 65% of the debt is in national hands, while in Spain this percentage hoovers around 50%). If NCBs would make purchases from domestic and foreign investors using a uniform trading pattern, one should expect that they should grossly respect this subdivision. Thus, the figure of 80% is likely to be representative for countries such as Austria, where 85% of the debt is actually in foreign hands, but it ought to be consider overestimated for Italy and Spain.

The hypothesis that NCBs make purchases from domestic and foreign investors using an uniform trade pattern is not supported by Terzi (2018), that claimed that "*NCBs do not use any trading pattern other than taking the lowest dealers' ask price*". However, given how NCBs perform their purchases, we made a conservative choice consistent with the principle of market neutrality that does not require any additional assumptions on how the seller may behave[7]. The lowest ask price criterion is only another hypothesis since, according to the ECB, the price of the asset is only an element to be evaluated in the purchase decision[8]. Nonetheless, our hypothesis is not necessarily in contrast with Terzi (2018), rather it is perfectly consistent with it if foreign investors are no more willing to sell securities to the NCBs than the national ones. It would lead to wrong conclusions only in the case (highlighted by Terzi) where foreign investors have sold disproportionally government bonds to domestic investors. In that case, in fact the probability that counterparties are non-resident entities does not necessarily mirror their holding shares. But this is another presumption on the behavior of other agents; in absence of precise information we are dealing with two speculations instead of one. Moreover, the data regarding the foreign holdings of government bonds do not seem to support Terzi's speculation: since the APPs

[6] According to the *Bundesbank* "The TARGET2 balance in the Bundesbank's balance sheet is therefore mainly attributable to cross-border transactions which involve banks that participate in TARGET2 via the Bundesbank" – Link: https://www.bundesbank.de/Redaktion/EN/Standardartikel/Tasks/Payment_systems/target2_balance.html

[7] In other words market neutrality in our hypothesis means that the national central bank is paying the same price for the bond as any other buyer. Moreover, the NCBs do not use the nationality of the counterparty as a selective criterion during purchase.

