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"MONETARY POLICY IN A WORLD OF UNCERTAINTY"

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Ladies and gentlemen,

It is a great honour for me to be invited to deliver the second of a series of speeches at the new Economic Policy Forum under the joint auspices of Foundation Banque de France, Centre d'Etudes Prospectives et d'Informations IFnternationales, and Université d'Aix-Marseille.

Indeed, it was no surprise to me, but rather an encouraging sign that Mervyn King devoted the opening speech of this series to the special role of money in central banking. It was more than an intellectual exercise when the Deputy Governor of the Bank of England - the father of its Inflation Targeting strategy - stressed the importance of money.

For this speech I have chosen the apparently harmless title "Monetary Policy in a World of Uncertainty". But beware! This will lead me to discuss what I view as one of the challenges most relevant to past, present and future central bankers and still not fully explored by the academic world. As a central banker directly involved in monetary policy-making, I have been dealing with uncertainty and its consequences for a large part of my professional life. This included the challenges posed by German reunification and the turbulence surrounding the ERM crises, the introduction of the euro and the birth of the single monetary policy, and more recently, the stock market bubble and a series of terrorist attacks, which followed the string of crises that have struck a number of emerging countries over the last years. It is therefore clear to me that central bankers often have to face largely unexpected and difficult-to-model situations in which their reactions are nevertheless central to the final outcome.

Anyway, knowing my background, if I had chosen the title "No Money, no Inflation – The Importance of Money in the Economy", you might have yawned, thinking: not again, can't he speak at least once of something else?

But, of course, the issue of uncertainty will nevertheless allow me to come back to the role of money. In fact, I will do that, but after reviewing successively the possible forms of uncertainty, the responses of monetary policy and finally the associated communication and credibility challenges.

THE FORMS OF UNCERTAINTY

Economists hardly need any reminding that central bankers have to make decisions in a world of pervasive uncertainty. However, while the academic profession has made tremendous progress in analysing risk in well-defined stochastic economies, the "Knightian" uncertainty that confronts central bankers and sometimes markets is of an altogether different dimension. Let me distinguish three broad categories or levels of uncertainty, going from the more common to the more complex and, hence, "Knightian" ones.

a) Uncertainty about the state of the economy:

A challenge that faces all central banks when preparing monetary policy decisions is to assess accurately the prevailing economic conditions, which are sometimes referred to as the state of the economy. Uncertainty surrounding this analysis arises at three levels.

First, the information that underlies this analysis is often imperfect. The availability and the quality of data vary, almost always implying a trade-off between timeliness and reliability.

Second, this trade-off is significantly amplified for unobservable "synthetic" indicator variables, like the output gap, equilibrium real interest rates, equilibrium exchange rates and various measures of excess liquidity conditions, since these indicators have to be estimated. For instance, Orphanides and van Norden (1999) show that, at least for the U.S, taking into account the sizeable measurement error derived from real-time estimates of the output gap may lead to a significant deterioration of feasible policy outcomes.

Third, in order to interpret the state of the economy and its implications for future price stability, central banks need to identify the nature of the shocks that are driving observed economic developments. That is whether shocks occur on the demand or supply side of the economy, originate from domestic or foreign sources, and are transitory or long-lasting. However, econometric theory has spent decades devising sophisticated identifying restrictions to isolate different types of shocks from the tangle that appears in the data without reaching anything close to a consensus view (Christiano, 1999 and Galí, 1999).

b) Uncertainty about the structure of the economy:

In addition to, and intimately linked with, the uncertainty about the state of the economy, central banks also have limited knowledge about the structure and

functioning of the economy. Uncertainty about the structure of the economy itself arises from two sources.

First, there is fundamental uncertainty about which models provide suitable descriptions of the structural relationships in the economy. As a result, central banks cannot afford to rely on one single model of the economy, but need to have a number of alternative modelling tools available. For example, there is a widespread consensus that inflation is, as indicated by the quantitative theory of money, a monetary phenomenon in the long run. At the same time, there are a multiplicity of different approaches, such as Phillips curve models, to modelling the inflation process at short and medium-term horizons.

Second, even if there were a consensus on a suitable model of the economy, considerable uncertainty would remain regarding the strength of the structural relationships, i.e. the value of parameters, within that particular model. Inevitably, available parameter estimates are affected by data imperfections and by the particular econometric techniques that are employed for estimation. An even more fundamental problem is that parameters may vary over time as a result of structural change in the economy. Uncertainty about parameters confronts all central banks, but seems particularly relevant for empirical models of the euro area, since their estimation has to rely on historical back data which stem from the period prior to the formation of Economic and Monetary Union (EMU), when the member countries experienced different monetary policy regimes within different institutional settings and data were not always sufficiently harmonised.

c) Strategic Uncertainty: the interaction of private agents and policy makers.

