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Interaction between monetary policy and bank regulation: lessons for the ECB

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Abstract

The European Central Bank (ECB) recently became engaged in macro-prudential policies and the micro-prudential supervision of the largest Euro area banks. These new tasks should help complete financial integration, and make the Euro area more resilient to financial instability risks. However, the multiplicity of mandates and instruments involves a risk of their inconsistency which could compromise the ECB's core price-stability mandate as well as its independence. The experience of central banks during the recent global financial crisis confirms that such risks are not purely hypothetical.

Executive Summary

- After the global financial crisis of 2007–2009, the European Central Bank (ECB) became engaged in macro-prudential oversight of the financial system via the European Systemic Risk Board and, more recently, in banking regulation and supervision within the Single Supervisory Mechanism. Although this would be nothing exceptional in the practice of other central banks, this is quite a new situation for the ECB, which began its operations in 1999 as a “pure” monetary authority.
- Policymakers do not always realize that financial regulations, monetary conditions and monetary policy remain interlinked in various ways. Financial regulations affect monetary conditions via the money multiplier and money velocity, i.e. money supply and demand for money. On the other hand, monetary conditions resulting from monetary policy decisions have an impact on financial stability and financial institutions’ incentives. Both high inflation and substantial deflation have devastating effects for financial stability. However, although sustainable low inflation provides the best macroeconomic environment for financial stability, it is not totally free of risk. Under specific circumstances, such as those prevailing in the early and mid-2000s, it may be conducive to building financial and asset bubbles.
- The above interdependencies as well as other potential synergies (use of the same statistical databases and scarce human resources) may serve as an argument in favour of central banks’ involvement into both macro- and micro-prudential regulation and supervision. On the other hand, the multiplicity of central bank mandates, which requires using multiple instruments, involves the risk of their potential inconsistency which may lead to compromising the core mandate of price stability and central bank independence. The experience of numerous central banks, including the ECB, during and after the recent global financial crisis, confirms that such a risk is not purely hypothetical.
- It is still too early to assess the effects of the new ECB mandates. While its involvement in macro-prudential policies and micro-prudential regulation and supervision is not free of risks, it may offer substantial Euro area-wide externalities such as completing financial market integration, reducing financial stability risks and fears of Euro area disintegration. Other crisis-related engagements of the ECB, in particular, quasi-fiscal support to the distressed sovereigns and banks, must be considered temporary and should be terminated as soon as possible.

1. Introduction

Apart from its core price stability mandate and monetary policy task, the European Central Bank (ECB) has recently become engaged in the macro-prudential oversight of the financial system via the European Systemic Risk Board (ESRB) (since January 2011) and in banking regulation and supervision within the Single Supervisory Mechanism (SSM) (since November 2014). Although this would be nothing exceptional in the practice of other central banks (most of which are also involved in both macro-prudential policies and banking supervision), this is quite a new situation for the ECB, which started its operations in 1999 as a “pure” monetary authority.

The multiplicity of central bank missions and mandates, which requires using multiple instruments and analytical approaches, has raised theoretical and practical questions regarding their potential inconsistency or even conflicting goals which, under specific circumstances, could lead to compromising the basic mandate of price stability. In particular, the pros and cons of mandating central banks with the tasks related to banking regulation and supervision, macro-prudential policy, and financial stability have been discussed in the literature related to central bank independence and financial vs. business cycles.

This debate came to the forefront again after the 2007–2009 global financial crisis when most central banks, especially in advanced economies, became involved in rescue operations aimed at restoring financial stability; their engagements in macro- and micro-prudential policies expanded and the operational framework of monetary policymaking changed dramatically.

Still, several issues remain either open or underexplored both in conceptual and practical terms, especially those concerning the interaction between monetary policy and financial/banking regulation. Relatively little is reflected in daily operational practices in both spheres of how monetary policy decisions affect financial stability, on the one hand, and how changes in regulatory regimes influence monetary conditions.

The purpose of this report is to answer some of those questions in the context of the ECB institutional mandate and activity. We start with an analysis of the impact of bank regulation on money supply and demand for money, and the impact of inflation and monetary policy on financial intermediation and financial stability (Section 2). Then we look



1. Introduction

at the impact of financial instability on monetary policymaking in the context of the recent global financial crisis (Section 3). In Section 4, we discuss the pros and cons of central banks' involvement in macro- and micro-prudential regulation and supervision. Section 5 brings the previous analysis to the particular context of the ECB's institutional mandate, governance framework, and operational practices. Section 6 offers a summary of discussions and conclusions.

2. The Interplay between Financial Regulation and Monetary Policy

In this section, we will briefly discuss the impact of financial regulation (and the micro-economic behavior of banks and other financial institutions) on monetary conditions and vice versa, i.e., the impact of inflation and monetary policy on the conditions in which the financial sector operates.

2.1 The Impact of Bank Regulation on Money Supply and Demand for Money

To understand the potential impact of bank/ financial regulation on monetary conditions it is helpful to remember basic money supply and money demand equations, especially money multiplier and money velocity, the two parameters which determine both broad money supply and demand for money balances.

The money multiplier is defined as the ratio between the broad money aggregate (i.e. money created by commercial banks and non-banking financial institutions) and the central bank's base money (also called reserve money, monetary base or high-powered money). While there are various definitions of broad money, ranging from the sum of cash in circulation, demand and time deposits (M2) to broader aggregates which also include various quasi-money instruments (M3, M4 or M5), this does not change the basic characteristic of the money multiplication mechanism of a fractional-reserve banking system.

In our analysis, the two most important questions are: (i) the role of the money multiplier in determining money supply and (ii) factors that may cause changes in the money multiplier.

As for the first question, the higher money multiplier increases broad money created by a unit of the central bank's base money. In turn, as suggested by the quantity theory of money, an increase in broad money without simultaneous changes in demand for money (as determined by changes in money velocity and real GDP) must have inflationary consequences. In the case of a decrease in the money multiplier, the consequences are exactly the opposite, i.e., it leads to less broad money creation and deflationary impact (other things being equal). Putting this in other, more practical words, a higher money multiplier narrows the central bank's room for maneuver in changing base money.



2. The Interplay between Financial Regulation and Monetary Policy

As for the second question, changes in the money multiplier can result from monetary policy instruments, banking and financial sector regulations, and changes in the demand for various types of money balances from economic agents.

