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Monetary Policy in the Eurosystem

Speech delivered as part of the Ken Dixon public lecture series
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1 Introduction

Ladies and gentlemen

It is a pleasure for me being invited to deliver a speech as part of the Ken Dixon public lecture series. Some of you probably know that I worked as a professor of economics at various German universities before I became President of the Bundesbank. As a professor, I used to dig rather deeply into economic issues related to both international economics and monetary policy and shared the insights I gained with my students in lectures and seminars. As a policymaker, however, my public speeches now often focus on the outlook for current monetary policy in the Eurosystem.

Thus, as a side effect of my change of direction from being an academic to becoming a policymaker, the subject matter delivered in my public appearances has narrowed somewhat to mid-term inflation and economic outlooks. Given that I still like to talk about more fundamental issues in my speeches from time to time, I welcome occasions such as this lecture in which I can shed greater light on a more basic feature of monetary policy.

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Over the next 45 minutes or so, I shall mainly be elaborating on the nature and role of macroeconomic projections in monetary policy. In this context, I shall draw on the experiences of the Bank of England and of the Eurosystem and will also provide you with some details of the projections which the Bundesbank now publishes semi-annually.

Since the design of monetary policy, the underlying strategy and its various inputs, such as macroeconomic projections, usually provide a good deal of food for thought leading to an exchange of views, I am looking forward to a discussion afterwards.

Before I talk about macroeconomic projections in greater detail, I would like to start my remarks by bringing to mind the basic state of monetary policy in general and of Eurosystem monetary policy in particular.

2 The current state of (European) monetary policy

Over the past few decades, a well-founded consensus has emerged about the nature of sound monetary policy. It comprises two key elements.

First, the agreement that inflation should be low and stable. The rationale behind this low-inflation paradigm is that price stability reduces the degree of economic uncertainty, and, therefore, facilitates the efficient allocation of resources in an economy. In addition to this key benefit, maintaining price stability also minimises other negative effects that accompany inflation, such as un-

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intentional effects on the distribution of income and wealth. Hence, maintaining price stability is, and should be, a central bank's primary objective because it is the best way in which monetary policy can contribute to economic stability, economic prosperity and job creation.

Second, the clear assignment of responsibility for inflation to an independent central bank. Undisputedly, independence is an exceptional privilege granted to only a few institutions in democratic societies. However, the independence of modern central banks is not an end in itself. Rather, central bank independence helps to maintain a long-term stability orientation of monetary policy by insulating decision-making bodies from short-termist political influence. Put briefly, an independent central bank is in the interests of the general public. Central bank independence assists in enhancing monetary policy's credibility and its effectiveness, which can be measured by inflation expectations, for instance.

The role of inflation expectations, in particular, has attracted a lot of attention over the past decade and it has become a key element of modern monetary policy and the related field of research. The reason for this is that inflation expectations are now considered to play a central role in the transmission process of monetary policy, as it has become evident that expected future inflation is a crucial determinant of actual future inflation.

Some observers see this as absolutely critical. Michael Woodford, for example, a highly renowned US-based researcher, even put it as follows: "Not only do expectations about policy matter, but, at least under current conditions,

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very little else matters." In other words, steering inflation expectations has now become an important – or even the most important – lever for central banks in pursuing price stability.

Not very long ago, many central banks were very opaque institutions from an outsider's point of view. By contrast, transparency has now become a key element in the design of modern monetary policy. The reason for this is twofold. On the one hand, there is the principle of democratic accountability according to which an independent central bank – since it is not even indirectly subject to electoral accountability – must be transparent in order to give the public the opportunity to see whether monetary policymakers are fulfilling their mandate.

On the other hand, monetary policy transparency and monetary policy effectiveness are positively correlated. Basically, at least to a certain degree, the more transparent monetary policy is, the more effective it becomes in maintaining price stability. The reason for this is that transparency makes it possible for market participants to better understand both the central bank's objective and its strategy and, hence, enables them to better anticipate the future monetary policy course. In turn, this reduces uncertainty among market participants and the public and helps to anchor inflation expectations at a level consistent with the central bank's inflation target.

There are four crucial elements that contribute to a transparent monetary policy. First, a clear definition of the ultimate goal, that is a quantitative price stability target. Second, the announcement of a coherent and robust monetary policy strategy. Third, the real-time publication of the data relevant to decision-

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making. Finally, the immediate and consistent explanation, justification and publication of policy decisions.

