Jürgen Stark: Monetary policy before, during and after the financial crisis

Speech by Mr Jürgen Stark, Member of the Executive Board of the European Central Bank, University Tübingen, Tübingen, 9 November 2009.

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1 Monetary policy before the financial crisis of 2007

Before I start with the discussion of the ECB's monetary policy before the financial crisis of 2007, let me briefly recall the key features of the ECB's monetary policy strategy. First of all, in order to provide a yardstick against which the ECB can be held accountable, the Governing Council, in line with its definition of price stability, aims to keep inflation rates below, but close to, 2% over the medium term.

In addition, the two-pillar structure of our analytical framework plays a major role in assessing the risks to price stability over the medium term. There are two pillars because it consists of economic and monetary analysis. The economic analysis is especially suitable for detecting short to medium-term risks to price stability. The monetary analysis plays a prominent role in identifying inflationary trends over extended horizons. It takes into account the long-term relationship between money and prices. This helps to ensure the medium-term orientation of the ECB's monetary policy. In this sense, the monetary analysis serves as a means of cross-checking the short to medium-term signals from the economic analysis from a medium to longer-term perspective.

Keeping our strategy in mind, let me discuss the economic environment that prevailed before the financial turmoil started in August 2007, for it is vital to understand the causes of the financial crisis and, hence, the role of monetary policy in the run-up to the crisis.

If I were to characterise the years since the inception of the euro in 1999 until the start of the financial tensions, from the perspective of an economist, with a few words, most observers would probably agree that "globalisation" and "deregulation", as well as "technological and financial innovation", are among the elements I should mention. In addition, "stock and housing market bubble" and "global current account imbalances" would figure prominently among those with a more negative connotation. Needless to say, this list is by no means complete.

With the exception of the cyclical downturn following the bursting of what many observers have called the "dot-com bubble" in 2000/01, the world economy had been enjoying a period of robust growth since 1999. World trade had increased to unprecedented levels during that period, and international economic and financial integration had deepened considerably.

At the same time, emerging economies, especially in Asia, endowed with the memory of recent currency crises, had started to build up foreign exchange reserves, partly driven by the desire to hedge against the volatility of international capital flows. What was necessary for this accumulation of reserves were large and persistent current account surpluses, i.e. these countries were consuming less than they actually produced in each year, while some others, mainly advanced economies, were doing just the opposite. These latter countries had been living beyond their means. In some of these advanced countries, the strong consumption growth was driven mainly by increasing household indebtedness.

As this had continued unabated over the years, significant global imbalances developed and, until late 2007, a strong global trend of increasing imbalances prevailed in full.

This period was also characterised by a widespread tendency of deregulation and the emergence of financial innovations, which were insufficiently regulated. In fact, these trends were closely connected to the strong forces of globalisation.

As one example of such innovations in the financial sector during that time, let me mention securitisation. This concept, which had been known in the United States since the late 1970s, relates to the repackaging of assets that sit on financial institutions' balance sheets into marketable slices, i.e. securities, with the aim of selling these new securities in financial markets. This sale frees up capital in banks, which can then, in turn, increase their lending. A glance on some US figures serves to illustrate the steep increase in securitisation over the last few years before the turmoil. The outstanding amount of US asset-backed commercial paper, which is only a fraction of the total of the assets generated through securitisation, increased from around USD 500 billion in August 2004 to over USD 1.2 trillion just three years later. Although total issuance of asset-backed securities by banks between January 2005 and August 2007 was more than seven times higher in the United States than in the euro area, monthly issuance in the euro area still reached EUR22 billion, on average. This shows that, although more pervasive in the United States, excess lending due to insufficiently regulated securitisation activities also affected the euro area.

It is easy to recognise the huge benefits of securitisation for growth, but there are also substantial downsides. The significant increases in sub-prime mortgage lending from 2005 onwards, for example, were only possible with the help of securitisation. I do not think that it is too far-reaching to claim that much tighter financial market regulation is needed in order to reap only the positive benefits of securitisation.

How are these developments connected with monetary policy, especially with monetary policy in advanced economies?