The mandatory reserve requirements (MRR) have been the traditional monetary policy instrument. The MRR set the minimum ratio of customer deposits that commercial banks must keep in liquid form (most frequently on a special central bank account). An increase in the MRR rate slows down the mechanism of money multiplication, i.e., makes the money multiplier lower and vice versa. However, several central banks in advanced economies *de iure* or *de facto* abandoned this instrument in the last two decades. It is still of use in emerging-market and developing economies, for example, in China.

Banking and financial sector regulations may have a similar although sometimes less direct impact on the money multiplier. In particular, this concerns the liquidity coverage ratio (LCR) and capital adequacy ratios (CAR). Increasing the LCR has a similar (negative) effect on the money multiplier and broad money creation as increasing MRR (see above). Increasing CAR can also suppress the money multiplier at least in the short term until commercial banks supplement their capital. The same concerns fiscal instruments such as taxes on banking transactions, e.g., a financial transaction tax proposed by the European Commission and introduced or considered to be introduced in several EU member states would inevitably lead to financial disintermediation and a dampening of the money multiplier.

The way in which various regulatory standards are defined may also affect changes in the money multiplier. This concerns, for example, the methodology of calculating risk-weighted assets introduced by the Basel-II accord. Apart from its obvious pro-cyclicality with respect to banks and other financial institution activity (risk decreases during a boom and increases during a downfall – see Repullo and Suarez, 2008), it also has a pro-cyclical impact on money multiplier and money supply.

Finally, the size of the money multiplier also depends on a bank's own liquidity and capital adequacy preferences beyond the MRR, LCR and CAR. Especially in a time of financial distress and market uncertainty, commercial banks may conduct a more "conservative" business model, preferring to retain additional liquidity and capital margins (beyond what is required by prudential standards) rather than become engaged in risky lending. Such practices can explain the phenomenon of excess voluntary reserves kept by commercial banks in central banks. In monetary policy terms, this means a lower money multiplier as compared to when banks work at full lending capacity (i.e., within the limits set by regulatory norms).

Bank regulation may also have a certain impact on demand for money. Tighter banking regulation increases the costs of financial intermediation and can lead to an increase in the demand for cash and narrow money aggregates (M1) at the cost of demand for broad

money. The same concerns periods of financial distress when the liquidity of quasi-money instruments comes under question. Such fluctuation in demand for money can cause changes in the velocity of various monetary aggregates.

Regretfully, policymakers do not always understand the impact of changes in the banking/ financial sector regulatory regimes on money supply and demand for money. As a result, they are rarely taken into consideration in monetary policymaking and regulatory policies.

2.2 The Impact of Inflation and Monetary Policy on Financial Intermediation and Financial Stability

Inflation and monetary conditions have an impact on financial intermediation and financial stability and, therefore, on financial regulations and their effectiveness. The vast empirical experience demonstrates that high inflation discourages and distorts financial intermediation and may undermine the stability of banking and financial systems (Bordo et al. 2001; Borio and White 2003; Poole and Wheelock 2008). This is due to high-inflation volatility and unpredictability with respect to its exact rate, resulting in difficulties in assessing the future real rate of return, a worsening of the asymmetric information problems between lenders and borrowers, and frequent recessions following high-inflation periods (Issing 2003). High inflation also leads to the real depreciation of bank capital.

Changes in inflation levels (especially if unexpected) create numerous risks. In periods of inflation acceleration, banks suffer losses resulting from a maturity mismatch. They must borrow in the short-term at higher nominal interest rates (adjusted for higher inflation) to finance their long-term lending contracts and other assets which previously offered lower interest rates. The disinflation process, often associated with a slowdown in economic activity or even recession, leads to the deterioration of banks' assets portfolios (an increase in the non-performing loan ratio) even if the above-mentioned maturity mismatch allows borrowing at lower rates.

Deflation understood as systematic decrease in price level (and expectation of its continuation) associated with declining output is also damaging for the financial system. The real value of debt is increasing even if interest rates are close to zero. The ratio of non-performing loans is increasing. Assets prices are going down; the same is true for the value of credit collateral.

Based on the above analysis, one can draw the conclusion that sustainable price stability is the best macroeconomic environment for ensuring financial stability. In principle, this is true but it does not mean that a low-or zero-inflation environment is free of risks. On the contrary, success in bringing actual inflation and inflationary expectations down can weaken the perception of potential risks among both financial institutions and their



2. The Interplay between Financial Regulation and Monetary Policy

clients (Borio and White 2003; Issing 2003; Adrian and Liang 2014). This may manifest itself in underpricing risk, accepting excessive maturity mismatches and leverage, and preference for complex financial instruments (see Adrian and Liang 2014). Low nominal and real interest rates in commercial banks (resulting from the absence of inflationary pressure) can tempt economic agents to invest their money balances in more risky but higher-yield financial instruments, so financial institutions feel pressed to provide them with such opportunities.

Furthermore, the disappearance of immediate inflation risk (as occurred in most advanced economies in the 1990s) may shift monetary policy's focus on stabilizing output and employment, which can sometimes result in more expansionary monetary policies than dictated by the price stability goal alone. As a result, the additional money supply created by a looser monetary policy stance combined with a low risk perception can fuel credit and asset bubbles. Because asset prices are not part of the consumer price basket, the most frequent measure of inflation, i.e., consumer price index (CPI), does not reflect changes in their level. Therefore, they can remain unnoticed by the monetary authority if it focuses on price stability in a traditional, narrow sense (see Section 4).

Historical experience confirms the dangers of building up financial sector instability in low-inflation periods, for example, in the US in the 1920s, 1990s and early 2000s, in some of the EU member states in the early and mid-2000s, in Japan and Scandinavia in the 1980s, or in East and South East Asia in the 1990s. In particular, there is vast evidence that the low interest rates of major central banks in the early and mid-2000s may have contributed to building financial and asset bubbles, which eventually led to the 2007-2009 financial crisis (see e.g. De Larosiere et al. 2009; Taylor 2010; Maddaloni and Peydro 2013). It may also happen that the current period of historically record-low interest rates will contribute to building up new financial bubbles.

