



NÁRODNÁ BANKA SLOVENSKA
EUROSYSTEM

CHAPTER 7

ECONOMIC RESEARCH

7



7 ECONOMIC RESEARCH

The content of research work in 2010 focused mainly on the need for a more in-depth analysis of economic developments in Slovakia in the context of its euro area membership. The most important outputs did not simply bring more detailed information about the current state of Slovakia's competitiveness, convergence, financial situation and fiscal position vis-à-vis other EU or euro area countries, but also provided thought-provoking ideas for structural reforms aimed at accelerating economic growth and raising the quality of life. In elaborating a structural macroeconomic model (DSGE) of the Slovak economy, account was taken of the euro area's increasing effect on the domestic economy. The research team also intensified its international cooperation, especially in regard to macro-prudential modelling and consumer behaviour. In addition, a greater number of papers were published in English.

The purpose of the economic research undertaken at the central bank is to better identify the economic and financial interrelationships in the economy and their connection with monetary policy. That is particularly true of applied research, which provides supporting information for monetary policy decision-making and contributes to specialist discussions on current economic issues. The majority of the research is carried out by staff members of the NBS Research Department. The most notable results and findings of 2010 were published in specialist articles, while the more extensive outputs were published as reviewed working papers (with the designation WP). Analyses and findings not included in working papers are published as discussion papers (DP) or specialist analyses – mostly policy papers (PP) and occasional papers (OP).¹⁶

A total of eight research papers intended for the public were published during the course of 2010. Four of them were specialist analyses, one was a discussion paper, and three came under the heading of working papers. Although most of the authors of these papers were members of the Research Department staff, they cooperated to an increasing extent with staff members of other NBS departments and with external authors and

co-authors. In addition to these specialist papers, the Research Department staff produced two Financial Stability Reports (FSRs) in cooperation with colleagues from other NBS departments involved in financial stability issues.

The published papers helped to deepen our knowledge about the domestic economy in several areas. The first of them focused on the calculation of total factor productivity (TFP) at the corporate level and on estimating the effect of TFP on unit labour costs. The key finding for the purposes of monetary policy was that increasing corporate productivity is accompanied by a rise in hourly wages, which are the main factor in unit labour cost growth. The next paper examined the relationship between the local level of unemployment and the wage level, and confirmed that wages in Slovakia are, on average, relatively flexible – although there are significant differences between sectors, regions and worker skill groups. Research on the effect of labour cost increases on inflation in the euro area indicates that prices in Slovakia are also flexible. Another paper offers a detailed description of developments in the nominal and real economy. As a consequence of the financial and economic crisis, real divergence was prevalent in a number of Member States (and also candidate countries) in 2010. This in turn led to the non-fulfilment of Maastricht criteria, particularly in respect of the substantial worsening fiscal situation. A further paper dealt with issues of competitiveness and found that the deterioration of Slovakia's price and cost competitiveness following the euro adoption was only temporary and that the decline in output was caused by the global downturn in demand. As a result of the financial crisis, increasing importance was attached to the macro-prudential aspects of financial supervision and changes were made to the financial regulatory system. These subjects are covered in detail in the FSR annexes. In 2010, a comprehensive quarterly database of general government revenue and expenditure was completed. The details of how it is compiled and how it may be used are the subject of another research paper. A working paper produced in cooperation with the Monetary Policy Department presents the

¹⁶ The full texts are also available on the NBS website at www.nbs.sk/sk/publikacie/vyskumne-studie



second generation of the DSGE model of the Slovak economy. The paper that attracted the most public interest was one proposing ten outcome indicators that could be used both for setting targets and for the quantitative evaluation of structural policies in Slovakia. A more detailed description of the published papers is provided in Box 1.

An important role is played by the exchange of knowledge through expert seminars and conferences. In cooperation with Comenius University in Bratislava and Heriot-Watt University in Bratislava, Národná banka Slovenska organised a prestigious three-day international conference attended by senior representatives and experts from several European central banks, international institutions and universities. The conference helped to further the international exchange of valuable insights concerning the euro area and the financial crisis. Altogether in 2010, NBS hosted more than 30 seminars at its headquarters. The work presented at these seminars included not only published research, but also findings that were still to be released. A positive development last year was the increase in the number of seminars at which external lecturers presented their work – to the point that they even outnumbered the seminars on NBS research results. The information presented by our foreign guests was of great value. In addition to the subject-matter of the published studies, the expert seminars focused on current economic and monetary-policy issues, supervision of financial institutions, and specific issues in the field of economic modelling.

