5 Comparison with the Previous Convergence Programme and Sensitivity Analysis

5.1 Comparison with the Previous Macroeconomic Scenario

The differences between the macroeconomic scenarios of the current programme and last year's programme are related to the following:

- New observations of the macroeconomic phenomena were included.
- The figures for the annual national accounts for 2003 and the figures for the quarterly national accounts for Q1 and Q2 2004 were updated.
- The assumptions of the programme were changed, primarily for the price of oil.
- The reaction of the economy to external shocks differs from the assumptions of the previous programme in a positive way.

The differences between the expected development of the external environment in both programmes are significant. The assumptions of economic growth in the EU-15 and in Germany were reduced. The largest change occurred in the price of oil where the anticipated dollar price, according to the current forecast, is more than 50% higher for 2005 and even more than 75% higher for 2006 than the assumption for the last Convergence Programme. Both changes are the result of unexpected developments during the spring and summer months of 2005. The differences in the USD/EUR exchange rate are relatively small in comparison.

Table 5.1: Assumptions of the scenario

	CP 2004			CP 2005			Difference		
	2004	2005	2006	2004	2005	2006	2004	2005	2006
GDP growth (%)									
USA	4,4	3,7	4,1	4,4	3,5	3,3	0,0	-0,2	-0,8
EU-15	2,1	2,4	2,8	2,3	1,4	1,9	0,2	-1,0	-0,9
Germany	1,6	1,8	1,9	1,6	1,0	1,4	0,0	-0,8	-0,5
Prices of oil									
(USD / barrel)	36,8	35,9	34,0	38,3	55,5	60,5	1,5	19,6	26,5
Exchange rate									
USD / EUR	1,22	1,21	1,22	1,24	1,26	1,24	0,02	0,05	0,02

Source: Ministry of Finance

Despite the lower economic performance of the EU-15 countries, a shift in oil prices and stronger appreciation of the exchange rate vis-à-vis the euro, the prediction of future Czech economic development has changed in a positive direction.

It has been shown that the dependency of the Czech economy on fuel prices and on the absorption capacity of export markets is limited and that the positive factors associated with EU accession, the subsequent growth of total factor productivity and the competitiveness on world markets prevail.

Table 5.2: Change in the indicators of the macroeconomic scenario

	CP 2004			CP 2005			Difference (p.p.)		
	2004	2005	2006	2004	2005	2006	2004	2005	2006
Growth in real terms (in %)									
GDP	3,8	3,6	3,7	4,4	4,8	4,4	0,6	1,2	0,7
Households consumption	3,6	3,4	3,4	2,1	2,3	3,5	-1,5	-1,1	0,1
Government consumption	-1,2	-0,2	-0,2	-2,0	-0,6	-0,2	-0,8	-0,4	0,0
Gross fixed capital formation	9,3	7,0	5,4	7,6	2,8	3,4	-1,7	-4,2	-2,0
Contribution of domestic demand (pp)	4,6	3,8	3,3	2,7	0,8	3,2	-1,9	-3,0	-0,1
Contribution of foreign trade (pp)	-0,7	-0,2	0,4	1,7	4,0	1,2	2,5	4,2	0,8
Growth (in %)									
HICP	2,7	3,2	2,6	2,6	1,5	2,2	-0,1	-1,7	-0,4
GDP deflator	4,0	3,1	3,0	3,0	0,9	2,2	-1,0	-2,2	-0,8
Employment	-1,0	-0,3	0,1	-0,6	0,9	0,8	0,4	1,2	0,7
Unemployment rate (level in %)	8,3	8,3	8,0	8,3	7,9	7,4	0,0	-0,4	-0,6
Exchange rate CZK/EUR (level)	32,0	31,1	30,5	31,9	29,8	29,2	-0,1	-1,2	-1,3
Balance of goods and services (in % of GDP)	-1,2	-0,7	0,5	-0,3	2,1	2,8	0,9	2,8	2,3
Net lending/borrowing (in % of GDP) [1]	-6,0	-5,7	-5,3	-5,2	-2,6	-2,2	x	x	x

1) The ratio of the balance of payments current account to GDP was given in the 2004 Convergence Programme.

Source: Ministry of Finance

In the previous programme, however, we did not expect such a significant slowdown in domestic demand for all segments, especially gross fixed capital formation, the change in inventories and household consumption, which is reflected in the predictions for the upcoming period.

Moreover, price development has been substantially calmer than expected. Improved current and future economic performance is also reflected in the basic labour market indicators – higher employment growth and a decline in unemployment.

5.2 Comparison with the Fiscal Framework of the Previous Convergence Programme

The government has committed itself to strict compliance with the programme and the fiscal targets established therein. The fiscal targets for 2006 and 2007 are fully in line with the targets of the previous Convergence Programme. Acceleration of economic growth, which is attributable to the acceleration of potential growth, and favourable development of tax revenues reflecting the implemented tax reform, help in meeting the fiscal targets.