My answer to this question is that the current financial crisis has shown that there are many linkages indeed.

First of all, the dynamics of globalisation have certainly made the central banks' task of analysing the inflation process more complicated. This may have caused potential output, which is a crucial input for the economic analysis of risks to price stability, to have been overestimated. In other words, some of the strong growth we had experienced in that period may have been unsustainable in the first place.

Second, the build-up of global imbalances arguably contributed to a distortion in relative asset prices, resulting in a systematic under-pricing of risk in financial markets. Indeed, looking at financial market data from periods as recent as the first half of 2007, you will find embedded credit risk premia, for example for unsecured interbank loans, that are very close to zero and appear amazingly low. Yet central banks have to rely on functioning financial markets, since they are essential for the transmission of monetary policy signals to the economy.

Third, insufficient regulation for financial innovations, as in the case of securitisation, led to the creation of whole asset classes, e.g. sub-prime mortgages, whose economic basis was less than sound. This contributed to the build-up of substantial risks to financial stability, as cash flows in these asset classes would be extremely vulnerable to stagnating or even declining house prices.

Taking all this into account, it can probably be argued that central banks around the world had, to differing degrees, contributed to fuelling asset price bubbles by keeping policy rates at very low levels for a protracted period of time in an environment of robust economic growth, ample global liquidity, continued low inflation rates and low default risks.

Before I turn to the renewed debate on whether or not central banks should address asset price bubbles, I would like to say a few words about the monetary policy of the ECB, and the central role of its monetary analysis in the pre-crisis period.

Indeed, the euro has been a remarkable success, and the ECB has delivered what it is expected to deliver under its mandate, namely the maintenance of price stability in the euro area. I think there is broad consensus as regards this observation. First of all, with inflation averaging only slightly above 2%, the euro area has witnessed a decade of relative price

stability, despite a number of severe upside price shocks. In addition, medium and long-term inflation expectations have, judging by all available measures, remained firmly anchored at around 2%. Such anchoring reflects favourably on the smooth functioning of the ECB's monetary policy and its high degree of credibility, which is based on the principles for sound central banking.

Analysing risks to price stability using our two-pillar approach served us well during these times. Let me give you some specific examples of the impact of signals from our monetary analysis on our actions.

As you are aware, in the aftermath of the bursting of the dot-com bubble and faced with receding inflationary pressures, the ECB lowered its policy rate to 2%. It was because of signals from the monetary analysis that we stopped lowering rates still further.

In the same vein, when the ECB decided in late 2005 to start increasing its policy rates again, it was mainly because our monetary analysis indicated upward risks to price stability. At the time, the signals from the economic analysis were rather mixed, and I remember that we were widely criticised for our decision. In retrospect, I would say this decision appears to have been well-timed, given the strength of the economic upturn that followed from 2006 onwards.

Finally, using signals from the monetary analysis, we continually reminded market participants during those times that risk premia in financial markets were extraordinarily low and that the strong growth in credit aggregates implied future risks to financial stability. On various occasions in 2006 and 2007, we voiced concerns and warned markets to prepare for the unavoidable correction.

You all know what happened. The repricing of risks did indeed occur, although in a much more dramatic way than anticipated. There was virtually nobody who foresaw a financial crisis of such abruptness and swift progression, nor its severity. The complex interaction of the factors that I outlined earlier had created enormous risks for financial stability.

2 Monetary policy in times of financial crisis

Let me now give you a detailed account of what have been – and continue to be – very challenging times for the conduct of monetary policy. I will concentrate on the most important cornerstones of the current financial crisis, from the perspective of a European central banker, of course.

2.1 The start of the crisis: fine-tuning money markets

On 9 August 2007, short-term money markets rates such as the overnight rate suddenly started to surge. The ECB was the first central bank in the world to react, and did so immediately, calming the markets, first, with a technical announcement via the relevant Reuters pages and, later in the course of the day, with the provision of unlimited central bank liquidity with overnight maturity at the prevailing policy rate.

The demand of banks turned out to be extraordinarily strong, totalling EUR95 billion. Over the next two days, further liquidity-providing fine-tuning operations were conducted, so that tensions in short-term euro area money markets abated to some extent.

