



národní  
úložiště  
šedé  
literatury

**Economic research bulletin (2004, No.2)**

Česká národní banka  
2004

Dostupný z <http://www.nusl.cz/ntk/nusl-124077>

Dílo je chráněno podle autorského zákona č. 121/2000 Sb.

Tento dokument byl stažen z Národního úložiště šedé literatury (NUŠL).

Datum stažení: 02.05.2024

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# Economic Research Bulletin

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No. 2, Vol. 2, October 2004

## EDITORIAL

*The notion of an optimum policy mix is well known among professional economists. But how exactly does a central bank reflect fiscal developments? In this issue of the Czech National Bank Research Bulletin, Vladimír Bezděk and Aleš Krejdl present the results of CNB research on the key fiscal problems in the Czech Republic.*

*First, they look at the cyclically adjusted fiscal balance. Could we expect any contribution of Czech fiscal policy to smoothing macro-economic fluctuations, or does it in fact display pro-cyclical features?*

*Second, the authors calculate quasi-fiscal deficits caused by the specific costs of economic transition, such as financing enterprise restructuring or cleaning up commercial banks' balance sheets, which are not officially included in the budgetary system. The issue is to quantify the extent to which the "official" information on overall fiscal outlays is downward-biased.*

*Finally, there is the impact of population ageing, which the central bank must anticipate when assessing the interplay between monetary and fiscal policies. What would happen without immediate reform of the pension and health care system?*

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## IN THIS ISSUE

### **The Czech Fiscal Deterioration: Is Structural Expansion or the Business Cycle to Blame?**

Czech fiscal policy does not fulfil the macroeconomic stabilising function in a satisfactory manner. As the cyclically-adjusted primary balance suggests, it even contributes to business cycle fluctuations, as it exhibits mainly pro-cyclical features. Therefore, monetary policy is overloaded and left to stand alone in short-term economic stabilisation.

**Vladimír Bezděk and Aleš Krejdl (on page 2)**

### **The Quasi-fiscal Deficit in the Czech Republic: How Large Is It and Where Does It Come From?**

The quasi-fiscal transactions of the Czech government were significant in terms of their size and in some years even changed the character and timing of overall fiscal expansions or restrictions. The low transparency of fiscal policy thus increased the risks and uncertainty which monetary policy had to cope with.

**Vladimír Bezděk and Aleš Krejdl (on page 4)**

### **The Fiscal Implications of Population Ageing: Are Czech Public Finances Ready to Absorb the Costs of Ageing?**

The Czech Republic will have to clear its high primary deficit and at the same time reform its pension and health care systems. Using our long-term projections, we provide strong arguments to convince all the important stakeholders that it is high time to take immediate action. Otherwise, an explosive rise in public debt and interest payments cannot be sustained.

**Vladimír Bezděk and Aleš Krejdl (on page 6)**

# The Czech Fiscal Deterioration: Is Structural Expansion or the Business Cycle to Blame?

Vladimír Bezděk and Aleš Krejdl \*

The concept of the cyclically-adjusted fiscal balance has gained in popularity in recent years, both among academics and in policy-oriented institutions. Indeed, it is difficult to assess fiscal policy properly without having any idea about the impact of the business cycle on budgetary revenues and expenditures. Such an analysis can deliver useful insights into whether fiscal policy is pro-cyclical or, on the contrary, exhibits predominantly stabilising properties.

It should also be noted that, within the context of the European Union, the cyclically adjusted primary balance has been widely used in the process of multilateral fiscal policy co-ordination. These are some of the reasons why a central bank should be interested in elaborating this sort of fiscal policy analysis.

There are several different approaches used in the literature to disentangle the impact of the business cycle from the fiscal balance.<sup>1</sup> In the Czech National Bank we have decided to use two of them – the OECD approach (Giorno *et al.*, 1995) and the ESCB method (ECB, 2001). We wished to investigate what kind of results these methods provide when applied to Czech fiscal data.

