Relationships of Macroeconomic Indices in the Light of Recent Developments (Relations des agrégats macroéconomiques du point de vue des changements évolutifs)

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In the past 20 years, the Czech economy has undergone a relatively rapid development, whether with respect to the changing social conditions and distribution of property in the Czech Republic or the changes of the world as a whole. In this example we can show influence of such factors on the relationships between the fundamental macroeconomic indices. First we show the data characterizing the relevant period (cf. Table 1).

Table 1

Year	Exchange rate CZK/USD	Trade balance (bln. CZK)	Inflation rate (%)	y-o-y growth of GDP (%)	Government deficit (bln. CZK)	Government debt (bln. CZK)
1993	29.15	-15.3	20.8	-0.9	-23.8	.
1994	28.79	-39.8	10.0	2.2	-3.5	.
1995	26.54	-97.6	9.1	5.9	-13.4	14.6
1996	27.15	-154.9	8.8	4.0	-3.3	12.5
1997	31.70	-155.2	8.5	-0.7	-3.8	13.1
1998	32.28	-84.0	10.7	-0.8	-5.0	15.0
1999	34.57	-65.8	2.1	1.3	-3.7	16.4
2000	38.60	-120.8	3.9	3.6	-3.7	18.5
2001	38.04	-116.7	4.7	2.5	-5.7	25.1

Year	Exchange rate CZK/USD	Trade balance (bln. CZK)	Inflation rate (%)	y-o-y growth of GDP (%)	Government deficit (bln. CZK)	Government debt (bln. CZK)
2002	32.74	-71.3	1.8	1.9	-6.8	28.5
2003	28.21	-69.8	0.1	3.6	-6.6	30.0
2004	25.70	-13.4	2.8	4.5	-2.9	30.4
2005	23.76	59.4	1.9	6.3	-3.6	29.7
2006	22.60	65.1	2.5	6.8	-2.7	29.6
2007	20.29	120.6	2.8	6.1	-0.8	28.9
2008	17.07	102.7	6.3	2.5	-2.7	30.0
2009	19.06	180.6	1.0	-4.1	-5.8	35.3
2010	19.10	124.5	1.5	2.3	-4.2	38.3

If we assess the economic development by the GDP growth rate, we can see several stages of the Czech economy's development. These stages are quite distinctive. The early 1990s were markedly influenced by extensive social changes and redistribution of property in the Czech economy. A short-term upturn in 1995-1996 was followed by a considerable recession in the economic dynamics, more or less prevailing to the end of last century.

At the beginning of the new millennium, a new expansion of the Czech economy was observed. The annual growth was nearly 7 % in the years 2005-2007. Then the worldwide financial crisis came, followed by the economic crisis. Of course, the Czech Republic could not have avoided being hit by both of them.

Lets us provide a brief summary of the main events taking place, as seen from the perspective of the Czech economy.

1993   The Czech Republic is born, and a tax reform takes place.

1994   The first year of economic growth.

1995   The peak of economic growth, beginning of banks' insolvency (15 out of 45 banks went bankrupt).

1996   Slowdown of growth, persistent inflation rate, soaring trade balance deficit.

1997   Optimistic expectations vs. economic crisis; April 1997 - the first package of government measures (foreign-exchange deposits, ineffective), July 1997 - another package (export-enhancing policy, restrictive monetary policy, high mandatory reserve of the CNB at 11.5 %), August - large floods.

1998   A year of crisis, activation of foreign investments, mandatory reserve of the CNB at 7.5 %, drop of households' final consumption and of retail turnover even before Christmas

1999   Activation, growth of investments from abroad (investment incentives), stable deficit of the state budget, low inflation rate, the interest differential ceases to be of concern.

2000   Deficit of trade balance nearly doubled, increasing state budget deficit, economic growth at 3.6 %, very weak CZK (average at 38.60 CZK for 1 USD; October 2000: 41.13 CZK for 1 USD), increase of households' final consumption.

2001 High trade balance still prevails, high inflation rate, slowdown of GDP growth (although higher than the EU average); the proportion of industry is growing, CZK is still very weak.

2002 Negative growth factors are enhanced, deficit of the public budgets is growing, the proportion of investments in the GDP is low, CZK gets stronger, and the trade balance deficit gets substantially lower, large floods again

2003 CZK gets stronger, large public budget deficits prevail, high-speed industrial and constructional production begin, the inflation rate is low (0.1 %).

2004 CZK gets even stronger, high-speed growth begins.

2005 CZK gets even stronger, public budget deficits are growing, the public debt is stable, the growth rate is high and the trade balance turns positive.

