Ewald Nowotny: The future of monetary policy

Text of the Joint Vienna Institute Lecture by Prof Dr Ewald Nowotny, Governor of the Central Bank of the Republic of Austria, Vienna, 24 September 2013.

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The financial crisis that flared up in 2008 and whose consequences continue to hold the world in its grip has severely tested the consensus on monetary policy as it existed prior to 2008. Soon after the onset of the crisis central banks pushed existing tools to their limits and adopted new types of measures that went far beyond what had been thinkable a few years ago.

To some extent the scale of the new policies just reflected the scale of the shock that had hit the economies. In this sense the measures can be considered temporary, one-off extreme actions taken in reaction to an extreme, one-off crisis event. However, the crisis has also put serious doubts on some of the basic tenets of monetary policy held before 2008. While there is still no new consensus around, it is clear that our thinking about how the economy works and the proper role of monetary policy has changed. This means that even after the acute phase of the current crisis is over, banks have been stabilized, public finances are back in order, unemployment has declined and growth has resumed, which may still be well far in the future, monetary policy will not return to the ways from before 2008.

Monetary policy therefore faces a double challenge. In the short run stability has to be restored while in the long term an enduring framework has to be established that is capable of preventing the recurrence of a crisis as the one seen in 2008. Both the immediate and the longer-term future of monetary policy will be the topic of this paper. The first section focuses on the policies adopted by central banks in the wake of the crisis. The second section discusses the exit from these policies and the associated challenges. Finally, the concluding section provides an outlook on the possible long-term design of monetary policy.

Challenges to pre-crisis thinking

Before discussing the policies that central banks have recently adopted, it might be useful to recapitulate the way monetary policy had been thought about before 2008. In the decades leading up to the financial crisis, hand in hand with globalization, the opening of markets for goods, financial services and capital, economic models converged and so did monetary policy. The key elements of the consensus were (1) that central banks should focus on one primary objective, i.e. price stability, and (2) that central banks could perform their function best when given independent authority over policy. The consensus was based on the belief that the influence of elected politicians with their presumed short-term focus on re-election would bias monetary policy towards higher inflation. Monetary policy should thus be delegated to an autonomous agency with a clearly defined objective of price stability. The delegation in turn was thought possible because monetary, fiscal and prudential policies were believed to operate separately, relying on their particular sets of instruments and exerting only limited influence on the other policy areas, hence requiring a minimum of coordination. For quite some time the consensus worked fine, seemingly vindicated by a long period of relatively stable output growth and low and stable inflation, which was labelled the Great Moderation.

Events since 2008 have disproved the idea of a neat separation of policies. Prudential policy had been unable to prevent the occurrence of a massive financial crisis, possibly helped along by unintended side effects of monetary and fiscal policy. A key lesson of the crisis was then that in the absence of financial stability, monetary policy can be severely hampered and fiscal policy pushed off track. Re-establishing financial stability in turn can come at a very high price; and part of it may be achieved through emergency actions and balance sheet

policy of the central bank, again blurring the separation lines between fiscal and monetary policy.

Using the central bank balance sheet

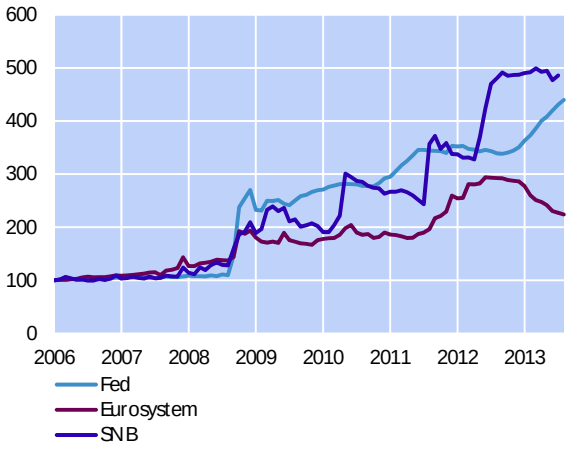
A few years ago the balance sheets of central banks have been a barely noticed sideshow. The focus was on interest rate policy. Today, with interest rates close to or at their lower bound and consequently hardly moving, attention has shifted to what happens in the balance sheets. After having been stable or growing steadily for years, balance sheets have expanded massively since the onset of the crisis (Figure 1). Total assets and liabilities multiplied within a matter of months, rising in total by a factor of three in the case of the Eurosystem, a factor of above four for the Federal Reserve System (Fed) and close to five for the Bank of England and the Swiss National Bank. In the euro area and Switzerland the level has stabilized or even declined over the last year, while in the US and the UK the trend is still upwards.