The Eurosystem's monetary policy follows these guiding principles very closely. With respect to the first point – the definition of the ultimate goal – the Eurosystem's primary objective is to maintain price stability, as stipulated in the Treaty establishing the European Community. Since the Treaty itself does not give a precise operational definition of what is actually meant by the term "price stability", we on the ECB's Governing Council define it as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below, but close to 2%. Taking into account the existence of long time-lags in the transmission of monetary policy, price stability is to be maintained in the medium term.

While the definition of price stability is the first step in establishing a transparent monetary policy, the Governing Council's policy decisions are based on an explicit, publicly announced monetary policy strategy. The Eurosystem's approach to organising, evaluating and cross-checking the information relevant to assessing the risks to price stability is based on two complementary perspectives, known as the "two pillar-strategy".

In this context, the first perspective aims to assess the short to medium-term determinants of price developments, with a focus on real activity and financial conditions in the economy. This takes account of the fact that price developments over those horizons are influenced largely by the interplay of supply and

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demand in the goods, services and factor markets. This perspective, the first pillar, is the “economic analysis”.

The second perspective or pillar – the “monetary analysis” – focuses on a longer-term horizon, exploiting the long-run link between money and changes in the general price level. The monetary analysis serves mainly as a means of cross-checking, from a medium to long-term perspective, the short to medium-term implications for monetary policy stemming from the economic analysis.

As regards the third and fourth point of a transparent monetary policy – the publication of the data relevant to monetary policy decisions and the substantiation of these decisions – the Eurosystem’s communication policy is very advanced as well. For instance, the monthly decisions on key interest rates and their underlying reasoning are explained in detail to the public by the ECB President in a press conference that directly follows the meeting of the Governing Council. Furthermore, media representatives have the opportunity to pose their questions to the ECB President in the subsequent Q&A session.

Taken together, the Eurosystem’s monetary policy framework is transparent, and monetary policy decisions are explained to the public both in great depth and in real time.

Notwithstanding all these elements of a “state of the art” monetary policy, some observers, in particular from the English-speaking world, have repeatedly called into question the European monetary policy framework and have doubted its clarity.

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These critics claim that European monetary policy is not sufficiently transparent, and therefore sends out misleading signals, especially regarding the future course of key interest rates. This assertion is particularly surprising given that many studies have shown time and again that the predictability of the single European monetary policy is, in fact, very high – not low, as some critics claim. This applies to both the short-term horizon – decisions on key interest rates have been highly foreseeable over short time horizons, and to the long-term horizon – the monetary policy framework, comprising monetary policy's ultimate goal and its strategy, is well understood by most market participants.

This is also reflected, for instance, in long-term inflation expectations, which have been largely contained since the launch of European monetary union. Therefore, as empirical evidence clearly shows, the European monetary policy framework is definitely not as complicated as some observers always claim. On the contrary.

But what precisely is it that some critics have in mind when they say that European monetary policy lacks transparency? In addition to the usual complaints about minutes and voting records, which I will not dwell upon here, one aspect is the role and use of macroeconomic projections in policymaking. In this context, some commentators contend that European monetary policy is lagging behind the "state of modern monetary policy", particularly with respect to how its macroeconomic projections are conveyed to the public and how they are used for policymaking purposes.

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During the remaining part of my speech, I shall elaborate on this subject. In doing so, I would first like to shed some light on the rationale behind macroeconomic projections and the method used before talking about the importance and use of projections in monetary policy.

3 The rationale behind macroeconomic projections and the method used

Forecasting and utilising projections of the likely development of key economic variables is key to effective central banking. Why is this so? The main reason for this is that monetary policy measures affect the economy only after a long, variable und uncertain time lag. A stability-oriented monetary policy should therefore not merely respond to actual data on inflation and the real economy. Rather, it should act in a pre-emptive manner and, in turn, should not wait for risks to price stability to materialise.

