EUROJÄRJESTELMÄ
EUROSYSTEMET

Erkki Liikanen, Governor of the Bank of Finland:

Meeting of the Finnish Economic Association on 30 May 2007

Monetary policy in theory and practice

Chart 2. Developments in the global economy

The global economy is undergoing its longest cyclical upturn in more than 30 years. For the fifth consecutive year, production growth hovers around 4–5%, the price of oil and other commodities has increased sharply and liquidity has been ample. Nevertheless, price and salary increases have been modest.

What has made this possible? Many underlying factors can be identified. Partly this is the fruit of globalisation, which has intensified competition and lowered the import prices of industrial products. On the other hand, strong growth in productivity has also moderated price increases.

In addition, monetary policy occupies a significant role in the stabilisation of price developments – and not just at central banks. The credibility achieved by monetary policy has anchored inflation expectations close to the inflation targets set by central banks. This has helped restrain the price shocks experienced in the commodity market to be reflected in other prices and salaries, whilst keeping long-term interest rates low.

Chart 3. Central banks' policy rates

Although price developments have, for a long time, been moderate in comparison with many earlier cyclical upturns, recent times have seen inflationary pressures become more pronounced in industrial countries. Central banks have reacted to growing inflationary risks by gradually tightening the easy stance of monetary policy. The European Central Bank (ECB) joined this group of central banks at the end of 2005. Since then, ECB policy rates have been raised a total of seven times, from 2% to 3.75%. The Governing Council of the ECB believes that the monetary policy continues to be on the accommodative side. That is why the Governing Council monitors closely euro area price developments to ensure that risks to price stability do not materialise.

Nevertheless, my intention today is not to discuss the current status of monetary policy. The reason for this is that the Governing Council of the ECB convenes next week. By mutual consent, all members of the Governing Council withdraw from commenting on current monetary-policy matters during the week preceding the meeting.

We can thus benefit from this period of 'radio silence' by discussing other major fundamental issues. I would like to bring to the fore two themes pertaining to the monetary-policy strategy that are currently subject to animated international debate. The first of these is the importance and role of communication in monetary policy. The second issue of topical interest in monetary-policy decision-making is the role of monetary analysis.

These themes have been characterised by exchange of opinions by both researchers and representatives of central banks. It is for this reason that I would also like to touch upon the interaction between monetary-policy implementation in practice and academic macro-economic research. The Finnish Economic Association is indeed an opportune forum for this kind of discussion. After all, the purpose of the Association has been, from the very beginning, to bring together researchers and decision-makers.

Monetary-policy decision-making and academic research

Three years at the core of monetary-policy decision-making have proven that academic researchers and central banks are engaged in intimate interaction, and that central banks place a great deal of weight on researchers' views on monetary-policy strategy – and occasionally even on tactics. I believe that this interaction is useful in both directions. Current monetary-policy research is vibrant and particularly relevant to the practical implementation of the policy.

Chart 4. Monetary policy and academic research

Indeed, close interaction has long characterised academic macro-economic research and monetary policy. During the period of empirical monetary research of the 1960s and early 1970s, research had a major impact on monetary-policy thinking. Those years laid down the foundation for the use of econometric models in forecasting and policy preparation. The aim was to establish a scientific basis for adjusting the policy rates to the prevailing cyclical conditions. At the same time, interest re-evolved in the Quantity Theory of Money, ie the relationship between the money stock and inflation. Recently deceased Milton Friedman was one of the leading economists and opinion leaders of the time.

In the late 1970s and early 1980s, the nature of interaction between academic research and monetary policy changed. One reason for this was the conclusion arrived at in theoretical research of the time, whereby only monetary-policy surprises had any impact in the real economy. It was demonstrated that through their own actions, rational economic agents, companies and households overrode the real impact of monetary policy, to the extent to which they could anticipate political developments. The systematic part of monetary policy that could be anticipated affected only inflation.

According to the same expectations-based theory, the macro-economic models used by central banks were unavoidably fallible, as the structure of the models depended on the mechanisms whereby expectations were formed, and these in

turn could not be independent of the taxonomy of monetary policy.[1] Accordingly, models constructed by conventional statistical methods could not be used reliably in the evaluation of monetary-policy alternatives.

This had a revolutionary impact. In the 1980s, monetary-policy research found new directions. While previously the focus had been on adjustment questions, monetary-policy systems and their development were now brought into the spotlight. It was strongly emphasised that central banks' independence should be guaranteed and that monetary-policy objectives should be given a quantitative determination. One area where macro-economic research has subsequently made a profound impact on practical monetary-policy implementation is the accountability and transparency of central banks. Giving a quantitative determination to monetary-policy objectives consolidates accountability with a view to the set target.