2006 CZK gets even stronger, public budget deficits are growing, the public debt is stable, the growth rate is high and the trade balance is positive.

2007 Reduction of public budget deficits (in consequence of the restrictive budget policy).

2008 Financial and economic crisis, strong CZK, positive (but falling) trade balance, growing deficit of the public budgets.

2009 Economic recession, record surplus of the trade balance (180 bln. CZK), record absolute public deficit (209 bln. CZK).

2010 Moderate economic gain, slightly weakening CZK.

It is interesting to view in more detail two stages of the Czech economy's development, rather different from each other. Namely, we have in mind the periods of 2000-2007 (with positive features prevailing) and 2008-2010 (financial and economic recession). Fig. 1 shows the time evolution of the above-mentioned fundamental indices. The green background shows the years of relative prosperity, while red means economic difficulties (not only for the Czech economy, of course).

Figure 1
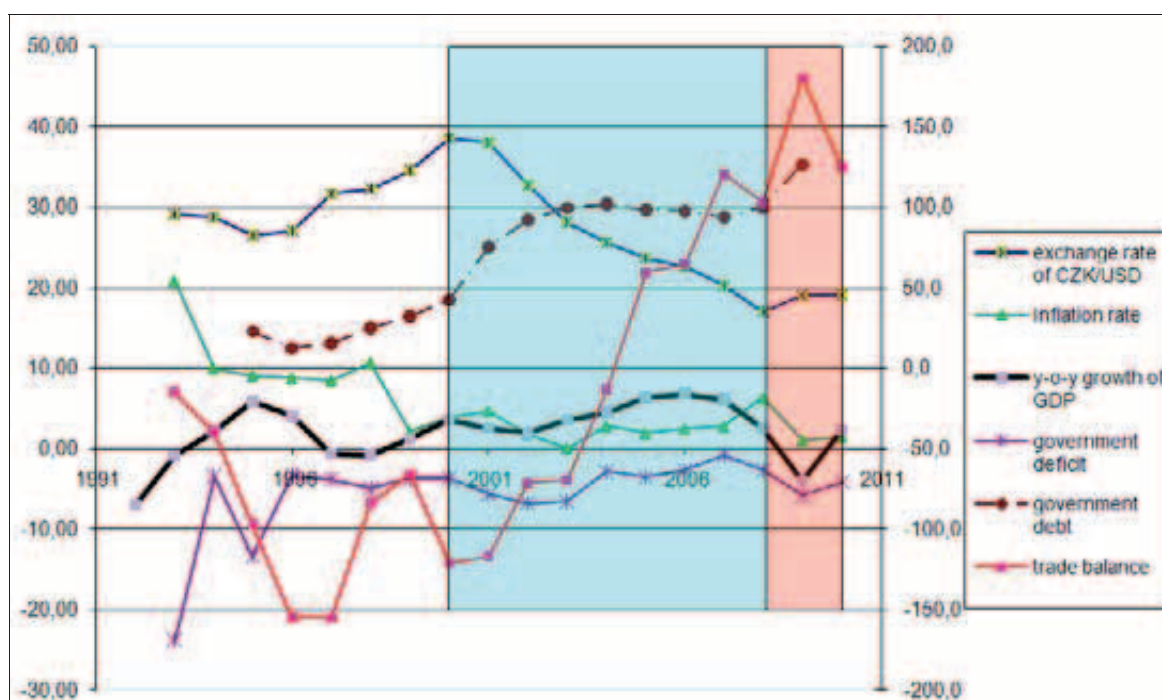
Taking the basic data shown in Table 1 and calculating correlation coefficients between these indices separately for period 2000-2007 and 2008-2010, we get Tables 2 and 3, respectively.
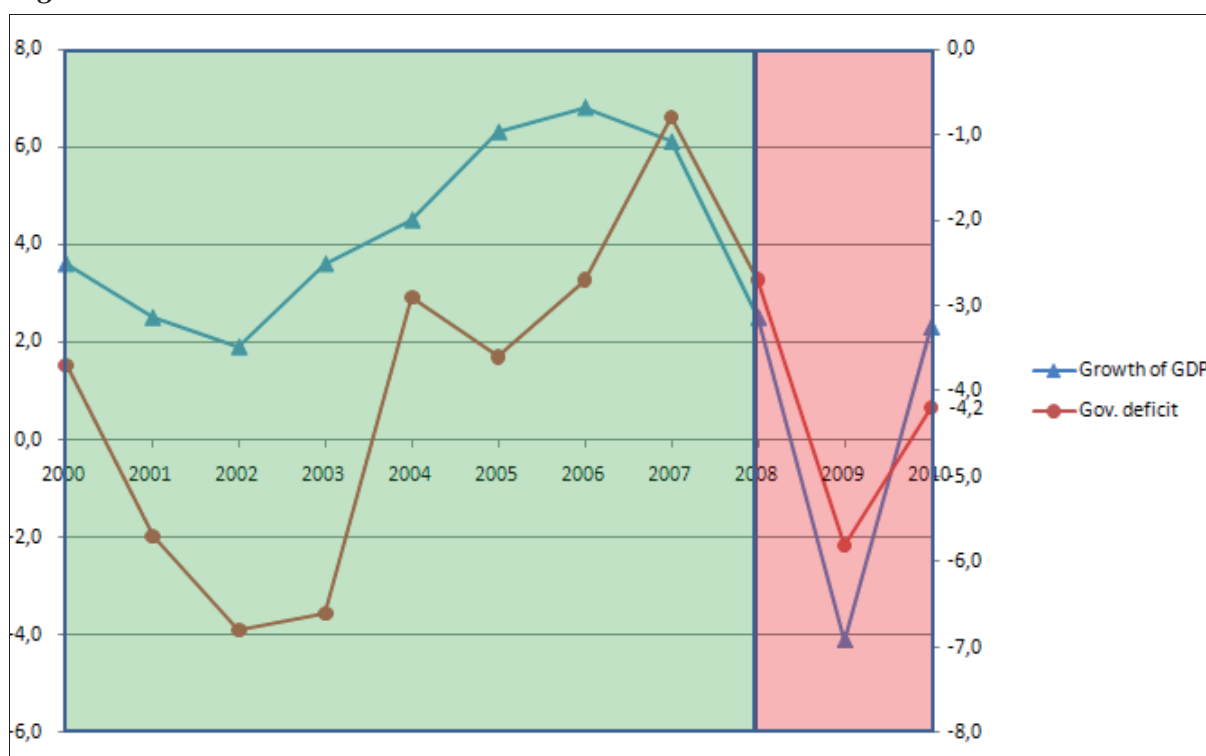
Table 2