Metaphorically speaking, obviously, a stability-oriented monetary policy cannot be conducted by looking through the rear-view mirror – in other words, by focusing on past inflation and real economic data. Moreover, looking through the side window – that is relying primarily on current observations of growth and inflation – is not sufficient either, since the long and variable lags of monetary policy transmission mean that today's inflation can no longer be influenced by current monetary policy decisions. Thus, the only viable option for monetary

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policy is to act in a forward-looking manner in order to ensure price stability over the medium term.

Therefore, (at least implicit) forecasts for inflation and real GDP growth are tools used by most central banks nowadays for assessing the appropriateness of the current monetary policy stance. In this context, three particular questions arise: “What are the specific characteristics of economic forecasts?”, “How can these characteristics be conveyed to the general public?”, and “How can monetary policy make use of macroeconomic projections?”

3.1 Central forecast and uncertainty

Especially with respect to the first two questions, I do not want to go into too many mathematical details regarding forecasting techniques, as this would make my remarks a highly technical presentation. I would prefer to concentrate instead on the fundamental and most important elements of forecasting.

So, where to start if one wants to generate a forecast? As we are living in an ever-changing economic environment, the starting point of every forecast is a set of forward-looking assumptions, at least with respect to main economic variables such as future market interest rates, exchange rates, crude oil prices and both world trade and growth. The fact that economic projections are built on assumptions highlights their typical conditional nature.

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Such assumptions are then used as input factors for a macroeconomic model of the economy as a whole, which, as a result, provides a central forecast, reflecting the most likely outcome over the projection horizon, also called the "point forecast" or the "baseline scenario".

So far, so good. Up to now, this has been relatively easy to understand, but this is not the end of the forecasting process. A key consideration to bear in mind is that point forecasts do not allow the proper quantification and communication of two very important aspects of a forecast, namely uncertainty and risk.

Uncertainty and risk are two different things. I am therefore going to cover them separately. Let me first elaborate on the issue of uncertainty before looking more closely at the issue of risk.

Kenneth Wallis, a researcher who has been working a lot on forecasting issues, rightly points out that "it is now widely recognised that a point forecast [central projection] is seldom sufficient for well-informed decision-making in the face of an uncertain future, and that it needs to be supplemented with an indication of the degree of uncertainty."

In other words, even though the baseline scenario presented is to be regarded as the most likely development given the assumptions made, it is subject to uncertainties since actual future developments may deviate from the expected developments as reflected in the point forecast.

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The greater the difference between the point forecast and the subsequent actual realisation of the forecast variables is on average, the more uncertain is the forecast. Conversely, if the average deviation is low, this indicates that the forecasts are comparatively secure.

What are the actual causes of the more or less high degree of uncertainty when generating macroeconomic forecasts? Five sources of forecasting uncertainty and possible causes of forecast errors can be distinguished.

First, the model used for forecasting can differ from the actual macroeconomic process, a fact called “model uncertainty”. Models generally describe the macroeconomic process at a very high degree of abstraction and aggregation and thus necessarily conceal some of the complexities of economic processes or confine the account to certain elements which are deemed characteristic. For the forecast, it is assumed that the relationships considered in the model are of sufficient relevance and will remain valid over the forecasting horizon.

Second, the starting values on which a forecast is based can be tentative and thus subject to future statistical revisions. This is known as “data uncertainty”.

Third, estimates are also necessary for the exogenous variables in the model, and these can be fraught with errors. This is termed “exogenous uncertainty”. The development in oil prices and capital market rates used for the forecasts are classic examples of this.

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Fourth, it can be expected that a number of non-systematic disruptions will occur during the forecast period. These “stochastic shocks” cannot be foreseen owing to their incidental nature but are temporarily able to influence, more or less strongly, the underlying relationships between the economically relevant variables. This phenomenon is referred to as “residual uncertainty”. For instance, unusual weather conditions can temporarily have a stronger impact on value added than in the usual seasonal pattern, particularly in the construction industry.

Finally, estimation of the model parameters is also subject to uncertainty as samples of only a limited size are available and the data used can be fraught with errors. This is called “estimation uncertainty”.

The various sources of forecasting uncertainty are not generally independent of each another. They can be mutually reinforcing but may also offset each other. It is thus conceivable, for example, that an underestimation of the euro’s exchange rate against the US dollar will go some way towards “correcting” an underestimation of the dollar price of imported crude oil in terms of the effect on domestic prices.