The expected level of government debt in 2006 and 2007 was reduced by about two percentage points. More favourable development of the government debt is the result of the high privatisation revenues collected in 2005 amounting to 3.5% of GDP. Last year's Convergence Programme worked with the assumption of privatisation revenues of 1.8% of GDP. The higher privatisation revenues will not only be used to finance the deficit in 2005, but a significant amount will also help to finance the general government in 2006 (see 4.5 – Government Debt).

Table 5.3: Comparison with the previous Convergence Programme

% of GDP	ESA code	Year 2004	Year 2005 (1)	Year 2006 (1)	Year 2007 (2)	Year 2008 (2)
GDP growth						
previous update		3,8	3,6	3,7	3,8	
latest update		4,4	4,8	4,4	4,2	4,3
Difference		0,6	1,2	0,7	0,4	
Actual budget balance						
previous update	EDP B.9	-5,2	-4,7	-3,8	-3,3	
latest update	EDP B.9	-3,0	-4,8	-3,8	-3,3	-2,7
Difference		2,2	-0,1	0,0	0,0	
Gross debt levels						
previous update		38,6	38,3	39,2	40,0	
latest update		36,8	37,4	37,1	37,9	37,8
Difference		-1,8	-1,0	-2,1	-2,2	

(1) Estimate
(2) Trend values or period averages

Source: Ministry of Finance

5.3 Sensitivity Analysis

The Czech economy is small and open, and to a certain degree, dependent on raw materials. In this respect, the prices of mineral resources are in all probability the largest risk to Czech economic development at this time.[14] Therefore, the sensitivity analysis will be based primarily on various scenarios of oil price development. The adverse development of raw material prices, however, does not only have a negative effect on the Czech economy, but it will most likely affect economic development abroad as well.[15] We have, therefore, decided to supplement the sensitivity analysis with two secondary effects, i.e. the effect of foreign demand and foreign inflation.[16]

We have decided to test the sensitivity of the Czech economy in relation to various developments of the above factors with the help of two scenarios. The optimistic scenario combines positive external supply and demand shocks. It is based on the assumption of a gradual decline in the price of oil, slightly higher foreign demand dynamics, and on the contrary, a lower growth rate for foreign industrial prices. On the other hand, the pessimistic scenario is derived from the assumptions of a higher oil price, lower foreign demand dynamics and acceleration of foreign inflation.

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[14] *For a quantitative analysis of the effects of the above factors on Czech economic development, the Ministry of Finance employs a medium-term, quarterly calibrated model. The model is generated by approximately 20 stochastic equations and 50 identities. This model is a standard Keynesian model supplemented with a neoclassical supply side.*

[15] *In our case, we have focused exclusively on the probable impact of oil price fluctuations on the economy of the European Union, our largest trade partner. The simulation results of the MULTIMOD model, set up and managed by the International Monetary Fund, were used to estimate the sensitivity of the European economy.*

[16] *We would like to point out that the scenarios presented below are asymmetric in relation to the baseline forecast of macroeconomic variables.*

Table 5.4: Scenario of exogenous variables

		Year 2004	Year 2005	Year 2006	Year 2007	Year 2008
	UK Brent					
Optimistic	USD/barrel		51,3	49,5	45,8	42,3
Baseline	USD/barrel	38,3	55,5	60,5	57,8	54,3
Pessimistic	USD/barrel		61,8	77,0	75,8	72,3
	GDP EU 15					
Optimistic	y/y in %		1,7	2,3	2,7	2,7
Baseline	y/y in %	1,2	1,5	1,9	2,4	2,5
Pessimistic	y/y in %		1,2	1,3	1,9	2,2
	PPI EU 15					
Optimistic	y/y in %		2,4	0,8	1,2	1,6
Baseline	y/y in %	2,3	3,1	2,0	1,7	1,7
Pessimistic	y/y in %		4,1	3,7	2,4	1,9

Source: Ministry of Finance

Optimistic scenario

The settings of the above scenarios are characterised by the primary nominal and secondary real impact on the Czech economy. Thanks to the assumed decline in the price of oil to around USD 40 per barrel, we can expect a very substantial improvement in the external imbalance measured by the balance of payments current account. A lower price for oil has a very positive income effect. Thanks to the relatively high and, in particular, unchanged energy demands of the Czech economy, firms reduce their production costs, which is reflected positively in lower price dynamics as well as wider profit margins.