The logic underlying the OECD method differs slightly from that of the ESCB method. The OECD approach works with the aggregate output gap derived from the

production function. A cyclical surplus (deficit) emerges in a situation where the economy operates above (below) its potential GDP level. Specifically, fiscal revenue and expenditure elasticities are calculated with respect to the output gap.

These elasticities tell us, for example, how large is the reaction of fiscal revenues/expenditure to a 1% change in the output gap. As a result, the cyclical balance is driven by the sign and magnitude of the output gap, but its concrete value depends additionally on the coefficients of the fiscal elasticities.

By contrast, the ESCB method relies on more detailed data when analysing the position of the economy in the business cycle. Fiscal elasticities under the ESCB approach are not related to the aggregate measure of cyclical fluctuations (i.e. the output gap), but to individual macroeconomic bases such as private consumption, the private sector wage bill, the gross operating surplus of firms, and private sector employment. In this case, the difference (gap) between actual private consumption (the private sector wage bill, etc.) and its long-term trend level represents an analogy of the output gap.

The next step to obtain a cyclical surplus/deficit is to estimate fiscal expenditure/revenue elasticities with respect to these macroeconomic bases. Finally, the cyclical balance is obtained as the sum of the gaps in the individual macroeconomic bases multiplied

by the relevant elasticity coefficients (Figure 1).

Figure 1 presents estimates of the cyclical fiscal balance according to the techniques employed. While on average the two methods provide similar results, the most remarkable short-term differences are observable in 1995, 1997 and 2001. For example, according to the OECD approach, the Czech fiscal balance in 2001 should have already experienced a cyclical surplus of 0.20% of GDP, since the overall output gap measured by the production function concept was slightly positive.

Using the ESCB technique leads, however, to a cyclical deficit of the same order, since the economic recovery was not yet satisfactorily reflected in the most important “domestic” macroeconomic bases (the private wage bill and private consumption). A similar situation is observable in 1995. On the contrary, for 1997 both methods agree on the existence of a cyclical surplus, but the magnitude differs substantially. The reason is that, based on the output gap, the economy was only slightly above its potential. However, the private wage bill and private consumption – the main fiscal macroeconomic bases relevant for the ESCB technique – were still well above their trend levels. The differences in the cyclical balance for the above-mentioned years are thus driven by an unbalanced structure of economic growth, since the private wage bill and private consumption

<sup>1</sup> See, for example, Banca d'Italia (1999) for a very good survey of the different methods.

\* Vladimír Bezděk is Adviser to the Bank Board and a member of the Economic Research Department. Aleš Krejdl is Head of the Fiscal Forecasting and Economic Modelling Unit at the Ministry of Finance. The short articles presented in this issue are based on Bezděk, Krejdl and Dybczak (2003). The full version of this Czech National Bank Working Paper is available at <http://www.cnb.cz/en/pdf/wp7-2003.pdf>

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lagged behind the GDP growth rate changes.

For Czech fiscal developments the above evidence signals the existence of what the literature calls the “composition effect”.

Having presented the cyclical fiscal balances in Figure 1, we now introduce the cyclically adjusted primary fiscal balance in Figure 2. Whereas the cyclical fiscal balance fully reflects the “potential” impact of the business cycle on the budgetary position, the cyclically-adjusted primary fiscal balance shows the real direction of fiscal policy which is not a result of business cycle fluctuations. To obtain such a

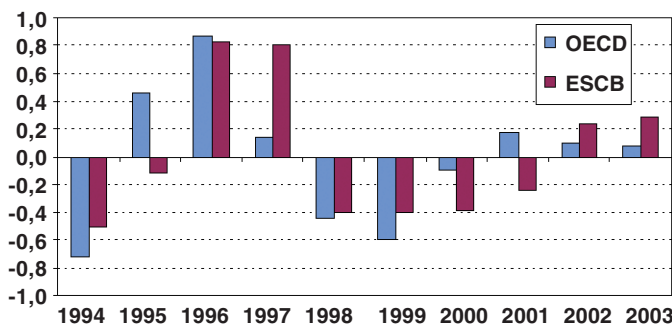
result, we simply deduct the cyclical balance from the primary fiscal balance in the given year.<sup>2)</sup>

