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## **Economic growth of the Czech Republic in the light of real income indicators**

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**Vojtěch Spěváček**

**Abstract:**

The aim of the work is to show that GDP as it is currently calculated should not be used as the only aggregate indicator for evaluation of the overall development in the economy. Obtaining more complete and objective indication of development of the economy additionally requires analysis of development in aggregate indicators of real income, which consider gains or losses resulting from changes in terms of trade and the processes of primary and secondary distribution of incomes between the domestic economy and the world. Certain characteristics typical for the Czech economy require the use of real income indicators. The first part of the study outlines macroeconomic relations of foreign trade and terms of trade and their impact on the real domestic income indicator. It includes quantification of the impact of changes in terms of trade and the development of real domestic income in the CR during 1996-2004. The second part addresses transition from GDP expressed in fixed prices and real domestic income to real national income. It highlights the significance of the efflux of incomes abroad through the process of primary distribution and illustrates the development in real national income during 1996-2004. The third part analyses the development in real disposable income. The analysis of development in aggregate real income indicator for the Czech Republic during 1996-2004 is based on annual and quarterly national accounts published by the Czech Statistical Office (ČSÚ).

**Key words:** national accounting, gross domestic product, terms of trade, real gross domestic income, real gross national income, real gross disposable income

**JEL Classification:** O11

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## 1. Introduction

The Czech Republic has achieved relatively low growth performance measured by the real growth in the gross domestic product (GDP) on long-term basis and this reflects in the insufficient rate of narrowing the gap between the economic level (GDP per capita in the purchasing power parity) in the Czech Republic and in more advanced countries. Low growth performance is a problem currently affecting also the European Union (with significant differences among individual member states). Long-term differences in growth performance between countries thus attract intensive interest of experts, who focus on the issues of measuring economic growth and studying growth factors.

Many studies, particularly those completed by international organisations (EU, OECD, MMF and the UN European Economic Commission), have identified inhibiting factors of the economic growth in the Czech Republic, chiefly in the economic policy, institutions, innovation performance and education. None of these renowned institutions questioned the calculation of the basic macroeconomic indicators performed by the Czech Statistical Office (ČSÚ). On the other hand, none of these studies showed more positive development in the Czech economy in light of the real income indicators.

Ongoing revisions of national accounts in the Czech Republic tend to be subject to criticism because changes in statistical data, particularly changes in data such as GDP, complicate analysis, future development prediction and economic policy. Discussion on the methods for calculating GDP has appeared in the *Ekonom* magazine in this context. K. Lommatzschová and V. Benáček (2004) expressed their doubts regarding whether the officially reported GDP indicator in fixed prices illustrates fully the real economic growth and voiced their opinion that this growth in the Czech Republic is in fact higher than the figures published by ČSÚ by one to one and a half of a percentage point on average. Articles by J. Kubíček and V. Tomšík (2004) were published in response to their views. The debate on the basic economic indicator went on in the opinion of ČSÚ employees J. Heller and J. Mrázek (2004).

A number of problems will understandably appear in connection with statistical macroeconomic systems as complex as the system of national accounts, which has a short history in new EU member states, as it can be expected that at first the quality of the systems will not match the standard usual in the old member states. Indeed, this is why revisions aimed at harmonisation with standards defined by the European System of Accounts (ESA 1995) are carried out.<sup>1</sup> However, it is necessary to bear in mind that apart from their less pleasant aspects, revisions also have their positive side as they usually provide more accurate and complete reflection of the development in national economy, and improve the quality and broaden the scope of international comparison. This applies equally to the latest revision of national accounts, which not only initiated changes in the methodology and methods for calculating growth indexes, but

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<sup>1</sup> System of national accounts (SNA) is a macroeconomic statistical model that produces comprehensive image of the national economy, its main relations and relationships in respect of the world and provides numerical data on development of macroeconomic variables. The macroeconomic databank produced through SNA is a part of most macroeconomic analyses performed by international organisations such as OECD, EU, IMF, WB, UNECE. The increasingly extensive use of SNA was supported by international harmonisation of national accounts based on SNA 1993 or ESA 1995. The interconnection between SNA and the balance of payments system and the public finance statistics is also important. Unfortunately, comprehensive use of SNA in analysis and research in the Czech Republic remains insufficient.

also provided some new data that were known to only few experts and were practically never used by analysts. These included mainly aggregate real income indicators (domestic, national and disposable), which take into account the income generating effect of changes in foreign trade prices and movement of incomes within the primary and secondary distribution between the national economy and the world.

GDP is undoubtedly one of the basic macroeconomic indicators describing the development of the national economy. Development of GDP in fixed prices is monitored and analysed in great detail and serves as the grounds for important measures within the economic policy. To emphasize that calculation of GDP in fixed prices for the purposes of the economic policy should be as accurate as possible would be stating the obvious. Nevertheless, the significance of GDP should not be overestimated whether due to the definition of its contents or due to problems associated with calculation of this indicator. GDP is an indicator of production (production performance of the economy) expressed as gross added value of resident units (i.e. including enterprises under foreign control). The double deflation method is applied for conversion to fixed prices (intermediate consumption converted to fixed prices is deducted from total production converted to fixed prices or import converted to fixed prices is deducted from total final use converted to fixed prices). Calculation of price deflators used to convert total production and intermediate consumption or domestic demand and foreign trade components to fixed prices presents a complex statistical issue.

