

ARTICLES

THE ROLE OF THE CENTRAL BANK BALANCE SHEET IN MONETARY POLICY



This article discusses the use of the central bank balance sheet as a monetary policy tool, focusing in particular on the experience of the ECB but also reporting on that of other monetary authorities. Since the financial crisis started in 2007-08 central banks have used their balance sheets to perform a variety of interventions, altering their size and composition to varying degrees. These interventions include operations to provide “funding reassurance” to counterparties; credit easing measures to enable or improve the transmission of the monetary policy stance in the presence of market impairments; and large-scale purchases of securities to provide additional monetary policy accommodation at times when short-term nominal interest rates are at their effective lower bound.

In pursuit of its price stability mandate, the ECB has implemented all of these measures, including large-scale purchases of public sector securities with the introduction of the expanded asset purchase programme earlier this year. The use of the Eurosystem balance sheet has thus evolved from a relatively passive approach, with liquidity provision being determined by the needs of Eurosystem counterparties, to more active management of the size and composition of balance sheet assets in order to ensure the appropriate degree of monetary accommodation.

I INTRODUCTION

The ECB’s asset purchase programmes have marked a more active use of the Eurosystem balance sheet in pursuit of the ECB’s price stability mandate. In September and November 2014 the ECB began to implement purchases of covered bonds and asset-backed securities (ABS) respectively. In January 2015 it decided to expand the asset purchase programmes to include secondary market purchases of securities issued by the public sector in the euro area. These purchases are a further instance of how changing the size and composition of the Eurosystem balance sheet is used as an instrument in pursuit of the ECB’s price stability mandate.

Throughout the crisis central banks around the world moved beyond their traditional operating frameworks to make use of their balance sheets as a monetary policy tool. Monetary authorities have deployed their balance sheets when liquidity shortages and market impairments, resulting from elevated liquidity and credit risk premia, impeded the transmission of the intended monetary policy stance; and when a further easing of the stance was needed at times when short-term nominal interest rates were at their effective lower bound. The explicit and active calibration of the size and composition of the central bank balance sheet as a monetary policy tool has in many respects been novel, since within contemporary central bank operating frameworks – notwithstanding all the differences in economic and financial structures and central banking traditions across jurisdictions – monetary authorities primarily pursue their mandates through the setting of an operational target for a short-term interest rate. Within such frameworks, the balance sheet of the central bank plays a subordinate role.

This article discusses the role of the balance sheet of a central bank as an instrument of monetary policy,¹ focusing in particular on the policies of the ECB. Section 2 provides an overview of the different ways in which monetary authorities use their balance sheets. Section 3

¹ The central bank balance sheet is a financial statement that records assets and liabilities resulting from monetary policy instruments and autonomous factors (for example, government deposits and banknotes). Monetary policy instruments are those financial contracts that the central bank enters into in pursuit of its goals. It is the different types of financial contract – for different nominal amounts – that have implications for financial market prices and the economy, rather than the central bank balance sheet per se. This article nonetheless follows established practice and refers to the central bank balance sheet as an instrument of monetary policy.

focuses on the euro area experience, while a box describes recent developments in the Eurosystem balance sheet. Section 4 concludes.

2 THE CENTRAL BANK BALANCE SHEET AS A MONETARY POLICY INSTRUMENT

2.1 THE CENTRAL BANK BALANCE SHEET: FROM SIDESHOW TO POLICY INSTRUMENT

Monetary policy attempts to influence broad financial and macroeconomic conditions in order to achieve the goals that the central bank has been tasked with in its mandate. This is done by varying the monetary policy stance – the contribution monetary policy makes to economic, financial and monetary developments.

In “normal” times the stance of monetary policy is signalled by the price of central bank reserves. Within most contemporary central bank operating frameworks, the monetary policy stance is very often revealed by the price at which banks can trade central bank reserves in the interbank market, which is, in turn, influenced by the price at which central banks make these reserves available to banks. Within such operating frameworks, the central bank injects reserves into the banking system according to banks’ demand in order to steer the interbank interest rate towards a level that is consistent with the intended monetary policy stance.

Consequently, in “normal” times the composition and size of the central bank balance sheet contain limited information on the degree of monetary accommodation provided. The size of the balance sheet results passively from the need to steer the short-term interest rate(s) in line with the desired stance. The quantity of liabilities – as well as assets – and hence the size of the balance sheet is largely determined by the demand for funds on the part of the central bank’s counterparties, which is, in turn, determined by the liquidity needs of the banking system. Put differently, the central bank must supply, inelastically, the quantity of reserves required by the banking system in order to control the short-term interest rate. The composition of the assets and liabilities on the balance sheet reflects institutional characteristics of central bank liquidity management, including collateral policies and modalities of liquidity provision and absorption. In short, when the instrument of monetary policy is the short-term interest rate, the size and composition of the central bank balance sheet do not provide information about the monetary policy stance.²

With the advent of the financial crisis, central banks began using their balance sheets in different ways – some of which were novel, at least in the contemporary context, while others were in line with traditional central bank tasks and practices. Faced with the strains and risks of the financial crisis, central banks took one or more of the following actions:

- increasing liquidity provision to their banking systems elastically, i.e. accommodating banks’ increased demand for liquidity, and modifying the modalities of liquidity provision to give funding reassurance, in some cases by also providing term lending;
- launching direct lending operations for the non-bank private sector or purchasing private sector assets;

² This is not the case for central banks with operating frameworks that involve some degree of active management of the exchange rate. In these cases, both the total size of the assets and the composition of the assets and liabilities may provide information about the desired stance of monetary policy.

- starting to purchase medium and long-dated public sector securities, or securities guaranteed by governments, on a large scale;
- offering explicit verbal guidance on the evolution of policy in the future, including indications about the future use of the central bank balance sheet if specific developments materialise.

All of these actions involve – although to varying degrees – an expansion in the size of the central bank balance sheet and a modification of its composition (see Chart 1). However, caution is required when comparing central bank balance sheets across jurisdictions and also when comparing balance sheets of the same jurisdiction over time. As discussed in this article, a unit of liquidity will have very different economic effects depending not only on the financial structures and central bank operating procedures in place, but also on the use to which the central bank balance sheet is put – that is, its use as an instrument to address specific policy needs.

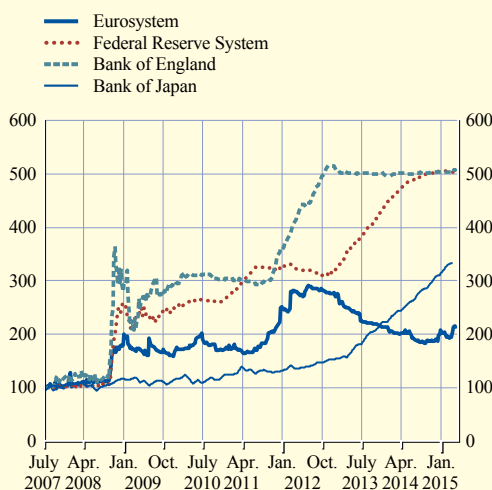
Three main reasons for the increased use of central banks' balance sheets can be identified:

(1) the need to respond to financial stress and manage financial crises – in line with central banks' traditional function as the ultimate provider of funding reassurance for the banking system; (2) the need to enable or improve the transmission of the intended monetary policy stance in the presence of market impairments; and (3) the need to provide additional monetary accommodation – that is, to further ease the stance – by exerting downward pressure on long-term interest rates when short-term nominal policy rates have been reduced to their effective lower bound. In principle, these three objectives are complementary, while in practice they may be closely related. In any case, the measures deployed for any one of the above reasons can have very similar implications for the monetary policy stance. For example, by compressing the spreads between the market costs of borrowing and the risk-free interest rates, transmission-enhancing measures can also be regarded as increasing the degree of monetary accommodation.

