Articles

ANALYSIS OF THE DEVELOPMENT OF THE CZECH ECONOMY IN 2001 AND OUTLOOK FOR 2002 AND 2003

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Abstract:
This paper evaluates Czech economic development during 2001 and is supplemented by the predictions of basic economic indicators for 2002 and 2003. This article is divided in several parts. In the beginning we focus on economic growth, including a marginal analysis of GDP and industrial production. It is possible to find a detailed net inflation analysis in Chapter three which consists of an explanation of current demand and supply factors and then we present an econometric estimate of the net inflation equation. This chapter includes impulse-response analysis. Raw material dependency and the intensity of Czech production is analyzed in Chapter four, including an econometric estimate of oil and gas prices. In the following chapter – Labour Market – we focus on gross nominal wage determinants in the Czech Republic. In the last two chapters we evaluate fiscal and monetary policy, including an detailed interest rate analysis.

Keywords: econometric estimate, impulse-response analysis, net inflation equation, oil and gas equation, wage determinants, import intensity, energy dependency and intensity

JEL Classification: 0110, 0520

1. Introduction

In spite of the less favourable development of the EU economies, the Czech economy continued to grow, primarily due to the rapid growth of domestic investments and of consumption demand. In 2001, the exporting performance of the economy was further increased, and became evident in the rather fast growth of exports and industrial production. Companies under foreign control greatly contributed to these results.

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The unfavourable development of import prices and extensive deregulation were the main causes of the growth of the inflation rate in 2001 (from 3.9 % to 4.7 %). In the second half of the year, the direction of the inflation development changed, and the annual growth of consumer prices decreased substantially. The Czech National Bank (CNB), for the first time in four years, managed to achieve its monetary goal, as the targeted net inflation came within the interval set. The development of the inflation rate is the main factor influencing the adjustment of Czech monetary policy, i.e., primarily of interest rates. The Chapter three is therefore devoted to a broader analysis of inflation and the possibility of construsting composite leading indicator which would announce the changes in the development of net inflation. The impact of CNB interest rate changes on the interbank rates, and on client rates, are analysed in the chapter entitled "Monetary Policy".

The faster growth of the economy (3.6 % in 2001), as well as the high oil prices and strong USD, were reflected in the foreign trade deficit and in the current account of the balance of payments, which, however, remained under the safe level of 5 % GDP, and which was smoothly offset by the great influx of long-term capital in the form of foreign direct investment. In imports, goods of an investment nature prevailed, which participate in the development of Czech production and exporting capacities. The Czech foreign trade deficit, however, has been, in the last three years, primarily caused by a high deficit in the mineral fuel group (SITC3). In the fifth Chapter, we have therefore focused on the issues of oil and natural gas imports into the Czech Republic, and on the impact on the trade balance, of changes in the prices of these raw materials.

The unfavourable development of foreign demand in the second half of the year slowed the growth of industrial production. Striving to increase the labour productivity, companies again began to downsize employment. This change was reflected in the labour market, as the number of the unemployed grew (unemployment rate reached 8.9 % at the end of the year). Real wages grew at a rather high rate, and contributed to the greater real growth of disposable income.

The problematic development of public finances continued in 2001. The budget deficit reached CZK 67.7 billion, including the current bond programmes. The fact that there has been a deficit budget in the past few years is reflected in the growth of the government and public debts of the Czech Republic, which, at the end of 2001, reached CZK 345 billion, i.e., approximately 16.3 % of GDP. The tendency toward deficit financing and the growth of public debt, and therefore also toward a greater demand by the state for resources, will continue in the next few years, as it is necessary to cover the losses of consolidation institutions. No less important is the structural deficit of the state budget (primarily of the pension system), which will, in the mid- and long-term, require a fundamental reform. The current and the future results of public budgets indicate a greater demand of the state for resources on the financial market, which may be, however, temporarily mitigated by an inflow of privatization income.

The continuing inflow of foreign capital into the Czech Republic was the main cause of the nearly stable strengthening of the CZK with respect to the EUR (DEM), against which the CZK reached its new historic maximum. The trend of a rapid strengthening of the currency required CNB interventions on the foreign exchange market, and was one of the causes of the interest rates cut at the beginning of 2002.

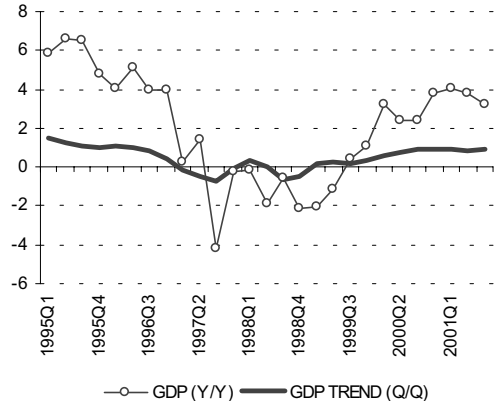
The banking sector witnessed further fundamental changes in 2001. The transformation of the Consolidation Bank (Konsolidační banka – KOB) – the administrator of the greatest part of bad debts – into a non-banking entity Czech Consolidation Agency (Česká konsolidační agentura – CKA) meant a great drop in the size of the banking loan market in the Czech Republic. Aside from this change, we can say

that there was a renewed growth of loan provision in the economy. The CNB states that in November 2001, the total volume of client loans grew by 4 %. On the other hand, a rather fast growth of deposits continued (primarily of non-term) which, in a market with a limited number of investment options, led to another increase in the banks' interest in base-rate operations with the CNB (the average monthly volume of CNB currency notes held by the banks in 2001 reached approximately CZK 270 billion). Banks increasingly focused on retail clients, which is evidenced by the great dynamics of loans (primarily mortgages) granted to this client segment.

2. Economic Growth

The development of the Czech economy was, in spite of the lower foreign demand, very favourable, in our opinion. Gross domestic product grew by 3.6 % in 2001, due to the rapid growth of domestic demand. The impact of foreign trade on economic growth was slightly unfavourable. The Czech Republic, as a small, open economy which is not self-sufficient in terms of raw materials, is greatly dependent on the development of its main trading partners, primarily the EU countries, and on the price development in global markets, where it figures as a „price taker". In this respect, the situation developed controversially last year.

Graph 1
GDP Growth (y/y in %) **and Growth of Trend-cycle Component of GDP** (q/q in %)



Source: Czech Statistial Office, author's calculations.

The growth of foreign demand has been slowing down since the beginning of 2001. The GDP of our major trading partner, Germany, grew in that year, but only by 0.6 %, primarily due to the drop in the gross fixed capital formation, in reaction to the unfavourable outlook of both domestic and foreign economies. Exports to Germany stagnated, and in the last few months of the year dropped sharply, which was immediately reflected in the performance of the overall Czech economy. On the other hand, the dropping prices of oil and natural gas meant a drop in the prices of imports of primary raw materials to the Czech Republic, and improved the results of foreign trade, in current prices.

The relatively fast growth of the GDP in 2001 was aided primarily by the growth of the gross fixed capital formation (sometimes referred to as "investment"), which

increased by 7.0 % last year. We can therefore speak of a continuing, and even strengthening, investment wave, which began in 1999. The greatest increment (i.e. also the greatest share in the growth) in the gross fixed capital formation was investment into machinery and equipment, which had more than a two-third share in last year's growth of investment. The remaining third consisted of investment into buildings and construction. Sector-wise, the greatest share in the increase of investment was held by non-financial companies (nearly 60 %), followed, with a huge gap, by financial institutions (just under 14.0 %), households (3.0 %) and government (25.0 %). The greatest volume of new investments, last year, came in the manufacturing industry, while in 2000, the investment leaders were transportation and telecommunication. This result indicates good conditions for the creation of new production and exporting capacities for the industry. The continuing influx of foreign capital into the corporate sphere shows that there will be favourable conditions for a relatively great growth of gross fixed capital formation in the near future.

Household consumption, the second most significant component of GDP growth, increased by 3.7 % in 2001. Disposable income, as the main source for meeting private needs, grew by 7.1 %. Given that, in real term, the disposable income grew only by 3.3 %, there was a slight decrease of gross domestic savings, to 6.9 %. The growth of household consumption should not be faster this year (2002). The reason lies in the less favourable development in the labour market (we can expect a stagnation of employment and a slower growth of real wages). The growth of consumption will be stimulated by a growing volume of loans to private individuals, who are at the centre of attention of large banks in the Czech Republic, and which demonstrate a great dynamism (see the chapter "The Loan Market").

As we have said in the introduction, the impact of foreign trade on GDP growth was slightly negative last year. A great pace of exporting (+12.0 %) was kept up for a relatively long time, but the export figures at the end of the year were impacted by the negative development of foreign demand. The great growth in domestic demand (+5.6 %) induced, given the relatively great import intensity, a growth in imports into the Czech Republic (+13.1 %). Only at the end of the year did the growth of imports decrease sharply, due to the slowdown of export dynamics. The results of Czech foreign trade are strongly determined by the development of foreign demand, who-

Table 1
Components of GDP by Type of Expenditure and Their Contribution to GDP Growth (in percentage points)

	1995	1996	1997	1998	1999	2000	2001
Final consumption expenditures	2.0	4.7	0.4	-1.5	1.0	0.8	1.9
Households	2.9	4.0	1.2	-1.2	1.2	0.9	2.0
Government	-0.9	0.7	-0.9	-0.5	0.0	-0.2	-0.2
Non-profit organizations	0.1	0.0	0.0	0.1	-0.2	0.1	0.0
Gross capital formation	6.6	2.9	-1.1	-0.8	-1.6	3.1	4.1
Fixed	5.6	2.6	-1.0	0.0	-0.2	1.4	2.3
Change in stock of inventories	1.0	0.3	-0.2	-0.8	-1.4	1.7	1.8
Foreign trade	-2.7	-3.4	0.0	1.1	0.2	-1.0	-2.4
Goods	-4.6	-3.5	0.1	1.8	1.3	-1.7	-2.1
Services	1.9	0.1	-0.1	-0.7	-1.1	0.7	-0.4
GDP (in %)	5.9	4.3	-0.8	-1.2	-0.4	2.9	3.6

Source: author's calculations based on Czech Statistical Office figures.

se predictions are very uncertain at the moment. We expect, however, that in 2002 the impact of foreign trade on the Czech economic growth will be slightly negative.

From the point of view of the supply side of economics, it can be said that the manufacturing industry and services pulled GDP growth along in 2001. Industry has been a significant GDP growth factor since the beginning of 2000. Industry's share in GDP, in basic prices, thus grew to 34.2 %. On the other hand, the gross value added in construction decreased, and its share in the GDP dropped to 4.2 %. Even the first three quarters did not bring a change in the tendency of the added value of this sector, which has been dropping since 1996. The recent construction results perhaps indicate a change in the tendency (the monthly indices of construction work have grown steadily since May 2000).

In 2002, GDP could, in our opinion, grow by roughly 3.0 %. We do not expect that growth could be higher, unless there is a quicker revival of the EU, and primarily German, economies. The growth of Czech GDP will be based primarily on the development of domestic demand (primarily the gross fixed capital formation and final household consumption); export expansion will continue to be significantly determined by the development of the external environment[1)] and the introduction of new export capacities. Year 2002 should be another year in which Czech economic growth should be greater than that of the EU countries. There will be another, although marginal, reduction of the gap between the economic levels of the Czech Republic and the EU economies. We expect that this year the Czech Republic could reach approximately 61 % of the EU level. The process of convergency to the EU is therefore very slow and the GDP growth in the Czech Republic is totally insufficient. If we were to rely only on a difference in economic growth corresponding to two percentage points, it would take 12 years to reach 75 % of the average EU level; if Czech GDP grew 3 percentage points faster than the EU GDP, it would take approximately 8 years to reach that level.

The growth of **industrial production** in 2001 achieved a new record. The production of industrial companies grew by 6.8 %, and industry retained its role as the main engine of the Czech economy last year. It is becoming increasingly evident that at the root of the successful industrial sectors are primarily companies under foreign control. That is, for example, characteristics of the fastest growing sectors, such as has been, in the last five years, the production of electrical and optical equipment, machinery and transport equipment and the rubber industry. We rate it as very positive that, aside from the traditionally dropping leather-processing industry (whose production dropped more that two thirds in the last five years), the production of all other industrial sectors grew last year (see Table 2).