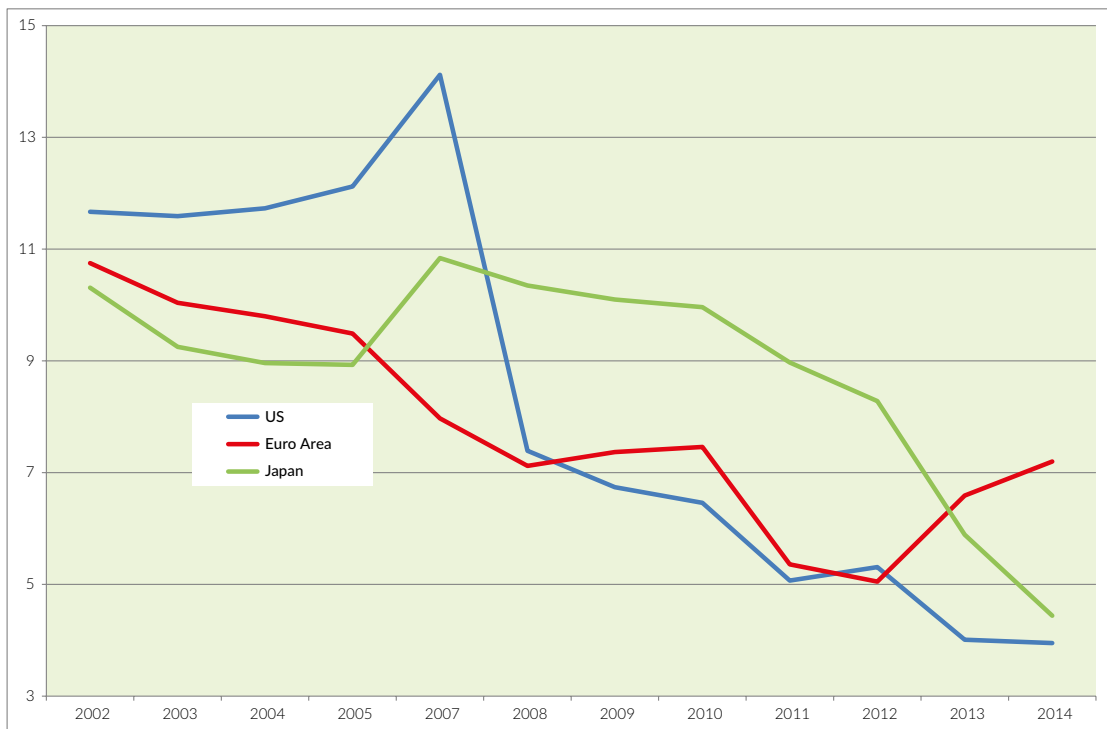
3. The Impact of Financial Instability on Monetary Policy Making

Periods of financial instability radically change the environment in which monetary policy is conducted. Liquidity and solvency problems faced by banks and other financial institutions impair their ability to continue their previous business strategies and practices. Furthermore, the difficulty of any larger bank (sometimes only suspected) in meeting its obligations vis à vis depositors can trigger a far-reaching confidence crisis in the entire banking system (systemic banking crisis). If this happens, a massive deposit withdrawal may follow, which would dry up the interbank market and possibly cause a flight from the national currency (in economies which suffer from currency substitution). As a result, the level of financial intermediation drastically collapses, at least temporarily. In such a situation, economic agents prefer to keep their money balances in liquid form, often outside banks. In turn, commercial banks want to keep more of their assets in cash and as demand deposits in the central bank.

The money multiplier collapses (Adrian and Liang 2014) and broad money supply shrinks. The central bank must step in not only as the lender of last resort (LOLR) to stop/ limit the liquidity crisis but also to avoid the monetary crunch caused by a decline in the money multiplier. Thus, it must compensate for the decline in the money multiplier with additional base money supply.



Figure 1: Money multiplier in the US, Euro area and Japan, 2002–2014 (broad money/base money)



Source: International Monetary Fund, International Financial Statistics (www.data.imf.org) and author's own calculation

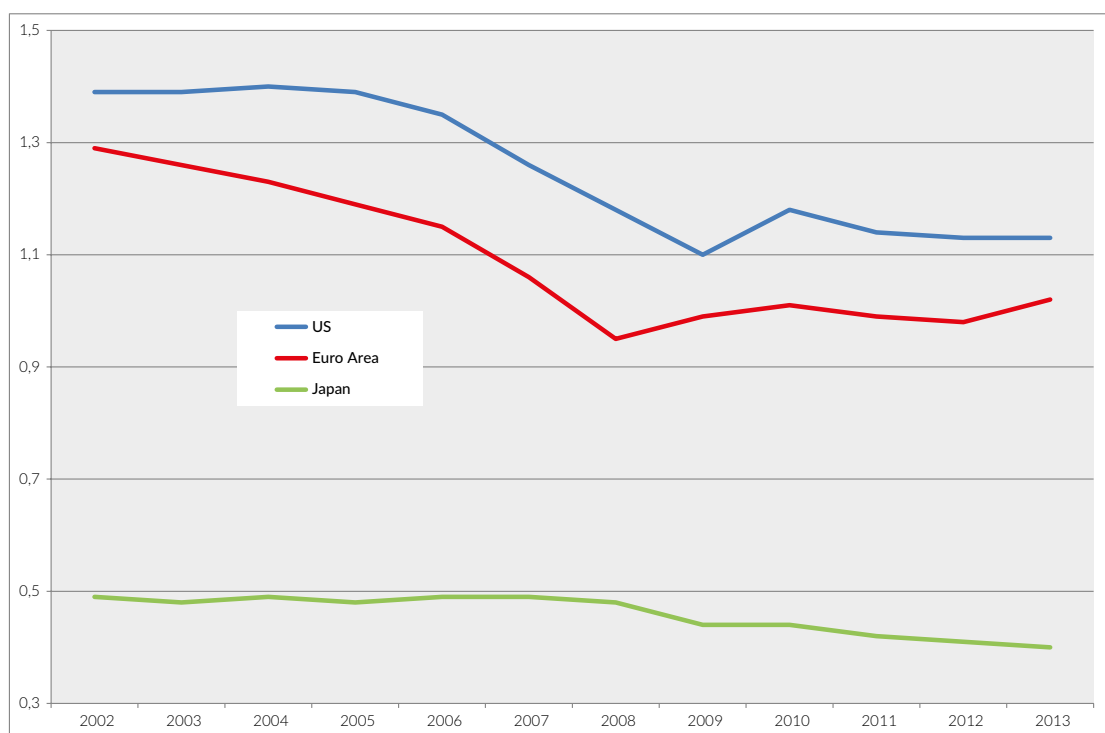
In countries which suffer from the limited credibility of their currencies, the demand for money balances denominated in the local currency also collapses as a result of financial crisis (because of the flight to foreign currency) which will be reflected in increasing money velocity. In such cases, the room for maneuver of the central bank to provide emergency liquidity to local banks and compensate for the decreasing money multiplier remains limited. However, in advanced economies, this is rarely a problem. On the contrary, a financial crisis usually results in increasing demand for (the decreasing velocity of) base money and narrow money (M1).

