

Articles

The transmission of the ECB's recent non-standard monetary policy measures

This article evaluates the transmission through bank intermediation, bank lending and money of the ECB's non-standard measures announced since June 2014, namely the credit easing package, focusing on the targeted longer-term refinancing operations (TLTROs), and the expanded asset purchase programme (APP), focusing on the public sector purchase programme (PSPP). The results presented suggest that these measures have significantly lowered yields in a broad set of financial market segments, with the effects generally increasing with maturity and riskiness. Both programmes have contributed to a reduction in banks' funding costs, which has incentivised them to pass on the cost relief to final borrowers by granting more credit at better conditions. Overall, the improved credit conditions in the euro area have helped push the monetary policy accommodation through the intermediation chain to reach households and firms.

1 Introduction

Since the onset of the financial crisis, the ECB and all other major central banks have complemented their operating frameworks with an array of non-standard monetary policy measures. In “normal” times, the ECB pursues its price stability mandate by setting the price for central bank reserves, thereby steering short-term money market interest rates so as to reflect its intended monetary policy stance. This monetary policy signal is then propagated through the financial system, influencing broader financing conditions and, ultimately, macroeconomic developments. During the financial crisis, this standard operating framework proved insufficient for two main reasons. First, dislocations in some financial market segments were impairing the mechanism through which the monetary policy stance is transmitted from the price of central bank reserves – which is controlled by the central bank – to broader financing conditions that affect investment and consumption decisions of firms and households. Second, the duration and severity of the global financial crisis led to the scope for providing monetary stimulus to the economy by reducing nominal short-term money market rates being exhausted, as these rates reached their effective lower bound.

The aim of the non-standard measures introduced by the ECB before June 2014 was to remedy impairments in various stages of the transmission mechanism. These measures ranged from the flexible provision of liquidity to the banking system according to demand, with extended maturities and also in currencies other than the euro, to conducting outright purchases of assets in

malfunctioning market segments.¹ What they have in common is that they were not intended to alter the ECB's monetary policy stance, but rather to ensure that it is duly transmitted to the economy by addressing impairments in the transmission mechanism.²

Starting in June 2014 a series of new measures was gradually introduced, which constitute a package of credit easing policies. The aim of these measures was to enhance the transmission of monetary policy but also to reinforce the accommodative monetary policy stance in view of the persistently weak inflation outlook, slowing growth momentum and subdued monetary and credit dynamics at the time. Since the original way that non-standard measures had been conducted – by providing a backstop for banks' liquidity needs – had become less suitable as banks entered a new phase of active deleveraging, new incentives for banks to resume their lending activities were required. In June 2014 the ECB announced the introduction of the TLTROs. These allow banks to borrow from the Eurosystem at fixed interest rates for a period of up to four years in a series of eight operations conducted at quarterly intervals starting in September 2014. Importantly, the amounts that banks can borrow are linked, for the first two TLTROs, to their stock of eligible loans (loans to euro area non-financial corporations (NFCs) and households, excluding loans to households for house purchase) as at 30 April 2014, and, for the remaining six operations, the evolution of eligible lending since May 2014.³ In addition, in the context of a broader reduction in the key ECB interest rates, the Governing Council decided in June 2014 for the first time to introduce a negative rate on the deposit facility and on reserves in excess of the minimum reserve requirements. The rate was further lowered in September 2014 to its current level of -0.20%. In September 2014 the ECB also announced the launch of two asset purchase programmes, the asset-backed securities purchase programme (ABSPP) and the third covered bond purchase programme (CBPP3).

Finally, in January 2015 the ECB announced the introduction of the expanded APP in order to further ease the monetary policy stance. This measure was deemed necessary as policy rates were constrained by the lower bound – the rate on the ECB's main refinancing operations (MROs) had been set to 0.05% since September 2014 – and the inflation outlook had deteriorated further since the introduction of the credit easing package. The expanded APP encompasses the two previously launched purchase programmes (the ABSPP and CBPP3) as well as purchases of public sector securities. The purchases under the programme, which amount to €60 billion per month, are intended to be carried out until the end of September 2016, or beyond, if necessary, and, in any case, until a sustained

¹ For a review of such measures, see the article entitled "The ECB's response to the financial crisis", *Monthly Bulletin*, ECB, October 2010. For a more recent review, see the article entitled "The role of the central bank balance sheet in monetary policy", *Economic Bulletin*, Issue 4, ECB, 2015.

² Starting in July 2013, the ECB also initiated a practice of offering explicit verbal guidance on the evolution of its policy in the future ("forward guidance"), aimed at providing greater clarity about the Governing Council's monetary policy orientation based on its assessment of the outlook for price stability, thereby enhancing the effectiveness of the ECB's monetary policy in the prevailing circumstances. For more details, see the article entitled "The ECB's forward guidance", *Monthly Bulletin*, ECB, April 2014.

³ For details on the modalities of the TLTROs, see the document entitled "Targeted longer-term refinancing operations: updated modalities", available at: http://www.ecb.europa.eu/press/pr/date/2014/html/pr140729_updated_modalities.pdf

adjustment is seen in the path of inflation consistent with the aim of achieving inflation rates below, but close to, 2% over the medium term.⁴

This article discusses the impact on bank intermediation, bank lending and money of the non-standard measures introduced by the ECB since June 2014.⁵ A discussion of their impact on non-bank financial intermediaries

as well as of the ultimate impact on economic activity and inflation is beyond the scope of this article. Section 2 analyses the impact of these measures on banks' balance sheet developments, funding conditions and risk-bearing capacity with a view to establishing how they affect banks' ability to act as financial intermediaries and thus be an effective conduit for the transmission of the monetary policy signal. Section 3 focuses more specifically on the effect of the measures on the outcome of the intermediation process, namely bank lending. Section 4 analyses the impact of the APP on broad money in view of the exogenous increase in the amount of central bank liquidity brought about by this measure. Section 5 concludes. The two boxes provide a stylised overview of the main transmission channels for these measures (Box 1) and their impact on various financial market prices (Box 2).

Box 1

Transmission channels for non-standard measures

While the non-standard measures introduced by the ECB since June 2014 are relatively diverse in nature, the broad transmission channels through which they are expected to affect the economy are similar, albeit activated to varying degrees by the different measures.

A large body of literature, focusing primarily on asset purchase programmes, has identified a number of possible channels through which non-standard measures might influence inflation and output. Borrowing from this literature, this box focuses on three main channels of transmission, namely the direct pass-through, portfolio rebalancing and signalling channels.

First, via the direct pass-through channel, the non-standard measures are expected to ease borrowing conditions in the private non-financial sector by easing banks' refinancing conditions, thereby encouraging borrowing and expenditure for investment and consumption. This channel is perhaps most prominent in the case of the TLTROs, which are designed to reduce banks' marginal cost of funding for the targeted lending activity. The targeting features of the TLTROs incentivise banks to increase their supply of specific types of net lending to the real economy, which ensures that at least part of the funding cost benefit is passed on to borrowers. Moreover, as TLTROs allow banks to replace market-based bank funding with borrowing from the central bank, they can result in a reduction in the supply of bank bonds in the economy.

The scarcity of bank bond issuance should translate into lower yields on bank bonds, including those issued by intermediaries not participating in the TLTROs. Asset purchases, particularly of the type included in the credit easing package, can also affect the credit conditions faced by the private sector. Central bank purchases increase the price of the targeted covered bonds and asset-backed securities: this encourages banks to increase their supply of loans that can be securitised, which tends to lower bank lending rates.

⁴ For more details, see the box entitled "The Governing Council's expanded asset purchase programme", *Economic Bulletin*, Issue 1, ECB, 2015.

⁵ The cut-off date for data in this article was 25 September 2015.

Second, via the portfolio rebalancing channel, yields on a broad range of assets are lowered.