Research has had a significant impact on developments that have led to the consolidation of central banks' independence all over the world and to enhancement of the credibility of monetary policy. It could be said that inasmuch as the present combination of low inflation and favourable growth are the result of credible monetary policy, it is primarily the achievement of researchers, who have emphasised the priority of institutional reform as a prerequisite of good monetary policy.

Since the 1990s, the relationship between macro-economic theory and monetary policy has again grown more intimate. It is perhaps even more vibrant today than ever before. The closer contact is the result of modern macro-economic theory and the new modelling tools built on that platform, where expectations are treated in a more coherent manner.

Research has had a particularly strong influence on quantitative inflation targets becoming more common in monetary policy and on the increasing

[1] See Lucas, R., 'Econometric Policy Evaluation: A Critique'. In Carnegie-Rochester Conference Series on Public Policy 1 (ed. K. Brunner & A. Meltzer), 1976.

importance of inflation forecasts in adjusting monetary policy. Current mainstream macro-economic researchers and central banks both agree that monetary policy aimed at achieving long-term price stability must be supported by high-quality macro-economic analysis.

Both of today's main themes – communication about monetary policy and the role of monetary analysis – are good examples of the gravity given to research in monetary policy. Researchers play a prominent role in the debate on the ECB's monetary-policy strategy. Many renowned researchers have challenged the ECB to warm to the fashionable monetary-policy system, based on inflation and interest rate forecasts published by the central bank. Some of the same researchers have also voiced critical assessments on the use of money aggregates in the ECB's monetary-policy strategy and analysed the stability or instability of money demand in the euro area in recent years. The Governing Council of the ECB has been, and continues to be, open to discussion with the research community.

Communication by central banks

Heightened role of communication

Chart 5. Communication central banks

Central banks' communication and their approach to openness have undergone profound transformation during the last couple of decades. Previously, central banks were in the habit of taking the financial markets and other parties by surprise in announcing their policy rate decisions. Skimpy communication and a tendency towards secrecy had been standard practice in central banks for aeons. The best description for this type of way of working was perhaps the slogan 'never excuse, never explain'. Observers talked about 'mysticism' over monetary policy. Openness and transparency were not considered good practice at central banks.

One reason for this culture of secrecy was the desire to uphold a certain impression of infallibility, which was considered beneficial to their credibility.

Alan Blinder sums this up to the point: 'If you shut your mouth and pull down the blinds, no one realises if you change your mind'. As noted earlier, in the 1970s this practice was justified on the basis of leading-edge macro-economic research. According to the prevailing mainstream doctrine of the time, a central bank could only influence the real economy – and thus stabilise cyclical fluctuations – through decisions issued by surprise.[2]

Today's views about openness and transparency are very different and are also clearly reflected in central banks' new ways of communication. Following the focus in monetary policy shifting towards the achievement of price stability, the coherence and predictability of monetary policy have become a virtue that all central banks seek to attain. For this reason, central banks are nowadays actively engaged in enhancing understanding of their activities by the financial markets and other economic agents. This not only applies to monetary-policy objectives and strategy but also to the developments and reasoning underlying the monetary-policy decisions taken.

Indeed, central banks' heightened need to provide more information about their activities and reasoning reflects the shift that has taken place in macro-economic theory as well as the concurrent change in how the functions of monetary policy are understood. The present monetary-policy theory is based on the premise that we need such systematic policy rules whereby it is possible to minimise inflation deviations from the set objective, thereby reducing costs arising from cyclical fluctuations.

[2] Contributing to the formation of this doctrine were the pre-eminent researchers of the 1970s, such as Robert Lucas and Thomas Sargent, who applied rational expectations and on that basis arrived at a result whereby systematic monetary policy, ie monetary policy based on policy rules, cannot influence the real economy because it is exactly the systematic nature which leads to a situation where the forthcoming monetary policy can be anticipated. Accordingly, the effectiveness of monetary policy is solely based on the inability of the private sector to understand the systematics of monetary policy. As a consequence, in order to be effective (relative to the real economy) monetary policy should take the private sector by surprise. See Lucas, R. & Sargent, T., 'After Keynesian Macroeconomics', in *After the Phillips Curve: Persistence of High Inflation and High Unemployment*, Conference Series No. 19, Federal Reserve Bank of Boston, 1978.

Where theoreticians previously took a mistrustful position towards the effectiveness of monetary policy that could be anticipated, the current thinking holds that it is exactly this systematic nature of monetary policy that is of consequence.