A third broad category of uncertainty facing central banks is sometimes referred to as strategic uncertainty. This form of uncertainty relates to the interaction between private agents and policy-makers and, in particular, to the role of expectations. The central bank often wonders about the reaction of economic agents and financial markets to its own policy decisions and announcements. Conversely, economic agents may be unsure about the precise motivations and actions of central banks and other economic agents. This is always the case, even if market developments are fairly close to what would be expected on the basis of fundamentals.

However, the degree of strategic uncertainty may in some cases become especially pervasive. This appears when some of the uncertainties mentioned above are amplified by deeper or more widely spread doubts on the side of market participants about the stability of economic relationships, thus leading to what some call “fundamental uncertainty”. Such developments are relatively limited in developed countries as their central banks usually prevent their appearance through the very success of their policies. But their potential occurrence needs to be taken into account by central banks in order to avoid them.

Large-scale institutional changes, for instance, may be sufficiently severe to impart a profound discontinuity in the data-generating process and, hence, be associated with a widely dispersed range of expectations. I am happy however to mention that, although it did preside over a monumental transition in January

1999 when the euro was created, the ECB was able to avoid such phenomenon probably due to the quality of the preparation for this transition.

However, even in the absence of large institutional changes, it is not impossible that economic agents enter phases where their expectations have difficulties to form and focalise around reasonable levels and the rules of the game become unclear. In general, such phenomena are directly reflected and sometimes amplified by asset prices and culminate in so-called “bubbles”.

As an example, take the debate on a possible emergence of a “New Economy” over the last years. Such developments had the potential to change the economy’s productive capacity either permanently or for a sustained period, but were intrinsically difficult to identify on the basis of historical information. Uncertainty developed with the speculative bubble, as its clear identification was close to impossible in real time. But central bankers also face it when such a bubble bursts, potentially affecting the functioning of normal economic relationships.

More generally, the risk of such amplification phenomena is particularly apparent when a very high level of uncertainty on economic developments makes markets move away from or back to the levels usually associated with fundamentals in a disorderly manner. This is often the case when markets all of a sudden become aware of previously ignored information. In such situations, mechanisms which usually tend to re-establish equilibria, like active market-making by large traders or financial institutions, might lose their efficiency as market-makers become increasingly reluctant to hold large net positions, thereby giving way to bandwagon behaviours or social inter-actions (to use the

vocabulary of my discussant). Such developments may in most cases be limited to specific markets. However, if not handled appropriately - i.e. if central banks and other policy makers, supervisors and/or international organisations - do not react appropriately, contagion to other segments of the economy may happen.

THE RESPONSE OF MONETARY POLICY TO UNCERTAINTY

If data and their interpretation by central bankers and agents are uncertain and variable, how should monetary policy respond to these various forms of uncertainty and their inter-relations?

The debate on this issue has been recognised in the economic literature for at least half a century. However, it has recently moved from the discussion of the optimal degree of activism of policy to the more general issue of robustness of rules.

The debate on activism

Already in the late 1940s and the 1950s it was recognised that reliable information about the long and variable lags in the transmission of monetary policy is typically not available. This led a number of academic economists to warn strongly against the implementation of policies that aim at fine-tuning economic activity. Prominent among them was Milton Friedman (Friedman, 1956) who, with others, argued in favour of a constant growth rate of money.

Academic research in the 1960s and later gradually qualified this analysis. For example, uncertainty about key parameters describing the transmission of monetary policy provides a rationale for an "attenuated" approach to monetary policy-making in the sense of reacting less vigorously to incoming information than would be optimal if such uncertainty did not exist. This result, which is known as "Brainard's conservatism principle", has been used as one explanation of the commonly observed central bankers' practice of moving interest rates in a gradualist fashion.

Recently, research has also shown that central banks should moderate the responsiveness of the policy instrument when underlying data are expected to be subject to measurement error. The reason is that, when a measurement error occurs, a strong policy response to mismeasured data will induce unnecessary fluctuations in the economy. In fact, the weight given to the individual information variables should depend on how precisely those variables are measured. This is especially applicable to variables such as potential output and the output gap.

However, more recent literature has also emphasised circumstances in which parameter uncertainty should lead the policy-maker to vary the policy instrument more than would be optimal in the absence of such uncertainty. For example, uncertainty about the persistence of the inflation process or one's own credibility can lead the policy-maker to adjust interest rates more vigorously so as to reduce uncertainty about the future development of inflation (Woodford, 2002).

However, is it possible to generalize from these observations? Here also, we are far from having reached any consensus. Uncertainty about model parameters or, more generally, about model structures can be so complex that an approach encompassing all cases is very difficult. In this context, the problem is now rather cast in terms of ensuring "robustness" of monetary policy rules and, more generally, of monetary policies across models.