Higher foreign demand growth will then have a positive impact on acceleration of the export growth rate and in turn on industrial activity. However, thanks to continued high import demands on the supply side of the Czech economy, the high export dynamics will also be connected to high import dynamics. So the overall positive effect will be partially reduced. The higher dynamics for economic activity, or industrial production, will be associated with higher demand for labour as well as higher labour productivity. Thanks to lower raw material prices and lower foreign price dynamics, relatively positive price and wage development can be expected.[17] Inflation and economic activity (or the output gap) will show contradictory development, however, a lower interest rate than in the baseline scenario can be expected with the current settings of the central bank's reaction function.

Thanks to the expected deceleration of inflation and only a slight increase in GDP dynamics, there will only be a moderate change in the volume of wages and salaries. Hence, the revenue increase for income taxes in our scenario is actually negligible. In addition, even the revenues from consumption (VAT and excise tax) have not really increased due to the composition of economic growth. The expenditure side of the budget assumes nominal rigidity of the expenditure ceilings, and for the given simulations, it has actually not changed. In fact, the positive price development could also be connected with savings on the expenditure side of the budget (e.g. lower valorisation of pensions, social benefits, etc.). Nonetheless, this factor is not accounted for in our simulations, which could cause the deficit or the debt to be overestimated in the scenario. The decline on the expenditure side of the budget is associated

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[17] *A substantial decline in the prices of mineral resources could be associated with the asymmetry of monetary policy, especially in the case of low-inflation economies. Despite deflation in the economy, the non-existent ceiling on interest rates does not allow the central bank to reduce short-term nominal interest rates.*

with a decline in debt service, which is affected by a lower level of nominal interest rates and lower expenditures for unemployment benefits. Achieving the optimistic scenario would help improve the performance of public budgets.

Table 5.5: Macroeconomic effects of the optimistic scenario

		Year 2004	Year 2005	Year 2006	Year 2007	Year 2008
Gross domestic product						
Consumption expenditures	volumes, y/y in %	2,1	2,3	3,5	3,7	3,8
Gross fixed capital formation	volumes, y/y in %	7,6	2,8	3,5	5,0	7,9
Government expenditures	volumes, y/y in %	-2,0	-0,6	-0,5	-0,7	-0,4
Export of goods and services	volumes, y/y in %	21,9	9,5	10,7	10,7	10,8
Import of goods and serivces	volumes, y/y in %	18,4	3,9	9,3	9,6	10,4
Gross domestic product	volumes, y/y in %	4,4	4,8	4,4	4,5	4,9
Labour market						
Total employment	y/y in %	-0,6	0,9	0,8	0,6	0,6
Unemployment rate	in %	8,3	7,9	7,4	7,0	6,7
Wages and salaries	y/y in %	6,5	5,2	5,2	5,8	6,4
Prices						
Consumer price index	y/y in %	2,8	1,9	2,3	1,9	2,2
Gross domestic product deflator	y/y in %	3,0	1,1	2,8	2,8	2,7
Public budget						
Public deficit	in % of GDP	-3,0	-4,8	-3,7	-3,1	-2,4
Gross public debt	in % of GDP	36,8	37,2	36,6	37,1	36,6
Other indicators						
PRIBOR 3M	in %	2,4	1,9	1,8	2,0	2,3
Current account	in % of GDP	-5,4	-2,4	-1,4	0,2	1,2

Source: Ministry of Finance

Pessimistic scenario

In view of energy demands and raw material dependency, an immediate impact on the external imbalance would be observed should the pessimistic oil price scenario occur. This fact would cause corporate costs to rise and in turn affect the price block.

A secondary effect of high oil prices would be lower foreign demand dynamics, and on the contrary, faster foreign price growth. Lower foreign demand would be reflected in lower export performance and in turn lower GDP dynamics. Higher foreign price growth would put additional pressure on import price growth and production cost growth. Higher price dynamics would also prompt trade unions to accelerate wage bargaining, which would cause production costs to increase again with an effect on prices. Negative inflation pressures are expected to exceed interest in economic growth, and the central bank would then resort to higher interest rates. This fact together with lower corporate profitability will depress investment activity, which will cause economic performance and potential GDP to deteriorate further. Lower economic activity will be connected with lower demand for labour resulting in a slight increase in the unemployment rate.

Higher inflation acceleration than deceleration of real variables (employment, GDP) causes certain tax revenues to increase, even in the pessimistic scenario. However, a higher inflation rate is associated with higher nominal interest rates and thus higher debt service costs. An increase in the drawdown of unemployment benefits would also occur. In addition, it should be pointed out that a higher inflation rate in our scenario is not related to additional

valorisation of old-age pensions or other social benefits. This simplification could cause the resulting rise in the deficit or public debt to be underestimated in the pessimistic scenario.

