Deutsche Bundesbank Spring Conference 2012 – monetary policy, inflation and international linkages

This year's Bundesbank Spring Conference, which was co-organised with the Federal Reserve Bank of Philadelphia, dealt with the interplay between inflation, international macroeconomic linkages and the concomitant challenges for monetary policy. Among other things, the contributions to the conference illustrated that the welfare gains created by the steadily increasing globalisation of product and financial markets depend heavily on the characteristics of those markets. Existing market imperfections and frictions need to be eradicated to the greatest possible extent in order to capitalise on increasing international interdependencies.

Constantly growing global integration also has feedback effects on monetary policy. For instance, highly volatile prices in the energy and commodity markets or contagion effects in interlinked financial markets are presenting new challenges for monetary policy. At the same time, however, monetary policymakers also have access to additional information, and thus can make sounder judgements. Changes in nominal and real exchange rates, for example, provide important information for a monetary policy that is geared towards price stability. The papers presented at the conference also looked at various ways in which monetary policy impacts on international capital markets. The conference showed how central banks can achieve more accurate forecasts where observers are highly unsure about future trends in the international product and financial markets. The final point of discussion in this context was the contribution that monetary policy can make towards stabilising market participants' expectations regarding future inflation paths in an environment of heightened uncertainty.

Background

Particular challenges in the light of globalised product and capital markets

Shaped by the financial and economic crisis, the interactions between globalised product and capital markets on the one hand and inflation developments and monetary policy on the other have come under the spotlight once more. In particular, the fact that the economic downturn in the fourth quarter of 2008 and the first quarter of 2009 spread quickly to many countries and affected the economies of most industrial countries almost simultaneously has reawakened interest in issues concerning the international linkages in the product and financial markets and the resulting implications for economic policy. Central banks around the world are also facing new challenges owing to increasing levels of international integration. There is, moreover, a tendency to assign central banks more and more tasks that extend beyond their core mandate of maintaining price stability. The Bundesbank therefore dedicated its Spring Conference this year to the topics of monetary policy, inflation and international linkages.[1]

The contributions to this year's Spring Conference were pooled around the following questions.

- What role does the increasing international integration of the product markets play in factor price movements?
- What bearing does the increasing globalisation of the financial markets have on a country's economic policy and especially on the free movement of capital flows?
- To what extent is monetary policy affected by strong price fluctuations in the product and financial markets in an integrated global economy?
- How does monetary policy impact on international capital markets and exchange rates?
- What form should monetary policy take in an international environment of heightened uncertainty?

International product markets and factor prices

Lower international trade costs lead to higher wages, …

The contribution to the conference by Burstein and Vogel[2] answered several questions about the impact of product market integration on factor price movements, especially relative wage differences. The authors use a general equilibrium model for a variety of countries to examine how lower international trade costs affect the relative wage developments of skilled to unskilled workers (the "skill premium", the wage mark-up for more qualified workers). The empirical analysis shows that real wages rise for all workers when trade costs fall, but that the increase in the relative wages of well-qualified workers is two to three times greater. The authors also show that the intensity of relative wage growth depends on country-specific characteristics. For example, the skill premium increase is stronger for more qualified workers in small open economies, in particular. Furthermore, the rise in the skill premium is not necessarily linked to a skill-abundant production sector.

… but the welfare gains are unevenly distributed owing to product market integration

This finding suggests that the integration of international product markets can be beneficial to both qualified and less qualified workers. However, the welfare gains from increasing globalisation may be unevenly distributed. Moreover, Burstein and Vogel observe that, in a highly integrated global economy, central banks should have an even more differentiated view of what is causing wages to grow.

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1 The programme and the papers presented can be found on the Deutsche Bundesbank's website at www.bundesbank.de/Redaktion/EN/Termine/Research_centre/2012/2012_05_24_eltville.html.
2 A Burstein and J Vogel (2012), International Trade, Technology, and the Skill Premium, mimeo, University of California, Los Angeles.