One reason for the expansion is that the balance sheet is the main (if not the only) remaining instrument of central banks when policy rates cannot be lowered further. In fact, however, balance sheet policy had already played a significant role while interest rates were still well above their current low levels. In order to understand the logic of balance sheet policy it is necessary to look at the composition of the balance sheet and the components of the recent increases.

Figure 1

Balance sheets of the Fed, the Eurosystem and the Swiss National Bank

Index, January 2006 = 100

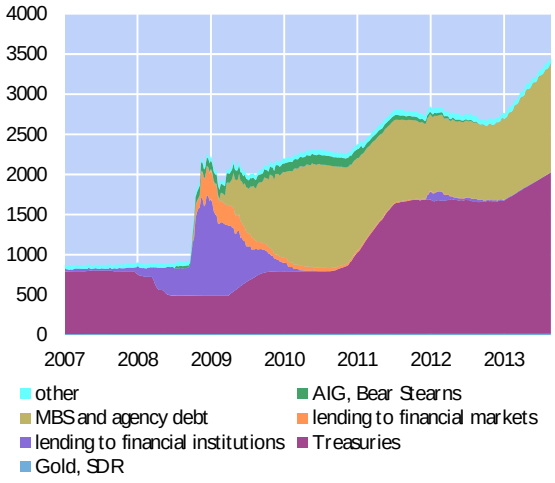


Source: Thomson Reuters.

Figure 2

Assets of the Federal Reserve

in billion USD



Source: Thomson Reuters.

Federal Reserve

In the case of the Federal Reserve three phases can be distinguished (Figure 2). In a first phase, which lasted from early 2008 to early 2009, the balance sheet was mainly driven by new lending programs designed to support banks that had difficulties accessing refinancing markets. With the rapid stabilization of US banks, volumes in these operations declined significantly in 2009 and were soon discontinued.[1] Policy focused instead now on the market

[1] The major exception being the swap agreements with foreign central banks, most notably the ECB, but these operations addressed USD requirements by Non-US banks.

for mortgages, badly hit by a crisis in the housing market. Interest rates on mortgages had not declined to the same extent as policy rates, reflecting higher risk premia. A new program by the Fed specifically addressed this risk premium by buying up significant amounts of mortgage-backed securities (MBS).

It is only in the third phase, beginning in November 2010, that US treasuries moved center stage. In the early months of the crisis, the Federal Reserve had even run down its treasury holdings and redirected funds to the lending programs for banks. In 2009 some treasury bonds were bought alongside MBS but only to bring the total up to its pre-crisis level. By then the main focus of US monetary policy had become the question of how to invigorate a flagging economy with short-term interest rates already at a historic low. In this context the purchase of longer-dated US treasuries was hoped to push down the yield curve, driving down interest rates also in those markets important for private investment and consumption decisions. Operation Twist, the replacement of short-dated by longer-dated treasuries announced in September 2011 pursued an essentially similar tactic of decreasing the relative supply of longer-dated treasuries in the market, driving their price up and their yields down. In September 2012 the Federal Reserve published an open-ended commitment to buy USD 40 billion and USD 45 billion worth of MBS and longer-term Treasury securities, respectively, per month.

Eurosystem

A look at the consolidated balance sheet of the Eurosystem (Figure 3) reveals a few similarities as well as a number of differences. In the case of the Eurosystem, the main policy-relevant balance sheet component and also the one essentially driving the size of the balance sheet are the regular refinancing operations, where banks receive liquidity against eligible securities. Before the crisis about two-thirds of this liquidity was provided for one week, while the remainder for three months.