Asset purchases by the central bank result in an increase in the liquidity holdings of the sellers of these assets. If the liquidity received is not considered a perfect substitute for the assets sold, the asset swap can lead to a rebalancing of portfolios towards other assets. Through a chain of such portfolio rebalancing attempts, asset prices rise until a new equilibrium is reached, implying lower yields and costs of external financing. The theoretical underpinnings of this channel date back at least to the 1960s.⁶ Portfolio rebalancing may support the expansion of bank lending, as the compression of yields on securities renders lending a relatively more attractive proposition. The increased supply of bank lending lowers its cost. Portfolio rebalancing could in part entail increased holdings of external assets by euro area residents or repatriation of funds by non-residents, thereby exerting downward pressure on the foreign exchange value of the euro. Portfolio rebalancing effects can also be activated by the TLTROs, as the amounts that banks can borrow are a multiple of their eligible lending, which allows them to also finance purchases of assets such as government and private sector securities. Moreover, the repayment – rather than roll-over – of maturing bank bonds by banks participating in the TLTROs is likely to trigger portfolio rebalancing by the holders of these bonds. The empirical importance of this channel has been tested in works focusing mainly on the financial market impact of quantitative easing policies. Most of the studies have found evidence supporting the relevance of this channel.⁷

Third, via the signalling channel, the deployment of non-standard measures, particularly those that have a sizeable effect on the central bank's balance sheet, serves to underscore the monetary authority's commitment to its mandate.⁸

This can have two effects. First, it can trigger a downward revision of market expectations for future short-term interest rates. In the case of the ECB's asset purchase programmes, this is because of the long period of ample liquidity implied by the maturity profile of the assets purchased. In the case of the TLTROs, this is related to the fixed rate of the operations and their long maturity, which was four years for the initial operations. Second, it may anchor or, as the case may be, increase inflation expectations. The result is that real long-term rates will be lower, thereby supporting investment and consumption. Past studies have found that the contribution of the signalling channel is highly uncertain. It has been found to be muted in the United Kingdom, moderate in the euro area and highly uncertain in the United States, for which estimates have ranged from 10% to 50% of the total decline in Treasury yields.⁹

⁶ See Tobin, J., "Money, Capital, and Other Stores of Value", *American Economic Review*, Papers and Proceedings of the Seventy-Third Annual Meeting of the American Economic Association, Vol. 51, No 2, 1961, pp. 26-37; Friedman, M. and Schwartz, A.J., "Money and Business Cycles", *Review of Economics and Statistics*, Vol. 45, No 1, 1963, pp. 32-64; Brunner, K. and Meltzer, A.H., "Mr Hicks and the 'Monetarists'", *Economica*, Vol. 40, No 157, 1973, pp. 44-59; and Vayanos, D. and Vila, J.-L., "A Preferred-Habitat Model of the Term Structure of Interest Rates", *NBER Working Paper Series* No 15487, 2009.

⁷ For evidence in relation to the euro area, see Altavilla C., Carboni G. and Motto, R., "Asset purchase programmes and financial markets: lessons from the euro area", *Working Paper Series*, ECB, forthcoming. For the United Kingdom, see Joyce, M., Lasoosa, A., Stevens, I. and Tong, M., "The Financial Market Impact of Quantitative Easing in the United Kingdom", *International Journal of Central Banking*, Vol. 7, No 3, 2011, pp. 113-61. For the United States, see Gagnon, J., Raskin, M., Remache, J. and Sack, B., "The Financial Market Effects of the Federal Reserve's Large-Scale Asset Purchases", *International Journal of Central Banking*, Vol. 7, No 1, 2011, pp. 3-43. See also D'Amico, S., English, W., López-Salido, J.D. and Nelson, E., "The Federal Reserve's Large-Scale Asset Purchase Programs: Rationale and Effects", *Economic Journal*, Vol. 122, 2012, pp. 415-46.

⁸ For a discussion on the implications of the measures for the balance sheet of the Eurosystem, see the article entitled "The role of the central bank balance sheet in monetary policy", *Economic Bulletin*, Issue 4, ECB, 2015.

⁹ See Krishnamurthy, A. and Vissing-Jorgensen, A., "The Ins and Outs of LSAPs", *Proceedings - Economic Policy Symposium - Jackson Hole*, Federal Reserve Bank of Kansas City, 2013; Bauer, M.D. and Rudebusch, G.D., "The Signaling Channel for Federal Reserve Bond Purchases", *International Journal of Central Banking*, Vol. 10, No 3, 2014, pp. 233-289; and Christensen, J.H.E. and Rudebusch, G.D., "The Response of Interest Rates to US and UK Quantitative Easing", *The Economic Journal*, Vol. 122, No 564, 2012, pp. F385-F414.

2 The impact on bank intermediation

The ECB's non-standard measures interact in intricate and often far-reaching ways with banks' intermediation processes and capacities by influencing their balance sheet developments, funding conditions and risk-bearing capacity.

This section discusses some of the main aspects of this interaction in the case of the TLTROs and the APP in order to ascertain how these measures affect banks' ability to act as effective conduits for the transmission of the monetary policy signal.

2.1 Banks' use of the TLTROs

The TLTROs are intended to impact on the balance sheets of the borrowing banks in two main complementary ways. First, the TLTROs provide an incentive for asset expansion, particularly in terms of lending to firms and households, in line with the targeted nature of the measure. Given that the amounts that banks can borrow from the TLTROs are a multiple of their eligible lending, they also allow banks to fund other asset expansion strategies, involving asset classes beyond eligible loans. Second, as an attractive source of long-term funding the TLTROs are intended to allow banks to replace more costly sources of funding and extend the maturity of their liabilities in order to better match that of the lending targeted by the measure.

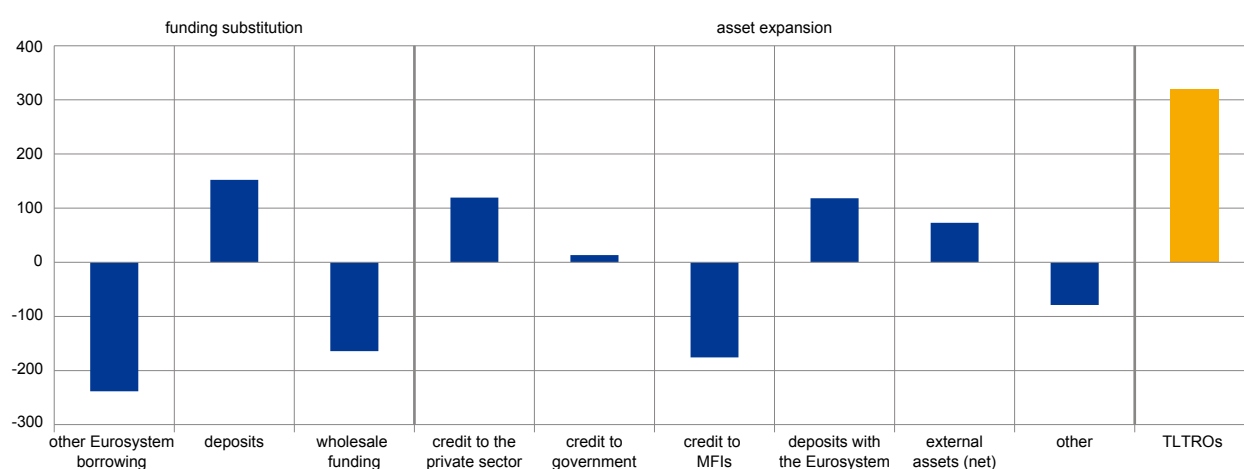
Bank asset expansion has indeed taken place over the period during which TLTROs have been conducted although it has been centred on countries that are currently considered less vulnerable.¹⁰ It is important that the asset expansion that may have been encouraged by the TLTROs be assessed against a counterfactual path for an increase in bank balance sheets that would have materialised in the absence of this measure. While such a path is elusive, it should be recalled that when the operations were launched some banks in the euro area, and entire banking systems in certain vulnerable countries, were facing the need to deleverage, which in some cases was even formalised in restructuring plans. Chart 1 shows the changes in the main balance sheet items of banks that borrowed in the TLTROs between end-August 2014 (before the first TLTRO was conducted) and end-July 2015. Clearly, the movements on these banks' balance sheets are also affected by numerous other factors and considerations not related to the TLTROs, which cannot be parsed out in this simple illustration. These developments should therefore be interpreted with caution and in conjunction with complementary evidence. Chart 1 shows that TLTRO borrowers expanded their credit to the private sector over this period. It should be noted, however, that this outcome is entirely driven by banks in countries that are currently considered less vulnerable. In vulnerable countries, by contrast, credit provided to the private sector by TLTRO borrowers continued to decline, reflecting the ongoing deleveraging process in these countries. Across vulnerable and less vulnerable countries, TLTRO borrowers

¹⁰ Throughout this article the term "vulnerable countries" refers to Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia, while the term "less vulnerable countries" refers to the remaining euro area countries.

acquired external assets in net terms, while the overall change in their provision of credit to euro area sovereigns was muted.¹¹ There is no evidence that TLTRO borrowers, in aggregate, distributed the liquidity they obtained to other banks, as credit to monetary financial institutions (MFIs) contracted. While Chart 1 documents some “parking” of funds in Eurosystem deposits by TLTRO borrowers, it should be recalled that the expanded APP was launched in the last part of the period covered, which resulted in a large, steady increase in central bank reserves in the system.