Table 5.6: Macroeconomic effects of the pessimistic scenario

		Year 2004	Year 2005	Year 2006	Year 2007	Year 2008
Gross domestic product						
Consumption expenditures	volumes, y/y in %	2,1	2,3	3,4	3,4	3,3
Gross fixed capital formation	volumes, y/y in %	7,6	2,8	3,3	4,5	6,9
Government expenditures	volumes, y/y in %	-2,0	-0,5	0,1	-0,3	-0,7
Export of goods and services	volumes, y/y in %	21,9	9,4	9,5	8,4	8,8
Import of goods and serivces	volumes, y/y in %	18,4	3,9	8,1	7,8	8,9
Gross domestic product	volumes, y/y in %	4,4	4,8	4,4	3,8	3,5
Labour market						
Total employment	y/y in %	-0,6	0,9	0,8	0,4	0,1
Unemployment rate	in %	8,3	7,9	7,4	7,2	7,2
Wages and salaries	y/y in %	6,5	5,2	5,4	6,2	6,6
Prices						
Consumer price index	y/y in %	2,8	2,9	2,8	2,8	2,9
Gross domestic product deflator	y/y in %	3,0	4,0	1,4	3,0	3,5
Public budget						
Public deficit	in % of GDP	-3,0	-5,3	-4,0	-3,6	-3,2
Gross public debt	in % of GDP	36,8	38,6	37,6	38,8	39,1
Other indicators						
PRIBOR 3M	in %	2,4	2,3	2,1	2,9	3,2
Current account	in % of GDP	-5,4	-6,0	-3,7	-2,9	-2,3

Source: Ministry of Finance

Comparison of the sensitivity scenarios
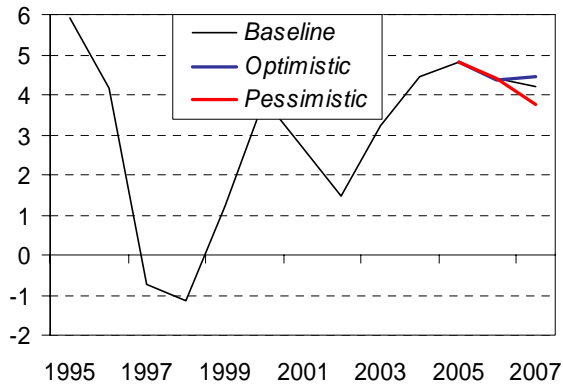
Chart 5.1: GDP (y-o-y, in %)

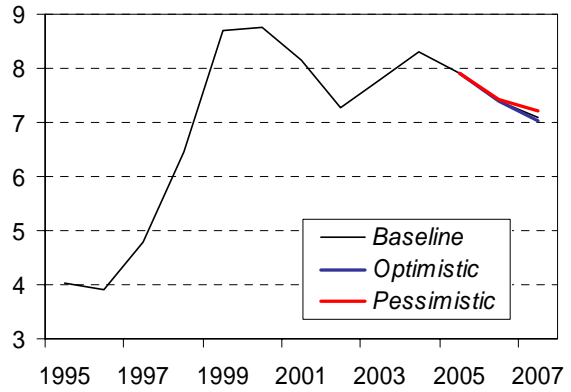### Chart 5.2: Unemployment rate (in %)

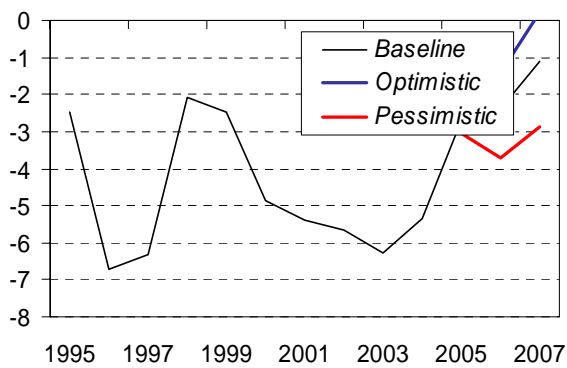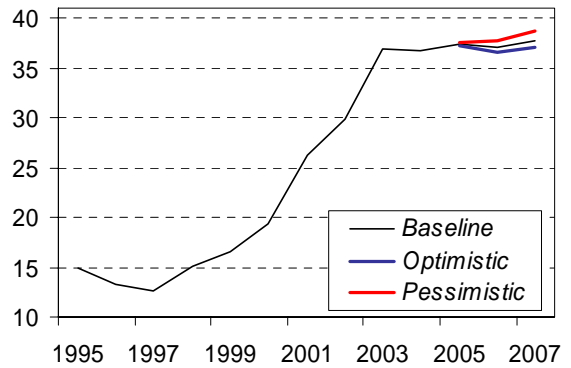### Chart 5.3: Current account (in % GDP)

Chart 5.4: Public debt (in % GDP)

Source: Ministry of Finance