This series of fine-tuning operations turned out to be the starting point of the first phase of policy responses to the financial crisis, a phase that lasted until September 2008. During that time, the ECB addressed tensions in euro area money markets within its operational framework, mainly by "frontloading" credit extended via its main refinancing operations within the reserve maintenance period, while at the same time keeping the overall supply of central bank liquidity unchanged. Put simply, "frontloading" means that the ECB provided higher amounts of credit at the beginning and lesser amounts of credit at the end of each relevant

period, the reserve maintenance period, instead of always extending the same amounts of credit in each operation.

Further important measures that fall into the early phases of the crisis were the lengthening of the average maturity of our liquidity provision by conducting supplementary refinancing operations with maturities of three and six months, the provision of US dollar liquidity against euro-denominated collateral, on the basis of a swap agreement with the US Federal Reserve System, and the conduct of a two-week full-allotment tender in the penultimate main refinancing operation of 2007 in order to address especially elevated funding concerns of banks over the year-end of 2007.

Until the end of August 2008, all these measures – which were taken within the Eurosystem's operational framework – proved broadly sufficient to align short-term money market rates with our policy rate, although the volatility in money market rates was higher than before August 2007 and money market spreads at longer maturities remained elevated.

Overall, during that time, the monetary policy implementation framework of the ECB proved extremely robust and suitable to address the challenges. In particular, our measures allowed the determination of the monetary policy stance to be kept separate from the way it is implemented, i.e. the ECB's management of the liquidity in the euro area money market. The interest rate hike of July 2008 is an example of the application of the separation principle. We took this step at the time, which is fully in line with our primary objective of maintaining price stability, to prevent second-round effects, with a view to avoiding the dis-anchoring of inflation expectations, even in times of money market tensions.

2.2 Extraordinary times and measures: extraordinary rate cuts and enhanced credit support

In September 2008, conditions in financial markets worsened dramatically. The bankruptcy of Lehman Brothers led to the emergence of a full-fledged financial crisis and this, in turn, was accompanied by a rapid deterioration of economic conditions in most major economies of the world.

The ECB reacted decisively and swiftly on two fronts. First, consistent with its mandate of maintaining price stability over the medium term and, specifically, in view of rapidly receding inflationary pressures, the policy rate was cut by 325 basis points and now stands at 1%.

Second, the ECB engaged in what we refer to as enhanced credit support and I will elaborate a bit more on this in what follows. After the bankruptcy of Lehman Brothers, interbank money markets simply stopped working. Banks did not trust each other any longer, since nobody was sure just how risky it really was to lend to another bank. In terms of economic theory, one could say that information asymmetries had become too large, with the result of a market breakdown. And economic theory also tells us that a market breakdown is justification for public sector intervention.

Two of the main functions of interbank money markets are the intermediation of liquidity shocks and the provision of short term funding for financial institutions. In other words, the financial sector cannot work without these markets, cannot fulfil its role of supplying the economy with credit. Consequently, in the case of the euro area, these functions had to be taken over by the ECB. To achieve this, a number of actions were taken.

The ECB switched to fixed-rate tenders with full allotment in all liquidity-providing operations in October 2008. In practical terms, this was a change in the way the ECB "sells" its loans to the financial sector, away from a competitive auction to a fixed-price offer without limitations on the quantity. This change guaranteed banks access to as much central bank liquidity as they needed, provided they possessed sufficient eligible collateral. The term collateral refers to an asset that the financial institution temporarily deposits with the ECB in exchange for the loan it receives. If the institution pays back its loan, the asset is returned. Indeed, all loans

that financial institutions receive from the ECB are fully collateralised and, hence, take the form of secured lending.

In connection with this change, as a further safeguard, the already relatively broad set of eligible collateral was expanded further, taking into account market developments and making sure that collateral would not be the limiting factor for banks. In general, the ECB accepts only high-quality assets as collateral, such as government bonds, covered bonds and some asset-backed securities, all of which need to posses a certain minimum rating. Furthermore, we discount the value of the collateral banks post with the ECB, according to the risk of the asset, in order to protect the ECB from the default risk of the borrowing financial institution.