We see as positive the continuing trend of a faster growth of labour productivity than the growth of real wages, which helps the price competitiveness of domestic industrial companies.

Over time, a successful core of industrial companies has became evident, whose share in the industrial production and exports continuously grows. This development serves as evidence of the ongoing restructuring of Czech industry, which is currently significantly oriented towards exports (the greatest dependence on exports is in the production of transportat equipment), which means, on the other hand, that it is greatly influenced by conditions on foreign markets, which are still unfavourable.

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1) The Fall prognosis of the European Commission expects that the growth of the German and EU-15 economies will reach only 0.7 % and 1.3 %, respectively, in 2002. The imports of goods and services into Germany and the EU-15 should grow by 2.1 % and 1.3 %, respectively. Only in 2003, there should be a more significant revival of the EU economies.

The interconnectedness of Czech exports and production (or sales) can be documented by the development of the sales of industrial companies and exports in stable prices (see Figure 2). We should also mention the share of direct imports of industrial companies in their sales, which in the entire sector came to 27 % in the

Table 2
Industrial Production

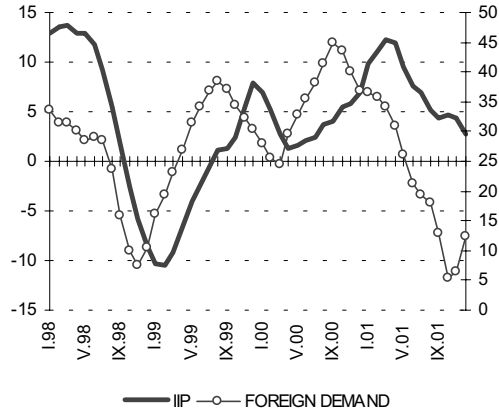
	Contribution to the growth rate						Average growth rate 1996-2001
	1996	1997	1998	1999	2000	2001	
Industrial production	2.0	4.5	2.2	-3.1	5.3	6.1	2.9
C. Mining and quarrying	0.1	-0.1	-0.2	-0.5	0.3	0.1	-1.5
Mining and quarrying of energy producing materials	0.0	-0.1	-0.2	-0.4	0.3	0.0	-0.8
Mining and quarrying except energy producing materials	0.1	0.0	-0.1	-0.1	0.1	0.0	-0.3
D. Manufacturing	1.3	5.0	2.5	-2.0	3.9	5.7	3.5
Manufacture of food products, beverages and tabacco	0.6	0.6	0.0	-0.1	-0.4	0.0	0.8
Manufacture of textilies and textile products	-0.6	-0.2	-0.1	-0.9	0.7	0.1	-1.9
Manufacture of leather and leather products	0.0	-0.2	-0.2	0.0	-0.1	-0.1	-17.4
Manufacture of wood and wood products	0.0	0.1	0.0	0.0	0.2	0.1	4.0
Manufacture of pulp, paper and paper products, publishing and printing	0.1	0.4	0.4	0.0	0.1	0.0	4.6
Manufacture of coke, refined petroleum products	0.1	0.0	-0.5	-0.4	0.0	0.5	-1.2
Manufacture of chemicals and chemical products	0.2	0.1	0.2	-0.1	-0.1	0.2	1.1
Manufacture of rubber and plastic products	0.3	0.4	0.3	0.3	0.5	0.4	12.7
Manufacture of other non-metalic mineral products	0.1	0.3	0.1	0.1	0.2	0.2	4.2
Manufacture of basic metals and fabricated metal products	-1.3	0.7	-0.6	-1.9	-0.4	0.5	-3.3
Manufacture of machinery and equipment	0.4	0.8	0.2	-0.4	0.6	1.0	7.4
Manufacture of electrical and optical equipment	0.4	0.9	2.0	1.4	0.9	2.5	23.8
Manufacture of transport equipment	0.9	1.0	0.5	-0.4	1.3	0.2	9.2
Other manufacturing	0.2	0.1	0.2	0.2	0.4	0.0	7.8
E. Electricity, gas and water supply	0.6	-0.4	-0.1	-0.6	1.0	0.3	0.8

Note: Differencies from Industrial Production Index published by Czech Statistical Office are caused by rounding.
Source: author's calculations based on Czech Statistical Office figures.

first half of 2001 (more recent data is not available yet); in certain sectors, it even exceeded 50 %. We may therefore say that certain sectors are import-intensive. Concretely, these included the manufacture of transportation vehicles, of electrical and optical equipment, and refineries. The electro-technical industry is, in the long term, the fastest-growing sector in Czech industry.

The long-term high growth rate in certain sectors in fact increases their real significance for the overall industrial production. Given that the index of industrial production has been calculated on the basis of constant weights from 1995, the industrial results are in fact undervalued; if the structural changes were reflected, the growth rate for the entire industrial sector could be up to 2 percentage points higher.[2)]

Graph 2
Expected Foreign Demand Development and Adjusted Index of Industrial Production (in %)



Source: Czech Statistical Office, author's calculations.

The slower demand of the Czech main trading partners became evident at the beginning of 2001, but a visible indication of the external problems impact on our economy only came at the end of the year. The best indicator was the development of the sales of industrial companies, which dropped by 4.5 % at the end of the year, whereas the industrial production index grew by 3.7 %! This may be partially explained by an increase in stock, which may mean that at least in the first months of 2002, results of industry will be less favourable. Its faster growth will also be halted by the larger basis from last year. A critical factor for industrial development this year will be the speed of demand recovery in European Union countries. The expectations of domestic industrial companies for the nearest future unfortunately do not give a reason for any greater optimism. As opposed to the slightly growing optimism of German companies (IFO Business Climate Index), a similar trend has yet to be manifest in the Czech Republic.

2) The Czech Statistical Office, in its report on the development of industry in December of 2001, states this influence in the amount of 3 per cent.

3. Inflation

The Czech inflation rate in 2001 was again primarily of a cost nature. Price development in the Czech Republic – as a small, open economy – is greatly determined by external price factors transferred into the economy via exchange rate development. At the beginning of 2001, price development was still being negatively influenced by the high oil prices (expressed in CZK), which led to increases in the prices of fuel, and subsequently had secondary cost effects. A significant role in the growth of consumer prices was played by the so-called deregulation (in January and July 2001).

For nearly two-and-a-half years, the annual growth of consumer prices in the Czech Republic stayed below five per cent. In the summer months of 2001, a sharp increase in consumer prices came, due to an increase in the prices of foreign recreation, and July annual CPI reached its 2.5 year maximum (0.9 %). From August 2001 until this January, the annual inflation dropped continuously (in January, it was 3.7 %). The great decrease in the dynamics of the CPI was caused primarily by a drop in oil prices on the world markets, which was reflected in domestic fuel prices (see Figure 3). The positive impact of the prices of primary raw materials also supported the more favourable exchange rate of the CZK to the USD in the second half of the year. The inflation rate was relatively high last year, when it reached 4.7 %. That was, however, primarily caused by the short-term summer swing of the annual CPI.

Graph 3
Consumer Price Index Growth and Net Inflation (in %)

Source: Czech Statistical Office.

Net inflation, until last year the primary indicator of monetary policy, reached 2.4 % in December 2001, and therefore came within the bottom half of the targeted interval. For the first time in three years, the CNB managed to achieve own goal. Ironically, it was in the last year in which the central bank focused on net inflation, because since the beginning of this year, the CNB's monetary policy has been focused on following the indicator of the annual growth of CPI (see the chapter on monetary policy).

The prices of industrial products developed very favourably throughout 2001. The growth rate of industrial producer prices gradually slowed down by more than 3 p.

p. (from 4.3 % in the first quarter, down to 1.0 % in the last quarter of 2001). The main deceleration factor was, naturally, the development of import prices, which were influenced (especially at the end of the year) by the drop in oil prices and the gradual appreciation of the CZK. A positive impact came also from the foreign price development, where price growth slowed down, not only due to a decrease in oil prices, but also due to a slowing down of the world economy. A very slow rate of growth of the prices of industrial producers, at the end of last year, was also influenced by the great growth at the end of 2000. The average rate of growth of the prices of industrial producers reached 2.9 % in 2001, two percentage points lower than in 2000 (4.9 %).

3. 1 *Inflation Analysis*

The economic recovery in the Czech Republic was, in the first half of 2001, accompanied by inflation growth, which culminated in summer, and which, among other factors, led the CNB to increase the repo rate by 25 basis points. In this context, we ask two questions: What factors determine price development in the Czech Republic and to what extent are these factors under the CNB's control. Let us use as our basis the basic split of inflation factors into those based on cost and those based on demand. At the end of this chapter, we will mention an approach which allows for a prediction of price development in a small, open economy.

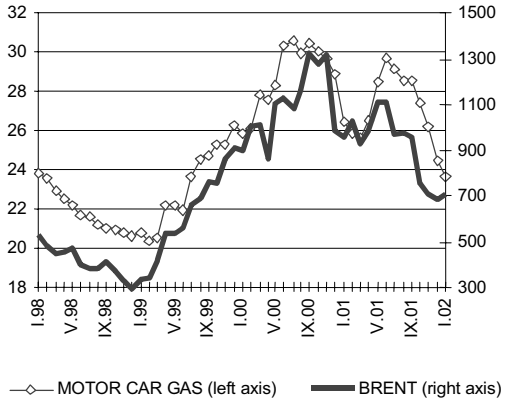
3. 1. 1 *Cost Factors*

The Czech Republic is a small, highly open and greatly raw-material dependent economy, which is very sensitive to external price shocks, primarily in the case of fluctuation of primary raw material prices (oil, natural gas). Our situation at this moment is, furthermore, made more difficult by the relatively high, energy intensity of domestic production (see the chapter on foreign trade). The transmission mechanism in the case of primary raw materials may be described as follows: primarily, the change in the price of raw materials is reflected in the import prices, and then is transferred both into production prices (in industry and construction), and also in consumer inflation (in the transportation item, one of whose items is "fuel", which takes about 3.1 % of the consumer basket).

The impact of import prices on the prices in the Czech Republic is perhaps most evident in the growth of the price of oil, which was transferred into the prices of domestic fuel very quickly (e.g. the average petroleum price (Natural 95) increased from CZK 23.1 per litre in 1999 to CZK 27.3 in 2001). A marked increase in the price of oil had been visible nearly from the beginning of 1999, but the threshold of USD 30 per barrel was not broken until 2000. The high prices of oil endured until the third quarter of 2001. Only after the terrorist attacks on the USA did the price of oil go down significantly, and its price dropped by one-third within a relatively short period of time. Based on our calculations, we can say that a CZK 100 drop in the price of oil (BRENT per barrel) is reflected in an approximately CZK 1.1 decrease in the petroleum price (Natural 95). For the sake of completeness, let us add that import prices have been dropping continuously since July of 2001, and their impact on domestic prices (consumer prices or prices of industrial producers) is therefore favourable.

Another significant factor, which may to a large extant mitigate or multiply the price of imported raw materials (or foreign prices), is the appreciation or depreciation of the CZK against the USD. (The exchange rate of the CZK against the DEM, or EUR, is significant more for the imports of production components or consumer

Graph 4
Price of Oil (BRENT) and Price of Motor Car Gas



Source: Czech Statistical Office, International Monetary Fund.

products.) It is the long-term depreciation of the CZK against the USD that multiplied the negative impact of high prices of oil and natural gas in the world markets in Czech economy in 2001.

The exchange rate of the CZK plays an important role as a factor which has a long-term share in the favourable development of prices in the Czech Republic. CZK has been continuously (with a few sways) strengthening against its reference currency, which has been, since 1999, the EUR. Given that approximately 70 % of imports are paid for in EUR,[3)] we use in our inflation analysis, the effective exchange rate. In this case, we can say that the appreciation of the effective exchange rate of the CZK by 10 % decreases in the long-term inflation by approximately 2 percentage points. If we consider that the CZK will probably keep strengthening against the EUR in the long term, the CZK exchange rate should work as a significant anti-inflation factor. This fact is significant also for the approximation of the price level in the Czech Republic to that of the EU countries, or the weakest EU countries. That means that price convergence is achieved not only by the existence of the inflation differential, but also by the appreciation of the domestic currency.