Being aware of the various sources of uncertainty associated with point forecasts is essential for a sensible use these projections, but this does not answer the question of how to actually put a figure on the degree of uncertainty.

Not surprisingly, the precise extent of the forecasting uncertainty is unknown and has to be estimated. One procedure is to carry out stochastic simulations

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with a model. However, such simulations can hardly account for the effects of model uncertainty. Moreover, most forecasts are not, in fact, purely model-based: a wealth of other information and expert opinions is included.

Therefore, the Bank of England, the ECB, the Bundesbank and most other institutions' estimates for forecasting uncertainty are based on forecast errors discovered *ex post*, that is "with the benefit of hindsight". For instance, the mean absolute error, the variance or the standard deviation of the errors can be used as a measure of forecasting uncertainty.

Nowadays, the Bank of England, for example, employs a variance measure. In accordance with ECB practice for publishing Eurosystem projections, the measure of uncertainty used by the Bundesbank is the mean absolute forecast error above and below the point projection, which constitutes an uncertainty band. So, the width of the uncertainty band is double the mean absolute forecast error. If the errors occur randomly and are normally distributed, this area covers just under 60% of the distribution.

However, in contrast to the Bank of England, the ECB and the Bundesbank do not relate forecast uncertainty to a certain distribution. The Bank of England, relying on its variance measure derived from past forecast errors, publishes a density forecast, thereby enabling the public to calculate any preferred measure of forecast uncertainty. The forecast density also allows the calculation of probabilities associated with certain inflation ranges, that is, for example, the probability that inflation will lie between 1% and 2% in a specific period.

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However, such a probability can, in principle, also be determined using the forecasts of the ECB and the Bundesbank. The main difference from the forecasts of the Bank of England is that the ECB and the Bundesbank leave the assumption about the distribution of the forecast errors to the public.

3.2 Risks associated with macroeconomic forecasts

It is often assumed that uncertainties are distributed symmetrically around the central forecast. However, depending on the specific data situation and conditions, there may well be signs when the projections are produced that this will not be the case. Indeed, unlike in the historical patterns, there is not a symmetrical, but often a skewed distribution, which means that a deviation from the central forecast to one side is more likely than to the other side.

Technically speaking, in such a case, the single most likely outcome – the point forecast or mode – deviates from the expected average outcome – the mean forecast. If this is the case, the terms “upside” or “downside” risks are used as part of a central bank’s risk analysis.

In this context, a distinction can be made between exogenous risk factors – especially developments in the world economy and interest rates – and endogenous (domestic) risk factors. For example, unexpected movements in oil prices or exchange rates or further implications of the financial market turbulence we have been observing during the past ten months are considered to be risk factors at present.

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While the Bank of England quantifies these risks and calculates its density forecasts accordingly, the ECB and the Bundesbank restrict themselves to qualitative risk assessments. Thus, they might, for example, simply speak of upside risks to inflation towards the end of the forecast horizon, whereas the Bank of England might publish that the skewness of its inflation density forecast equals 0.1 in the third quarter of 2010, implying that there is a slight upward risk in that quarter.

3.3 How to convey uncertainty and risk?

Given the uncertainties and risk associated with macroeconomic forecasts, the question arises of how these facts should be conveyed to the public. One possible approach could be to communicate both elements in a purely qualitative (verbal) way without any specific quantitative piece of information. However, many forecasting institutions apply a method which also includes some additional numerical information or which, in addition, translates this information into charts.

The Bank of England, for instance, has been publishing its well-known fan charts for more than 12 years now. These skewed fan charts reflect both the degree of uncertainty and the perceived risk to the forecast and, being in the form of a graph, they are quite intuitive.

The Eurosystem, by contrast, does not use fan charts as part of its quarterly macroeconomic staff projections, which include projections for inflation and the

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growth of real GDP. Rather, the Governing Council has decided to communicate the inherent uncertainty of forecasts by publishing the projections in the form of ranges, whose width is twice the average value of the absolute forecast error.

With respect to the issue of risk, some observers make the criticism that the Eurosystem approach is not as advanced as that of the Bank of England, for example, because how the projections are conveyed to the public does not adequately communicate the balance of risk to the projected outcome. In particular, the criticism has sometimes been made that the Eurosystem does not make use of skewed fan charts as the Bank of England does.

