

CENTRAL BANK MONITORING – DECEMBER

Monetary and Statistics Department
Monetary Policy and Fiscal Analyses Division

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In this issue

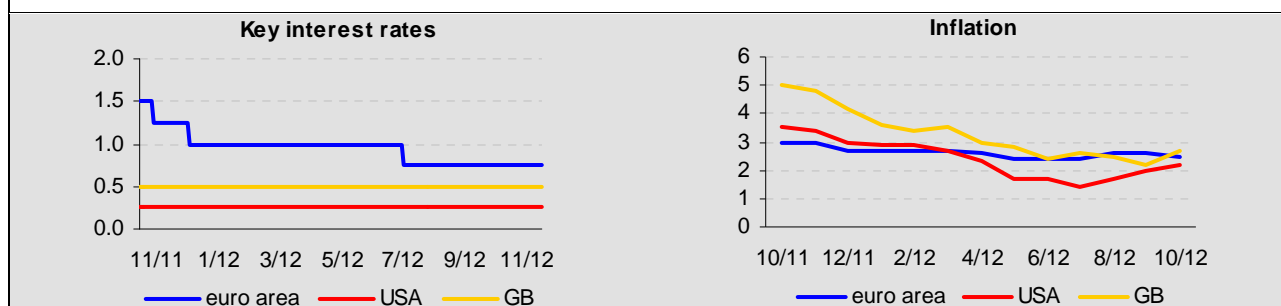
Economic activity in advanced economies remains subdued. A permanent euro area rescue mechanism (the ESM) was launched at the start of October. The Eurogroup approved further financial assistance for Greece. However, the euro area debt crisis continues to be surrounded by considerable uncertainty. In Switzerland, activity on the mortgage market is rising sharply and household indebtedness is increasing in parallel. The topic of high household debt was also discussed in the Sveriges Riksbank. In September, the Fed announced a further round of quantitative easing (QE3). The central banks of Hungary and Poland lowered their key interest rates. The Swiss National Bank is still maintaining the minimum exchange rate of the franc to the euro at CHF 1.20/EUR. The remaining central banks under review left their interest rates unchanged and stable rates are expected in the coming quarter for all the monitored central banks. In Spotlight we focus on the composition of the top decision-making bodies of central banks. Our Selected Speech summarises a speech given by SNB board member Fritz Zurbrugg on the challenges posed by the growth in the Swiss central bank's foreign exchange reserves.

1. LATEST MONETARY POLICY DEVELOPMENTS AT SELECTED CENTRAL BANKS

Key central banks of the Euro-Atlantic area

| | <u>Euro area (ECB)</u> | <u>USA (Fed)</u> | <u>United Kingdom (BoE)</u> |
|--|--|--------------------------------------|--|
| Inflation target | < 2% ¹ | 2% ² | 2% |
| MP meetings (rate changes) | 4 Oct (0.00) 8 Nov (0.00) 6 Dec (0.00) | 12–13 Sep (0.00) 23–24 Oct (0.00) | 3–4 Oct (0.00) 7–8 Nov (0.00) 5–6 Dec (0.00) |
| Current basic rate | 0.75% | 0–0.25% | 0.50% |
| Latest inflation | 2.2% (Nov 2012) ³ | 2.2% (Oct 2012) | 2.7% (Oct 2012) |
| Expected MP meetings | 10 Jan 7 Feb 7 Mar | 29–30 Jan | 9–10 Jan 6–7 Feb 6–7 Mar |
| Other expected events | 7 Mar publication of forecast | 10 Jan: publication of Beige Book | 13 Feb: publication of Inflation Report |
| Expected rate movements⁴ | → | → | → |

¹ ECB definition of price stability; ² January 2012 definition of inflation target; ³ flash estimate; ⁴ direction of expected change in rates in coming quarter taken from Consensus Forecast survey.