From the point of view of central banks, key to this are inflation expectations in particular, because the expected rate of inflation has a material impact on the types of pricing and wage decisions made in the economy. Actual inflation is in turn due to these decisions. From the central bank's point of view it is therefore of utmost importance that the prevailing inflation expectations are kept in line with the central bank's own targets. Theory and practical experiences both demonstrate that controlling inflation against the expectations of the general public can lead to major economic expenses. That is why the control of expectations is crucial to achieving price stability.

Published objective facilitates anchoring of expectations

Chart 6. Anchoring of inflation expectations

During the last couple of decades, several central banks have ended up releasing a numerical inflation target for their monetary policy. In the 1990s, Finland also belonged to this group of countries. In February 1993, the Bank of Finland announced that by 1995, it aimed to stabilise underlying inflation permanently at 2% and to maintain it at this level from then on.[3] Previously the direct inflation target had been introduced by New Zealand, Canada and the United Kingdom. Sweden introduced a similar system slightly before Finland.

Subsequently, many other central banks have set a numerical inflation target to their monetary policy. The so-called direct inflation target strategy has become increasingly commonplace in monetary policy, where a key role is held by the central bank's public, official inflation forecast. In line with this strategy,

[3] The Bank of Finland's inflation target was defined by means of the underlying inflation indicator. It was calculated by removing from the consumer price index the impact of direct taxes, subsidies and capital costs relating to housing.

monetary policy is accommodated on the basis of the inflation forecast, and the aim is to maintain the level of inflation consistent with the set target.

The monetary-policy strategy of the ECB also contains an inflation target, but the strategy is not consonant with the direct inflation target. The Maastricht Treaty states that the ECB's primary monetary-policy objective is to safeguard price stability in the euro area. The Governing Council of the ECB has itself operationalised this target by defining the concept of price stability as pertaining to the annual rate of increase in the euro area harmonised index of consumer prices (HICP) that must remain close to, but below, 2% in the medium term.[4] In addition to this primary target, as stated in the Treaty, the ECB shall support the general economic policies in such a way that price stability is not endangered.

According to empirical research, publication of a numerically defined target for price stability has an impact on inflation expectations and the actual rate of inflation. As a main rule, the targets are good 'rules of thumb' as regards anticipating future inflation.[5] It has also been observed that the persistence of inflation – ie how long it takes until the rate of inflation recovers from expense-related or other disturbances – is lesser in nature when monetary policy has a publicly announced numerical target.[6] All this indicates that the publication of the inflation target has increased confidence in monetary policy and influenced price formation, which indeed was the intention.

---

[4] Originally, the ECB's strategy defined price stability as being the rate of increase in the harmonised index of consumer prices, which remains below 2% in the medium term. Following the revision of the strategy in 2003, the definition was specified by determining price stability as pertaining to the rate of increase in consumer prices that is close to, but below, 2%. This is how the Governing Council wished to communicate that deflation is not consistent with price stability.

[5] See, eg, Diron, M. and B. Mojon, B., 'Forecasting the Central Bank's Inflation Objective is a Good Rule of Thumb'. ECB Working Paper No. 564, 2005.

[6] See, eg, Levin, A. et al., 'Explicit inflation objectives and macroeconomic outcomes'. ECB Working Paper No. 383, 2004.

Explicable reasoning for the policy rates sustains anchoring of expectations

Chart 7. Reasoning for the policy rates

Defining the price stability target and ensuring comprehensible communication about the target are thus key elements in the central bank's endeavours to influence the inflation expectations held by companies, households and trade unions. Of course, mere communication is not enough, but actions must be in line with the announced targets. That is the only way to ensure the credibility of monetary policy on a sustainable basis.

Consequently, central banks must be able to justify their policy rate decisions and other monetary-policy decisions in an effective and understandable manner. This holds true particularly in situations where interest rate decisions deviate from market expectations or where actual price developments are in stark contrast with the set targets. In such situations the credibility of the policy is in risk of being undermined – if the markets interpret the central bank's operations incorrectly. A policy rate decision or a swing in inflation that is in conflict with expectations can be interpreted as indicating a change in the policy targets.

In such circumstances it is important to provide comprehensive insights to the analysis on economic and inflationary developments underlying the decisions in order to maintain confidence in the policy. One way to do this is to publish the central bank's own macro-economic forecast that contains all the different postulations and relevant justifications. This, indeed, is the cornerstone of monetary policy in the direct inflation target strategy.