Chart 1
Changes in the balance sheets of banks participating in the TLTROs

(EUR billions)



Sources: ECB and ECB calculations.

Notes: Changes refer to cumulated flows in the period from end-August 2014 to end-July 2015. Data refer only to the subset of banks participating in the TLTROs for which individual balance sheet information is available. “Wholesale funding” refers to the issuance of debt securities and borrowing from MFIs.

The funding substitution that has taken place as a result of the TLTROs has resulted in a significant extension of the maturity of bank funding. TLTRO borrowers have sharply reduced their recourse to other Eurosystem borrowing (see Chart 1). This reflects the fact that the three-year long-term refinancing operations that were conducted in December 2011 and February 2012 matured in, respectively, January and February 2015, as well as the fact that banks switched borrowing from other operations (three-month longer-term refinancing operations and MROs) to the TLTROs. Overall, this has resulted in a substantial extension of the weighted average maturity of bank borrowing from the Eurosystem, from 130 days before the first TLTRO was conducted to 804 days after the settlement of the fourth TLTRO in June 2015.¹² This extension of maturity provides banks with funding certainty over a longer period and allows them to better match the maturity of their liabilities with that of assets such as loans to households and firms. TLTRO borrowers have also reduced their recourse to wholesale funding, i.e. issuance of

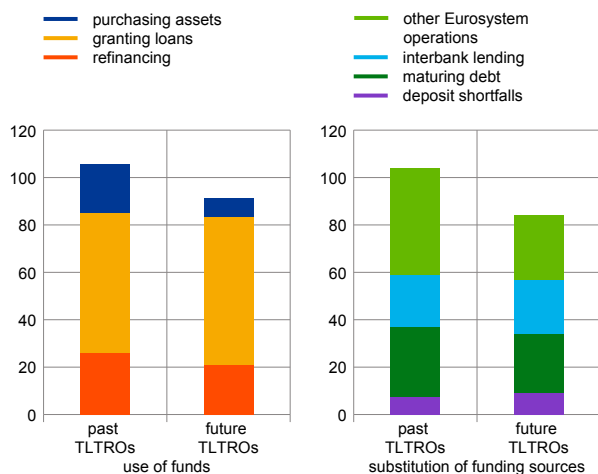
¹¹ The increase in net external assets mainly reflects the intermediation of bank clients’ external transactions and is thus predominantly not an active portfolio decision by banks. This notwithstanding, gross external assets also increased over this period.

¹² This illustrative calculation assumes that all TLTROs are repaid on their final maturity in September 2018 and are not subject to voluntary or mandatory early repayment.

Chart 2

Use of funds from the TLTROs as reported in the July 2015 bank lending survey (BLS)

(percentages of respondents)



Source: ECB.

Notes: "Past TLTROs" refers to all TLTROs which took place up to June 2015 and "future TLTROs" refers to operations beyond this point. Values displayed in the chart are the sum of the percentages of banks responding "has contributed or will contribute considerably" and "has contributed or will contribute somewhat" to the corresponding question in the BLS. The results shown are calculated as a percentage of the number of banks that did not reply "not applicable". Respondents may indicate that the TLTROs have contributed or will contribute to more than one use.

debt securities and interbank borrowing. Indeed, there is evidence that the reduced recourse to the issuance of debt securities is, in aggregate terms, more pronounced in the case of TLTRO borrowers than for other banks. While the reduction of debt securities, particularly of the unsecured type, would be the most cost-effective type of funding substitution, the reduction of outstanding debt securities is constrained by the roll-off rate implied by their maturity structure as well as by business considerations supporting a continued issuing presence in the market. In this context, other policy measures taken by the ECB over this period, and the CBPP3 in particular, have supported banks' continued issuance activity in the covered bond market.

Looking ahead, banks have signalled that they expect to mobilise more of the TLTRO funds borrowed in order to extend loans.

In their responses to the July 2015 euro area bank lending survey (BLS) banks indicated that in future TLTROs they expect that more of the funds drawn will be deployed to grant loans and less to acquire other assets (see the left-hand panel of Chart 2). As regards funding substitution, banks

expect that the replacement of funding from other Eurosystem operations will become less important (see the right-hand panel of Chart 2), which is unsurprising given the extent to which TLTROs have replaced other Eurosystem operations thus far.

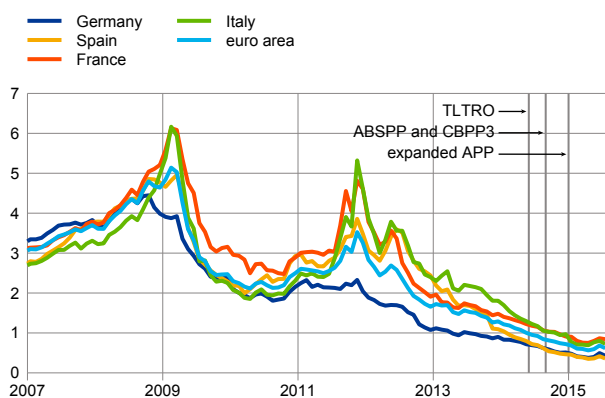
2.2

The impact of the ECB's non-standard measures on banks' access to market financing

Chart 3

Composite cost of bank deposit and bond financing

(percentages per annum)



Sources: ECB, Merrill Lynch Global Index and ECB calculations.

Notes: Average of deposit rates on new business and cost of market debt funding weighted with their corresponding outstanding amounts. Vertical lines denote the announcement dates of the respective measures. The latest observation is for July 2015.

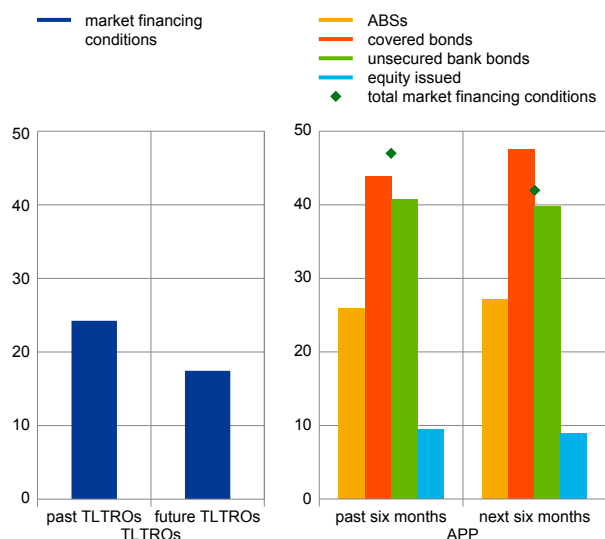
The ECB's non-standard measures have also improved broader market financing conditions for banks, regardless of their participation in Eurosystem borrowing operations.

The replacement of more costly and shorter-dated funding sources with TLTROs is only one part of the easing effect of the TLTROs on bank funding conditions and, ultimately, the cost of funding for firms and households. The TLTROs, along with the other standard and non-standard measures introduced by the ECB since June 2014, and the APP in particular, have precipitated a substantial compression of medium and long-term yields on a number of financial assets, including bank funding instruments (see Box 2). As a result, the composite cost of debt financing for banks has decreased markedly across euro area countries (see Chart 3). Moreover, the cross-country dispersion of this cost has continued

Chart 4

Improvement in market financing conditions for banks resulting from the TLTROs and the APP, as reported in the BLS

(percentages of respondents; net percentages of respondents)



Source: ECB.

Notes: "Past TLTROs" refers to all TLTROs which took place up to June 2015 and "future TLTROs" refers to operations beyond this point. Values displayed in the left-hand panel of the chart are the sum of the percentages of banks responding "has improved or will improve considerably" and "has improved or will improve somewhat" to the corresponding question in the July 2015 BLS. Values displayed in the right-hand panel of the chart are the difference between the sum of the percentages for "increased/improved considerably" and "increased/improved somewhat" and the sum of the percentages for "decreased/deteriorated somewhat" and "decreased/deteriorated considerably", as reported in the April 2015 BLS. The results shown are calculated as a percentage of the number of banks that did not reply "not applicable".

to decline. The improvements have resulted in a broader easing of financing conditions, which applies to banks regardless of the volume of their recourse to the Eurosystem's lending operations. The role of the ECB's non-standard measures as a driver of these developments is confirmed by banks' responses to the BLS (see Chart 4). Around one-quarter of respondents in the July 2015 survey indicated that the TLTROs have contributed to easing the conditions they face when accessing market financing. As expected, the positive impact is more widespread in the case of the APP: almost half of the banks participating in the April 2015 survey identified a positive effect on market financing conditions in the six months to March.¹³ In terms of specific instruments, the positive impact was reported to be more widespread in the case of funding via covered and unsecured bank bonds.