It is apparent that the cyclically adjusted primary fiscal balance has deteriorated substantially in the last ten years (see Figure 2). The largest deterioration has been observed in the last five years. Such a result has been achieved in accelerated GDP growth conditions, which indicates that for most of the time fiscal policy in the Czech Republic shows unpleasant pro-cyclical tendencies. These are the basic characteristics of the recent Czech fiscal development as confirmed by both the OECD and ESCB techniques. Due to the

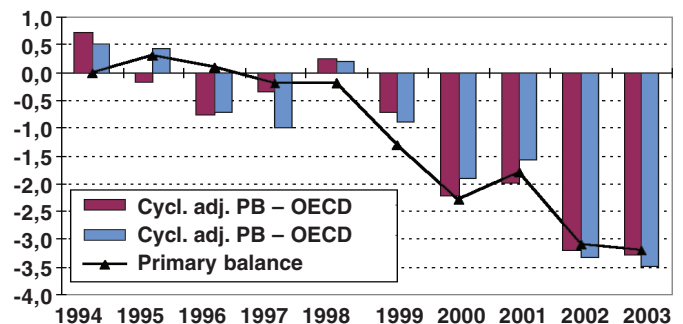
poor fiscal policy management, the fiscal and monetary policy mix is far from optimum. Moreover, the continuous fiscal deterioration compromises long-term fiscal sustainability and raises questions about the country’s future long-term economic prospects.

Fiscal issues remain at the centre of the CNB’s research. The current fiscal research deals, *inter alia*, with modelling the fiscal impulse, i.e. the impact of a given fiscal stance (and its revenue/expenditure structure) on macroeconomic performance. We believe that such progress will further improve the CNB’s analytical abilities in the fiscal policy area. ■

**FIGURE 1: Cyclical fiscal balance in the Czech Republic (comparison of OECD and ESCB approaches)**



**FIGURE 2: The primary fiscal balance in the Czech Republic from 1994 to 2003 (as % of GDP) and the cyclically adjusted primary balance**



<sup>2</sup> The primary fiscal balance represents the nominal fiscal balance in the given year minus interest payments. There is a broad consensus in the literature that interest payments should be excluded from the fiscal balance when computing cyclically-adjusted data. Interest expenditures are exogenous for the government, especially in the short run. Therefore, the primary fiscal balance is used as a data input into this sort of analysis.

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# The Quasi-fiscal Deficit in the Czech Republic – How Large Is It and Where Does It Come From?

Vladimír Bezděk and Aleš Krejdl

This short article deals with the transparency of Czech fiscal policy and the quality of fiscal statistics. It is well known that the optimal fiscal and monetary policy mix depends crucially, *inter alia*, on the quality, timeliness and transparency of information, including fiscal accounts.

The experience of the Czech Republic in the field of fiscal policy may serve as an interesting example. The transparency of Czech fiscal policy has been impaired by the existence of “transformation institutions”, namely the financial group of the Czech Consolidation Agency (hereafter: CCA; formerly: Consolidation Bank)<sup>1</sup>. The individual entities within the CCA were created by the government during the 1990s with the aim of facilitating the process of economic transformation. On top of that, in the second half of the 1990s the government used these agencies in order to stabilise the banking sector.

Both the business sector restructuring and the cleaning-up of commercial banks’ balance sheets in the pre-privatisation period were very costly. As the CCA as a whole stood, until quite recently, outside the officially reported scope of the general government budgets, the price of these government interventions was not included in the standard fiscal statistics in a satisfactory manner, or even at all.

As a result, an important piece of information on the government’s capital transfers to the private sector escaped not only from the government accounts and public oversight, but also from the set of information used by the fiscal and monetary authorities to conduct stabilisation policies. Thus, policy makers in the Czech Republic were faced with a sub-optimal situation, since they did not have full information on the extent of the overall fiscal outlays.