The discussion in this article will distinguish between “passive” and “active” uses of the central bank balance sheet, while announcements about potential future balance sheet measures are termed “contingent balance sheet policies”.³ The fully

Chart 1 Central bank balance sheets since the crisis: total assets

(index: H1 2007 = 100)



Sources: ECB, Federal Reserve System, Bank of England and Bank of Japan.

3 There are many different taxonomies of central banks' use of their balance sheets. Bernanke and Reinhart (Bernanke, B. and V. Reinhart, “Conducting Monetary Policy at Very Low Short-Term Interest Rates”, *American Economic Review*, Vol. 94, No 2, 2004, pp. 85-90) distinguish policies that affect the size of the central bank balance sheet from those that affect the composition of the asset side. Borio and Disyatat (Borio, C. and P. Disyatat, “Unconventional Monetary Policies: An Appraisal”, *BIS Papers*, No 292, 2009) emphasise the effect on the private sector balance sheet – which is a mirror image of the effect on the central bank's balance sheet. Other possibilities include the type of risk for the central bank's balance sheet that results from its interventions (see Goodfriend, M., “Central Banking in the Credit Turmoil: An Assessment of Federal Reserve Practice”, *Journal of Monetary Economics*, Vol. 58, No 1, 2011, pp. 1-12.); the locus of the central bank intervention, that is, the market targeted; the purpose of the intervention – what type of market imperfection the central bank is addressing – and hence the function it takes on by virtue of its intervention (e.g. market-maker of last resort); and the transmission channels of its policies.

elastic supply of central bank liquidity to its counterparties in response to heightened demand induced by financial stress is considered in this article to be a passive deployment of the central bank balance sheet. This categorisation seems apt, since, in such cases, the consequences for the balance sheet of the monetary authority depend solely on the demand for central bank credit on the part of its counterparties. Active balance sheet policies, on the other hand, involve central bank measures that deliberately attempt to steer economic conditions by influencing specific financial market prices. The article identifies two types of active policy. “Credit easing” measures are targeted interventions that aim to influence credit spreads by altering the composition of the central bank balance sheet in order to improve the transmission of the desired monetary policy stance; and large-scale asset purchases (often termed “quantitative easing”) are intended to lower long-term interest rates, when short-term nominal interest rates are at their effective lower bound, by increasing the size of the balance sheet, with the ultimate aim of achieving a comprehensive easing of the monetary policy stance. Finally, contingent balance sheet policies consist in a commitment by the central bank to use its balance sheet in certain ways, if specific circumstances materialise.

2.2 PASSIVE CENTRAL BANK BALANCE SHEET POLICIES: PROVIDING LIQUIDITY AS THE SYSTEMIC PROVIDER OF FUNDING REASSURANCE IN RESPONSE TO FINANCIAL STRESS

Financial stress leads to increased demand for liquidity, which the central bank accommodates in an attempt to arrest the potentially disruptive deleveraging process that would otherwise ensue. In periods of systemic stress private financial intermediation becomes dysfunctional. In particular, the ability of the interbank market to efficiently (re)distribute central bank funds across counterparties diminishes or even breaks down completely owing to market fragmentation and precautionary “hoarding” of liquidity. In such cases, the central bank may need to provide reserves in excess of the “regular” liquidity needs arising from “autonomous factors” (e.g. demand for banknotes) and, if applicable, from reserve requirements, for two main purposes: first, to stabilise the banking system in accordance with the traditional role of central banks as the ultimate provider of funding reassurance; and, second, to prevent an increase in short-term interest rates above levels consistent with the desired monetary policy stance.

Many central banks implemented such policies as part of their response to the 2007-08 financial crisis, particularly during the financial turmoil following the collapse of Lehman Brothers in September 2008. To alleviate severe tensions in the interbank money market, central banks engaged in a number of operations as the ultimate provider of funding reassurance, providing liquidity to their respective banking sectors. This type of central bank intervention was aimed at reducing interbank market spreads, but also helped to improve overall market functioning and to restore confidence in the economy. In fact, by stabilising short-term interest rates around the level of the operational target, an unwarranted tightening of the monetary policy stance was prevented.⁴

The central bank may also make longer-term liquidity available in order to provide funding reassurance to the banking system. Financial stress may affect not only the market for central bank reserves – the overnight market – but also term funding markets, including term money markets and the market for unsecured bank bonds. In response to such dislocations, central banks extended the maturity of their liquidity interventions beyond “conventional” horizons. The availability of longer-term liquidity provides counterparties with the funding to match the maturity of some of their assets

4 Foreign currency swap lines between central banks – which increase the size of the central bank balance sheet as well – should also be seen in the context of funding reassurance: by making foreign currency liquidity available to their banking systems, central banks relieve funding pressures, in this case for foreign currency-denominated assets.

(offering funding reassurance). It thus insures banks against duration and rollover risk and thereby halts too rapid deleveraging. As a result, confidence effects in financial markets may be amplified. In addition, there may be important signalling effects, as this measure demonstrates the central bank's determination to act as a liquidity backstop and ensure "normal" conditions in the markets for term funding as well. The provision of funding reassurance to the central bank's counterparties may be complemented by modifying other modalities of liquidity provision, for example, broadening the pool of eligible collateral. The ECB also switched its liquidity-providing operations to fixed rate full allotment tenders, which will remain in place until at least December 2016.

The provision of term funding combines liquidity support and credit easing. By providing longer-term liquidity, the central bank influences conditions in the markets for term funding. Compared with the situation that would have prevailed if no policy interventions had been conducted, this lowers bank funding costs and credit spreads and is translated into looser financing conditions for final borrowers in the economy – safeguarding the transmission of the desired monetary policy stance. Therefore, this aspect of liquidity provision also has a credit easing dimension.

Accommodating the banking system's increased demand for liquidity and providing term funding will result in a larger central bank balance sheet. When financial stress increases counterparties' demand for reserves, the central bank has to accommodate this demand or forfeit the achievement of its operational target, which would blur the signal of its monetary policy stance. Stresses in funding markets, in turn, may interfere with the transmission of the intended stance. In both cases, the necessary increased provision of liquidity by the central bank increases the size of its assets: the monetary authority "takes intermediation onto its own balance sheet".⁵

The limited scope of liquidity support interventions may necessitate more active deployment of the central bank balance sheet. The overall efficacy of liquidity assistance policies is entirely dependent on counterparties' decisions regarding whether and how much to borrow. While they may be sufficient to maintain market functioning and prevent financial dislocations from generating spillovers to the economy, they afford the central bank only limited control over broad monetary conditions. In particular, they may ultimately be insufficient to prevent bank deleveraging and the resulting drag on the economy stemming from restrictive credit conditions. In such cases, the central bank may need to take more active control of its balance sheet. Many major central banks – including the ECB – have made the transition from passive to active balance sheet policies in the course of the last few years, albeit at different speeds, as economic conditions necessitated increasingly tight control over the balance sheet in order to effectively steer the monetary policy stance.

