ECONOMIC RESEARCH BULLETIN

EDITORIAL

What is worth researching in a central bank?

Why does research benefit central banks, and what type of research benefits them the most? Three members of the CNB's Research Advisory Committee (RAC)[1] – David Mayes, Carsten Detken and Nicoletta Batini – provide some answers to these questions.

Central banks' ability to attract the brightest young minds makes them one of the best hubs of applied economic research. Quality research serves as a reputation instrument demonstrating a central bank's capability to handle future problems that may not simply replicate past experience. While established central banks may be able to achieve such reputation over the passage of time, "younger" central banks can demonstrate such capability both faster and more cheaply, based on evidence derived from their research. Successful central bank research programmes share some common traits. First, the management of the bank carefully selects research areas and projects based on the bank's competitive advantage and its role in the global financial system. Second, ensuring quality output is of paramount importance, necessitating a well-designed appraisal system and incentives for research. Finally, the bank ensures proper dissemination of research output.

Aleš Bulíř, International Monetary Fund

[1] The RAC is a standing advisory body to the CNB Bank Board for economic research issues. Since its establishment in 2001, the Committee has met every autumn to discuss the documents prepared by the Economic Research Department (ERD) and to make recommendations regarding them before they are discussed by the Bank Board. The Committee has 16 members, six of whom are external foreign experts.

A research agenda for central banks
David G Mayes (University of Auckland and Bank of Finland)

Central banks are not universities and one would thus expect their research to aim at a clearly defined purpose, such as, to lay the ground for the satisfactory treatment of monetary policy related problems in the future. To some extent the ability to handle future problems comes from experience in handling related problems in the past, but to a large extent 'problems' are events that do not replicate past experience. If they did, the central bank would either be able to head them off or be able to react in a manner well laid down in advance. Central banks are not merely expected to manage shocks with limited volatility, but the public must believe that the central bank will be able to manage any future shocks even though no one knows which specific ones will occur.

How did central banks obtain such a favourable reputation? Getting into the position of a credible provider of stability in a rapidly changing world involves continuous research and the building up of a knowledge base of the hypothetical and how to handle it. While long-standing providers of stability may be able to achieve that credibility over the passage of time, younger central banks need to be able to demonstrate a capability based on evidence derived from research. Demonstrating it by successful response to unpleasant shocks is not a route anyone would prefer.

The research landscape that needs to be covered is large and two-dimensional. One dimension is the list of problem areas that need to be addressed in monetary policy, financial stability, financial system oversight, advice for the government and any other areas in the central bank's mandate. The other dimension is what the research should cover, from the theories governing behaviour through the data to be collected or processed, the statistical and econometric methods, the modelling approaches, the policy conclusions to the institutional and regulatory frameworks necessary to address them. The potential landscape is vast, well beyond the resources of small central banks, particularly where the central bank's mandate is itself vague.

Who is best suited to define the research agenda? Both the policy departments and researchers themselves have an important role to play in mapping out the agenda for research. On the one hand, giving the upper hand to the policy departments may result in a shopping list dominated by short-term needs and an unfocused collection of work that fails to maximise the potential of the research staff. On the other hand, while making sure that researchers are motivated by tackling projects which they find interesting, giving too free a hand to them to help drive the agenda may result in work irrelevant to the bank's interests.

The definition of the research agenda is not an easy path to tread, as useful research tells us something we did not know when we started it. Research today is trying to anticipate the policy agenda some years hence. Many bright ideas may turn out unproductive, while other avenues may turn up rather unrelated benefits. This inevitably means that the bank needs to back more than one horse. To take a simple example, the Reserve Bank of New Zealand correctly judged that since the performance of the Australian economy was outpacing its own that there would be interest in a monetary union, as a means of acquiring some of that success. Even though it was confident that its current policy was the best way to achieve price stability, it nevertheless had to anticipate that the increased interest in monetary unions might spill over.