The **ECB** left its policy rate unchanged at 0.75% in Q4. At the December meeting, it announced it would continue conducting its main refinancing operations as fixed rate tender procedures with full allotment at least until 9 July 2013. Owing to high energy prices and increases in indirect taxes in some euro area countries, inflation rates are expected to remain above 2% in 2012, but should fall below this level next year. Inflation expectations remain firmly anchored. The OMT programme has evidently improved financial market confidence. The ECB forecast foresees GDP growth in a range between -0.6% and -0.4% for 2012 and between -0.9% and 0.3% for 2013, with a gradual recovery starting in the second half of the year.

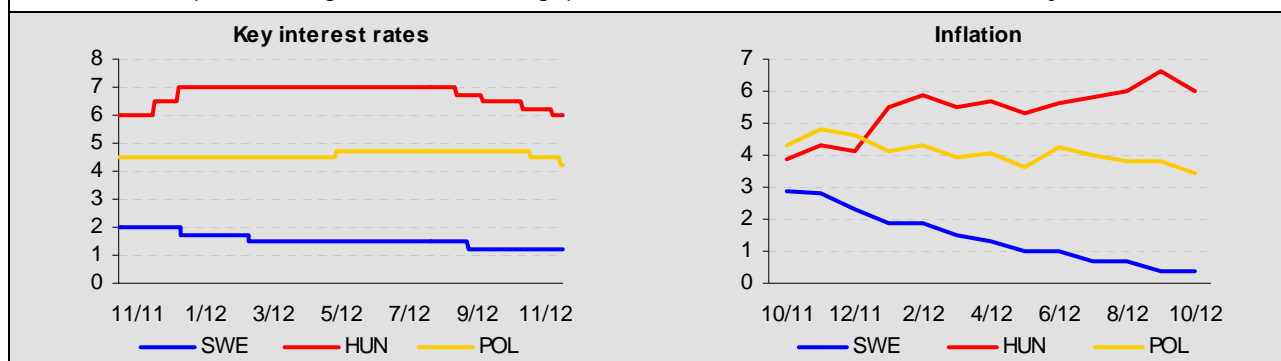
The **Fed** left its key rate unchanged, but moved its forecast for the duration of very low rates to mid-2015. The central bank not only is continuing its programme to extend the average maturity of its holdings of government debt securities, but also has introduced QE3, i.e. purchases of mortgage-backed securities at a pace of USD 40 billion per month (see *News* for more details). The USA has seen a continued moderate economic recovery in recent months. Employment growth has been slow and the unemployment rate remains elevated. Household spending is rising gradually, but growth in fixed investment has slowed. Despite some signs of improvement, the housing sector remains depressed. Inflation has picked up in recent months, reflecting increases in oil and petrol prices. Long-term inflation expectations remain stable.

The **BoE** left its key interest rate unchanged at 0.50% and voted to maintain its stock of asset purchases at GBP 375 billion, a level which, according to the BoE, will probably soon be reached. The recovery in economic activity was aided by the Olympic Games in London. GDP growth was 1% in Q3. Inflation is still above target, but the Monetary Policy Committee expects it to decline further in the course of 2013, to below the 2% target.

Selected central banks of inflation-targeting EU countries

| | Sweden (Riksbank) | Hungary (MNB) | Poland (NBP) |
|--|--|--|--|
| Inflation target | 2% | 3% | 2.5% |
| MP meetings (rate changes) | 25 Oct (0.00) | 25 Sep (-0.25) 30 Oct (-0.25) 27 Nov (-0.25) | 2–3 Oct (0.00) 6–7 Nov (-0.25) 4–5 Dec (-0.25) |
| Current basic rate | 1.25% | 6.00% | 4.25% |
| Latest inflation | 0.4% (Oct 2012) | 6.0% (Oct 2012) | 3.4% (Oct 2012) |
| Expected MP meetings | 18 Dec | 29 Jan 26 Feb 26 Mar | 8–9 Jan 5–6 Feb 5–6 Mar |
| Other expected events | 18 Dec: publication of Monetary Policy Update Report | 26 Mar: publication of Quarterly Report on Inflation | mid-Feb: publication of Inflation Report |
| Expected rate movements¹ | → | → | → |

¹ Direction of expected change in rates in coming quarter taken from Consensus Forecast survey.