2.3 FROM PASSIVE TO ACTIVE CENTRAL BANK BALANCE SHEET POLICIES: CREDIT EASING

In certain cases, providing liquidity elastically to the banking system may not be sufficient to remedy dysfunctional private financial intermediation. Liquidity provision by the central bank, however ample, is usually available only to a subset of market participants (namely the central bank's counterparties); and even these participants may be reluctant to part with their liquidity to enter impaired markets in times of heightened risk aversion. Under such circumstances, direct central bank interventions may become necessary to improve the functioning of markets or market segments deemed crucial for the financing of the real economy.

⁵ The asset-side counterpart of the newly created reserves on the liability side is the credit granted to the central bank's counterparties (if monetary policy is implemented through repo operations, for example) or securities held (if monetary policy is implemented through outright purchases and sales of government securities on the open market, for example).

Under credit easing policies, the central bank may take a more active stance on determining the composition of the assets on its balance sheet, with a view to influencing market spreads that particularly impede transmission. In the case of central bank interventions targeted at credit easing, it is the composition of the balance sheet's asset side that is of primary importance, in the sense that the assets on the balance sheet reflect the monetary authority's intention to ease conditions in specific markets.⁶ To do so, the monetary authority makes more active use of its balance sheet to improve upon or substitute for private financial intermediation, as well as to enable or enhance the transmission of the intended degree of accommodation. In this regard, credit easing policies are mainly aimed at improving financing conditions for the non-financial private sector. They achieve this by altering market spreads paid by certain borrowers and in certain markets, thus facilitating the transmission of the intended monetary policy stance in the presence of impairments to market functioning.

Credit easing spans a diverse set of central bank interventions. The measures taken by the central bank will depend on the specific characteristics of the impairment and the idiosyncrasies of the markets targeted, as well as more broadly on the financial structure of the economy and the set of tools available to the central bank. Credit easing measures may therefore include the provision of liquidity to financial market participants outside the usual set of central bank counterparties; the provision of liquidity – or collateral – against securities not normally accepted for use in monetary policy operations;⁷ and outright purchases of assets. Thus, depending on the circumstances, credit easing interventions may, as noted above, have a great deal in common with passive liquidity support operations;⁸ or may be more active, in the sense that the central bank itself calibrates the composition and possibly also the size of its assets.

Targeted lending operations, such as those launched by the Bank of England and the ECB, also constitute credit easing measures, but have much in common with term funding interventions. The Bank of England in July 2012, and the ECB in September 2014, launched targeted schemes aimed at boosting bank lending to the non-financial private sector in order to enhance the transmission of monetary policy.⁹ Such targeted lending operations differ from the measures already discussed insofar as they contain explicit incentives for banks to extend credit, by linking the terms of the provision of long-term funding to their lending performance. In substance, targeted lending operations are credit easing measures in that they aim to lower borrowing costs for the real economy and thus strengthen transmission – in this case by easing funding conditions for banks. At the same time, targeted lending measures have a great deal in common with passive term funding interventions – notably, the provision of central bank credit for a lengthy period of time and the dependence of lending volumes in these operations on counterparty demand.

It is neither necessary nor sufficient for short-term nominal interest rates to have reached their lower bound in order for credit easing to have beneficial effects for the economy. Rather,

6 In the case of “pure credit easing”, the central bank finances the acquisition of the assets in question through sales of other assets, changing the composition of the asset side of the balance sheet but leaving its size unaffected. The most prominent example of a pure credit easing policy is probably the Federal Reserve System's Maturity Extension Program, in which longer-term Treasury securities were purchased in exchange for short-term ones.

7 In such cases, central banks are sometimes said to have acted as “market-makers of last resort” (see, for example, Tucker, P., “The repertoire of official sector interventions in the financial system: last resort lending, market-making, and capital”, speech at the Bank of Japan 2009 International Conference, “Financial System and Monetary Policy: Implementation”, May 2009).

8 One way to demarcate credit easing interventions from liquidity support operations is that the former involve direct interventions in “unconventional” market segments – that is, transactions which, by virtue of the counterparty or asset class involved, are outside the usual modus operandi of the central bank – while the latter are confined to the central bank's usual counterparties.

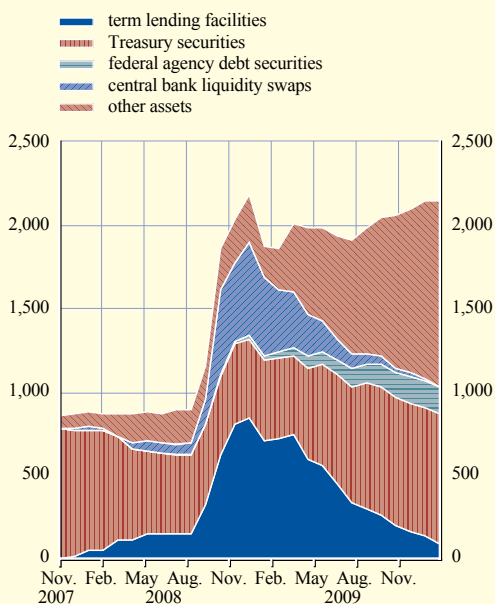
9 For more details, see Churm, R., A. Radia, J. Leake, S. Srinivasan and R. Whisker, “The Funding for Lending Scheme”, *Bank of England Quarterly Bulletin*, Q4 2012; and the box entitled “The targeted longer-term refinancing operation of September 2014”, *ECB Monthly Bulletin*, October 2014.

the usefulness of such policies depends on how important the targeted markets are for non-financial private sector financing conditions, as well as the degree of their impairment. For example, in response to credit market dislocations, the US Federal Reserve System established several facilities that extended temporary liquidity to key market segments (see “term lending facilities” in Chart 2).¹⁰ These facilities made a substantial contribution to restoring market functioning while short-term nominal interest rates were well above their lower bound, as evidenced, for example, by the rapid decline in spreads in the commercial paper market following the Federal Reserve System’s interventions under the Commercial Paper Funding Facility (see Chart 3). However, the positive effects of credit easing interventions for the economy are likely to be even greater when short-term nominal interest rates have reached their lower bound.¹¹

The transmission of credit easing policies relies on direct pass-through and, if accompanied by substantial liquidity creation, portfolio rebalancing effects. Credit easing measures are targeted at market segments that are closely linked to private non-financial sector borrowing conditions. This link may be direct – for example in the case of interventions that ease conditions

Chart 2 A breakdown of the simplified US Federal Reserve System balance sheet: assets

(USD billions)

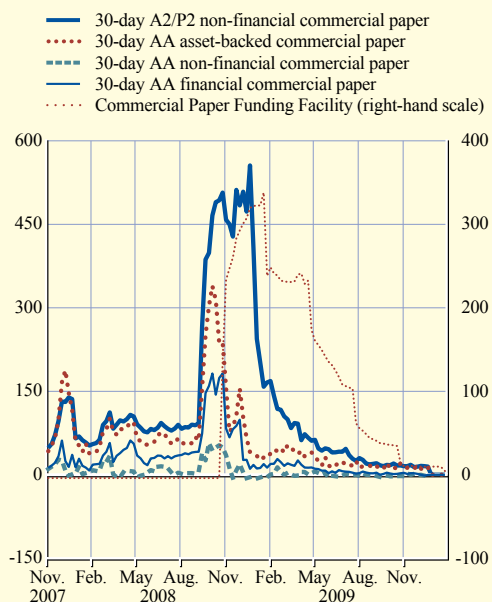


Source: US Federal Reserve System.