Economic policy in globalised financial markets

Product and labour markets are characterised by a range of market imperfections. For example, wage flexibility is generally limited on the labour markets, especially if wages need to fall in order to create full employment. What are the consequences of this in an environment of highly integrated product and financial markets?

Asymmetric nominal wage rigidity in a fixed exchange rate regime

In their paper, Schmitt-Grohe and Uribe[3] analyse the interactions between free capital flows and fixed nominal exchange rates when wages are downwardly rigid. The authors use a selection of small European economies to show that, during an economic upturn, nominal wages and current account deficits in these countries increased sharply, while unemployment figures went down. After the onset of the crisis, the current account improved and unemployment rose. However, the latter did not lead to a reduction in nominal wages. The authors explain this phenomenon using a dynamic model of a small open economy with downward nominal wage rigidity. They show that the combination of fixed exchange rates and free capital mobility can have a negative income effect on economies if nominal wages do not fall following an economic downturn. If wages are not adjusted, the consequences include high levels of unemployment, overborrowing and an economic depression. Schmitt-Grohe and Uribe point out that, to counteract these negative economic effects, optimal capital controls can increase welfare. During expansionary phases, capital controls restrict capital inflows and slow the pace of economic activity, while they subsidise external borrowing during economic downturns.

Macroprudential regulation to ease the effects of nominal wage rigidity

The conference contribution suggests that the potentially negative consequences of the interaction between downward wage rigidity and increasing financial market integration can be economically cushioned using capital market controls and macroprudential regulations. However, it should be noted that, for the most part, it is not globalised financial markets but rather frictions on the labour markets that are responsible for a situation of this kind. The ultimate aim should therefore be to address the root of the problem instead of the symptoms, especially as the question of how such capital controls could be implemented in a globalised economy remains unanswered.

Price fluctuations in the product and financial markets in an integrated global economy

Presentations by Bodenstein, Guerrieri and Kilian,[4] Perri and Quadrini[5] as well as Eickmeier and Ng[6] provided new insights into the question of a monetary policy response to strong price fluctuations in the product and financial markets in an interconnected global economy.

Oil price fluctuations pose challenges to monetary policy

Bodenstein, Guerrieri and Kilian's conference paper examines whether and how monetary policymakers should respond to oil price fluctuations. In their analysis, the authors conclude that a more detailed analysis is required to determine whether shocks on the supply side or on the demand side of the world market are the predominant cause of strong oil price fluctuations.[7] Demand-led oil price shocks generally require more decisive monetary policy countermeasures, while in the case of supply-led shocks, the direct price effects and the ef-

3 S Schmitt-Grohe and M Uribe (2012), Prudential Policy for Peggers, NBER Working Paper No 18031, National Bureau of Economic Research, Inc.
4 M Bodenstein, L Guerrieri and L Kilian (2012), Monetary policy responses to oil price fluctuations, mimeo, University of Michigan.
5 F Perri and V Quadrini (2011), International recessions, NBER Working Paper No 17201, National Bureau of Economic Research, Inc.
6 S Eickmeier and T Ng (2011) How do credit supply shocks propagate internationally? A GVAR approach, Deutsche Bundesbank Research Centre, Discussion Paper, Series 1, No 27/2011.
7 For a more detailed discussion, see Deutsche Bundesbank, Development and application of DSGE models for the German economy, Monthly Report, July 2008, pp 31-46.

fects on the potential oil supply at least partially cancel each other out. As structural changes are difficult to identify promptly and economic fluctuations are often the result of several different shocks occurring simultaneously, the authors once again emphasise that monetary policymakers are reliant on careful analyses of underlying causes when deciding how they should respond to oil price fluctuations.