In addition, the maturity spectrum at which the ECB offered refinancing operations was broadened, with operations covering the full length of the maintenance period and, in May 2009, one-year longer term refinancing operations being added. In enhancing the "menu" of maturities at which banks can obtain liquidity, the ECB supported the financial sector further as it made the refinancing of banks up to a certain horizon more predictable and, at the same time, less costly.

Finally, also in May 2009, we added a covered bond purchase programme. Covered bonds, known as "Pfandbriefe" in Germany, are long-term debt securities that are issued by banks to refinance loans to the private and public sector, often in connection with real estate transactions. Although covered bonds are low-risk assets and are tightly regulated via specific laws, markets for these bonds were nevertheless strongly affected by the intensification of the financial crisis in September 2008. Supporting these markets, therefore, amounted to bolstering the long-term refinancing options of the financial sector, and to helping to overcome fundamentally not justified liquidity problems in an otherwise sound asset class.

As you will certainly have noticed, all these measures were designed specifically to support the vital role financial markets play as intermediaries with respect to providing credit to the economy. In the euro area, this role is mainly assumed by banks. The enhanced credit support, therefore, is aimed mainly at supporting banks in the fulfilment of their role.

The importance of bank financing for the euro area economy also helps to explain the differences between the tools employed by the US Federal Reserve and the ECB. In the euro area, more than 70% of financing for corporations is provided by banks, while this share is about 20% in the United States. This means that the transmission of monetary policy in the euro area relies to a considerable extent on banks, unlike the situation in the United States where financial markets are more important in that respect. Therefore, the US Federal Reserve engaged in large-scale outright purchases of, and guarantee schemes for, private sector debt securities, in actual fact providing life support for several key financial markets, while the ECB could resort to the more focussed enhanced credit support for banks.

In this respect, in order to better understand the ECB's monetary policy, especially in these extraordinary circumstances, it is important to consider not only the actions that we took. It is equally important to also look at measures that we did not take. In particular, we did not engage in large-scale outright purchases of debt securities. Most of our liquidity provision rests on refinancing operations, which have the character of repurchase agreements, and are thus temporary loans. This will greatly facilitate the phasing-out of our exceptional support. Nor did we engage in buying government securities. This would amount to the monetisation of government debt, a sure road towards inflation over the medium term, with adverse effects on our independence and credibility. All our actions were constantly guided by our mandate under the Treaty, which is to safeguard price stability.

2.3 Understanding central bank interventions: a view on the balance sheet

Another, instructive way of looking at all these measures is to use the balance sheet of the ECB. In an extremely stylised version, the balance sheet of the ECB resembles that of any other central bank. On the asset side are its reserves (foreign currency holdings and gold) and its own financial assets without reserve status. On the liability side, you will find its own currency, the euro. Some of the euro amounts on the liability side take the form of reserve requirements, so that banks are actually obliged to hold them. The larger proportion, however, are accounted for by physical euro, i.e. banknotes and coins, which are held by economic agents in the euro area and abroad, as well as by other central banks. It is important to note that the willingness of economic agents to hold these liabilities ultimately constitutes the capital of the central bank. This willingness is very closely related to the reputation of the central bank and to the confidence economic agents have in the institution.

The demand of banks for the currency needs to be refinanced; technically, banks borrow currency from the ECB and deposit collateral to secure the loan. These loans take the form of refinancing operations and can be found on the asset side of the balance sheet of the ECB.

Using this rather technical approach helps to distinguish the two phases of the financial crisis.

During the initial phase of financial tensions, i.e. until September 2008, the balance sheet of the ECB did not change much. In fact, overall liquidity provision was more or less unchanged. There is one notable exception to this statement, namely the provision of unlimited liquidity for two weeks over the turn of year 2007/2008, which resulted in a temporary expansion of the ECB's balance sheet.