Unlike in the US, the financing of the real economy in the euro area relies extensively on banks. During the crisis the main policy concern in the euro area was therefore to ensure that banks would pass on lower policy rates to their customers and remained able and willing to provide loans to companies and households. Consequently, the Eurosystem lengthened the average maturity of its refinancing operations to reduce maturity mismatch in commercial bank balance sheets by first providing larger three-month tenders and later special operations with one- and even three-year maturities. To assure banks that refinancing will always be available if needed, limiting the incentives for banks to hoard liquidity and hold back lending, the Eurosystem switched to a new tender procedure, in which all demands for liquidity were satisfied at the set policy rate as long as banks can provide sufficient eligible collateral. This fixed-rate full allotment (FRFA) procedure made the volume of outstanding liquidity effectively depend on banks' demand. As is visible in Figure 3, volumes fluctuated significantly, pointing to periods of stress as well as an easing of tensions.

European banks needed refinancing not only in euro but also US dollars and Swiss francs, in which the euro area is short. In cooperation with the Federal Reserve and the Swiss National Bank, the Eurosystem consequently set up tender facilities similar to those for euro to provide foreign exchange. These programs are all very much akin to the lending programs the Federal Reserve offered to US banks.

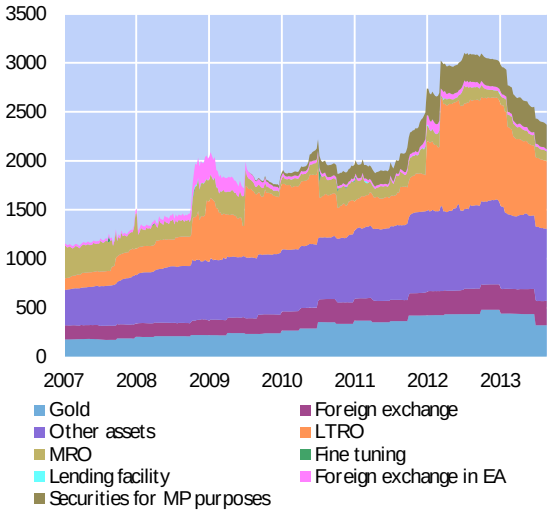
Compared to the US, outright purchases of assets play a much smaller role in the euro area. The covered bond purchase programmes (CBPP) I and II addressed tensions in the market for covered bonds, which is again very important for bank refinancing in the euro area. Comparable to the purchase of MBS in the US, the CBPPs addressed risk premia in the

mortgage market in the euro area, if on a much smaller scale than in the US.[2] The differences between the Federal Reserve and the Eurosystem become even more evident when it comes to the purchase of government securities. While the Fed purchased US treasuries on a large scale to lower risk-free interest rates, the Eurosystem's Securities Markets Programme (SMP) was much smaller and targeted towards the debt titles of specific euro area countries hit by risk premia that were judged to be excessively high. Its economic logic – reducing risk premia – is thus closer to the MBS purchases in the US rather than to the purchase of US treasuries.

Figure 3

Assets of the Eurosystem

Consolidated balance sheet, in billion EUR

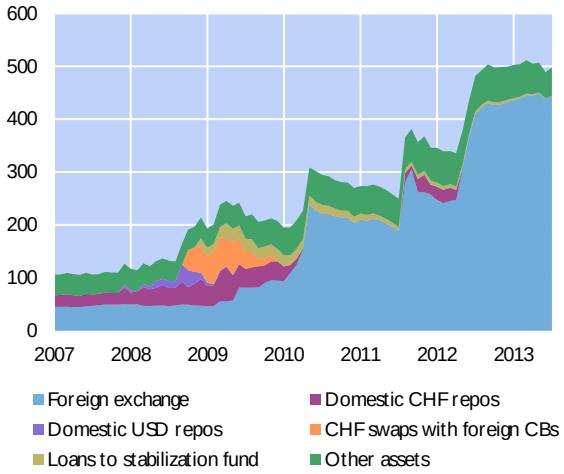


Source: ECB.

Figure 4

Assets of the Swiss National Bank

in billion CHF



Source: Thomson Reuters.