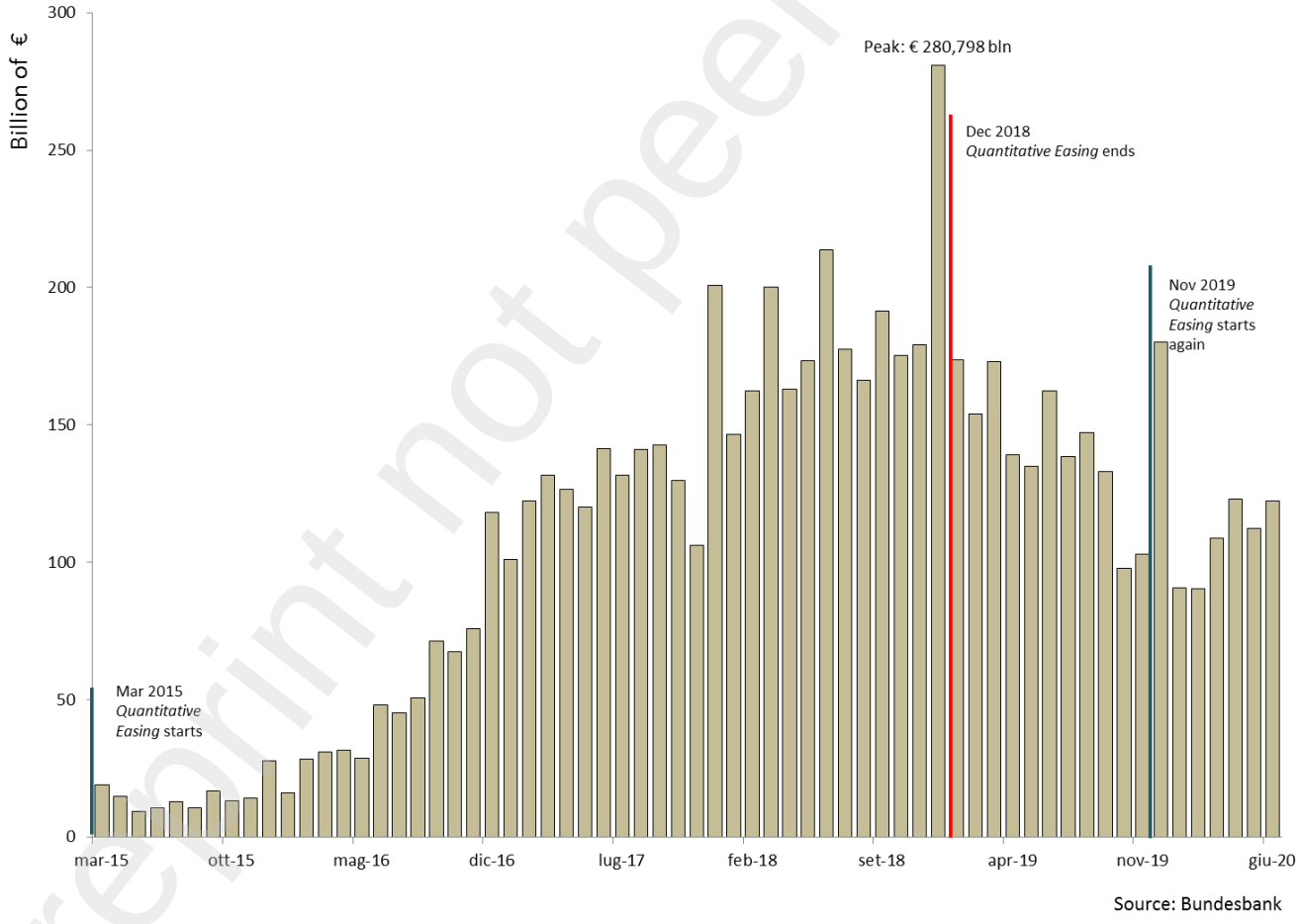
[8] Embarking on public sector asset purchases - Speech by Benoît Cœuré, Member of the Executive Board of the ECB, at the Second International Conference on Sovereign Bond Markets, Frankfurt, 10 March 2015. Link: https://www.ecb.europa.eu/press/key/date/2015/html/sp150310_1.en.html

inception, foreign investors have increased their holdings share in Spain (+4,1%, December 2019) while Italy experienced a limited reduction (-4,1%, December 2019) mainly in the last two quarters of 2018, and so clearly not attributable to NCBs purchases[9].

For what concerns the weight (undetermined in the ECB's *position paper*) to be attributed to the Bundesbank role of *hub* when purchasing securities on behalf of banks outside the EA, some information can be extracted from a Bundesbank time series that appears in the passive side of the foreign exposure of the central bank (see Figure 9[10]). This series (Liabilities to non-euro-area residents denominated in euros) is mainly related to deposits of non-EA central banks and monetary authorities at the Bundesbank.

The growth of this financial variable is evidently linked to the purchase of government bonds by the *Bundesbank* during the APPs and can reasonably be explained by the role of intermediary that the German central bank has on behalf of financial institutions residing outside the EA. This interpretation is in line with that of Lehment (2018), who extends the analysis also to the accounts of the Banque de France and of De Nederlandsche Bank, but not shared by Terzi (2018).

Figure 9 – Bundesbank External Position – Deposits of non-euro area residents (monthly flows)



[9] Bruegel datasets - Sovereign Bond Holdings. Link: http://bruegel.org/publications/datasets/sovereign-bond-holdings/.
[10] Germany BoP – External position of the Bundesbank – External Liabilities – Other Investment – Deposits of non-Euro area residents.

The reduction of the Eurosystem net foreign external assets (NFAs) is a well-documented phenomenon and is commonly connected with the APPs, see Kowalewski/Szadkowski (2017). According to the authors "the increase in 'other liabilities' to 'non-euro area residents denominated in euros' (the account we are considering, ndA) (around €121bn from end-2014 to the start of March 2017) accounts for the largest fall of NFAs."

The mechanism that is at work here is explained in detail by Eisenschmidt et al. (2017): "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, […] 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". Moreover, in footnote 53, ibidem, they claim that "This [the other financial arrangements, ndA] 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."

