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Growth and convergence

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Content

1. Introduction

This section focuses on growth performance and convergence of the Czech economy during 1996–2005. Economic growth is a result of a number of diverse factors and determines the economic level of a particular country and the process of convergence towards the level of developed countries. Growth performance of the Czech economy measured by real growth of GDP and alternative indicators of real income is analysed. The analysis of real convergence shows divergence of the CR's economic level from the European average during the recession in the second half of the 90's and the subsequent rapid convergence during the following period. Studies of relations between real convergence and nominal convergence focus mainly on development of the price and wage levels. Special attention is paid to the level of unit labour costs as an indicator of price-based competitiveness in international comparison.

2. Economic performance

Growth performance is one of the basic criteria used for assessing economic development of countries and how successful countries are in individual periods and on an international scale. **Gross domestic product** (GDP) calculated in constant prices is the main and the most frequently used indicator describing economic growth of the domestic economy.[1] According to this indicator the CR has achieved relatively low growth performance on a long-term basis. The average annual growth of GDP in the CR during 1996–2004 was only 2.1 % and the CR was the 22nd of the 25 EU countries. However, **two distinct periods** need to be differentiated during this decade**:** the period from 1996 to 1999 characterised by very slow growth of GDP (on average by less than 1 %) and the period from 2000 to 2004 characterised by rapid acceleration of GDP growth (on average to 3.2 %).

The period 1996–1999 was strongly marked by the recession in the Czech economy during 1997–1998, when a number of hindering factors had an impact on the Czech economy:

- Structural deformation from the past with a dominant role of heavy industry and insufficiently competitive industrial sectors;
- Problematic course of privatisation, which delayed the vital restructuring process in companies;
- Institutional barriers, in particular a critical situation in the banking sector;
- Weak inflow of foreign direct investment;
- Stagnating investment;
- Restrictive economic policy.

The economic growth **during the period 2000–2004** accelerated significantly as a result of positive impact of some factors:

- Strong inflow of foreign direct investment and increasing importance of companies under foreign control;
- Fast growth of domestic investment and export;
- Improvement in the institutional environment in connection with preparation and accession to the EU;
- Privatisation and restructuring of banks (consolidation of this sector);
- Pro-growth economic policy (decreasing interest rates and expansive fiscal policy).

[1] Methodological definition, problems with measurement and basic details of this indicator can be found in Kadeřábková a kol. (2005), p. 7.

However, even this period was influenced by some hindering factors, such as the persisting relatively low quality of the institutional environment, unsolved legislative issues (act on bankruptcy), excessive regulation, insufficient innovation activity, lagging behind in science and research, and slow improvement in the quality of human resources.

The CR moved to the centre of the growth scale of EU countries, where leading positions are held by the Baltic states and Ireland and Slovakia follow (see Figure 1). Different growth dynamics of GDP in the CR and other EU countries during 1996–1999, 2000–2004 and throughout the period are shown in Table 1.

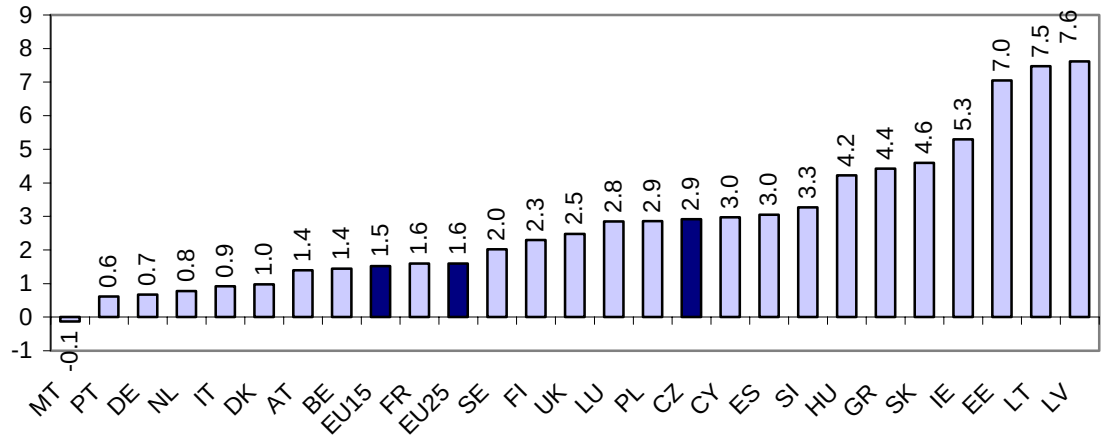
Table 1: Real GDP (percentage average annual change)

	1996–2004	1996–1999	2000–2004
EU-25	2.3	2.6	2.1
EU-15	2.3	2.6	2.0
Belgium	2.2	2.4	2.0
Czech Republic	2.1	0.9	3.1
Denmark	2.0	2.7	1.5
Estonia	6.2	5.0	7.2
Finland	3.6	4.6	2.8
France	2.3	2.6	2.1
Ireland	7.7	9.8	6.1
Italy	1.5	1.6	1.3
Cyprus	3.4	3.5	3.4
Lithuania	5.8	4.3	7.1
Latvia	6.3	5.0	7.4
Luxemburg	5.2	6.6	4.0
Hungary	3.8	3.7	3.9
Malta	2.4	4.1	1.1
Germany	1.4	1.7	1.2
Netherlands	2.4	3.8	1.3
Poland	4.1	5.4	3.1
Portugal	2.5	4.1	1.2
Austria	2.3	2.8	1.8
Greece	3.9	3.2	4.4
Slovakia	4.1	4.1	4.1
Slovenia	3.9	4.4	3.4
Spain	3.6	3.8	3.5
Sweden	2.7	3.0	2.5
United Kingdom	2.9	3.0	2.8

Note: Data are not fully comparable because countries are gradually passing to the calculations of GDP in prices of preceeding year and to the standards of ESA 1995 (for example realocation of FISIM). Source: Kadeřábková a kol. (2005), s. 13, own calculations.

Gradual acceleration in the economic growth brought first significant results in 2004, when GDP growth reached 4.7 %, and in 2005, when the growth rate increased to 6 %. The economic growth in the CR became healthier with regard to growth factors on the supply and demand side. The restructuring and modernising process was accelerated by strong inflow of foreign direct investment, which in turn strengthened investment and export. However, most analyses carried out by international organisations point out growth barriers arising from rigidity of the labour market and unsolved institutional obstacles, such as a complex legislative environment for conducting business. Analyses of the institutional environment, innovation activity and the quality of human resources show that the CR lags behind developed Western European countries in these aspects.

Figure 1: Real GDP (percentage average annual change in 2001-2004)

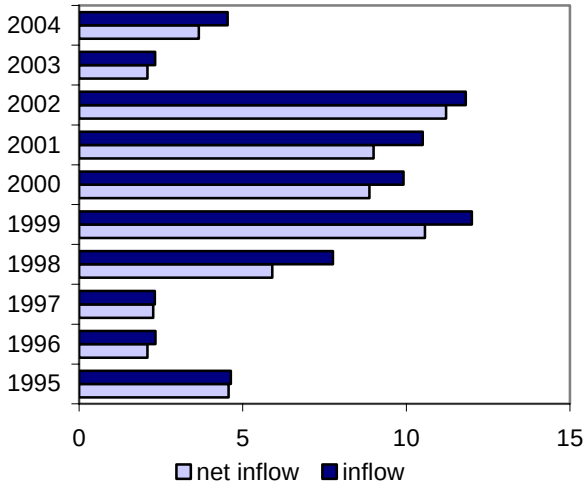


Source: EUROSTAT (2005a).

3. Impact of foreign direct investment

The impact of FDI became an important factor in development of the Czech economy in the second half of the 90's (see Figure 2). Adopting an act containing investment incentives for investors represented a major motivating factor for increased inflow of FDI. Most of FDI before 1998 was directed for companies sold directly to foreign investors and for those privatised by other methods. However, the share of green-field investment was very small.

Figure 2: Inflow and balance of foreign direct investment in 1995-2004 (per cent of GDP)



Source: ČNB (2005b), ČSÚ (2005a), own calculations.

