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Let us face up to the risks!

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– Check against delivery –

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Ladies and Gentlemen

Delivering the concluding remarks at a conference which has had such outstanding presentations and participants implies a certain risk for me.

The risk I take is considerable, in particular since the conference has more than met my expectations. Therefore, let me start by thanking everyone involved.

1 Let's talk about risks

At the start of our conference, my colleague Hermann Remsperger cited the famous words of Chairman Greenspan that uncertainty is the defining characteristic of the monetary policy landscape.¹

This characterization is particularly adequate that it is worth repeating.

In the same speech, the Fed Chairman also emphasised that

“monetary policy in the last two decades has been operating in an environment particularly conducive to the pursuit of price stability.”

Indeed, the degree of price stability achieved in industrialised countries as well as in emerging markets seems to be unparalleled in recent history.

Without signalling complacency, I would like to give at least some credit for that achievement to central banks.

And at the same time the volatility of output in industrialised countries has declined noticeably.² However, it is unclear whether or to what extent monetary policy deserves

¹ See Greenspan, Alan (2004), Risk and Uncertainty in Monetary Policy, remarks at the meetings of the American Economic Association, San Diego, California, January 3, 2004.

² Stock, James H. und Mark W. Watson (2003), Has the Business Cycle changed? Evidence and Explanations, Federal Reserve Bank of Kansas, Jackson Hole Symposium.

some credit in this respect. Rather the case is less clear cut as it is for the recent moderation of inflation.

Notwithstanding this qualification and against the background of declining inflation and output volatility we must address the question, why central banks talk so much about risk.³ Why do we organize international conferences about macroeconomic risk and policy responses?

Are the risks faced by central banks more severe than those facing other policymakers or those in private business? Or, did macroeconomic risk on other fields recently rise and as a result entail a possible poorer performance in the future?

To my mind, there are three reasons why to emphasise risks in monetary policy:

- Firstly, the uncertainties regarding the different channels of the transmission process and its possibly long and varying time lags. In this respect it is very important to understand the functioning of financial markets, including how the private sector perceives risk.
- Secondly, monetary policy implies collective risks that cannot be insured. Private risk taking, on the other side may be hedged and does not necessarily represent a collective burden.
- And thirdly, the credibility of monetary policy requires transparency about the risks involved.⁴

I believe that markets will trust central banks more, if they openly address the risk they face and the uncertainty under which they operate.

Above all, prudent policy requires being cautious and to pondering the risks ahead. As Confucius put it:

“When people feel safe, danger will arise.”⁵

³ As the Fed Chairman in his cited speech did I will not explicitly differentiate between uncertainty in the definition of “Knightian uncertainty” and “risk”.

⁴ Mervyn King emphasized that argument vividly. See King, Mervyn (2004), What Fates Impose: Facing Up To Uncertainty, The Eight British Academy Annual Lecture, December 1, 2004.

⁵ Eigene Übersetzung von: „Gefahr entsteht, wenn der Mensch sich seiner Position sicher fühlt.“

In addition, there is ample evidence that the monetary policy landscape has changed to an extent that warrants even more intensive research into risks although monetary policy performance has not been too bad over the past decade.

The major change I should like to refer to is the increasing role of financial markets.

On the one hand, broader and more liquid financial markets improve the ability to diversify risks and lead to more robust financial institutions. On the other hand, in well integrated financial markets the possibility of contagion and spill-over effects grows and potentially makes the financial system more crisis-prone.

It therefore comes as no surprise that most of the papers presented at this conference dealt with issues relating to financial markets.

2 Progress in macroeconomic modelling and open questions

Macroeconomic modelling of the real economy - though far from perfect – has made substantial progress over the past few decades.

The main reason for this may be the long history of research in an agreed paradigm using less than a handful of different approaches.

For instance, as Governor Donald Kohn has pointed out last week, the basic framework for analysing inflation used by the Fed has remained fundamentally unchanged over the past 35 years. He said

“That basic framework is essentially the expectations-augmented Phillips curve introduced by Milton Friedman and Edmund Phelps in the late 1960s.”⁶

Of course, there has been a lively debate and substantial theoretical and empirical progress leading from the neoclassical synthesis in the spirit of Paul A. Samuelson and John R. Hicks in the late 1960s to the new classical theory focusing on real business cycles and, more recently, to the new Keynesian framework, which put nominal rigidities and market imperfections centre stage.

⁶ Kohn, Donald L. (2005), Modelling Inflation: A Policymaker's Perspective, Speech to the International Research Forum on Monetary Policy Conferences in Frankfurt am Main, May 20, 2005.