Swiss National Bank

The Swiss National Bank gives another example of balance sheet policy, yet with different components driving the increase in total assets (Figure 4). In the early phase of the crisis, until 2009, the SNB also expanded its lending to banks, both in Switzerland and through swap agreements abroad. As in the US, lending to banks soon declined. In the opinion of the SNB board, a larger threat to economic stability in Switzerland then came from the Swiss franc exchange rate, which was being driven up by safe haven flows. The high Swiss franc was considered dangerous for a small export-oriented economy like Switzerland, harming economic growth and threatening to push Switzerland into deflation. Consequently, the SNB intervened in the foreign exchange markets to dampen the appreciation of the franc. On 6 September 2011 the SNB announced that it would "no longer tolerate a EUR/CHF exchange rate below the minimum rate of CHF 1.20" and was "prepared to buy foreign currency in unlimited quantities." As can be seen in Figure 4 sizeable interventions were required between May and July 2012, but since then foreign exchange holdings and total balance sheet numbers have remained stable.

The Federal Reserve, the Eurosystem and the Swiss National Bank give a good overview over balance sheet policies since 2008.[3] Four observations can be drawn:

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[2] Under the CBPP 1 a nominal amount of EUR 60 billion was bought; the maximum amount of EUR 40 billion of the CBPP 2 was not fully utilized. At the end of August 2013, holdings of MBS and agency debt by the Federal Reserve stood at USD 1,360 billion USD, and they are still rising further.

[3] Including the Bank of England and the Bank of Japan would not yield much different evidence.

- First, balance sheet policies have been employed by central banks irrespective of their rather different intellectual and institutional traditions. Faced with an unprecedented crisis, central banks have reacted flexibly, using new tools and instruments as soon as the limits of traditional interest rate policy had become apparent. Flexibility was key.
- Second, policies in the different countries relied on different components of the balance sheet and affected different markets, mainly because economic and financial structures differed and so did optimal policies.
- Third, differences appear not only between countries but also over time. During the most critical initial phase, around the failure of Lehman, all central banks focused on bank refinancing markets. It is only later that policies diverged. In Switzerland the foreign exchange market was seen as the most important lever for policy; in the US the markets for mortgage securities and government debt took center stage; while in the euro area bank refinancing remained crucial, alongside the markets for government debt of a few countries particularly hit by the sovereign debt crisis. Again, both similarities and differences between the policies of the major central banks testify to their flexibility in the design of unconventional policies.
- Fourth, there is no one-to-one relation between the effectiveness of policy and the size of a change in the balance sheet. The stance of monetary policy as expressed by the policy rate, with all due caution about differences in the transmission between various economic areas, can be rather easily compared between central banks, both in terms of levels (5% is higher than 3%) and changes (lowering interest rates by 2% is more accommodating than lowering by 1%). This is not the case with balance sheet policies. Depending on the underlying markets, smaller or larger interventions might be needed to achieve the same effect in two different countries. In the extreme case, no change in the balance sheet is needed at all.

  The financial crisis holds two particularly interesting examples for that. The first is the announcement of a maximum exchange rate for the Swiss franc and the commitment to unlimited purchases by the SNB. While in the month before the announcement the SNB had bought foreign exchange worth more than CHF 90 billion, after the announcement the pressure immediately eased and the Swiss franc even depreciated without any sizeable intervention by the SNB in the following seven months. The second example was the announcement by the ECB of Outright Monetary Transactions (OMT), again potentially unlimited purchases of securities issued in particular countries within the euro area. Before the announcement, financing markets for both European governments and companies had been characterized by diverging yields and increasing fragmentation along national borders. As in the case of the Swiss exchange rate, the mere announcement of the OMT led to a rapid convergence of yields and easier financing conditions for banks in stressed countries. Again this effect appeared without any purchases actually undertaken. The effect of balance sheet policies can therefore not be measured by the changes in the size of the balance sheet alone.

The last observation also draws the attention to the importance of expectations about future policy, in particular in periods characterized by high uncertainty. The announcements of the ECB and the SNB removed uncertainty about the future course of policy of the two central banks and stabilized expectations around the outcome desired by policymakers.

Forward guidance

Guidance on future policy has not only been provided in the form of commitments to unlimited purchases but also in other domains of monetary policy, in particular the setting of policy rates. Here again, improved communication about future policy intentions has allowed for a better aligning of market expectations with policy intentions, typically supporting

accommodative policies. This has reduced uncertainty about the future interest rate path, stabilized the yield curve, and thus strengthened the effects of short-term interest rate policy.