After September 2008, the balance sheet grew considerably in size. There are a number of reasons for this. First of all, the volumes of refinancing operations increased as a result of the procedure providing for fixed-rate tenders with full allotment, in which banks can themselves determine the amount of liquidity they obtain. To the extent that these amounts were larger than the underlying liquidity needs, banks simply left the liquidity in a special account with the ECB, which is called the deposit facility. In effect, both sides of the balance sheet of the ECB increased. Second, the covered bond purchase programme leads to an increase in the assets of the ECB, which is paid for with currency. And, lastly, there was also more demand for banknotes and coins, an increase of the liabilities – which leads to higher volumes in refinancing operations on the asset side.

Technically speaking, you could say that the ECB used its balance sheet to grant banks access to liquidity that was no longer available in the interbank market. Seen from a more philosophical perspective, the ECB employed the trust euro area citizens have in the institution and its currency to overcome a situation in which trust was scarce and badly needed. With trust comes responsibility to use it only for worthy causes. The ECB is well aware of this enormous responsibility, and its decisions are guided by it. The decision to buy covered bonds, for example, was based on the insight that this asset class deserved our support as its underlying incentive structure was, and is, sound and it economic basis robust.

Using the structure of central banks' balance sheets also allows the ECB's actions during the crisis to be compared with those of the US Federal Reserve. In the United States, as mentioned earlier, the financing for corporations is provided by banks to a far lesser extent than in Europe. Most of the programmes enacted by the US Federal Reserve were, therefore, aimed at directly stabilising key financial markets, which it did mainly via outright purchases of debt securities and guarantee programmes for such securities. Since required reserves of banks are much smaller in the United States, the resulting excess liquidity was enormous, which caused the Federal Reserve to start paying interest on these excess reserves in October 2008. In the case of the ECB, such a mechanism was already in place. Required reserves of banks are remunerated at the average marginal rate of the refinancing operations, and excess liquidity is remunerated with the rate of the deposit facility. Again, this

recent experience suggests that the ECB's operational framework provides a suitable and robust toolkit for the implementation of monetary policy, even in difficult times. This view is also increasingly being shared by other central banks.

Finally, I would like to address one particular question that I am often asked in connection with the growth of our balance sheet: what are the consequences of this process for the possible emergence of inflationary risks?

Again, knowledge of the ECB's balance sheet helps to answer this question. First of all, it is important to note that the "excess liquidity", the amount of base money that exceeds the reserve requirements and currency in circulation, does not stay in the market. Rather, it flows back to the ECB via the deposit facility. So, from this perspective, our liquidity policy has no inflationary impact. The abundant liquidity, however, has the effect of lowering money market rates and, hence, impacts the price of capital. Here, our economic and monetary analyses come into play in determining whether such rates are consistent with our mandate of maintaining price stability and, at the moment, we have come to the conclusion that they are. Although the liquidity provided by the ECB has increased substantially, this has not led to an increase in monetary and credit aggregates. On the contrary, credit flows remain weak and loan demand has not yet picked up.

This will, however, change at some point in the future, so that we are constantly monitoring the situation. Again, you could gain an understanding of the dynamics of a pick-up in credit demand and supply via the ECB's balance sheet. If banks increase their lending activities, their reserve requirements would rise. All other things being equal, that would reduce the amount of "excess liquidity", thereby transforming the balance sheet expansion of the ECB into credit and economic growth, both of which entail inflationary risks. From this reasoning it becomes clear that the timing will be crucial for the withdrawal of the enhanced credit support, and that a strategy is needed to guide this process. Let me now turn to this topic.

2.4 Phasing out the enhanced credit support

There can be no doubt that the ECB's monetary policy currently provides substantial support to the banking sector and the euro area economy as a whole. I would characterise our current monetary policy stance as accommodating, which is appropriate in view of the fact that neither the economic analysis nor the monetary analysis point to risks for price stability at this stage.

It is clear, however, that our exceptional support cannot last for too long a period of time since there are negative side effects.

- The money market yield curve is currently strongly influenced by the abundant liquidity in the market, i.e. short term money market rates are to some extent distorted. If this situation persists for too long, it may contribute to a misallocation of capital.
- There is a clear risk of creating a dependency of banks on central bank refinancing, while the intention of the current policy is only to "help banks to help themselves". It may also slow down necessary structural adjustments to the balance sheets of banks and, ultimately, to the business models of some financial institutions.
- Risks to price stability will ultimately emerge from having this exceptional support in place for too long a period of time.