Note: The term lending facilities comprise the Primary Dealer Credit Facility (PDCF), Term Securities Lending Facility (TSLF), Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), Commercial Paper Funding Facility (CPFF), Money Market Investor Funding Facility (MMIFF) and Term Asset-Backed Securities Loan Facility (TALF).

Chart 3 Commercial paper spreads and US Federal Reserve System interventions

(commercial paper spreads in basis points relative to the one-month OIS rate; USD billions)



Sources: US Federal Reserve Board and Curdia and Woodford (2011), working paper version.

Note: The data for the Commercial Paper Funding Facility refer to outstanding amounts.

¹⁰ These facilities mostly consisted in the provision of term liquidity through collateralised lending to Federal Reserve System counterparties or other market participants. Thus, they constitute “hybrid” interventions that straddle term funding and credit easing.

¹¹ See Curdia, V. and M. Woodford, “The Central-Bank Balance Sheet as an Instrument of Monetary Policy”, *Journal of Monetary Economics*, Vol. 58, No 1, 2011, pp. 54-79; and Gertler, M. and P. Karadi, “A Model of Unconventional Monetary Policy”, *Journal of Monetary Economics*, Vol. 58, No 1, 2011, pp. 17-34.

in commercial paper markets – or indirect, where the central bank’s action influences market prices of assets that, in turn, affect the price applied to the underlying credit – as in the case of interventions in markets for products securitised on loans to households or companies. Prominent examples of the latter are the Federal Reserve System’s purchases of mortgage-backed securities (MBS), and the ECB’s purchases of ABS and covered bonds. As the prices of such assets are bid up, banks respond to the market incentives by creating more saleable securities, and thus more loans to collateralise them, thereby expanding the volume and lowering the price of credit for final borrowers. Furthermore, as these interventions were financed through the creation of central bank reserves, the liquidity generated resulted in positive spillovers into other markets and securities – such portfolio rebalancing effects are discussed in more detail in the next section.

Credit easing may thus also have a “quantitative” impact on the central bank balance sheet, making it difficult in practice to draw a sharp distinction between credit easing measures and “quantitative” policies, as the former have tended to be financed by the creation of central bank reserves (e.g. the purchases of MBS in the United States, and the targeted longer-term refinancing operations (TLTROs), the ABS purchase programme and the third covered bond purchase programme in the euro area). Indeed, unsterilised credit easing interventions, if conducted on a sufficiently large scale, can have significant macroeconomic effects. For example, while the US Federal Reserve System’s purchases of MBS provided a catalyst for a drastic fall in spreads and a restoration of market functioning, their ultimate consequence was the stabilisation of the US housing market – with the concomitant macroeconomic benefits.¹²

2.4 ACTIVE BALANCE SHEET POLICIES: LARGE-SCALE ASSET PURCHASES WITH SHORT-TERM NOMINAL INTEREST RATES AT THEIR LOWER BOUND

With short-term nominal interest rates at their lower bound, central banks have embarked on large-scale asset purchases to ease the monetary policy stance further. While credit easing policies also ease the monetary policy stance, simply easing conditions in particular markets may not suffice to achieve the degree of accommodation necessary for the central bank to fulfil its mandate. Rather, this may require a tool which, by design, will reliably deliver a broad easing of financial conditions. To achieve this objective, central banks have used large-scale asset purchases. They are thought to affect financial market prices via two main avenues:¹³ the portfolio balance channel, as the liquidity generated through the asset purchases is used by investors to reallocate their portfolios, thus resulting in spillovers that affect prices in a multitude of market segments not addressed by central bank interventions; and the signalling channel, whereby the expansion in the size of the balance sheet is also a signal for the path of the policy rate in the future and hence for the future monetary policy stance. Through this channel, expectations of a looser monetary policy stance in the future will ease the current stance.

The portfolio balance channel relies on imperfect substitutability of assets in private sector portfolios. In the presence of segmentation between different markets, for example, owing to imperfect substitutability of assets and limitations on arbitrage, changes in the net supply of a security in the market will affect the price of that asset as well as, potentially, the price of broadly similar instruments. For example, investors in government bonds may confine themselves to

12 See, for example, Krishnamurthy, A. and A. Vissing-Jorgensen, “The Effects of Quantitative Easing on Interest Rates: Channels and Implications for Policy”, *Brookings Papers on Economic Activity*, autumn 2011, pp. 215–287; and Walentin, K., “Business Cycle Implications of Mortgage Spreads”, *Journal of Monetary Economics*, Vol. 67, 2014, pp. 62–77.

13 This article only discusses the transmission of large-scale asset purchases to financial market prices. For a review of the transmission from asset prices to spending, see, for example, Bowdler, C. and A. Radia, “Unconventional Monetary Policy: the Assessment”, *Oxford Review of Economic Policy*, Vol. 28, No 4, 2012, pp. 603–621.

particular segments of the yield curve for institutional or other reasons. Central bank purchases that create a relative shortage of, for example, long-term bonds, will increase prices and lower yields. In addition, investors will seek to rebalance their portfolios away from “cash” (central bank reserves) and into riskier assets. To induce this investor response, the risk characteristics (i.e. the liquidity, duration or credit risk characteristics) of the assets purchased by the monetary authority must differ sufficiently from those of central bank reserves. For example, central bank purchases of riskless, liquid government securities against reserves can only be effective if they take duration risk out of investor portfolios – necessitating purchases of government debt with a long residual maturity. In this way, an expansion of the central bank’s balance sheet may provide additional accommodation through lower long-term yields and higher prices for a wide variety of assets, resulting in looser financial conditions.

The portfolio balance channel is a function of the size of central bank interventions.

In principle, the portfolio balance channel is not tied to purchases of specific classes of assets. Rather, it emphasises the importance of quantities of securities for the pricing of assets.¹⁴ This is because, in contrast to targeted central bank interventions, which have an immediate impact on credit conditions owing to the direct pass-through effect discussed above, the portfolio balance channel is less direct: it requires a spillover process whereby newly generated liquidity is passed from one market to another before it influences prices that are closely linked to broad credit conditions. Therefore, achieving meaningful macroeconomic effects – easing the monetary policy stance – requires substantial “scaling” of purchases.