In this connection, I would like to stress that, although the Eurosystem does not explicitly use fan charts, the way in which the Governing Council communicates the balance of risks with respect to the staff projection has, in my view, the same information content, at least qualitatively.

At first sight, when looking at the ranges of the Eurosystem's staff projections, there seems to be no indication whether risks to the outlook are symmetrically or asymmetrically distributed – in other words, whether risks are balanced or skewed to the upside or downside. Therefore, many observers simply take the mid-point of the projection ranges and interpret this figure as the view of the Governing Council.

But, in this context, there are two important elements Eurosystem observers should not overlook. First, the projection exercise is carried out by staff mem-

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bers of the Eurosystem. Therefore, the projections do not necessarily reflect the Governing Council's view or its subjective judgement. Second, and more importantly, the ECB's Governing Council does signal its subjective assessment regarding the balance of risk to the staff projections by explicitly giving qualified indications in various ways.

For instance, at the most recent press conference following the Governing Council meeting last week, the ECB President stressed, on behalf of the whole Council, that risks to the outlook for inflation remain on the upside in both the short and medium term. He also indicated that the balance of risks to the output growth projections lie on the downside. Finally, he added that the uncertainty surrounding the outlook remains high. Such messages are regularly conveyed not only in the press conference and the Monthly Bulletin, but also in many speeches by members of the Governing Council.

In my view, there is no fundamental difference between publishing a skewed fan chart or indicating the asymmetry of risks in a qualitative, verbalised form like the Eurosystem does. In other words, "fans of the fan chart" might see the Governing Council's statements on the Eurosystem staff projections as "verbalised fan charts", reflecting the Governing Council's subjective judgements with respect to the balance of risks.

In our own Bundesbank approach, we have chosen to communicate uncertainty in the macroeconomic staff projection for Germany in a more formal way than the Eurosystem. This takes the form of an in-between view by adding a symmetric fan chart to the central forecast regarding the economic develop-

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ment in Germany. The main benefit of a fan chart is that it is pretty illustrative and, because of this, a fan chart is likely to convey more clearly the message and degree of uncertainty related to the projections.

We arrived at a more sceptical assessment regarding the associated question of whether such a fan chart should also reflect a risk assessment, that is whether – technically speaking – it should also be skewed. To do this, the impact of the various risk factors on the form and position of the density function of the forecast variable would have to be quantified.

Although different approaches exist, such as the one taken by the Bank of England, there is not yet any generally accepted procedure for achieving this. Furthermore, while the Bank of England's risk statements are, in quantitative terms, clearly more precise than the risk statements of Bundesbank and the Eurosystem, the basic question arises as to whether such precision is warrantable. My answer is that I am rather sceptical about the ability to forecast macroeconomic risks in a precise, quantitative manner. Therefore, it seems preferable to me to assess risks in a qualitative, verbal manner only.

Put briefly, I think that our approach with respect to the Bundesbank's forecasts – symmetrically constructed uncertainty bands supplemented by a qualitative (verbal) risk assessment – strikes a good balance between displaying our view on the degree of uncertainty related to the forecast and, at the same time, being aware of the limitations generally faced by risk assessments. In this context, putting, for example, the Bank of England's risk forecasts under scrutiny, our internal research has made the point that these forecasts contain

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little, if any, additional information. Finally, let me briefly cover the role of projections in monetary policy and then draw a conclusion.

4 The role of projections in monetary policy

The role which macroeconomic projections play in the conduct of actual monetary policy differs among central banks according to the policy strategy they pursue.

Macroeconomic projections and, in particular, the inflation outlook, are the key element of the monetary policy strategy referred to as “inflation targeting” or, more precisely, “inflation forecast targeting”. The Bank of England provides a classical example of this policy approach. Pursuing such a strategy principally provides a transparent decision rule for monetary policy.

In few words, the central bank sets its key interest rate in such a way as to ensure that its own forecast coincides with the inflation target over the time horizon relevant to monetary policy. Hence, if the inflation projection forecasts the inflation rate to be above the target, the decision rule suggests that key interest rates should be increased and vice versa. Basically, owing to this rather simple, but transparent and comprehensible rule, monetary policy becomes more predictable, as the likely policy course of the central bank can be anticipated relatively well by market participants.