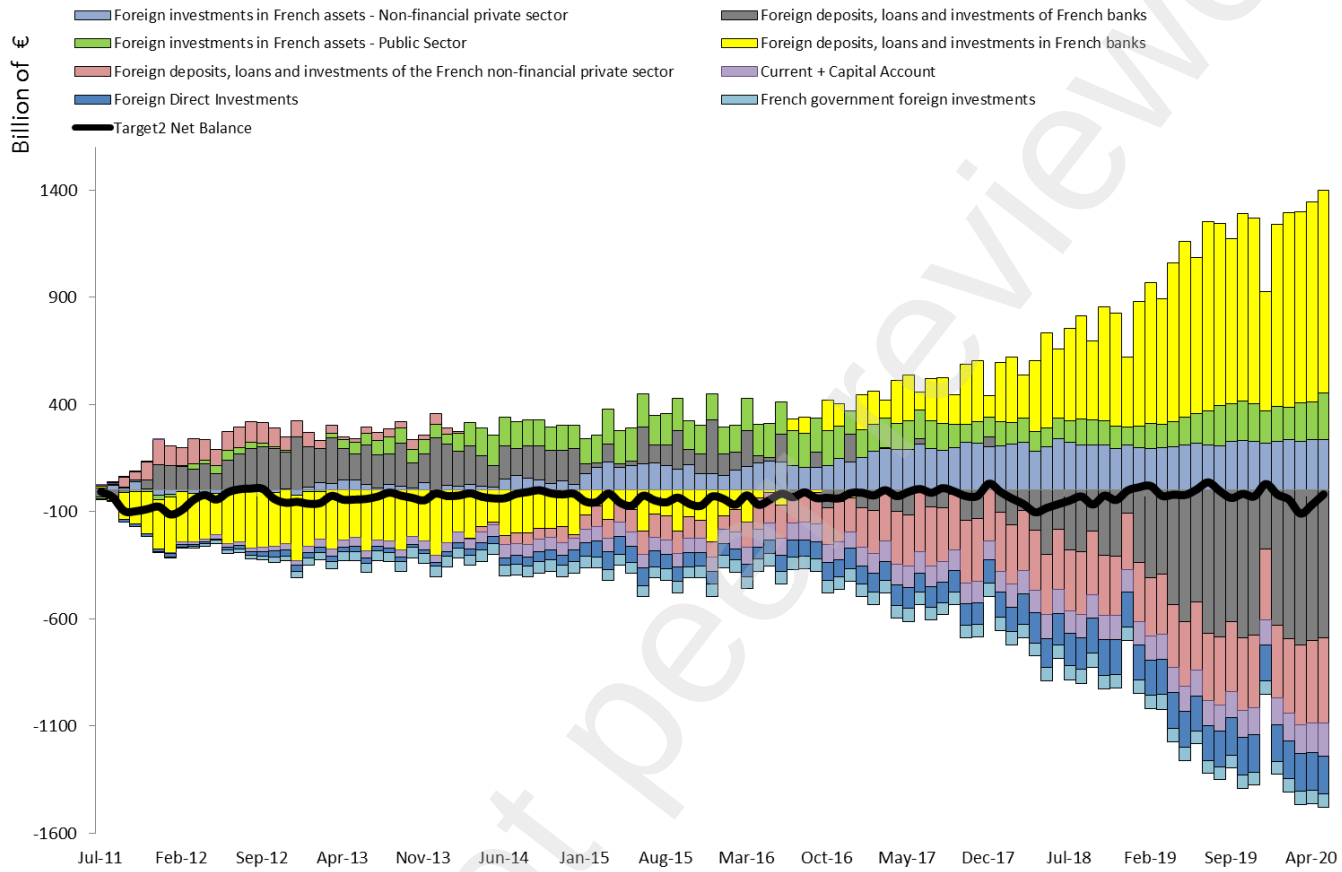
For what regards the "other financial arrangements", the Bundesbank gives us an example by stating: "Having a euro account at the Bundesbank allows international organisations, central banks and monetary authorities to participate in the European cross-border payment system TARGET2. The account is held on a credit balance basis and forms the basis for the other services which are offered. There is no need to maintain a given minimum credit balance. Accounts are remunerated as described under "Account remuneration through automatic overnight deposits" and "Fixed-term deposits". These accounts are managed by the Eurosystem Reserve Management Service (ERMS)". To our knowledge, ERMS holdings are increasing and are accounted in the BoP item "Liabilities to non-euro-area residents denominated in euros" .