Global real economic effects as a result of national credit tightening

Perri and Quadrini highlight the significance of credit supply shocks in a globalised economy. The authors show that, under these conditions, local restrictions in lending – as observed in many countries during the financial crisis – can have global real economic effects leading to an international recession. Using a two-country general equilibrium model, they demonstrate that the tightening of credit conditions in one country can lead to a state of equilibrium in which fully rational economic agents have pessimistic expectations of economic growth at home and abroad and therefore curtail their economic activity. The outcome is a recession which is driven by expectations rather than by production and which may spread to other countries as a result of financial integration. Furthermore, the paper shows that the severity and duration of a recession caused by the tightening of credit conditions is determined by the level of borrowing in the preceding upturn.

The paper presented at the conference by Eickmeier and Ng also deals with the real economic effects of credit supply shocks in an integrated global economy. The authors use an extensive multi-country dataset to produce an empirical analysis of the international propagation of credit supply shocks to the private sector. The focus is on the effects of such shocks originating in the USA, Japan and the euro area on the real economy and the financial sector in these three regions as well as on the entire world economy. The results show that financial market integration can expedite the transmission of disturbances in a country's supply of credit to the global real economy. The international transmission of US credit supply shocks to foreign GDP has been observed to be particularly strong. However, regardless of the quantitative differences revealed, there are qualitative similarities in all three cases.

The aforementioned two presentations suggest that global financial and product market integration combined with country-specific restrictions in the supply of credit (as seen in recent years) has furthered the current recession in some countries. When setting a monetary policy that directly influences a country's lending, policymakers must therefore bear in mind that their measures may also impact on other countries. The conference contribution by Perri and Quadrini in particular illustrates the effects of regulating lending. This paper therefore also adds to the current discussion about the potential implications of macroprudential supervision.

International capital markets and exchange rates

The fourth issue discussed at the Spring Conference concerned the impact of monetary policy on international capital markets and exchange rates. In order to stabilise the real economy, the monetary policy of many countries became extremely expansionary during the financial crisis. Short-term interest rates fell to historic lows in the major currency areas.

International interest rate differentials and monetary policy

In this context, the paper by Backus, Gavazzoni, Telmer and Zin[8] provides new answers. The theory of interest rate parity on which the paper is based (and the observation that this theory does not appear to hold true unreservedly) has long been a subject of intense debate in macroeconomics, and a large number of questions remain unanswered. The conference paper's key finding is that different national monetary policy rules may lead to higher

8 D Backus, F Gavazzoni, C Telmer and S Zin (2011), Monetary Policy and the Uncovered Interest Rate Parity Puzzle, NBER Working Paper No 16218, National Bureau of Economic Research, Inc.

inflation and interest rate differentials between countries and regions as well as to increasing foreign currency risk premiums where monetary policy is less stability-oriented. A further important conclusion is that monetary policy action can trigger high volatility and currency flows on the international capital markets, especially in times of heightened uncertainty.

The effect of consumption and savings behaviour on stock returns

Another fundamental theoretical issue relates to the correlation between savings behaviour and stock market returns. The understanding of these correlations has an impact on the interpretation of international capital and product flows. In their research paper, Albuquerque, Eichenbaum and Rebelo[9] attempt to reconcile conventional asset pricing theories with the data available. Using a dynamic equilibrium model, the authors present a new, demand-oriented explanatory approach. In particular, they analyse how changes in market participants' time preference affects their consumption and savings behaviour and what effects this has on asset price developments.

Nominal price stickiness and exchange rate fluctuations

Crucini, Shintani and Tsuruga[10] likewise examine the importance of exchange rate volatilities and analyse the relationship between price stickiness and exchange rate fluctuations against the backdrop of the Law of One Price. In particular, the paper brings out the relationship between price stickiness and exchange rate volatility using sector-level real exchange rate data. In contrast to the conclusions in the existing literature, the authors find that an increase in price stickiness is accompanied by a decrease in sector-level exchange rate volatility. They attribute this result to the predominance of real shocks over nominal shocks in explaining the volatility of real exchange rates at the sector level. The authors conclude that their result is contrary to the literature because real shocks in prices disappear at the aggregate level, meaning that nominal shocks are overweighted.