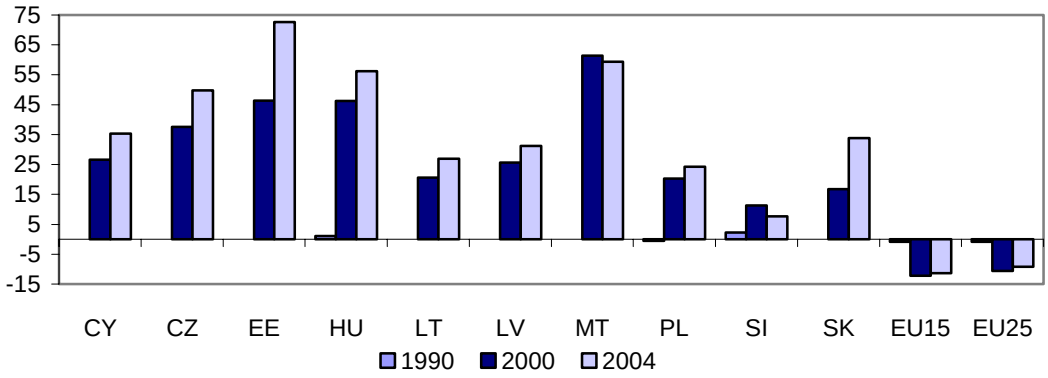
The inflow of investment after 1998 (mainly to the sector of telecommunications, car industry, processing industry, and to the financial sector) was to a large extent associated with the next wave of the privatisation process. In addition to that, a range of new green-field investment started to appear (for example the trade sector with the penetration of multinational companies).[2] The period 1999–2002 was characterised also by considerable inflow of FDI due to the privatization of major banking institutions.

[2] This inflow of FDI is associated with a strong increase in competition among traders and pressure on prices of sold commodities. It is one of the major factors influencing a low increase in prices in the economy as a whole.

The FDI balance during 2003–2004 was negatively influenced by the temporary absence of revenues from privatisation, transformation of a part of FDI into portfolio investment, withdrawal of capital from Český Telecom, purchase of Eurotel shares and outflow of capital connected with participation of domestic companies in privatisation abroad (for example ČEZ in Bulgaria). On the other hand, new investment of foreign companies in administrative and logistic centres in Prague or technological and strategic services centres had a positive impact. Stronger orientation on services and gradual involvement of domestic small and medium-sized enterprises represent a positive aspect of the development of FDI in comparison with the previous period.[3]

The CR is the fourth on the scale of new EU members according to cumulative inflow of FDI in relation to GDP, after Estonia, Hungary and Malta (see Figure 3) and holds the first place in the inflow of FDI per capita.

Figure 3: Cumulative stock of net foreign direct investment (EU-10, per cent of GDP)



Note: For Cyprus, Malta, Poland, Slovenia and EU-15 for the year 2004 the estimates of UNCTAD are used. Source: UNCTAD (2005), s. 308–312.

3.1 Structure of FDI

Investors from the EU-15 account for the largest share in the territorial structure of FDI (more than 87 % of the total inflow), followed by investors from the USA (5.5 %), Switzerland (almost 3 %) and Japan (2.3 %). The industrial structure of FDI is characterised by a significant share of the manufacturing industry (more than 44 %), financial services (almost 15 %) and trade and intermediation (almost 13 %), (see Table 2).

Table 2: Cumulative stock of foreign direct investment by industries in the Czech Republic in 2004

	Mil. USD	In percent
Manufacturing (D)	20 726.9	44.2
Electricity, gas and water supply (E)	3 168.5	6.8
Whosale and retail trade (G)	5 982.0	12.7
Transport, storage and communicat. (I)	2 801.4	6.0
Financial intermediation (J)	6 898.8	14.7
Real estate, renting, bus. activities (K)	4 313.4	9.2
Other (A + B + C + F + H + L – Q)	3 029.3	6.5
Total	46 920.2	100.0

Note: Data included in the cumulative stock in the year 2004 are preliminary. Conversion rate 25,701 CZK/USD. Source: ČNB (2005b), s. 59–65; ČNB (2005c), own calculations.

[3] However, some investments have proven unprofitable (excessive reliance on cost-based advantages of production located in the CR) and investors abandoned their original plans. The Flextronics company in Brno was the first case. The situation of LG. Phillips Displays in Hranice is slightly different.

3.2 Influence of companies with participation of foreign capital

Companies under foreign control tend to have very different performance characteristics from domestic companies, which are less involved in international trade. Foreign companies are a source of additional capital, which allows restructuring and increasing the company‘s effectiveness. They also provide transfer of technologies, i.e. know-how. Their involvements generally improve performance of the relevant company or even the entire national economy.

Countries with a high share of companies owned by foreign investors face a certain risk of developing a dual economy. This risk is especially strong in the case of insufficient interconnections between companies under foreign control and domestic companies. Some domestic companies also have negative experience with abuse of the economic power of companies under foreign control. Multinational companies can put pressure on domestic companies because medium-sized and small companies alone can rarely succeed in export markets.

According to the latest study (see ČSÚ, 2005g) that focused in detail on non-financial companies with 100 or more employees over the period 2000–2004, the number of companies under foreign control increased by more than one quarter, while the number of employees in these companies increased by almost one half and the increase in the volume of value added was identical. Comparison of the growth of labour productivity measured by the *level* of value added *per employee* in companies under foreign control with the rest of non-financial companies shows virtually identical dynamics, while the level of labour productivity in companies under foreign control remains higher by approximately one third.

International comparison of the share of employment, revenue and labour productivity in foreign investment companies on totals for the national economy of selected new EU members is summarised in Table 3. Labour productivity in companies with domestic capital showed positive development and the gap between these companies and companies with FDI was gradually reduced (except for Poland). This fact suggests higher involvement of domestic companies in international links and growing pressure on their restructuring and productivity, which lowered the risk of dual economy.

Stronger orientation of FDI companies towards import and export is a significant characteristic of these companies. This shows their pro-export (or in many cases pro-import) orientation, which contributes to improvement of deterioration of the trade balance.

Adoption of new technologies, procedures, etc. (spillover effect) is conditional on the will to apply these methods (see OECD, 2005c, p. 31). What‘s more, technological transfer can be complicated by protection of corporate know-how. Transfer is less complicated in industries such as retail trade as it can occur through the so-called learning by watching. Another, different example is the selection procedure for new employees in automobile factory operated by the TPCA consortium in Kolín, which is based on the modern approach learning by doing.

The question that arises in this context is how the support of foreign investors can be turned to services in scientific and technical parks rather than production in assembly lines. According to the government agency CzechInvest projects in the pharmaceutical industry, ITC and R&D should be supported (in particular in the form of lower limits for obtaining appropriate public support).

Table 3: Non-financial corporations under foreign control in the Czech Republic in 2000-2004

	2000	2001	2002	2003	2004	Index (2004/ 2000)
Number of corporations (in percent of total)	22.1	24.4	25.6	27.1	28.3	128.1
Number of employees (in percent of total) [1)]	23.8	28.3	29.5	31.8	34.8	146.2
Accounting value added (share of total, in percent)	31.8	37.0	38.6	42.1	46.3	145.6
Accounting value added on employee (corporations under foreign control, thousands of CZK)	595.0	633.4	643.3	724.9	814.9	137.0
Accounting value added per employee (total of non-financial corporations, thousands of CZK)	445.4	483.8	490.7	547.4	611.5	137.5
Total revenues from sales of goods and services (share of total, in percent)	36.5	41.1	43.5	47.1	50.5	138.4
Net profit (share of total, in percent) [2)]	60.6	56.0	48.5	55.3	51.0	*x*

Note: [1)] Adjusted number of employees. Total is related to non-financial corporations. [2)] Net profit in the year 2004 is calculated as a sum of quarterly gross profits after deduction of 28% income tax.

Many companies continue to operate with foreign rather than domestic R&D departments. New investment should be targeted at high-tech industries, i.e. industries with high intensity of R&D. In 2002, the share of these industries in gross value added in the manufacturing industry in the CR was 10.2 % (see OECD, 2005b, p. 167).[4]

This type of strategy will require adequate structure of workforce with regard to education and qualification and one of the main conditions (*sine qua non*) is that there are a great number of domestic companies wanting to be involved in business relationships in the Czech economy. What's more, this strategy does not solve the problem of high unemployment because the structure of unemployed persons generally does not correspond to required qualifications. The spillover effect may not occur if the significant differences in technologies between companies with FDI and domestic companies with low absorption capacity persist. The gap between these two types of companies would not continue to decrease in this case and the adverse (dual) character of the economy would persevere.

