Convergence, synchronization of cycles and symmetry of shocks[1]

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Introduction and Summary

The Slovak economy is growing at a strong pace, labour productivity is rising, employment is increasing, and unemployment is falling. Real convergence is currently progressing faster than nominal convergence and represents a significant supporting factor for nominal convergence. The conditions for meeting in a sustainable manner the criteria for euro introduction, due to take place on 1 January 2009, are favourable.

The only criterion that Slovakia currently meets is the one on long-term interest rates. Nevertheless, current developments and the outlook for the nominal criteria confirm the ability to fulfil all the criteria by the end of 2007.

In 2006, Slovakia reported its highest ever economic growth. Increasing labour productivity was reflected in a slowdown in the dynamics of unit labour costs, while the substantial growth in employment translated into a declining unemployment rate. Yet the labour market, in particular long-term unemployment, continues to be a bottleneck of real convergence. Despite strong export growth, the current account deficit widened year-on-year. The gradual launch of production at new plants in the automobile and electrical industries should lead to a reduction in the external imbalances and continuation of the economic development of Slovakia.

The business cycle in Slovakia is now to a certain extent synchronized with the euro area business cycle. Supply shocks are also partially aligned and their synchronization is increasing. As a consequence of structural reforms, demand shocks in Slovakia have so far been asymmetric in comparison with euro area demand shocks. Based on the experiences of euro area countries, demand shocks are expected to become more symmetric following the euro introduction.

1. Nominal Convergence

Current state of fulfillment of the Maastricht criteria

The long-term interest rate criterion is the only criterion that Slovakia currently meets.

The ratio of general government debt to GDP has over the long term been lower than the reference value and declined further in 2006.[2] The general government budget deficit was 3.4% of GDP,[3] i.e. above the threshold of 3% of GDP. Even excluding the effects of the introduction of the second pillar of pension reform, the public finance deficit narrowed year-on-year. Slovakia did not meet the fiscal criterion in 2006 (see box). If the euro is to be introduced on schedule, it is essential that the overall deficit of the general government budget be reduced to the required level in 2007.

During 2006, the average rate of 12-month inflation moved away from the reference value of the inflation criterion. The main reason for the sharper rise in inflation during the year was higher than expected prices of energy and foodstuffs. At the beginning of the year, however, inflation eased substantially and year-on-year[4] inflation fell below the reference value. In April 2007, the average 12-month inflation rate was still higher than the reference value and therefore Slovakia still does not meet the criterion for price stability.

The rise in inflationary expectations in the EU has manifested in an increase in the average long-term interest rate as well as the reference value. In Slovakia, however, the average long-term in-

Table 1 Fulfilment of the Maastricht criteria

		Current value (April 2007)	Reference value (April 2007)
Fiscal criterion	General government deficit General government debt	3.4% of GDP 1) 30.7% of GDP 1)	≤ 3% GDP ≤ 60% GDP
Inflation rate (HICP)		3.5%	≤ 3.0 %
Long-term interest rate		4.5%	≤ 6.4%
Nominal exchange rate		Participation in ERM II since 28 November 2005 2)	Participation in ERM II for two years without severe tensions

Source: Ministry of Finance of the Slovak Republic, NBS, Eurostat, own calculations.
1) 2006.
2) After entry into ERM II, the koruna's 10-day average exchange rate fluctuated around the central parity of SKK/EUR 38.4550 in a band ranging from -13.2% (stronger) to +0.23% (weaker). Since the change in the parity, the exchange rate has stayed on the negative (stronger) side of the band, appreciating as far as -5.8%.

1 This article presents the main parts of the latest convergence analysis produced by the NBS Research Department. We do not focus here on how Slovakia's convergence compares with that of the other V4 countries. The complete version of the analysis may be found online at http://www.nbs.sk/PUBLIK/07_KOL1.PDF.
2 The general government debt declined only slightly (from SKK 507.4 billion in 2005 to SKK 503.1 billion in 2006. The main factor behind the drop in the debt-to-GDP ratio was the rapid year-on-year growth in GDP at current prices.
3 The general government budget deficit was originallybudgeted at 4.2% of GDP. The lower deficit was achieved as a result of better financial results in the general government sector (equivalent to 0.6% of GDP) and stronger economic growth (0.2% of GDP).
4 The pension reform costs are now included in the deficit.

Formal Conditions for Meeting the Fiscal Criterion

In April 2007, the transitional period set by Eurostat came to an end, and now the reported public finance deficit must include costs of pension reform.

Under the Stability and Growth Pact, the reference value of 3% may be exceeded for reasons related to pension reform. Specifically, the reference value may be exceeded in the second year of pension reform by up to 80% of the costs related to the reform, which in the case of Slovakia represent around 0.9% of GDP. Since Slovakia is exceeding the reference value by only 0.4% of GDP, it complies with the terms of the Stability and Growth Pact (Article 2(7) of Council Regulation (EC) No 1467/97 as amended by Council Regulation No 1056/2005). Moreover, the excess is temporary (the deficit was below 3% of GDP in 2005, and it will again be below 3% of GDP in 2007) and the deficit is still close to the reference value (the excess is not more than 0.5% of GDP). Therefore, Slovakia is in essence meeting the conditions of the Stability and Growth Pact.