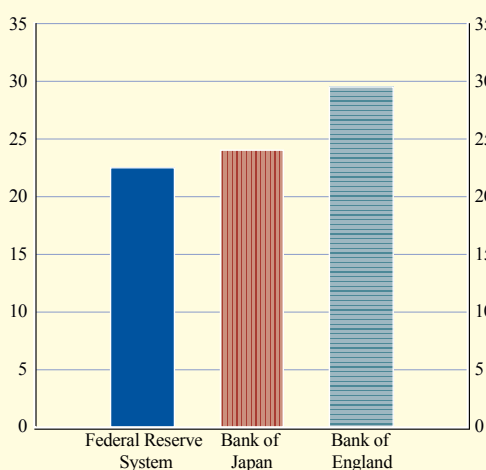
This in part explains the size of some asset purchase programmes, as well as the primary asset of choice for such programmes: government securities.

Government bond markets, in addition to their key role in the pricing of a vast array of assets in the economy, are generally sufficiently large for central banks to be able to purchase the volumes necessary to generate a broad easing of financial conditions. For instance, the US Federal Reserve System, the Bank of Japan and the Bank of England held between 22% and 30% of total outstanding debt securities of their respective sovereigns at the height of their purchase programmes (see Chart 4). In this context, therefore, the size of the asset side of the central bank balance sheet becomes a proxy for the “intensity of employment” of the portfolio balance channel and the resulting broad-based easing of financial conditions.

Asset purchases may also enable a central bank to send a signal about the future stance of monetary policy. It may wish to do so either

Chart 4 Central bank holdings of government debt securities

(percentages of total outstanding domestic government debt securities)



Sources: United States: Federal Reserve System, US Treasury; United Kingdom: Bank of England, Debt Management Office; Japan: Bank of Japan, Ministry of Finance.

Notes: The figures refer to government debt securities with a minimum maturity of 12 months. The reference dates are the last quarters of actual purchases (Q3 2013 for the Bank of England, Q3 2014 for the Federal Reserve System and Q4 2014 for the Bank of Japan).

¹⁴ See, for example, Bauer, M. and G. Rudebusch, “The Signalling Channel for Federal Reserve Bond Purchases”, *International Journal of Central Banking*, Vol. 10, September 2014, pp. 233-289.

to provide additional stimulus or to better align market expectations with its intended monetary policy stance. In particular, the central bank may wish to indicate that it will keep interest rates low in the future to highlight its commitment to its mandate. Large-scale purchases of securities, such as long-term government bonds, in exchange for central bank reserves, replace long-duration assets in the portfolios of economic agents with liquidity. This may convince markets that the liquidity expansion will be long lasting, which, in turn, would influence the market pricing of term contracts. Put differently, withdrawing the large amounts of liquidity generated through the asset purchases in a short period of time may have adverse consequences for money market functioning and financial stability, making the central bank reluctant to be seen to reverse its course. By “putting its money where its mouth is”, the central bank underscores its commitment to achieving its goal. In this sense, the commitment to use the balance sheet can also be seen as buttressing the forward guidance on key policy rates that some central banks have provided.¹⁵

Successful signalling through the balance sheet involves both a size and a time dimension.

Using the balance sheet to demonstrate commitment is only effective when a reversal of course would be sufficiently costly. Thus, a larger balance sheet can be a proxy for the cost to the central bank of renegeing on its commitment to keep policy rates low. However, since signalling revolves around the future actions of the central bank, size is not the only way to state commitment – the time dimension is also important. The intentions of the central bank can thus also be signalled via (1) the maturity of liquidity-providing operations (e.g. the ECB’s three-year longer-term refinancing operations); (2) the residual maturity of the assets purchased – since the longer duration of the bond portfolio implies a higher interest rate risk and therefore a potentially higher cost of renegeing on its commitment to low policy rates; and (3) the length of the period during which operations or certain operational modalities are maintained (for example, the ECB’s current commitment to make liquidity available via fixed rate full allotment tenders until December 2016). In short, signalling involves information about both the current and future uses of the balance sheet. For example, the US Federal Reserve System has focused on changing “... market participants[?] ... expectations concerning the entire path of the Federal Reserve System’s holdings of longer-term securities”.¹⁶

2.5 CONTINGENT BALANCE SHEET POLICIES

The central bank may also commit to deploy its balance sheet if specific circumstances materialise.

Such contingent use of the balance sheet is effectively a signalling mechanism. A prominent example of a contingent balance sheet policy is the ECB’s Outright Monetary Transactions (OMTs). In the case of the OMTs, the ECB committed to intervene in government bond markets to address distortions arising from the presence of unwarranted redenomination risks in order to strengthen the transmission mechanism.¹⁷ More broadly, however, contingent balance sheet policies have been employed by central banks to provide information about the duration of purchase programmes that are subject to conditionality. Two prominent examples of this latter use of contingent balance sheet communication are the so-called LSAP-3 announcement by the Federal Reserve System in September 2012 and the ECB communication which clarified that, under its expanded asset purchase programme, “[p]urchases are intended to run until the end of

15 Indeed, mainstream asset pricing theory suggests that central bank asset purchases are ineffective when interest rates are at the lower bound, and only forward guidance can provide monetary stimulus. See Eggertson, G. and M. Woodford, “The Zero Bound on Interest Rates and Optimal Monetary Policy”, *Brookings Papers on Economic Activity*, Vol. 34, No 1, 2003, pp. 139-211.

16 Yellen, J., “Challenges Confronting Monetary Policy”, speech at the 2013 National Association for Business Economics Policy Conference, Washington DC, 4 March 2013.

17 In monetary policy frameworks that involve at least some active management of the exchange rate, central bank pledges to intervene in foreign exchange markets may also constitute contingent balance sheet policies. The commitment is to buy or sell foreign currency; the contingency is usually related to the value of the domestic currency reaching certain levels in foreign exchange markets.

September 2016 and, in any case, until [the Governing Council] see[s] a sustained adjustment in the path of inflation that is consistent with [its] aim of achieving inflation rates below, but close to, 2% over the medium term". The contingency for triggering such a use of the central bank balance sheet is usually current and future macroeconomic conditions (for example, the inflation outlook) in relation to the central bank's goals.

3 THE EUROSISTEM BALANCE SHEET

Since the start of the crisis the ECB has taken several unconventional measures that have altered both the size and composition of the Eurosystem balance sheet in pursuit of price stability. Over the recent period the nature of these measures has changed and in part resembles the actions of other major central banks. The size and composition of the Eurosystem balance sheet has evolved over time on the basis of the policy purpose and the types of instrument used.

In the initial stages of the crisis monetary policy focused on maintaining very short-term interest rates in line with the intended monetary policy stance through liquidity support measures. With the outbreak of the tensions in money markets, the ECB provided substantial liquidity support to the euro area banking system. In line with the classical notion of the central bank's role as the ultimate provider of funding reassurance, the short-term liquidity support aimed to prevent disruption to money market activity from spreading further and creating the conditions for a generalised banking panic and a phase of disorderly deleveraging. Ultimately, this was to ensure an efficient transmission of changes in money market conditions to other financial variables (reflecting the predominantly bank-based financing structure of the euro area economy), and, hence, to the real economy and to inflation.