The analysis shows that the inflow of FDI to the CR led to major changes in the structure and international links of the economy and contributed significantly to the economic growth during 2000–2004. However, the economic policy should now influence the inflow of FDI towards greater use of qualitative growth factors with positive impact on competitiveness of the country.

4. Alternative methods for measuring growth performance

Measurement of a country's growth performance cannot be limited to a single indicator. International comparison is conditional on methodological comparability. Although the comparability is not absolute, the use of the European System of Accounts (ESA 1995) ensures comparability at the macroeconomic level in the EU. Besides the GDP indicator,

[4] Data for comparison - Hungary 9.6 %, Poland 5.5 % (in 2000) and Slovakia 7.9 % (in 2001) (see the study mentioned above).

indicators of final use of production (consumption, investment and net export) and indicators of real income are used for comprehensive description of economic performance.[5]

For example, the real growth of total domestic demand (final consumption and investment) in the CR exceeded the growth of GDP annually on average by 0.5 p.p. during 1996–2004 (2.6 % compared to 2.1 %). Yet, the growth of domestic demand is more important for increasing living standard and future growth of the economy than the growth of GDP. However, this is conditional on maintaining macroeconomic balance.

Development of aggregate real income indicators, which take into account the benefit or loss arising from terms of trade changes and processes of primary and secondary distribution of income between the domestic economy and the world, needs to be analysed in order to obtain a more comprehensive and objective idea of development in the economy. All real income indicators grew faster than real GDP in the CR during 1996–2004. The average annual growth of real gross domestic income was 3 %, i.e. higher than the GDP growth by 0.9 percentage point. The growth of real gross national income during the same period was 2.5 % due to the relatively significant and increasing outflow of primary income abroad. The growth of gross disposable income did not differ significantly from the growth of real gross national income.

Table 4: Gross domestic product and indicators of real income (constant prices of preceeding year, annual percentage change)

	GDP	RGDI	RGNI	RGDiI
1996	4.2	5.8	4.7	4.3
1997	-0.7	-0.5	-0.7	-0.6
1998	-1.1	2.3	2.2	2.4
1999	1.2	0.9	0.4	0.5
2000	3.9	2.1	1.9	1.5
2001	2.6	4.3	3.1	3.2
2002	1.5	3.7	2.4	2.2
2003	3.2	3.3	3.7	3.7
2004	4.7	5.0	4.5	4.0
1996–2004	2.1	3.0	2.5	2.3

Note: RGDI – real gross domestic income, RGNI – real gross national income, RGDiI – real gross disponable income. The figures in last row express an average annual rate of growth in the years 1996-2004.
Source: ČSÚ (2005a), own calculations.

The faster growth of real income indicators compared to the growth of GDP allowed for expenditure on final consumption and gross capital formation exceeding the growth of GDP without deteriorating trade balance. Foreign relationships (whether due to changes in terms of trade or owing to primary and secondary distribution of income) therefore played an important role in the economic development in the CR. As the positive influence of changes in terms of trade weakened in 2003 and 2004, so did the lead of real gross domestic income over GDP. Terms of trade deteriorated in 2005 due to a strong growth in prices of fuel and other commodities and this led to a situation when GDP grew by 6.0 % while real gross domestic income only increased by 4.2 %.

The currency and fiscal policy, but also policy relating to development of wages should take into account this different development of macroeconomic indicators of economic performance (see Table 4). The faster growth of real income indicators compared to the

[5] For more details see Spěváček (2005a), Vintrová (2005a).

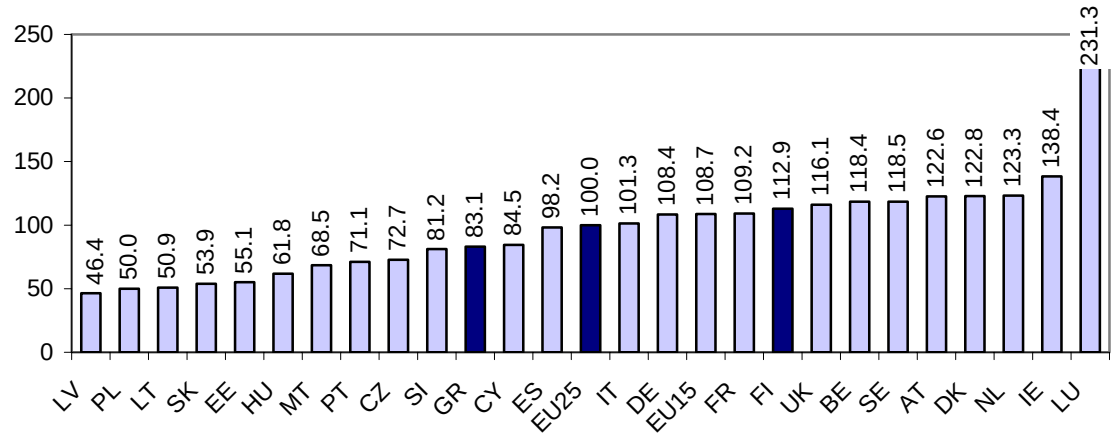
growth of GDP caused especially by positive development in terms of trade reflects the impact of qualitative factors and growth in competitiveness of the Czech economy.

5. Convergence of the Czech economy towards the EU level

Real convergence reflects approaching of the relevant country's economic level to the level of selected developed countries or their groups. The economic level is measured by GDP per capita in purchasing power parity to eliminate differences in price levels. This indicator shows the "physical volume" of goods and services available to the relevant economy for consumption and investment (including the foreign trade balance). The economic level of the Czech Republic is on the 17th place in the EU. The CR surpassed Portugal in 2005 and Malta in the previous year. The CR ranks among the most developed countries in the group of new member states from Central and Eastern Europe (EU-8), Slovenia being the only country in this group with a higher economic level (see Figure 4).

After recovery from the second recession during 1997–1998, the real convergence is successful and the position of the CR improved by 9 p.p. during a short period of 5 years (between 2000 and 2005), (see Table 5). GDP per capita in purchasing power standard was approximately 73 % of the EU-25 average in 2005, while the same figure in 2000 was only 64 %.

Figure 4: GDP per capita in PPS[1)] (EU-25, 2005)



Note: [1)] PPS – Purchasing Power Standard, unit of purchasing power parity on the basis of EUR, expresses average price level in countries EU-25. Source: EUROSTAT, Structural Indicators (11. 1. 2006).

Table 5: Gross domestic product per capita in EU-8 (in PPS, 1996-2005, EU-25=100)

				Difference in p.p..	
	1996[1)]	2000	2005[1)]	1996–2005	2000–2005
Czech Republic	70.3	64.0	73.0	2.7	9.0
Hungary	48.7	53.2	62.0	13.3	8.8
Poland	42.3	47.0	50.1	7.8	3.1
Slovakia	45.6	47.3	54.0	8.4	6.7
Slovenia	69.2	73.2	81.5	12.3	8.3
Estonia	34.9	41.2	55.3	20.4	14.1
Lithuania	34.8	38.3	51.0	16.2	12.7
Latvia	30.3	35.1	46.5	16.2	11.4

Note: [1)] Estimate of EUROSTAT. Source: EUROSTAT, Structural Indicators (11. 1. 2006).

Convergence towards the EU level is a result of higher growth rates of GDP per capita in the CR compared to the EU average. The average annual growth rates during 2001–2005 were 3.5 % in the CR and 1.2 % in the EU-25. However, the dynamics of real convergence in long-term cannot be assessed solely based on an advantage in growth rates of GDP per capita in constant (domestic) prices, although this factor is crucial. "Convergent" growth rates differ due to changes in terms of trade, which are not included in the indicator of GDP in constant domestic prices, and due to differences in recording structural changes in purchasing power parity calculations.

5.1 Development of the CR's economic position in the EU-8

The economic advantage the Czech Republic had over other Central and Eastern European countries at the beginning of the transformation process weakened significantly in the 90's. While the CR was still on the first place according to the level of GDP per capita in purchasing power standard in mid 90's, it was surpassed by Slovenia after the critical year 1997 and the gap between other countries and the CR decreased. Due to the second (post-transformation) crisis, the position of the CR in relation to the EU improved by not even 3 p.p. between 1996 and 2005, while other countries recorded improvement by 8 to 20 p.p. (see Table 5).