As regards formal compliance with the Maastricht criteria, Slovakia has been in an excessive deficit procedure since 2004, and the Council of the European Union has given time until 2007 to remedy this situation. Slovakia therefore remains in an excessive deficit procedure, although it managed to eliminate the gap in 2005 (according to revised data,there was no excessive deficit not only in 2005, but also in 2004, even taking into account pension reform costs). For abrogation of the excessive deficit procedure, however, the deficit is required to fall, or else the country may not take into account the costs of pension reform. Since the deficit in 2006 rose in comparison with 2005, the abrogation of the procedure cannot be expected before April 2008.

Like Slovakia, Malta has also been in an excessive deficit situation since 2004. In a convergence report published on 16 May 2007, the European Commission positively evaluated Malta's development and proposed to the EU Council to abrogate the derogation. On the same day, the Commission proposed the abrogation of the excessive deficit procedure for Malta. Given that the process for abrogating the excessive deficit procedure is faster than that for deciding on the introduction of the euro in an EU Member State, the excessive deficit procedure will have already been abrogated for Malta by the time of the final decision on the abrogation of Malta's derogation, and therefore Malta will already be in formal compliance with the fiscal criterion.

terest rate remains far below the reference value.

When the Slovak koruna joined the ERM II exchange rate mechanism, the central parity was fixed at SKK/EUR 38.4550. Since then, the Slovak economy has gone through significant structural changes. The sound macroeconomic policy and substantial inflow of foreign direct investment over recent years have resulted in the gradual acceleration of economic growth. The differential in labour productivity growth vis-à-vis the euro area has led to substantial strengthening of the equilibrium real exchange rate. With relatively low inflation, this has also been reflected in the nominal exchange rate. The central parity therefore ceased to be in line with the current state of the economy. At the request of Slovakia, and with the agreement of members of the ERM II Committee, the Slovak koruna's central parity in ERM II was revalued with effect from 19 March 2007, to SKK 35.4424 per euro. The lower compulsory intervention rate was reduced to SKK/EUR 30.1260 and the upper compulsory intervention rate to SKK/EUR 40.7588.

Following the general election in July 2006, the koruna depreciated temporarily and its exchange rate remained on the weaker side of the fluctuation band for several days. Since the koruna's exchange rate had weakened too far and was not corresponding to the economy's development, the NBS intervened against the currency's excessive volatility. As a result, the koruna appreciated steadily and eventually reached strongest ever levels. For most of its time in ERM II, the koruna has been trading on the stronger side of the fluctuation band, and in April 2007 it was fluctuating at around 6% above the central parity. The nominal exchange rate recorded its strongest level to date on 20 March 2007, when it reached SKK/EUR 32.878.

By joining ERM II, Slovakia met the basic systemic conditions for the evaluation of exchange rate stability. The fulfilment of the exchange rate criterion cannot, however, be evaluated yet, since the condition of two-years' membership in ERM II has not been met.

Outlook for meeting the Maastricht criteria

If the conditions for introducing the euro in 2009 are to be met, it will be necessary to continue consolidating the public finances and to achieve in 2007 a general government deficit of not more than 3% of GDP.[5] Inflation as measured by the HICP should fall comfortably below the estimated reference value of around 2.7%[6] by the beginning of 2008 at the latest. According to official publications of the Slovak Ministry of Finance[7] and the National Bank of Slovakia,[8] Slovakia should be able to meet these criteria.

When evaluating fulfilment of the fiscal criterion, we use the general government deficit after taking into account the impact of pension reform. It is already the case that the public finance deficit cannot be reported without including the impact of pension reform, which will

5 What is most important from the formal view is the abrogation of the excessive deficit procedure.

6 The reference value estimate based on own calculations. Given the uncertainty over the future level of the reference rate, it is necessary to target inflation at a somewhat lower level. By comparison, the inflation criterion figure – calculated on the basis of point estimates made by the European Commission for inflation in EU countries in 2007 – represents 2.8%.

7 Convergence Programme of Slovakia for 2006–2010, Ministry of Finance of the Slovak Republic, November 2006; Draft Framework of the General Government Budget for 2008–2010, April 2007.

8 Medium-Term Forecast P2Q-2007, April 2007.

Table 2 Outlook for fulfilment of the Maastricht criteria

Criterion		2007	2008	2009
Fiscal (% of GDP)	General Government Deficit	2.9	2.3	1.8
	General Government Debt	31.8	31.0	29.7
		It will be met		
Inflation rate (HICP, %)		1.5	1.9	2.2
		It will be met		
Long-term interest rate (%)		4.3	–	–
		It will be met		
Nominal exchange rate		Membership of ERM II since 28 November 2005		
		It will be met		

Source: Ministry of Finance of the Slovak Republic, NBS, own calculations.

raise the deficit by 1.1% of GDP in 2007 and by 1.2% in 2008 and 2009. The current forecast for the development of public finances is in line with the planned fiscal consolidation to which Slovakia is bound under the convergence programme and the budget for 2007. Compliance with the planned general government deficit for 2007 should result in the abrogation of the excessive deficit procedure under the Stability and Growth Pact. This will make fulfilment of the fiscal criterion possible. With the expected favourable economic development, however, the pace of fiscal consolidation over the next two years could be even faster.