To shed more light on the size and timing of these quasi-fiscal activities we used a slightly modified approach developed by Poláčková-Brixí (2000) to estimate the size of the quasi-fiscal deficits and quasi-fiscal debt. The quasi-fiscal deficit in our definition equals the change in the net wealth of the transformation institutions in a given year. By contrast, the quasi-fiscal debt (sometimes also called the “indirect debt”) is basically the consolidated sum of the external liabilities of all the transformation institutions within the CCA group.

Our estimates are based on detailed data from the balance sheets and profit-and-loss statements of the relevant transformation institutions. Due to data availability, the analysis is restricted to the period from 1993 to 2000. The main results are summarised in Tables 1 and 2.

The estimates demonstrate that in the 1990s the quasi-fiscal deficits were not negligible, amounting to about 1.5% of GDP a year on average (Table 1). However, two different periods can be distinguished. Up to 1996 (except for 1993), the quasi-fiscal deficits were negligible and even declining in relative terms.

Starting from 1997, however, quasi-fiscal expenditures were used additionally to clean up the banking sector before privatisation, so their volumes started increasing quite rapidly.

The indirect state debt rose after 1996, as the transformation institutions’ dependency on external financial resources intensified (Table 2). At the end of the last decade, these hidden state liabilities amounted to about 7.5% of GDP according to our calculations.

Based on the above evidence, we argue that fiscal policy in the Czech Republic has been implemented in a dualistic way. On the one hand, we do have an “official” account of government policies. But, on the other hand, the government conducted some fiscal operations beyond the official scope of the public finance system *via* the transformation institutions.<sup>2</sup> Such a strategy entailed serious adverse effects with regard to fiscal transparency and readability for policy makers.

Moreover, the size of the

<sup>1</sup> The CCA financial group consists of the following entities: Czech Consolidation Agency (including its subsidiaries), Česká inkasní and Česká finanční.

<sup>2</sup> Our conclusion was broadly confirmed in May 2004 by the European Commission (2004) in co-operation with Eurostat. In its report on the notification of deficit and debt data for 2003, Eurostat raised the Czech fiscal deficit for 2003 in a one-shot manner from the previously estimated 5.5%–6% to 12.9% of GDP (and the debt from 30% to 37.6% accordingly) in order to account for past quasi-fiscal activities.

quasi-fiscal deficits in some years, in particular from 1997 to 1999, was so large that it may change the previous interpretation of overall fiscal policy development. Adding the quasi-fiscal data to the official fiscal deficit, we argue that the fiscal policy stance in 1997 and 1998 was in fact expansionary,

which is in sharp contradiction to the previous assessments of a neutral or even restrictive fiscal policy in these years made by a number of analysts (see, for example, Schneider and Krejdl, 2000). On the other hand, the fiscal stance in 1999 used to be described as expansionary. Our

data, however, show that the expansion was realised just a year later. In terms of monetary policy conclusions, we can sum up that the monetary policy decisions in the past decade were based on insufficient fiscal information. ■

**TABLE 1: Quasi-fiscal deficits (CZK bn)**

	1993	1994	1995	1996	1997	1998	1999	2000
Ceska inkasni	20.1	6.1	7.0	4.3	3.7	2.4	1.8	0.1
Ceska financni	–	–	–	–	26.4	24.2	-3.8	-2.1
Czech Consolidation Agency	n.a.	2.6	-3.3	0.4	1.2	27.0	35.0	39.4
TOTAL	20.1	8.7	3.7	4.7	31.3	53.6	33.0	37.4
TOTAL (% of GDP)	2.0%	0.7%	0.3%	0.3%	1.9%	2.9%	1.7%	1.9%