The CR's economic position in relation to the EU was at its worst (64.0 %) in 2000. A rapid progress of real convergence started after this year as the CR approached the economic level of the EU-25 by 9 p.p. between 2000 and 2005 and was the most successful Central European country during this period. This is a somewhat surprising finding, which is in contrast with standard ideas based solely on monitoring development of GDP.

The growth of GDP, which is used to measure the progress of real convergence, is not the only indicator of economic performance. Long-term improvement of terms of trade (T/T) in relation to abroad (see subchapter 1.3) is a specific attribute of the Czech economy, which is characteristic in the European context. This is why the Czech economy has been characterised on a long-term basis by a faster growth of RGDI than GDP. The difference between the average annual growth rate of RGDI and the average annual growth rate of GDP between 1996 and 2004 was 0.8 p.p. and this difference increased to 1.1 p.p. during 2001–2004. The differences between the two indicators in other Central European countries are lower and in some cases they even are negative. Slovenia recorded a significant lead of the RGDI growth rate over the GDP growth rate during 2001–2004 and Hungary recorded a less significant difference. The growth of RGDI in Poland and Slovakia by contrast was lower than the growth of GDP (see Table 6).

The picture of economic dynamics in international comparison arising from the RGDI indicator is different from conventional one based on development of GDP in constant prices. The Czech Republic is frequently presented as a country with relatively slow dynamics of economic growth in the EU-5. However, long-term improvement in terms of trade reflected in the RGDI indicator made the growth rate of this indicator one of the highest of the five Central European countries.

Improvement in terms of trade is also reflected in faster progress of real convergence. Real convergence in spatial comparison is measured by GDP per capita in current purchasing power parity to reflect the actual price levels in the relevant year. Improvement in T/T is reflected as an increase in the volume of total GDP in current parities because

the expenditure component of GDP – net export is recorded in prices actually paid for imports and achieved prices of exports converted by the market exchange rate. This differentiates development of indicators in current purchasing power parities from development in "domestic" constant prices.

While the progress of convergence in the Czech Republic, Slovenia and Hungary is faster than the recorded lead in the GDP growth rates, the situation in Slovakia and Poland is quite the opposite (see Table 7).

Table 6: GDP and real gross domestic income per capita 2001-2004 (percentage average annual change)

	GDP per capita	RGDI per capita	Difference in p.p.
EU-25	1.3	1.5	0.2
Czech Republic	3.2	4.3	1.1
Hungary[1)]	4.3	4.5	0.2
Poland	3.0	2.8	-0.2
Slovakia	4.7	4.3	-0.4
Slovenia	3.1	3.6	0.5

Note: [1)] Data are not fully comparable due to different stage of national accounts revisions implemented by reason of new methodology of allocation of financial services (FISIM) and of new method of calculation of constant prices by chain linking. Hungary recorded the biggest changes due to these revisions – the rate of growth of GDP and RGDI increased in the years 2001-2004 more than by 0.4 percentage point annually. Source: Data for CR from CSO, for other countries own calculations by using EUROSTAT, National Accounts (12. 1. 2006).

Table 7: Gross domestic product per capita (EU-25=100) in current PPS and according to rates of growth in constant prices

	2000	2004		
	Current PPS	Current PPS	Adjusted by GDP growth[1)]	Difference in p. p.
Czech Republic	64.0	70.6	68.9	1.7
Hungary[2)]	53.2	60.4	59.8	0.6
Poland	47.0	49.1	50.1	-1.0
Slovakia	47.3	52.1	54.0	-1.9
Slovenia	73.2	79.5	78.8	0.7

Note: [1)] Calculated as relation of country to EU-25 in the year 2000 in current PPS (column 1), multiplied by relation of indices of growth of GDP per capita in a given country to the average of countries of EU-25 in constant prices. [2)] The year 2000 before revision, the year 2004 after revision including the impact of FISIM; comparable figure for the year 2004 in current PPS is almost by 2 percentage points lower and the difference is -1,4 percentage points. Source: EUROSTAT, Structural Indicators (11. 1. 2006), own calculations.

5.2 Linkages between real and nominal convergence

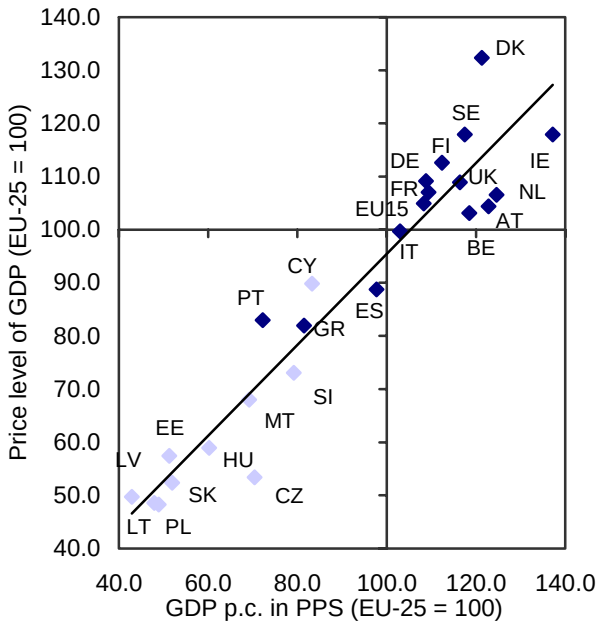
Nominal convergence means convergence of nominal values – price levels, inflation rates, interest rates, nominal wages, etc. The progress of nominal convergence in relation to the European Union is typically described by the fulfilment of Maastricht criteria, which represent a condition for accession of member states to the euro area. However, these criteria are defined for the purpose of maintaining the stability of common currency. They do not convey the linkages of real and nominal convergence in the context of the Czech economy ensuring its steady economic growth.

Real and nominal convergences occur simultaneously and influence each other. Countries with low economic level are also characterised by low price levels compared to

economically more advanced countries and their wage levels or levels of labour costs tend to be even lower. The price level grows with an increasing economic level, real appreciation of the currency occurs and the relative wage levels also increase. Less developed countries base their competitiveness on the international scale mainly on low wages and low total production costs. Countries with developed economies have better conditions for non-price (qualitative) competitiveness.

A harmonized progress of adjusting the economic level (based on an advantage in the growth of labour productivity), price level and wage level is vital for a smooth course of the integration process. An excessively fast increase in the consumer price levels unsupported by a sufficient advantage in the growth of labour productivity and the relating increase in wage levels can jeopardize development of the living standard as a result of decreased real wages and all real income of the population. Excessively strong pressure on wages unjustified by increased labour productivity would on the other hand lead to a decline in competitiveness of the business sector, deceleration of the economic growth and ultimately to increased unemployment.

Figure 5: Relationship between the price level and the economic level in EU-25 countries (EU-25=100, 2004)



Note: Luxembourg not included. Coefficient of correlation = 0,95. Source: EUROSTAT, Structural Indicators, National Accounts (30. 1. 2006), own calculation.

The extent of the gap in relation to developed EU countries in individual recorded basic macroeconomic parameters varies. In 2005, the economic level in the Czech Republic measured by GDP per capita in PPS was approximately 73 % of the EU-25 level and the level of labour productivity measured by GDP per employee was 67 %. Yet, the price level of the overall GDP reached only 58 % and shows a large deviation downwards on the regressive curve, which measures interdependence of the economic and price levels. The largest gap occurs in the level of labour costs, which in nominal terms (exchange rate adjusted) per employee do not reach even one third of the average figure for EU-25 countries. These facts suggest that the fastest dynamics in the process of convergence will be in nominal wages (expressed in euros), followed by real wages (in purchasing power standard) and price level. The overall economic level, where the ex-

isting difference in relation to the European Union average was "only" 27 % in 2005, will have the slowest convergence.

Correlation between the economic level measured by gross domestic product per capita in purchasing power standard and the price level of the overall GDP is very close in the EU-25. However, the price level in the Czech economy differs significantly from the price level in the European Union on a long-term basis and this difference is greater than the gap between the economic levels would justify. This is one of the differences between the Czech economy and economies of other post-communist new member states. Their price level is either directly on or very close to the regression curve that measures the interdependence between the economic level and the price level. Differences in the group of developed countries can be observed in Scandinavian countries and Germany – their price levels show upward divergence, or in Belgium, Ireland, Netherlands and Austria where the price levels diverge downwards (see Figure 5).