The general government deficit will decline in coming years in accordance with the framework for the setting of budgets for years 2008 to 2010.[9] As currently proposed, the ratios of the general government deficit to GDP for the years 2008 and 2009 are lower (by 0.1% of GDP) than the figures originally approved. The requirement of the Stability and Growth Pact for an annual reduction in the structural deficit of public finances (excluding one-off factors) by 0.5% of GDP should be met. The ratio of general government debt to GDP has been substantially lower than the reference value over the long term and will decline further in the years ahead.

According to the NBS's latest medium-term forecast,[10] average year-on-year inflation as measured by the HICP will fall to 1.5% for 2007 and will rise slightly over the next two years. Based on our estimates for the reference value in 2007, it will be around 2.7%.[11] The price stability criterion will be sustainably met in 2007, since we do not see inflation rising above the reference value in either 2008 or 2009. The probability that the reference value will be lower than 1.5% (the current inflation estimate for Slovakia) is, according to simulations, less than 1%.

The gradual rise in interest rates in EU Member States has formed the conditions in which the long-term interest rate in Slovakia could be raised without jeopardizing the fulfilment of the Maastricht criteria. The current monetary and economic developments are paving the ground for a further narrowing of the interest rate differential between the long-term rate in Slovakia and those in the euro area. Projections for future developments show that in coming years, Slovakia will continue to meet the long-term interest rate criterion with a significant margin.

The way the exchange rate has developed so far and the continuous positive macroeconomic expectations indicate that the fluctuation band of Ī15% will not be exceeded during the koruna's participation in ERM II and that the criterion of exchange rate stability will be met. During the previous period, the exchange rate remained mostly in the middle third of the strong side of the band. As regards the fulfilment of the Maastricht criteria, this is the area where there is the most leeway.

2. REAL CONVERGENCE

Current state of real convergence

The trend of steadily accelerating economic growth has been observed since 2000 and became even more pronounced in 2006. Real GDP growth in the third and fourth quarters of 2006 reached record levels of 9.8% and 9.6% respectively (year-on-year). For the full year, real GDP growth averaged 8.3%. The economy's stronger performance was supported mainly by a rise in foreign demand, as well as by final consumption and investments. As measured by GDP per capita in terms of purchasing power parity (PPP), the performance of the Slovak economy has grown to 60.2%[12] of the EU's average performance.

The inflation differential between Slovakia and the EU, together with strengthening of the Slovak koruna, has led to the convergence of the price level in Slovakia towards the price level in the EU. In 2006, according to our estimates, the price level in Slovakia increased to 59.3% of the EU average.

Mounting investment in the automobile sector over recent years has been reflected in a further acceleration of export dynamics. By the end of last year, export growth had overtaken import growth, but, even so, the trade deficit deepened in comparison with the previous year, to 5.6% of GDP. The deficit in the current account of the

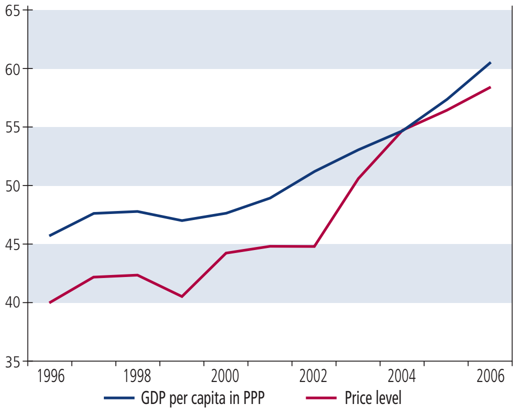
9 Draft Framework of the General Government Budget for 2008–2010, Ministry of Finance of the Slovak Republic, April 2007.

10 Medium-Term Forecast (P2Q-2007), NBS, April 2007.

11 The estimate methodology is described in further detail in Box 12 of Šuster et al: 'The Effects of Euro Adoption on the Slovak Economy'; NBS, March 2006. The input data came from the Spring Forecast of the European Commission and the Medium-Term Forecast (P2Q-2007).

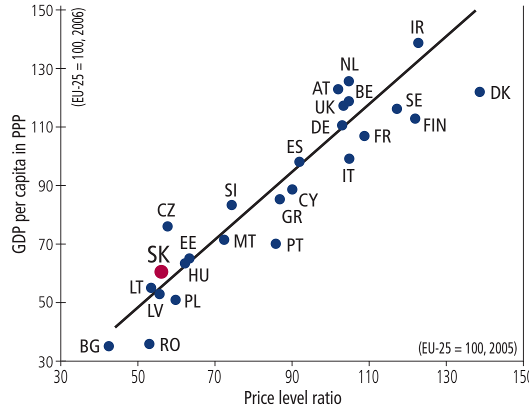
12 Eurostat estimate for 2006.