The debate on rules

The analysis of strategic uncertainty is directly related to the debate on the role of rules. The latter has first focused on the way monetary "surprises" aimed at boosting output in the short run could become ingrained in expectations over time. More recently, it has focused on the recognition that a predictable and systematic monetary policy should stabilise expectations over time.

Traditionally, central banks and academics have tended to seek simple policy rules in order to reduce discretion and foster credibility. Simple unconditional rules, like the gold standard or the constant money growth rule were seen as a safeguard against overly ambitious policies. However, such rules are not, in practice, applied in their strictest form as they are viewed as potentially leading to undesirably high volatility in prices and output.

As a consequence, somewhat more elaborate contingency rules linking a policy instrument to a limited set of indicators have therefore been proposed. Main examples of such rules are Taylor-type rules (Taylor, 1993) which have become rather popular both in academic literature and among professional central bank watchers in recent years (Clarida, Galí & Gertler, 1998).

However, decision-making bodies in central banks cannot mechanically apply the Taylor-type rules assumed in the theory. The informational basis, upon which they are designed to function, is simply too narrow to be of practical assistance in conducting policy.

Hence, another popular approach to modelling economic policy in the past decades has been to derive the optimal rule starting from a specification of the objective function and the choice of a given model to describe the working of the economy and, in particular, the response of policy-relevant variables such as inflation and output to policy measures. In its most recent version, the rule-like element of this approach is represented by the central bank's commitment to an inflation target and to an optimising procedure which has to be employed in the actual pursuit of the target (Svensson, 1999).

The prescriptions for virtuous central banking embodied in optimising rules address some of the criticisms of simpler rules discussed previously by avoiding some of the drawbacks associated with a policy reacting mechanically to a specific inflation forecast while encompassing a large information set.

However, it remains in my view too restrictive for policy purposes in several respects. First, the proposed optimising procedure is conditional on a model and seems to underrate the need for judgement in the use and interpretation of any economic model. Second, optimising rules mandating central banks to pursue targets at predetermined horizons unduly restrict the relevant time frame for policy. They may, in some circumstances, induce short-sighted and time-inconsistent reactions, the effects of which may have to be counteracted at a

later date, with associated costs in terms of instability. This is especially relevant when an economy experiences a series of unexpected and lasting shocks or in the case of asset price bubbles.

More generally, a sequence of policy moves which may be considered optimal on the basis of one model of the economy may often turn out to be associated with bad policy outcomes if simulated on the basis of a different model, representing alternative views about the workings of the transmission mechanism. Therefore, a variety of models and indicators need to be used for different purposes and coexist within central banks. In this context, it becomes less clear how the proposed optimising rule could still be implemented as a strictly codified procedure.

In such circumstances, the most important is to convey the judgement that motivates one particular view of the world rather than another. In this context, the ECB's monetary policy strategy provides one illustration of a commitment to a procedural framework, which may overcome some of the limitations and risks associated with an over-reliance on more narrowly defined monetary policy rules. The strategy includes a clear commitment to the goal variable, i.e. the primary objective of price stability. Moreover, the two-pillar structure of the ECB's monetary policy strategy takes explicit account of the need for robustness in monetary policy-making (ECB, 2000). The first pillar represents a group of models and analytical frameworks which embody a view of price level determination that accords an important role to money. The second pillar encompasses a range of alternative models of the inflation process, predominantly those which emphasise the interplay between supply and demand in the goods and labour markets. The two-pillar structure reduces the

scope for discretion, as it makes it more difficult for policy-makers to disregard or gloss over contradictory evidence (as may happen with a single summary device, such as a single inflation forecast).

UNCERTAINTY, MONETARY POLICY AND FINANCIAL MARKETS

At this point, you might think: Yes, we have heard some answers concerning the best way to face uncertainties on the state of the economy, on the structures and models of this economy as well as on some aspects of strategic uncertainty. But is that all?

Apart from a monetary policy strategy aimed at price stability over the medium term within a consistent and coherent framework two further challenges remain for monetary policy to face uncertainty adequately: the challenge of communication with markets and the challenge of credibility.

The challenge of communication, i.e. advancing the understanding of what monetary policy sets out to do and how it goes about achieving its objective – among professional central bank watchers of all sorts, market participants and, not least, among the general public – is paramount for any modern central bank. It is crucially important for a young institution lacking a long track record like the ECB and facing a multi-cultural – and especially a multi-lingual-environment. More generally, most central banks increasingly recognise that successful communication helps them work in tandem with financial markets and in general will contribute to achieving policy objectives more effectively and help earn the trust of the wider public, which is particularly important for

independent central banks. There are thus legitimate demands for transparency in monetary policy-making. Indeed, promoting transparency is in general in a central bank's own interest. However, the following points have to be kept in mind.