Going back to the ECB, the forecast does not have such a prominent role. Instead, the introductory statements delivered by the President of the ECB at the press conferences held immediately after the interest rate meetings are the most official and most important form of communication as regards the reasoning underlying policy rate decisions. In the introductory statements, the aim is to depict, with carefully deliberated wording, the reasoning leading to

the decisions taken and to describe the economic outlook, with particular relevance to price stability. The introductory statements are under extensive scrutiny and meticulous analysis by the 'ECB watchers' – which indeed has been the aim.

The ECB also publishes euro area economic projections on a quarterly basis. Two of these projections are prepared in collaboration with the ECB and the national central banks belonging to the Eurosystem. Summations of these projections are published in the ECB Monthly Bulletins in June and December. In between these two comprehensive rounds of projections the ECB's own expert staff updates the projections, and summations of these results are published in the March and September issues of the Monthly Bulletin.

Accordingly, the projections published by the ECB do not have an official status to the extent that the Governing Council with the ultimate responsibility for the monetary-policy decisions would approve the projections or be held accountable for them. The projections are published in the form of a *communiqué* about the analysis prepared by the experts of the Eurosystem for use by the Governing Council. Despite their unofficial nature, the projections undoubtedly help observers to understand the fundamentals of the ECB's monetary-policy stance. Publication of the projections is also beneficial as a challenge: It contributes to the pressures for constantly improving the quality of the forecast methods and econometric models used and of the forecast reports themselves.[7]

Communicating about the future path of the policy rates steers interest rate expectations

Chart 8. Influencing interest rate expectations

[7] In its own forecast work and policy analysis the Bank of Finland uses dynamic general equilibrium models based on modern macro-economic theory. The experiences gained have encouraged the Bank to actively contribute to the development of such tools within the Eurosystem.

As already mentioned, increasingly more interest has recently been shown in the question of the extent and way in which central banks should communicate about the future path of the policy rates. Understandably, this is a matter of interest among bankers conducting money market transactions who need to form expectations on the interest rate outlook and manage their interest rate risk. Increasing interest in the communication of central banks' future interest rate policy has also been shown by researchers focusing on monetary policy strategy, many of whom consider this as contributing towards good monetary policy transparency.

Key to monetary policy implementation is the ability to influence market interest rate expectations. By communicating policy rate decisions, the underlying justifications and future intentions regarding the policy rates central banks not only have an impact on developments in short-term market rates but also influence longer-term interest rate expectations. The impact is thus reflected in the entire yield curve and extends beyond the money and bond markets to the prices of other financial market instruments. These in turn shape, via different channels, aggregate demand and supply, asset prices and eventually price developments. Bringing market interest rate expectations in line with the central bank's own outlook on interest rates improves the effectiveness of monetary policy, thus facilitating the central bank's endeavours to achieve its inflation target.

Since the period of interest rate hikes started at the end of 2005, the Governing Council of the ECB has given advance signals to the financial markets to prepare them for the forthcoming move in the policy rates. Consequently, markets have not usually been taken by surprise by the interest rate increases. This has contributed to financial market stability whilst keeping the yield curve for short-term interest rates close to the path requested by the central bank.

Both in the academic research community and at central banks, contemplation of monetary-policy communication has, in recent times, primarily focused on how and to what extent central banks should give an indication of the intended

path of the policy rates. Should central banks give only qualitative estimates on how they perceive the policy rates are going to develop in the future? Or should central banks be more explicit and publish their views on the preferred path of the policy rates? The question can also be looked at from a time-related perspective: How far into the future should intentions about the policy rates be exposed?

Communication about central banks' intentions regarding future policy rates has usually been justified by claiming that it reduces uncertainty in the financial markets and enhances the efficacy of the interest rate policy. Market interest rates tend to take the direction desired by the central bank already prior to the actual policy rate decision, and the decision itself only seals, as it were, what had previously been communicated. Sudden movements in market interest rates can thus be avoided at the time when the policy rate decisions are made public. Overall, by giving advance indication of the intended path of the policy rates, volatility in the money market can be reduced, because oscillation resulting from rumours and misinterpretations wanes if markets are more or less aware of what is to be expected.

However, giving advance indication of the intended path of the policy rates is not devoid of problems. After all, the point is to communicate intention – not commitment. Intention is always conditional on available information, when future interest rate developments are being outlined. Communicating this is a challenging task for central banks. As the economic outlook changes, the outlined interest rate path is likely to change. Repeated deviations from publicly announced intentions or revisions of the intentions may undermine the confidence extended towards the central bank. That partly explains why most central banks are so wary when it comes to discussing their future interest rate policy.