Forward guidance involves two elements. The first is communication about the central bank's perception of future economic conditions. The second is communication about the central bank's reaction to these conditions. Both elements are equally important, yet guidance practices across central banks have differed remarkably with respect to their emphasis on either the first or the second element. As an illustration, Table 1 shows the dates and wordings of recent forward guidance announcements by three major central banks.[4]

The Fed has introduced threshold-based forward guidance about its interest rate policy in December 2012. Low-interest policies are announced to be in place until the unemployment rate falls below a numerical threshold level of 6.5%. Explicit conditionality is introduced by quantitative and qualitative criteria. Specifically, it is stressed that interest rates could be increased once inflation is expected to be above 2.5% or inflation expectations no longer remain well anchored. In June 2013, the Fed also provided date-based guidance about the tapering of its asset purchase program, revealing its intention to cease new purchases of Treasury bonds and mortgage-backed securities by mid-2014.

The Bank of England's forward guidance in August 2013 was on both interest rates and asset purchases at the same time. Akin to the Fed, the Bank of England provides threshold-based guidance with a numerical target for the unemployment rate. Both the announced interest rate and asset purchases policies are subject to the same (quantitative and qualitative) knockout criteria, which include risks to price stability and financial stability.

The ECB, in turn, has provided qualitative open-ended guidance, not referring to any explicit threshold or date that will likely lead to the termination of the accommodative policy stance. The conditionality of the ECB guidance is not linked to a numerical threshold for inflation, but more broadly to changes in the outlook for price stability.

Both quantitative and qualitative guidance have their relative merits, and both face challenges. First, forward guidance must be clearly understood by the public to be effective. To this end it must neither provide too much information, which may confuse market participants about the central bank's policy intentions, nor provide too little information, which may increase the risk of misunderstandings. Finding the right balance is particularly difficult for policymakers at the center of the public debate, be it in the United States, in Europe, or elsewhere. Their exact choice of wordings typically gives rise to extended debates in the financial media, which often involves serious misinterpretations. A recurrent example is that simple statements about positive economic developments are misinterpreted as indications of imminent increases in the interest rate. Second, forward guidance must be credible. On the one hand, this requires that market participants have confidence in the central bank's assessment of future economic conditions, that is, economic forecasts must continue to be of the highest quality. On the other hand, policy intentions must be time-consistent. This is guaranteed in the current practices by the conditional nature of forward guidance announcements, giving central banks the necessary room to react to unanticipated market and economic developments.

The medium term: eventual exit from unconventional policies

Unconventional monetary policy measures have been of the utmost importance to strengthen accommodative monetary policy, and they will continue to be an important policy tool as long as the economy is in troubled waters. Yet it is clear that central bank balance sheets cannot grow forever. In the medium term, when the economy is back on track and solid growth is restored, some unconventional measures will have to be reversed. This eventual exit will

[4] But note that many central banks have recently given similar forward guidance about their policy intentions.

pose unprecedented challenges to central banks, and it is our responsibility to prepare for these challenges well in advance.

The following three aspects are particularly relevant. First, we must find the adequate timing and sequence of actions. Second, we must ready the public for the eventual exit by carefully communicating our exit strategy. Third, we must take into account potential international spillover effects of our policies. Given the strong international linkages of banks and financial markets, monetary policy changes in one major currency area can have significant global effects.

Timing

Finding the right timing is the first key challenge when exiting unconventional policies. Exiting too early or too fast may create risks to economic growth and employment. Exiting too late or too slowly may create risks to price stability, both over the short and the medium term, and distort the private sector's incentives to continue balance sheet repair. Exit strategies thus need to be designed in a cautious manner. They must be flexible to respond to changing economic conditions. They must involve gradual and steady adjustments rather than occasional and disruptive action. They must provide the right incentives.