The **Riksbank** left its monetary policy interest rate at 1.25%. The Swedish economy grew quickly in the first half of this year but is now slowing more sharply than the Riksbank had expected. At the October meeting, there were calls to lower the repo rate by 0.25 or even 0.50 percentage points. According to the Board members who proposed it, this would cause inflation to attain the target more quickly and unemployment to begin falling earlier (see the [minutes of the meeting](#) for details). Households' high debt ratio was also discussed at the monetary policy meeting, but the members did not reach a consensus on the risks this may pose to the economy.

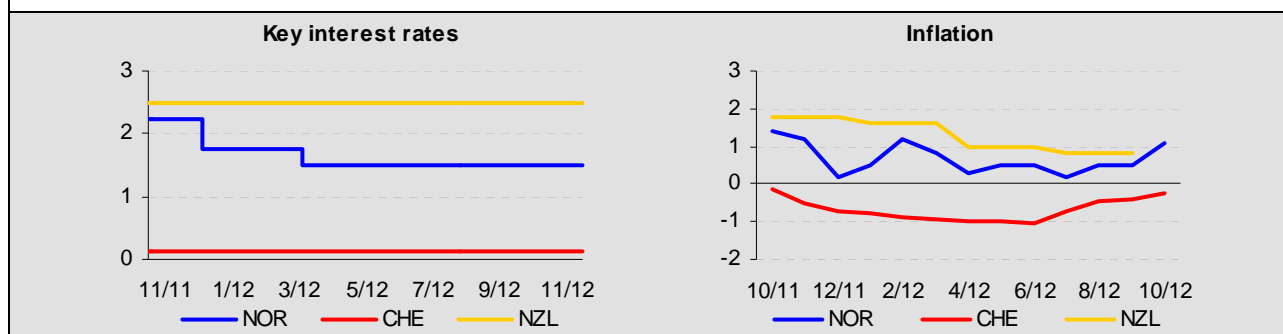
The **MNB** lowered its monetary policy rate by 0.25 percentage point three times in the last quarter, i.e. by a total of 0.75 percentage point to 6.00%. Inflation remains above target, largely due to the effects of tax increases and rising commodity prices. Inflation slowed in October owing to declining growth in fuel prices and administered prices. The Hungarian economy is showing an overall slowdown in economic activity and slack domestic demand. The MNB expects the economy to start growing again next year. The Hungarian economy is threatened by a downgrade of its sovereign debt rating, which might have an adverse effect on foreign investors' perceptions.

The **NBP** cut its monetary policy rate by 0.25 percentage point to 4.25%. The data on GDP growth in Q3 show that domestic demand declined further, mainly because of decreasing investment and decelerating consumption growth. Net exports were the only positive contributor to GDP growth. Slower employment growth and a higher unemployment rate contributed to wage growth deceleration. Inflation stood at 4.0% in October and remains above the target despite falling gradually.

Other selected inflation-targeting countries

| | Norway (NB) | Switzerland (SNB) | New Zealand (RBNZ) |
|--|---|---|--|
| Inflation target | 2.5% | < 2% | 2% |
| MP meetings (rate changes) | 31 Oct (0.00) | 16 Sep (0.00) | 13 Sep (0.00) 6 Dec (0.00) |
| Current basic rate | 1.50% | 0–0,25% ¹ | 2.50% |
| Latest inflation | 1.1% (Oct 2012) | -0.2% (Oct 2012) | 0.8% (Oct 2012) |
| Expected MP meetings | 19 Dec 14 Mar | 13 Dec | 31 Jan 14 Mar |
| Other expected events | 14 Mar: publication of Monetary Policy Report | 23 Dec: publication of Monetary Policy Report | 14 Mar: publication of Monetary Policy statement |
| Expected rate movements² | → | → | → |

¹ Chart displays centre of band; ² direction of expected change in rates in coming quarter taken from Consensus Forecast survey or, in the case of New Zealand, from RBNZ survey.