First, there are limits to the degree of transparency that central banks can realistically be expected to supply. In our understanding, a monetary policy strategy is no more and no less than a framework for organising and structuring analysis for the purpose of internal decision-making and, at the same time, for providing a vehicle for external communication. Hence, it cannot supply full predictability and certainty over the medium term in a world that is anything but clear, predictable and certain.

Second, a monetary authority should lead the financial markets and not "follow them ". To explain why I would like to quote Alan S. Blinder, who puts the argument very succinctly:

"…*Following the markets may be a nice way to avoid unsettling financial surprises, which is a legitimate end in itself. But I fear it may produce rather poor monetary policy, for several reasons. One is that speculative markets tend to run in herds and to overreact to almost everything. Central bankers need to be more cautious and prudent. Another is that financial markets seem extremely susceptible to fads and speculative bubbles which sometimes stray far from fundamentals. Central bankers must inoculate themselves against whimsy and keep their eyes on the fundamentals.*

Finally, traders in financial markets – even those for long-term instruments – often behave as if they have ludicrously short time horizons, whereas maintaining a long time horizon is the essence of proper central banking."

Third, it is nevertheless clearly desirable for policy to be predictable in order to reduce uncertainty and volatility in financial markets. There can be no interest in the monetary authority deliberately aiming to surprise the financial markets. And our experience is that the ECB policy moves have been fairly well anticipated by the market (Gaspar, Perez-Quiros & Sicilia, 2001).

UNCERTAINTY AND CREDIBILITY

All of this leads me to the critical challenge of credibility and, as I had promised you, to the special role of money in this context.

Indeed, credibility tends to induce a virtuous circle, which is inherently related both to the stability of money and to avoiding the development of „fundamental uncertainty". Indeed, no matter what specific medium of exchange a society might wish to adopt, the efficiency of money in facilitating economic transactions via the price mechanism depends on its stability as a unit of account, i.e. as a common financial denominator, for the economy.

In contrast, if money loses or acquires value excessively, this also undermines its usefulness for exchange. Indeed, in periods of very high inflation, currency tends to be replaced, for example, by cigarettes or other goods – or, perhaps, 'bads' – in everyday transactions. Similarly, in periods of prolonged deflation, the financial soundness of the banking sector and of economic agents

becomes highly uncertain with exchanges of goods and assets guided by precautionary motives which are inconsistent with long-term equilibrium.

Hence money is deeply connected to trust and, under special circumstances, to distrust in a society. For this reason, it is essential that the central bank gives special attention to the two components of credibility, as the standard dictionary definition suggests: “the ability to have one’s statements accepted as factual or one’s professed motives accepted as the true ones”. That is, credibility is critically dependent on the quality of the central bank analysis and its ability to track and describe facts and reality over the medium term, including macroeconomic, microeconomic, market and financial stability developments. It also depends on the central bank’s ability to make good on its commitments.

In this context, it is especially important to note that monetary aggregates and their counterparts are especially helpful (Borio, 2002) in reflecting such trust and distrust movements given that they are based on the balance sheets of financial intermediaries. Indeed the demand for money reflects both transaction motives that are directly connected to other macroeconomic variables, including prices, and precautionary motives. The latter can be related to fundamental uncertainty and are thus difficult to model. While the transaction motives can be the basis for a definition of a reference value for the growth of a monetary aggregate, M3 in the case of the ECB, the existence and reversibility of precautionary motives explain that this reference value cannot be a target and that it is useful to monitor and explain on a continuous basis. Hence money is an essential, although not exclusive, element of the central banker’s response to uncertainty.

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Let me now come to my conclusion.

Stable money, stable prices: these are the very foundations of a well-functioning market economy and the best way for a central bank to face uncertainty. There is a strong economic case for price stability, which today is – again – widely accepted. However, the case for price stability goes beyond the purely economic sphere. Price stability, i.e. the ability to rely on stable money, is the basis for trust in the interaction among economic agents, trust in property rights, trust in society and trust in the future more generally. Conversely, a loss of such confidence inevitably leads to calls on the state to step in and provide for the future collectively. Inflation and deflation undermine trust in money and in property rights more generally.

This mechanism was apparently recognised by Lenin who allegedly remarked that the "most effective way to destroy civil society is to destroy its money". From this one could establish not just an economic case but an ethical obligation to maintain price stability. Indeed as far back as the Middle Ages - and I am very happy to conclude this intervention in Paris with a reference to a famous French author - Nicolas Oresme has argued in favour of stable money as a principle of natural law and has denounced the debasing of currency by the state as worse than usury and equivalent to robbery and exploitation. This basic idea is still valid today even if uncertainty may take different shapes.