Cooperation with international research teams continued to be developed in 2010. Since an NBS representative attends meetings of Heads of Research of EU national central banks, NBS's domestic research activities can to a greater extent be dovetailed with the research undertaken by other euro area NCBs. Last year, Národná banka Slovenska was a member of three ESCB expert groups that performed research-related activities.

The Household Finance and Consumption Network (HFCN) examines the financial position and consumption expenditure of households. As part of a joint project of euro area national central banks, a survey of more than 2,000 households was conducted in Slovakia in 2010, the aim being to collect reliable data on the financial situation

of Slovak households. Analysis of the collected data will help to further understanding of how macroeconomic shocks and monetary-policy or institutional changes affect different household groups. What now seems particularly relevant from the central bank perspective is the analysis of the wealth effect on household consumption and the analysis of household indebtedness. The collected data represents a suitable starting point for several future papers, whether on household access to loans, the household saving ratio, the increase in household debt, or how to address the housing issue.

The financial crisis and its far-reaching consequences made clear the need for a deeper knowledge of financial stability and its interconnection with the real economy. In this regard, the ESCB established a Macro-prudential Research Network (MaRs) in 2010 following the successful completion of the MaRs preparatory phase in 2009. At the first plenary meeting of the MaRs, the attending experts analysed and classified the submitted drafts of research projects. The MaRs activities are divided into three core areas: 1) the development of macro-financial models connecting financial stability with the real economy; 2) early warning systems and systemic risk indicators; and 3) the assessment of contagion risk. NBS was represented at the plenary meeting and has also been involved with the research into early warning systems and systemic risk indicators. At the same time, the MaRs will focus also on the following areas: the identification of stress and credit growth, the emergence of asset price bubbles, fiscal surveillance, and individual and systemic bank risks.

Issues surrounding the interrelationships between the financial economy and real economy have also come to the fore in the Working Group on Econometric Modelling (WGEM). This group brings together three teams: the first team examines potential output within DSGE models; the second deals with the benefits and costs of fiscal consolidation; and the third focuses on macro-financial links. Staff members of the NBS Research Department contributed to the preparation of the interim report and they were actively involved in the work of the third team, focusing on the transmission of shocks from the financial sector to the real economy and on the potential feedback loops to the financial sector.



Box 1

PAPERS PUBLISHED IN 2010

Michal Benčík

OP 1/2010: The impact of total factor productivity on wages and unit labour costs

This paper focuses on estimating total factor productivity (TFP) at the corporate level over the period 2001–2007. It examines the effect of TFP on wages, employee numbers and the number of hours worked, as well as on unit labour costs measured by the share of wages in value added. Total factor productivity is estimated using the Levinsohn and Petrin method. By applying a dynamic panel estimator, it was found that TFP affects the share of wages in value added through several channels. In the case of unit wage cost development, the wage channel is dominant. This means that the TFP acts mainly through hourly wages, which are an increasing function of corporate productivity and a declining function of sectoral productivity. The effect of TFP is seen to a lesser extent in the number of employees and the number of hours worked per employee – here the increase in corporate productivity has a negative impact and the level of sectoral productivity has a positive impact.

Mária Marčanová and Ľudovít Ódor

OP 2/2010: Quarterly fiscal database 1996–2006 (for analytical purposes)

This paper presents a comprehensive quarterly database of general government revenues and expenditures in the period 1996–2006, which had not previously been available in Slovakia. Compiled on the basis of the economic budget classification, the database preserves the main principles of the ESA 95 methodology and so remains internationally comparable. It has the advantage of allowing quantitative research of certain aspects of fiscal policy: multiplier size, the efficiency of consolidation measures, and structural deficit size. The data can also be applied in comprehensive models of the Slovak economy to improve fiscal blocks.

Tibor Lalinský

OP 3/2010: Business competitiveness after the euro adoption in Slovakia

Slovak enterprises recorded a significant worsening of economic and financial indicators in the period after the euro adoption. Dramatic changes in the results of non-financial corporations were observed in most EU countries. The principal factor behind the adverse development was the slump in global demand. Some indicators suggest that the adoption of the euro and consequent appreciation of the effective exchange rate may have had an additional negative effect on selected services sectors. The decrease in the price and cost competitiveness of these sectors after the introduction of the euro proved to be only temporary. The tradable sector, represented mainly by manufacturing, seems to be sufficiently competitive. The gradual recovery of the global economy is accompanied by the rising importance of the competitiveness factors identified at the outset, in particular: support for research and development, education, and innovation.