The **Norges bank (NB)** left its monetary policy rate unchanged at 1.50%. According to Governor Øystein Olsen, “the key policy rate is being kept at a low level because inflation is low and global interest rates are at very low levels”. However, the Norwegian economy is growing at a solid pace. Risk premiums in money and bond markets decreased, but banks’ reduced funding costs were not reflected in a reduction in interest rates on loans to households and enterprises.

The **SNB** is maintaining rates in the lower part of the 0–0.25% target range. At its September meeting, it confirmed its commitment to enforce a minimum exchange rate of CHF 1.20/EUR and its preparedness to buy foreign currency in unlimited quantities if this limit is exceeded. However, it considers the Swiss franc to be very strong even at the current rate. The SNB expects an inflation rate of -0.6% for 2012 and 0.2% for 2013. According to the SNB, there is no threat of inflation in the Swiss economy in the foreseeable future. Imbalances are continuing to grow on the property and mortgage markets. The SNB considers this a risk to financial stability over the medium term.

The **RBNZ** left its key interest rate at 2.50%. The inflation rate is slightly below the (newly introduced point) inflation target (see also *News*). Economic activity is being affected by weaker trading partner performance. The unemployment rate remains elevated and the high New Zealand dollar continues to undermine export earnings and encourage substitution toward imported goods and services. Housing market activity and retail spending have continued to increase since the June monetary policy meeting.

2. NEWS

Fed decides to purchase additional long-term securities

At a September press conference, Ben Bernanke announced the FOMC's decision to purchase additional assets. Unlike in the first two rounds of asset purchases, called QE1 and QE2, this time neither the total target value nor the time period were specified. The Fed will focus on agency mortgage-backed securities and will purchase them at a pace of USD 40 billion per month. The Fed will also continue its programme to extend the average maturity of its holdings of securities (Twist) to the end of the year and is maintaining its existing policy of reinvesting principal payments from its holdings of maturing agency securities. At the same time, the Fed extended the timescale of its assumption of low levels of the federal funds rate, specifically at least until mid-2015.



Eurozone has permanent crisis resolution mechanism

The [European Stability Mechanism](#) (ESM) was formally inaugurated in October. The ESM is a permanent crisis resolution mechanism for eurozone countries. It will be an important component of a comprehensive strategy designed to safeguard financial stability within the euro area. Decisions of this Luxembourg-based intergovernmental organisation are taken by a Board of Governors consisting of ministers of finance. Apart from providing loans, the ESM will purchase bonds in primary and secondary markets and provide precautionary financial assistance. Moreover, it will finance recapitalisations of financial institutions through loans to the relevant governments and later on – provided that a single supervisory mechanism is established for euro area banks – directly to the institutions affected. All the financial assistance will be linked to appropriate conditionality. The ESM will replace the European Financial Stability Facility (EFSF), which will stop providing new programmes in July 2013. EUR 192 billion has already been committed in EFSF loans to Ireland, Portugal and Greece. Up to EUR 100 billion has been approved for recapitalisation of banks in [Spain](#), with EUR 39.5 billion likely to be disbursed by December. Spain was also subject to the first [EC and ECB review mission](#) in October. Further missions are taking place in other programme countries. The next disbursement to [Greece](#) was approved after lengthy negotiations.

2% inflation target set in New Zealand

New Zealand has a new inflation target of 2%. RBNZ Governor Graeme Wheeler, who replaced Alan Bollard in September, believes this step will help better anchor inflation expectations. Previously, an inflation target band of 1–3% was in place. The new, more specific target is set out in a recent Policy Targets Agreement signed by the finance minister and the new governor. The September agreement also requires the central bank to put a stronger focus on financial stability and to have regard to the soundness and efficiency of the financial system in setting monetary policy.

[ECB's second covered bond purchase programme ends](#)

The ECB terminated its second covered bond purchase programme (CBPP2) at the end of October after one year. The initially targeted total amount of purchases of EUR 40 billion was not achieved, as investors' demand for these securities increased after the exceptional 3-year LTROs were introduced. The Eurosystem central banks purchased bonds in a total amount of EUR 16.4 billion and intend to keep them until maturity. The first covered bond purchase programme of EUR 60 billion took place between May 2009 and June 2011.