6. A basket case: BoP reconstruction from 2011 to 2020 for France

To conclude, we want to present a BoP reconstruction for France. This is a useful example to show that indeed the different monetary configuration that has characterized EA countries after 2008 is a necessary but not sufficient condition for the increase of T2 balances (see also Terzi 2018). France's T2 balance has remained stationary throughout the years, even after the take-off of APPs in 2015. We think that the reconstruction via BoP cumulated accounts could help to understand, at least partially, the reasons for this. Interbank credit has a strong role in French BoP (see Figure 10): this can be attributable to the large size of the French banking system. During the 2011-2012 crisis, foreign credit to French banks experienced a significant contraction, compensated by a corresponding reduction in the foreign assets of French banks. In the following years both items significantly recovered. These inflows of capital reduced greatly the banks' use of NCBs liquidity for funding needs. Capital reallocation towards foreign investments also has characterized the French economy in a similar way as observed for Italy, Spain and Germany (pink bars). It seems however that the French T2 balance has remained basically stationary due to the strong *re-leveraging* of the banking sector and the capacity of the French non-financial private sector to attract investment flows towards the French economy.

Again, this capacity has to be understood "*in a context of differing yields on national debt, investors' risk aversion, and a domestic bias in banks' investment strategies"* (see Baldo et al., 2017; and Alves et al. 2018).

Figure 10: France – T2 balance and its BoP reconstruction (2011-2020, cumulative flows)



Source: Banque de France

Conclusions

In the last decade, diverging NCBs' T2 balances are become a recurrent phenomenon in the EA after an initial phase of the monetary union in which they seemed not to play a relevant role. Our long-term reconstruction, based on a well-established BoP accounting identity, shows for the economies of Italy, Germany and France that divergence in T2 balances may occur (or not) under specific monetary policy configurations when there are less incentives and opportunities for banks with excess liquidity to access the interbank market due to a massive and persistent central bank liquidity injection. If a sizable interbank market operates smoothly as in the pre-GCF period, investments in foreign assets by the private sector are compensated by a corresponding growth in the external liabilities of banks; in this environment there's no space for an increase in T2 balances.

Proving a strong causality link between T2 balances and condition of stress or fragmentation of markets or other macroeconomic variables like exchange, inflation or growth rates was not the scope of this work. While acknowledging that causal relationships are difficult to prove from data that have to fulfill an accounting identity, we nevertheless believe that useful information can be extracted from the analysis of BoP accounting

correspondences, especially in the long run when the signal-to-noise ratio in the data tends to reduce and the structural features of the different economies emerge.

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ANNEX

ITALY - TARGET2 NET BALANCE AND ITS RECONSTRUCTION VIA BALANCE OF PAYMENTS ACCOUNTS[11]