2.3 The accommodation of the reserves created by the APP on bank balance sheets

Asset purchases by the Eurosystem in the context of the APP are also having profound effects on banks' balance sheets.

The Eurosystem pays for the assets it purchases by supplying reserves, i.e. deposits

with the Eurosystem. Since credit institutions are the entities that typically hold deposit accounts with the central bank,¹⁴ purchases are always settled through them, regardless of who the ultimate seller is. The accommodation of these reserves on banks' balance sheets is associated with movements in other balance sheet items. It is expected that this will eventually trigger portfolio rebalancing by banks, whereby they exchange the reserves they receive for other assets.

The increase in reserves following the introduction of the expanded APP is matched on banks' balance sheets by increases in deposits and, to a somewhat lesser extent, by sales of government bonds from banks' own portfolios.

The largest counterpart to the increase in holdings of reserves in the period during which the expanded APP has been active is an increase in deposits by euro area residents (see Chart 5), part of which reflects banks' intermediation of bond sales to the Eurosystem by euro area non-banks. Their intermediation of sales by non-euro area residents is reflected in a decline in net external assets, which is also very sizeable. A somewhat smaller but still material part of the increase in holdings of reserves is matched by a decline in bank credit to governments,

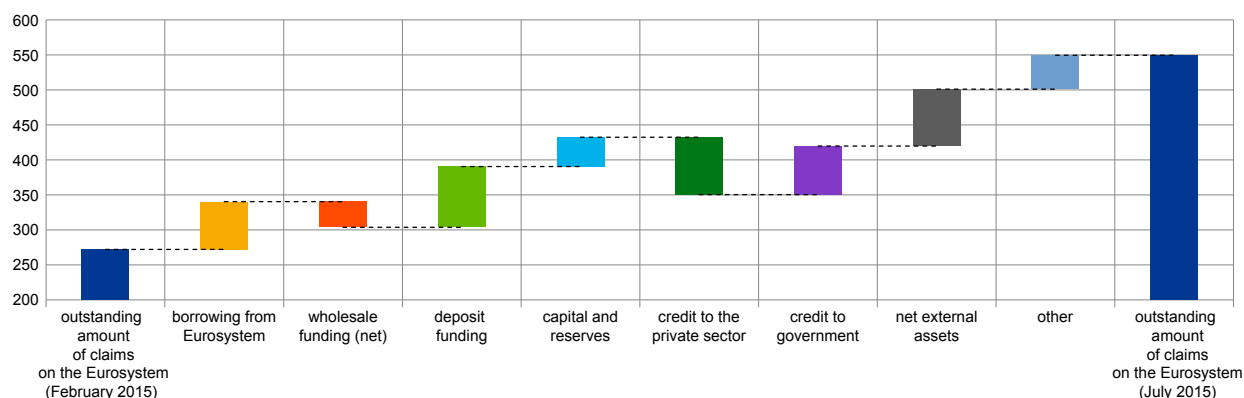
¹³ These are the latest results available at the time of writing for the question on the APP, which is included in the BLS on a semi-annual basis.

¹⁴ Certain other entities, such as governments or government agencies, also hold deposit accounts with Eurosystem national central banks. Such entities, however, are not involved in intermediating sales of securities to the Eurosystem.

Chart 5

Balance sheet movements of MFIs other than the Eurosystem that correspond to the change in reserve holdings between end-February and end-July 2015

(EUR billions, not seasonally adjusted)



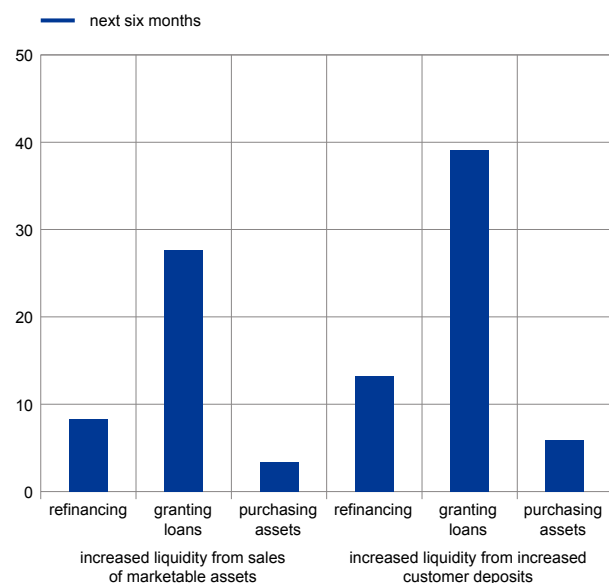
Sources: ECB and ECB calculations.

Notes: Increases in net asset positions reduce claims on the Eurosystem. Increases in net liability positions increase claims on the Eurosystem. "Wholesale funding (net)" refers to issuance of debt securities net of holdings of MFI debt securities and borrowing from MFIs other than the Eurosystem net of deposits with MFIs other than the Eurosystem.

Chart 6

Intended use of additional liquidity arising from the APP, as reported in the April 2015 BLS

(percentages of respondents)



Source: ECB.

Notes: The percentages are defined as the sum of the percentages responding "will contribute considerably to this purpose" and "will contribute somewhat to this purpose" to the corresponding question in the April 2015 BLS. The results shown are calculated as a percentage of the number of banks which did not reply "not applicable" and refer to banks' assessments for the forthcoming six months.

which, at least partly, reflects sales of securities to the Eurosystem from banks' own portfolios. Chart 5 also shows an expansion of credit to the private sector, part of which will have also contributed to the increase in deposits discussed above.

The final uses of the liquidity generated by the APP are likely to be different to the initial uses.

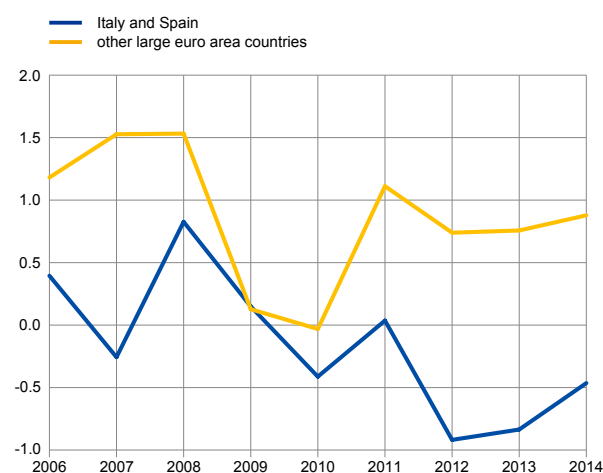
The banking system as a whole cannot reduce the total amount of reserves it holds by engaging in portfolio rebalancing.¹⁵ Looking at aggregate data can therefore provide only limited insights into the use of the liquidity generated by the APP, as the liquidity being used by one bank will be matched by a movement on the balance sheet of the bank receiving the liquidity. However, survey evidence can shed some light on banks' intentions. A large number of respondents to the April 2015 BLS said they expected to use the increased liquidity they receive to grant loans (see Chart 6). This response should be qualified, however, as the expansion of loans is a process that requires time to materialise, not only owing to operational considerations but also because the reaction of loan demand to improved supply conditions is unlikely to

¹⁵ A limited amount of reserve reabsorption can occur through the repayment of borrowing from the Eurosystem. Moreover, the acquisition of banknotes by banks also depletes the aggregate amount of reserves.

Chart 7

Difference between the ex-post risk-adjusted returns on loans and those on securities in selected euro area countries

(percentage points)



Sources: Bankscope and ECB calculations.

Notes: Risk-adjusted return on loans (interest received from loans net of impairment and capital charges, over amount of net loans) and the corresponding figure for securities. Weighted averages for an unbalanced panel of 186 banks. Yearly data. "Other large euro area countries" comprises Germany, France and the Netherlands.

be instantaneous. It is therefore probable that the first stage of rebalancing will affect mainly the liabilities side of banks' balance sheets, as banks use the increased liquidity at their disposal to pay down their more costly liabilities. This initial stage is also likely to involve the acquisition of some liquid assets, which can be done swiftly and with low transaction costs. Nevertheless, both of these types of immediate transaction contribute to activating portfolio rebalancing effects and are therefore congruent with the APP's intended objectives.

The APP is expected to improve the attractiveness of loans compared with securities as regards banks' portfolio allocation decisions.