Living standard and wealth of a country does not depend solely on production performance measured by the GDP indicator; how products and services are exchanged through foreign trade and how the generated income is distributed (not only inside and between the sectors but also between the national economy and the world) is also vital in this context. Not only the volume of products and services produced, but also how and at what prices these products and services are sold abroad is important. The importance of these processes further increases with increasing integration of the world economy and free movement of international capital. This applies especially to small and open economies, such as the Czech economy. The effect of these processes can be quantified through calculation of aggregate real income indicators.

The aim of the work is to show that GDP as it is currently calculated should not be used as the only aggregate indicator for evaluation of the overall development in the economy. Obtaining more complete and objective indication of development of the economy additionally requires analysis of development in aggregate indicators of real income, which consider gains or losses resulting from changes in terms of trade and the processes of primary and secondary distribution of incomes between the domestic economy and the world. Certain characteristics typical for the Czech economy require the use of real income indicators. The first part of the study outlines macroeconomic relations of foreign trade and terms of trade and their impact on the real domestic income indicator. It includes quantification of the impact of changes in terms of trade and the development of real domestic income in the CR during 1996-2004. The second part addresses transition from GDP expressed in fixed prices and real domestic income to real national income. It highlights the significance of the efflux of incomes abroad through the process of primary distribution and illustrates the development in real national income during 1996-2004. The third part analyses the development in real disposable income. The analysis of development in aggregate real income indicator for

the Czech Republic during 1996-2004 is based on annual and quarterly national accounts published by the Czech Statistical Office (ČSÚ).

## **2. Why domestic demand in the Czech Republic grows faster than GDP, yet foreign trade deficit does not increase?**

Analysis of development of the Czech economy reveals a certain paradox between relatively slow growth in GDP and the generally more positive picture of the Czech economy arising from development of domestic demand (consumption and investments). It is the growth in individual and private consumption that the population perceives more intensively than the growth of GDP because it represents a condition for growing living standard. This is caused by the long-term predominantly positive development in terms of trade, which has allowed faster growth in the domestic use of GDP (final consumption and investments) before creation of GDP without deteriorating the external imbalance. The real GDP grew at an average annual rate of 2.1 % between 1996 and 2004 (over 9 years). The overall domestic use of GDP (final consumption and gross capital formation) increased by 2.7 % per annum. Private consumption (household expenditures for final consumption) and formation of gross fixed capital, i.e. two key components of the use of GDP that influence the growth in living standard and the future development of the economy, reached an average annual growth of 3%. At first sight it may appear that the domestic use of GDP exceeding its formation must reflect in deteriorated foreign trade balance (difference between export and import of goods and services). However, this effect was observed in net export quantified in fixed prices only. In contrast, the deficit of foreign trade in goods and services calculated in current prices was relatively low, remaining around 2 % of GDP with the exception of 1996 and 1997 and falling in 2004 to only 0.4 % of GDP. Analyses focused solely on the informative properties of GDP cannot explain the “contrast” between the formation and use of GDP.

This paradox can be explained by the benefit of positive development in foreign terms of trade (terms of trade, T/T – calculated by dividing the export price index by the import price index). This essentially means that if the export prices grow faster than the import prices, we can spend more for consumption or investments without the necessity to increase the production and export. Not only what we produce at home and how much of this production we export, but also how advantageously we can exchange the products and services in foreign trade is crucial for the domestic use of GDP. The influence of terms of trade can therefore be significant.

What are the macroeconomic relations of foreign trade and terms of trade? When examining the influence of foreign trade (FT) on the economy, distinction must be made between nominal and real values. Development of FT in nominal representation calculated as the value of export and import in current prices reflects in the balance of FT in products and services. If the balance is negative (more goods and services are imported than exported), as it is in the case of CR, domestic use of GDP (final consumption and investment) is greater than domestic creation of GDP by the amount of this balance. The balance of export and import of goods and services is included in the current account of balance of payments and influences the external economic balance. FT deficit allows consuming goods and services in a volume greater than the volume produced at home at the expense of deteriorating external balance. The basic macroeconomic identical equation applies:

$$\text{GDP} + \text{M} = \text{C} + \text{I} + \text{X}, \text{ or } \text{GDP} = \text{C} + \text{I} + (\text{X} - \text{M}), \quad (1)$$

where C stands for final consumption, I stands for creation of gross capital, M stands for import and X is export.

When C + I is referred to as A (domestic absorption – domestic final use or domestic demand), the following equation applies:

$$\text{GDP} - \text{A} = \text{X} - \text{M} \quad (2)$$

The difference between domestic supply (GDP) and domestic demand (A) equals the balance of foreign trade with goods and services (X-M). If domestic demand exceeds domestic supply, the balance of foreign trade is negative (import is greater than export and the difference is used to cover the gap between domestic demand and supply). This balance is generally referred to as performance or primary balance in current account of balance of payments (containing balance of goods and balance of services) and significantly influences the overall balance of the current account.

Development of FT v **real** representation (physical volume of export and import calculated in fixed prices) influences real growth of GDP. Real growth of export is a factor of GDP growth because exported goods and services had to be produced in the domestic economy. In contrast, real growth of import is a factor reducing GDP growth (national accounting records import as negative production). Understanding of the contradictory effect of export and import is often lacking and dynamic growth in physical volume of export (which has been the case in the CR over the last few years) is expected to reflect in rapid growth of GDP. However, the basic national accounting equation ( $\text{GDP} = \text{C} + \text{I} + (\text{X}-\text{M})$ ) clearly shows that physical volume of import is deducted. If import grows faster than export and the foreign trade deficit in fixed prices increases compared with the previous year, foreign trade as a whole reduces growth of GDP. In total, changes in FT balance (net export) in fixed prices are important because they combine with changes in domestic demand on the demand side and influence growth of GDP in fixed prices. Although the export growth rate in the CR during 1995-2004 significantly exceeded the GDP growth, the growth of export was even higher and the net export presented an inhibiting factor for economic growth and reduced the GDP growth. The influence of FT on economic growth in the CR is significant owing to the relatively high ratio of import and export in the Czech GDP.