For all these reasons, the ECB has an exit strategy in place to guide the process of phasing out our enhanced credit support. This strategy can be activated at any time. Let me elaborate.

Consistent with its mandate, the ECB needs to act if risks to price stability should emerge. In other words, we have to avoid keeping policy rates at their current historically low levels for too long. Changing policy rates does not necessarily entail a phasing-out of all the measures

of enhanced credit support. At the same time, our liquidity measures will not all be required to the same extent as has been the case thus far. In particular, as mentioned earlier, we should avoid setting wrong incentives by fostering banks' dependence on the ECB's substantial liquidity support. This calls for our starting to phase out the enhanced credit support as soon as money market conditions permit us to do so.

Let me use this reasoning to illustrate our exit strategy on the basis of two highly stylised scenarios. Should money market conditions improve before upside risks to price stability emerge, the enhanced credit support can be gradually withdrawn before we start changing policy rates. This would not imply a change in the stance of our monetary policy as long as the liquidity support would not be needed to the extent it has been so far. In this respect, we will have a first opportunity to review the typology and modalities of our refinancing operations at our first meeting in December. In case money market tensions persist while upside risks to price stability emerge, some elements of the enhanced credit support would need to remain in place. At the same time, policy rates could already be changed.

It is also important to stress that all measures of the enhanced credit support were designed with the clear view to facilitating their phasing-out.

Let me reassure you that, not least thanks to our political independence and credibility, we are well-equipped to act in a timely and prompt manner when the need arises. We continue to monitor the stabilisation of the economic activity and financial markets very closely. However, I would like to reiterate that not all our liquidity measures will be required to the same extent as they have been necessary thus far.

3 After the storm: the future of monetary policy

What lessons can we learn from the causes of the crisis and the crisis itself for monetary policy? Let me mention three key elements.

First of all, it seems that a central bank, especially in difficult times, is served well by having a clear and unambiguous mandate, a robust strategy and a principles-based approach to communication.

Second, the ECB does not need to change either its mandate or its strategy. Our mandate is well-communicated and understood by the markets, while our strategy is suitable for fulfilling this mandate and has proved to be robust. In particular, the ECB's strategy is comprehensive. It includes the analysis of money, credit and asset prices. As such, it provides a useful model for a monetary policy strategy that allows the medium-term risks to price stability to be identified that result from imbalances in both domestic and global markets.

This ties in with my third and final "lesson". A well-known topic is back on the agenda: the role of asset prices for the conduct of monetary policy.

A long series of booms and busts in asset markets – occurring with increasing intensity and frequency – over the last 40 years has shown that unsustainable trends in asset values can pose serious threats to macroeconomic stability and, by implication, to price stability. The current financial crisis – coming at the end of a long and tumultuous boom – has revived a long-standing debate on the role that asset prices should play in the monetary policy strategy of price stability-oriented central banks. In one camp of academics and experts are those who claim that central banks should target asset prices and should, most notably, incorporate some form of an asset price index into the price indicator that they use for their respective definition of price stability. In the opposite camp are those who argue that it is too difficult to extract "fundamental" dynamics from asset prices, to detect bubbles in real time and, eventually, to devise an appropriate policy response with so blunt a tool as the policy rate. According to this latter camp, monetary policy could, and should, deal only with the eventual consequences of the bursting of a bubble.

Let me immediately say that the recent financial crisis has called into question the credibility of the second position. One of the main lessons of the crisis is that central banks cannot simply neglect asset price developments on the tacit understanding that – no matter how large and unsustainable price trends might become – they will be able to intervene in the aftermath of a crash to sweep up the pieces. The crisis has shown how costly this understanding can be in terms of, first, distorting the incentives of asset market participants in the boom phase and, second, tolerating the build-up of financial imbalances that can grow so large that their eventual unwinding is close to impossible to tackle ex post with the conventional tools of monetary policy.