However, since these debates more or less concentrated on the shortcomings of the original synthesis, it did not really fundamentally leave the old paradigm.

The basic macroeconomic framework of inflation determination has its analogue in the prominence of monetary policy rules. In that context it is argued that monetary policy can roughly be tracked by so called “simple feedback policies” such as the “Taylor rule”. Some central banks appear to follow those rules.⁷

Some macroeconomists even claim that solely relying on those “simple feedback policies” might be sufficient if not superior. The latter statement draws on the fact that such simple rules entail lower information requirements than complex rules.

However, the plausible tracking of observed monetary policy by a monetary policy reaction function does not imply that the monetary policy strategy is reducible to a simple rule. For instance, even if a central bank has no output goal, it is likely to react to variations in the output gap as a possible determinant of future inflation.

Moreover, “simple feedback policies” are not necessarily only backward-looking. They can also incorporate forward-looking elements.⁸ Indeed, they must to some extent be forward-looking. Hence, forward-looking approaches or forecast-based policies are and should be relevant to central banks.

In this context let me stress two aspects which have been discussed at this conference: Our limited knowledge about the expectation formation process and the problem of limited information and limited credibility in financial markets.

I should like to discuss expectation formation first. The traditional assumption of rational expectation formation aims at bringing intellectual discipline into our thinking rather than being intended to be an adequate description of the real world. We know that

⁷ See Bernanke, Ben S. (2004), The Logic of Monetary Policy, Speech before the National Economists Club, Washington, D.C., December 2, 2004.

⁸ See Clarida, Richard; Jordi Galí und Mark Gertler (1998), Monetary policy rules in practice: Some international evidence, *European Economic Review*, vol. 42, issue 6, pp. 1033 – 1067; and Clarida, Richard; Jordi Galí und Mark Gertler (2000), Macroeconomic policy rules and macroeconomic stability: Evidence and some theory, *Quarterly Journal of Economics*, vol. 115, issue 4, pp. 147 - 180.

simplification is advisable under certain circumstances, but more realistic models for expectation formation may be useful in other respects.

Several papers at this conference pay tribute to this fact. Let me just mention Monika Piazzesi's paper.

Modifying the assumptions about the expectations formation process or introducing model uncertainty has important consequences for economic policy - and monetary policy in particular - as has been highlighted several times at this conference. In this respect I should like to mention the contributions by Lars Hansen as well as by Lars Svensson and Noah Williams. Both, "robust control" or "distribution forecast targeting" methods are designed to deal with model uncertainty.

A second, and often related topic, is our still very incomplete knowledge of how financial markets work and how they deal with the problem of limited information. Several papers at this conference illustrate the role of collateral and the problems we are confronted with if this instrument is not available. Let me mention as one example the paper by Larry Christiano and his co authors. This paper points out the fundamental role which collateral plays in an integrated world and concludes that "having collateral or having not" not only makes a big difference for the creditors and debtors but also for monetary policy.

However collateral might play different roles in different financial systems. John Moore's paper is very informative in this respect. It is in my view also interesting because it improves our understanding of the linkage between developments in the financial system and in the real economy.

Chris Sims in his paper on "rational inattention" makes another point: our limited ability to collect information may have far reaching consequences for our models.

3 Modelling financial system behaviour

Ladies and gentlemen

Macro-modelling of financial market developments, let alone financial stability has by most measures less progressed than general macroeconomic modelling.

At least four reasons for that are obvious:

- Firstly, financial integration on a regional as well as on a global scale mostly followed real integration (trade induced financial flows).
- Secondly, the role of expectations and psychological aspects seems to be much more pronounced on financial markets. Neither is very easy to capture analytically or to quantify.
- Thirdly, the financial system became much more complex in a short period of time as a result of a number of significant structural changes.
- Finally, proper modelling of financial markets in a general equilibrium context has to confront the issues of incomplete markets and heterogeneous agents in a much more direct way than most of the traditional macro models do.

My colleague Svein Gjedrem has put that simply:

“The instruments have become more intricate,
the activities more diversified and
the risks more mobile.”⁹

Some of the underlying fundamental difficulties in understanding and modelling financial markets have been addressed by several economists at this conference.

The fundamental change of the financial system has been the topic of the paper presented by *Kiyotaki and Moore*. They highlight the aspect of financial deepening and provide a thorough analysis. Their deduction might be helpful to comprehend the implications of financial developments for the real economy as well as for central banking.