While development of FT in current prices mainly influences the macroeconomic balance, real changes in export and import have relatively strong impact on economic growth calculated as growth of GDP in fixed prices. Export and import prices, which are reflected in changes in terms of trade, play a significant role in both cases. If terms of trade improve, their effect is reflected positively in trade balance in current prices (therefore in macroeconomic balance). On the other hand, GDP in fixed prices, as it is traditionally calculated, does not consider the income effect of improvement in T/T and a decrease in import prices therefore reflects in an increase in physical volume of trade and a consequent decrease in GDP in spite of the identical conditions.

This paradox can be documented on the development between 2001 and 2002, when terms of trade were very advantageous for the CR, leading to improvement in balance of

trade in goods and services in current prices on average by more than CZK 40 billion. However, during the same period foreign trade reduced the real GDP growth by 2 percentage points per annum. Table 1 and chart 1 illustrate the development of deflators of export and import of goods and services according to national accounts and the terms of trade calculated based on these deflators. Terms of trade are calculated from the ratio of export and import prices index (in this case from the ratio of export and import deflators). Where the terms of trade index is higher than 100, the development in prices on worldwide markets was positive and export prices grew faster than import prices. Where the index is lower than 100, the situation was quite different with import prices growing faster than export prices. Table 1 states deflators of export and import of goods and services obtained from national accounts. These deflators differ from price indexes of export and import in foreign trade statistics.

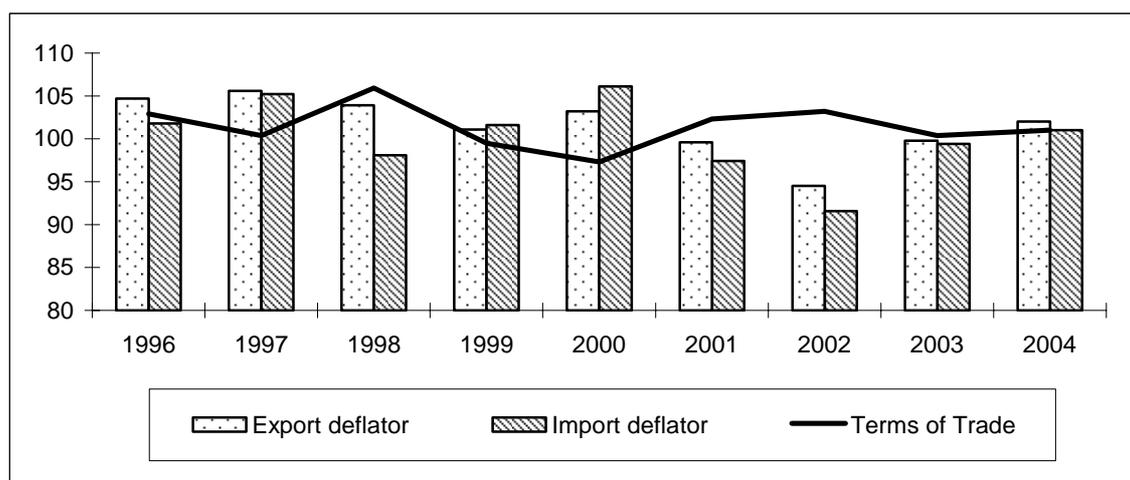
Both, table 1 and chart 1 demonstrate a sharp decrease in import prices during 2001-2003 combined with a slight decrease in export prices. Naturally, this situation would have reflected in positive development in terms of trade. Changes in export and import prices are influenced by a range of factors – from changes in worldwide prices, exchange rates and foreign trade structure to prices achieved based on agreements between exporters and importers. The improvement in terms of trade during 2001-2004 was a result of a number of factors – from appreciation of Czech crown and positive structural changes in foreign trade to more favourable prices achieved, which were undoubtedly partially caused by the positive impact of the growing influence of foreign companies in the Czech economy (integration in international commercial networks, elimination of discounts for “goods from the East” with inferior quality or increasing technical standard of goods produced). Predominantly positive development in terms of trade on long-term basis may be seen as an indicator of growing competitiveness of the Czech economy. However, an in-depth analysis of factors influencing the changes in terms of trade is essential.

**Table 1: Development of export and import deflators and terms of trade (year-on-year indexes)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Export deflator	104.7	105.6	103.9	101.1	103.2	99.6	94.5	99.8	102.0
Import deflator	101.8	105.2	98.1	101.6	106.1	97.4	91.6	99.4	101.0
Terms of trade	102.9	100.4	105.9	99.5	97.3	102.3	103.2	100.4	101.0

Source: Revised annual national accounts (ČSÚ 2004), own calculation.

How to explain the fact that the improvement in terms of trade does not reflect in real growth of GDP and it would appear that the improved terms of trade reduce the real growth of GDP? This is due to the fact that changes in terms of trade are seen as a price phenomenon in the system of national accounts (as changes in export and import deflators influencing the calculation of GDP deflator), whereas in fact they have a real effect, which in the case of improvement in terms of trade reflects in real growth of incomes allowing an increase in domestic use and therefore ensuring economic well-being of the country (this effect is quantified in the growth of real gross domestic income). It is this very dilemma between price effect and real effect that often leads to misunderstanding and criticism of GDP indicator that fails to consider gains or losses arising from changes in terms of trade.