The downwards divergence of the price level in the Czech Republic from the curve is exceptionally high in relation to the rest of the EU and this characteristic needs to be considered when assessing the outlook for future development.

5.3 Convergence of the price level and appreciation of the exchange rate

The gap between GDP per capita in nominal terms and the EU average is greater than the gap between economic levels in real terms, which is caused by relatively low price levels in less developed EU countries. GDP per capita in euros (exchange rate adjusted) in the Czech Republic in 2004 was less than 38 % of the EU-25 level. This is very close to the level in Hungary (36 %), where the gap between the local level and the EU level in nominal terms is partly narrowed by a slightly higher price level compared to the CR. Similarly to the real terms, Slovenia maintains the highest level of GDP per capita in euros in the EU-5, and the lowest level is achieved in Poland, where GDP per capita represents as little as 24 % of the EU-25 average.

The Comparative Price Level (CPL) of the total GDP in the CR is slightly higher than one half of the average level in the EU-25. The CPL was 54 % in 2004, while the price level of final household consumption was between 55 % and 56 %. (According to estimates by EUROSTAT the CPL increased in 2005 to 58 %).

The price level of the total GDP compensates for a significantly higher price level of gross fixed capital formation (influenced by a high share of import of machinery and equipment, including means of transport, from countries with higher price levels) with an exceptionally low price level of public consumption (general government final consumption), where a low level of wages in relation to abroad is reflected in constructed evaluation of this mainly non-market item (wages have a high weight in this expenditure component of GDP). Changes in CPL are influenced by different development of prices and development of nominal exchange rate in relation to other compared countries.

As the price level approaches the reference level, **the progress of nominal convergence is significantly faster than the progress of real convergence.** While the annual average growth rate of GDP per capita in real terms (in constant prices) in the CR during 2001–2004 was 3.1 % and the excess of the EU was 1.8 p.p., the GDP per

capita in euros (exchange rate adjusted) increased annually by 9–10 % and approached the EU level with an overlap in growth rates of 6.6 p.p. The position of the CR in GDP per capita in euros in relation to the EU-25 thus improved in 4 years by more than 8 p.p.

Besides the fast growth of GDP in real terms, the dynamics of nominal convergence were also significantly influenced by appreciation of the nominal CZK exchange rate and to a lesser extent by the positive inflation differential of the GDP deflator. Appreciation of the nominal and real CZK exchange rate over a short period may be influenced by random fluctuations, including speculative influences of financial markets. Appreciation of the exchange rate over a longer-term period is a result of faster growth of labour productivity in the relevant country and is accompanied by steady convergence of the local price levels to levels of developed countries. This process is simultaneous with real convergence and reflects increasing welfare of the relevant country.[6] This process will not cease after adopting the common currency as some analysts erroneously assume. Instead, it will take its course through a single channel – the inflation differential. However, ensuring that nominal appreciation of the exchange rate or the positive inflation differential does not lead to deterioration of the foreign trade balance is necessary in order to maintain long-term balanced development.

The price levels in all transitive countries have been approaching the average values for economically more advanced "older" EU members in long-term development since 1990, although the extent of this convergence in individual countries differs. Hungary has been and remains the closest to the average price level in the EU of all compared Central European countries (EU-4 excluding Slovenia). The price level of total GDP in the Czech Republic approached the EU price level the fastest of all Central European transitive countries. This indicator increased in relation to the EU-25 during 1995 and 2004 almost by 15 p.p. (see Table 8). However, the price level in the CR remains low in relation to the achieved economic level.

The course of currency appreciation and price level increase should not be precipitate or with severe fluctuations as these aspects complicate the position of exporters, decrease price-based competitiveness of the relevant country in foreign trade and can deteriorate the external economic balance.

Table 8: Changes in comparative price levels (CPL) of GDP in EU-5

	EU-25 = 100			CZ = 100
	1995	2004	Difference in p. p.	2004
Czech Republic	38.6	53.4	14.8	100.0
Hungary	43.8	58.9	15.1	110.3
Poland	44.0	48.2	4.2	90.3
Slovakia	40.9	52.4	11.5	98.1
Slovenia	74.4	73.0	-1.3	136.8

Source: EUROSTAT, National Accounts (11. 1. 2006), own calculations.

[6] Some authors (for example Singer, 2005, p. 7) propose alternative "euro" indicators of economic growth as they recommend converting GDP into euros with the nominal exchange rate and subsequently deflating this indicator by the average inflation in the euro area. However, this approach results in intermixing indicators of real and nominal convergence.

5.4 Labour productivity and unit labour costs

Growth of labour productivity is an essential factor in real convergence. The CR lags behind the EU average according to labour productivity measured by GDP per employee or working hour slightly more than according to GDP per capita. The economic level is relatively higher due to a greater participation and employment rate and partly due to certain demographic factors (relatively small numbers of supported persons, especially children, in the CR).

GDP per employed person in PPS was 65 % of the EU-25 level in 2004 (compare to 73 % in GDP per capita) and the CR was on the 20th place on the scale of EU countries. Labour productivity places the CR on the 3rd place in the EU-8 – after Slovenia and Hungary. However, compared to 1995 GDP per employed person increased in 2004 in relation to the EU-25 by 8 p.p., while the relation in GDP per capita practically stagnated. The process of catching up in labour productivity was therefore faster than the process of catching up in the economic level. This is because the increasing labour productivity was accompanied by a decrease in employment rate and in the rate of economic activity.

Comparison of the "net" labour productivity measured as GDP per working hour in PPS produces even less positive results for the CR. According to this comparison, which is only available in relation to the EU-15, the CR is surpassed not only by the EU-8 states listed above, but also by Slovakia. While GDP per employed person was approximately 59 % of the EU-15 level in 2003, GDP per working hour was as low as 46 % (51 % in Slovakia). The higher number of hours worked in the CR compared to the average values for the "old" member states is diminished by the impact of lower productivity per hour.

Table 9: Average gross monthly wages in EU-8 and their comparison with Austria, 2004

	In market exchange rate		In PPS	
	EUR	Austria = 100	EUR/ PPS	Austria = 100
Czech Republic	565	22.2	1047	41.1
Hungary	579	22.8	986	38.7
Poland	505	19.8	1034	40.6
Slovakia	395	15.5	748	29.4
Slovenia	1190	46.8	1597	62.8
Estonia	466	18.3	791	31.1
Latvia	314	12.3	641	25.2
Lithuania	335	13.2	687	27.0
Austria	2545	100.0	2545	100.0

Source: Podkaminer, Hunya et al. (2005), s. 101–105, own calculations.

Labour productivity in the EU-8 lags behind the average figure for the European Union significantly less than the level of wages and total labour costs in nominal representation. This leads to generally very low aggregate unit labour costs in EU-8 countries and consequently high price-based competitiveness. The level of Czech nominal wages (exchange rate adjusted) was EUR 565 in total in 2004, which is slightly more than one fifth of Austrian wage level. The same comparison of real wages shows that the wage level in the CR was more than two fifths of the wage level in Austria due to the lower price level in the CR (see Table 9).

Unit labour costs (ULC) calculated as gross wages plus indirect costs (including employers' contribution to social security) exchange rate adjusted per unit of GDP in real

terms range between the lowest level of 38 % to 39 % in relation to the EU-25 (in Slovakia, Poland, Latvia and Lithuania) to 47 % in Estonia, 48 % in the CR and 52 % in Hungary. Slovenia records the highest level (77 %), (see Table 10).

Table 10: Labour productivity and unit labour costs in EU-8, 2004 (EU-25=100)

	GDP per person employed[1)]	Labour costs per person employed[2)]	Total ULC[3)]
Czech Republic	64.4	30.9	48.0
Hungary	68.2	35.7	52.3
Poland	62.2	24.5	39.4
Slovakia	59.1	22.6	38.2
Slovenia	75.3	57.6	76.5
Estonia	51.1	24.0	47.0
Latvia	42.8	16.2	37.9
Lithuania	49.7	19.4	39.0

Note: Labour productivity measured by gross domestic product per employee in PPS, labour costs of employed person calculated according to compensation of employees converted by exchange rate. Source: EUROSTAT, Structural Indicators (8. 2. 2006), own adaptations (1); Podkaminer, L., Hunya, G. et al. (2005), s. 21 (2); own calculations (3).