It is expected to impact on banks' portfolio decisions by tilting the risk-adjusted return on assets in favour of loans. In recent years the returns that banks, particularly in vulnerable euro area countries, have earned (in ex-post risk-adjusted terms) by investing in securities have been much higher than those on investing in loans (see Chart 7). However, the portfolio rebalancing effects triggered by the APP will reduce the yields on securities. While these effects will also place downward

pressure on loan rates, for banks' bottom line profitability this will be counteracted by the lower credit risk of the loans, owing to the improving macroeconomic outlook. Overall, therefore, the APP is expected to make loans more attractive than securities.

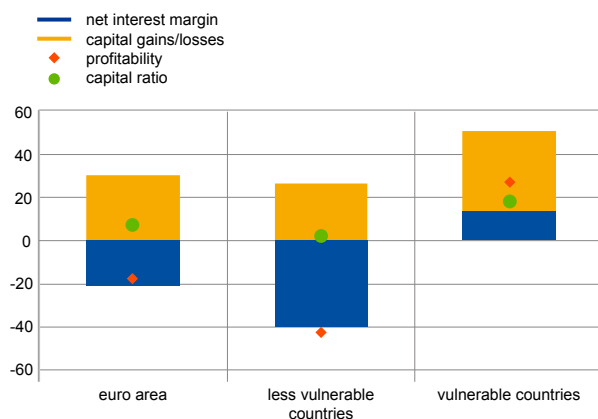
2.4 The impact of the APP on bank profitability and capital

The APP also has implications for banks' capacity to bear risk. Banks' capital positions are of central relevance for their ability to intermediate and thus transmit the monetary policy accommodation engineered by the ECB's non-standard measures. The accumulation of profits is one of the main methods that banks can use to boost their capital buffers and thereby increase their capacity to lend and take on the associated risks. The APP has several, partly competing effects on banks' capital and profitability. The reduction in longer-term yields brought about by the APP in an environment where short-term rates are at or close to their effective lower bound implies a flattening of the yield curve. Given banks' traditional business model of performing maturity transformation, i.e. funding the acquisition of long-term assets by issuing short-term liabilities, this yield constellation can exert downward pressure on their intermediation margins. At the same time, this adverse effect on bank profitability and capital is counteracted by the boosting effect of the APP on economic activity, which, as previously mentioned, moderates the credit risk of loans, thereby reducing the associated provisioning costs. Moreover, the general increase in asset prices expected to be triggered by the APP will lift the valuations of these assets on bank balance sheets, thus, under certain conditions, giving rise to capital gains.

Chart 8

Expected impact of the APP on banks' profitability and capital ratios, as reported in the April 2015 BLS

(net percentages of respondents)



Source: ECB.

Notes: Expected impact over the next six months. The net percentages are defined as the difference between the sum of the percentages of banks responding "increased/improved considerably" and "increased/improved somewhat" and the sum of the percentages for "decreased/deteriorated somewhat" and "decreased/deteriorated considerably" to the corresponding question in the April 2015 BLS. The results shown are calculated as a percentage of the number of banks which did not reply "not applicable".

Evidence from the BLS points to a positive overall effect of the APP on bank capital, but the impact on profitability is reported to vary across countries.

Since some of the effects of the APP have opposing impacts on bank profitability and capital, the overall effect is ex ante unclear. According to the April 2015 BLS, banks expect a slight overall improvement in their capital ratios resulting from the APP (see Chart 8). This reflects a broad-based expectation of capital gains associated with the programme. However, as part of these capital gains are not reflected in banks' accounting profits,¹⁶ the negative effect of the APP on banks' net interest margins dominates here, resulting in an adverse overall effect on bank profitability. While the impact on net interest margins is negative overall at the euro area level, the responses at the country level are more diverse. In particular, in vulnerable euro area countries where loans are often extended at floating rates and banks are most burdened by costs associated with credit quality, the impact is reported to be positive.

Box 2

The impact of non-standard measures on financial markets

This box quantifies the effects of the ECB's recent non-standard measures on financial asset prices. The main challenge in doing this is that the ECB's announcements of both the TLTROs (June 2014) and the expanded APP (January 2015) were largely expected by financial markets, following a number of official ECB communications which indicated the possibility of further non-standard measures being introduced. According to theory, efficient markets should price in the impact of a policy measure in anticipation of its actual implementation. This reasoning implies that asset prices should react to TLTRO and APP-related news in anticipation of the official announcement itself, as market participants revise the likelihood of the programmes being introduced and their expected size.

This box employs an event study methodology that extends the set of events to include official ECB announcements from May 2014 onwards which might have affected market expectations regarding the programmes. For the TLTROs, policy-related events include the Governing Council meetings of May and June 2014.¹⁷ For the APP a larger set of events has been identified, following the approach of Altavilla et al.¹⁸ For each event, changes up to a two-day window in length are considered, so as to allow for possible slow reactions of asset prices in light of the novelty of the

¹⁶ The extent to which capital gains are reflected in accounting profits depends on the accounting portfolio in which the relevant assets are held.

¹⁷ The analysis associates the Governing Council meeting held on 8 May 2014 with the TLTROs in part because the President of the ECB explicitly stated during the press conference that the Governing Council was willing to act in the following month. As a result, the official announcement of the TLTROs in June 2014 was already partially priced in after this press conference.

¹⁸ See the first Working Paper cited in footnote 7.

programmes. For this reason, this regression analysis explicitly controls for macroeconomic releases. Specifically, the estimates in the “controlled event study” columns (see Table) are obtained by regressing the daily changes in yields on the selected event dummies and the surprise component of a wide set of macroeconomic releases. The analysis considers macroeconomic news for the euro area, the four largest euro area economies and the United States over the sample period, i.e. from the beginning of January 2014 to the end of March 2015. The “standard event study” columns contain estimates obtained without controlling for macroeconomic news.

Table

Changes in yields of selected financial assets around policy event dates

	TLTRO		APP	
	Standard event study	Controlled event study	Standard event study	Controlled event study
Three-month EURIBOR (basis points)	-4	-4	-5	-3
10-year government bond (basis points)				
Euro area	-22	-23	-48	-47
Germany	-9	-10	-23	-18
France	-17	-18	-36	-27
Italy	-31	-33	-72	-60
Spain	-29	-31	-69	-65
Bonds issued by financial corporations (basis points)				
AAA	-14	-14	-13	-7
AA	-13	-13	-15	-11
A	-15	-14	-18	-14
BBB	-23	-24	-32	-27
Bonds issued by non-financial corporations (basis points)				
AAA	-10	-9	-26	-11
AA	-10	-10	-20	-12
A	-12	-12	-19	-15
BBB	-15	-15	-19	-23
Bonds issued by banks (basis points)				
Euro area	-16	-16	-26	-22
Germany	-12	-12	-13	-8
France	-13	-13	-17	-11
Italy	-26	-26	-56	-59
Spain	-18	-18	-15	-14
Exchange rate (percentages)				
USD/EUR exchange rate	-1	-1	-12	-12
Nominal effective exchange rate	-1	-1	-8	-8
Stock prices (percentages)				
Dow Jones EURO STOXX (broad) index	2	3	5	1
Inflation swap rates (basis points)				
One-year	-1	1	5	33
Three-year	2	3	14	27
Five-year	2	3	14	24

Source: Reuters, Bloomberg and ECB calculations.

Notes: The ten-year government bond yield for the euro area refers to an indicator constructed by the ECB using the Nelson-Siegel-Svensson model, which includes all issuers and all ratings. The nominal effective exchange rate of the euro used in the estimation is that against the currencies of the EER-19 group of trading partners (Australia, Bulgaria, Canada, China, Croatia, the Czech Republic, Denmark, Hong Kong, Hungary, Japan, Norway, Poland, Romania, Singapore, South Korea, Sweden, Switzerland, the United Kingdom and the United States). Bank bond yields are investment grade. For the TLTROs, the events are 8 May and 5 June 2015. For the APP, the exercise is based on 17 event dates. For 2014 the selected events are: 4, 12, 24 and 25 September; 2, 10 and 24 October; 6, 17, 21 and 27 November and 4 December. For 2015 the events are 2, 8, 14 and 22 January and 5 March.

The results suggest that the combined effects of the non-standard measures implemented since June 2014 have significantly lowered yields in a broad set of financial market segments. The effects generally increase with maturity and riskiness. For instance, a sizeable impact is estimated for long-term sovereign bonds, with ten-year yields declining by about 70 basis points for the euro area, and roughly 100 basis points for Italy and Spain. The spillovers to yields of untargeted assets are significant in the case of euro area financial and non-financial corporate bonds.