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It is well known that, in principle, a rule-based and, thus, relatively predictable monetary policy building on an explicit policy strategy helps to reduce uncertainty and, thus, renders central bank policy more effective.

However, central banks that act as inflation forecast targeters are not necessarily dependent on a new official inflation outlook in order to adjust their key interest rate. The Bank of England, for instance, has shown twice during the past two years that it is free to change its monetary policy stance without referring to a new inflation report.

For many market participants, these interest rate moves came as a surprise. This underlines the point that forecast targeting should not be misconstrued as an attempt at absolute monetary policy predictability, either in the timing or the direction and size of policy moves.

Hence, in almost every case, central banks that pursue an inflation forecast targeting strategy do so in a rather flexible way, thus leaving room for additional policy manoeuvre if warranted by the specific situation. Notwithstanding its basically simple and intuitive decision rule, inflation forecast targeting includes a substantial degree of judgement and should therefore not be confused with the notion of a mechanical reaction to the official inflation outlook.

In this context, one should also bear in mind that the Bank of England's inflation outlook, for example, is not the outcome of a purely technical exercise. Rather, it represents the iterative conduct of the forecasting exercise between the Monetary Policy Committee and the bank's staff, and, ultimately, the sub-

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jective assessment of the Monetary Policy Committee regarding medium-term inflationary pressures. Evidently, this assessment can change between two publicly released inflation reports if significant new information becomes available.

While the inflation outlook is of crucial importance for inflation forecast targeting central banks, the Eurosystem takes a different approach. As outlined above, we base our interest rate decisions on two pillars and do not target the inflation projection in a way a forecast-targeting central bank does. This is particularly the case as the inflation projection reflects the assessment of the staff, not necessarily that of the Governing Council.

Our two-pillar approach is designed to ensure that no relevant information is lost in the assessment of the risks to price stability and that appropriate attention is paid to different perspectives and the cross-checking of information in order to come to an overall judgement of the risks to price stability.

Against the backdrop of an environment generally characterised by considerable uncertainty, the Eurosystem's monetary policy strategy allows the adoption of a robust monetary policy which reduces the risk of policy errors that might be caused by over-reliance on a single indicator, forecast or model.

In this context, the regular broad macroeconomic projections are one important input factor for our policy decisions, but they are not the only relevant information we make use of. In particular, we also look at the development of monetary aggregates, as inflation is ultimately always and everywhere a

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monetary phenomenon – a point repeatedly stressed by Milton Friedman and supported by a tremendous number of empirical studies.

Conclusion

After this overview of macroeconomic projections, their characteristics and their role for monetary policy, let me conclude by saying that, nowadays, the basic principles of stability-oriented central banks are largely the same everywhere. Inflation should be low and stable, and a central bank's policy should focus primarily on achieving this goal.

The actual monetary policy strategies, or, in other words, the way in which central banks try to live up to this goal, in fact differ to a certain extent, as I outlined earlier when referring to the Eurosystem's and the Bank of England's approach.

However, irrespective of the differences between the respective strategies, these variations should not be overstated either. Ultimately, I think that the approaches adopted do not differ dramatically. This applies to the method and the outcome, too. Evidently, either stability-oriented approach proves to be largely successful in containing both inflation and inflation expectations.

Against this background, I do not see any signs that one approach might be clearly superior to the other, as some commentators suggest from time to time. More precisely, I do not see any obvious shortcomings in our own approach either. Nor do I perceive any obvious advantages – or any which are,

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at the same time, free of obvious limitations – in the policy approaches taken by other central banks which would lead me to conclude that any change is needed in our own framework.

In general, any monetary policy strategy has to take due account of the specific situation of the currency area for which it is responsible. As this is so, different policy frameworks for achieving the same ultimate goal – price stability – are an absolutely natural outcome, not a surprising one.

Furthermore, I think that another aspect is well worth mentioning. The diversity of specific approaches which are, nevertheless, built on the same stability-oriented fundamentals, enriches the wealth of experience available to monetary policymakers. This helps to draw further conclusions for a robust and successful monetary policy in a continuously evolving economic landscape and, hence, helps to maintain price stability in the long run.

Having said that, just one last point: speakers should exhaust their topic, not the audience. Therefore, I shall conclude with only two sentences. Thank you for your attention. I am now looking forward to our discussion.

* * *

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