Frequently repeated statements about high labour costs in the CR, which tend to appear in the press and numerous statements by business associations, are misleading and incorrect. While it is true that the CR has higher labour costs than China, Ukraine, Bulgaria or Romania, none of these countries is comparable to the CR in their economic level or history of industrial development. Although the share of contributions to social and health insurance is relatively high in relation to gross wages in the CR, other indirect labour costs are exceptionally low and the basic component of labour costs, i.e. average wages, is especially low. The total volume of labour costs in relation to labour productivity represents the essential value for business calculations. In the CR, these costs are below the level adequate for a country with the same level of economic development. The Czech economy has high price-based competitiveness in the EU especially due to relatively low labour costs.

5.5 Prospect of convergence and economic growth strategy

The priorities of new member states in the EU-5 are very different from those of stabilised Western European countries, which did not experience a long period of isolation from development in the developed world and thus do not face the necessity of "catching up". A robust economic growth ensuring convergence to the economic level of advanced EU countries while maintaining a high level of employment represents the basic priority of their economic strategies. Nonetheless, on the broader, worldwide scale even the "old Europe" feels the need for reforms in the transition to a knowledge-based economy and the line between the processes of catching up in new member states and the Lisbon Strategy processes tends to be blurred to some extent under this challenge.

6. Conclusion

After the adverse development of the Czech economy in the second half of the 90's, the period 2000–2004 brought a significant increase in the GDP growth rate (to more than 3 % in the annual average). Growth culminated in 2005 at 6 %. The accelerated economic growth was positively influenced by a number of factors:

- Restructuring of the economy accelerated by strong inflow of foreign direct investment and increasing importance of companies under foreign control;
- Rapid growth of domestic investment and export adapting to the new market conditions;
- Improvement of the institutional environment as the country prepared for accession to the EU;
- Privatization and restructuring of banks (consolidation of this sector);
- Pro-growth economic policy (decreasing interest rates and expansive fiscal policy).

Foreign direct investment (FDI) became a major factor in the growth of the Czech economy. Its inflow strengthened after 1998 in connection with the adoption of investment incentives and ongoing privatization and restructuring of companies. In 2004, the Czech Republic was the fourth of the 25 EU countries in the cumulated net volume of FDI in % of GDP (after Estonia, Hungary and Malta). As the inflow of FDI strengthened, the influence of companies under foreign control increased significantly. These companies accounted for a half of all revenues in the sector of non-financial enterprises in 2004.

When the economic performance for the period 2000–2004 is measured by alternative real income indicators, more positive results are achieved. Real gross domestic income (RGDI) grew during this period at an average annual rate of 3.7 % and its growth rate was faster than that of GDP by 0.5 p.p. This was due to positive development in terms of trade. However, the situation changed in 2005 when terms of trade deteriorated due to a major increase in prices of oil and other raw materials and RGDI grew considerably slower than GDP. This also had an impact on the growth of domestic demand (final consumption and investment), as its real growth depends on development of real income. Development of real gross disposable income, which is influenced not only by changes in terms of trade, but also by primary and secondary distribution of income between the CR and the world, is especially important in this context.

As the difficulties faced by the economy in the 90's in connection with major restructuring of the production base and complicated institutional adjustment during transition to a market economy have been overcome, the **convergence of the Czech economy** towards the EU progresses at a fast rate in the current decade. The gap in the economic level, which extended significantly during the transformation crisis at the beginning of the 90's and persisted due to the prolonged recession in the second half of the 90's, was reduced significantly during 2001–2005. GDP per capita in purchasing power standard was at 64 % of the EU-25 level in 2000 and increased to approximately 73 % in 2005.

Analyses focusing exclusively on growth rates of GDP in constant prices cannot describe the progress of convergence. For example, the OECD study Going for Growth states that the growth of GDP per capita in the CR over the last few years has not been sufficiently high to ensure significant convergence in the level of income. This statement is misleading and at variance with the facts because the convergence in the Czech Republic towards

the EU economic level progressed over the last five years the most of all five Central European new EU members. The economic level measured by GDP per capita in purchasing power standard (PPS) moved towards the EU-25 level during 2001–2005 by 9 p.p., while the gap between the economic level of Slovakia and the EU-25 was reduced by just about 7 p.p., despite the higher growth rate of GDP in Slovakia.

The progress of convergence in the CR is faster than the economic growth rate measured by the standard GDP indicator would suggest. This is due to development of qualitative factors, which have an impact on comparison of economic levels in current purchasing power standards but are not reflected fully in growth rates of GDP in constant prices. Besides the growth rate of GDP, the accelerated convergence in the CR was also influenced by positive development of terms of trade in foreign trade. This phenomenon is also confirmed in development of real income as the real income growth in the Czech Republic in this decade is one of the fastest of all Central European new EU members. The picture about economic performance of individual new EU members therefore differs from conventional assessment.

Nominal convergence progresses alongside real convergence. Price levels, inflation rates, interest rates and in the case of large differences also wage levels converge. The difference in the price level of the CR and the average price level for the EU-25 is greater than the observed relation between the economic and price level in the conditions of European countries would suggest. The price level of the overall GDP in relation to EU-25 was just under 58 % in 2005 (the household consumption price level was slightly higher).

The Czech Republic has a low inflation rate. Over the last few years, the inflation rate measured by harmonized price index has been even significantly below the average rate for the EU-25 and Euro Area countries. Price stability according to ECB stipulates that inflation should be “below but close to 2 %” (the average annual rate during 2002–2005 was 1.4 % in the CR, 2.1 % in the EU-25 and 2.2 % in the EU-12). This low inflation rate puts excessive pressure on appreciation of the exchange rate, which affects exclusively exporters as opposed to equal distribution of inflation throughout the economy.

The main current issue related to nominal convergence is the timing for adopting euro and determining an exchange rate to be used for conversion of CZK to euro. This involves not only fulfilling the Maastricht criteria, which ensure stability of the common currency, but also ensuring that this step supports convergence of the real economic level as much as possible. Experience of less economically developed countries that have adopted euro should be examined in this context (in particular the experience of Portugal, which is going through a stage of rapid divergence of the economic level compared to the EU-25 following the country's accession to the Euro Area).

The low price and unit labour costs levels, which in nominal terms amount to less than one third of the average level in the EU-15 countries, make the Czech economy cost and price competitive. Even with gradual increase in unit labour costs their level will remain low compared with advanced EU countries. Unit labour costs related to total GDP are less than a half of the average level for the EU-25 countries. They are slightly lower than in Hungary (slightly higher than one half of the EU-25 average), while unit labour costs in Slovakia, Poland and the Baltic states do not reach even 40 % of the average level for the EU-25.

Real convergence to the average level of EU-25 countries is to continue in future. The Czech level is likely to exceed the 75 % threshold (a limit for support from EU structural funds) within the next 2 years. However, matching the economic level of the EU-25 in 2013, as stipulated by the Strategy for Economic Growth, appears to be an excessively ambitious objective which is highly unlikely to be fulfilled. As the CR has high convergence dynamics, we can expect that if this dynamics will continue, the country may soon reach the position of Greece, Cyprus and Slovenia. These countries achieve GDP per capita in PPS in relation to the EU-25 between 80 and 85 %. How well the transition from price-based to quality-based competitiveness is managed will decide the future course of this development.