The recent global financial crisis, which was triggered by the bust of the subprime mortgage market in the US in the summer of 2007, provided good empirical evidence of how a major episode of financial instability can affect monetary policymaking and central bank functioning.

Figure 1 demonstrates a dramatic decline in the money multiplier in three major monetary jurisdictions: the US, Euro area and Japan. At the beginning, this was the result of spontaneous financial disintermediation caused by the financial crisis. In subsequent years, this effect was magnified, however, by tighter prudential regulations (see Section 2).

On the other hand, broad money velocity recorded a modest decrease (Figure 2), which reflects the increasing demand of economic agents for money balances. Given these two trends (decreasing multiplier and velocity), central banks had to rapidly expand their monetary bases and, consequently, balance sheets, which was done in a relatively short period of time (Figure 3) to avoid a monetary crunch and deep deflation of the sort observed in the early 1930s.

Figure 2: Broad money velocity in the US, Euro area and Japan, 2002–2014
(nominal GDP/ broad money)

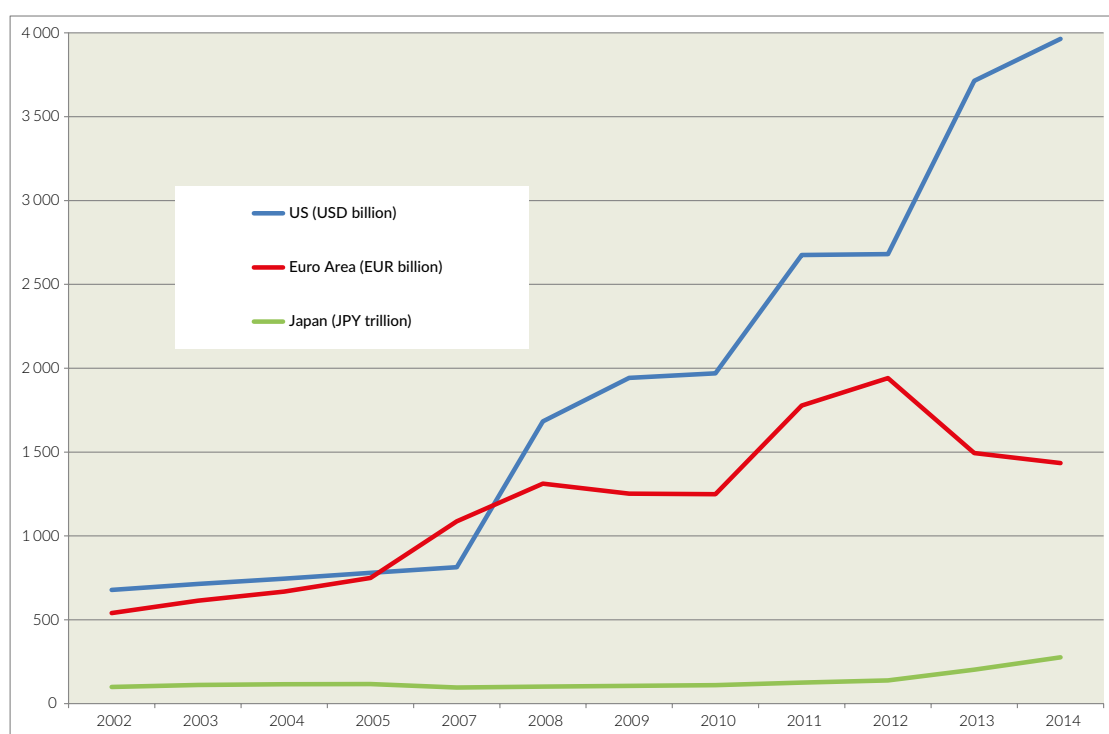


Source: International Monetary Fund, International Financial Statistics (www.data.imf.org) and Author's own calculation

3. The Impact of Financial Instability on Monetary Policy Making

The US Federal Reserve Board (the Fed) recorded the largest expansion of its base money (almost 5 times) between 2007 and 2014. The ECB responded in a milder way; its basemoney nearly doubled between 2007 and 2012 and started to decline thereafter (Figure 3). The Bank of Japan started to follow other central banks with a significant time lag. However, between 2012 and 2014, it more than doubled its base money.

Figure 3: Base money in the US, Euro area and Japan, 2002-2014 (in national currencies)



Source: International Monetary Fund, International Financial Statistics (www.data.imf.org)

Central banks in advanced countries had also to deal with other challenges brought on by the global financial crisis (Gerlach et al. 2009). First, they started to accept the lower quality of collateral to be able to continue extending credit to commercial banks. Second, in response to the paralysis of various segments of the interbank market, they increased the maturity of their lending to commercial banks. Third, for the same reason, they substituted the interbank market by conducting two-way monetary operations, i.e., simultaneously lending to banks faced by structural underfunding and absorbing excessive liquidity from overfunded banks.

Such an engagement could be seen as an emergency measure aimed at temporarily substituting the dead interbank market to allow for the uninterrupted operation of monetary transmission channels. However, once the central bank steps into the role of commercial banks intermediary, it may not be easy to restore the interbank market afterward. Moreover, such a substitution can further decrease money multiplier.