Research departments in the private sector are not that different from research departments in central banks. Both should not be expected to produce an unbroken string of winners. However, they need to deliver an adequate number of major successes to meet the objectives of the company. To this end the research department requires a focused strategy, starting with an assessment of what of the central bank is particularly well placed to achieve and what outside sources can provide. Central banks have particular advantages both in having forecasting teams with detailed knowledge on the domestic economy and in having a unique ability to combine information from macroeconomic and financial sources, some of which may be confidential. It is no surprise that central banks are the leaders in dynamic stochastic general equilibrium (DSGE) modelling, learning processes and methods of updating, because it is they who are most concerned to understand the interaction between policy decisions and the reactions of the outside world rather than produce just 'best guess' forecasts. They have also focused on decision-making under uncertainty and 'tail events' of low probability but high impact, as these reflect central bank interests.

However, individual banks are not entirely on their own – much of the success in research comes from a highly developed network that lets them draw rapidly on the work in progress elsewhere. There has been a significant shift from the secretive behaviour that traditionally enshrouded each bank in the past toward a variety of formal and informal contacts that stimulate rapid learning. The European System of Central Banks (ESCB) has encouraged this exchange of information and ideas and international organisations (IMF, World Bank, OECD) have also been developing their role as providers of policy relevant research.

Within a country the central bank will want to be the hub of the network of research being undertaken in universities and research institutions, encouraging their staff to work in the bank on secondment and financing projects in areas where it does not have the direct expertise or sufficient people available at the time. Providing the incentives are appropriate, the bank will find that a lot of its work is being done through competition by outsiders. The network is bound to be international, especially for smaller countries, not just because of limits to expertise, but because of the importance of comparative work and the lessons from others. A bank that is reluctant to adopt ideas because they are 'not invented here' will face very heavy overheads.

To form an effective research strategy, central banks need to carefully evaluate research prospects to ensure selection of internationally competitive individuals or teams. The Bank of Finland, for example, judges that it can only produce work that will be influential within the Eurosystem if it has at least five or six people working on a subject area. Given the overall available resources, this means that the Bank of Finland focuses on three themes only: modelling monetary policy, the future of the financial services sector and the economics of transition, particularly in Russia and China. These themes were largely determined by the existing comparative advantage and special needs.

The most important issue after determining the agenda is ensuring quality. Quality assessment is largely academic driven, although an element of peer review among central banks is now becoming possible. Inside the ESCB, the need for external validation is obvious: a small central bank is only going to have an influence through the acknowledged quality of its work. Not only does each individual item need to be of a high standard to be persuasive, but also a reputation needs to be built up so that the work is read by outsiders in the first place. Thus, achieving an international impact is fairly different from achieving an impact inside individual countries. Domestically, central banks have autonomy on operational issues, so they have to persuade themselves and provide some justification outside. On wider issues they have to get political approval, but the intellectual competition tends to be relatively easy. Even domestically, however, the rise of inflation targeting has helped change this benign environment, with an increasing focus on the importance of expectations. The private sector, both domestic and foreign-based, has to believe in the central bank's judgments as well and this will be strongly assisted if the outside informed community is in general support because of the scientific quality of the evidence the bank produces.

In conclusion, quality assessment has two legs: first, gradual gain in research reputation and, second, peer review. While the first leg is ultimately the more important of the two, regular, published independent reviews of the bank's research will be helpful to those running it, to senior management in knowing that they are getting value for money, and to outsiders in confirming the standard.

The institutional structure plays an important role in both determining a useful research agenda and executing research that is found useful. In some banks a research culture permeates the entire bank, so that most people are expected to (and have the time to) undertake substantial research despite having policy-related jobs. In other banks, research needs to be in a department of its own and an equal partner with its clients in the structure of the bank. However, not all central bank research departments do research – without strong safeguards and incentives, immediate policy issues will fill all the time available.

A well design system of staff appraisal is needed to ensure that the amount of time planned for research is actually devoted to it. In the US Federal Reserve, many of the research staff see the alternative employment as being the academic sector and are motivated in their own careers to produce high quality publications in order to maintain the outside option. As a consequence the bank itself then only needs to maintain conditions noticeably ahead of that sector. For much of the rest of the world the outside options are the commercial sector and international organisations and there central banks have limited hope of providing conditions that are as good as the outside options. Most central banks thus face attrition in their good research staff. They have the best trained and most knowledgeable people in the country and they thus provide training for the financial sector as a whole. For a small institution this can be a costly public service and such a central bank may be better off outsourcing some of the training function to universities.