References

Aghion, P., Lewitt, P.: *Endogenous growth theory*. Cambridge, MA, MIT Press 1998.
Auer, J., Müller, W.: Bilaterale Wirtschaftsvergleiche mit Polen, Ungarn, ČSFR, Jugoslawien, Rumänien und Sowjetunion. *Statistische Nachrichten*, 1993, No. 8.
Barro, R. J., Sala-i-Martin, X.: *Economic Growth*. New York, McGraw-Hill 1995.
Benáček, V.: Král není nahý. *Ekonom*, 2004, No. 31, pp. 32–34.
Blanchard, O. J., Diamond, P., Hall, R. E., Yellen, J.: The Beveridge Curve. *Brookings Paper on Economic Activity*, 1989, No. 1, pp. 1–76.
Boltho, A., Holtham, G.: New approaches to economic growth. In: Jenkinson, T. (ed.): *Readings in Macroeconomics* (2nd edition). Oxford, Oxford University Press 2000, pp. 237–247.
CEP: Měříme správně HDP? Praha, Centrum pro ekonomiku a politiku 2005, No. 39.
Crafts, N.: `Post-neoclassical endogenous growth theory`: What are its policy implications? In: Jenkinson, T. (ed.): *Readings in Macroeconomics* (2nd edition). Oxford, Oxford University Press 2000, pp. 261–274.
ČNB: Zprávy o inflaci. Praha, Česká národní banka 2004 a 2005.
ČNB: Statistika platební bilance. Praha, Česká národní banka 2005 (a).
ČNB: Platební bilance 2004. Praha, Česká národní banka 2005 (b).
ČNB: Stav přímých zahraničních investic k 31. 12. 2003. Praha, Česká národní banka 2005 (c).
ČSÚ: Evropský systém účtů – ESA 1995. Praha, Český statistický úřad 2000.
ČSÚ: Zahraniční obchod – časové řady 1994–2000, Praha, Český statistický úřad 2002.
ČSÚ: Zaměstnanost a nezaměstnanost v ČR podle výsledků výběrového šetření pracovních sil za 1. čtvrtletí a za 2.čtvrtletí 2004. Praha, Český statistický úřad 2004.
ČSÚ: Analýzy a prognózy makroekonomického vývoje ČR. Praha, Český statistický úřad 2004 a 2005.
ČSÚ: Čtvrtletní národní účty ČR. Praha, Český statistický úřad 2004 a 2005.
ČSÚ: Roční národní účty. Praha, Český statistický úřad 2005 (a).
ČSÚ: Časové řady – zaměstnanost a nezaměstnanost v ČR podle výsledků VŠPPP. Praha, Český statistický úřad 2005 (b).
ČSÚ: Rychlé informace – Tempo růstu celkové zaměstnanosti se dále zvýšilo. Praha, Český statistický úřad 2005 (c).
ČSÚ: Věda a technologie – ČR a mezinárodní srovnání ve světle statistických čísel; 1995–2004. Praha, Český statistický úřad 2005 (d).
ČSÚ: Zahraniční obchod ČR v lednu až prosinci 2004. Praha, Český statistický úřad 2005 (e).
ČSÚ: Zaměstnanost a nezaměstnanost v ČR podle výsledků výběrového šetření pracovních sil za 1. čtvrtletí a za 2. čtvrtletí 2005. Praha, Český statistický úřad 2005 (f).
ČSÚ: Zdroje podnikání a účetní přidaná hodnota nefinančních podniků v období let 2000 až 2004. Praha, Český statistický úřad 2005 (g).
ČSÚ: Dlouhodobý vývoj (ne)zaměstnanosti a HDP se zaměřením na částečné úvazky. Praha, Český statistický úřad 2005 (h).
ČSÚ: Statistická ročenka ČR 2005. Praha, Český statistický úřad 2005 (i).
ČSÚ: Bilance nefinančních aktiv 1995–2002. Praha, Český statistický úřad 2005 (j).
ČSÚ: Vývoj české ekonomiky v 1. až 3. čtvrtletí 2005. Praha, Český statistický úřad 2005 (k).
ČSÚ: Databáze ročních národních účtů. (5. 11. 2005) (l).
ČSÚ: Aktuality ČSÚ za listopad – prosinec 2005. Praha Český statistický úřad 2006.
CzechInvest: Investiční projekty agentury CzechInvest 1994 – 1. pol. 2005 (databáze projektů k 30. 6. 2005). Praha, CzechInvest 2005 (30. 11. 2005).
EC: European Commission, December 2004 Update of the Convergence Programme of the Czech Republic (2004-2007), An Assessment. Brussels, European Commission 25 January 2004.
EC: Labour Market and Wage Developments in 2004, With Special Focus on Risk of Jobless Growth. Luxembourg, European Communities 2005, Special Report No. 3. (b)
ECFIN: Statistical Annex of European Economy. Autumn 2000. Brussels, European Commission, Directorate General ECFIN – Economic and Financial Affairs, 2000.

ECFIN: Statistical Annex of European Economy. Autumn 2002. Brussels, European Commission, Directorate General ECFIN – Economic and Financial Affairs, 2002.
ECFIN: The EU Economy: 2003 review. Luxembourg, European Commission 2004, No. 6 (a).
ECFIN: Statistical Annex of European Economy. Autumn 2004. Brussels, European Commission, Directorate General ECFIN – Economic and Financial Affairs, 2004 (b).
ECFIN: Economic Forecasts. Autumn 2005. Brussels, European Commission, Directorate General ECFIN – Economic and Financial Affairs, 2005 (a).
ECFIN: Statistical Annex of European Economy. Autumn 2005. Brussels, European Commission, Directorate General ECFIN – Economic and Financial Affairs, 2005 (b).
ECFIN: Public Finances in EMU – 2005. Brussels, European Commission, Directorate General ECFIN – Economic and Financial Affairs, 2005 (c).
ECFIN: Employment in Europe 2005. Recent Trends and Prospects. Brussels, EC, Directorate General for Employment, Social Affairs and Equal Opportunities, 2005 (d).
EUROSTAT: The ESA 95 Input-Output Manual. Luxembourg, EUROSTAT 2002.
EUROSTAT: Labour Cost in Europe 1996–2002. Luxembourg, *Statistics in Focus*, 2004, No. 9 (a).
EUROSTAT: Science and Technology. Luxemburg, *Statistics in Focus*, 2004, No. 10 (b).
EUROSTAT: Structural Indicators, Luxembourg, EURO-STAT 2005 (a).
EUROSTAT: National Accounts, Luxembourg, EURO-STAT 2005 (b).
EUROSTAT: Decreased FDI flows for the EU25 in 2004. Luxemburg, EUROSTAT, *Statistic in Focus*, 2005, No. 32 (c).
EUROSTAT: European Union foreign direct investment yearbook 2005. Data 1998–2003. Luxemburg, EC 2005 (d).
EUROSTAT: Yearbook 2004, Data, Long-Term Indicators. Luxemburg, EUROSTAT November 2005 (e).
EUROSTAT: Structural Indicators. Luxembourg, EURO-STAT 2006.
Galuščák, K., Münich, D.: Structural and Cyclical Unemployment: What Can We Derive form the Matching Function?. Praha, ČNB, 2005, ČNB Working Paper Series, No. 2.
Gordon, R. J.: *Productivity Growth, Inflation, and Unemployment.* The Collected Essays of R. J. Gordon. Cambridge, Cambridge University Press, MA 2004.
Hájek, M.: Ekonomický růst a souhrnná produktivita faktorů v České republice, 1992–2003. Praha, Centrum ekonomických studií VŠEM 2004.
Hájek, M.: Ekonomický růst a souhrnná produktivita faktorů v České republice v letech 1992–2004. Praha, Centrum ekonomických studií VŠEM, 2005, CES VŠEM Working Paper No. 5.
Havlik, P.: Structural Change, Productivity and Employment in the New EU Member Statepp. Vienna, WIIW Research Reports, January 2005.
Havlik, P., Podkaminer, L., Gligorov, V. et al.: Accelerating GDP Growth, Improved Prospects for European Integration. Vienna, WIIW, 2005 Research Reports No. 314.
HCSO: Gross Domestic Product 2004. Budapest, Hungarian Central Statistical Office, October 2005 (25. 11. 2005).
Hrstková, J.: Virtuální investice. *Ekonom*, 2004, No. 12, pp. 57.
Hurník, J., Navrátil, D.: Supply-Side Performance and Structure in the Czech Republic (1993–2003): Macroeconomic View. Prague, Czech National Bank, September 2003, CNB Research Paper.
Hurník, J.: Potential Output: What Can the Production Function Approach Tell Us? Prague, Czech National Bank, May 2005, Economic Research Bulletin, No. 1.
Hunya, G., Geishecker, I.: Employment Effect of Foreign Direct Investment in Central and Eastern Europe. Vienna, WIIW, August 2005 Research Reports, No. 321.
IMF: The 5th Balance of Payments Manual. Conceptual Framework. Washington, IMF 1993.
IMF: Growth and Institutions. World Economic Outlook. Washington, IMF, April 2003.
IMF: The Global Demographics Transition. World Economic Outlook. Washington, IMF, September 2004.
IMF: Czech Republic. Staff Report for the 2005 Article IV Consultation. Washington, D.C., IMF, July 20, 2005.
Jaroš, J.: Growth Accounting in Transitive Economies. *Prague Economic Papers*, 2002, No. 2, pp. 149–166.