Another significant factor in explaining net inflation are the prices of foreign industrial producers. In our case, these are primarily prices in EU countries, which make up about 65 % of the total Czech imports. The transmission mechanism in the case of the prices of foreign industrial producers (and, of course, also in the case of the exchange rate – see above) is again both direct and indirect. The indirect effects are reflected through the import prices into domestic producer prices, and subsequently into net inflation. The direct effect lies in the reflection of import prices directly in consumer prices in the Czech Republic, i.e. directly into net inflation and CPI (it is a reflection of imports for the satisfaction of household consuption). Given the expected development of foreign prices we can expect only very slight inflation pressures.

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3) According to the data of the Czech Statistical Office, the share of EUR (and currencies of EMU Member States) in the exports and imports of the Czech Republic last year came to 66.4 % and 68.3 %, respectively. The share of the USD was much lower, reaching only 19.7 % and 14.2 %, respectively.

Domestic cost factors include prices of food, or more precisely, prices of agricultural products. These prices are partially influenced by prices of imported agricultural commodities (primarily from EU countries), the exchange rate of the CZK to the EUR, size of crop, etc. Inflation tendencies should not be stronger in the case of prices of domestic farmers.

3. 1. 2 *Demand Factors*

Probably the most significant factor determining inflation on the demand side is the development of the so-called output gap. This is the difference between the real and potential GDP, which depends on the stage of the economic cycle of the given economy. Given the relatively strong (although variable in time) tie between net inflation and the growth of industrial producer prices, we have replaced the output gap with a deviation of the industrial production index from the trend. We seasonally adjusted the industrial production (using the X12 – ARIMA method), and thus adjusted time series was filtered by linear trend. We then obtained the cyclical deviation as the ratio of the seasonally adjusted time series and linear trend. This variable does not have direct impact on net inflation in our model, but only a mediated one, through the prices of industrial producers. Based on our analysis, we found out that with a 1 % growth of the positive cyclical deviation in industry (more precisely, in industrial production), an annual growth of net inflation of approximately 0.2 p. p. is achieved.

Measuring the impact of demand factors on inflation is, however, much more difficult than in the case of most supply factors. For example, even a relatively high rate of growth of household consumption does not have to be necessarily related to a inflation pressure, if the growth in demand is sufficiently covered by a growth in the labour productivity in the given sector of the economy. Therefore, unit labour costs are sometimes used as an indicator of demand which may have an impact on inflation (or more precisely, by how much they exceed labour productivity). The advantage of this variable is that it does not measure only the possible demand impact, but also supply impact: if wages grow faster than labour productivity, producers will probably try to increase their prices, in order to retain their profit margins. We cannot even rule out that in the case of a greater growth of demand, not covered by an adequate increase in labour productivity, there will not be a price increase, but an increase in the trade balance deficit, i.e. the external imbalance of the economy will be deepened.

A significant variable which determines the development of demand, and is therefore used for inflation predictions, is the unemployment rate. In our opinion, however, the inflation rate is not, at this point, a good indicator of demand in the Czech Republic, and therefore of any inflation impulse, as it has been strongly influenced (especially last year) by the change in the labour force. For example, in the first half of 2001, the unemployment rate (according to Sample Survey of Labour Force) decreased annually by 0.9 p. p., which was a rather significant drop to “indicate” certain demand and subsequently also inflation impulses. Nevertheless, if we analyse this drop, we will find out that the drop in the labour force (due to premature retirement), sped up the drop in the unemployment rate by 0.4 p. p. and the growth of employment by 0.5 p. p. That is why we decided to use employment growth in our analysis of inflation.

3. 1. 3 *Inflation and Economic Policy*

Another problem, which is at this point nearly irresolvable, is how to express the impact of monetary policy. There are two options for including the monetary policy effect into an inflation analysis: using the growth of monetary supply (or other monetary aggregates) and using interest rates.

The use of interest rates is very limited, as the central bank has, in our opinion, used, rather than a forward-looking policy, a rather backward-looking one. That means that it did not react to the expected development of the targeted variable (which, until 2001, was net inflation, and from 2002 is the annual growth of CPI), but to the inflation development (known from the past). We did not manage to demonstrate the significance of the so-called spread, i.e. the difference between interest rates with different payment dates (e.g. the difference between the one-year and one-month PRIBOR). Another reason why it is not possible at this time to use information about interest rates is the malfunctioning of the loan transmission mechanism. The drop in rates is connected to a greater money demand, but that demand is not satisfied, due to a lack of good-quality projects and a great measure of caution among the commercial banks. The only option has been to use crown loans, which, de facto, characterise a satiated demand for money (loans). Due to the transformation of the Consolidation Bank into the Czech Consolidation Agency, the time series of loans in the Czech Republic have been distorted, and it will not be possible to use them any longer, until the CNB publishes complete adjusted series.

Similarly, it was not easy to incorporate the influence of fiscal policy in the inflation equation. Fiscal policy influences inflation in two ways: directly, by the set scope of deregulation, and indirectly, through transfers, which may, in the end, contribute to the growth of inflation pressures in the economy, as they have an impact on the volume of disposable income (i.e. the resources which are available to this sector for consumption and savings). Nevertheless, we did not manage to prove, at a reasonable level of significance, a correlation between the disposable income and inflation (furthermore, a certain measure of colinearity would be created, with a unit labour costs variable).

The equation of net inflation was specified in the in the following form: [4)]

$$\begin{aligned}\Delta_4\%(NET) = {} & \underset{(0.030)}{-0.84} + \underset{(0.000)}{0.46}*\Delta_4\%(PPI) + \underset{(0.000)}{0.12}*(0.6*\Delta_4\%(PPIEU15(-1)) + \\ & + 0.4*\Delta_4\%(ERI(-1))) + \underset{(0.000)}{0.15}*\Delta_4\%(WLP(-2)) \\ & \underset{(0.032)}{0.11}*\Delta_4\%(CREDIT(-2)) + \underset{(0.025)}{0.036}*\Delta_4\%(AGRP) + \\ & \underset{(0.003)}{0.32}*\Delta_4\%(NET(-1)) + \underset{(0.003)}{2.22}*\Delta_4\%(DUMMY\_NET)\end{aligned}$$

$R^2 = 0.987$ SE = 0.37 DW = 2.41 LBQ(1) = 1.62(0.204)
JB test: $\chi^2(2) = 2.15(0.341)$ ARCH test: $\chi^2(1) = 1.03(0.310)$

4) If the regression contains a delayed explained variable, the DW- statistic is not as strong; therefore, the Ljung-Box Q statistic is used for testing first order serial correlation. The normality of residuals was, in the regression we have presented, tested using the Jarque-Bera test and the heteroskedasticity of residue with the ARCH test. R^2 is the classic coefficient of determination and SE the standard error.

Symbol Δ_4% is the y-on-y change of the variable in per cent, NET is the base index of net inflation, PPI is the index of industrial producer prices, PPIEU15 is the index of industrial producer prices in the EU 15, ERI is the index of CZK effective growth (weighted according to the significance of each country, for their imports into the Czech Republic), WLP is the ratio of the nominal wage index and the index of labour productivity in the national economy, CREDIT are the total crown loans, AGRP is the index of agricultural producer prices, and DUMMY_NET is the dummy variable which separates the extreme growth of foreign recreation prices in the second and third quarters of 2001. The value of 0.6 for PPIEU15 and 0.4 for ERI is the normative elasticity from the import price equation. In brackets are the levels of the significance of the estimated parameters. All indices are based on the average of 1995 = 100. The estimate was done using the method of three stage least squares, and we worked with time series for the period between 1995Q1 – 2001Q4. The results have been taken over from the simultaneously estimated price block of the econometric model, which we use in the ČSOB (Československá obchodní banka). We have organised all interesting, in our opinion, impacts into the Table 3.[5)]

Table 3
Simulated Impacts on Net Inflation (in percentage points)

	Δ_4%(BRENT)[1)]	Δ_4%(PPIEU15)	Δ_4%(ERI)	Δ_4%(WLP)	Δ_4%(GAP)[2)]	Δ_4%(AGRP)
shock (in %) [3)]	100.0	5.0	5.0	5.0	5.0	10.0
impact (in p. p.)[4)]	3.0	1.7	1.0	1.2	1.0	0.6

1) BRENT – suppose not only oil price shock but gas price also.
2) GAP – cyclical deviation of industrial production from trend (in percentage).
3) Suppose one quarter shock in percentage.
4) Cumulative (long term) impact.

3. 1. 4 *Targeting Inflation*

The targeting of inflation, i.e. an approach which is used by a number of central banks, is, in the long term, based on the fact that the central bank applies a forward-looking policy (reacts to the development values), in order to be able to somewhat minimise the cyclical deviations in the target indicator. But this approach is based on the ability to predict the price development in the short- and mid-term, which is probably the most problematic. The above mentined factors and their impact on the development of prices in the Czech Republic show that a great part of the factors are outside of the CNB control. This fact has a very strong negative impact on the success of inflation predictions, not only of the CNB. Conditional prediction does give us very valuable quantitative information, but only if the given preconditions are met, which is rather problematic in the case of exogenous variables, like the price of oil, the exchange rate of the CZK, prices of agricultural products, etc.

5) The Table 3 does not contain estimated parameters, but in fact multipliers which were gained from a simultaneous estimate of the price block.

3. 1. 5 *Composite Leading Indicator*

We tried to look at inflation from a different view, and put together an composite leading indicator of net inflation, which we called ČSOB-CLI-NET. We consider it extremely important to emphasize that the composite advance indicators are constructed in order to reveal, with a bit of advance notice, any so-called breaking points, not to provide us with quantitative information about the future development of any indicator. Our composite indicator of net inflation will never give us information about whether, for example, the net inflation in the third quarter of 2002 will be 3.0 or 3.3 %. Nevertheless, it is able to signal in advance (relatively very well) the acceleration or deceleration phases of inflation (see Figure 5). If the indicator begins to signal a breaking point, we must wait for a few months for this information to be really confirmed, so it is generally required that the advance of the indicator be approximately 6 months.

The idea of the indicator we have composed is partially based on the above equation for net inflation. Given that data were available in time, we used three basic specific lines: price of BRENT oil (the chapter Foreign Trade contains an econometric analysis of the prices of primary raw materials); the nominal effective exchange rate composed of three currencies – CZK/EUR, CZK/USD and CZK/SKK (weights for the indices of these rates are set on the basis of the significance of these currencies in the foreign trade of the Czech Republic); inflation expectations of various economic entities, as published in the business surveys of the Czech Statistical Office. The reference line is the net inflation index. We also tested other specific series, for example, the prices of agricultural products, but this series falls into the group of simultaneously developing series.

Graph 5
Net Inflation and Composite Leading Indicator of Net Inflation (growth in %)

Source: Czech National Bank, author‘s calculations.

The construction of the index is based on OECD methodology, which uses method of deviations from trend for the construction of composite indicators. The procedure is as follows: the seasonal variations have been eliminated from the series and they were subsequently filtered, using a 3-term simple (symmetrical) mooving average,[6)] to eliminate or at least reduce random variations in the given time series

6) The moving average is in fact a linear filter, which is defined, for the central part of the given time line, in our case, as follows: $y_t = (Y_{t-1} + Y_t + Y_{t+1})/3$, pro $t = 2, \ldots, T\text{-}1$.

(since we could be getting too many false signals);[7] thus adjusted time series have been smoothed by a linear trend; the cyclical deviations were separated out of the series (the ratio of the seasonally adjusted series and trend). The estimated cyclical deviations had to be normalised in order for them to have a zero mean and unite variance. The estimated lag between the cyclical component of the reference series and the cyclical component of the selected specific ones was gained on the basis of cross correlation and subsequent expert corrections.