**Chart 1: Development of export and import deflators and terms of trade (year-on-year indexes)**

**In national accounting**, when the expenditure approach to calculating GDP is applied, nominal values of the individual components of GDP use are converted to fixed prices using individual deflators of these components. The following procedure is applied: final use components (final household consumption, final consumption of government institutions, creation of gross fixed capital, change in reserves and export) are converted to fixed prices and import converted to fixed prices using the import deflator is deducted from the total final use in fixed prices (domestic demand and export). Changes in export and import prices thus influence calculation of the GDP deflator, which is used to convert GDP in current prices to fixed prices. If import prices are decreasing while export prices are increasing (improvement in terms of trade), import in fixed prices grows faster than import and current prices and the growth export in fixed prices is slower despite otherwise identical conditions. In the logic of national accounting, this translates into decelerated GDP growth (in relation to its hypothetical growth in a situation when foreign trade prices would remain unchanged). Alternatively, faster growth in import prices compared with growth in export prices (i.e. deteriorated terms of trade) will produce a more favourable GDP deflator (usually lower than inflation rate measured by the consumer price index) and result in higher calculated real growth of GDP.

This clearly shows that calculation of individual deflators presents a serious statistical problem, the core issue being how qualitative changes can be distinguished from price changes. It has been frequently noted in this context that the existing statistical methods overestimate growth in prices as they are unable to distinguish between changes in quality (representing real growth) from changes in prices. Naturally, this would reduce the calculated real dynamics of GDP. As the share of import in GDP in 2003 was 65 %, while the share of export was 62.8 %, the foreign trade statistics and quality of price indexes are very important for calculation of real growth of GDP.

The accounting reflection of export and import prices in GDP deflator and real growth of GDP as described above often leads to incorrect conclusions that growing import prices and decreasing export prices are positive because they increase GDP growth. However, the situation is quite the opposite **in economic reality** because growing import prices increase costs and decrease profits of companies, accelerate inflation and are harmful to the economy. On the other hand, growing export prices or decreasing

import prices bring companies and the economy as a whole additional real income, which allows increasing domestic use without unsettling the macroeconomic stability. The underlying fact is that the character of movement of foreign trade prices is different from that of growth in prices in domestic economy.

If prices of products and services produced and consumed at home (closed economy) increase, this price increase does not create additional real income (incomes are merely redistributed between sectors and institutional units within the domestic economy) and must therefore be eliminated from calculation of GDP in fixed prices. The mechanism in foreign trade is, however, different and decreasing import prices or increasing export prices create real income that allows increasing physical volume of import and consequently also domestic use of production (consumption or investment). In other words: when the price of goods produced and consumed at home increase, country's economic well-being does not improve. However, if prices of exported goods increase, more goods can be imported and country's prosperity increases. However, calculation of GDP in fixed prices fails to take this varying character of price movement into account.

### **3. Real gross domestic income as an indicator considering the effect of changes in Terms of Trade**

Cumulative real domestic<sup>2</sup> income of residents is influenced not only by the volume of production measured by GDP in fixed prices, but also by the ratio at which the production is traded in import and export in relation to non-residents. If price terms improve, less export is required to pay for the given volume of import, which means that with the same level of domestic production products and services can be transferred from export to consumption or creation of capital. A GDP indicator calculated in fixed prices does not take this real income effect into account. This is why the national accounting system includes an indicator of real gross domestic income, which is calculated by adding/deducting so-called trading gains or losses (ČSÚ translates these terms into Czech not very accurately as “obchodní zisk či ztráta ze změn směnných relací”) to/from GDP in fixed prices. Gross real domestic income expresses the purchasing power of incomes created by residents in the domestic economy.

The real domestic income indicator was included in the system of national accounts following the revision of national accounts in 1993 (SNA 1993). The previous system of national accounts from 1968 did not include this indicator. Its relatively infrequent analytical use is contributable to its short history combined with the fact that the difference between growth of GDP and growth of real gross domestic income in many countries (especially large countries) is not very large. Nonetheless, a country as large as the USA has used an indicator referred to as “command GDP”, which is calculated differently but is equivalent to real gross domestic income, since 1981. ČSÚ began to publish trading gains and losses and real income indicators for the period 1996-2003 according to the ESA 1995 methodology in December 2004 in annual national accounts in a table entitled “Real disposable income in fixed prices of the previous year”.<sup>3</sup>

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<sup>2</sup> The expression **domestic** refers to income created by resident units (incl. enterprises under foreign control) that was not subjected to the distribution processes. **National** income is a result of primary distribution and as such is reduced (increased) by the outflow (inflow) of primary incomes (from) abroad.

<sup>3</sup> Interestingly, some Swiss institutions (for example the Swiss National Bank) have studied growth of gross real income in relation to growth of GDP more intensively. The motivation behind this interest was

Trading gains (losses) for a particular year can be calculated from the deficit of balance of foreign trade in goods and services in current prices by deducting the foreign trade balance converted to prices of the previous year from this balance. The result shows by how much the foreign trade deficit would increase (decrease) if the export and import prices in the current year remained unchanged from the previous year (see table 2). The formula for calculation of a trading gain or loss according to ESA 1995 is as follows:

$$T = (X - M) / P - (X / P_x - M / P_m), \quad (3)$$

Where: X – export of goods and services, M - import of goods and services, P – price deflator for the current balance of export and import (usually the mean of price indexes for import and export), P<sub>x</sub> – export price deflator, P<sub>m</sub> - import price deflator.