Differences in how interest rate expectations are steered

Chart 9. Communicating about the future path of the policy rates in practice

In recent times, however, openness regarding communication on or the outlook concerning the future path of the policy rates has increased. The most explicit communication about the intended path of the policy rates is given by selected central banks that follow the direct inflation target strategy, namely the central banks of New Zealand and Norway. Recently they were joined by the central bank of Sweden. The macro-economic projections published by these central banks are based on their own outlook on developments in short-term interest rates. Accordingly, by announcing these interest rate projections, they also foretell their forthcoming policy rate decisions.

For example, the economic forecast of the central bank of Norway is based on the interest rate path determined on the basis of six criteria.[8] Interest rate developments that follow the projected path are expected to stabilise inflation close to the target within a period deemed appropriate, while at the same time developments in employment and output remain at a reasonable level. In addition to the intended path of the policy rates, an evaluation is given on how much uncertainty is associated with the path. This uncertainty is expressed with the help of a fan chart.

By providing an interest rate forecast of their own, central banks can communicate their preferences. These forecasts not only communicate the central bank's view of inflationary pressures and cyclical outlook, but also indicate the type of policy that the central bank would observe, provided nothing surprising and unexpected happens. Besides designating the level at which the central bank intends to steer the rate of inflation, the forecast also indicates the type of interest rate path that the central bank is anticipated to require. The information content of the forecast is thus maximised. Another advantage in this kind of econometric calculation that even contains an interest rate forecast is that, in all respects, it provides a genuine projection, the materialisation of which can reasonably be evaluated in retrospect.

[8] See Qvigstad, J., 'Review of the ECB’s strategy and alternative approaches'. VIII Conference on the ECB and Its Watchers, Frankfurt 5.5.2006.

Many other central banks are more reticent on how much information they release about their own intentions regarding the path of the policy rates. The most general practice is to provide merely qualitative indication of the intended path of the policy rates. The most explicit information concerns only near-term intentions, while a longer-term interest rate outlook is usually painted with a rather broad paint-brush. This reflects the complicated nature of outlining the future paths of the policy rates.

As stated earlier, the ECB has, in recent times, indicated in advance its intention to the markets to prepare them for the forthcoming policy rate decisions. In providing this intention, the ECB has made use of economic analysis on the one hand and used various 'code words'. In other words, by choosing certain phrases or words, such as 'vigilance', the ECB has communicated that the likelihood of a forthcoming policy rate increase has become stronger. The approach has worked and has been reflected in the steady development of short-term money-market interest rates. The Governing Council has also given advance indication of its view of longer-term interest rate developments by assessing, for instance, whether monetary policy is accommodative or what the level of the policy rates is relative to their historical developments. The use of code words is tied to the prevailing economic situation. For this reason, close attention should be paid to the economic and monetary analysis that forms a clear entity in the introductory statement delivered by the President of the Governing Council after the interest rate meeting.

When the economic situation changes, the words previously used are no longer applicable, thus heightening the importance of the analysis still further. The times when the interest-rate policy is at a turning point present the most complex challenges for monetary-policy decision-making and for any interpretations regarding the policy. It is virtually inevitable that these are the times when the focus of communication must shift from giving an indication of the intended path of the policy rates to how the central bank views the

prevailing economic situation and what factors it will pay particular attention to in evaluating changes in the inflation outlook.

Role of monetary analysis in the ECB's monetary policy

Chart 10. Monetary analysis and the ECB's monetary policy

Alongside communication, another issue of topical interest in the debate about monetary-policy strategy is the role of money and credit aggregates in monetary policy. It cannot be denied that fundamentally, monetary policy is concerned with the ability to influence money supply. It is, however, a matter of greater controversy what kind of role should be given to the indicators on money stock in practical monetary-policy implementation. This has been reflected particularly in debate about the ECB's monetary-policy strategy, because the ECB has, more than any other major central bank, raised money aggregates to the fore in the reasoning behind its monetary policy.

Researchers who are in favour of monetary policy based on the direct inflation target strategy – such as Michael Woodford and Lars Svensson – often deny money aggregates of an independent position in the monetary-policy framework, except to the extent that money aggregates influence the inflation forecasts, which – in their opinion – should form the basis of monetary policy. However, the ECB's monetary-policy strategy gives an independent role to the money stock. In this respect, the ECB continues to pursue a tradition upheld previously by the Bundesbank.