[BoE publishes three expert reviews](#)

The Bank of England published three independent expert reviews of its performance and existing capabilities. The first of them examines the handling the function of the lender of last resort in 2008–2009, when the BoE provided emergency liquidity assistance to two banks. The second review covers monetary policy implementation, i.e. the framework for providing liquidity to the banking system as a whole. The last document assesses monetary policy. It comments on the central bank's economic forecasts and its forecasting process and also examines monetary policy decision-making and communication. All three reviews provide recommendations and options for further consideration. For example, the third review contains 21 recommendations, including the options of publishing alternative scenarios, enhancing communication of the monetary policy outlook and publishing a summary of the individual forecasts of the MPC members as a supplement to the fan charts.

[ECB and BoE extend swap facility agreement](#)

The ECB and the BoE agreed to extend their swap line to the end of September 2013. If requested, the BoE will provide the ECB with sterling in exchange for euro up to a limit of GBP 10 billion.

[MNB changes terms of two-year loan facility](#)

In October, the Magyar Nemzeti Bank altered the conditions of its two-year loan facility for commercial banks, which was introduced in March this year. The criteria for counterparties and the sanctions applicable in the case of non-fulfilment will be eased. The aim of these changes is to promote bank lending to the corporate sector.

[Mark Carney to become BoE governor in July 2013](#)

The present governor of the Bank of Canada Mark Carney will become the head of the Bank of England at the start of July next year. He will succeed Sir Mervyn King, whose second five-year term ends on the same date. Deputy Governor Charles Bean's reappointment was approved at the same time. He has asked to stand down in June 2014.

3. SPOTLIGHT: MONETARY POLICY DECISION-MAKERS

Who are the monetary policy decision-makers? In some central banks, monetary policy decisions are made by the board that manages the institution's overall operation, while other banks have special monetary policy councils. Either way, the key parameter is dependence on/independence from the political process. This is reflected in the way the governor and other members are appointed and in the length of their terms of office. The number of board members and the board's diversity in terms of education, experience, age and gender (as well as nationality and regional representation for monetary unions and federations) can influence the quality of decisions and the legitimacy in the eyes of the public. In some countries, greater diversity of opinion is ensured by appointing external members. Decisions can also be strongly affected by personal qualities, decision-making mechanisms and the scope of disclosure of individual views.

A prerequisite for effective monetary-policy decision-making is that those responsible must be independent. This is determined largely by the legislation – how and by whom central bankers are selected, how long they serve for, and how they can be removed from office. Independence is considered crucial in modern central banks. A two-tier selection process can provide a safeguard. In Japan, for example, board members are appointed by the government, but the selection must be approved by both houses of parliament. In Poland, the governor is appointed by the parliament at the president's request, and the president, the upper house and the lower house each elect three council members. In the euro area, Executive Council members are formally selected solely by the European Council, but this year's experience has shown that the process is complex and subject to strong political influence.

To make senior central bank officials more resilient to political pressure, their terms of office tend to be longer than the election cycle (usually five to six years with the option of one re-appointment). Members of the Fed's Board of Governors may remain in office for 14 years, while the ECB's management has only one eight-year term. Protection against unwanted external influence also tends to be bolstered by very limited options for dismissing board members. The grounds for removal from office are usually limited to cases of gross negligence, criminal activity or unethical conduct.

In some central banks, boards have decision-making powers for all issues relating to the institution. Other banks have special monetary policy (or other) committees made up of policy makers who do not have to deal with the day-to-day management of the institution. At the Bank of England, for example, the Board of Directors deals with operational matters, while monetary policy decisions are made by the Monetary Policy Committee, and a Financial Policy Committee is also going to be established. However, the governor and the two deputy governors are members of all these units. Special monetary policy decision-making bodies are quite common (the Bank of Canada, the Riksbank and the Swiss National Bank also have them, for example). On the other hand, the Bank of Japan, for example, has a single decision-making body for monetary issues and other matters.