Fourth, the aggressive monetary easing quickly brought central bank interest rates to the near-zero level. Losing their traditional “ammunition”, central banks have started to look for unconventional monetary tools such as massive asset purchases, so-called quantitative easing (QE). Furthermore, because of the limited and not always sufficiently liquid market of private securities (especially in Europe), QE has inevitably led to massive purchases of treasury bonds in a situation when public debt in most of the advanced economies has grown rapidly. In this way, central banks have become hostages of the troubled fiscal policy, even if formally the QE has been justified by money supply considerations and conducted exclusively on the secondary market.

Finally, some central banks, the US Fed for first instance, have become engaged beyond monetary policy and LOLR responsibilities. For example, they have participated in cleaning up commercial bank portfolios, taking over part of their non-performing assets, recapitalizing banks, arranging bank mergers, etc., i.e., in activities which should be conducted by governments and which often have a quasi-fiscal character which might eventually compromise central bank independence. The ECB has been much more “conservative” in this respect; however, it has become engaged in rescuing distressed sovereigns, especially in the case of Greece (Sections 5 and 6).

Even if central banks did not cross the limit which might compromise their independence, their tasks expanded and operational frameworks became more complicated as compared to the pre-crisis situation. Before the crisis, most central banks in advanced economies aimed primarily at achieving/maintaining price stability (defined in various ways in individual jurisdictions) and to achieve this goal they used a single instrument, i.e., short-term interest rates. During and after the crisis, their focus on output and employment increased, partly as a result of very low or even negative inflation. In addition, they assumed *de iure* or *de facto* new mandates, especially with respect to financial stability and prudential supervision. On the other hand, once short-term interest rates hit the zero band, some central banks resorted to other less conventional and more controversial policy tools such as QE. We will come back to these problems in the subsequent sections of this report.

4. Central Banks and Financial Stability

As previously mentioned, the statutory missions and legal mandates of most central banks go beyond price stability goals and conducting monetary policy and include various aspects of financial stability, banking and financial regulation and supervisory powers. They fall into two categories: (i) regulation and supervision of individual banks and (sometimes) other financial institutions (micro-prudential regulation and supervision) and (ii) monitoring and counteracting the system-wide risks to financial stability (macro-prudential policies), which we will discuss briefly below.

4.1 Central Banks and Banking Regulation and Supervision

Most central banks in the world are involved in banking regulation and supervision either directly or indirectly through autonomous regulatory bodies operating within central bank structures. In some countries (such as the US), the central bank shares regulatory and supervisory responsibilities with other, usually government bodies. As a result of the recent global financial crisis, central banks' regulatory and supervisory responsibilities have increased. In some countries, they were moved back from government regulatory bodies to central banks. The best example is the UK, where, in 2010, the newly created Prudential Regulation Authority within the Bank of England replaced the governmental Financial Services Authority, which was in charge of banking regulation and supervision between 1997 and 2010.

With the launching of the SSM in November 2014, the ECB also joined the group of central banks involved in micro-prudential regulation and supervision (see Section 5).

4.2 The Content and Role of Macro-prudential Policies

Macro-prudential policy is a relatively new concept and is not always precisely defined in conceptual or operational terms. Although the origins of this approach go back to the late 1970s (Clement 2010), it was the recent global financial crisis, which made policymakers around the world excited about this idea and truly interested in its practical adoption.

The aim of macro-prudential policy is to identify and limit a systemic risk, i.e., the risk of widespread disruptions to the provision of financial services. Its focus is on the financial system as a whole, including the interactions between the financial and real sectors, as opposed to its individual components. Macro-prudential policy uses primarily prudential tools calibrated to target the sources of systemic risk (Macroprudential 2011). This means that macro-prudential policy is to build a bridge between micro-prudential regulation and the supervision of banks and other financial institutions, on the one hand, and monetary and other macroeconomic policies, on the other.

The launch of macro-prudential policies raised expectations in terms of preventing a new systemic financial crisis on the scale of the one in 2007–2009 and smoothing out both business and financial cycles (Brunnermeier et al. 2009; Angelini et al. 2012). However, it is still too early to say whether those expectations are justified and can be met. Most countries are still at the stage of building their respective governance structures, developing research and analyses, and experimenting with various policy tools. The IMF cross-country analysis for the period up to 2013 (Cerutti et al. 2015) suggests that (i) emerging-market economies more actively use macro-prudential tools than advanced economies; (ii) emerging market economies concentrate on foreign-exchange related measures (in some instances it is just a reincarnation of capital controls under a new label) while advanced economies prefer borrower-based measures such as caps on loans-to-value (LTV) and debt-to-income (DTI) ratios; (iii) some of these measures are associated with a reduction in the growth rates of real credit and home prices; (iv) nationally adopted measures tend to be circumvented through cross-border financial transactions.

The implementation of macro-prudential policies has been, in most cases, delegated to central banks. They are involved either directly or through external policy bodies in which they play a leading role. In the UK, it is the Financial Policy Committee within the Bank of England, which is appointed similarly to the Monetary Policy Committee. In the case of the EU and Euro area, it is the ESRB with a leading role played by the ECB (see Section 5). Only the US Fed has a less privileged position within the Financial Stability Oversight Council (FSOC).

In practice until now, a broad spectrum of macroeconomic and financial indicators has been used to detect the potential dangers of systemic risks within financial systems. However the list of those indicators and data sources is a subject of discussion and needs further improving (see Macroprudential 2011; Cerutti et al. 2015; ESRB 2014). The same concerns concrete policy tools.

The existing cross-country evidence (Cerutti et al. 2015; ESRB 2015) records the most frequent use of the following macro-prudential measures: Countercyclical Capital Buffer/Requirement, Leverage Ratio for banks, Time-Varying/ Dynamic Loan-Loss Provisioning, LTV ratio, DTI ratio, Limits on Domestic Currency Loans, Limits on Foreign Currency Loans,



4. Central Banks and Financial Stability

Reserve Requirement Ratios, Levy/Tax on Financial Institutions, Capital Surcharges on Systemically Important Financial Institutions (SIFIs), Limits on Interbank Exposures, and Concentration Limits.

4.3 The Pros and Cons of the Central Bank's Involvement in Bank Regulation and Macro-Prudential Policies

Although most central banks have been involved in bank/ financial regulation and supervision for a long time and, more recently, also in macro-prudential policies, their involvement is not free of controversy.