Such measures included liquidity-providing operations of various maturities and the use of fixed rate full allotment tenders in refinancing operations. The ECB increased both the size and parameters of its liquidity-providing operations, particularly after the intensification of the crisis following the default of Lehman Brothers in September 2008. Most notably, the ECB started to provide unlimited funding to banks, conducting its refinancing operations as fixed rate full allotment tenders, which satisfies fully banks' demand for central bank liquidity against adequate collateral.¹⁸ Reflecting the increased demand for liquidity and the full allotment procedure that increased the intermediation role of the Eurosystem, there was a gradual, passive increase in the Eurosystem balance sheet (see the box).

During the ensuing crisis the ECB had recourse to a set of primarily bank-based measures to enhance the flow of credit. To counter tensions in specific public and private sector debt markets, which were hampering the transmission of monetary policy, a number of measures were taken with a more targeted focus to support financial conditions and market functioning in those markets. The aim was primarily to enhance the transmission of a given stance of monetary policy, as reflected in the policy interest rates and very short-term money market rates, through recourse to a set of measures that supported credit provision to the real economy. These measures comprised funding operations with a very long duration, as well as more active use of the Eurosystem balance sheet to target specific public and private sector market segments.

¹⁸ Note that the ECB modified its collateral framework several times to ensure adequate access of counterparties to its funding facilities. Moreover, in order to address euro area banks' need to fund their foreign currency-denominated assets, the Eurosystem provided liquidity in foreign currencies, most notably in US dollars.



Three-year longer-term refinancing operations (LTROs) were introduced to provide funding reassurance.¹⁹ The two LTROs conducted in December 2011 and February 2012 provided funding reassurance for banks for a significant period of time when refinancing via the usual bank funding sources was potentially impaired. While in principle a liquidity support measure, it succeeded in halting excessively rapid rates of deleveraging and thus supported the provision of credit to the real economy. With banks' participation amounting to €521 billion in net terms, the balance sheet of the Eurosystem increased significantly and the maturity of its assets lengthened (see the box).

The ECB also undertook outright purchases targeting malfunctioning market segments that impaired the transmission of monetary policy, making more active use of its balance sheet. Given the importance of covered bonds as a major source of funding for banks in many parts of the euro area to refinance loans to the public and private sectors, in June 2009 the ECB started to purchase euro-denominated covered bonds under two covered bond purchase programmes (CBPP1 and CBPP2). Similarly, when tensions arose in euro area government bond markets, which play an important role in the pricing of other financial assets and loans to the real economy, thereby hampering the transmission of the ECB's monetary policy stance, the ECB purchased government bonds in the context of the Securities Markets Programme (SMP).²⁰ Accumulated SMP purchases at their height amounted to €220 billion, while the size of CBPP1 and CBPP2 reached €60 billion and €16 billion respectively.

Moreover, in August 2012 the ECB announced its intention to purchase government bonds in secondary markets if certain conditions were met – a contingent balance sheet policy. It could address severe distortions in these markets, originating in particular from fears of the reversibility of the euro, through OMTs.²¹ This programme commits the ECB to using the Eurosystem balance sheet to overcome this distortion, provided certain conditions are fulfilled.²²

19 Among the relevant empirical studies are Peersman, G., "Macroeconomic effects of unconventional monetary policy in the euro area", *ECB Working Paper Series*, No 1397, 2011; Lenza, M., H. Pill and L. Reichlin, "Monetary Policy in Exceptional Times", *Economic Policy*, Vol. 25, pp. 295-339; and Gambacorta, L., B. Hofmann and G. Peersman, "The Effectiveness of Unconventional Monetary Policy at the Zero Lower Bound: A Cross-Country Analysis", *Journal of Money, Credit and Banking*, 46(4), pp. 615-642.

20 The targeted nature of the measure (that aimed to repair impaired monetary policy transmission rather than to alter the existing stance of monetary policy) was underlined by the full sterilisation of the SMP liquidity injected.

21 For further details, see the press release on the technical features of Outright Monetary Transactions published by the ECB on 6 September 2012.

22 The ECB has also provided forward guidance since July 2013, as discussed in the article entitled "The ECB's forward guidance", *Monthly Bulletin*, ECB, April 2014.

BOX

RECENT DEVELOPMENTS IN THE EUROSISTEM BALANCE SHEET

The size and composition of the Eurosystem balance sheet has changed significantly over recent years as a result of unconventional monetary policy operations. This box provides information on developments in the Eurosystem balance sheet observed since the latter half of 2011 from a market operations perspective.¹

1 Information on prior developments in the Eurosystem balance sheet can be found, for example, in the article entitled "The ECB's non-standard measures – impact and phasing-out", *Monthly Bulletin*, ECB, July 2011; and the article entitled "Recent developments in the balance sheets of the Eurosystem, the Federal Reserve System and the Bank of Japan", *Monthly Bulletin*, ECB, October 2009.

Developments on the asset side of the Eurosystem balance sheet

Monetary policy tools and investment portfolios are the main items on the asset side.

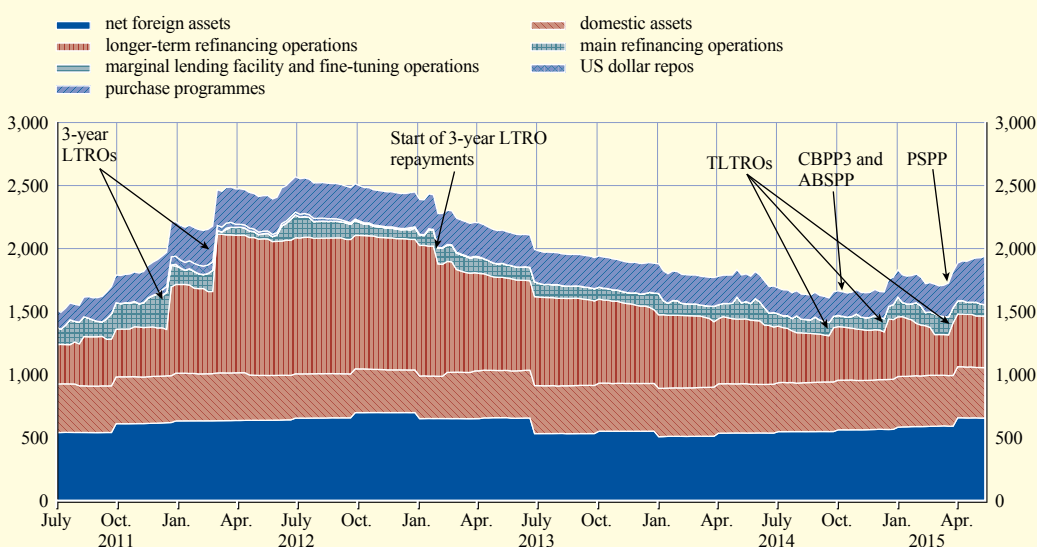
Monetary policy tools include short and long-term repo operations, the marginal lending facility and outright purchase operations. Investment portfolios include domestic as well as foreign assets. The Eurosystem's investment portfolios are not used for the implementation of monetary policy, except the foreign reserves of the ECB, which are available for possible foreign exchange interventions. The Eurosystem's investment portfolios are subject to restrictions decided upon by the ECB, such as maximum size limits, in order to ensure that they do not interfere with the implementation of the single monetary policy. In addition, the Eurosystem has rules restricting foreign reserve transactions that are not carried out for policy purposes, in order to ensure consistency with the exchange rate and monetary policies.²

Monetary policy tools have been the main drivers of the recent significant changes in the size and composition of the Eurosystem balance sheet.