**Table 2: Year-on-year influence of terms of trade (in billion CZK)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total	24.0	3.7	62.1	-6.0	-36.8	36.8	50.7	6.0	19.1
in % GDP	1.6	0.2	3.5	-0.3	-1.7	1.7	2.2	0.2	0.7

Source: ČSÚ (2004), own calculation.

The table shows long-term predominantly positive impact of terms of trade on foreign trade balance in the Czech Republic. Significant fluctuations in both directions caused chiefly by external shocks associated with rapid movement of prices of oil and other raw material occurred on short-term basis. The most significant positive impact of terms of trade was recorded in 1998 (CZK 62 billion). The positive impact in 2001 amounting to CZK 37 billion balanced the equally high loss from the previous year, which was caused by strong growth in import prices. Further positive development of terms of trade in 2002 resulted in gains amounting to CZK 51 billion. The figures quoted above document the great significance of development in import and export prices for stability of the Czech economy and explain the contrast between the relatively low balance of foreign trade in current prices and the significantly higher balance in fixed prices over the last few years. Real income increases or decreases of this significance cannot be disregarded in an analysis of macroeconomic stability. The influence of terms of trade on real income in certain years even exceeded the applicable growth of GDP in real representation. Neglecting this factor distorts analytical reflection on development of macroeconomic stability, deforms inflation prognoses and may thus lead to serious consequences in inappropriate measures of fiscal and monetary policy.

**Table 3: Growth of RGDI and GDP (in %, fixed prices of the previous period)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Real gross domestic income	5.8	-0.5	2.3	0.9	2.1	4.3	3.7	4.0	4.7
Gross domestic product	4.2	-0.7	-1.1	1.2	3.9	2.6	1.5	3.7	4.0
Difference in percentage points	1.6	0.2	3.4	-0.3	-1.8	1.7	2.2	0.3	0.7

Source: ČSÚ (2004), own calculation.

the fact that economic development of Switzerland evaluated according to growth of GDP was one of the worst among OECD states. Evaluation of the Swiss economy using growth of real domestic income provided significantly more positive results owing to favourable development in terms of trade (see Sfreddo, 2004). Similarly, Bureau of Economic Analysis in the USA calculates so-called “command GDP”, which takes into account the influence of terms of trade.

If trading gains (losses) are added to GDP (in fixed prices of the previous year), the result indicates the growth rates of real gross domestic income (RGDI) in relation to growth of real GDP (see table 3).

The growth of RGDI during 1996-2004 was more favourable than the growth of GDP on average by 0.9 percentage point. The influence of terms of trade during 2001-2004 was even more significant, adding 1.2 percentage point to growth of GDP. This data changes the image of the Czech economy in international comparison. As the effect of terms of trade on real income was negative in other central European countries (slight in Hungary, more pronounced in Slovakia and the most significant in Poland), these results alter the rating of countries in terms of growth. According to the RGDI indicator calculated per capita, the growth recorded in the Czech Republic during 2001-2004 was the fastest in Central Europe. The Czech Republic therefore is not one of the slowest growing countries in the region as is the common belief due to the GDP indicator.

The more positive image of the development in the Czech economy arising from the real gross domestic income indicator is consistent with opinions that the Czech economy developed better than GDP growth suggests. However, this is not because statisticians would have calculated GDP incorrectly (although as the latest revision of national accounts suggests, there are some significant problems even in this area), but due to the fact that real gross domestic income in the CR grew significantly faster than GDP as a result of trading gains, which allowed increasing domestic use of GDP without jeopardising the macroeconomic stability. International comparison shows that the Czech Republic achieved very positive development of terms of trade of goods and services during 1995-2004 (according to the national accounts). Out of 25 EU member states, the Czech Republic was second after Lithuania and compared with 1995 (index 100) achieved an index of 113.4 in 2004, while terms of trade of the neighbouring central European countries deteriorated over the same period of time: Poland (index 90.2), Slovakia (index 94.5) and Hungary (index 98.2).<sup>4</sup> The differences in development of terms of trade imply that although the Czech Republic achieved a slower growth of GDP compared with the neighbouring central European countries, preliminary calculations show that it has exceeded these countries in the growth of real gross domestic income over the last few years.

#### **4. Real national income**

The previous section focused on the real gross domestic income indicator (i.e. income of residents including the influence of trading gains or losses). From the perspective of the national economy, it is also important to consider the influence of income distribution between the national economy and the world. In the current conditions of strongly integrated and internationalised world economy, a considerable part of GDP may be created by firms controlled by foreign capital. In addition, a significant number of foreign citizens work within the national economy. In order to establish the gross national income (GNI), incomes from labour and capital (primary incomes) belonging to non-residents must be deducted from GDP (and on the other hand, primary incomes of Czech entities created abroad must be added).

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<sup>4</sup> ECFIN: Statistical Annex of European Economy, spring 2005, p. 84-85.

The GNI category provides better (though not complete) indication of the means available to the national economy, which determine the final consumption and savings. The gross national income indicator is important not only from the analytical, but also from the practical point of view because the amount of contribution to the European Union is determined according to the gross national income achieved. Macroeconomic analyses tend to prefer the GDP indicator available to users quarterly, while GNI is only stated in annual national accounts. However, as the balance of primary income with foreign entities is included in the balance of payments (balance of revenues), GNI can also be calculated quarterly. While the differences between the two indicators were relatively small in the past, the last few years have seen an increase in these differences owing to liberalisation of capital transactions, strong flow of international capital and greater freedom in the movement of labour.