Chart 11. Monetary-policy strategy of the ECB

The ECB's monetary-policy strategy – the way in which the ECB structures and assesses economic information in support of its monetary-policy decisions – consists of the definition of price stability and of two pillars that give structure to the practical decision-making process: economic analysis and monetary analysis. This division into economic analysis and monetary analysis is also clearly reflected in the ECB's communication and particularly in the

way in which monetary-policy decisions are justified publicly after the monthly meetings where the policy-rate decisions were taken.

In the preparatory work and decision-making by the Governing Council of the ECB, the focus is on broad-based assessment of the real economy, financial markets and price developments. Quarterly projection exercises also form an integral part of this work. The economic analysis focuses on identifying risks that may threaten price stability in the short and medium term.

In monetary analysis, the time horizon is more distant. Monetary analysis looks at the long-term connection between the money stock and the level of prices and seeks to assess risks to price stability through the careful examination of growth in money and credit aggregates. Particular focus has been extended to the broad money aggregate M3, which includes cash in hand and various deposits as well as money-market fund shares/units and debt securities with a maturity of up to and including two years.

In making monetary-policy decisions, the results obtained from economic analysis and monetary analysis are cross checked in order to form a comprehensive assessment of risks to price stability. In fact, it could be said that short-term real-economy analysis is viewed from a monetary perspective. This cross-checking ensures that all information relevant to monetary-policy decision-making is taken into account.

When the ECB's monetary-policy strategy was laid down in 1998, the reference value for the annual growth rate of the broad money aggregate M3 was set at 4½%. Growth of this magnitude was considered to be consistent with the target of maintaining price stability in the euro area over the medium-term. The reference value is based on the operational definition of the concept of price stability mentioned before, assessment of 2–2.5% trend growth in euro area potential production and assumed annual trend deceleration of 0.5–1 percent in the income velocity of M3.

Chart 12. Constituents of analysis on developments in money supply

The ECB has monitored developments in euro area money supply by comparing these developments directly with the reference value and with indicators of money gaps, constructed on the basis of the reference value. The latters assess the cumulative deviation in money supply from the path required by the reference value in both nominal and real terms. Developments in money aggregates have also been assessed with money demand functions. In addition, money variables have been used in the so-called money-based inflation forecast models to help prepare short-term forecasts for the euro area harmonised index of consumer prices on the basis of purely monetary information.[9] The aim has thus been to quantify potential threats to price stability arising from monetary developments. The results of this analysis have been regularly presented in the ECB's Monthly Bulletin and they have also been referred to in the reasoning underlying monetary-policy decisions.

Monetary analysis is increasingly difficult

Chart 13. Monetary analysis in practice

How has monetary analysis worked in practice? The growth rate of the broad money aggregate M3 has, for the most of the time, exceeded the reference value since the introduction of the euro. According to the ECB, developments in M3 in the early years of the 2000s were essentially influenced by what are called portfolio shifts. Owing to heightened uncertainty, funds were transferred to liquid instruments and to instruments that were considered safe, such as money-market fund shares/units that are included in M3. Underlying this uncertainty were considered to be the downward correction in the prices of ICT sector shares at the beginning of the millennium, the terrorist attacks in September 2001 and bookkeeping irregularities at some major conglomerates.

At the ECB, these shifts were identified at a fairly early stage. As a result, the ECB started to use portfolio-shift corrected M3 aggregate in its monetary analysis and all related communication. The corrected M3 series indicated a

[9] The indicators of inflation forecast models have been presented, for example, in ECB Monthly Bulletin, March 2005 (Box 1).

much slower growth rate than the original M3 and it was considered as better reflecting the strength of monetary expansion and the ensuing threats to price stability. In 2004, the importance of portfolio shifts was considered to have declined essentially, following the weakening impact of factors causing uncertainty, and developments in the corrected series followed closely developments in the original M3.[10] The use of the portfolio-shift corrected series clearly illustrates that the ECB's monetary analysis has not been mechanistic in nature, but tools and interpretations have been revised along the way as needed.

In the last couple of years, growth in the broad money aggregate has increased again. In recent months, M3 growth has been some 10% faster than a year earlier. This development has essentially been considered to be a reflection of a low level of interest rates. This assessment draws from the fact that particularly the most liquid parts of M3 have grown rapidly. Looking at developments from the supply side of money, this assessment has been supported by a strong growth in credit in particular that is one of the counterparts to money aggregates. However, the previously employed money demand models have not been able to explain these developments. Thus, the forecasting ability of estimated money demand models has (once again) proven to be insufficient. The reason often offered for this is the unstable nature of the money demand functions used. Accordingly, analysis based on such models has now been subjected to re-evaluation.[11]