Martin Filko, Štefan Kišš, Ľudovít Ódor and Matej Šiškovič

DP 1/2010: Structural policy challenges in Slovakia

This paper presents possible approaches to measuring the quality of life, including their strengths and weaknesses. It identifies ten outcome indicators that could be used both for setting targets and for the quantitative evaluation of structural policies in Slovakia. In addition, it provides several case studies of best practice from around the world, as a potential source of ideas for economic policy-makers.

Tibor Lalinský

Analysis of the Slovak economy's convergence in 2010

In 2009, real divergence was prevalent in several EU Member States as well as EU candidate countries. In Slovakia, the relative performance declined somewhat while the relative price



level increased. The close link between real and nominal convergence was confirmed. In most countries (including Slovakia), the fiscal situation worsened dramatically. Only Estonia managed to meet all the Maastricht criteria. Although the process of real convergence is expected to recover in the years ahead, Slovakia is unlikely to be able to eradicate its excessive deficit within the near term. Without the adoption of severe consolidation measures, the fiscal situation in other countries under review will also remain largely unchanged. For several countries, the higher average inflation rate in the EU will improve their chances of meeting the inflation criterion; in Slovakia, however, the risk of not meeting this criterion will increase.

Matúš Senaj, Milan Výškrabka and Juraj Zeman

WP 1/2010: MUSE: Monetary Union and Slovak Economy model (DSGE)

This paper presents a new structural model of the Slovak economy called the MUSE model. It is a second-generation dynamic stochastic general equilibrium (DSGE) model which simultaneously models economic developments in Slovakia and in the euro area as a whole. This means that the contribution of NBS, as part of the Eurosystem, to monetary policy decisions affecting the entire euro area can be taken into account. Another improvement of the current model is that its dynamic parameters are estimated by the Bayesian method, which is at present the best estimation technique for complex models. The model may be used to simulate the outcomes of different types of economic policies or technological changes. The paper shows how the model variables react to selected structural shocks.

Sandra Tatierska

WP 2/2010: Do unit labour costs drive inflation in the euro area?

This paper analyses the relationship between unit labour costs and inflation. For eleven euro area countries, it estimates an independent model of optimum price growth based on a New Keynesian Phillips curve, assuming that unit labour costs are proportional to marginal

costs. The outcomes obtained by the two-stage method of estimation confirm the validity of the relationship between labour costs and prices in eight of the eleven countries under review. The average period within which a change in unit costs is reflected in a change in prices is eight months. The outcomes for Slovakia indicate the predominant flexibility of prices.

Pavel Gertler

WP 3/2010: The wage curve: a panel data view of labour market segments

The paper studies the relationship between the local unemployment rate and wage level – commonly referred to as the wage curve. Using a panel data setup for annual business-level microdata, it confirms previous findings that wages in Slovakia are, on the whole, relatively flexible – with a rise in the local unemployment rate of 1 percentage point being associated with a drop in wages of 0.85%. However, these elasticities are found to differ considerably across sectors, regions and, in particular, skills. The estimate results indicate that overall wage flexibility in the Slovak labour market is driven more by the wage flexibility of higher-skilled employees, and their broader opportunities for employment, than by the institutional arrangements of the labour market.

Financial Stability Report for 2009

The Report evaluates the most important factors that affected financial stability in Slovakia in 2009 and assesses the risks to financial stability in the medium-term horizon. In 2009, the downturn in the global economy and in international financial markets tested the resilience of Slovakia's economy and its financial system; domestic financial stability was not threatened and the financial system comfortably withstood the shocks, owing mainly to the strong financial position of financial institutions that had sufficient amounts of high-quality capital. Given the difficult conditions in the external environment, the principal risk in the medium-term horizon was judged to be the expected development in weaker institutions. The Report also includes annexes dealing with several key issues that



have come to the fore during the financial crisis. Two of them address proposals for improving the financial regulatory system. They stress the need for a greater focus on systemic risk and/or the significance of macro-prudential aspects of financial supervision and regulation. The third annex concerns the macrofinancial implications of household indebtedness.

Financial Stability Report for the First Half of 2010

The Report evaluates the most important factors that affected financial stability in Slovakia in the first half of 2010. It notes a slight improvement in domestic conditions for financial stability and the persistence of sev-

eral risks originating from the external environment. Apart from its regular content, the Report includes an annex focused on the establishment, structure, roles and objectives of the new European financial supervisory framework, with an assessment of its benefits and drawbacks. The Report's second annex analyses the changes brought about by Slovakia's entry into the euro area from the view of the country's external debtor position and the sustainability of the balance of payments current account. The third annex evaluates the role of the Maastricht criteria in the budgetary policies of EU countries – the effect of general government deficit and debt on budget revenue and expenditure.