The sence of the composite indicator lies in the estimate of breaking points, not the maximization of the goodness of fit between the reference and specific series. The results of a correlation analysis must therefore be always taken as helpful, and not definite results. All above-mentioned series have a relatively very stable advance of 6 to 12 months. In the final stage, it was also necessary to set the weights that we will assign to various series. The OECD recommends two methods in this case: either the use of structural information (if it is available), or to assign equal weight to all series. We tried both approaches, with very similar results; so we use the second approach, as it is easier. The resulting indicator is then transferred back into the index, and in Figure 5, it is presented in the annual rate of growth, together with net inflation.[8]

If we consider the above Figure, the advance of the given indicator and the "expected development" of its key factors (the price of oil begins to grow gradually, the appreciation of the CZK will probably slowdown, and economic entities are expecting a stagnation of prices, or their slight growth) we may believe that in the 3rd and 4th quarters of 2002, we are to expect an acceleration of the net and consumer inflation. Nevertheless, the change of price development will not be such as to force the central bank to significantly increase its rates. It would therefore be possible to expect only a slight correction of rates to the level of the beginning of 2002.

We are, of course, aware that we cannot always entirely rely only on one type of information (e.g., from these advance indicators); nevertheless, we think that they can serve as a suitable supplement to conditional predictions.

3. 2 *Inflation Outlook*

The development of inflation in 2002 will be, in our opinion, very favourable. After the February increase of the annual CPI, the annual CPI should drop steeply, down to two per cent. From the mid-point of the year, annual consumer prices should again rise above 3 %, primarily due to technical factors (last year's low base). We presume that the inflation rate will reach 3.4 % this year. Net inflation, which at this point provides valuable information about the price development, unburdened by deregulation, could reach an average of 2.5 % this year. Next year, the development of inflation should not sway from today's values. A great unknown, however, will be the extent of price adjustments which will be implemented, and any changes in in-

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7) If a time series is filtered using the simple moving averages of a $2m+1$ length (with an odd number of terms), we will not adjust the first m and the last m observations. For this feature, moving averages are, unjustifiably disadvantaged in comparison with other filters – HP filter, etc. We have solved this problem by estimating the so-called ending moving averages, which, in our case, take the following form: for the first value of the given time line $y_1 = (5^*Y_1 + 2^*Y_2 - Y_3)/6$ and for the last value of the series $yT = (-Y_{T-2} + 2^*Y_{T-1} + 5^*Y_T)/6$.

8) Net inflation presented in Figure 5 has been seasonally cleaned, in order to be sure to be rid of all disruptive elements – remote observations have been separated out, as they may be caused by one-time sways of certain kinds of food, which should probably not be the most indicative for thinking about changing the base rate.

direct taxation. Overall, the domestic price level should get yet closer to the average level of the EU. We presume that the Czech Republic could reach 48 % of EU level this year, and 51 % next year.

Given the development of basic determinants – oil, CZK exchange rate, and foreign prices – we presume that the average rate of growth of the industrial producer prices in 2002 will slow down to approximately 0.7 %, but for 2003 we can presume that it will again speed up to about 3.0 %. The price development in 2002 and 2003 should not present a problem for the Czech economy, and the expected growth of PPI can be considered adequate.

4. Balance of Payments

The external imbalance of the Czech Republic, expressed in the deficit of the current account of the balance of payments, stabilised at a safe 5 % of GDP in 2001. The result of the current account was, as usual, influenced primarily by the high trade balance deficit of, which was partially offset by the surplus of the balance of services, which reached CZK 38 billion. The balance of payments was, seen annually, approximately CZK 2 billion higher, thanks to better results in transportation and other services; the surplus achieved in the tourist services was smaller this time. The deficit in the income balance, from year to year, increased by approximately CZK 9 billion, which was caused by an increase in the interest and dividends paid out in 2001.

In spite of the relatively high deficit of the trade balance (in 2001, it corresponded to 5.5 % of GDP) does not have to be considered alarming, since the deficit of the current account was smoothly covered by the high inflow of foreign direct investment, and its real size was caused by the negatively developing import prices in the first half of 2001, rather than domestic demand.

The Czech Republic is currently the most attractive country for foreign direct investment (FDI) among the transforming countries in Central and Eastern Europe. Between 1993 and 2001, the Czech Republic has attracted direct investment of USD 24.3 billion, which represented approximately USD 2,400 per capita. The Czech Republic thus surpassed the formerly so successful Hungary. We can expect that, at least due to the privatization of the remaining large companies (Czech Telecom and energy and gas companies), the value of FDI this year and next year will be very high. As positive, we see the fact that FDI inflow is not only due to the government's privatization activities, but also a great volume of non-privatization investment is coming into the country, the so-called new ("green meadow") investment,[9] which is directly involved in the increase of the exporting performance of the country. As an example of the recent greatest investment we can list Philips in Hranice na Moravě (USD 0.6 billion) or the Toyota/ PSA factory in Kolín (USD 0.85 billion). FDI has a share not only in the creation of new production and export capacities of the country, and thereby in the restructuring of Czech economy, but also creates new jobs. On the other hand, these companies are, at least at the beginning of their existence, import-intensive.

From the point of view of structure of the incoming capital, the greatest investor in the Czech Republic is Germany, (with approximately USD 6 billion), followed by

9) According to data from Czechinvest, 154 projects were finished by the end of 2001, 74 of which represented new investment. Czechinvest states that, at the end of 2001, the number of projects commenced reached 979. In total, they should create more than 47,000 jobs, and the volume of planned investment should exceed USD 5.5 billion.

the Netherlands (USD 4.8 billion). From the sectoral point of view, the greatest amount (one-third, i.e. USD 8.3 billion) came into the processing industry, primarily into machinery and transport equipment production, and into the electro-technical industry. In the service sector, the greatest amount of investment came into retail, financial and insurance segments, and transportation and telecommunication. Last year, FDI of USD 4.9 billion came into the Czech Republic, and a half of that amount into telecommunication (GSM) and into retail (a massive development of hypermarkets). It will be very important for the Czech Republic to retain the favour of foreign investors even after privatization is over. It is a primary factor for thinking about the development of the exchange rate of the CZK, before the entry into the EMU.

Graph 6
Inflow of Foreign Direct Investment (USD in thousands per capita)

Source: International Monetary Fund, author's calculations.

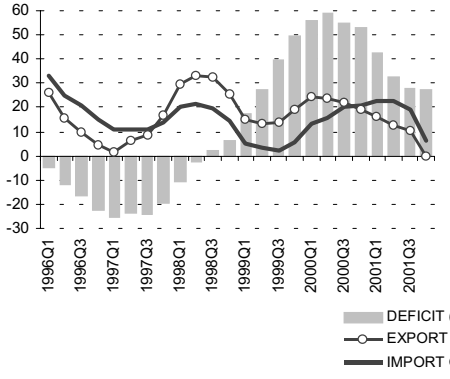
The Czech Republic is a very attractive territory for FDI, but in the case of portfolio investment the situation is very different. From CNB data about the investment position of the Czech Republic, we may see that, at the end of the year, foreign investors had invested only USD 5.0 billion into securities, and 70 % of that into shares. We do not expect a turn within a short period of time. A change, i.e. an increase of foreign investors' interest in domestic securities, could come with the prospects of an approaching entry of the Czech Republic into the EU and with an increased offer of good-quality investment opportunities. On the other hand, Czech entities are very attractive investors in foreign markets, and, as of the end of year, held foreign securities in the value of more than USD 5.1 billion. These were primarily bonds (the investment position states USD 3.2 billion), whereas in the previous years, an interest in stock prevailed greatly. At the root of the extensive investment by Czech entities into foreign securities was the attempt of funds, insurance companies and banks to diversify their portfolios, and probably also a lack of suitable investment opportunities in the Czech Republic.[10)]

10) We cannot exclude the formerly rather attractive foreign securities, whose popularity declined sharply in the second half of 2001.

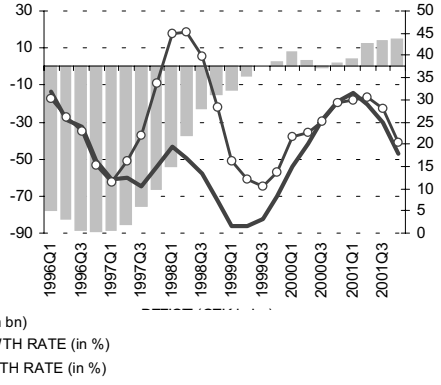
This year, the deficit of the current account of the balance of payments should stabilise under 5 % of GDP. A fundamental question will be the further development of the trade balance (see below), whose results will depend on the speed and strength of the revival of the EU economies and on the creation of new exporting capacities of the Czech Republic. A very significant factor of import development will be the price of raw materials on the world markets. Due to the expected high inflow of foreign investment, the deficit of the current account of the balance of payments will not pose a serious problem for the Czech economy and should be smoothly financed by the inflow of FDI. A similar development can be expected in 2003.

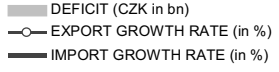
The results of **foreign trade** in 2001 may be evaluated as relatively positive, as the deficit of trade balance decreased, from year to year, by just under CZK 2 billion, to CZK 119 billion. The year-long rates of export growth do indicate a very favourable development (exports increased by 13.1 %), but in the second half of the year (primarily in the fourth quarter), the slowdown in the demand in EU countries became very evident in Czech exports, as most of Czech exports was directed to that region (nearly 69 %). The drop in overall imports into Germany in the last quarter was reflected very unfavourably in Czech exports.[11] In exports, a long-term growth trend is evident in the exports of machinery and transport equipment, which last year represented about 44 % of total exports. The exports of motor vehicles, which forms the greatest part of this group, was the long-term engine of the Czech exports, but in the last quarter, its dynamics decreased due to the limited sale opportunities.

Graph 7
Export and Import Growth and Balance with Germany (annual averages, annual cumulation)



Graph 8
Export and Import Growth and Balance of SITC 7 (annual averages, annual cumulation)





Source: Czech Statistical Office, author's calculations.

One of the primary causes of the decrease of the foreign trade deficit in 2001, or the drop in the import growtth, was the decrease of oil prices in the world markets and subsequently also of natural gas. In this context, we must add that the deficit of mineral fuels and raw materials trade has for three years formed more than one-half of the entire trade balance deficit. The price of oil and commodities related thereto is therefore a very important determinant of the development of Czech fo-

11) According to the data of the Federal Statistical Office of Germany, imports into Germany in the third quarter stagnated (+0.1 %) and in the last quarter of 2001 it even dropped by 9.4 %.

reign trade deficit, and we have therefore devoted a special chapter to this topic. Another no less important determinant, which impacts upon the imports into the Czech Republic, was the large import dependence of Czech exports, which causes the fact that the slowing down of Czech exports also slows down the rate of raw material and component imports.

Dependence of the Czech Republic on raw materials, and its impact on the trade balance deficit. The trade balance development is determined, in the long-term, by two factors. The first is the relatively high import intensity of exports,[12] which we estimate, based on calculations, at approximately 0.7, which means that with a 1 % growth in the rate of exports, the imports grow at the rate of 0.7 percentage points. This fact is related to the problem of the supply side of our economy, which is (unfortunately) not able to generate added value from its own resources at the moment, which it could subsequently place on foreign markets. That is necessary, from the point of view of economic growth in a small open economy with a limited scope of the supply side.

The other determinant which has been very important in the last two years, is the development of raw material prices in world markets. Price fluctuation of primary raw materials (oil, natural gas, etc.), which has occurred approximately from 1999, has pointed to another weak spot of our economy – the great energy intensity of our production. This indicator shows how much primary raw materials is needed for a GDP unit in the purchasing power parity (PPP). An international comparison published by the OECD shows that Czech production is among the most energy intensive in Central Europe. This fact sounds even worse in context with our "economic development" before 1989. A plausible explanation of this fact may be found in the structure of the supply side of the economy, which is still burdened by heavy industry (although much less than before November 1989), which is not capable of creating high added value. For example, in 2001, the balance in the SITC 3 group (mineral fuels and lubricants) was over 70 % of the total trade balance deficit. The Table 4 shows that Czech production is more than 25 % more energy intensive than that of Hungary, or double that of Ireland. For that reason, we decided to analyse the SITC 3 group in more detail.

Table 4
Energy Intensity of Production in 1999

	CR	Hungary	Poland	SR	Ireland	Germany	Spain
TPES / GDP (PPP)[1]	0.30	0.24	0.28	0.33	0.15	0.18	0.17

1) TPES = Total Primary Energy Supply (t/GDP PPP).
Source: International Energy Agency.