**TABLE 2: Indirect state debt in transformation institutions (CZK bn)**

	1993 <sup>2)</sup>	1994	1995	1996	1997	1998	1999	2000
Ceska inkasni	20.1	26.7	28.0	23.9	20.0	16.7	12.2	8.2
Ceska financni	–	–	–	–	9.6	21.3	21.8	15.2
Czech Consolidation Agency	75.8	73.9	72.4	67.1	87.6	106.6	141.1	137.5
TOTAL	95.9 <sup>2)</sup>	100.5	85.3	75.0	95.2	116.6	140.7	145.4
Consolidation <sup>1)</sup>	0	-0.1	-15.1	-16.0	-22.0	-28.0	-34.4	-15.5
TOTAL (% of GDP)	9.4%	8.5%	6.2%	4.8%	5.7%	6.3%	7.5%	7.4%

**NOTES:** <sup>1)</sup> In CZK billions; where a particular transformation institution was partly financed by a loan granted by another one, consolidation of the total external liabilities was necessary in order to avoid accounting duplication. Thus the negative values mean a decrease in the overall indirect debt caused by these internal financial transactions, while the zero value in 1993 means that there was no such transaction at all. <sup>2)</sup> This starting level of indirect debt in 1993 resulted from the previous government's quasi-fiscal activities, related primarily to business sector restructuring.

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# The Fiscal Implications of Population Ageing: Are Czech Public Finances Ready to Absorb the Costs of Ageing?

Vladimír Bezděk and Aleš Krejdl

One of the most debated issues in the area of public finances is the impact of population ageing on the long-term sustainability of public finances. It has been widely recognised that the industrialised countries will be subject to a profound demographic shock in the coming decades.<sup>1)</sup>

The Czech Republic is no exception in this respect. International comparisons indicate that it ranks as a rapidly ageing country (behind Italy, Spain, Austria and Poland), as measured by the projected evolution of the old-age dependency ratio. The increasing number of elderly people and the shrinking working-age population will have a major impact on labour market functioning and on the pension and health care systems.

Long-term fiscal projections are now widely used to quantify the future fiscal burden of changes in demographic structure. In the past, fiscal projections were often limited to pension spending only and did not take into account other budgetary items. Undoubtedly, pension spending will be most strongly hit by the steeply rising dependency ratio, but there are some other spending categories which are likely to be affected – namely health care, education expenditure and some social benefits.

We provided a complex input into the debate on the fiscal implications of population ageing in the context of the Czech Republic. It also shows

the magnitude of the fiscal adjustment needed to make Czech public finances sustainable.

About 53 per cent of overall public spending in the Czech Republic can be considered to depend on the age structure of the population. The age-related spending comprises pensions, health care, education and child/family benefits. While ageing populations are likely to drive up pension spending and health care costs, the shrinking youth age group may offset this rise by inducing reductions in education expenditure and child/family benefits.

The long-term projection of age-related spending shows the primary deficit starting to rise sharply from 2010, when the large post-war cohorts reach retirement age (Figure 1). At the same time, the increasing number of the elderly, who consume the highest portion of health services, drives up health care spending. The greatest increase in the primary deficit is likely to occur between 2030 and 2040.

It is only beyond 2040 when the increments in pension and health care spending diminish and the primary deficit appears to stabilise at more than 10 per cent of GDP, some 7 percentage points higher than in 2003. The decline in education expenditure and child/family benefits is not large enough to mitigate the impact of ageing on the budgetary balance. It brings about only a marginal improvement in the primary balance in the first five years of the projection.

In the next 50 years the ratio of

pension spending to GDP will increase by some 6 percentage points, i.e. from 9% in 2003 to 15% in 2050. Next to that, the health care spending ratio is projected to rise by almost 2 percentage points. During the same period (2000–2050), the size of the population aged 0 to 26 will fall by 46 per cent. Such a rapid decline in the youth population indicates a potential area for spending containment. Education expenditure, as a per cent of GDP, will decline by 0.6 percentage points and child/family benefits will decrease by 0.3 per cent of GDP by 2050.