There is also easing pressure on other financial market prices, such as the exchange rate and equity prices. As shown in the table, the APP announcements are estimated to have led to a depreciation of the euro by 12% against the US dollar. It is also estimated that there was a positive impact on the euro stock market index of 3% in the case of the TLTROs and 1% in the case of the APP.

The results suggest that the APP has contributed to an increase in long-term inflation expectations. Inflation swap rates for maturities between one and five years are a measure of the private sector's inflation expectations over the respective horizons. The estimated change in inflation swap rates due to the APP is around 30 basis points for the one-year maturity and around 20 basis points for the five-year maturity. For the credit easing and asset purchase programmes to provide stimulus to the real economy, the response of inflation expectations is crucial: a decline in inflation expectations matching the decline in nominal yields would leave real interest rates unchanged. Moreover, the response of inflation expectations is a metric for gauging the credibility as perceived by financial markets of the asset purchase programme's ability to address deflation risks.

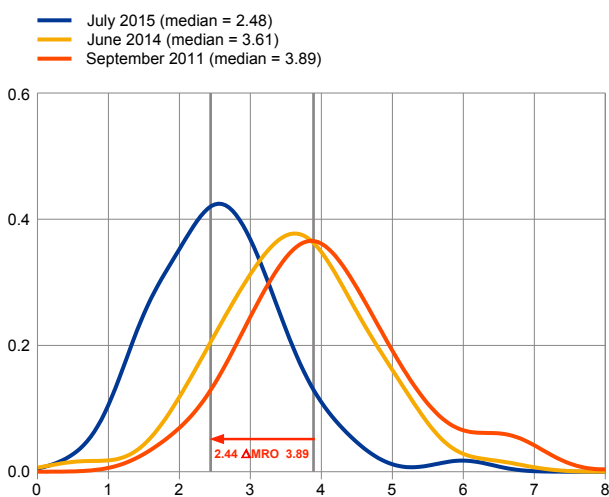
3 The impact on bank lending

From a monetary policy transmission perspective, banks' intermediation capacity is relevant primarily because it affects the supply of bank loans to firms and households. This section therefore focuses more specifically on the effect of the ECB's recent non-standard monetary policy measures on the eventual outcome of the intermediation process, namely on the availability, conditions, rates and volumes of bank lending.

Evidence from lending rates applied by banks to NFCs points to an improvement in the pass-through of monetary policy measures. Data on individual MFI lending rates suggest that successive cuts in the MRO rate have been passed through to lending rates applied to NFCs to a different extent across countries (see Charts 9 and 10). Looking at the distributions of lending rates charged by MFIs to firms in September 2011 (i.e. shortly before the first of a series of cuts in the MRO rate starting in November 2011) and June 2014, it appears that the 125 basis point reduction in the MRO rate over this period was incompletely and unevenly reflected in the decline in the median lending rate: in the group of less vulnerable countries it declined by 92 basis points, whereas in the group of vulnerable countries it declined by only 28 basis points. Before, therefore, the launch of the credit easing package, and especially in vulnerable countries, the bulk of the reduction in the key ECB interest rates had not been transmitted to the borrowing costs faced by households and firms. In the period after the announcement of the credit easing package in June 2014, however, the reduction in borrowing costs was larger in vulnerable countries (113 basis points) than in less vulnerable countries (50 basis points), suggesting that both the TLTROs and the APP have supported credit flows to the private sector and aligned the price of such credit with the intended stance of monetary policy.

Chart 9**Composite lending rates for NFCs: distribution of individual MFIs in vulnerable countries**

(percentages per annum)

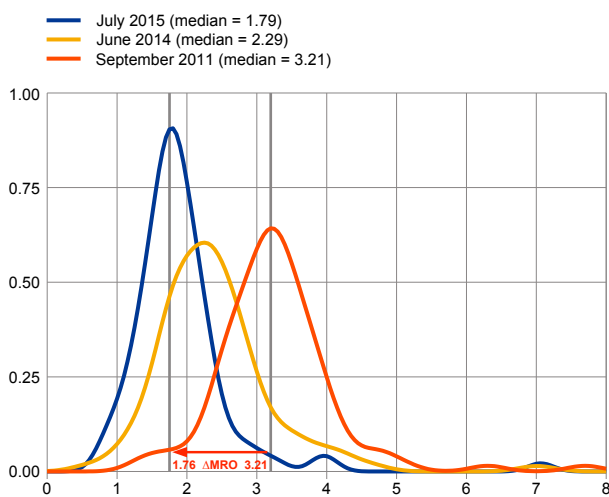


Source: ECB.

Note: The chart shows the density approximation of the lending rate distribution obtained from a sample of 55 MFIs in selected vulnerable countries (Ireland, Spain, Italy and Portugal) in three different periods (September 2011, June 2014 and July 2015). The chart also shows that if the reduction in the MRO rate since September 2011 (i.e. 145 basis points) had been fully passed on to the median lending rate of that period (i.e. 3.89%), the lending rate in July 2015 would have been 2.44%.

Chart 10**Composite lending rates for NFCs: distribution of individual MFIs in less vulnerable countries**

(percentages per annum)



Source: ECB.

Note: The chart shows the density approximation of the lending rate distribution obtained from a sample of 105 MFIs in selected less vulnerable countries (Belgium, Germany, France, the Netherlands and Austria) in three different periods (September 2011, June 2014 and July 2015). The chart also shows that if the reduction in the MRO rate since September 2011 (i.e. 145 basis points) had been fully passed on to the median lending rate of that period (i.e. 3.21%), the lending rate in July 2015 would have been 1.76%.

A simplified accounting model of how banks price their loans can be used to analyse the main factors that influence lending rates. Using such a model, it is possible to break down lending rates into four main components:¹⁹

$$\text{Lending rate} = \text{bank funding cost} + \text{capital charge} + \text{intermediation margin} + \text{other factors}$$

This simplified model assumes that when pricing a loan, the base used by banks is a market reference rate which mainly reflects the rate at which they can raise funds in the interbank money market. In addition to this rate, banks pass on to the final borrower a number of spreads to recover the costs they incur in making the loan, including the cost of funding through deposits and market debt (bank funding cost). Moreover, banks need to recoup their cost of equity (capital charge). When a new loan is created, the regulatory risk weight is positive, so the bank has to set aside some capital to back the loan.²⁰ Banks also charge a margin for intermediation services (intermediation margin). This margin has to compensate the bank for a number of factors related to the riskiness of the borrower and it generates net earnings from borrowing activity. Finally, there are other factors not considered separately in this simple formula (other factors), which may influence, sometimes substantially, the pricing of banks' retail products. These include changes in demand

¹⁹ The factors driving banks' costs of funding enter into the breakdown in terms of spreads relative to the risk-free market rate of the closest maturities. For example, the deposit spread is often negative because banks provide liquidity services to depositors. So the deposit rate is very low, and can even be lower than the overnight index swap (OIS) rate.

²⁰ The cost of capital can be approximated by multiplying the excess return on bank equity by a coefficient of capital consumption.

for loans, banking sector competition and the opportunity costs of lending (most notably taking into account incentives for holding sovereign debt).²¹

Lending rates were exceptionally sticky and sluggish between 2011 and 2014, especially in vulnerable countries. This occurred despite the fact that after the announcement of Outright Monetary Transactions in August 2012, monetary policy was successful in compressing funding costs and even the cost of capital for banks (see Chart 11).

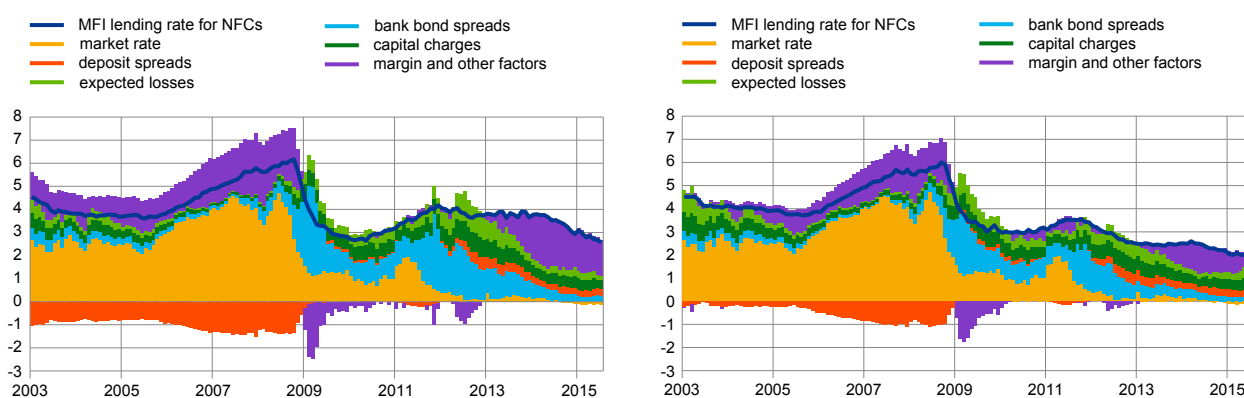
Chart 11

Breakdown of the composite cost of borrowing for NFCs in vulnerable countries

(percentages per annum)

a) in vulnerable countries

b) in less vulnerable countries



Sources: ECB, Moody's and Merrill Lynch Global Index.