CUMULATIVE FLOWS SINCE 2001

		Net Values			Assets			Liabilities			
	Target2 Net balance	Current + Capital Account	Direct Investments	Central Bank foreign investments and other liabilities	National government Foreign Investments	Foreign deposits, loans and investments of Italian banks	Foreign deposits, loans and investments of the non-financial private sector	Foreign Investment in Italian Assets – non-financial private Sector	Foreign Investment in Italian Assets – public sector	Foreign deposits, loans and investments in Italian banks	Other Flows
2000 (Dec)	-1.000										
2001	-7.615	-748	797	-23.652	-379	9.256	-1.439	2.482	-1.946	9.009	-1.874
2002	9.782	6.960	-1.550	-15.388	-2.911	20.643	-44.602	32.080	-12.034	28.606	1.538
2003	4.917	835	5.682	-22.431	-1.773	-9.812	-54.435	56.056	2.431	41.436	-2.576
2004	9.331	-4.225	20.764	-29.212	-1.669	-31.167	-108.613	48.976	82.476	72.482	-23.673
2005	18.344	-8.631	23.923	-27.408	-1.323	-40.623	-140.175	75.212	83.398	112.242	-29.574
2006	27.095	-22.408	10.088	-22.367	-2.150	-67.900	-268.936	80.566	184.258	216.494	-50.060
2007	28.716	-44.825	-3.330	-20.420	-2.633	-86.535	-342.243	95.540	186.920	342.890	-61.184
2008	34.663	-66.967	-16.495	-30.502	-2.695	-153.012	-331.853	110.566	176.122	452.910	-70.915
2009	50.650	-112.704	-78.836	-34.018	-2.990	-112.636	-278.212	96.633	220.052	419.900	-38.032
2010	77.579	-142.381	-76.981	-53.956	-2.994	-87.065	-271.711	116.395	308.278	367.554	-37.072
2011	27.700	-199.218	-99.963	-85.260	-8.093	-80.939	-268.820	180.243	280.486	396.295	-64.335
2012	-180.130	-244.122	-107.072	-93.057	-23.860	-100.699	-239.381	171.737	222.652	331.583	-74.589
2013	-228.163	-242.499	-114.978	-96.627	-56.383	-121.370	-200.160	191.646	212.940	289.076	-85.512
2014	-199.411	-222.739	-107.076	-100.058	-75.471	-58.472	-232.101	203.149	241.762	265.571	-92.060
2015	-164.474	-190.132	-117.658	-109.854	-82.945	-74.605	-322.503	250.209	294.097	288.956	-71.676
2016	-251.264	-159.777	-116.946	-120.138	-86.178	-62.908	-411.752	230.703	293.943	281.695	-65.678
2017	-364.733	-116.764	-103.609	-122.801	-95.627	-81.950	-471.491	213.949	268.879	225.625	-36.656
2018	-433.205	-71.958	-106.150	-125.229	-102.081	-115.760	-580.063	204.286	283.944	242.785	-29.232
2019	-481.969	-28.495	-104.605	-123.406	-106.149	-136.418	-617.097	206.906	242.438	256.774	-48.225
2020	-383.248	23.115	-101.440	-113.574	-112.658	-185.213	-663.133	232.035	328.412	285.069	-48.930
2020 (Apr)	-512.899	30.680	-109.623	-112.032	-107.150	-216.599	-651.222	218.411	265.381	262.507	-66.382

[11] Source: Eurostat Database. Link: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bop_c6_m&lang=en