Of particular importance to the design of exit strategies is also the initial composition of a central bank's balance sheet. As outlined in greater detail before, the Fed's quantitative easing program mainly relies on large-scale asset purchases, especially purchases of mortgage-backed securities and Treasury bonds. The exit strategy will therefore have to incorporate a detailed state-contingent plan that formulates when, or under what conditions, purchases of new assets in either asset class will cease and existing portfolios will be sold off. As indicated by the disruptions following the Fed announcement in June, market participants expect that these actions will have significant impacts on asset prices and thus the overall economy. Moreover, finding the adequate sequence of reversing actions will be critical to keeping disruptions in asset prices to a minimum, and to ensuring the stability of the financial system.[5] For the design and success of the Fed's exit strategy, precise a priori knowledge about the macroeconomic impact of different reversing options thus seems to be essential.

The ECB's response to the crisis has focused on the establishment of new credit easing policies. Most notably, enhanced repurchasing operations have been introduced to provide the banking system with sufficient liquidity. As stated above, compared to the United States, the supply of liquidity in the euro area adjusts more endogenously to banks' demand for liquidity, and the ECB's assets are of shorter maturity than the Fed's assets. These features will facilitate reversing unconventional policy measures in a gradual and careful way, while monitoring the health of the financial system. It will also allow us to respond quickly to unexpected disruptions. Exiting from unconventional credit easing policies may thus be easier than exiting from large-scale asset purchases. But this by no means implies that the exit will be *easy*. We too must carefully decide on when, how fast, and in what order the unconventional measures – including our commitments to provide virtually unlimited liquidity to banks and secondary markets for government debt – shall be reversed. We too must correctly anticipate the implications of different reversing options for macroeconomic and financial stability. These are obviously difficult tasks given the lack of past experiences. Yet I have no doubt that we will successfully master these difficulties.

Forward guidance on exit

The second key challenge is to ready the public for an eventual exit from accommodative policies. Striking the right balance between clarity and transparency will be especially difficult

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[5] This has been convincingly argued Krishnamurthy at this year's Jackson Hole conference.

in this context because the exit process will likely expand over an extended period of time. Communication of future policy actions will thus be complex. Formulating adequate conditionality concepts a priori will be particularly difficult, and it may become desirable to adapt conditions along the way. This creates additional risks to the central bank's reputation and credibility: Changes in guidance could be perceived as a deviation from existing policies rather than a clarification of existing policies. To keep these risks to a minimum, we need to choose forward guidance practices carefully from the start, so that sizeable revisions do not become necessary later.

Global liquidity and international spillover effects

Finally, our exit strategies must also take into account potential international spillover effects. Banks operate on a global scale, and their decisions on funding and credit today are global in nature. The *private global liquidity* created by the financial sector is a key determinant of funding conditions in the broader international economy, in addition to the *official global liquidity* provided by central banks.[6] The accommodative policy stance over the past years has contributed to easy financing conditions not only in the crisis countries but also in countries with stronger economic conditions. Many argue that today, global banks searching for yield in a low-interest rate environment show signs of excessive risk-taking and weakening lending standards in some of these economies, most notably in emerging market economies.

Global liquidity thus poses at least two further challenges to monetary policy in the advanced economies. First, continuing an accommodative stance for too long may increase problematic international liquidity spillovers, and may eventually contribute to a build-up of systemic risks unless addressed by prudential measures. Second, an unexpected early exit may cause a sharper and quicker than expected tightening of financing conditions in emerging markets, causing sudden reversals of cross-border capital flows and disruptions in financial markets. Our exit strategies must take into account these potential side effects.

The long term: a new framework for monetary policy

Regarding the future of monetary policy in the long term, the main question is: How close will monetary policy return to the pre-crisis framework? As of today, opinions on this question vary greatly. Some in favor of reversing the latest innovations argue that these have moved the central bank more into political territory, raising concerns about the clarity of price stability mandates or about democratic legitimation. Others argue that the crisis has forcefully demonstrated that our initial model, with its clear separation of monetary and financial stability policies, has not delivered on its promises and should be fundamentally reconsidered. Eventually, the most probable outcome is that some, but not all, recent innovations will be part of the future monetary policy framework.