Oil and Natural Gas. The prices of oil and natural gas influence the long-term high deficit of the SITC 3 group the most. The price of oil can be characterised classically, using the demand and supply factors. Among the demand factors, we have placed the GDP in stable prices of the 25 OECD Member Countries[13] (as an indi-

12) More about the import intensity of exports may be found in the Economic Outlook for the Czech Republic published by the ČSOB.

13) Long-term statistics only contain data of 25 OECD Member States; data with new Member States have only been available since 1995.

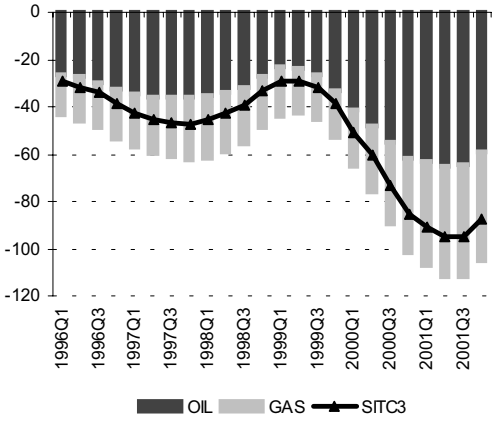
cator which characterises the economic activity of the most developed countries) and oil stock. In the case of stock, we have encountered the problem of data accessibility, so this variable has been approximated by the stocks of oil, gas, and other distillates in the USA. Supply factors include the world-wide production of oil. The regression which characterises the long-term relationsbetween the variable is as follows:

$$\ln(BRENT) = \underset{(0.000)}{16.08} - \underset{(0.000)}{4.09}*\ln(WOPSA) - \underset{(0.003)}{1.57}*\ln(USAOPDS) + \underset{(0.000)}{2.37}*\ln(YOECDSA(-1)) + \underset{(0.000)}{0.68}*\ln(BRENT(-1))$$

$R^2 = 0.865$ SE = 0.093 DW = 1.71 LBQ(1) = 0.77(0.381)
JB test: $\chi^2(2) = 0.51(0.774)$ ARCH test: $\chi^2(1) = 0.000(0.941)$

BRENT is the average quarterly price of BRENT oil in USD per barrel, WOPSA is the seasonally adjusted index of the world-wide production of crude oil (1995 = 100), YOECDSA is the seasonally adjusted GDP index for OECD countries (we only consider 25 countries, 1995 = 100), USAOPDS[14] is the index of oil, gas and other distillates stock (1995 = 100). The estimate of the regressive equation was done by the method of the ordinary least squares during 1991/Q1 – 2001/Q2. We did not use any other time series, in order to avoid two crisis situations: the Gulf War at the beginning of the 1990s, and the impact of the terrorist attacks on the USA in September of last year. Brackets state the levels of significance of each variable.

Graph 9
Structure of SITC 3 Balance (in CZK bn)



Source: Czech Statistical Office.

In order to depict the short-term ties between the price of oil and its factors, we have used the EC method (Error Correction). As a form of stationarisation, we used the annual growth rates.[15] The estimated equation had the following form:

14) This line did not show a pronounced seasonal aspect.

15) There are two reasons for working with annual growth rates: a time line transformed with the use of an annual growth rate has a so-called long memory, which means that we are better able to use the correlation structure of the given line (this feature is then useful for predictions, for example); the equati-

$$\Delta_4\%(BRENT) = \underset{(0.000)}{-6.75}*\Delta_4\%(WOPSA) - \underset{(0.000)}{2.03}*\Delta_4\%(USAOPDS) +$$

$$+ \underset{(0.000)}{4.27}*\Delta_4\%(YOECDSA(-1)) - \underset{(0.000)}{1.28}*RES\_BRENT(-4) +$$

$$+ \underset{(0.000)}{0.73}*\Delta_4\%(BRENT(-1))$$

$R^2 = 0.928$ SE = 10.9 DW = 1.78 LBQ(1) = 0.42(0.519)
JB test: $\chi^2(2) = 0.02(0.989)$ ARCH test: $\chi^2(1) = 0.13(0.721)$

Symbol Δ_4 % means the y-on-y change in per cent and RES_BRENT are the residuals from the first equation in this chapter (in this case, the deviation from the long-term "equilibrium" which impacts the long-term ties among variables).

Based on the above, we can say that with a 1 % growth of oil production, the growth rate of oil prices in the short term will be decreased by approximately 6.5 p. p. A 1 % growth of GDP will lead, on average, to an increase in the rate of growth of the price of oil of about 4 p. p. It is important to note that the sensitivity of oil prices to a change in extraction (primarily by an influence of OPEC countries) is about double compared to the sensitivity of oil prices to a GDP change in OECD countries.

On the basis of the above specification, the equation of the price of BRENT we can now transfer to the specification of natural gas price (set as the average for 1000 m^3 in USD). We will not construct the equation for the price of natural gas like the one for oil, but we will try to deduce it from the well known, but empirically unverified, relation between the price of oil and natural gas. We must realise that oil and natural gas are, in the long term, complements in production, and substitutes in consumption. Their complementarity is based on the fact that the sources of natural gas and oil are in most cases identical.[16] Substitution means that if the price of oil grew more that the price of natural gas for a longer time period, consumers would probably change their preferences in favour of natural gas. That fact would probably lead to a partial drop in the demand for oil, and in turn to a growth in the demand for natural gas, which would approximate the price development of both raw materials. For that reason, we have used the unit elasticity between the price of oil and gas in the long term.[17] Based on geologists' estimates of raw material reserves, we can expect that the world-wide supply of natural gas will last at least 25 years longer than the supply of oil, and newly discovered sources of natural gas are more numerable than sources of oil. This fact may, in the long term, represent a weakening of the relationship between the price of oil and natural gas. The equation which characterises the short-term dynamics, was in the following form:

$$\Delta_4\%(GAS) = \underset{(0.000)}{0.57}*\Delta_4\%(BRENT(-1)) - \underset{(0.000)}{0.64}*RES\_GAS(-4) + \underset{(0.000)}{0.37}*\Delta_4\%(GAS(-1))$$

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ons estimated in this chapter form a part of a price block of an econometric model used for analysis and (in modified form) for predictions in the ČSOB. This model is quarterly, and is specified primarily in y-on-y changes.

16) Natural gas is extracted from the source, and, in most cases, the extraction of oil may follow.

17) Residues achieved in the relation of ln(GAS)-ln(BRENT(-1) have been modified in order that these values may have a zero central (RES_GAS).

$R^2 = 0.950$ SE = 7.0 DW = 1.47 LBQ(1) = 2.52(0.112)
JB test: $\chi^2(2) = 4.87(0.087)$ ARCH test: $\chi^2(1) = 0.00(0.965)$

The above relationship shows that with the increase in the price of oil, there will be an immediate growth in the price of natural gas by 0.6 p. p. (with a delay of approximately 1 quarter), nevertheless, in the long run (within several quarters) this impact will be nearly proportionate (0.9).

Deficit of the SITC3 Group. We have already mentioned at the beginning that the deficit of the SITC3 group, which has in the last three years significantly impacted the exterior balance of Czech economy, may be explained with the prices of oil and natural gas. Given the dependency of the Czech economy and its energy intensity, it is clear that demand for these raw materials from the side of the Czech Republic is not very elastic, so that we can disregard the change in the volume of imports of these two primary raw materials. The total annual variability of raw material imports, measured with a variation coefficient (between 1993 and 2001), was 8.0 % in the case of oil, and 11.0 % in the case of natural gas, which confirms the above-mentioned hypothesis, if we take into account the extent of price fluctuations. Further, we must note that oil comes exclusively from Russia (and is paid in USD), whereas about 10 % of natural gas has been, from 1997, imported from Norway (and paid in EUR). The equation for the deficit in the SITC 3 group is the following:

$$\begin{aligned} SITC3 = {} & 3.15 - 0.067*(0.65*(BRENT*(CZK/USD)/4.526) + \\ & (0.000)\ (0.000) \\ & + 0.35*(GAS*(_{WUSD}*CZK/USD + {}_{WEUR}*CZK/EUR)/25.878)) + \\ & + 0.49*SITC3(-1) \\ & (0.000) \end{aligned}$$

$R^2 = 0.955$ SE = 1.40 DW = 2.1 LBQ(1) = 0.28(0.596)
JB test: $\chi^2(2) = 1.04(0.595)$ ARCH test: $\chi^2(1) = 0.00(0.969)$

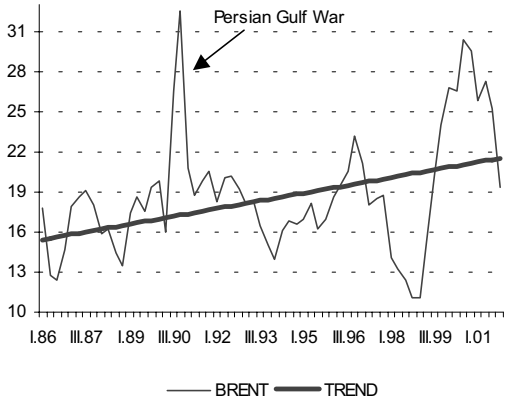
The variable SITC3 stands for the balance in the SITC3 group, CZK/USD and CZK/EUR are the exchange rates of the CZK to the USD and the EUR. The weights of 0.65 and 0.35 contained in the above equation are set on the basis of koruna imports of oil and natural gas. The values 4.526 and 25.878 are the averages of koruna prices of oil and gas in 1995 (divided by 100). We had to introduce this transformation, as it is not possible to weigh two time series of different levels – this transformation is used, for example, in the construction of price indices. Although in the previous part, we have used time lines starting in the 1st quarter of 1991, in the case of the SITC3 group deficit, we have had to make do with data from 1993 – the creation of an independent Czech Republic. Given that the OPEC countries (10 countries, excluding Iraq) make up about 35 % of the total supply of crude oil (but they have about 70 % of all reserves), we tried to calculate their impact on the price of oil. The above model shows that with a drop in the extraction quotas by 1 million barrels a day (that would currently represent a reduction of about 4 % of extraction) we can expect an almost immediate rise in the price of oil by about 8 – 10 %. The annual average price would then grow by more than 20 %. But this qualification is based on two presumptions: that all OPEC countries will respect this reduction for 1 year (in the past, the have not been willing to do that) and that non-OPEC countries will not co-ordinate to compensate for this shortage by their own extraction.

We would also like to mention the price development of oil in the last ten years (see Figure 10), which not only shows a growing trend in oil prices, but also a growth in the amplitude of cyclical sways of this series. Until now, these fluctuations did not

last long, which is an important insight primarily for the authors of economic policy. In other words, if the external imbalance grows, economic authorities should pay attention to the causes. There is a fundamental difference in the imbalance being caused by investment (which will later share in the creation of added value; the authors of economic policy should therefore be very cautious in the application of a restrictive policy with respect to them), or by private consumption (with respect to which it is appropriate to think about a co-ordinated mixture of fiscal and monetary restrictions), or by prices of primary raw materials.

The situation is more serious in the case of raw materials, as the growth of raw material prices will reflect not only in the growth of the external imbalance, but also in inflation. It is necessary to note that inflation, which is shown as annual, will be influenced by the price shock for approximately 12 months (there is no reason at this point to expect a continuous increase in the prices of raw materials), and then the shock will wane away. Our calculations show that the cumulated impact of a growth in the price of oil (and subsequently also the price of natural gas – see above) by 100 % in a given quarter would increase inflation by approximately 3.0 percentage points, but only over more than one year. The above-mentioned equation shows that with a CZK 100 increase of the price of oil, the trade balance deficit grows by about CZK 8 billion.

Graph 10
Price of Oil (BRENT, USD per barrel)



Source: International Monetary Fund, author‘s calculations.

Based on the above model, we have concluded that the price of BRENT should be around 25 USD/ barrel in 2002, and in 2003 we can expect another increase to approximately 27 USD/barrel. We expect, at least in 2002, a gradual appreciation of the CZK to about 35 CZK/USD, which should in some measure mitigate any sways in the price of oil. We therefore think that in 2002 the balance of the SITC3 group could be in the vicinity of CZK 80 billion. For 2003, a worsening of the situation may be expected, as the growth of oil prices will not be offset by such a strong appreciation of the CZK. On the basis of this prediction, we can say that the prices of primary raw materials this year should not, on average, have an anti-inflation effect (see chapter Inflation).