For example, Ireland recorded the difference between GDP and GNI of 9.5 percentage points (p.p.) in 1995 and this difference increased in 2003 to 16.2 p.p. to the detriment of GNI. In Hungary, this difference was 8.7 p.p. in 1998 and decreased to 5.1 p.p. in 2003. This was caused mainly by strong inflow of direct foreign investment, which increased the share of enterprises under foreign influence,<sup>5</sup> whose profits (whether repatriated in the form of dividends or reinvested) represent primary income of non-residents and as such reduce GNI of the relevant country. The efflux of primary incomes from the Czech Republic in the form of wages, profits, dividends and interest has currently reached a significant level and exceeds their inflow. The balance of primary income with non-residents (so-called net primary incomes) is negative.

Terminological differences between national accounts and balance of payments should be emphasised in this context. Although both systems have been harmonised, balance of primary incomes with non-residents is referred to as balance of incomes in balance of payments, while national accounts state net primary incomes from non-residents (+)/for non-residents (-).

The influence of balance of incomes on the current account deficit has become very strong over the last few years, mainly due to an increasing volume of reinvested profit, which is included in the financial account under direct foreign investments with reinvested profit in the balance of incomes as its counter-item.<sup>6</sup> The difference between

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<sup>5</sup> Companies under foreign control are companies with a seat in a different country. The gross added value created by these companies is therefore included in GDP of their relevant country. However, as these companies (or their parts) are owned by non-residents, the profit created by these non-residents (or its part) constitutes primary income of non-residents, which must be deducted from GDP when calculating gross national income.

<sup>6</sup> Evaluation of reinvested profit and subsequently evaluation of the deficit of the current account of balance of payments as a whole is very complicated because reinvested profit does not represent actual outflow of capital. It is a fictitious (balance) item used to balance the inflow of capital in the financial account. On the other hand, profits could theoretically be repatriated and used to finance investments in the host country. The borderline between repatriated and reinvested profit is therefore very flexible and depends on decisions of foreign investors. However, as the inflow of DFI has recently weakened, it is to be expected that reinvested profit will be transformed into repatriated profit and will represent actual outflow of capital in the future. When evaluating the macroeconomic stability, it is necessary to bear in mind that reinvested profit is not included in national savings (as they are savings of non-residents – i.e. external source of investment funding) and should be correctly perceived as outflow of primary incomes decreasing national disposable income and therefore also national savings (reinvested profit therefore broadens the gap between savings and investment and consequently also increases the current account balance).

GNI and GDP has an increasing trend and has recently reached very significant level – over the last few years it ranged between 4 and 5 % GDP. Lower GNI compared with GDP means that a part of created GDP became a property of non-residents. However, this does not necessarily mean actual outflow of primary incomes as it is in the case of reinvested profit. The difference between GDP and GNI in the CR is documented in table 4.

**Table 4: GDP and GNI (in billion CZK, current prices)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
GDP	1466.7	1660.6	1785.1	1962.5	2041.3	2150.1	2315.2	2414.7	2550.7	2751.1
Balance of incomes	-7.2	-24.7	-29.2	-35.1	-46.7	-53.2	-83.8	-116.2	-117.2	-139.5
GNI	1459.5	1635.9	1755.9	1927.4	1994.7	2096.9	2231.5	2298.5	2433.5	2611.6
GNI in % GDP	99.5	98.5	98.4	98.2	97.7	97.5	96.4	95.2	95.4	94.9

Source: ČSÚ (2004), own calculation.

Data on flow of incomes and distribution processes is typically published in current prices only. Although conversion to current prices is possible, selecting the correct deflators for conversion of primary incomes, where conventional price indexes cannot be constructed, is essential. ESA 95 recommends deflating primary incomes (and transfers) using the index for gross domestic final expenditures. ČSÚ published deflated primary incomes in relation to foreign entities (in prices of the previous year) for the first time in the revision of national accounts in December 2004 and facilitated calculation of real growth of gross national income of the CR.

Two growth indexes can be constructed in connection with gross national income: the index of real growth of gross national income, which is based on real growth of GDP and considers the balance of primary incomes with foreign entities in fixed prices, and the index of growth of real gross national income, which additionally takes into account trading gains or losses (see table 5).

The average annual growth of gross national income in the CR during 1996-2004 was 1.6 %, a significantly slower growth compared with GDP (2.1 %). 2003 was the only year when GNI grew faster than GDP (though data for this year is preliminary, based on annual national accounts). This means that the CR not only loses a significant part of the GDP created, but this net outflow of primary incomes abroad shows an increasing trend. This development is associated with various stages of inflow of foreign investment. The first stage is characterised by inflow of foreign capital, while the volume of reinvested profit becomes significant in the second stage and repatriated profit prevails in the third stage. Unlike Hungary or Ireland, the CR appears to be still in the second stage.

**Table 5: Real growth of GDP and GNI (in %, fixed prices of the previous year)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Gross domestic product	4.2	-0.7	-1.1	1.2	3.9	2.6	1.5	3.7	4.0
Gross national income	3.1	-0.9	-1.4	0.7	3.7	1.4	0.1	3.9	3.5
GNI incl. trading gains or losses	4.7	-0.7	2.2	0.4	1.9	3.1	2.4	4.2	4.3

Source: ČSÚ (2004), own calculation.

When considering the outflow of primary incomes, attention must be paid to their influence on not only the volume of distributed national income, but also the macroeconomic stability as the balance of primary incomes with foreign entities becomes a crucial item in the balance of the current account of balance of payments. While trading gains improved the balance of foreign trade in goods and services (performance balance), the outflow of primary incomes has a negative effect on the current account of balance of payments. This is why positive development in the foreign trade balance contrasted by negative development in the current account balance can be observed in the CR.