Central banks' decision-making committees usually have between five and nine members. While it can be easier to reach agreement in smaller groups, a large group may be preferred as it allows for a wider range of ideas, opinions and interpretations of information, giving greater legitimacy and credibility in the eyes of the public. Moreover, a larger group is more resilient to external pressures. The largest decision-making bodies include those of the euro area and the USA, which is not surprising given their size and multi-state nature. While the US FOMC consists of 12 voting members, the ECB's Executive Board has 23 representatives. With 10 members, Poland's Monetary Policy Council is also relatively large. By contrast, the monetary policy board in Switzerland is very small, with only three members. New Zealand is specific in that decisions are taken by the governor, while the board has only an advisory function.

As regards specialisation, the members of central bank management are usually economists, but some boards also contain lawyers (especially in the USA). Experts from other fields (e.g. political science or other social sciences) are rather rare. The usual candidates are people from universities, the public administration (the Ministry of Finance in particular), international institutions (often the IMF and the World Bank) or the central banks themselves. Many of them are heavily involved in economic research. Recruits from the private sector usually come from the banking and financial services industries.

External members can contribute to the diversity of the group by offering expertise outside central bank analysis. However, they might represent short-term or regional interests that are not in line with the long-term interests of society. The UK's MPC has four external members, Norway's Executive Board has five and Israel's Monetary Committee has three.

Some countries have an age limit. In Denmark, board members are appointed for an indefinite period of time but may remain in office only until 70 years of age (the current governor Nils Bernstein will reach this age in January 2013). Israel has a minimum age of 25 years, but the average age there is currently the highest of the central banks under review (66 years).

The representation of women in top managerial positions has been a hot topic recently, and central banks have been no exception. While the boards in Scandinavian countries (Norway and Sweden, but not Denmark) and the Fed's Board of Governors have made efforts to achieve balanced numbers of men and women, in Switzerland, the UK and the euro area monetary policy-making is the exclusive preserve of men. The British government would like to see more women applying for positions in the MPC. When a selection procedure for an external MPC member was held at the start of last year, there was just one woman among the 27 applicants. This year, seven of the 29 applicants were women. While the inclusion of at least one woman in the Executive Board is currently a controversial issue in the euro area, Switzerland seems to be unaffected by the "quota for women" topic and men are in charge of monetary policy there, just as they always have been. On the other hand, there are countries with female central bank governors (Argentina, Aruba, Bahamas, Belarus, Botswana, Honduras, Kyrgyzstan, Lesotho, Malaysia, Samoa and South Africa).

The ECB is addressing another issue relating to appropriate representation, namely national representation. While the Fed has a system of rotating membership (except for the governor of the Federal Reserve Bank of New York, who is a permanent member), there is no written rule in Europe. However, efforts to achieve equal representation of the countries of the southern periphery and the core euro area countries can be observed. Despite the growing number of euro area member states, no one from the new countries has been appointed yet.

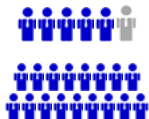
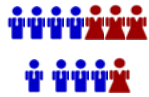



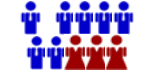


ECB Executive Board members by nationality





| | '98 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|----------------|------------------|------|------|------------------|------|---------|------|------|------|----------|-------|------|------|------|------|
| President | NETHERLANDS | | | | | FRANCE | | | | | ITALY | | | | |
| Vice-President | France | | | Greece | | | | | | Portugal | | | | | |
| | Germany | | | | | Germany | | | | | Ger. | | | | |
| | Italy | | | | | Italy | | | | | Fr. | | | | |
| | Finland (w oman) | | | Austria (w oman) | | | | | | Germany | | | | | |
| | Spain | | | | | Spain | | | | | | | | | |

So far it has been taken almost for granted that national central banks should be governed by nationals of the country concerned. The choice of a Canadian (the current governor of the Bank of Canada Mark Carney – see *News*) as head of the conservative Bank of England from July 2013 is therefore unusual. This choice was probably influenced by the fact that there were few suitable candidates for this important and specialised post. In addition, this role is associated in the UK with responsibility for macroprudential policy and supervision of a huge globally integrated financial system. It may thus prove beneficial to bring in an outsider with experience, charisma and a great reputation as leader. It will also be interesting to follow

whether governors of foreign nationality will remain the exception rather than the rule, or whether a taboo has been broken.