A permanent primary deficit of large magnitude results in a ballooning debt, reaching seven times the 2050 GDP level.<sup>3)</sup> These circumstances trigger a vicious circle of growing interest payments that add to the primary deficit and further speed up the debt accumulation. But just under half of the debt accumulation (i.e. some 280 per cent of GDP) is a direct result of rising age-related spending. The rest can be attributed to the poor starting position given by the high primary deficit.

For instance, in 2035 the primary deficit amounts to 8.2 per cent of GDP. Compared to the base year (in Figure 1 approximated by the 2005 deficit of 4.5 per cent of GDP), the ageing process will lead to a rise in primary spending of 3.7 per cent of GDP. Behind the ballooning debt, an increase in interest payments from only 1 per cent of GDP towards some 26 per cent of GDP should be

<sup>1</sup> See, for example, EC (2001) and OECD (2001).

<sup>2</sup> Defined as the number of persons aged 65 and over divided by the number of persons aged 20–64.

<sup>3</sup> GDP was projected as a product of labour productivity and employment. Employment was derived from the demographic projection. Labour productivity was allowed to converge to 80 per cent of the EU level during the period 2005 – 2035 and then stabilising at the common growth path of 1.75 per cent a year.

considered (not shown in Figure 1)! It is obvious that such an explosive rise in public debt and interest payments cannot be sustained.

The best way of portraying the magnitude of the future fiscal imbalance is to calculate the “tax gap”. This measures the difference between the current tax-to-GDP ratio and the constant tax-to-GDP ratio ensuring that public debt will not exceed 60 per cent of GDP at the end of the projection period. Should the government undertake a fiscal adjustment in 2005, it would immediately have to raise taxes or reduce spending by 6.8 per cent of GDP and keep to that new level of taxes/expenditure every year of the projection period in order not to break the Maastricht debt level in 2050. Postponing the decision by one additional year raises the costs of such an adjustment by another 0.2–0.3 per cent of GDP.

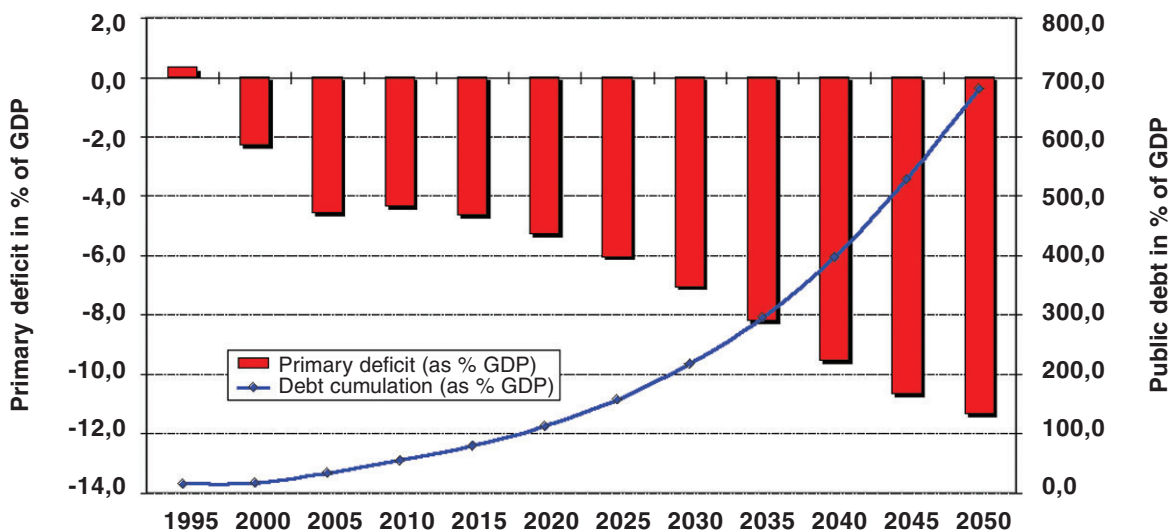
The macroeconomic scenario underlying the fiscal projection captures the impact of the changing demographic structure only to the extent to which the shrinking working-age population affects the labour market. The resulting negative employment growth becomes a severe obstacle to future economic growth. However, the projection omitted any feedback mechanisms from public finances to the rest of the economy. The sharp increase in age-related spending, the deterioration of the primary deficit and the exploding public debt would inevitably trigger costly adjustment in terms of lost output.