On the one hand, there are a number of arguments in favor of central banks' engagement in banking regulation and supervision. They refer to the synergy between monetary policy and banking regulation and supervision. As discussed in Section 2, both are interlinked, i.e., banking and financial regulations have an impact on money supply (via money multiplier) and demand for money (via money velocity), and monetary conditions and monetary policy have an impact on financial stability. Thus, bringing banking regulation and supervision under a central bank's jurisdiction offers the chance of better mutual coordination. Similar arguments refer to the synergy between price and financial stability. The former cannot be sustainable and will not ensure sustainable economic growth without the latter.

Furthermore, the legal and operational independence of central banks from both the executive and legislative branches of government offers the opportunity to carry out micro-prudential supervision in a less politicized way, disregarding the political cycle (as compared to the model where these tasks belong to a government agency even if the latter possesses a high degree of operational autonomy).

Other, more practical, arguments refer to the similarity of professional skills and knowledge (sometimes of a unique character) required by both monetary policy and banking supervision and use of the same statistical data sources based, to a large extent, on bank reporting.

The above arguments sound even stronger in the case of macro-prudential policies, which are closer to monetary policy in terms of their substance, potential synergies, statistical databases and required professional expertise than in the case of traditional, micro-prudential regulation and supervision. Some analyses take for granted that they should be conducted by central banks or under their leadership (see e.g., Brunnermeier et al. 2009; Gersbach 2010; Adrian and Liang 2014). Others make a strong argument in favor of such a mandate (De Larosiere et al 2009).

The opposite opinions argue that price and financial stability do not always go hand-in-hand (see Section 2) and achieving them requires different policies, which may be contra-

dictory in a given point in time. Furthermore, the concept of financial stability is not always precisely defined in operational terms (Issing 2003; Wall 2014) and there are no good operational models, which can guide central banks in how to achieve financial stability goals by using monetary policy tools (Wall 2014).

This argument can be further developed by referring to the so-called Tinbergen rule, which says that the number of policy goals cannot exceed the number of instruments at the policymakers' disposal. Thus if a central bank uses the short-term interest rate as its only instrument, it cannot focus on two different goals – price stability and financial stability (however it is defined).

However, as we discussed in Section 3, since the 2007–2009 global financial crisis, most central banks in advanced economies do not conduct monetary policies using only one instrument, i.e., the short-term interest rate. The largest central banks (the US Fed, the ECB, the Bank of Japan, and the Bank of England) are involved in various forms of QE. Thus, they use more than one instrument, and de facto take care of financial stability goals. To formalize this practice, Gersbach (2010) proposes setting two central bank policy goals, price stability and the stabilization of output fluctuations, by avoiding or reducing financial instability. This can be accomplished by using two separate instruments (the short-term interest rate and the aggregate equity ratio of the banking sector).

While Gersbach's (2010) proposal can solve the dilemma related to the Tinbergen rule, it may not be able to ensure the consistency of price stability and financial stability goals at a given point in time. As discussed in Section 2, price stability can encourage, under certain circumstances, excessive risk taking and there can be a discrepancy between business and financial cycles. Thus, at least hypothetically, central banks' engagement in macro-prudential policies may expose them to the necessity of pursuing conflicting policy goals.

These kinds of risks increase when the central bank is involved in micro-prudential regulation and supervision and takes outright responsibility for the stability of the banking and financial system. What seems to be its institutional advantage, i.e., independence from government (see above), may be compromised when the central bank deals with the politically sensitive issues of bank/ financial sector regulation, supervision and resolution (in the case of failures), which also involve fiscal responsibility.

This danger has been discussed in the literature on central bank independence (e.g. Cukierman 1996), in particular, in the case of emerging-market and transition economies. However, the experience of the recent global financial crisis (see Section 3) demonstrates that this is also a serious challenge for central banks in advanced economies, due to their deep involvement in policies of rescuing and rehabilitating the financial sector. This was also the reason why the De Larosiere (2009) report did not recommend mandating the ECB with the task of micro-prudential supervision.

5. The Experience of the ECB

The ECB started its operations in 1999 as a “pure” monetary authority following the tradition of the German Federal Bank (Bundesbank). Its primary objective is to maintain price stability, which has been operationalized by the ECB Governing Council as maintaining “... *inflation below, but close to, 2% over the medium term*” (ECB 2011, p.7). In its monetary policy decisions, the ECB follows the stability-oriented two-pillar strategy based on economic and monetary analysis (ECB 2011, p. 69–72), which differs from both traditional monetary targeting and direct inflation targeting frameworks but draws from the experience of both.

In the first decade of its operation, the short-term interest rates (the rate on the main refinancing operations, the rate on the deposit facility and the rate on the marginal lending facility, mutually interlinked) served as the main monetary policy tools. Since 2008, the ECB started to use several “non-standard” measures aimed at addressing the consequences of the global financial crisis and then, since 2010, of the European sovereign debt and financial crisis. In January 2015, after its short-term interest rates hit the zero-level band, the ECB launched large-scale QE operations (Constancio 2015), which primarily target the sovereign debt market (due to the insufficient supply of commercial bonds and papers).

The global and European financial crises also led to the ECB involvement in financial-stability related tasks, including prudential regulation and supervision. Following the recommendations of the De Larosiere (2009) report, the European Parliament and Council approved two EU regulations in December 2010 which created the ESRB and determined ECB tasks with respect to its functioning. The ESRB started its operations in 2011 as the part of the European System of Financial Supervision (ESFS) with the mission of macro-prudential oversight of the EU financial system. The main tasks of the ESRB include identifying and prioritizing systemic risks, issuing warnings in the case of significant risks and offering recommendations for remedial actions.

The ECB plays a leading role in the ESRB operation. First, the ESRB General Board includes the President and Vice-President of the ECB and the governors of national central banks of EU member states. The ECB President chairs the ESRB General Board.

Second, the ESRB Steering Committee is led by the Chair of the ESRB (i.e., the ECB President) and includes the ECB Vice-President and four members of the General Council of the ECB. Third, the respective department of the ECB performs the role of the ESRB Secretariat.