Each central bank has to decide where it wants to be in the research spectrum and this choice will depend on the internal culture of the bank. However, without a clear purpose, a focus on how to develop and retain the necessary staff and their skills, a means of evaluating priorities, assessment of the potential value and likely success of projects, a strong domestic and international research network and an appraisal of outcomes in order to improve, it is unlikely that a small central bank will obtain the sorts of value-added from its research that it desires.

Economic research priorities at the ECB

Carsten Detken (European Central Bank)

In each of the last two years the ECB published about 70 working papers with ECB staff authorship. This in itself is evidence of substantial resource commitment to economic research within the ECB. The task of organising economic research within a central bank is not a trivial undertaking. The challenge is to hit the efficient frontier with respect to academic quality, policy relevance and timeliness of research output. At the ECB economic research is conducted to a large extent in the Directorate General Research, but also in other business areas, especially in the Directorate General Economics. To be relevant, research output has to be disseminated within the institution, requiring channels of communication and implementation (of tools and models) and raising issues with respect to the appropriate types of output.

At the ECB, research is coordinated by the Research Coordination Committee (RCC), which also sets research priorities. The RCC meets twice a year in order to approve an annual forward-looking research priorities report and a backward-looking annual review of ECB-wide research activities. For each priority area, the former report spells out the envisaged division of labour between different business areas, the envisaged type of output and the foreseen time frame. The latter report monitors results ex-post. The RCC is chaired by the Director General Research, with senior management of almost all ECB business areas constituting the RCC, and the Executive Board of the ECB being decisively involved in the RCC procedures. Two Executive Board members act as patrons of the RCC and committee meetings are open to other Board members, who are expected to provide early guidance in selecting and defining research priorities. Research results on some of the priorities (at least four a year) lead to seminar presentations to the Executive Board.

Research at the ECB refers to the following activities: economic analysis aiming at publication in refereed journals; model development; and technical support in implementing developed models or tools. Currently, the ECB's research priorities are structured along six broad headlines: 1. Forecasting and Model Development; 2. Monetary Policy Analysis; 3. The Transmission Mechanism of Monetary Policy; 4. Financial Stability; 5. The Efficiency of the European Financial System; and 6. International Issues. I will briefly discuss some major topics within these broad priority research areas, mentioning most but not all of the ECB research priorities for 2006. The contribution of ECB research to these topics can be monitored by following the ECB Working Paper Series in the next 1 to 2 years.

1. Forecasting and Model Development

A) Dynamic Stochastic General Equilibrium (DSGE) models are quickly developing into the standard tool for policy simulations and forecasting. DSGE models have the potential to provide superior simulation and forecasting results due to the fact that they explicitly model the behaviour of economic agents and sectors in the economy on the basis of solid micro-foundations. In empirical analyses this generally allows us to identify and attribute shocks affecting macroeconomic aggregates to specific sources (e.g. demand-driven versus supply-driven inflation). In addition, DSGE models can easily be used for specific scenario analysis, allowing us to trace out the dynamic response of the economy to specific disturbances and permitting simulations of alternative monetary policy reactions. However, these models can easily turn into a black box and thus it is important to investigate thoroughly the robustness of policy conclusions derived with DSGE models.

B) Short-term forecasts for GDP and inflation provide an essential input into the monitoring and forecasting of euro area economic developments. The methods of short-term forecasting have been evolving constantly; with new approaches including forecasting with large datasets using factor models, forecasting with aggregated and disaggregated data, and forecasting using combined results from different models.

2. Monetary Policy Analysis

A) Researchers are currently revisiting the monetary history of the euro area for the 4th ECB Central Banking Conference in November 2006. The information content of money will be documented in real time. This will allow assessment of the role of the ECB's monetary analysis in past projections and monetary decisions.

B) A further priority is the exploration and further development of early indicator properties of money and credit aggregates, both with regard to a direct link to consumer price inflation and with respect to an indirect, longer-term link via asset prices.