This year, the deficit of foreign trade should not, therefore, diverge too much from last year’s values. Based on the outlook of EU economies, the growth of domestic

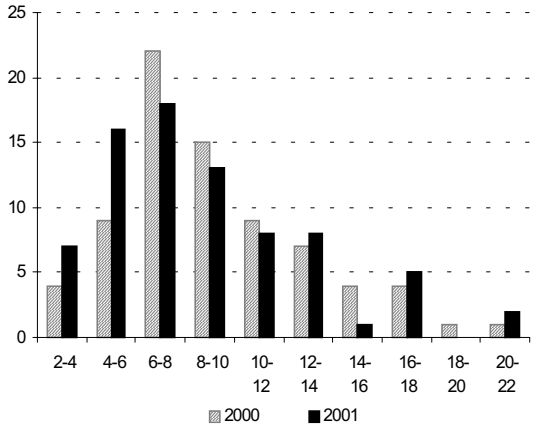
demand, and the prediction of raw materials prices, we estimate that the Czech trade balance deficit will reach about CZK 125 billion. The exports and imports growth will not be high this year, as it will be influenced, primarily in the first half of the year, by a less favourable development of foreign demand and a high basis from last year. A risk for the further development of exports is the speed and strength of the revival if German economy, and the entire EU, and the development of raw material prices in world markets (see above).

5. Labour Market

Last-year development in the labour market could be seen as stabilising, even slightly positive. The unemployment rate was slowly decreasing, as well as the number of unemployed, and the supply of jobs available grew. At the end of the year (November and December), the situation turned, however, and the unemployment rate[18] grew to 8.9 %; at the same time, the number of jobs available dropped. Until the third quarter, it grew at a two-digit rate, but in the last quarter, there were only 6.5 % more jobs available that at the same time in 2001. This change in the labour market resulted in an increased number of job applicants per job. Whereas, at the mid-point of last year, there was one job for every seven applicants, at the beginning of 2002, there were nearly ten applicants.

At the beginning of this year, the situation worsened, and in February, for instance, there were 10 % fewer jobs available than last year. These changes are, in our opinion, caused by the pressure for downsizing and increasing productivity in companies, as well as a worsened economic situation, which makes it harder to find opportunities for increasing, or at least retaining, the current level of sales in foreign markets. Another significant reason is certainly the restructuring of large companies, which forces large downsizing. This tendency is apparent primarily in industry, where the growing trend of the number of employees has stopped, and, on the contrary,

Graph 11
Histogram of Unemployment Rate (in %)



Source: Czech Statistical Office, author's calculations.

18) Based on monthly data published by the Ministry of Labour and Social Affairs.

it decreased[19] by nearly 19 thousand over last year (primarily in the production of electrical and optic equipment, machinery and equipment, and in food and extraction industries).

Unemployment results in the first months of this year are not favourable. The unemployment rate returned to over nine per cent, which it last reached in January of last year. The development of monthly figures is strongly marked by the season, but even a seasonally adjusted time series shows a very slight growth in the unemployment rate in the last few months. Unemployment development this year, as with a number of other indicators which we mention in other chapters, will be determined by the course of revival of foreign demand, as well as by other factors, for example "green field" investment, development of the retail network, continuing growth of the construction output, etc. In our opinion, the unemployment rate according to Sample Survey of Labour Force (LFS) could stabilise at last year's level. A more significant drop in unemployment could come in 2003, when the external conditions for the Czech economy, which are reflected in the external growth of the Czech Republic, are expected to improve.

Unemployment in various regions of the Czech Republic has retained its highly differentiated nature. The average results for the last two years show, however, that the number of districts with the highest unemployment rate is dropping, in favour of districts with the lowest rate (see Figure 11).

The development of wages last year was not very even: whereas in the first half of the year, a fast growth of 9.3 % (expressed nominally) was retained, a significant slowdown of the wage dynamics came in the second half of the year, and it was down to 7.5 % at the end of the year. Real wages increased by 3.6 % (compared to 1989, real wages have increased by approximately 15 %, i.e. their average annual increase in the last twelve years was only 1.2 %). Wages in the non-business sphere grew faster last year, and the difference between the private and public sectors thus diminished very slightly.

In this respect, it would be interesting to mention some of the factors which have an impact on nominal wages (primarily in the private sector). The development of nominal wages is, to some extent, the product of the tripartite negotiations – of the representatives of the trade unions, government and business. The unions (and partially also the government) try to have the wages reflect the development of prices. Nevertheless, in the case of a slower economy, even unions are satisfied with a slower growth in wages, as long there is a promise of retaining the rate of employment, which guarantees social stability. Businesses, whose general goal is the "maximization of profits", will primarily reflect the development of labour productivity in the wage development. Our calculations show that, in the long-term, the rate of inflation is fully reflected in the wage development. A 1 % growth of in labour productivity, however, in the long-term, leads to an increase in wages by 1.6 p. p., which causes a faster growth of wages than is the growth of labour productivity. A 1 % growth in employment then leads to an approximately 0.8 p. p. growth in wages.

This year, the growth of wages in the commercial sphere will continue to decrease. The data from industrial companies from the end of last year show that trend. Furthermore, the growth of wages is largely determined by the development of in-

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19) In this case, great differences may be found between the results of selective work force inspections (LFS) and the recorded numbers, which we have used as the basis. According to the Czech Statistical Office, the LFSs are of a more "general nature" and "include populations living only in certain apartments". For example, the data for the last quarter of last year from the LFS and the monthly statistics are very different. Whereas LFS indicate a drop in unemployment to 7.9 %, the unemployment rate in the monthly values reaches 8.5 %.

flation in the previous period and by inflation expectations. In the public sector, a significant increase of wages came in March. We presume that the growth of nominal and real wages will be in the vicinity of 7.8 %, and 4.0 %, respectively. If these values were reached, the growth of real prices would slightly surpass the dynamics of labour productivity growth in the entire economy. We do not think, however, that it would induce an excessive growth in consumption or cause any inflation pressures.

6. Fiscal Policy

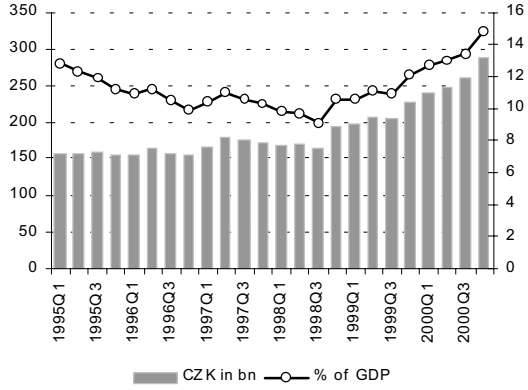
The state budget deficit last year was lower than was initially expected, reaching CZK 67.7 billion. The October prognosis of the Ministry of Finance expected a state deficit about CZK 84.5 billion. From the point of view of annual comparison, the deficit is by CZK 21.6 billion higher, but since 2001, the budget is being composed on the basis of new budgetary rules, so these results cannot be virtually compared. Last year's budget automatically included expenses approved by the Parliament, which went over the scope of the original budget, and were financed from special bond programmes. Concretely, it was the coverage of former losses of the Consolidation Bank, compensation to credit-union clients and compensations to farmers for the losses they suffered due to the summer drought. After subtracting these expenses, last year's deficit was much lower. In spite of that, it is evident that the income side of the budget was influenced by the exceedingly optimistic expectations of VAT collection (in the end, about CZK 11 billion was missing; there probably was an unrealistic expectation of a greater household consumption in the GDP) and the problems in the sale of UMTS licences. The result was also influenced by the shift of the Consolidation Bank (CKOB) loss coverage, which was taken from some of the income from the privatization of Komerční banka (the National Property Fund was, based on a government resolution, to set up a special account in the KOB and deposit CZK 20 billion for the coverage of KOB losses into it).

The state budget for this year was approved by the Chamber of Deputies on December 18, 2001, and the country thereby escaped the need to have a provisional budget at the last moment. This year's income of the national budget should come to CZK 690.4 billion, expenses to CZK 736.6 billion. The deficit, which should come to CZK 46.2 billion, should be largely covered by an issue of government bonds (CZK 44 billion); the remaining CZK 2.2 billion should be financed from the state financial assets and liabilities. The budget as approved expects that the interest on government debt will come to CZK 21.2 billion, and that the loss of the Czech Consolidation Agency, of CZK 33.2 billion, will be paid for. The budget is based on the following presumptions: GDP growth of 3.8 %, inflation rate of 4.6 %, and unemployment rate, based on Sample Survey of Labour Force, of about 8.0 %. In our opinion, the economic growth of the Czech Republic and the inflation rate will be lower (3.0 %, and 3.2 % respectively). The unemployment rate could stagnate on last year's level of 8.1 %. The planned income of the budget therefore seems optimistic to us (primarily the revenue from VAT),[20] and some expenses are undervalued (primarily salaries in the budgetary sphere and social transfers). The budget also counts, on the income side, on the use of resources gained from the sale of the Russian debt to the Czech Republic (CZK 20.4 billion), and on privatization in-

20) Information about the collection of VAT included in the income of the national budget this year cannot be compared with the previous term, since from 2002, a portion of VAT goes, based on Act No. 243/2000 Coll., to regions (precisely 3.1 % of gross VAT income) and the values included in the budget do not represent the entire amount of that tax collected.

come of CZK 25.2 billion. The budget will very likely be very stretched this year, and the approved deficit will probably be exceeded.

Graph 12
State Budget Development



Source: Ministry of Finance of the Czech Republic.

The results of the use of the state budget at the beginning of 2002 are not very favourable, as shown by the budget deficit of CZK 15.7 billion in January to March of this year. January's deficit even stands out in the long row of deficit results, as the budget in that month usually ends up with a surplus. The result was negatively influenced by VAT refunds and lower legal entity income tax collection on the income side; and on the expense side by a payment by the state of CZK 12.1 billion to the Czech Consolidation Agency to cover losses from 1999. The Ministry of Finance has recently announced its issue schedule of government bonds for the second quarter, in which it expects to issue bonds in the volume of CZK 20 billion, while adhering to the annual plan for CZK 80 billion (± 10 %).

Deficit budget financing is directly reflected in the growth of government and public debts. Although government debt grows at a relatively high pace (annually by 19.3 %), its share in the GDP remains very low (16.3 % GDP as of the end of 2001). The GDP share of public debt, whose greatest part consists of the above-mentioned government debt, reached 19.4 % at the end of 2001 (as estimated by the Czech Ministry of Finance), which is much less than in developed countries or in the EU. The government and public debts will continue to grow rapidly as the losses of the former KOB (now CKA) will be realised (they come from writing off classified loans purchased from commercial banks). A great portion of the government debt does not, therefore, come from an expansive fiscal policy, but is caused primarily by the financing (payment) of transformation debts. The growth of the state debt will then depend on the manner (speed) of writing off receivables accumulated in the CKA and its financial group. A part of the debt is, among others, caused by Parliament bond programmes, which include a compensation of deposits in the bankrupt co-operative credit unions.

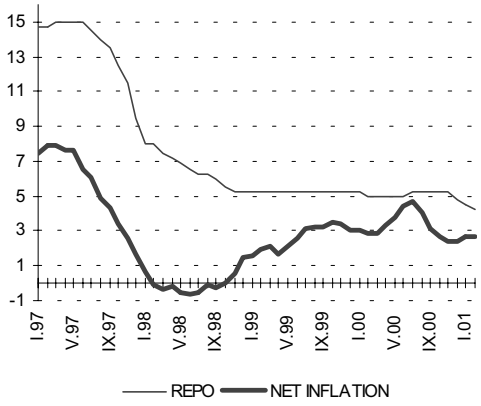
A significant portion of the budget deficit (reflected in the growth of state debt) is of a structural nature. It is a deficit of the social security system, primarily of the pensions system. Future development will be greatly influenced by the willingness of the new government to reform the existing system, and on the speed with which

changes will come. We should not, however, expect that any results could be visible before 2004. In the short-term, the results of public budgets will be improved by massive privatization income (this year, the National Property Fund will get some CZK 130 billion from the sale of the gas sector, the sale of Český Telecom is still in the game; in the next few years, the energy sector will be privatized). A Ministry of Finance estimate of privatization income for this year is CZK 260 billion.[21] That may, in the short-term, mitigate the growth tendency of public debt, but its causes are definitely not being resolved by short-term income.