Chart 1 Real convergence of Slovakia (EU-25 average = 100)



Source: Eurostat, own calculations.

Chart 2 Ratio of price levels to economic performance in EU countries



Source: Eurostat.

balance of payments narrowed slightly (to 8.3% of GDP), mainly in connection with a higher surplus in the services balance.

In 2006, the rise in imports and exports again exceeded the rise in nominal GDP, and the openness of the Slovak economy increased. The ratio of foreign trade in goods and services to GDP rose to 175% of GDP.

The dynamics of unit labour costs[13] slowed down substantially in 2006, as nominal compensation per employee rose by 7.6% and real labour productivity accelerated to 5.9%. Since the increase in the average real wage was markedly lower than productivity growth, labour market developments did not put upward pressure on inflation. Labour productivity in Slovakia in 2006 reached 67.5% of labour productivity in the EU.

The trend decline in the unemployment rate also continued in 2006. The average rate of registered unemployment declined to below 10% and unemployment calculated on the basis of a labour force survey fell from 16.2% to 13.3%. Nevertheless, the structural component of unemployment continues to be high. Although the number of long-term unemployed people declined slightly, the ratio of long-term unemployment to total unemployment rose to almost 74%. A record rise in employment was reflected in the employment rate, which increased to almost 60%.

The positive development that foreign investors initiated in the corporate sector is being reflected in structural change in the Slovak economy, which ever more closely resembles that of the euro area economy. The importance of agriculture is declining while that of services is increasing. The contribution of agriculture to total value added has fallen over the past ten years from 6% to 4%. Meanwhile, industry has seen its share decline at the expense of services. At present, services account for 61.1% of value added and that share is steadily approaching the euro area's figure of 71.3%.

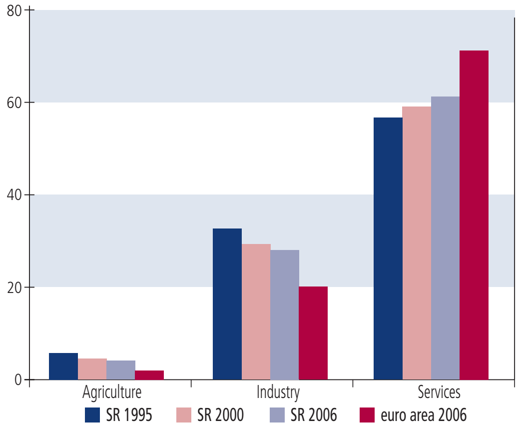
Table 3 Current indicators of real convergence and the condition of the economy (2006)

Indicator of real convergence		Comparable indicator in the EU-25
Slovakia's GDP relative to the EU's (PPP per capita)	60.2% 1)	100%
Slovakia's price level relative to the EU's	59.3% 2)	100%
Real GDP growth	8.3%	2.9%
Openness of the economy		
Exports	85.7% of GDP	
Imports	90.3% of GDP	
Current account of the BOP	-8.3% of GDP	-0.6% of GDP
FDI inflow	7.6% of GDP	
Labour market and employment		
Employment rate	59.4%	64.7%
Unemployment rate (labour force survey)	13.3%	7.9%
Labour productivity growth (ESA 95)	5.9%	1.3%
Unit labour cost growth (ESA 95)	1.7%	1.5%

Source: Statistical Office of the Slovak Republic, Eurostat, own calculations.
1) Eurostat estimate.
2) Own estimate based on inflation and exchange rate developments.

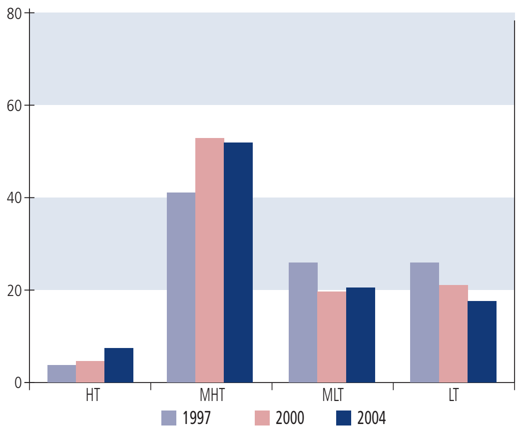
13 As defined in the ESA 95 methodology: unit labour costs = compensation per employee at current prices / labour productivity in fixed prices (ESA 95).

Chart 3 Sectoral structure of the Slovak economy (percentage share of value added)



Source: Eurostat.

Chart 4 Technological intensity of exports from Slovakia to the euro area (percentage share of exports)



Source: OECD, own calculations.
HT – high technology products.
MHT – medium-high technology products.
MLT – medium-low technology products.
LT – low technology products.

Apart from in the sectoral structure of production and value added, changes are taking place in the technological intensity of production and exports. The structure of Slovak exports is dominated by medium-high technology products, which have been rising as a share of total exports over recent years. Although high technology products also account for a steadily climbing share of total exports, that share is for the moment relatively low. It may be seen as positive that medium-low and low technology products have a declining share of exports.