Notes: "Market rate" is the two-year overnight index swap (OIS) rate. "Deposit spreads" are computed in relation to an average of overnight deposits, deposits with agreed maturity and deposits redeemable at notice, weighted by their corresponding new business volumes. The spreads are calculated vis-à-vis the EURIBOR of the closest maturity. Yields for "bank bond spreads" are taken from the Merrill Lynch Global Index and aggregated on the basis of their corresponding outstanding amounts. The spreads are then calculated vis-à-vis the swap rate of the closest maturity. "Capital charges" are the cost of the capital required by Basel II regulations. "Expected losses" = LGD*PD, where PD (probability of default) is the expected default frequency computed by Moody's, and LGD (loss given default) is fixed at 0.45. "Margin and other factors" is constructed as the residual between lending rates and all of the other components.

The costs of borrowing from capital markets (i.e. bank bond spreads) have been higher in vulnerable than in less vulnerable euro area countries, especially during the period 2011-12. This difference reflects the higher opportunity cost of investing in securities issued by banks operating in vulnerable countries, where sovereign yields are higher. Additionally, the deterioration in sovereign creditworthiness as a result of the sovereign debt crisis has had a significant effect on the credit risk of banks operating in vulnerable countries, where high exposure to domestic sovereign bonds has adversely influenced their funding costs.²²

Against the background of additional monetary policy measures and especially after the announcement of the credit easing package, there has been a steep decline in lending rates. This decline has been influenced by different factors, including the further reduction in money market rates, which

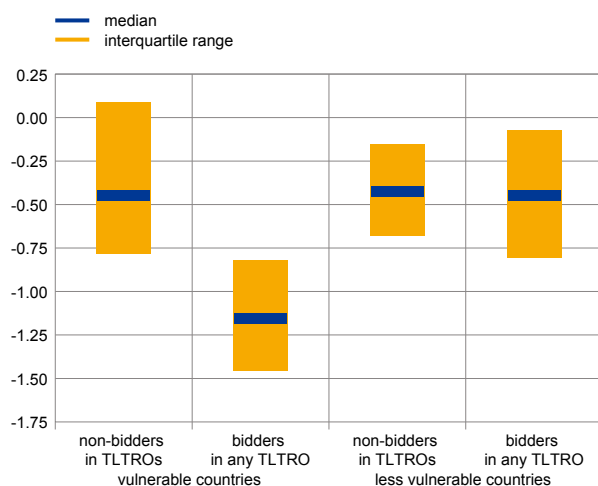
²¹ Note that this simplified pricing formula cannot be directly translated into single measures of bank refinancing costs, risk spreads and capital charges, although several proxies are available for each. Consequently, the breakdown is illustrative only and is not robust to the choice of these proxies, which is surrounded by a high degree of uncertainty.

²² See Altavilla C., Pagano M. and Simonelli, S., "Bank Exposures and Sovereign Stress Transmission", *CSEF Working Paper*, No 410, 2015, and Acharya, V., Drechsler, I. and Schnabl, P., "A Pyrrhic Victory? Bank Bailouts and Sovereign Credit Risk", *Journal of Finance* Vol. 69, Issue 6, 2014, pp. 2689-2739.

Chart 12

Changes in lending rates for NFCs

(percentage points)



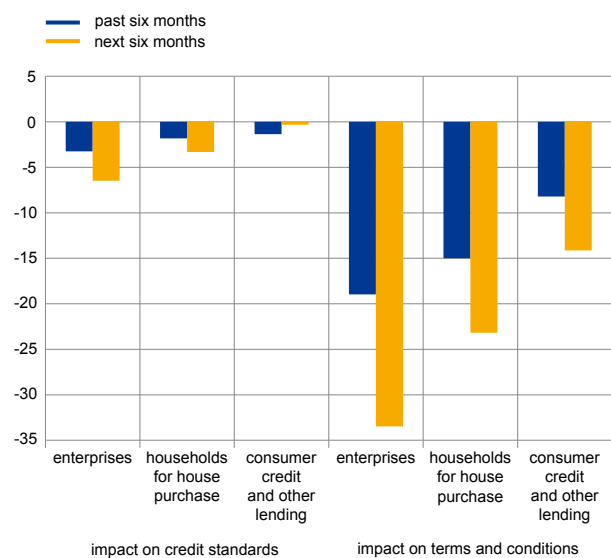
Source: ECB.

Notes: The chart covers the period from June 2014 to July 2015. In “vulnerable” countries the “non-bidders in TLTROs” group comprises ten banks and the “bidders in any TLTRO” group comprises 49 banks. In “less vulnerable” countries the “non-bidders in TLTROs” group comprises 71 banks and the “bidders in any TLTRO” group comprises 43 banks.

Chart 13

Impact of the expanded APP on bank lending conditions as reported in the April 2015 BLS

(net percentages of respondents)



Source: ECB.

Notes: Net percentages are defined as the difference between the sum of the percentages of banks responding “tightened considerably” and “tightened somewhat” to the corresponding question in the April 2015 BLS and the sum of the percentages responding “eased somewhat” and “eased considerably”. The results are calculated as a percentage of banks which did not reply “not applicable”. A positive value indicates net tightening and a negative value indicates net easing.

have entered into negative territory. Another part of the decline in lending rates is due to the shrinking of the residual component linked to “margins and other factors”, especially in vulnerable countries. These dynamics are in line with the main objective of the TLTROs, which is to stimulate the supply of bank loans, thereby exerting downward pressure on lending rates in order to attract more demand, expand operations and contribute to a more robust recovery. A better business environment will ultimately be reflected in an improvement in banks’ profitability.

Analysing the bidding of banks in TLTROs suggests that there is a close relationship between participation in these operations and lending behaviour, especially in vulnerable countries.

Banks located in vulnerable countries which have participated in at least one of the first four TLTROs have lowered their lending rates by more than non-participants (see Chart 12). Lending volumes also provide evidence of more forthcoming lending behaviour by these banks. The lending behaviour of banks located in less vulnerable countries does not appear to be significantly linked to TLTRO participation.

Euro area banks’ answers to ad hoc questions in the April 2015 BLS provide information on the potential ability of the APP to affect banks’ lending behaviour.²³

The majority of banks in the euro area indicated a positive impact of the APP on all loan categories, especially as regards their credit terms and conditions and, to a lesser extent, credit standards. A net percentage of around 5% of the banks reported a likely easing impact on the credit standards applied to loans to enterprises and to households for house purchase over the coming six months (see Chart 13). The positive impact on consumer credit and other loans was seen as more muted. Considerable net percentages of the banks indicated a favourable impact of the APP on their credit terms and conditions for loans to enterprises (-19%), housing loans (-15%), and consumer credit and other lending to households (-8%). This favourable impact was expected to increase over time for loans to enterprises (-33%), housing loans (-23%), and consumer credit and other lending to households (-14%).

²³ These results were collected in the April 2015 BLS, for which the deadline for banks to respond was 23 March. The answers should thus be seen as representative of the information that these banks had at that time.

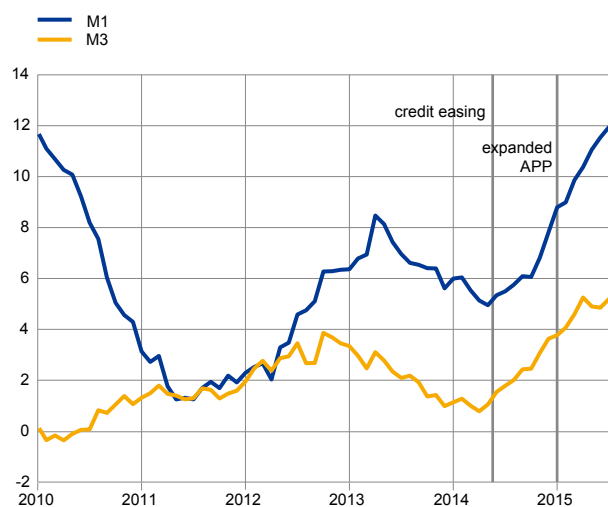
4 The impact on money

The APP is unique among the ECB's non-standard measures in that it entails an exogenous increase in the amount of monetary liquidity in the economy. The ECB's non-standard measures discussed in this article are intended to contribute to achieving its primary mandate of maintaining price stability over the medium term,

Chart 14

Annual growth rates of M1 and M3

(annual percentage changes)



Source: ECB.