Chart 14. Income velocity of M3 in the euro area

Another perspective to this matter is the income velocity of M3. In the 2000s, the income velocity has slowed down substantially in the euro area. Whereas the previous estimate – used also in the construction of the reference value –

[10] See Fischer, B. & Lenza, M. & Phill, H. & Reichlin, L.: 'Money and monetary policy: The ECB experience 1999–2006'. Preliminary version of the paper is on the ECB's website (www.ecb.int/events/conferences/html/cbc4.en.html)

[11] See eg Alves, N. & Robalo Marques, C. & Sousa, J. (2006): 'Some issues concerning the use of M3 for monetary policy analysis in the euro area'. Economic Bulletin, summer 2006, Banco de Portugal.

was 0.5–1% per year, the deceleration occurred in the 2000s has been almost triple the amount. Not even the inclusion of portfolio shifts can alter the overall picture to any major extent.[12]

Does money still count?

Chart 15. Future of monetary analysis

What should we think about this situation? Over the years, the monetary analysis pursued by the ECB has stirred up an abundance of comments, particularly in academic circles, and these questions have not always shown much understanding. On the one hand, criticism has been concerned with the 'two pillar' structure as such, which has been considered unclear and – according to some observers – backward even, in comparison with monetary policy based on the stabilisation of the inflation forecast. On the other hand, attention has been paid to the materialised instability of money demand, which has been seen as rendering monetary analysis difficult, if not even impossible. Recent developments have contributed to still stronger criticism than before.

In evaluating money and its role in monetary policy, however, we must bear in mind that the relation between money supply and inflation is one of the important cornerstones of macro economics, and it is supported by abundant theoretical and empirical evidence. In recent times, this relation has been examined with new research methods and the results obtained serve to consolidate the understanding of the long-tem relationship between money and prices.[13]

Key to monetary policy is the realisation that the money stock is not affected by the interest rate policy and changes in money demand alone. Independent changes also take place in the supply of credit, ie in banks' behaviour, which

[12] See eg Bordes, C., L. Clerc and V. Marimoutou, 'Is there a structural break in equilibrium velocity in the euro area' Banque de France Working Paper no. 165, 2007. Banque de France Working Paper no. 165, 2007.

[13] See eg Gerlach, S. and K. Assenmacher-Wesche, K., 'Money at low frequencies'. CEPR Discussion Paper no. 5868, 2006. CEPR Discussion Paper no. 5868, 2006.

influence money supply. Furthermore, banks' attitude to risk exposure, the pricing of risks and the competitive situation in the credit market may alter. The amount of credit may grow owing to, for example, the contraction of interest rate margins (intensified competition) or the reallocation of risks (eg securitisation). Changes in capital adequacy regulation also influence the supply of credit. Fluctuations in the supply of credit can in turn have an impact on asset prises and thus on aggregate demand.[14]

A key problem in the interpretation of money variables is the separation from each other of supply and demand disturbances.[15] Demand-driven growth in money stock does not, as a rule, cause inflationary pressures, but an increase in the supply of money, arising from growth in credit supply (or through state budgets), is a different matter. It is natural that the separation of supply- and demand-driven fluctuations calls for a thorough analysis of the financial markets. In this, an examination of changes in single money aggregates alone is not enough.

Consequently, the increasing complicatedness of monetary analysis should not give rise to drawing the conclusion that the examination and analysis of money and its supply sources – particularly banks' lending – would be useless for monetary policy. The variables of monetary economy still contain valuable information, which should be taken into account in the forecasting of inflation developments, for instance.

It is a question of what would be the best way to make use of this information. Combining economic and monetary analysis into a single framework would be the most desirable alternative, but for the time being macro economics is unable to offer suitable tools for this. The task is to build a macro model that fulfils current requirements, where monetary policy would have an impact

[14] See Goodhart, C., 'Whatever became of the monetary aggregates'. National Institute Economic Review No. 200, 2007.

[15] See, eg, King, M., 'The MPC ten years on'. Lecture delivered on XXX 2007 to the Society of Business Economists, www.bankofengland.co.uk.

through other channels than only the interest rate, ie where the independent impacts of liquidity and credit supply could be taken into account. Although preliminary trials to this end have been made using dynamic general equilibrium models, bringing these trial models to a level that would benefit the actual decision-making in monetary policy is still ahead of us.

Consequently, in keeping with the current research situation it is justifiable to apply an approach that accommodates different perspectives. It would be useful to make extensive use of the information contained in monetary variables and look at it in the light of other economic information. As fluctuations in money supply are the most interesting monetary variables in terms of monetary policy, besides money aggregates, attention should be paid to credit developments in particular – perhaps even more than to money aggregates – and examine them in terms of the different components of aggregate demand and price development. It is important to pay special attention to the pricing of risks and household indebtedness.