It is still too early to make a comprehensive assessment of the ESRB's activity and its effectiveness in reducing financial stability risks. It is even more difficult to discuss at this stage the potential synergies or conflicts between macro-prudential policies and their tools and monetary policy goals and instruments. Macro-prudential policy in the EU is still in a relatively early stage of operationalization and, even more, implementation. The two major macro-prudential regulations the Capital Requirements Directive (CRD) and the Capital Requirements Regulation (CRR) – became effective as recently as January 1, 2014. Their implementation remains, primarily, in the hands of national regulatory and supervisory authorities, which are proceeding at various speeds, and retain a wide room for maneuver in terms of their interpretation and concretization. The role of the ESRB is mainly overseeing and monitoring this process.

Finally, contrary to the recommendations of the De Larosiere (2009) report, the ECB has become involved since the end of 2014 in the micro-prudential regulation and supervision of the largest banks in the Euro area via the SSM. The SSM constitutes one of the pillars of the Banking Union, which has the chance to make a substantial contribution to the Euro area and EU-wide financial stability, increasing the transparency of its banking system, reducing the hypothetical risks of Euro area disintegration, deepening financial market integration and, therefore, making the monetary transmission mechanism in the Euro area more efficient.

The increasing market calm in the Euro area financial markets (even during the period of the returning risk of Grexit in the first half of 2015) may serve as evidence of the substantial externalities provided by the Banking Union project and the positive expectations of economic agents related to its launching. Whether those expectations prove justified will depend on the speed of implementation of the Banking Union (which still remains incomplete) and its practical operation, especially in the case of financial market distress.

If successfully implemented, the other pillars of the Banking Union, i.e., the Single Resolution Mechanism (which is in early stages of implementation) and the Euro area-wide deposit insurance system (the lacking element), can diminish the risk of pressure on the ECB to provide support to the banking system beyond its price stability mandate and the LOLR role. The experience since 2010 demonstrates that this is not a purely hypothetical risk. The ECB involvement into rescue programs to peripheral Euro area countries suffering various forms of public debt and financial crises (especially Greece) raised doubts and instigated heated public debate over whether the ECB went beyond its statutory mission and became involved in quasi-fiscal activities, a debate which goes beyond the remit of this analysis.

6. Conclusions

Historically, many central banks around the world have been involved in various tasks related to financial stability and prudential regulation. This involvement is not free of controversy. On the one hand, it allows for better coordination of monetary policy and banking/financial sector regulation, which affect each other. On the other hand, under certain circumstances, such a dual mandate can lead to compromising the central bank's core mission, i.e., price-stability oriented monetary policy and – as a result – the central bank's independence.

The developments during and after the global financial crisis of 2007–2009 have confirmed these concerns. Central banks' involvement into banking and financial sector regulation and supervision increased and a new framework of macro-prudential policies with central banks playing a leading role emerged. Several central banks provided quasi-fiscal support to the distressed financial institutions and, sometimes, sovereigns, going well beyond their statutory remit.

For the first decade of its existence, the ECB was free of this dilemma. It operated as a “pure” central bank with a sole price-stability mission, using short-term interest rates as its only policy tool. However, since 2008, at the culmination of the global financial crisis, its status, tasks and toolkit started to change. First, like the US Fed and other central banks, the ECB acted, on various occasions, as the LOLR. Second, due to the disruption of the interbank market, it decided to substitute its role, providing banks with liquidity support of various maturities and conducting two-way open market operations. Third, since the eruption of Greece's debt crisis in 2010, the ECB became involved in offering support to distressed sovereigns and banks in crisis-affected countries (especially in Greece), evidently going beyond its mandate and probably breaching Article 123 of the Treaty of the Functioning of the European Union, which prohibits the ECB and national central banks to finance governments. Fourth, since 2011, the ECB has become indirectly involved (via the ESRB) in macro-prudential oversight. Fifth, since 2014, the ECB has become directly involved in micro-prudential regulation and the supervision of the largest Euro area banks within the SSM.

All of these novelties form serious challenges for the ECB in terms of coordinating its various policies and protecting its independent status. While the ECB's involvement

in macro- prudential policies and micro-prudential regulation and supervision, although not free of risks, may offer substantial Euro area-wide externalities (completing financial market integration, reducing financial stability risks and fears of the disintegration of the Euro area), other engagements must be considered temporary and a clear timetable of their termination should be adopted. This concerns, in first instance, its quasi-fiscal support to the distressed sovereigns and banks.

Rapidly launching the SRM and a common deposit insurance scheme for the Euro area can diminish the risk of ECB involvement into bank rescue operations in the future. On the other hand, the adoption of the third rescue package for Greece in July-August 2015 financed by the European Stability Mechanism (ESM) will facilitate the gradual ECB disengagement from financing Greece's sovereign debt and supporting its distressed banking sector.

References

Adrian, Tobias, and Nellie Liang. "Monetary Policy, Financial Conditions, and Financial Stability". Federal Reserve Bank of New York, *Staff Report* no. 690, September 2014. http://www.ny.frb.org/research/staff_reports/sr690.pdf (accessed January 21, 2016)

Angelini, Paolo, Stefano Neri, and Fabio Panetta. "Monetary and Macroprudential Policies". European Central Bank, *Working Paper Series* no. 1449, July 2012. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1449.pdf> (accessed January 21, 2016)

Aydin, Burcu, and Engin Volkan. "Incorporating Financial Stability in Inflation Targeting Frameworks". International Monetary Fund, *IMF Working Paper* no. WP/11/224, September 2011. <http://www.imf.org/external/pubs/ft/wp/2011/wp11224.pdf> (accessed January 21, 2016)

Bordo, Michael D., Michael J. Dueker, and David C. Wheelock. "Aggregate Price Shocks and Financial Instability: A Historical Analysis", Federal Reserve Bank of St. Louis. *Working Paper* no. 2000-005B, September 2001. <https://research.stlouisfed.org/wp/2000/2000-005.pdf> (accessed January 21, 2016)

Borio, Claudio, and William R. White. "Whither Monetary and Financial Stability? The Implications of Evolving Policy Regimes". In: *Monetary Policy and Uncertainty: Adapting to a Changing Economy*. Jackson Hole, Wyoming: The Federal Reserve Bank of Kansas City, August 28-30, 2003. <https://www.kansascityfed.org/publicat/sympos/2003/pdf/Boriowhite2003.pdf> (accessed January 21, 2016)