Another problem is to define and measure risk. Volatility of financial market prices is a key issue in this respect. However, Yacine Ait-Sahalia and his co-authors alluded to the

⁹ See Gjedem, Svein (2005), The macroprudential approach to financial stability, Keynote address at the conference “Monetary Policy and Financial Stability” hosted by the Oesterreichische Nationalbank, Vienna, May 12, 2005; published: BIS Review 34//2005, p. 15.

difficulties one is confronted with when trying to measure risk in a high-frequency environment. But they not only point out the difficulties, they also provide tools for overcoming some of these problems.

Their paper about high frequency volatility estimation with dependent microstructure noise may supply a valuable tool for estimating volatility – a key variable for risk analysis.

In this context it is worth mentioning an important dogma shift that has occurred in financial market research. Efficiency in financial markets is no longer undisputed. Recent empirical research detects more and more “anomalies”. John Campbell highlighted a new one: Shares of enterprises at risk of going bankrupt have a particular low return. For central-banks who are also involved in banking supervision and guaranteeing financial stability it is important to devote some resources to further analysing this issue.

Another well known anomaly is the so called equity premium puzzle. Narayana Kocherlakota makes a new attempt to shed some more light on this issue. His paper puts incomplete markets, or more precisely the fact that individuals are not able to ensure themselves (entirely) against idiosyncratic risk at the core of the argument. Other papers, using incomplete-markets, have already tried to tackle this puzzle. The distinguishing feature of his paper is the fact that the allocation of risk across households is assumed to be socially optimal. This has implications for the interpretation of high returns in equity markets.

All these new findings may help us to make progress in understanding financial markets and in finding a better theoretical framework to discuss financial stability.

In this context, let me briefly reflect on whether or not financial stability should be an explicit central bank objective in line with its other objectives. The additional objective of financial stability is explicitly enshrined in many

central bank charters. However, the question of how policymakers are to weigh the various objectives against each other is one that so far remains unsettled.¹⁰

An undisputed case is the monetary policy reaction to financial instabilities that are significant enough to cause estimated good price inflation to deviate significantly from target. In this case no conflict arises.

There also seems to be agreement on the rapid and resolute use of monetary policy in the case of extreme events which could threaten financial stability.¹¹

However, other cases are conceivable. Think about evolving financial imbalances over a long period of time. How can and how should central banks react?

The debate on “asset prices and monetary policy” remains open. In his dinner speech yesterday Vice Chairman *Roger W. Ferguson* discussed that issue.

Taking this one step further, there is the question of how to react in a financial crisis. As *Lawrence Christiano et al* have demonstrated, we need to construct more realistic general equilibrium models in the context of financial turbulence.

I have already referred to two key elements these models should entail: Heterogeneous agents and incomplete markets. Charles Goodhart recently added a third aspect: ¹²

- modelling default properly, which one might subsume under the heterogeneity issue with regard to customers differing in certain aspects.

Let me just mention that certain aspects of all three characteristics have been topics at our conference.

¹⁰ See Ferguson, Roger W. (2002), Should Financial Stability Be an Explicit Central Bank Objective? Paper presented to an International Monetary Fund conference on Challenges to Central Banking from Globalized Financial Markets, Washington, D.C., September 17, 2002.

¹¹ See Gjedem, Svein (2005), The macroprudential approach to financial stability, Keynote address at the conference “Monetary Policy and Financial Stability” hosted by the Oesterreichische Nationalbank, Vienna, May 12, 2005; published: BIS Review 34//2005, p. 19.

¹² See Goodhart, C.A.E. (2004), Some new directions for financial stability? Bank for International Settlements, The Per Jacobson Lecture, June 27, 2004, p. 9.

4 Conclusion

There is no contradiction between the reasonable performance of central banks in recent decades and the impression that they face formidable risks and uncertainties.

However, we are in a good shape to face up to them. Our knowledge about the economy is permanently increasing. Risk analysis and risk management have improved significantly.

Additionally, a lot of work is being done to further improve our understanding. This conference may serve as a proof of that. The fact that some questions have been left unanswered provides an opportunity for another conference on this and similar topics.

I have very much enjoyed listening and talking to you. And I would like to thank all of you. In saying that, I include not only those giving the papers, but also the discussants and participants, who have contributed to the success of the conference.

Special thanks go to our conference staff and to the organisers, Harald Uhlig from Humboldt University, and Heinz Herrmann, from the Bundesbank.

Ladies and gentlemen,

I hope that all of you will take more from this conference than just papers. Networking, cooperation and a fruitful exchange of views are extremely valuable for our common task.

We are facing challenging risks.

Let's cooperate and jointly face them!

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