Monetary policy needs to pay attention to credit and money variables not only in the assessment of the potential inflationary impact of aggregate demand, but also because changes in indebtedness affect the stability of the financial markets and the whole economy. For one thing, the stability of the banking sector is a necessary prerequisite for the pursuance of successful monetary policy. For another, corporate and household indebtedness affects the susceptibility to disturbances of the whole economy. The higher the indebtedness of the economy, the faster aggregate demand reacts to different negative disturbances, such as fluctuations in economic outlook.

Conclusions

Chart 16. Conclusions

In recent years, conditions for the conduct of monetary policy have remained favourable. Globalisation and the rapid growth in productivity have kept inflationary pressures under control despite brisk economic growth and ample

liquidity conditions, resulting from a long period of loose monetary-policy stance. Against the background of low interest rates and rapid economic growth, central banks have been spared from major criticism, although in recent years, monetary policy has had to be tightened in many countries, the euro area included.

Nothing guarantees that conditions will remain equally favourable in the years to come. We cannot exclude a globally loose monetary-policy stance having inflationary repercussions, as it has had before, but this time, monetary-policy lags have just been exceptionally long. Furthermore, it is possible that a loose monetary-policy stance has contributed to higher asset prices and resulted in the under-pricing of risks in different parts of the global economy, although the impacts on consumer prices have been modest. If this is the case, loose monetary policy may have heightened the risk of uncertainty in the financial markets. Moreover, we cannot overlook the fact that greater difficulties may be looming ahead: Inflation will speed up in conjunction with decelerating economic growth. In such circumstances monetary-policy strategy and credibility will be put to test.

Previously, I underlined the importance of communication in steering interest rate expectations among the general public. I remain to be convinced that regular publication of the central bank's own interest rate forecast would enhance implementation of monetary policy. There is the danger that the forecast would be interpreted as a commitment, possibly leading to negligence of the conditional nature and uncertainty inherent in the forecast. An even greater danger is that debate might focus entirely on the path of interest rates, thus pushing the main issues – inflation and economic outlook – aside.

Guidance on the future path of the policy rates can be given in many other ways than by releasing interest rate forecasts. Key to this is the quality of comprehensive macro-economic analysis and unambiguous publication of the results of analytic research conducted by the central bank. Having said that,

interest rate forecasts have the advantage of bringing discipline and coherence to analysis and projections.

My second conclusion is that the importance of comprehensive monetary analysis in monetary policy should not be overlooked. I am not convinced of the importance of single money aggregates and of monetary analysis presented without connection to economic analysis. Examination of several credit and money aggregates, and combining them with the analysis of real-economy developments and movements in asset prices, is, however, a useful and even necessary part of monetary-policy preparation.

In addition to money and credit aggregates, closer attention should be paid to price variables in the financial markets. Market participants' expectations regarding future growth, inflation and related uncertainties are constantly being priced in the financial markets. From the perspective of monetary policy, price information of this kind, that conveys information about inflation and growth expectations and about the pricing of risks, is at least equally as important as money and credit aggregates as such.

I have paid a great deal of attention here to the close relationship, evolved over the last ten years, between macro-economic theory and monetary-policy decision-making. Interaction of this kind is useful for central banks: It is important that central banks' actions and practices as well as the quality of economic analysis are constantly subject to independent and high-quality evaluation.

I believe that the benefits travel both ways: The situations faced by monetary-policy decision makers constantly give rise to new areas of research. In order for interaction to run smoothly, macro-economic researchers and experts with training in macro economics are needed in many organisations.

At the last year's meeting of the Finnish Economic Association, the annual address by the Chairperson brought to the fore the deteriorating position of macro-economic training at Finnish universities and institutions for higher

education.[16] This is alarming not only from the Bank of Finland's point of view but also from a broader national perspective.

It cannot be avoided that critical and wide-ranging national debate about monetary policy remains scanty, if macro economics is given a meagre position in research training. As a consequence, Finnish experts' participation in international economic debate will undoubtedly remain ineffectual. The resulting repercussions will be felt in our position in cross-border decision-making forums.

[16] Tarkka, J., "Onko suomalainen makrotaloustiede kriisissä?" Kansantaloudellinen aikakauskirja 2/2006. ('Is Finnish macro-economics in crisis?' The Finnish Economic Journal 2/2006. Available only in Finnish.)