Notes: The vertical lines denote the announcement of the TLTROs (marking the initiation of the credit easing package) and the APP, respectively.

mainly by easing financing conditions for firms and households. Part of the expected reaction by these economic agents to the more forthcoming financing conditions is that they will increase their borrowing from the banking system in order to finance expenditure. The associated credit expansion results in an increase in broad money, as loan drawdowns are typically carried out by crediting the borrower's deposit account (and ultimately that of the recipient of the borrower's expenditure). The upshot is that all these non-standard measures ultimately have an impact on broad money creation. Indeed, measures of broad money growth have been moving upwards over the period during which the recent wave of non-standard measures has been active (see Chart 14). In most cases this impact is indirect and reflects the endogenous reaction of banks, firms and households to the easier financing conditions engineered by the central bank. The APP, however, is distinctly different in this respect. As explained in Section 2, when the Eurosystem acquires securities, this always leads to an increase of the reserves which euro area MFIs hold with the Eurosystem. When the ultimate sellers of

the securities are non-MFIs, the increase in central bank reserves is matched by an increase in the deposits of the seller with the credit institution which intermediated the sale. In view of the uniqueness of the APP in this respect, this section focuses on the impact of the APP on monetary aggregates.

4.1 Conceptual delineation of the impact

Two effects of the APP purchases on broad money (M3) can be distinguished: the direct, mechanical effect of the purchases, and the indirect effect resulting from the uses of the liquidity from the purchases. As regards the direct effect, the impact on M3 depends on the sector to which the ultimate sellers of the securities acquired by the Eurosystem belong.

Direct effects of the APP on M3 arise when purchases are made from the euro area money-holding sector. For sellers in the euro area money-holding sector – euro area households, NFCs, insurance corporations and pension funds, other financial intermediaries and general government entities other than central government – the purchases result, in the first instance, in a one-for-one direct

increase in M3.²⁴ In the case of sellers which are not resident in the euro area, the deposits they receive are not part of M3, and there will therefore be no impact on euro area broad money. If the sellers are euro area credit institutions or money market funds (i.e. they belong to the euro area money-issuing sector), they will receive either reserves or deposits with another MFI, both of which are consolidated within the euro area MFI sector and do not affect euro area M3.²⁵

The indirect effects of the APP on M3 result from the portfolio rebalancing that the programme is intended to bring about. Some of the portfolio rebalancing transactions may shift funds outside the money-holding sector or towards instruments that are not included in M3, thereby “destroying” money. By contrast, portfolio rebalancing by entities outside the money-holding sector may shift deposits towards the money-holding sector, thereby “creating” money. Some stylised examples of such indirect effects on money are provided below.

Money is destroyed when euro area money-holders acquire assets from non-euro area residents. As euro area residents seek to diversify their portfolios and pursue higher returns in the context of low yields in the euro area, they may invest in assets held outside the euro area. The settlement of these transactions will shift deposits which are held by euro area money-holders and included in M3 to deposits held by non-residents, thereby destroying money.

The acquisition by euro area money-holders of non-M3 liabilities of euro area MFIs also destroys money. While the deposits received in the settlement of the sale of assets to the Eurosystem will almost certainly be highly liquid and therefore included in M3, sellers may then choose to acquire assets from banks which are not included in M3 (such as long-term bank bonds or bank equity) in order to earn higher returns by increasing their exposure to duration or other types of risk. While aggregate bank liabilities may not change, the shift in their composition destroys money. A similar effect materialises if euro area money-holders acquire assets held by euro area banks, such as government and corporate bonds, or repay loans to banks.

Money is created through the acquisition by euro area MFIs or non-euro area residents of assets from euro area money-holders. Euro area money-holders are not the only economic agents engaged in portfolio rebalancing. Both non-residents and euro area MFIs will seek to re-optimize their portfolios. In doing so they may acquire assets from other non-residents or euro area MFIs, in which case there will be no effect on euro area M3. Some of the rebalancing is likely, however, to involve the acquisition of assets from euro area money-holders (especially as the money-holding sector will be encouraged to issue new assets given the lower funding

²⁴ This assumes that the proceeds from the sale are credited to a short-term bank deposit account, included in M3, which is typically the case.

²⁵ Strictly speaking, there is also another possibility, namely that the seller is a central government entity, which is part of the money-neutral sector. In this case, sales do not have a direct effect on M3. Given that the APP cannot include primary purchases of government debt, this case is unlikely to be of quantitative relevance.

costs), for example in the form of corporate bonds or equity.²⁶ Eventually banks are also expected to use some of the reserves they obtain to extend loans to euro area households and firms. All these transactions give rise to deposits held by euro area money-holders, thereby creating money.

4.2 The information content of the increase in M3

The increase in M3 associated with the APP results mainly from an exogenous shift in the supply of money and is therefore highly informative for future spending and inflation. Movements in broad money are generally informative for current and future spending in the economy and contain important signals for future developments in inflation. Indeed, in recognition of this, the ECB's monetary policy strategy contains a distinct pillar devoted to the analysis of monetary developments in order to identify risks to price stability in the medium to longer term. Movements in broad money that can be traced back to a higher demand for monetary assets have lesser implications for future inflation, as the higher money holdings in fact reflect portfolio decisions and will not therefore trigger portfolio rebalancing or increased spending. In the case of the APP, however, most of the associated increase in M3 reflects an exogenous augmentation of bank deposits engineered by the central bank.

As the APP compresses yields, part of the increase in broad money it generates will be absorbed by higher demand to hold money for investment reasons, but a substantial part will remain macroeconomically active and be informative for future developments in spending and inflation. When assessing the implications of the APP-induced increase in M3 for future inflation developments, it should be borne in mind that the APP is primarily intended to compress the yields on other assets. This, in turn, reduces the opportunity cost of holding money, which increases demand on the part of agents in the economy to hold money. In an environment where yields are already low, a further decline may cause a disproportionate increase in agents' willingness to hold money. This is because in order to invest in more sophisticated, non-monetary assets savers must incur fixed costs related to the acquisition of information and expertise in managing such investments. The hurdle that these costs pose is too high when the extra remuneration which can be earned is low. The upshot is that part of the money exogenously injected into the economy by the central bank via the APP will be met by increased demand for monetary instruments by the receiving agents, thereby eliminating part of the reinvestment and spending processes that would give rise to macroeconomic effects. In other words, in the current yield environment, the increase in M3 engineered by the APP is expected to have more muted macroeconomic effects than an increase of the same size in a more typical interest rate environment. Nevertheless, the overall effect is still clearly sizeable, particularly when taking into account that the propensity to spend "windfall" increases in money balances is likely to be higher in the present yield environment.

²⁶ Note that the euro area banking sector as a whole cannot offload reserves through such transactions. The efforts of individual banks, however, to pass on their reserves results in an increase in deposits of non-banks. For the sector as a whole, therefore, the portfolio re-optimisation occurs through expanding the balance sheet and thereby gradually shifting its composition.

5 Conclusions

This article has analysed the impact on money and credit of the most recent non-standard measures announced by the ECB. The empirical evidence suggests that these policies have successfully improved the credit conditions in the euro area and supported the ongoing recovery in lending activity.

The TLTROs and APP have significantly lowered yields in a broad set of financial market segments. The long-term bank funding provided by the TLTROs and the acquisition of longer-term private and public sector securities through the APP have had effects on a range of asset prices which generally increase with maturity and riskiness.

Reductions in bank bond yields, i.e. less expensive market-based financing for banks, have improved their funding costs, enabling a more forthcoming bank attitude towards lending. In practice, the elimination of illiquidity and abnormally high spreads and mark-ups in malfunctioning credit markets has incentivised banks and other lenders to pass the funding cost relief on to final borrowers in terms of higher credit flows and better lending conditions.

Overall, the non-standard measures have helped push the intended monetary policy accommodation through the intermediation chain to reach final borrowers, i.e. household and firms. This contributes to the recovery in lending and economic activity, which is expected to produce a sustained adjustment of inflation rates towards levels below, but close to, 2% over the medium term.