Brunnermeier, Markus, Andrew Crocket, Charles Goodhart, Avinash D. Persaud, and Hyun Shin. "The Fundamental Principles of Financial Regulation". *Geneva Reports on the World Economy* 11. Geneva and London: ICMB and CEPR, 2009. http://www.icmb.ch/ICMB/Publications_files/Geneva%2011.pdf (accessed January 21, 2016)

Cerutti, Eugenio, Stijn Claessens, and Luc Laeven. "The Use and Effectiveness of Macroprudential Policies: New Evidence". International Monetary Fund, *IMF Working Paper* no. WP/15/61, March 2015. <http://www.imf.org/external/pubs/ft/wp/2015/wp1561.pdf> (accessed January 21, 2016)

Clement, Piet. "The term "macroprudential": origins and evolution". Bank for International Settlements. *BIS Quarterly Review*, March 2010: 59–67. http://www.bis.org/publ/qtrpdf/r_qt1003h.pdf (accessed January 21, 2016)

Constancio, Vitor. "Assessing the new phase of unconventional monetary policy at the ECB". Panel remarks at the Annual Congress of the European Economic Association, University of Mannheim, August 25, 2015. <http://www.ecb.europa.eu/press/key/date/2015/html/sp150825.en.html> (accessed January 21, 2016)

Cukierman, Alex. "The Economics of Central Banking". *CentER Discussion Paper*, 1996, no. 31. Tilburg: Macroeconomics. <https://pure.uvt.nl/portal/files/524048/31.pdf> (accessed January 21, 2016)

De Grauwe, Paul. "There is more to central banking than inflation targeting". *VoxEU.org*, November 14, 2007. <http://www.voxeu.org/article/subprime-crisis-time-inflation-targeting-rethink> (accessed January 21, 2016)

De Larosiere, Jacques, Leszek Balcerowicz, Otmar Issing, Rainer Masera, Callum McCarthy, Lars Nyberg, Jose Perez, and Onno Ruding. *Report*. The High-Level Group on Financial Supervision in the EU chaired by Jacques de Larosiere, Brussels, February 25, 2009. http://ec.europa.eu/internal_market/finances/docs/de_larosiere_report_en.pdf



European Central Bank. *The Monetary Policy of the ECB*, 2011.
<https://www.ecb.europa.eu/pub/pdf/other/monetarypolicy2011en.pdf?806851948a-caa66136356457a4641a6c> (accessed January 21, 2016)

European Systemic Risk Board. *Flagship Report on Macro-prudential Policy in the Banking Sector*, March 2014. https://www.esrb.europa.eu/pub/pdf/other/140303_flagship_report.pdf?95f6192312846e46e31aac2a6f361c93 (accessed January 21, 2016)

European Systemic Risk Board. *A review of macro-prudential policy in the EU one year after the introduction of the CRD/CRR*. June 2015.
https://www.esrb.europa.eu/pub/pdf/other/150625_review_macroprudential_policy_one_year_after_intro_crdocrr.en.pdf (accessed January 21, 2016)

Friedman, Milton. "Notes on the Quantity Theory of Money". In *The Essence of Friedman*, edited by Kurt R. Leube. Stanford, Ca.: Hoover Institution Press, Stanford University, 1987

Gerlach, Stefan, Alberto Giovannini, Cédric Tille, and José Viñals. "Are the Golden Years of Central Banking Over? The Crisis and the Challenges", *Geneva Reports on the World Economy* 10, Geneva and London: ICMB and CEPR, 2009. http://www.icmb.ch/ICMB/Publications_files/Geneva%2010.pdf (accessed January 21, 2016)

Gersbach, Hans. "Double targeting for Central Banks with two instruments: Interest rates and aggregate bank equity". *VoxEU.org*, February 1, 2010. <http://www.voxeu.org/article/framework-central-banks-and-bank-supervision> (accessed January 21, 2016)

Issing, Otmar (2003): "Monetary and Financial Stability: Is there a Trade-off?". Speech at the European Central Bank Conference on "Monetary Stability, Financial Stability and the Business Cycle". Basle: Bank for International Settlements, March 28-29, 2003. <https://www.ecb.europa.eu/press/key/date/2003/html/sp030329.en.html> (accessed January 21, 2016)

Macroprudential. "Macroprudential policy tools and frameworks: Progress report to G20". Joint Paper of the Financial Stability Board, International Monetary Fund and Bank for International Settlements, October 27, 2011.

<http://www.imf.org/external/np/g20/pdf/102711.pdf> (accessed January 21, 2016)

Maddaloni, Angela, and Jose-Luis Peydro. "Monetary Policy, Macroprudential Policy and Banking Stability. Evidence from the Euro Area". European Central Bank. *Working Paper Series* no. 1560, July 2013. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1560.pdf> (accessed January 21, 2016)

Poole, William, and David C. Wheelock. "Stable Prices, Stable Economy: Keeping Inflation in Check Must Be No. 1 Goal of Monetary Policymakers". Federal Reserve Bank of St. Louis. *Regional Economist*, January 2008. <https://www.stlouisfed.org/publications/regional-economist/january-2008/stable-prices-stable-economy-keeping-inflation-in-check-must-be-no-1-goal-of-monetary-policymakers> (accessed January 21, 2016)

Repullo, Rafael, and Javier Suarez (2008): "The Procyclical Effects of Basel II". Paper presented at the 9th Jacques Polak Annual Research Conference. Washington, DC: International Monetary Fund, November 13-14, 2008. <http://www.imf.org/external/np/res/seminars/2008/arc/pdf/rs.pdf> (accessed January 21, 2016)

Taylor, John B. "Does the Crisis Experience Call for a New Paradigm in Monetary Policy?". CASE - Center for Social and Economic Research. *CASE Network Studies and Analyses* no. 402, July 2010.

http://www.case-research.eu/sites/default/files/publications/30087204_CNSA_402_0.pdf (accessed January 21, 2016)

Wall, Larry D. "Should Financial Stability Be a Goal of Monetary Policy?". Federal Reserve Bank of Atlanta, Center for Financial Innovation and Stability. *Notes from the Vault*, September 2014. <https://www.frbatlanta.org/cenfis/publications/notesfromthevault/1409> (accessed January 21, 2016)