The status of structural and institutional reforms

The past year saw only a slight modification to the results of structural reforms. The Income Tax Amendment Act raised the income tax rate for natural persons who have an above-average income. As for indirect taxes, a reduced 10% rate of value-added tax was introduced for medicines and certain other health-care goods.

The updated National Strategic Reference Framework of the Slovak Republic for 2007 – 2013[14] places greater stress on addressing the problems of employment and social inclusion, as well as environmental issues.

In regard to the requirement for further consolidation of public expenditure and for a reduction in the degree of redistribution of economic resources, it is to be seen as positive that measures which could contribute to a decline in general government spending over the years ahead are planned. In line with the Government's Programme Declaration, it is planned to make savings in the general government expenditure by reducing the number of employees in the general government sector by 20%.

As for meeting the Lisbon Strategy objectives, the progress made by EU countries during 2006 has been judged by the European Commission as satisfactory.[15] In the countries of the Community, according to the Commission, there was a visible escalation of work focused on translating political activities into real results. The implemented structural reforms were manifested in stronger economic growth. The countries set targets for investment in research and development and adopted measures to enhance the business environment. Employment opportunities and educational possibilities are improving. A majority of these changes have also been carried out in Slovakia. The European Commission evaluates Slovakia as a country which is making 'progress'[16] in implementing the National Reform Programme. In the implementation of several measures, however, it is necessary to accelerate the efforts made to date. Confirmation of the gradual fulfilment of the said tasks is found in the Progress Report on Implementation of the National Reform Programme of the Slovak Republic.[17] Nevertheless, several tasks have not been performed on schedule. The Report also includes the specification of measures in the field of employment policy for 2007-2008. The specification of tasks in other priority areas was included in the Addendum to the National Reform Programme.[18] This publication added environmental policy and related measures to the existing four priority fields.

The quality of the business environment in Slovakia remained largely unchanged over the past year. Even though it was a year in which, according to the World Bank, Eastern Europe and Africa were the regions with the highest number of adopted reforms, Slovakia did not play a part this time. On the basis of the World Bank ranking compiled as part of the study 'Doing Business in 2007',[19] Slovakia's overall position worsened slightly.[20] Countries are increasing reform activity, and for Slovakia to maintain its previous positions, it was not enough to make improvements in rules on closing a business and in the enforcing contracts. As regards its quality of business environment, Slovakia has so far maintained an above-average position in the EU and the best position in the V4.

14 The key document representing the benchmark instrument in the programming of EU funds. It stipulates the national priorities that are to be co-financed from Structural Funds and the Cohesion Fund in the programming period 2007–2013.
15 Implementing the Renewed Lisbon Strategy for Growth and Jobs – "A year of delivery"; Communication from the Commission to the Spring European Council; the European Commission December 2006.
16 The evaluation scale has four grades: 'very good progress', 'good progress', 'progress' and 'limited progress'.
17 Progress Report on the Implementation of the National Reform Programme of the Slovak Republic for 2006–2008, October 2006.
18 Addendum to the National Reform Programme of the Slovak Republic for 2006–2008, November 2006.
19 'Doing Business in 2007: How to Reform.' The World Bank, 2006.
20 Slovakia slipped from 34th to 36th place.

If Slovakia is to successfully introduce the euro and function in the euro area, as well as ensure long-term economic growth, it is essential that the country increase the flexibility of its labour market. The past year saw no progress towards this end. The currently proposed amendments to labour market rules focus mainly on the protection of employment positions, but if the problems of the labour are to be addressed, they should be aimed above all at improving conditions for obtaining work fast and easily.

The strong economic growth is reflected in the improving performance and stability of the corporate sector. Capitalization remained largely unchanged, and shareholders' equity as a percentage of total assets rose slightly. Value added maintained its double-digit growth (year-on-year). The increase in generated profits reached a five-year high; this was reflected in a further rise in profitability, as both return on equity and return on assets increased. In regard to expectations for a further acceleration of economic growth and companies' export performance, it may be anticipated that the trend improvement in the performance, stability and profitability of the corporate sector will continue.

Outlook for real convergence

The rapid real convergence of the Slovak economy towards advanced countries will continue in coming years on the basis of growth in competitiveness and performance.

According to our estimates, Slovakia's GDP per capita relative to the EU's (in PPP) will rise to 65.1% by 2008, and its price level in ratio to the EU price level will increase to 63.7%. As production at new plants in the automobile and electrical industries gradually reaches capacity, it may be expected that nominal growth in exports and imports will substantially exceed nominal GDP growth, meaning a further increase in the openness of the Slovak economy.

Based on current forecasts,[21] the economy's growth potential, as well as actual output, will increase in 2007 to reach a new record level. Strong dynamics of growth in production and potential will also be maintained in the years ahead. The main factor will be the improving export performance, which will also lead to a sharp decline in the trade deficit. Gross fixed assets formation will continue to be a key factor in GDP growth.

Rapid economic growth will be accompanied by a substantial rise in labour productivity, even in the context of a higher expected year-on-year change in employment. At the same time, rapid labour productivity growth will prevent the emergence of undesirable demand pressures related to the faster-rising average real wage.