C) Large resources are devoted to finding a practical solution to model uncertainty. The issue is how to derive robust quantitative policy recommendations from a large variety of simulation models.

**3. The Transmission Mechanism
of Monetary Policy**

A) The Eurosystem, with the participation of some new EU member states, has just started a new research network on wage dynamics in the euro area. Wage costs are a major determinant of

inflation in the euro area, and characteristics of the wage setting process seem to determine features of price setting. For example, prices change at a lower frequency in labour intensive sectors. Improving our understanding of wage dynamics is crucial for understanding the transmission mechanism of monetary policy, appropriately modelling the euro area macro-economy and providing policy advice with respect to labour market reforms.

B) Understanding residential property prices is gaining more attention, as housing is the largest component of private wealth and residential property price changes explain a large part of wealth effects in monetary policy. So far, satisfactory models to explain housing prices have been scarce. Home purchases are highly leveraged and the reliance on housing as collateral raises issues of banking sector stability in situations of asset price deflation and defaulting borrowers. National characteristics of mortgage markets play a crucial role and deserve scrutiny. As house price boom/bust cycles have proven to exert a strong influence on the economy, information on the likelihood of housing prices being fundamentally justified or not, could at times be an important input into monetary policy decision making. The quality and scope of euro area house price indices also deserve further attention.

C) Information on household finances and consumption using micro-level data is of prime importance to monetary policy makers. We know very little about the determinants of household portfolio decisions, an issue which is gaining importance in the light of the ageing of societies, related pension reforms and the likely consequences for various asset prices. Similarly, we lack precise knowledge about the importance of changes in social security systems, financial constraints and wealth on household consumption in the euro area. Most existing micro-level studies use US data. While in a number of euro area countries data sets on household finances exist, their quality, level of detail, lack of comparability and accessibility substantially reduce their usefulness for systematic research and policy making for the euro area.

D) The new literature on macro-finance models of the term structure allows risk premia in bond yields of different maturities to vary over time in an arbitrage consistent manner. These risk premia depend on macroeconomic conditions, while these models allow for mutual feedback between the macro-economy and interest rates. ECB researchers have been actively contributing to the macro-finance literature and current work is focused on

deriving reliable estimates of risk premia and thus inflation expectations for the term structure in these computationally expensive models.

4. Financial Stability
The link between financial stability and monetary policy has not been explored in sufficient depth in a general equilibrium context. Traditionally, macro models have only a rudimentary financial sector and finance models would not allow to study optimal monetary policy. We need to capture the mutual feedback between the monetary policy regime, financial market agents' behaviour and the stability of the financial system. Although some empirical work on asset-price booms and also some DSGE models including financial frictions are available, a lot remains to be done to satisfactorily integrate the macro and finance literature. The main question to be answered is how monetary policy is supposed to optimally deal with the possibility of financial imbalances and financial crises.

5. The Efficiency of the European Financial System
The ECB is particularly interested in monitoring the progress in European financial integration given that financial integration directly affects the transmission mechanism of monetary policy and has consequences for financial stability. Financial integration increases the efficiency of the European financial system and thus improves the allocation of scarce capital. Since 2002, the ECB together with the Center for Financial Studies has maintained a research network on "Capital Markets and Financial Integration" aimed at stimulating research on the current and future structure of the financial system in Europe and its linkages to the United States and Japan.

6. International Issues
Global imbalances is the catch-phrase for concerns about the sustainability of the US net foreign liability position. It is crucial to derive a clear understanding of the fundamental reasons behind the US current account deficits and the corresponding saving surpluses in other countries to make a judgement on the sustainability of the current positions. The most likely adjustment scenarios and the respective consequences for the world economy are of interest to policy makers. Some of the possible adjustment scenarios, such as a large US dollar depreciation in real effective terms, could – if occurring in a disorderly, abrupt manner – impose huge costs on the world economy as a whole with possibly uneven geographical distribution.