Given these unfavourable demographic trends, policy makers will have to contemplate how to address the pressures on public expenditures stemming from population ageing. Although some of the expenditures may attenuate

the impact of population ageing on pension system and health care spending, they are unlikely to reverse the unfavourable trends. A more favourable macroeconomic environment cannot be expected to solve the problem. This can be illustrated by sensitivity tests employing alternative assumptions regarding the relevant variables.

For example, we found that lowering the unemployment rate by 2.5 percentage points every year compared to the baseline would improve the primary deficit by only 0.5 percent of GDP. Higher annual productivity growth (by 0.5 percentage points compared to the baseline) makes the fiscal imbalance lower by some 0.6 per cent of GDP. ■

**FIGURE 1: Public deficit and debt (as per cent of GDP, from 1995 to 2050)**



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## News from the CNB Research Department

The year 2004 brought many staff and institutional changes to the CNB's Economic Research Department (ERD). Miroslav Hrnčíř decided to retire from the position of ERD Director. The CNB Board appointed Kateřina Šmídková as his replacement. Aleš Čapek took over responsibility for co-ordinating research in the area of financial stability and heading the newly established Financial Stability Unit.

This unit will produce a Financial Stability Report each year. Martin Cincibuch became co-ordinator of monetary policy research. Vladimír Bezděk took temporary leave from the Bank in order to co-ordinate the working group preparing the Czech pension reform, at the

request of the Czech Minister of Finance. Tibor Hledik moved to the Monetary and Statistical Department to lead the Macroeconomic Forecasting Division.

Despite all these changes, the ERD strived to provide both a stimulating and stable environment for economic research. The CNB Research Programme for 2005–2006, involving 16 research projects and 38 researchers, was prepared. The Programme includes plans to continue collaborating with the Czech economic society in organising several seminars with invited speakers each year.

The CNB Research Advisory Committee (RAC) met for the third time in Prague this year to discuss the 2005–2006

Programme and the Progress Report on the ongoing research projects. The ERD particularly appreciates the useful input from the external members of the committee: I. Angeloni (ECB), N. Batini (IMF), A. Bulíř (IMF), L. Halpern (Hungarian Acad. of Sciences), E. Hochreiter (OENB) and D. Mayes (BoF).

The ERD is now looking forward to publishing the first CNB Financial Stability Report at the end of this year and to working on the 2005–2006 Research Programme next year.

**Kateřina Šmídková**  
Executive Director  
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## CNB Working Papers Series

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1/2004	Tomáš Holub	Foreign exchange interventions under inflation targeting: The Czech experience
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# CNB Research Seminars

## Joint Seminars of the Czech National Bank and the Czech Economic Society

LECTURER	SEMINAR TITLE	DATE
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Nicos Christodoulakis	Real and Nominal Convergence to EMU: Reforms, Harmonization and Transeuropean Initiatives	11.11.2004
Neil Rankin	Dynamic General Equilibrium Models in Macroeconomics	21.04.2004
Juergen von Hagen	Fiscal Sustainability in EMU From the Stability and Growth To a Stability Council for EMU	11.12.2003
William R. White	Monetary and Financial Stability: How to Find Reinforcing Anchors?	31.10.2003
Nouriel Roubini	Sovereign Debt Restructurings	20.06.2003
Frederic Mishkin	Inflation Targeting: International Experience	5.4.2002
Willem H. Buiter	The Stability and Growth Pact Meets the Accession Countries: What Happens?	29.4.2002
Mario Nuti	Prospects of Unilateral Euro-isation in EU Accession Candidate Countries	2.10.2002
David Begg	Monetary Integration in Europe	23.11.2002