What about the first camp's view, the belief that the "cost-of-living" index that central banks monitor in their pursuit of price stability should include asset prices? This belief rests on the notion that such a complex measure of the purchasing power of economic agents would be more encompassing and therefore superior. However, this notion overlooks the deficiencies of asset prices as measures and indicators of future goods prices. An asset is a claim on future goods. So, in theory, the value of an asset today could be viewed as an indicator of prices that will be set in the future for the goods that the asset will purchase then. But the reality of asset markets departs from this abstraction in several ways. First, not all assets like human capital and consumer durables have a market on which a price is formed. Furthermore, as we all know, asset price developments can be determined by market dynamics that have little to do with expectations of future goods prices. We know that price dynamics in asset markets are very often driven by expectations of future changes in the price of the asset itself – what we call a bubble – rather than by expectations of the price of future goods. In these conditions, central banks would face a formidable challenge in distinguishing the "fundamental" value of the asset – namely that part of the asset price that reflects expectations about future inflation – from the "non-fundamental" part. However, this operation would be essential in order to extract the relevant signals on the underlying inflation dynamics.

So, where do all these reflections lead us? Let me explain why and how the strategic approach adopted by the ECB is a balanced and secure option for monetary policy-makers dealing with the possibility of recurrent instability in financial markets.

Our framework rests on the fundamental principle that if the central bank is successful and credible in stabilising "current" consumer prices, and is expected to do so in the future, it will firmly anchor inflation expectations as well.

How do we stabilise inflation in the current period? Well, to start with, a central bank needs a sufficiently broad and reliable strategic framework that can analyse and detect risks to price stability in a timely fashion. This strategic framework should include – with a prominent role – indicators that can signal macroeconomic and financial imbalances when they are forming. For example, when an unsustainable asset boom is inflating, fuelled by excess credit creation, the strategic framework should encourage the central bank to "lean against the wind" of financial exuberance. "Leaning against the wind" means the following in this case: the central bank should try to compensate for the excess ease with which speculators can secure credit to finance their speculative positions in asset markets with a stance of monetary policy that is more restrictive than the one they would implement in less perturbed financial conditions.

In this respect, the conviction is growing within the central banking community that comprehensive monetary policy strategies that include a prominent role for money and credit considerations are better suited to "lean against the wind" in the sense that I have just indicated. By giving more prominence to money and credit in their strategy, central banks can better identify the emergence of medium-term risks to macroeconomic stability that result from imbalances in both domestic and global markets. By incorporating money and credit conditions in their policy in a systematic way, central banks can adopt a somewhat tighter policy stance in the face of an inflating asset market than they would otherwise pursue if they

had been confronted with a similar macroeconomic outlook under more normal asset market conditions.

Of course, critics object that it is difficult to detect bubbles anyway, and that the instrument of policy is too blunt to resist an asset price bubble.

But central bankers face signal extraction problems everywhere! Monetary policy-making to a large extent involves extracting trends from noisy statistics. At the end of the day, monetary authorities always work in an uncertain environment and have to take "risk-adjusted" decisions.

And central banks should not underestimate the potency of monetary policy. For example, it is true that in most cases a small change in the policy rate may not be sufficient to slow down those asset price bubbles that develop on the – false – expectation of very large future capital gains. However, recent research suggests that there are other channels through which changes in interest rates can affect asset prices. The first is the profitability of financial institutions that systematically borrow short and lend long. These so-called leveraged institutions are credit companies that borrow by issuing short-term liabilities and use the proceeds of their borrowing to lend over the longer term, or to purchase assets that have a longer maturity. They use their capital as a partial – very partial – guarantee for their business. They are called "leveraged" because, as I have said, their capital finances only a small fraction of their lending activity. The larger proportion of their lending is financed by borrowing. Confronted with even marginal increase in the short-term borrowing costs, due to the increase in the policy rate, these institutions are forced to wind down their leveraged positions. In other words, they would have to borrow less and pay back their previous debt because the thin margins from which they profit would become even thinner or negative. In doing so, they would probably have to sell the assets that they had purchased on the expectations of future price gains. In the end, the "deleveraging" process triggered by the policy-induced restriction would ultimately exert a dampening effect on asset price growth.[1] Changes in policy rates – in combination, eventually, with appropriate central bank communication – can also serve as a signalling device from central banks and break the private sector herding behaviour that fuels the bubble.