7. Monetary Policy

For the first time last year, the CNB managed to achieve its inflation goal, as net inflation at the end of the year stayed within the set interval (December net inflation came to 2.4 %, the target band was 2.0-4.0 %). In the course of last year, the CNB changed the setting of interest rates several times: first, it decreased the two-week repo rate by 0.25 p. p. in February, to 5.0 %, then it increased it again in July to its original level of 5.25 %. The CNB thus reacted to the current developments in the country and probably also to the inflation outlook of the country. In reaction to the worsening of foreign conditions of the Czech Republic, and to an improvement of the inflation outlook after the autumn drop in oil prices in world markets, the CNB decreased its interest rates in October, by 0.5 p. p., to 4.75 %.

Graph 13
Net Inflation and REPO Rate (in %)



Source: Czech National Bank.

In January 2002, the two-week repo rate of the central bank dropped, after its two measures, to 4.25 %. On April 25 the CNB, a bit unexpectedly, again the repo rate cut by 50 basis points, whereby the rates reached the lowest level in the entire existence of an independent Czech Republic. The decrease of interest rates to this level can be seen as an adjustment of monetary conditions, i.e. that the CNB is, by this adjustment of its policy, trying to mitigate the unfavourable impact of the con-

21) Ministry of Finance: The Predictions of the Development of Basic Macroeconomic Indicators in the Czech Republic for 2002.

stant strengthening of the CZK against the EUR. Space for the lowering of rates was created by a very favourable development, and primarily by the inflation outlook for this year. The CNB should not, in our opinion, have any problems meeting its monetary goal and the annual growth of the CPI should remain in the set interval for most of this year. It is very likely, however, that for the next few months, the annual CPI will be below the lower limit of the target band. It should return to the CNB corridor in the second half of the year.

Lowering of interest rates was a desirable measure also from the point of view of the risk of a slower economic growth in the Czech Republic. The decrease of the interest rates was rapidly reflected in the interbank rates and subsequently in client rates (deposit and credit). Loans thus became the cheapest since 1993, which undoubtedly further increased their attractiveness, primarily due to the dynamically growing retail market. For example, the average interest rate of newly granted loans dropped, in December of 2001, under 6 %, and mortgage rates approached the same figure. The decrease of interest rates was, however, bad news for depositors, as the appreciation of term deposits in January of 2002 reached nominally only 3.2 %, and the real interest rate was probably slightly negative.[22] Given the risk of a slower economic growth, we do not see that as a serious problem which could, for example, influence the behaviour of households and which would lead to a growth in the trade balance deficit.

7. 1 *Interest Rate Analysis*

The most important and most frequently used tool of monetary policy in the Czech Republic are repurchase operations of the central bank. Given the significance and the scope of these operations, the official repo rate is the key rate in Czech economy. Any change in this interest rate is reflected not only in interest rates on the interbank market, but also in client credit and deposit rates and subsequently also in economic activity. It is therefore very important to analyse the relation between the repo rate and rates of commercial banks in the Czech Republic.

Relations between the rates in the interbank market (PRIBOR) with a maturity of 1, 3, 6, 9, and 12 months, have been modelled on the basis of recursive relations, which means that only the one-month PRIBOR was estimated on the repo rate, and other PRIBORs, with longer maturity, were modelled using the shorter-payment date PRIBORs. For the estimate, it was also necessary to calculate the so-called effective repo rate, which is the weighed arithmetic average of the repo rate in a given quarter. In the model, the impact of the jump-growth of rates at the time of monetary crises in the second half of 1997 was separated out, using an dummy variable (DUMMY_1997Q2). The estimate using the method of the ordinary least squares, for the period between 1996Q1 – 2001Q4, was in the following form:

$$\underset{}{\text{PRIBOR\_1M}} = \underset{(0.009)}{0.13 + (\text{EREPO})} + \underset{(0.000)}{7.43*(\text{DUMMY\_1997Q2})}$$

$R^2 = 0.998 \quad SE = 0.22 \quad DW = 1.71$

22) We base our figures on an estimate of the annual CPI for the next 12 months. It remains to be seen, however, whether CPI is the most suitable index for judging real interest rates, i.e. whether it would not be better to evaluate deposit rates using net inflation, which is cleansed of the impact of deregulation and changes in indirect taxation. In that rendering, term deposits would keep appreciating.

$$PRIBOR\_12M = \underset{(0.000)}{1.00}*(PRIBOR\_9M) + \underset{(0.000)}{0.68}*AR(1)$$

$R^2 = 1.000$ SE = 0.07 DW = 1.86

PRIBOR_1M (9M, 12M) is the one-month (nine- and twelve-month) PRIBOR, EREPO is the effective repo rate calculated.

The above equations show that a change in the repo rate gradually proportionally is reflected in the rates with a different maturity. The dependence of interbank market rates on the base rate is very natural, since commercial banks can currently place their short-term surplus resources only in the repo or on the interbank market. The draw-down repo rate operations represent a no-risk deposit with the CNB of surplus resources (these resources are covered by bills of the central bank), whereas the interbank market does pose a certain risk (albeit a very small one at this point). That showed in the equations through a constant, which may be explained as a "risk" premium for a bank which loans its resources to another bank and does not take part in the repo rate tenders announced by the CNB. For reference, we note that in 2001 commercial banks held over CZK 270 billion in CNB bills. Interesting is also the ratio between the amount of resources allocated in repo rate operations and M2, which was about 17 %.

At the next stage, the change in the repo rate is reflected, through the interbank market, in client rates – both credit and deposit. The main factor which will determine the development of rates on newly granted loans is the one-year PRIBOR, which can be considered to be a sort of prime rate for these rates. The fact that credit rates are constantly higher can be explained by the higher risk involved in business loans compared to the interbank market. The equation also includes a variable which characterises the revenue of government bonds which, together with PRIBOR, expresses the level of revenue on risk-free assets.

In general, financial institutions in their investment decisions compare the revenue they can gain from government (risk-free) bonds and the revenue gained from loans they grant. Furthermore, if the government is demanding too high a volume of resources from the financial market, it must increasingly take into account the development of market interest rates and the situation on the financial market in order to be able to place issues in the required volume and under adequate conditions on the market. In this situation, banks will focus on the purchase of government bonds more than on the financing of business activity, which will lead to an increase in the loan rates for the business sector. In the Czech Republic, the government currently issues (and will probably continue to issue) a significant amount of bonds, but their impact on interest rates is not significant, as the banking sector has enough available resources and a large number of the newly issued securities is used to finance government bonds which are due (and does not, therefore, represent an additional demand for resources).

A problem in estimating this equation is the existence of a colinearity between PRIBOR and the revenue government bonds to the maturity from (see below). Among other, less significant, variables we have included the share of net domestic assets in the monetary supply, which characterises the development of the realised resident demand for loans with respect to total resources which can be used by banks on a certain level of liquidity.[23] At this point, we do not take into account the

23) If a commercial bank grants a loan to a commercial resident entity, it is its asset, which has to be (speaking in simplistic terms) financed from some source. Non-cash issue of money changes nothing on this principle.

development of net foreign assets, as non-resident entities have a very strong bargaining position in negotiating with domestic financial institutions about loan conditions. Another variable, the speed of money turnover, shows what value of production (GDP in current prices) can be serviced by one financial unit. The growth of this variable means that the same level of economic activity requires a smaller amount of loan funds, which should, theoretically, lessen the demand for money, and therefore work in favour of business entities – lowering interest rates.

$$\underset{}{IRNC} = \underset{(0.000)}{0.40*(PRIBOR\_12M)} + \underset{(0.089)}{0.17*(YTM\_2R)} + \underset{(0.0350)}{0.082*(NDA/M2)} - \underset{(0.076)}{0.024*(V)} +$$

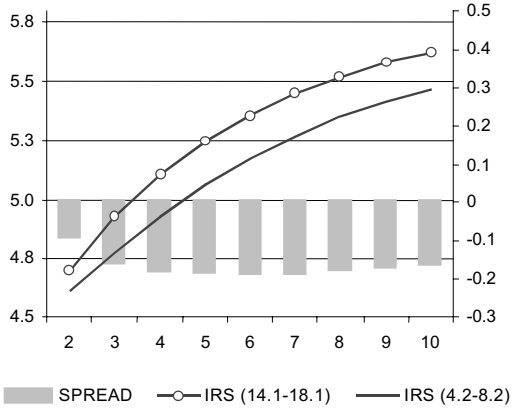
$$+ \underset{(0.000)}{3.70DUMMY\_1R} + \underset{(0.000)}{0.32*(IRNC(-1))}$$

$R^2 = 0.998$ SE = 0.25 DW = 1.80 LBQ(1) = 0.00(0.951)
JB test: $\chi^2(2) = 0.63(0.731)$ ARCH test: $\chi^2(1) = 1.42(0.234)$

Symbol IRNC is the interest rate of newly granted loans, PRIBOR_12M is a twelve-month PRIBOR, YTM_2R is revenue from two-year government bonds to maturity, NDA/M2 is the percentage ratio of net domestic assets and money supply, V is the income speed of money, DUMMY_IR is an artificial (zero-one) variable which eliminates the impact of the May 1997 financial crises.

The equation estimated above shows that a 1 p. p. growth of the one-year PRIBOR leads, within a few quarters, to an approximately 0.6 p. p. increase in the rates of newly granted loans. If we replace the revenue before due date by PRIBOR, the long-term effects of the interest rate would increase from 0.6 to 0.7 p. p. Furthermore, we must note that PRIBOR will work through other explanatory variables. If we left the variables YTM_2R, NDA/M2, and V out of the equation, the overall long-term effect of PRIBOR would increase to approximately 0.9. The growth of net domestic assets in resources (deposits financing this loan activity) in fact means that banks grant more loans to residents, which is, in the Czech case, more risky than granting loans to non-resident, and it will be related to a growth in interest rates. Nevertheless, the impact of this variable on the development of interest rates is not very significant (a 1 p. p. growth of this ratio will, in the long-term, lead to only a 0.1 p. p.

Graph 14
Interest Rate Swaps (in %)



Source: Reuters.

growth in rates). On the contrary, with the growth of the speed of money by 3 p. p., for example due to their more effective use, rates will drop by less than 0.1 p. p. The growth in rates of newly granted loans will then be reflected in a growth in the rates of loans overall, and in deposit rates. It is not easy to evaluate the impact on the overall interest rates on loans, as most loans have a moving interest rate. The impact on deposit rates is rather great: if the interest rate on the state of loans increases by 1 p. p., an increase of deposit rates of more than 0.9 p. p. will occur.

A stable expectation in this case is manifest in the market by a stable angle of the swap curve, which did not significantly change even after the two decreases of the base rate this January. Any change in interest rates in the second half of the year will depend on the economic development, primarily on whether the pessimistic prognoses about a slower economic growth in the Czech Republic will come true. The inflation outlook should, in our opinion, remain very favourable. Although the impact of high bases from last year will disappear, the annual growth of the CPI would not have to exceed 4 % (naturally only if some unexpected development, for example in oil prices, does not occur). If the optimistic scenario based on a revival of the EU economies and a faster growth of the Czech economy is realised in the second half of the year, we could even think about a very slight increase of interest rates at the end of the year. The development of the exchange rate of the CZK will play a significant role in this respect. It may therefore be expected that if further strengthening occurs, the CNB will be less willing to increase its interest rates in order to prevent a further tightening of monetary conditions.