Decisions can also be affected by personal qualities, decision-making mechanisms and the scope of disclosure of individual views. All these things can influence whether the monetary policy committee is conservative or, conversely, more intent on taking determined action.

| | Number of board members, who appoints them, and for how long (general settings) | Current number of members, gender representation, specialisation and average age | |
|-------------|---|---|--|
| Euro area | The Executive Board has six members appointed by the European Council for eight years without the option of re-appointment. Monetary policy decisions are made by the Governing Council, which also contains the 17 NCB governors. |  | All five current members have ministry of finance experience. Some of them have also worked at national central banks, with financial regulators or in international institutions. The average age of the Executive Board is 57 years. |
| USA | Interest rate decisions are taken by a seven-member Board of Governors (nominated by the president and confirmed by the Senate, for a maximum term of 14 years; the chairman and vice chairman are appointed from among the sitting governors for four-year terms). Open market operations are overseen by the Federal Open Market Committee, consisting of the president of the Federal Reserve Bank of New York and four of the remaining federal reserve bank presidents, who serve one-year terms on a rotating basis. |  | The Board of Governors currently pools experience from the federal reserve banks, the financial regulatory agency, the banking sector and universities. The three current members are lawyers. The average age of the governors is 58 years. |
| UK | The governor and two deputy governors are appointed by the Queen for terms of five years (not more than twice) on the recommendation of the government. The other members are the Chief Economist and the Executive Director for Markets. Four external members are appointed by the chancellor of the exchequer for three-year terms (not more than twice). |  | The governor and deputy governors worked at the BoE before their appointment. The other members are BoE staff. Before they were appointed, two of the external members worked in the banking sector, one in industry and one in economic research. The average age of the MPC members is 55 years. |
| Sweden | The six members of the Executive Board are appointed by the General Council of the Riksbank (which in turn is appointed by parliament) for a term of five or six years, with the option of re-appointment. |  | The Executive Board currently consists of members with experience from the Riksbank, the ministry of finance, banking supervision and economic research. The average age is currently 56 years. |
| Hungary | The Monetary Council is supposed to have between five and nine members. The governor is appointed by the president on the recommendation of the prime minister for a term of six years (not more than twice); two or three deputy governors are appointed in the same manner. The other members are elected by parliament for a term of six years. |  | The current Monetary Council has seven members. Some of them have worked at the MNB and also have banking sector or securities trading experience. One member has a technical education. The current average age is 57 years. |
| Poland | The governor is appointed by parliament at the request of the president. The council has nine more members, three appointed by the lower house, three by the upper house and three by the president (for a term of six years). |  | The current council members have a wealth of academic and public sector experience. Some of them have held ministerial office. One of the women is a lawyer. The youngest council member (born 1977) worked at the NBP before his appointment. The average age is currently 61 years. |
| Norway | All seven members are appointed by the government – the governor and deputy governor for a term of six years (not more than twice) and the other members for a term of four years (not more than 12 years in total). |  | The Norwegian board currently contains a lot of private sector experience. Two members worked at the central bank before their appointment. The current average age is 56 years. |
| Switzerland | The three members of the Governing Board are appointed by the Federal Council. |  | The current governor worked at the SNB for many years, the second member was mainly engaged in economic research and academic work, and the third member worked at the ministry of finance and the IMF. The average age is currently 54 years. |