One innovation that will survive is the integration of prudential policy tools. The recent crisis has highlighted that financial sector stability is a necessary precondition for macroeconomic stability and vice versa. Micro- and macroprudential policy tools that seek to guarantee a strong financial system thus interact with monetary policy tools that seek to stabilize the macro economy. This interdependence is a valid argument for coordinating prudential and monetary policy. The recent establishment of the Single Supervisory Mechanism within the ECB has been an important step in this process. On the other hand, taking up supervisory tasks may expose a central bank to massive reputational risks. In my view, no central banker with an adequate survival instinct will seek actively a larger role in banking supervision, especially microprudential supervision. So the specific form of institutional arrangements has to play a decisive role.

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[6] For a thorough discussion see the report "Global liquidity – concept, measurement and policy implications" by the Committee on the Global Financial System, available at http://www.bis.org/publ/cgfs45.htm.

A further innovation that may well be important in the future framework is increased international cooperation. Central banks' holdings of foreign currency assets have risen sharply in recent years. Reasons for this development include exchange rate stabilization, insurance against a destabilizing run on the domestic currency, or a desire to retain the ability to provide foreign currency liquidity to the domestic economy. On a global scale, these benefits have to be weighed against significant costs implied by foreign exchange accumulation. Externalities are imposed on other countries due to distortions of international asset prices, and accumulating central banks become increasingly subject to exchange rate and valuation risk, and to the risk of capital losses. Among the euro area members these costs are still relatively low, since the pooling of foreign exchange and gold reserves within EMU has led to significant efficiency gains. For emerging economies, however, costs are significant. This is reflected also in the recent initiative of the BRICS countries to create the *Contingent Reserve Arrangement,* a currency reserve fund pooling foreign exchange holdings worth USD 100 billion.[7] If the trend of reserve accumulation continues, global cooperation of central banks may become increasingly desirable since it reduces the precautionary incentive for central banks to hold foreign reserves and thus the associated costs. Formal arrangements, such as swap lines between central banks, have the potential to consistently prevent shortages of liquidity in foreign currencies. Given their success during the recent crisis, they may well become a more permanent element of the international monetary policy framework.

[7] China will be contributing foreign exchange reserves worth USD 41 billion, Brazil, India and Russia USD 18 billion each, and South Africa USD 5 billion.

Table 1

Recent forward guidance practices

Central Bank Date	Wording
Federal Reserve December 2012[8]	*(…) this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored.*
June 2013	*"(…) the Committee currently anticipates that it would be appropriate to moderate the monthly pace of purchases later this year. And if the subsequent data remain broadly aligned with our current expectations for the economy, we would continue to reduce the pace of purchases in measured steps through the first half of next year, ending purchases around midyear (…) our policy is in no way predetermined and will depend on the incoming data and the evolution of the outlook as well as on the cumulative progress toward our objectives."*
Bank of England August 2013[9]	*The MPC intends not to raise Bank Rate from its current level of 0.5% at least until (…) the unemployment rate has fallen to a threshold of 7% (…)The MPC stands ready to undertake further asset purchases while the unemployment rate remains above 7% if it judges that additional monetary stimulus is warranted.* *The guidance (…) would cease to hold if any of the following three "knockouts" were breached:* *(i) in the MPC's view, it is more likely than not, that CPI inflation 18 to 24 months ahead will be 0.5 percentage points or more above the 2% target;* *(ii) medium-term inflation expectations no longer remain sufficiently well anchored;* *(iii) the Financial Policy Committee (FPC) judges that the stance of monetary policy poses a significant threat to financial stability (…).*
ECB July 2013[10]	*(…) our monetary policy stance will remain accommodative for as long as necessary. The Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time. This expectation is based on the overall subdued outlook for inflation extending into the medium term, given the broad-based weakness in the real economy and subdued monetary dynamics. In the period ahead, we will monitor all incoming information on economic and monetary developments and assess any impact on the outlook for price stability.*

[8] See http://www.federalreserve.gov/newsevents/press/monetary/20121212a.htm and http://www.federalreserve.gov/mediacenter/files/FOMCpresconf20130619.pdf.

[9] See http://www.bankofengland.co.uk/monetarypolicy/Pages/forwardguidance.aspx.

[10] See http://www.ecb.europa.eu/press/pressconf/2013/html/is130905.en.html.