What are the research priorities of a central bank that targets inflation?
Nicoletta Batini (International Monetary Fund)

Inflation targeting (IT) has become a very popular monetary policy strategy among advanced and developing countries alike. Some 21 countries (of which 8 advanced and 13 emerging markets) are now inflation targeters. Most, if not all, are considered successes in that they have managed to reduce inflation to, or close to, desired levels without significant output gap costs; and none has abandoned IT, except to join the EMU. Following in their footsteps, a significant number of other countries are considering IT, including many emerging-market or developing economies.

The Czech Republic was the second emerging market country to adopt IT (in 1998) and the Czech National Bank (CNB) has been very successful at targeting inflation over the last eight years. Its inflation rate has remained in the low single digits and well within the inflation target band, even in the face of protracted depreciation and appreciation pressures. The tight grip on inflation has had no adverse consequences for economic growth, which over the last few years has been strong and relative stable by Czech standards. This could not have been achieved without improvements in the CNB's "technical infrastructure". Over the years, the CNB has worked on improving its inflation forecasting and modelling capabilities. Efforts have also been made on the communication and transparency front, leading to a progressively more open and informative exchange between the CNB, the markets and the public at large (Fracasso, Genberg and Wyplosz, 2003). One interesting question in this respect is what the CNB's most prominent research priorities should be from where it stands today. A few suggestions are listed below, grouped by research area.

There are at least three issues that deserve attention in **monetary policy** research:
1. *Inflation differentials and inflation expectations across EMU. In the run-up to the formation of EMU,* the dispersion of national inflation rates has fallen steadily. Current inflation differentials within the euro area are not particularly large. However, they are persistent and can create relative differentials in price competitiveness among countries. This is particularly important for emerging market countries within EMU, where exports are an important source of income;
2. *Flying "blind".* Output gap indicators tend to lose information content for inflationary pressures in economies that have successfully stabilised inflation and smoothed business cycles. This creates a problem for monetary policy because it complicates inflation forecasting, creating a need for new indicators of inflation;
3. *Major economic trends and new joining members.* More research is needed on the big economic trends driving the Czech Republic, including the real exchange rate, the population and, more generally, economic growth. As more countries join the EMU, it is vital to investigate the potential impact this may have on neighbouring countries and the domestic economy.

Successful IT central banks have long developed their own "suite" of **models**, rather than relying on a single model, since models with different structures and philosophy serve different purposes in monetary policy analysis. Practical experience tells us that central banks should refrain from pushing models beyond their limits. To this end, a central bank should devote part of its research resources to developing at least three types of models:
1. *Pure forecasting models*, that is, models with no structure, but typically with a good forecasting performance (such as reduced-form VARs);
2. *Dynamic stochastic general equilibrium models* (DSGE), which are story-telling tools and can help explain what is driving the data;
3. *Combinations of the former two types of models* (e.g. as suggested by Del Negro and Schorfheide, 2005), which can enhance medium-term forecasting by improving performance in a structural model environment

Central banks pursuing IT should buttress their **financial stability** analysis as well as their forecasting capabilities by incorporating research on financial markets into their suite of models. For example, credit channel and credit friction models plus liquidity constraints could be added to forecasting models and calibrated following results from research on financial markets.

Central banks need to be selective in their choice of **fiscal issues**.

1. *Ageing issues* and their long-run macroeconomic implications are often neglected. Ageing goes beyond fiscal implications and affects productivity, competitiveness, growth, migration and current account imbalances, among other things. Central banks can no longer afford to ignore the consequences of demographic change on their medium-term inflation and output projections, thus these should not be left to the ministry of finance but should be an integral part of the central bank research agenda.

2. Differences in *fiscal policies within EMU* can have nominal and real repercussions that, in turn, may affect economic trends and the balance of payments. Central banks should therefore devote some research time to comparative fiscal analysis relative to other countries inside and outside their proximate economic region.

Research in the area of the **real sector and convergence** remains at the centre of relevance both for economic predictions and for policymaking. One obvious example applicable to the Czech Republic is analysis of the potential impact of ERM II on the real sector, given alternative assumptions regarding the terms of trade of its trade competitors.