GERMANY - TARGET2 NET BALANCE AND ITS RECONSTRUCTION VIA BALANCE OF PAYMENTS ACCOUNTS

CUMULATIVE FLOWS SINCE 2001

		Net Values			Assets			Liabilities			
	Target2 Net balance	Current + Capital Account	Direct Investments	Central Bank foreign investments and other liabilities	National government Foreign Investments	Foreign deposits, loans and investments of German banks	Foreign deposits, loans and investments of the non-financial private sector	Foreign Investment in German Assets – non-financial private sector	Foreign Investment in German Assets – public sector	Foreign deposits, loans and investments in German banks	Other Flows
2000 (Dec)	-5.000										
2001	-11.568	-4.730	-7.076	-12.557	19.955	-9.548	-38.310	4.849	-10.945	46.618	5.176
2002	-27.310	-9.079	-5.380	-54	18.794	-161.068	-131.505	110.936	14.146	140.030	871
2003	-924	25.487	16.247	27.622	22.907	-333.739	-179.158	137.690	68.973	228.098	-10.049
2004	4.791	68.706	33.452	52.663	23.857	-498.828	-230.155	158.401	112.905	301.254	-12.455
2005	6.312	168.950	13.011	56.869	26.717	-711.795	-281.914	161.378	151.339	446.901	-20.143
2006	8.653	277.412	-10.503	88.597	30.991	-928.292	-417.129	224.317	223.504	537.781	-13.016
2007	6.993	415.770	-50.549	98.567	35.605	-1.214.463	-472.631	303.144	264.392	644.633	-12.467
2008	67.796	584.696	-128.621	123.572	43.897	-1.574.437	-556.009	403.836	331.061	926.196	-81.385
2009	133.692	717.358	-168.973	208.511	43.701	-1.516.417	-608.298	422.396	382.172	798.058	-139.812
2010	177.760	859.225	-203.940	212.201	42.202	-1.330.958	-729.516	410.885	446.717	624.938	-149.011
2011	302.630	1.007.980	-245.556	213.756	-120.087	-1.134.798	-925.752	485.597	577.558	644.415	-195.498
2012	498.131	1.177.625	-253.424	199.012	-138.396	-1.063.900	-991.422	488.177	700.870	658.681	-272.705
2013	616.937	1.370.542	-270.895	323.828	-170.757	-962.556	-1.112.441	493.667	752.114	556.599	-355.053
2014	500.357	1.559.915	-303.900	320.378	-173.511	-960.903	-1.260.949	496.559	759.035	403.192	-338.282
2015	515.266	1.773.986	-355.533	375.262	-185.404	-1.092.350	-1.425.670	541.677	772.299	477.329	-364.124
2016	587.000	2.034.452	-413.181	401.258	-164.145	-949.733	-1.532.588	583.905	659.535	374.148	-411.162
2017	795.621	2.302.442	-467.162	497.564	-155.153	-943.999	-1.646.379	576.872	556.981	506.066	-444.850
2018	882.052	2.562.643	-509.059	531.033	-146.020	-902.183	-1.821.646	580.697	467.315	514.557	-422.696
2019	868.142	2.805.794	-522.366	549.649	-133.150	-956.271	-1.909.492	580.830	427.937	468.416	-450.589
2020	811.435	3.048.082	-562.391	495.717	-138.003	-995.399	-2.055.080	620.344	429.281	497.635	-520.257
2020 (Apr)	918.814	3.103.248	-575.308	535.598	-137.428	-1.063.024	-2.063.925	702.458	431.096	581.243	-585.631

FRANCE - TARGET2 NET BALANCE AND ITS RECONSTRUCTION VIA BALANCE OF PAYMENTS ACCOUNTS

CUMULATIVE FLOWS SINCE 2011

		Net Values			Assets			Liabilities			
Date (Value observed at Jan/31)	Target2 Net balance	Current + Capital Account	Direct Investments	Central Bank foreign investments and other liabilities	National government Foreign Investments	Foreign deposits, loans and investments of French banks	Foreign deposits, loans and investments of the non-financial private sector	Foreign Investment in French Assets – non-financial private sector	Foreign Investment in French Assets – public sector	Foreign deposits, loans and investments in French banks	Other Flows
2010 (Dec)	-18.318										
2011 (Jul)	-7.406	1.264	-1.874	15.416	-189	-30.928	3.082	10.701	-7.313	6.541	14.211
2012	-33.489	1.986	-1.858	10.051	408	-28.605	7.407	21.490	2.803	-20.250	-8.607
2013	-97.730	1.426	-11.613	14.257	1.005	-10.470	43.846	7.359	7.946	-126.635	-6.538
2014	-98.530	-1.823	-13.912	14.582	1.322	8.745	37.449	38.654	-5.971	-148.792	-10.471
2015	-88.686	-2.207	-12.267	15.955	1.146	44.152	81.411	3.171	-3.698	-196.320	-1.718
2016	-77.424	636	-12.534	11.726	-147	119.456	116.247	-25.265	-18.312	-229.698	-21.222
2017	-113.666	-5.358	-14.754	12.858	-1.188	114.082	93.001	-19.868	-12.862	-257.056	-4.212
2018	-63.765	-29.569	-27.246	31.585	-32.699	188.855	66.029	14.070	23.846	-254.523	-25.796
2019	-276.52	-41.869	-22.287	23.937	-46.532	193.427	28.949	20.450	79.691	-246.585	1.486
2020	-53.584	-60.045	-62.157	21.455	-55.592	49.165	-68.522	74.110	153.644	-116.881	29.550
2020 (Apr)	-42.049	-69.159	-52.729	-23.070	-58393	101203	-60.322	68.967	159.138	-121.508	32.140