In this context, a deeper understanding of real exchange rate data behaviour at the aggregate and the disaggregated level helps to shed light on the significance of price stickiness and monetary shocks for exchange rate fluctuations.

Monetary policy in an international environment of heightened uncertainty

The aforementioned research papers presented at this year's Spring Conference provided a good basis for the final question raised at the conference: what form should monetary policy take in an international environment of heightened uncertainty? The recent crisis highlighted how uncertainty on the financial and product markets influences market participants' expectations and makes it more difficult to process new market information systematically. The uncertainty surrounding future economic developments in general and inflation in particular places high demands on a forward-looking monetary policy. Central banks should therefore not only take account of the most likely future event on average, but should also incorporate all possible future real economic and inflation developments into their decisions.

Inflation targeting as a risk management concept

Andrade, Ghysels and Idier[11] compare the task of monetary policy with that of risk management. Where risk considerations become increasingly significant, monetary policymakers also need suitable measures of risk for the implementation of their policies. This relationship is illustrated using the example of inflation risk. The authors examine in detail the inflation and deflation risks derived from the expectations of market participants and then calculate the asymmetries of these risks. They show that, in the case of the USA, these asymmetries contain

9 R Albuquerque, M Eichenbaum and S Rebelo (2012), Understanding the Equity-premium Puzzle and the Correlation Puzzle, mimeo, Northwestern University.
10 M Crucini, M Shintani and T Tsuruga (2012), Do Sticky Prices Increase Real Exchange Rate Volatility at the Sector Level?, NBER Working Paper No 16081, National Bureau of Economic Research, Inc.
11 P Andrade, E Ghysels and J Idier (2011), Tails of inflation forecasts and tales of monetary policy, mimeo, Banque de France.

important information about future inflation and that they help to explain monetary policy decisions.

Monetary policy and information frictions

Melosi[12] demonstrates how monetary policy decisions can be better formulated and signalling effects developed if the macroeconomic environment is characterised by a large number of market participants with different microdata. In the model used, the central bank, through its actions, signals its expectations about economic developments to the market participants, who have varying degrees of information. The impact on the market participants depends on the ability to influence expectations. Signalling effects can dampen the repercussions of an unexpected monetary policy change with regard to inflation. The author also illustrates that, in a rapidly changing economic environment, such signals help to strengthen a central bank's systematic stabilisation policy.

In his speech "Macro Models and Monetary Policy Analysis", Charles Plosser, President of the Federal Reserve Bank of Philadelphia, addressed various issues which monetary policymakers are facing, in particular against the backdrop of recent experiences. He called on researchers to intensify their efforts to improve the way in which today's conventional models approximate underlying rigidities and, in particular, to better analyse the consequences of monetary policy on wage-setting and pricing processes. In addition, he suggested that more thought be given to realistic monetary policy rules and how to ensure their credibility.

In this context, he also pointed out that macroeconomic models should examine both the potential systemic role of a lender of last resort and the institutional environment of monetary policy in a more credible manner. Both can lead to moral hazard problems with regard to monetary policy, which central banks must bear in mind when taking action.

Conclusions

Major challenges owing to international linkages

This year's Spring Conference provided a good overview of the current academic debate about international macroeconomic linkages and their consequences for inflation and the role of monetary policy. In particular, the advantages and disadvantages of highly integrated product and financial markets were presented and the challenges for monetary policy associated with this were discussed and analysed in the context of the core monetary policy mandate of price stability. In addition, however, the limits of monetary policy and its traditional instruments were discussed in the light of the current crisis, for example, as a result of the zero lower bound on interest rates. In this context, new instruments currently under discussion as part of macroprudential supervision were also the topic of debate.

The role of central banks

The conference illustrated that monetary policy is facing new major challenges in the wake of the recent crisis. Some central banks are encountering increasing demands to take on additional tasks, such as ensuring financial stability and economic growth. Both the research papers presented and the accompanying discussions highlighted the associated risks of an overload.

12 L Melosi (2012), Signaling Effects of Monetary Policy, mimeo, London Business School.