The sharper increase in household consumer spending will be partially offset by the declining impact of general government consumption. The Convergence Programme for 2006 to 2010 confirms that general government consumption should in future remain the slowest-rising component of GDP.

With flexible development in labour productivity and compensation per employee growing at a slower pace, the dynamics of unit labour costs should be weaker.

Bottlenecks of real convergence

The labour market and employment remains to be the major weakness of real convergence in Slo-

Table 4 Outlook for the performance, price level and openness of the Slovak economy

	2007	2008
Slovakia's GDP per capita relative to the EU's (PPP)	63.0% [1)]	65.1% [1)]
Slovakia's price level relative to the EU's	63.5% [2)]	63.7% [2)]
Ratio of exports and imports to GDP	178.4%	182.6%

Source: Eurostat, NBS, own calculations.
1) Eurostat estimate.
2) Own estimate.

Table 5 Outlook for real economy indicators (in %)

	2007	2008	2009
GDP (real growth)	8.9	7.4	6.9
Household final consumption (real growth)	6.9	6.0	6.1
General government final consumption (real growth)	2.9	2.0	1.9
Gross fixed capital formation (real growth)	7.7	7.4	8.0
Exports of goods and services (real growth)	23.3	13.7	7.8
Imports of goods and services (real growth)	18.5	11.9	7.1
Balance of the BP current account (ratio to HDP)	-4.3	-2.7	-0.9
Employment (labour force survey, growth)	3.0	2.3	1.9
Average monthly wage (real growth)	4.9	4.8	4.9
Labour productivity (real growth)	6.7	5.7	5.4

Source: NBS.

21 Medium-Term Forecast (P2Q-2007), NBS, April 2007.

vakia. Strong economic growth is translating into the higher number of employed persons: the employment rate is rising and the unemployment rate is falling. Even so, the employment rate in Slovakia is still among the lowest in the EU and the unemployment rate is the second highest within the EU-27. The OECD's most recent economic survey[22] calls for a reduction in the barriers to employing low-skilled workers, for the adoption of measures to increase the activation of long-term unemployed, and for strengthening labour mobility. Labour market policies focused on addressing income disparities should support employment growth. It is also recommended to avoid any significant increase in the minimum wage above the level of average wage growth, and to be cautious about extending commitments under collective agreements. In addition, the OECD sees shortcomings in the education field and in barriers to economic competition. Reform of the education system is necessary and should begin with pre-school education; the curricula of secondary schools should be better adapted to the needs of the market, and tertiary education should be made a more attractive option.

Further room for improvement in real convergence can be found in the proposed allocation of money that Slovakia is entitled to receive from EU funds over the years ahead. The updated version of the National Strategic Reference Framework of the Slovak Republic for 2007–2013 assumes a greater redistribution of funds for employment and social inclusion and for the environment, at the expense of education, transport infrastructure and promoting competitiveness. From the view of sustainable growth, however, it would be more appropriate to focus mainly on the promotion of education, since this is the basis of the knowledge economy. Problems in employment and social inclusion should rather be tackled with active labour market measures aimed at increasing the motivation to work.

As regards developing the knowledge economy, one of the biggest challenges continues to be to improve support for science, research and innovation. The European Commission, too, sees insufficient progress in the field of research and development. It considers research, development, innovation and education to be the weakest areas in the implementation of measures under the National Reform Programme of Slovakia, while at the same time it calls for a clear strategy and priorities.

The ambitious EU-level target for investment in research and development – 3% of GDP per year by 2010 – will not be met. Expenditure on research and development in Slovakia over coming years will unlikely exceed 0.6% of GDP. That ratio of expenditure to GDP is one of the lowest in the EU, with only Cyprus, Bulgaria and Romania reporting a smaller figure. Moreover, the trend development in Slovakia (as a percentage of GDP) is negative.[23]

According to the World Bank,[24] investor protection, enforceability of rights and high social security contributions are still considered as weaknesses of the quality of the business environment in Slovakia.

Like nominal convergence, real convergence faces a certain risk from the rise in energy resource prices. Their growth could translate into widening of the trade deficit, as well as in higher production costs and a decline in the competitiveness of enterprises. Some domestic enterprises still see their competitiveness at risk from any sharply imbalanced appreciation of the domestic currency. This would affect mainly export-oriented domestic enterprises earning exclusively from domestic inputs and enterprises for which wage costs represent a high share of total costs.

According to the Report on the State of the Business Environment,[25] several problematic issues persist: the relatively high number of procedures required to start a business, the high minimum amount of initial capital required for this purpose, the heavy contributions burden, the problem of complicated and quickly changing legislation, the lack of assessment of how regulations affect the business environment, and especially the often weak functioning of courts, weak enforceability of rights and rampant corruption.