Growth of real gross national income has been generally more positive than growth of GDP in fixed prices. Apart from growing GDP, factors positively influencing the growth of real gross national income included positive development in terms of trade, while the impact of outflow of primary incomes abroad was negative. The average growth of real gross national income for the period 1996-2004 was 2.5 %, a figure higher by 0.4 p.p. compared with growth of GDP. Development of real gross disposable income followed a similar pattern to that of real gross national income owing to relatively small significance of current transfers with the world.

## 5. Real disposable income

Disposable income can be described as a final income which is used for final consumption and its remaining part represents savings. Expressions disposable income and savings are used to refer to national disposable income and national savings. The following macroeconomic equations apply:

$$\text{GNDI} = \text{GDP} + \text{NY} + \text{NCT}, \quad (4)$$

Where: GNDI – gross national disposable income, GDP – gross domestic product, NY – balance of primary incomes of residents with non-residents, NCT – balance of current transfers in relation to the world

$$\text{GNDI} = \text{S} + \text{C}, \quad (5)$$

Where: S – savings, C – final consumption.

The amount of disposable income in relation to GDP is influenced not only by the balance of primary incomes with foreign entities (this balance in the CR decreases disposable income), but also by the secondary distribution processes, where one-sided movement of income occurs (something for nothing). The overall balance of current transfers (so-called net current transfers from non-residents) is positive in the case of the CR (the CR receives more from non-residents than it pays). This item increases the disposable income of the CR and partially compensates loss arising from primary distribution. The same item in the balance of payments is referred to as current transfers. Development of gross national income and gross disposable income (GNDI) and its relation to GDP is documented in table 6.

**Table 6: Development of GNI and GNDI (billion CZK, current prices)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
GNI	1459.5	1635.9	1755.9	1927.4	1994.7	2096.9	2231.5	2298.4	2433.5	2611.6
Current transfers	15.2	10.4	12.0	16.6	20.4	14.5	17.7	14.6	15.6	6.1
GNDI	1474.6	1646.3	1767.9	1944.0	2015.1	2111.3	2249.2	2313.0	2449.1	2617.7
GNDI in % GDP	100.5	99.1	99.0	99.1	98.7	98.2	97.1	95.8	96.0	95.1

Source: ČSÚ (2004), own calculation.

While GNDI was even slightly higher than GDP in 1995, it has been consistently lower than GDP and has demonstrated a significant deteriorating trend since 1996. In 2004, GNDI was lower than GDP by approximately 5%. This was caused by the significantly negative development in the balance of incomes.

**Table 7: Real disposable income, (billion CZK, fixed prices of the previous year)**

	1996	1997	1998	1999	2000	2001	2002	2003
GDP in market prices - fixed prices of the previous year	1528	1648	1765	1986	2121	2207	2350	2504
Trading gains or losses	24	4	62	-60	-37	37	51	6
RGDI - in prices of the previous year	1552	1652	1827	1980	2084	2243	2400	2510
Primary incomes – from abroad – in prices of the previous year	38	50	51	62	73	82	66	73
Primary incomes – abroad – in prices of the previous year	61	77	84	108	125	164	182	189
GNI in market prices – in prices of the previous year	1528	1625	1794	1935	2032	2162	2285	2395
Current transfers – from abroad – in prices of the previous year	24	28	32	44	35	35	32	46
Current transfers – abroad – in prices of the previous year	14	17	17	24	21	18	18	31
GNDI – in prices of the previous year	1538	1636	1809	1955	2046	2179	2299	2410

Note: Primary incomes and transfers in relation to foreign entities are deflated using the index for gross domestic final expenditures. Source: ČSÚ (2004).

Gross national disposable income presents an important indicator from the perspective of evaluation of macroeconomic stability, even if it tends to receive very little attention in analyses.<sup>7</sup> The amount of disposable income codetermines not only the level and growth of living standard, but also growth of wealth (assets) of the national economy because growth of assets of individual sectors and the entire national economy depends mainly on the ability of these sectors or national economy to generate savings. Country's ability to generate sufficient savings is the basic condition for dynamic and stable economic development. Investments are financed from savings and the gap between savings and investments determines the deficit or surplus of the current account of balance of payments. Generation of gross national savings is consistently insufficient in the CR due to the need to finance creation of gross capital. In addition, the level of national savings (ratio of gross national savings to gross disposable income) shows a decreasing trend on long-term basis. Not only the amount of disposable income

<sup>7</sup> An interesting detail is that the range of improving information according to ESA 1995 published by Eurostat for EU member states is increasingly frequently extended by processes of distribution of national income. Even quarterly accounts, which were previously limited to indicators illustrating creation of GDP and its use, are beginning to include primary and secondary distribution and the use of disposable income.

in current prices, but also development of real disposable income in time is interesting from the analytical point of view. Calculation of real disposable income is a regular part of national accounts of advanced countries. Real disposable income figures for the CR were published for the first time in the December revision of annual national accounts in 2004 (see table 7).

Real growth of gross disposable income differs only insignificantly from growth of real gross national income. This is due to the relatively low balance of current transfers with the world, which has been practically stable over the last few years. A decrease in current transfers in 2004 was caused by a decrease in revenue from private transfers and an increase in tax and social security payments for foreign labour. Table 8 summarises development in aggregate indicators of real income.