In particular, as a result of the two three-year longer-term refinancing operations (LTROs) conducted in December 2011 and February 2012, the size of the balance sheet expanded significantly. From early 2013 to September 2014 the size of the balance sheet progressively declined, as a result of the option given to banks to repay the three-year LTROs on a weekly basis. The improvement in bank funding conditions reduced banks' need to hold liquidity buffers. Since September 2014 the size of the balance sheet has halted its decline and started to increase again, owing to the launch of the targeted longer-term refinancing operations (TLTROs) and the asset purchase programmes – i.e. the third covered bond purchase programme (CBPP3), the asset-backed securities purchase programme (ABSPP) and the public sector purchase programme (PSPP). Meanwhile, investment portfolios have been relatively stable, with some fluctuations in net foreign assets mainly owing to exchange rate effects.

Chart A A breakdown of the simplified Eurosystem balance sheet: assets

(EUR billions)



Source: ECB.

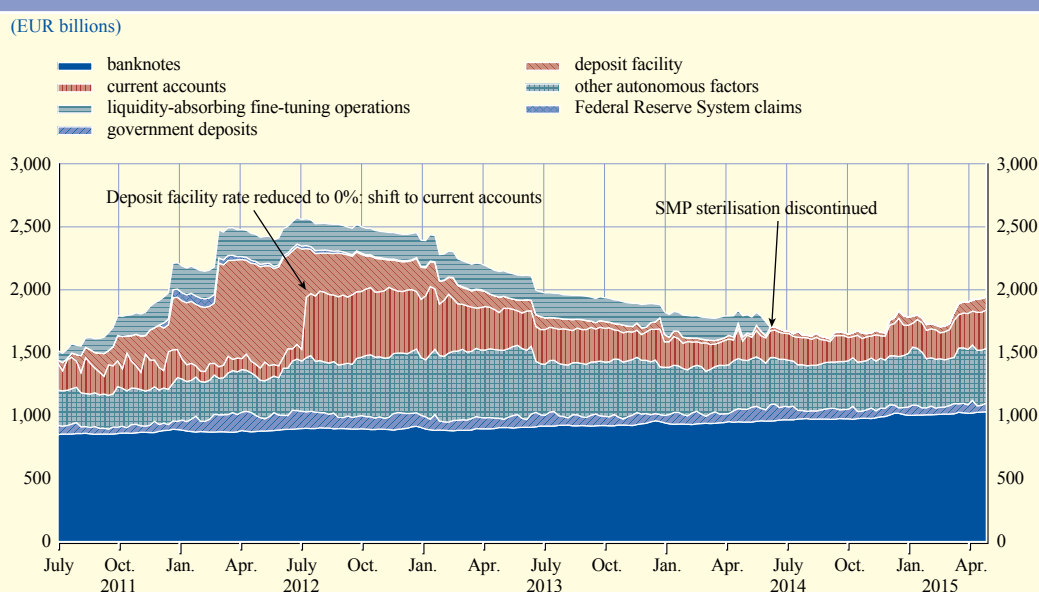
² See Article 31 of the Protocol on the Statute of the European System of Central banks and of the European Central Bank.

In order to operate monetary policy effectively and to alleviate collateral constraints on its eligible counterparties, the Eurosystem has altered and expanded its eligibility criteria for the assets it accepts as collateral for its credit operations.³ At the same time, it has continued to regularly review its risk control measures to ensure that its balance sheet continues to be protected. Such measures include requiring counterparties to submit adequate collateral, pricing the submitted collateral on a daily basis and applying appropriate collateral valuation haircuts and mark-downs.⁴

Developments on the liability side of the Eurosystem balance sheet

On the liability side, monetary policy tools and autonomous factors are the two main items. Monetary policy tools include the current accounts, the deposit facility and other liquidity-absorbing tools. The deposit facility increased substantially after the launch of the two three-year LTROs. The increase was driven by funding needs and precautionary liquidity demand by counterparties. After the ECB lowered the deposit facility rate to zero in July 2012, counterparties' liquidity holdings shifted in part from the deposit facility to the current accounts, because the remuneration of the deposit facility was identical to the remuneration of current account holdings over and above the minimum reserve requirements. As regards other liquidity-absorbing tools, the liquidity provided through the Securities Markets Programme (SMP) was fully sterilised through weekly liquidity-absorbing operations until June 2014, to leave central bank liquidity conditions unaffected by the SMP. The Eurosystem has foreign liabilities, as the US-dollar liquidity-providing operations have been implemented through swap arrangements with the US Federal Reserve System.

Chart B A breakdown of the simplified Eurosystem balance sheet: liabilities



Source: ECB.

³ Detailed information can be found, for example, in the article entitled “The Eurosystem collateral framework throughout the crisis”, *Monthly Bulletin*, ECB, July 2013.

⁴ See the Guideline of the ECB of 19 December 2014 on the implementation of the Eurosystem monetary policy framework (recast) (ECB/2014/60).

Turning to the autonomous factors, this item includes banknotes in circulation, government deposits and residual items over which central banks have little or no control. Government deposits have decreased recently since the negative deposit facility interest rate was introduced in June 2014, and this rate has also been applied to government deposits held with the Eurosystem that exceed a certain threshold.⁵

5 See the Guideline of the ECB of 5 June 2014 amending Guideline ECB/2014/9 on domestic asset and liability management operations by the national central banks (ECB/2014/22).

Against a backdrop of subdued inflation and weak money and credit growth, in 2014 the ECB introduced additional credit easing policies in order to improve transmission. The muted recovery that had begun in 2013 did not accelerate as initially expected. Monetary growth remained subdued and credit continued to contract, although the pace gradually slowed. Against this background, in June and September 2014 the ECB announced the launch of the TLTROs and purchases of ABS and covered bonds, while it also reduced the key policy interest rates to their lower bound. This package of measures was aimed at enhancing the transmission of monetary policy as well as providing further monetary accommodation. In particular, by bringing the average borrowing costs for households and firms down to levels that were more consistent with the intended policy stance, the measures aimed to support lending to the real economy.