| | | | |
|-------------|--|---|---|
| New Zealand | Monetary policy decisions are made solely by the governor, who is appointed by the minister of finance on the recommendation of the board for a term of five years (not more than twice). The seven-member board has an advisory role. |  | The current governor worked for many years at the New Zealand Treasury, later held senior posts at the World Bank and then established his own advisory business in the USA. |
| Canada | The governor and deputy governor are appointed by the bank's board of directors with the consent of the government for a term of seven years. The Monetary Policy Committee has an additional two to four members, selected by the board of the central bank. |  | Three of the current five members were long-time BoC employees, and one worked at the IMF. The current governor built his career at Goldman Sachs. The average age of the board members is 54 years. |
| Israel | The governor is appointed by the president at the government's proposal and the deputy governor is appointed by the government at the governor's proposal (both for a term of five years, not more than twice). Another central bank employee is appointed to the committee by the governor. Three external members are appointed by the governor on the recommendation and after consultations with committees designated for this purpose. |  | Three members of the current committee were largely engaged in research and academic work. Two members worked at the BoI before their appointment. Experience from international organisations is also represented in the committee. The current average age is 66 years. |
| Japan | The governor, two deputy governors and six other members are appointed by the government subject to approval by both houses of parliament for a term of five years with the option of re-appointment. |  | The governor and a deputy governor worked for many years at the BoJ. Three other members are academics, one worked in a research centre and three come from the private sector (two bankers and one lawyer). The average age is 57 years. |

4. SELECTED SPEECH: CHALLENGES POSED BY THE GROWTH IN THE SNB'S FOREIGN EXCHANGE RESERVES

In a [presentation](#) given on 8 November in Geneva, Fritz Zurbrügg, a member of the Governing Board of the Swiss National Bank (SNB), whose activities in the field of (nonstandard) monetary policy we closely monitor, addressed issues regarding the recently rapidly increased stock of foreign exchange reserves in the balance sheet of the SNB.

The SNB's balance sheet is currently around four times its pre-crisis level. The growth has been driven almost exclusively by expanding foreign exchange reserve holdings, which currently amount to nearly 70% of Swiss GDP. This increase reflects the policy of foreign exchange interventions (maintaining a minimum exchange rate of 1.20 CHF/EUR) adopted to combat the excessive appreciation of the Swiss franc and mitigate the ensuing risk of deflation in the presence of the zero lower bound for interest rates. Mr Zurbrügg described the challenges stemming from rapidly increased volumes of foreign exchange reserve holdings.

The major questions concern optimal management of a large portfolio of assets denominated in foreign currencies. Standard hedging tools are not an option for alleviating the exchange rate risk, as these would imply, in effect, purchases of Swiss francs by the counterparty, negating the desired effects of foreign exchange interventions. In this respect, monetary policy holds primacy over foreign exchange reserve management. As a result, the only tool for managing exchange rate risk is diversification across a broader set of currencies. The bulk of the SNB's foreign exchange reserves are denominated in the euro (currently 48%) and the US dollar (28%). The yen, the pound sterling and the Canadian dollar together account for 20%. Five new currencies (the Australian and Singapore dollars, the Swedish krona, the Danish krone and the Korean won) have been introduced into the reserve portfolio since 2010.

Mr Zurbrügg also noted that with expanding portfolio size, the depth of the markets for the relevant assets becomes an increasingly important factor to ensure sufficient liquidity of foreign exchange reserve holdings. The need for liquidity is another argument for broader portfolio diversification. The majority of the assets (88%) are held in bonds, most of them issued by governments (83%). Only a minority (12%) consist of equities. Equity holdings can help to diversify risk only partially, as their return volatilities are generally higher compared to bonds. The return on the foreign exchange reserve portfolio has stayed positive throughout the financial crisis (even in 2008) when denominated in foreign currencies, but has been negative in some years when denominated in the appreciating Swiss franc.

The portfolio should also be managed so as to minimise the distortive impact on the markets. This is another argument for diversification and operating only on major markets. Moreover, to ensure that the investments do not destabilise the markets, diversification must be gradual. As a result, the share of the euro in the reserve portfolio has fluctuated between 45% and 65% because of the time needed for gradual reallocation. Finally, the increasing demands on foreign exchange reserve portfolio management have prompted changes in the institutional setup of the SNB. The risk management unit has been separated from asset management and moved to another department to ensure independence and efficient governance.

To sum up, the zero lower bound on monetary policy rates, the appreciating Swiss franc and the threat of deflation have led the SNB to conduct sizeable foreign exchange purchases, which pose new challenges for the management of the reserve portfolio. Mr Zurbrügg noted that the SNB is well aware of the related issues and is trying to make its investment strategy as transparent as possible.

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