References

Fracasso, Andrea, Hans Genberg, and Charles Wyplosz, 2003, *How do Central Banks Write? An Evaluation of Inflation Reports by Inflation Targeting Central Banks*. Geneva Reports on the World Economy Special Report 2.

Del Negro, Marco, and Frank Schorfheide, 2005, "Monetary Policy Analysis with Potentially Misspecified Models," Working Paper Series 475, European Central Bank.

CNB Economic Research 2007–2012
Kateřina Šmídková (Czech National Bank)

Which topics should be researched in central banks? This is a question the Economic Research Department (ERD) asked the CNB Research Advisory Committee (RAC) members two years ago. A brainstorming session, during which the RAC members gave an extremely interesting set of presentations, was followed by an internal discussion in the CNB and by a second RAC debate devoted to the draft version of the CNB research priorities for 2007–2012. The priorities were published this year (www.cnb.cz/en/research/research_intro).

The CNB organises its research around a team of research coordinators at the ERD, who are responsible for defining research priorities, coordinating economic research projects and other research-related activities, supervising the quality of research outcomes and distributing those outcomes externally. The ERD has a staff of 14, including the Financial Stability Unit, which produces the CNB's annual Financial Stability Report. However, more than 50 researchers from inside the CNB as well as from external domestic and foreign institutions are working at any point in time on research projects. This provides a great deal of flexibility regarding the research teams.

The purpose of the CNB's economic research is to provide outputs that are relevant to the central bank and of a high international standard. Relevant outputs are those which help the CNB to expand the know-how needed for its core activities: monetary policy, financial sector supervision and maintaining financial stability. High-standard outputs are those that can be readily applied at the CNB and that can be subsequently published in international or regional research journals. The CNB aims to produce its economic research efficiently, hence resources are invested in research projects and activities that are in line with its six-year priorities and two-year Research Programmes.

In the forthcoming period, the CNB's economic research will face the following three main challenges:
(i)   to increase the emphasis on research in the European context;
(ii)   to give research support to changes in the CNB's core activities;
(iii) to utilise new advances in economic research relevant to central banks.
These challenges are reflected in the 2007–2012 priorities, which specify five priority research areas:

A. Monetary policy
Strategic and policy issues related to inflation targeting, and independent monetary policy in general, need to be researched in both the Czech and European context in order to provide (i) a background for the CNB's monetary policy prior to euro adoption and (ii) for the CNB's participation in the Europe-wide general discussion on monetary policy throughout 2007–2012. The experience of countries that will be adopting the euro before the Czech Republic and the experience of the enlarged euro area should be among the closely followed issues.

B. Macro-modelling and forecasting
In order to improve the quality and robustness of the CNB's modelling suite, the new SDGE models should be finalised and there should be an increasing stress on data-driven models. The CNB's forecasting models should be gradually improved by applying new advances in economic theory, computational methods and econometrics. The CNB will use these models to generate its own forecasts and policy simulations under inflation targeting and to produce country inputs into the ESCB debate following euro adoption.

C. Financial stability
Research on financial stability is gradually gaining prominence. The weight of the financial sector in the economy is increasing, and with it so are international financial linkages. The CNB will become the new financial system supervisor in 2006. The CNB's research needs to reflect the link between financial stability and monetary policy, which is currently at the research frontier, while also inviting topics related to the non-banking sectors of the financial system.

D. Fiscal policy
Fiscal issues such as the long-term sustainability and flexibility of the fiscal system need to be researched in order to form the CNB's views on the impact of the fiscal system on macroeconomic developments. Fiscal policy is a high-impact macroeconomic instrument and will be the only one remaining at the national level after euro adoption. The European experience to date indicates that fiscal policy can be one of the most limiting factors in the convergence process and that a further debate on modifications to the SGP, such as the role of fiscal federalism, can be expected.

E. The real sector and convergence
Research on real sector and convergence issues needs to increase the robustness of monetary

policy decisions both under inflation targeting and following euro adoption by delivering supply-side-oriented, disaggregated analyses that improve our understanding of the economy's long-term behaviour and determining factors. Specifically, more detailed knowledge of real economic developments, typically based on micro-data, should help in improving the CNB's macroeconomic predictions, especially at the "short end", and in setting the initial conditions of the model-based forecasts.