Jorgenson, D. W., Griliches, Z.: The Explanation of Productivity Change. *Review of Economic Studies*, July 1967, No. 99, pp. 249–283.
Jorgenson, D. W., Griliches, Z.: Issues in Growth Accounting: A Reply to Edward F. Denison, *Survey of Current Business*, May 1972, Part II, No. 5, pp. 65–94.
Kadeřábková, A. a kol.: Ročenka konkurenceschopnosti české ekonomiky. Linde, Praha, 2005.
Kadeřábková, A., Spěváček, V., Žák, M.: Růst, stabilita a konkurenceschopnost II (aktuální problémy české ekonomiky při vstupu do EU). Praha, Linde 2004.
Kejak, M.: Endogenní růstové modely. *Finance a úvěr*, 1998, No. 7, pp. 445–465.
Král, P.: PZI a jejich vliv na tempo dlouhodobého růstu v ČR. *Bankovnictví*, 2004, No. 2, pp. 18–20.
Kubíček, J., Tomšík, V.: Král není nahý, ale ani bohatý. *Ekonom*, 2004, No. 34, pp. 46–47.
Landesmann, M. et al.: Structural Developments in Central and Eastern Europe. Vienna, WIIW 2000, Structural Report.
Landesmann, M., VIdovic, H., Ward, T.: Economic Restructuring and Labour Market Develpments in the New EU Member Statepp. Vienna, WIIW December 2004, Research Reports, No. 312.
Lommatzschová, K.: Jak přepočítat HDP. *Ekonom*, 2004, No. 31, pp. 30-32.
Lucas, R. E. Jr.: *Lectures on Economic Growth.* Cambridge, MA, Harvard University Press 2002.
Mankiw, N. G., Romer, D., Weil, D. N.: A Contribution to the Empirics of Economic Growth. *Quarterly Journal of Economics*, 1992, pp. 407–437.
MF ČR: Konvergenční program České republiky (aktua-lizovaná verze). Praha, Ministerstvo financí ČR 2004.
MF ČR: Makroekonomická predikce České republiky. Praha, Ministerstvo financí ČR 2005.
MF ČR: Makroekonomická predikce České republiky. Praha, Ministerstvo financí ČR 2006.
MPO: Analýza vývoje ekonomiky ČR a odvětví v působnosti MPO za rok 2004. Praha, Ministerstvo průmyslu a obchodu ČR 2005 (30. 11. 2005).
Musil, P.: Vliv investičních pobídek na příliv přímých zahraničních investic do ČR. *Národohospodářský obzor*, 2005, No. 3, pp. 42–50.
Novotný, J.: Výnosy z přímých zahraničních investic a jejich rozdělení v České republice. *Politická ekonomie*, 2004, No. 6, pp. 741–755.
OECD: OECD Benchmark Definition of Foreign Direct Investment (3rd. edition). Paris, OECD 1995.
OECD: The Sources of Economic Growth in OECD Countries. Paris, OECD 2003.
OECD: Understanding Economic Growth. Paris, OECD 2004 (a).
OECD: National Accounts of OECD Countries. Paris, OECD 2004 (b).
OECD: Purchasing Power Parities and Real Expenditures, 2002 Benchmark Year. Paris, OECD 2004 (c).
OECD: OECD Economic Outlook. Preliminary Edition, No. 78. Paris, OECD 2005 (a).
OECD: OECD Science, Technology and Industry Scoreboard. Paris, OECD 2005 (b).
OECD: Economic Surveys: Slovak Republic. Vol. 2005/16. Paris, OECD September 2005 (c).
OECD: National Accounts of OECD Countries. Paris, OECD 2005 (d).
OECD: Going for Growth. Paris, OECD 2006.
Podkaminer, L., Hunya, G. et al.: Back from the Peak, Growth in Transition Countries Returns to Standard Rate of Catching-up. Vienna, July 2005, WIIW, Research Reports No. 320.
Potočnik, J.: Europe Needs a Wake-Up Call, International Symposium – Natural Science in Contemporary Society. Ljubljana, Slovenian Academy of Science and Arts, 21 October 2005.
Ravasio, G.: Real Economic Convergence: The Macroeconomic Dimension of Enlargement. Paper for High Level Seminar between EU Member States. Paris, December 2000.
Rogers, M.: *Knowledge, Technological Catch-up and Economic Growth*. Cheltenham UK & Northampton USA, Edward Elgar Publishing 2003.
Singer, M.: Srovnání temp hospodářského růstu. In: *Měříme správně HDP?* Praha, CEP 2005, No. 39, pp. 29–53.

Slavík, C.: Reálná konvergence České republiky k EU v porovnání s ostatními novými členskými zeměmi. Praha, Univerzita Karlova, Fakulta sociálních věd, CESES 2005. **Solow, R. M.:** Technical Change and the Aggregate Production Function. *Review of Economics and Statistics*, August, 1957, pp. 312–320.
Spěváček, V. a kol.: *Transformace české ekonomiky. Politické, ekonomické a sociální aspekty*. Praha, Linde 2002.
Spěváček, V.: K vývoji souhrnných ukazatelů reálného důchodu v České republice. Praha, CES VŠEM 2005.
Spěváček, V.: K vývoji souhrnných ukazatelů reálného důchodu v České republice. *Statistika*, 2005, No. 3, pp. 188–204 (b).
Spěváček, V., Vintrová, R.: Jak rychle rostla česká ekonomika? *Ekonom*, 2005, No. 16, pp. 50–53.
Srholec, M.: *Přímé zahraniční investice v České republice. Teorie a praxe v mezinárodním srovnání*. Praha, Linde 2004.
Šmídková, K.: Můžeme mít obojí? Reálná a nominální konvergence v období přílivu přímých zahraničních investic. *Finance a úvěr*, 2001, No. 6, pp. 364–376.
Thirlwall, A. P.: *Growth & Development. With Special Reference to Developing Economies* (seventh edition). London, Palgrave Macmillan 2003.
Tomšík, V., Kubíček, J.: Aktuální makroekonomický vývoj České republiky. Newton College, Brno 2005, Working Paper No. 4, pp. 15–32.
Törnqvist, L.: The Bank of Finland´s Consumption Price Index. *Bank of Finland Monthly Bulletin*, 1936, No. 10, pp. 1–8.
UN: System of National Accounts 1993. Brussels/Luxembourg, New York, Paris, Washington, D.C., United Nations 1993.
UNECE: Economic Survey of Europe No. 2. Geneva, New York, United Nations 2005.
UNECE: Economic Survey of Europe. Geneva, New York, United Nations, různá vydání.
UNCTAD: World Investment Report 2005. Washington, UNCTAD 2005.
Van der Ploeg, F., Tang, P. J. G.: The macroeconomics of growth: an international perspective. In: Jenkinson, T. (ed.): *Readings in Macroeconmics* (2.nd edition). Oxford, Oxford University Press 2000, pp. 248–260.
Varadzin, F., Frait, J., Červenka, M.: *Ekonomický rozvoj a růst*. Praha, Professional Publishing 2004.
Vintrová, R.: Co neodhaluje HDP při analýze ekonomického růstu a reálné konvergence. Praha, CES VŠEM 2005, Working Paper No. 1 (a).
Vintrová, R.: What GDP Indicators Do Not Tell You: Alternative Indicators of Economic Growth and Real Convergence. *Finance a úvěr*, 2005, No. 11–12, pp. 579–595 (b).
Vláda ČR: Strategie hospodářského růstu. Praha, vláda ČR (2. 12. 2005).
WB: Global Economic Prospects 2006. Economic Implications of Remittances and Migration. Washington, World Bank 2005.
Žďárek, V.: Analýza vztahu mezi mírou nezaměstnanosti a vývojem HDP v České republice v letech 1993 (1995) – 2004. Brno, ESF MU 2005 (mimeo).

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