7. 2 *Loans*

Year 2001 brought further significant changes in the loan market. The overall volume of loans in the economy dropped, expressed on average, by just under three per cent. Since the beginning of 2000, there has been a trend of a significant drop in foreign currency loans, which we connect with the fact that this form of financing has become less advantageous. Due to a decrease of the interest differential, the attractiveness of foreign currency loans decreased substantially. On the other hand, the volume of CZK loans kept slowly increasing until August of 2001. Whereas in the second quarter signs of a revival of loans became apparent, the third quarter brought a significant drop in the volume of loans. This was caused by the transformation of Consolidation Bank (KOB) into the Czech Consolidation Agency (CKA), which, as a non-banking entity, is not included in the bank statistics. [24)]

This step lead to a adjustment of data about the development of loan issue in the banking sector, but on the other hand, the current results cannot be compared time-wise (in the case of loans to businesses and government institutions). The consolidation of the banking sector was also reflected in the significant drop in the share of bank loans in GDP (so-called financial brokerage), which dropped to 45 % (the maximum was achieved in 1997, and was 64 %).

The development of various sectors was differentiated. [25)] As expected, loans to citizens (retail clientele) remained highly dynamic (22.6 %) and loans to small businessmen dropped again (-5.1 %). Company loans dropped by just under 13 %, but

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24) Loans with which Czech Consolidation Agency finances itself are included among loans granted to governmental institutions in the statistics. Loans which the CKA has in its assets are not included in these overviews. That is why the difference between the loans accepted and granted by the CKA caused a drop in the loan issue in October 2001.

25) In evaluating the development of credit issue as an annual figure, we use average values, in case of continuous monthly evaluations we use the seasonally cleansed time series and their trend elements.

Table 5
Credit and Money Supply Development

	XII:1995	XII:1996	XII:1997	XII:1998	XII:1999	XII:2000	XII:2001
Domestic credits	929.5	1029.7	1137.7	1109.9	1095.8	1120.4	1085.1
Net credits to government	10.1	12.6	24.8	36.1	63.4	117.4	261.4
Client credits	919.4	1017.1	1112.9	1073.8	1032.4	1003.0	823.7
Credits in CZK	822.3	888.6	912.6	860.0	838.5	838.3	695.2
Credits in foreign exchange	97.1	128.5	200.3	213.8	193.9	164.7	128.5
Money supply	1039.6	1125.3	1219.8	1285.2	1389.2	1479.5	1659.2
Currency	104.3	118.9	119.3	127.2	157.9	171.8	180.4
Deposits	935.3	1006.4	1100.5	1158.0	1231.3	1307.7	1478.8
Money supply		8.2	8.4	5.4	8.1	6.5	12.1
Domestic credits		10.8	10.5	-2.4	-1.3	2.2	-3.2
Deposits		7.6	9.4	5.2	6.3	6.2	13.1

Source: Czech National Bank Monetary Survey, author's calculations.

as we have said before, this outcome was strongly influenced by the transformation of the KOB.

The CNB in its inflation reports publishes very interesting and useful loan indicators, which are adjusted of the impact of the banking sector consolidation. The development of this series shows that the situation in the loan market is much more favourable than is indicated by the usually presented gross indicators. Based on these values, we may believe that the end of a loan shortage in the Czech economy is near. The year-long growth of loans did only come to 0.5 %, but in the second half of the year, the loan activity of banks was much more evident (+2 %). We expect the trend of bank-loan growth to further speed up in 2002. The reasons will be, primarily, the continuing expansion of the retail market (a growing volume and number of mortgages, construction-savings loans, and consumer loans granted), and a renewed growth in loans to corporate clients.

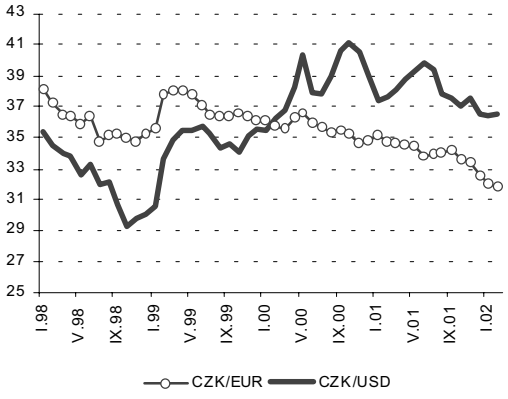
7. 3 *Exchange Rate*

The Czech koruna has been continuously strengthening from the beginning of 1999 and currently is the strongest in the entire period of the independent Czech Republic. In the period since 1999, when the Czech economy began to move from recession to growth, CZK has been strengthening against its reference currency (EUR) by 4 % a year, on average. The appreciation of the CZK has substantially accelerated in the last months of 2001 and at the beginning of 2002, as the rate of its appreciation has nearly doubled. The caused of the CZK appreciation may be found primarily in the currently high inflow of foreign capital and in the expected conversion of future privatization income from foreign currencies into korunas.

The CNB is trying to mitigate the sharp strengthening of the koruna with verbal interventions and decreases of the interest rates. In January 2002, the central bank even entered the market and intervened against the CZK (purchased approximately EUR 300 mil.). The CNB also intervened in October of 2001. As is evident from the development of the exchange rate after both interventions, the effect of this measure was soon exhausted and CZK returned to its growth trend.

In an attempt to resolve the problem of the conversion of income from the sale of large companies, the CNB and the government agreed on a conversion of the resources thus gained directly in the Czech National Bank, i.e. outside the foreign exchange market. That solution is supposed to minimise the impact of privatization on the foreign exchange market and will not lead to a further strengthening of the CZK against the EUR. The document approved by the government shows that the Ministry of Finance will not issue any foreign currency bonds this year; the revenue from the unblocking of the Russian debt will be deposited in a CNB account (at least until May 31, 2002); government institutions will finance their foreign exchange needs from sources outside of the market; an equivalent of CZK 25 billion will be deposited in a special CNB account to cover liabilities of the state related to the consolidation of the banking sector; any remaining foreign exchange resources of the state (both existing and future), which will need to be converted into CZK, will be bought by the CNB from the state directly, and the CNB will receive a compensation from the state for any losses connected therewith (i.e. the difference between the exchange rate and the interest revenue from foreign exchange reserves and the cost of sterilisation as part of base-rate operations).

Graph 15
Exchange Rates



Source: Czech National Bank.

For the CNB, the undertaking to convert privatization income means a further increase in its foreign exchange reserves which could be – given the volume of privatized assets – very significant. Only the sale of Transgas and distribution companies would increase the foreign exchange reserves by approximately EUR 4 billion.[26)] In this respect, the attempt to motivate investors to borrow at least a portion of the funds necessary to pay for the acquired assets directly in the Czech financial market and in CZK is understandable.

The long-term strengthening of the CZK is also reflected in the results of the real economy. It determines primarily the development of foreign trade, as it influences not only real exchange relations, but also the volume of imports and exports them-

26) The current state of foreign exchange reserves at the end of February 2002 was EUR 16.9 billion. The conversion listed would then lead to an approximately 24 % increase of foreign exchange reserves.

selves. Based on our calculations, the appreciation of the nominal effective exchange rate by 5 % leads to a 1.4 p. p. slowing down of the rate of export growth (of goods and services at constant prices), and to a slowing down in the rate of import growth of roughly 0.6 p. p.

The dependence of the development of the CZK is most evident in industry, which produces most of Czech exports. In individual sectors, however, the sensitivity to the exchange-rate development is differentiated. The results of industry in the first half of 2001 show that approximately 47 % of sales in the processing industry came from direct imports. The most export-oriented fields were: transportation vehicle manufacture, manufacture of machinery and equipment, and rubber and plastic industry, i.e. sectors with a long-term growth of production. On the other hand, these are highly export-intensive companies. That means that the appreciation of the CZK is negatively influenced on the service side, but cheaper imports at least partially compensate for the negative impact of CZK appreciation.

Further development of the koruna exchange rate will depend on whether the above-mentioned agreement between the government and the CNB will be observed, and whether the new government, which will come out of the June election, will adhere to it, as well. We expect that the long-term strengthening of the CZK against the EUR is an inevitable reality, and the effect of that agreement will therefore likely be limited. The exchange rate of the CZK to the USD will continue to develop according to the development of the USD/EUR exchange rate.

8. Conclusion

Year 2001 was a successful year for the Czech Republic, as the economy continued to grow in spite of the less favourable development of the external environment, and a low-inflation environment was maintained. The GDP per inhabitant according to the purchasing power parity reached, by our estimate, some USD 14,9, which corresponded to about 60 % of the level of EU countries. Our analysis shows that the development of Czech economy is, due to its great openness, rather strongly dependent on the tendencies of Czech Republic's main trading partners. Last year, economic growth was kept stable and even grew thanks to a higher rate of domestic demand. At the end of the year, the first signs of the impact of the negative development of EU economies, primarily in Germany, on Czech industry and exports, began to show.

The development of Czech economy in 2002 will be determined by an economic revival in the EU, which at this point does not seem very likely. A greater growth of demand abroad should come in the second half of the year, which will, indoubtedly be reflected in the development of our economy. We therefore presume that GDP growth in 2002 will not reach its previous levels and will stay around 3 %. The unfavourable impact of the slow rate of foreign demand may be partially mitigated by the introduction of new export-oriented capacities, which are connected to direct foreign investment. The main engine of Czech economy should be, like last year, domestic demand (both consumption and the gross fixed capital formation).

This year, inflation development should again be very favourable, and inflation rate could reach 3.2 %. The fluctuating and unpredictable prices of oil remain a risk factor; in the last few weeks they have again climbed over USD 25 per barrel. The strong CZK aids the favourable development of inflation, which, however, decreases price competitiveness of domestic producers. The current inflation outlook does not give reason for an increase of the current (historically lowest) interest rates. A change in the official interest rates therefore does not seem likely until the second

half of the year, depending on the development of a number of macroeconomic indicators. All these facts are documented in the final summary Table 6.

Table 6
Basic Macroeconomic Indicators of the Czech Republic and Outlook for 2002 – 2003

		Actual						Estimate	
		1996	1997	1998	1999	2000	2001	2002	2003
GDP	change in %	4.3	-0.8	-1.2	-0.4	2.9	3.6	3.0	3.8
GDP	USD in bn	57.7	53.0	56.9	54.6	50.8	55.7	63,2	76.9
GDP per capita	USD in thousands	5.6	5.1	5.5	5.3	4.9	5.4	6.2	7.5
GDP per capita in PPP	USD in thousands	13.0	13.2	13.2	13.3	14.0	14.9	15.5	16.4
GDP per capita	EU = 100	65	64	61	59	59	60	61	62
Price level	EU = 100	36	38	41	40	41	44	48	50
Industrial production	change in %	2.0	4.5	1.9	-3.1	5.4	6.5	3.5	5.5
CPI	end of the period in %	8.6	10.0	6.8	2.5	4.0	4.1	3.9	4.1
Inflation	average in %	8.8	8.5	10.7	2.1	3.9	4.7	3.2	3.9
Net inflation	end of the period in %	6.6	6.8	1.7	1.5	3.0	2.4	2.5	2.6
Industrial producer price index	average in %	5.0	4.9	4.9	1.0	5.0	2.9	0.7	3.0
Trade balance	CZK in bn	-153.0	-150.5	-80.2	-64.4	-123.0	-119.0	-120.0	-130.0
Current account	% GDP	-7.1	-6.7	-2.4	-2.9	-4.5	-5.0	-4.5	-4.6
Unemployment rate	average in %	3.9	4.8	6.5	8.7	8.8	8.2	8.2	7.9
Employment	change in %	0.2	-0.7	-1.4	-2.1	-0.7	0.4	0.0	0.2
Nominal wages	change in %	18.4	10.5	9.4	8.3	6.6	8.5	7.8	7.5
Real wages	change in %	8.8	1.8	-1.2	6.1	2.6	3.6	4.6	3.5
Money supply	average change in %	15.7	7.8	6.6	9.1	7.3	10.7	10.0	9.0
CZK/EUR	average	35,3	35.8	35.9	36.9	35.6	34.1	31.0	30.5
CZK/USD	average	27.1	31.7	32.3	34.6	38.6	38.0	35.2	33.2
PRIBOR 3M	average in %	12.0	16.0	14.4	6.9	5.4	5.2	4.2	5.0
USD/EUR	average	1.30	1,13	1.11	1.07	0.92	0.90	0.88	0.92

Source: Czech Statistical Office, Czech National Bank, Ministry of Finance of the CR, author's estimates.