Needless to say, "leaning against the wind" cannot be translated into an automatic rule. Policy action is always the outcome of a decision that takes into account a complex situation. The monetary pillar is there to uncover the complexity of the shocks that drive monetary aggregates, and to alert us on the channels of influence through which these shocks can interact with financial trends and pose risks to price stability over the medium term. As mentioned earlier, the monetary pillar is not an automatic rule that translates money growth into a policy decision. I have already mentioned one episode in the summer of 2004, when we decided to stabilise the policy rate at 2%, and, thereafter, in late 2005 when we started to tighten the stance of policy. At the time, the decision to tighten was based, among other elements, on the consideration that the *combination* of strong money *and* credit growth in the euro area in a context of already ample liquidity – with the excessive asset price growth being fuelled by an unsustainably low risk premium – posed risks to price and macroeconomic stability over the medium term. We decided to act on strong money growth because our monetary analysis at the time indicated that the rapid creation of money was due to a rapid expansion of the *supply of liquidity* by monetary financial intermediaries. That signal was very different from the signal that monetary analysis was sending in the preceding period of strong money growth – in the aftermath of the collapse of the stock market in 2001-2002 – when the root causes of the rapid monetary growth were different and due to an expansion of the demand for money by households who wanted to diversify their portfolios away from the stock market and toward safer instruments. As you can see, monetary

[1] T. Adrian and H.S. Shin. "Liquidity, monetary policy, and financial cycles", *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, January 2008.

analysis is deep enough to identify the risk signal on the basis of the underlying shocks that drive monetary dynamics.

The 2005 experience represents an example of how the monetary pillar of the ECB's strategy could help integrate asset price developments – and their eventual misalignments – into an overall framework directed towards the attainment of our goal: price stability. While asset prices had started the last phase of their tumultuous run-up, which eventually led to the crash, money and credit were strong and this signalled lax credit conditions. In the event, we were proved to have been right in ignoring those indicators and the signals we could extract from our economic analysis, which did not at the time indicate any need for a tightening in policy.

Monetary analysis is in progress. The signal extraction problem that it helps solve is not an easy task. It requires a substantial amount of work and continuous efforts on the part of central banks' staff to improve and update the analytical tools and techniques. In particular, the speed of innovation in global financial markets and their increasing interlinkages contribute to changing the landscapes where central banks operate. The Governing Council has promoted a complex process of enhancement of these tools and techniques along several avenues. The ECB has always been at the forefront of research in monetary analysis. We expect that, as this process of tool enhancement comes to completion, our leading position in this field – which is so important for central bank analysis – will be strengthened further.

Conclusion

Let me conclude. I have talked about the challenges for monetary policy over time, especially in the light of the current financial crisis. Naturally, I have focussed mainly on the experience of the ECB. I would see three main messages.

The first is on our mandate and monetary policy strategy. We are fully committed to our mandate, which is to safeguard price stability in the euro area. To this end, our two-pillar monetary policy strategy has served us well, both with respect to internal decision-making and in terms of our external communication. This has helped the ECB to ensure, in particular, that its monetary policy remains consistent, credible and effective.

The second message is about the ECB's monetary policy during the financial crisis. In response to the crisis, the ECB has taken forceful and timely action. In particular, it did not shy away from taking some highly unusual but appropriate measures with the aim of supporting banks in the fulfilment of their major role, which is to provide credit to the euro area economy. Nevertheless, all these measures have been fully consistent with our overarching objective of ensuring price stability. We are prepared for a timely exit and to gradually phase out all the extraordinary measures that we currently have in place.

Finally, there are the lessons to be learnt from the financial crisis as regards the role of asset prices in the conduct of monetary policy. In this respect, our monetary analysis has proven robust in difficult times. In particular, taking into account developments from broad monetary and credit aggregates is suitable and useful in shaping a strategy of "leaning against the wind". Such an approach will help to prevent another financial crisis.