3. Synchronization of Business cycles and Symetry of Shocks

Slovakia's planned entry into the euro area will mean the loss of its independent monetary policy – a way of reacting to the specific conditions of the economy and of curbing shocks.[26] A country joining the euro area should therefore report a certain degree of synchronization of business cycles and symmetry of shocks. Our calculations confirm that there has been in recent years not only an improvement in the alignment of economic development in Slovakia and the euro area, but also an increase in the symmetry of shocks and, to a lesser extent, in the synchronization of business cycles.

22 *OECD Economic Survey of the Slovak Republic, OECD, April 2007.*

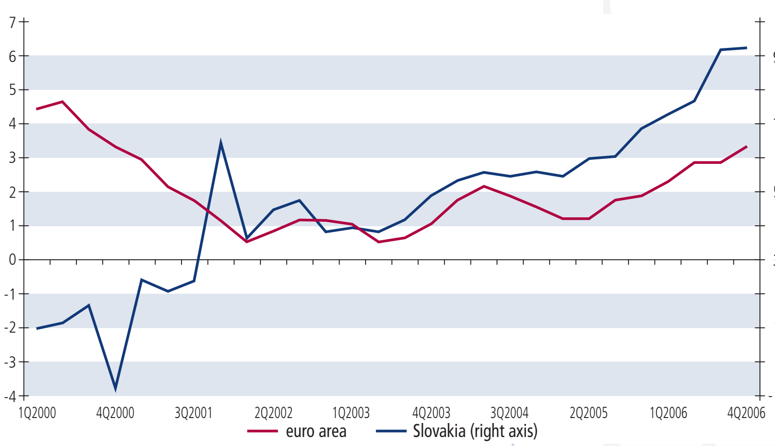
23 *Expenditure on research and development fell from 0.92% of GDP in 1995, to 0.65% of GDP in 2000, and to only 0.51% of GDP in 2005.*

24 *'Doing Business in 2007: How to Reform'; The World Bank, 2006.*

25 *Report on the State of the Business Environment in the Slovak Republic, including proposals for its improvement; Ministry of Economy of the Slovak Republic, 2006.*

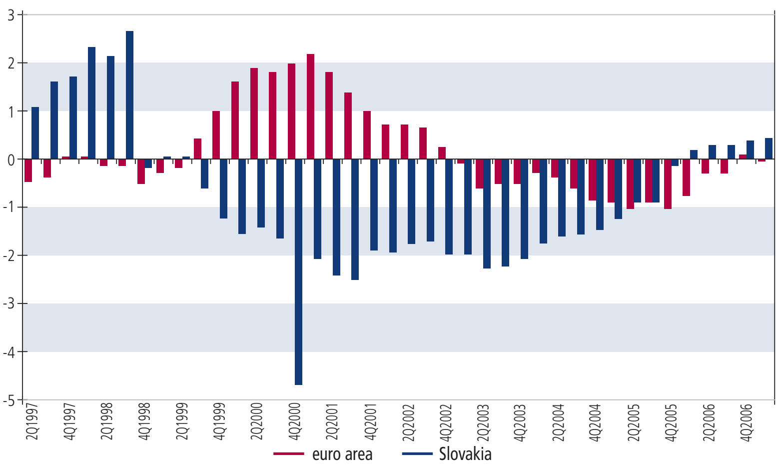
26 *In the case of an economy such as Slovakia's – small, highly-open, with liberalized movement of capital – the scope for monetary policy to have an effect is, however, severely limited.*

Chart 5 Slovak real GDP growth relative to the euro area



Source: Eurostat, own calculations.
Note: The chart shows data seasonally adjusted for the number of business days in each quarter; the increase is given in comparison with the same period of the previous year.

Chart 6 Output gap in Slovakia and in the euro area



Source: NBS.
Note: The output gap is calculated using the Kalman filter.

Synchronization of cycles

Average real GDP growth is between 3 and 4 percentage points higher in Slovakia than in the euro area. The economic development since 2002 has followed a very similar course. The correlation between GDP growth in Slovakia and in the euro area has been high (more than 0.9) since 2002.

Based on output gap development in Slovakia and in the euro area, it may be said that the respective business cycles had a negative correlation until 2003. Particularly during the period 1999–2003, the output gap in Slovakia had an opposite sign to the output gap in the euro area. This was largely caused by restructuring of the economy and significant government intervention in the economy. In 1998 and 1999, we in Slovakia experienced stabilization packages that even until the end of 2000 had a restrictive effect on the economy. By contrast, the euro area was reporting a boom during this period. The successful stabilization of the Slovak economy saw it return to strong growth in 2001, while the euro area began to record a slowdown.

A certain alignment of the business cycles has been observable since the beginning of 2003, when the output gap in the euro area turned negative. Between the first quarter of 2003 and the first quarter of 2007, the business cycle in Slovakia was partially synchronized with its euro area counterpart (the correlation coefficient was 0.2).

Based on estimates of the NBS[27] and OECD[28], the Slovak output gap for 2008 should be negative, corresponding with output gap in the euro area. As a consequence, the synchronization of the business cycles could increase again.

It cannot be expected that Slovakia will in future go through structural changes in the macroeconomic environment as significant as those made at the turn of the millennium, which in turn implies scope for a greater synchronization of the cycles over the years ahead.