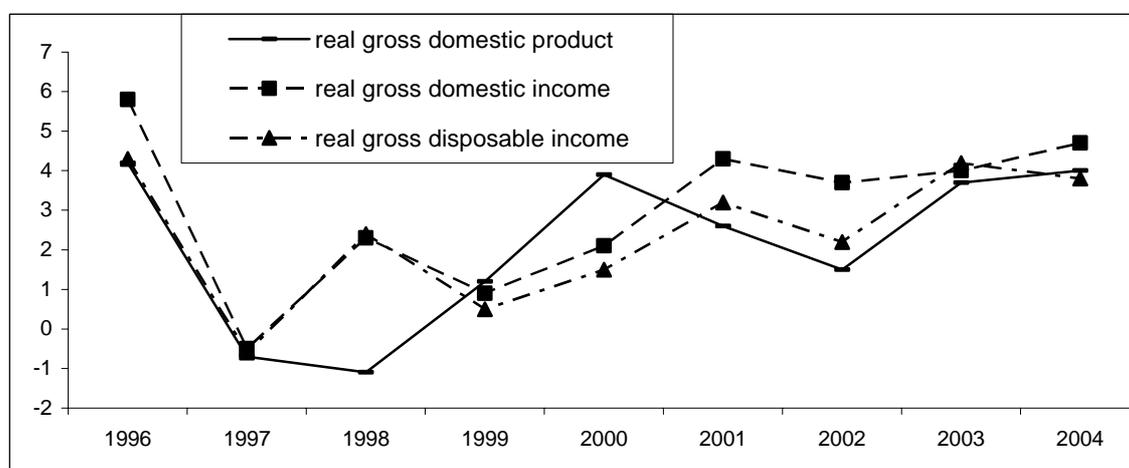
**Table 8: Growth of GDP and real income indicators (fixed prices of the previous year)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	1996-2004
Gross domestic product	4.2	-0.7	-1.1	1.2	3.9	2.6	1.5	3.7	4.0	2.1
Real gross domestic income	5.8	-0.5	2.3	0.9	2.1	4.3	3.7	4.0	4.7	3.0
Real gross national income	4.7	-0.7	2.2	0.4	1.9	3.1	2.4	4.2	4.3	2.5
Real gross disposable income	4.3	-0.6	2.4	0.5	1.5	3.2	2.2	4.2	3.8	2.4

Note: Data in the last column represent the average annual growth during 1996-2004.

Source: ČSÚ (2004), own calculation.

**Chart 2: Growth of GDP and real income indicators (in %)**



Differing growth of aggregate indicators of real gross domestic income (RGDI) and real gross disposable income (RGNDI) in relation to growth of GDP is also shown in chart 2.

The use of one indicator only is not sufficient for evaluation of the Czech economy. This evaluation will differ according to the indicator used. Generally, development during 1996-2004 appears more positive based on aggregate real income indicators. The difference between growth of GDP and growth of real domestic income of almost 1 percentage point to the benefit of the growth of real domestic income was especially significant. This was caused by the predominantly positive development in terms of trade. Although growth of real national income indicators was on average higher than

growth of GDP, it was lower compared with growth of real domestic income. This was due to the increasing negative balance of primary incomes in relation to foreign entities. Not only the differences in overall growth rates, but also their development in time is important. The difference recorded in 1998 is important from this perspective because real income indicators grew faster by more than 3 p.p. compared with GDP. On the other hand, 2000 was a significantly less successful year with regard to development of real income. During 2001-2004, real gross national disposable income increased annually by 3.4% compared with GDP, which showed the average annual growth of 3%. Development in 2003 was interesting with growth of real gross national income faster than growth of real domestic income due to stagnating balance of primary incomes with foreign entities. In 2004, real gross disposable income grew slower than GDP as a result of a decrease in current transfers. However, the data used are preliminary and may change during subsequent revisions.

## **6. Conclusion**

Comprehensive picture of development of national economy drawn with great accuracy is essential for economic policy. This cannot be achieved using solely the indicator of real growth of GDP as the most commonly used indicator for evaluation of development of the economy because it does not consider real income effect of changes in terms of trade and consequently provides a more grim image of development of the Czech economy than the image arising from development of aggregate indicators of real income. The GDP indicator focuses on production and represents production performance of the domestic economy, while national income indicators have closer ties to consumption and living standard. Comprehensive evaluation of development of the economy therefore should not be limited to growth of GDP and should also employ alternative methods for measuring performance of the economy. Aggregate indicators of real income, which are used so little in analyses, are important in this regard. This may be due to their relatively short history as their internationally harmonised version was only introduced during the latest revision of national accounts (SNA 1993 and ESA 1995). ČSÚ published these indicators for the first time in December 2004. During 1996-2004, all real income indicators (real gross domestic income, real gross national income and real gross disposable income) in the CR grew on average faster than GDP. Growth of real gross domestic income had the greatest advance over growth of GDP (by almost 1 percentage point per year), while growth of real gross national income was lower by one half of p.p. than growth of real gross domestic income due to relatively significant and increasing outflow of primary incomes abroad. Growth of real gross disposable income differed very little from growth of real gross national income. Faster growth of real income indicators compared with growth of GDP allowed the level of domestic use of GDP (expenditures for final consumption and creation of gross capital) to exceed the growth of GDP without deterioration of the trade balance. Relations with the world (whether as a result of changes in terms of trade or consequences of the primary and secondary distribution of incomes) thus played an important role in economic development of the CR. As the national accounting system can quantify the impact of these relationships on development of macroeconomic indicators, they should not be left unnoticed in analyses of development of the Czech economy.

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