CNB Research Seminars

Richard Disney	25 Nov 2006	TBA
Gary Schinasi	Fall 2006	TBA
Adrian Pagan, Australian National University	21 Jun 2006	Recent Developments in Macroeconmetric Modelling for Policy Analysis
Klaus Schmidt-Hebbel, Central Bank of Chile	22 Feb 2006	Does Inflation Targeting Make a Difference?
Finn E. Kydland, Carnegie Mellon University	7 Sep 2005	Quantitative Aggregate Economics
Stephen Cecchetti, Brandeis University	14 Apr 2005	Should Central Bankers Respond to Asset Price Movements: Theory and Evidence
Robert F. Engle, 2003 Nobel laureate, New York University	17 Mar 2005	Downside Risk: Implications for Financial Management

CNB Research and Policy Notes

4/2005	Vít Bárta	Fulfilment of the Maastricht Inflation Criterion by the Czech Republic: Potential Costs and Policy Options
3/2005	Helena Sůvová Eva Kozelková David Zeman Jaroslava Bauerová	Eligibility of External Credit Assessment Institutions
2/2005	Martin Čihák Jaroslav Heřmánek	Stress Testing the Czech Banking System: Where are We? Where are We Going?
1/2005	David Navrátil Viktor Kotlán	The CNB's Policy Decisions – Are They Priced in by the Markets?
4/2004	Aleš Bulíř	External and Fiscal Sustainability of the Czech Economy: A Quick Look Through the IMF's Night-Vision Goggles
3/2004	Martin Čihák	Designing Stress Tests for the Czech Banking System
2/2004	Martin Čihák	Stress Testing: A Review of Key Concepts
1/2004	Tomáš Holub	Foreign Exchange Interventions under Inflation Targeting: The Czech Experience

CNB Working Paper Series

2/2006	Kamil Dybczak	Generational Accounts in the Czech Republic
1/2006	Ian Babetskii	Aggregate Wage Flexibility in Selected New EU Member States
14/2005	Stephen G. Cecchetti	The Brave New World of Central Banking: The Policy Challenges Posed by Asset Price Booms and Busts
13/2005	Robert F. Engle, Jose Gonzalo Rangel	The Spline GARCH Model for Unconditional Volatility and its Global Macroeconomic Causes
12/2005	Jaromír Beneš, Tibor Hlédik, Michael Kumhof, David Vávra	An Economy in Transition and DSGE: What the Czech National Bank's New Projection Model Needs
11/2005	Marek Hlaváček, Michael Koňák Josef Čada	The Application of Structured Feedforward Neural Networks to the Modelling of Daily Series of Currency in Circulation
10/2005	Ondřej Kameník	Solving SDGE Models: A New Algorithm for the SylvesterEquation
9/2005	Roman Šustek	Plant-Level Nonconvexities and the Monetary Transmission Mechanism
8/2005	Roman Horváth	Exchange Rate Variability, Pressures and Optimum Currency Area Criteria: Implications for the Central and Eastern European Countries
7/2005	Balázs Égert Luboš Komárek	Foreign Exchange Interventions and Interest Rate Policy in the Czech Republic: Hand in Glove?
6/2005	Anca Podpiera, Jiří Podpiera	Deteriorating Cost Efficiency in Commercial Banks Signals an Increasing Risk of Failure
5/2005	Luboš Komárek, Martin Melecký	The Behavioural Equilibrium Exchange Rate of the Czech Koruna
4/2005	Kateřina Arnoštová, Jaromír Hurník	The Monetary Transmission Mechanism in the Czech Republic
3/2005	Vladimír Benáček, Jiří Podpiera, Ladislav Prokop	Determining Factors of Czech Foreign Trade: A Cross-Section Time Series Perspective
2/2005	Kamil Galuščák, Daniel Münich	Structural and Cyclical Unemployment: What Can We Derive from the Matching Function?
1/2005	Ivan Babouček, Martin Jančar	Effects of Macroeconomic Shocks to the Quality of the Aggregate Loan Portfolio