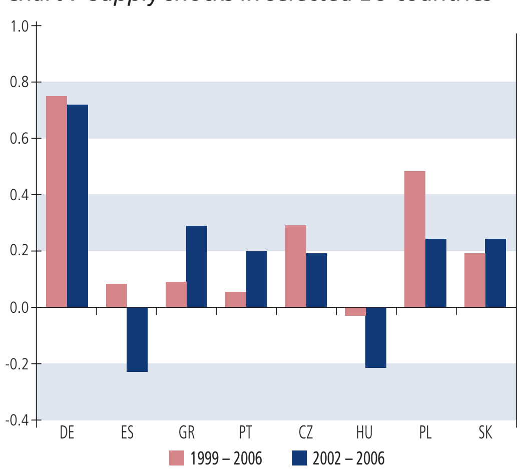
Symmetry of shocks

Supply and demand shocks were calculated from developments in real GDP and employment based on the Blanchard-Quah methodology (a standard approach in this field). From the shocks thus identified we worked out the correlation coefficient between each country and the euro area.

On the whole, the synchronization of shocks in Slovakia with the euro area is similar or even better than in countries at the fringes of the euro area (e.g. Spain, Greece, Portugal). Recently, supply shocks in Slovakia have been partially synchronized with the euro area, and, unlike in other V4 countries, the synchronization is improving.[29]

Demand shocks in Slovakia are likewise reporting a certain degree of synchronization with the euro area which has recently been improving.[30] In other V4 countries, demand shocks are not aligned with the euro area and the degree of synchronization is deteriorating. In historical terms, this may be explained by fundamental structural reforms that represent significant shocks to transforming economies and are without equivalent in the euro area. Based on the expe-

Chart 7 Supply shocks in selected EU countries



Source: Own calculations.

Chart 8 Demand shocks in selected EU countries

Source: Own calculations.

27 Medium-Term Forecast (P2Q-2007), NBS, April 2007.
28 OECD Economic Outlook, Volume 2006, No. 80, OECD, December 2006.
29 The negative correlation in Spain is, in our view, more likely to be a statistical blip arising from the lower volume of data than to be a proven fact.
30 Monetary policy is an instrument of demand management, and therefore it is more effective in eliminating demand shocks than supply shocks.

riences of euro area countries, it can be expected that demand shocks will become more symmetrical following the introduction of the euro.

An insufficient alignment of shocks (or cycles) does not necessarily mean that the country will be economically unsuccessful. Asymmetric shocks can be positive or negative. In recent years, less aligned countries such as Ireland, Finland and Spain have reported very successful economic performance.

Conclusion

Although the only Maastricht criterion that Slovakia currently meets is the one on long-term interest rates, the outlook for the economy confirms the ability to meet all the criteria by the end of 2007. The risk that the inflation criterion will not be fulfilled on schedule is very low. As for the fiscal criterion, the risk of non-fulfilment is also low provided that public expenditures remain as budgeted. The business cycle in Slovakia shows a certain degree of synchronization with the euro area business cycle; the symmetry of shocks is also improving, thereby fostering conditions for the Slovak economy to function successfully in the euro area.

Despite reporting rapid economic growth, Slovakia's biggest challenge is still to make progress in real convergence. The previous year saw only slight changes in the quality of the macroeconomic environment. If the introduction of the euro and functioning in the euro area are to be successful, and if long-term economic growth is to be ensured, it essential to further increase the flexibility of the economy, with particular stress on labour market flexibility.

Bibliography:

1. Addendum to the National Reform Programme of the Slovak Republic for 2006–2008, November 2006.
2. Doing Business in 2007: How to Reform; the World Bank, 2006.
3. Spring Economic Forecast 2007; European Commission, May 2007.
4. Implementing the Renewed Lisbon Strategy for Growth and Jobs – "A year of delivery"; Communication from the Commission to the Spring European Council; the European Commission, December 2006.
5. Komínková, Z., Lalinský, T., and Šuster, M.: Analysis of the convergence of the Slovak economy to the European Union; NBS, August 2005.
6. Convergence Programme of Slovakia for 2006–2010; Ministry of Finance of the Slovak Republic, November 2006.
7. Monetary Programme of the NBS until 2008; NBS, December 2004.
8. National Strategic Reference Framework of the Slovak Republic for 2007–2013; Ministry of Construction and Regional Development of the Slovak Republic; December 2006.
9. Draft Framework of the General Government Budget for 2008–2010; Ministry of Finance of the Slovak Republic, April 2007.
10. OECD Economic Outlook, Volume 2006, No 80; OECD, December 2006.
11. OECD Economic Survey of the Slovak Republic; OECD, April 2007.
12. Progress Report on the Implementation of the National Reform Programme of the Slovak Republic for 2006–2008; October 2006.
13. Report on the State of the Business Environment in the Slovak Republic, including proposals for its improvement; Ministry of Economy of the Slovak Republic, 2006.
14. Medium-Term Forecast (P2Q-2007); NBS, April 2007.
15. Šuster, M. et al: 'The Effects of Euro Adoption on the Slovak Economy'; NBS, March 2006.