TLTROs were conducted to support bank lending to the non-financial private sector (excluding loans to households for house purchase).²³ The TLTROs provided long-term funding at attractive terms and conditions for up to four years at the time of the launch of the operations for all banks that met certain benchmarks applicable to their lending to the real economy. The choice of this measure reflected the predominantly bank-based financing structure of the euro area economy and the significance of weak bank lending as a factor hampering the recovery. By providing incentives for banks to lend to the real economy, the TLTROs were aimed at enhancing monetary policy transmission. Improved funding conditions for banks should contribute to easing credit conditions and stimulating credit creation.²⁴

Purchases under the third purchase programme for covered bonds (CBPP3) and the ABS purchase programme (ABSPP) began in October and November 2014 respectively. They further enhanced the functioning of the monetary policy transmission mechanism and supported the provision of credit to the real economy. The purchases in the ABS and covered bond markets reflect the role of these instruments in facilitating new credit flows to the economy. In particular, there is a close link between the interest rate spreads at which ABS and covered bonds are traded and the lending rates which banks apply to the underlying loans. Purchases should therefore contribute to lower interest rates on the targeted securities (through the price effect) which should be passed on to the rates on the underlying loans to the private sector (via the pass-through effect), improving lending conditions and creating room for banks to extend more credit.

These credit easing measures were supplemented by a quantitative balance sheet orientation, marking a major change in the ECB's monetary policy communication. Adding an indication in the ECB's communication of the quantity of purchases was deemed essential in view of the further worsening of the inflation outlook that had taken place. Uncertainty about asset purchases as an instrument to enhance the accommodative monetary policy stance is inherently higher

23 See the press release on measures to enhance the monetary policy transmission mechanism published by the ECB on 5 June 2014.

24 The spread on the main refinancing operations, initially set at 10 basis points, was reduced to zero in January 2015 for the six TLTRO operations that then remained.

compared with uncertainty about changes in interest rates. The purchase programmes for ABS and covered bonds have a high potential pass-through per unit of purchase, given that both markets were impaired, but the precise effects are difficult to anticipate. These purchases will lower funding costs for banks, which should be passed on to households and non-financial corporations seeking bank financing, and will also generate broader macroeconomic spillovers if the liquidity injection is sizeable. By adding a quantitative dimension to its communication, the ECB signalled that a significant purchase volume was essential to arrive at a meaningful macroeconomic effect.

Following a further deterioration in the inflation outlook, and credit easing measures failing to deliver the necessary degree of accommodation, in January 2015 the ECB decided to purchase public sector securities. This programme focuses on secondary market purchases of investment-grade debt instruments issued by euro area governments and agencies or international and supranational institutions. Together with CBPP3 and the ABSPP, the public sector purchase programme (PSPP) constitutes the expanded asset purchase programme. Purchases under the expanded asset purchase programme started in March 2015 and amount to €60 billion per month.²⁵ They are intended to be carried out until the end of September 2016 and will, in any case, be conducted until a sustained 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. In May 2015 purchases of public sector securities stood below 2% of euro area total outstanding government debt.

The unconventional measures taken since June 2014, including both credit easing and large-scale asset purchases to further ease the monetary policy stance when policy rates are constrained by the lower bound, complete the shift from a passive to an active balance sheet policy. Purchases of public sector securities will mainly rely on the portfolio rebalancing effect and on the signalling effect. Both effects have a size dimension, while successful signalling through the balance sheet also involves a time dimension. The significant size of the monthly purchases, combined with an intended end-point that could be extended if the sustainable achievement of price stability calls for it, should ensure a significant contribution of the monetary impulse, as will be reflected in the increase in the Eurosystem balance sheet.

The ultimate indicator of the success of the recent programmes and operations is whether they achieve inflation rates below, but close to, 2% over the medium term. While it is too early to assess their full contribution to that goal, given time lags in the transmission of the monetary accommodation, a number of early indicators of financing conditions and confidence have produced positive signals. Broad financial conditions had already started to improve well before the expanded asset purchase programme was announced, as market participants had anticipated the measure, following announcements by the Governing Council that it stood ready to take additional measures if required. Euro area bond yields have declined since December 2014 across all instruments, maturities and issuers and, in many cases, have reached new historical lows. Given a slight upward tendency in medium-term inflation expectations, real interest rates have decreased further. Spreads on investment-grade corporate bonds have continued their decline and stock prices have increased significantly. Reflecting in part the further decoupling of euro area and US government bond yields, the euro exchange rate has weakened significantly.

The favourable developments in financial markets have started to spill over to the real economy. Lower bank funding costs are being gradually passed on to the cost of external finance

25 For more details, see the box entitled “The Governing Council’s expanded asset purchase programme”, *Economic Bulletin*, ECB, January 2015.

for the non-financial private sector, aided by the comprehensive assessment of the balance sheets of the main euro area banks conducted in 2014 in preparation for the Single Supervisory Mechanism. Yields on unsecured bank bonds declined to historical lows in the fourth quarter of 2014. This was accompanied by a substantial fall in composite bank lending rates for households and non-financial corporations. The nominal cost of non-bank external finance for euro area non-financial corporations continued to decrease in the fourth quarter of 2014 and in the first few months of 2015, as a result of a further decline in the cost of both market-based debt and equity.

4 CONCLUSIONS

In recent years the central bank balance sheet – its size and composition – has emerged as a flexible instrument of monetary policy. Since the start of the global financial crisis monetary authorities have increasingly moved beyond their traditional operating procedures to make ever more intensive use of the central bank balance sheet as a tool of policy. For many jurisdictions, the use of the central bank balance sheet over time has marked a transition from reactive, or passive, on-demand liquidity provision with limited scope to affect broad financial conditions, to active, or controlled deployment in an effort to affect broad financial conditions. Thus, in addition to monetary authorities' traditional role as the ultimate provider of funding reassurance in response to financial stress, the central bank balance sheet has also been used to address impairments in the transmission of monetary policy, as well as to provide policy accommodation when short-term nominal interest rates are at their effective lower bound. In short, the central bank balance sheet has proven a flexible tool to address a variety of policy needs.

However, given that the central bank balance sheet is a very flexible policy instrument, there is an important caveat: a unit of liquidity may have very different effects in a given jurisdiction over time, as well as across jurisdictions at a specific point in time. In a given economy, the monetary authority may use the balance sheet to achieve different effects over time, depending on the circumstances, as indeed has been the case in recent years. Moreover, differences in economic and financial structures, as well as operating procedures, will necessitate different types of intervention across economies in terms of the size and composition of the balance sheet. These considerations caution against overly simplistic comparisons of central bank balance sheets.

In recent years the ECB has used the Eurosystem balance sheet extensively in pursuit of its price stability mandate. The use of the Eurosystem balance sheet has followed a similar trajectory to that seen in other jurisdictions. The increased liquidity provision in the initial stages of the financial crisis (through an increase in the allotment in refinancing operations) was followed by term lending and funding reassurance (through longer-term refinancing operations carried out as fixed rate full allotment tender procedures), which were, in turn, followed by measures to strengthen transmission (the SMP, TLTROs, CBPP1 and CBPP2). The ECB has recently launched a further purchase programme for covered bonds and new programmes for ABS and public sector securities. These programmes are designed to strengthen the pass-through to the real economy and provide a further broad easing of the monetary policy stance with short-term nominal interest rates at their effective lower bound.

Outright asset purchases signal the determination of the ECB to achieve its primary objective, enhancing signalling effects and resulting in portfolio rebalancing effects that spread to assets across the board. This should contribute to improving lending and economic growth and, ultimately, to bringing about a sustained adjustment in the path of inflation consistent with the aim of achieving inflation rates below, but close to, 2% over the medium term.