2000-2007	CZK/USD	Trade bal.	Inflation rt.	y-o-y GDP	Deficit	Debt
CZK/USD	**1**	-0.941	0.473	-0.826	-0.613	-0.774
Trade bal.		**1**	-0.229	0.882	0.755	0.597
Inflation rt.			**1**	-0.126	0.293	-0.628
y-o-y GDP				**1**	0.801	0.371
Deficit					**1**	0.058
Debt						**1**

Table 3

| 2008-2010	CZK/USD	Trade bal.	Inflation rt.	y-o-y GDP	Deficit	Debt
CZK/USD	**1**	0.704	-0.995	-0.508	-0.848	0.940
Trade bal.		**1**	-0.773	-0.969	-0.974	0.420
Inflation rt.			**1**	0.594	0.898	-0.900
y-o-y GDP				**1**	0.888	-0.184
Deficit					**1**	-0.616
Debt						**1**

Figure 2

We can make several interesting observations concerning these tables. The GDP was growing in years 2000-2007 and the budget deficit was growing as well. There was a substantial growth of the deficit (in 2002 or 2003 this deficit took on values rather critical with respect to the GDP amount, namely, 6.8 % or 6.6 %, respectively). In other words, the Czech economy failed to sufficiently utilise the overall favourable economic situation to resolve its budget deficit. On the contrary, the deficit was getting worse. Hence the correlation coefficient between the budget deficit and GDP annual growth is positive and large. Examining the "critical" years 2008-2010 from the same viewpoint we can say this evolution continued, as can be seen in Fig. 2.

This type of dependency in data indicates that the favourable growth of the Czech economy in the period 2000-2007 was not consistently utilised to reduce the deficit. No systematic conditions were created in the area of mandatory and quasi-mandatory expenses, nor was an efficient link built between creation and utilisation of resources. Even in the years characterised by a higher GDP growth, all attempts failed that were aimed at creating an environment in which the expenses of the state budget would be kept within acceptable bounds.

To the contrary - Fig. 2 shows that the deficit copies the GDP evolution. A chance to stabilise the deficit in the years of substantial GDP growth was thus wasted. The contrary was true. In the time of unfavourable development (years 2008-2010) the deficit increased again.

There was another consequence: the public debt, oscillating around 30 % of GDP in 2000-2007 (and even sometimes getting below 30 % of GDP in the most dynamic years of 2005 to 2007), quickly went up to as much as 39 %. As already observed above, this fact was a logical consequence of the unwise policy applied to the budget deficit in years 2000-2007.

Figure 3
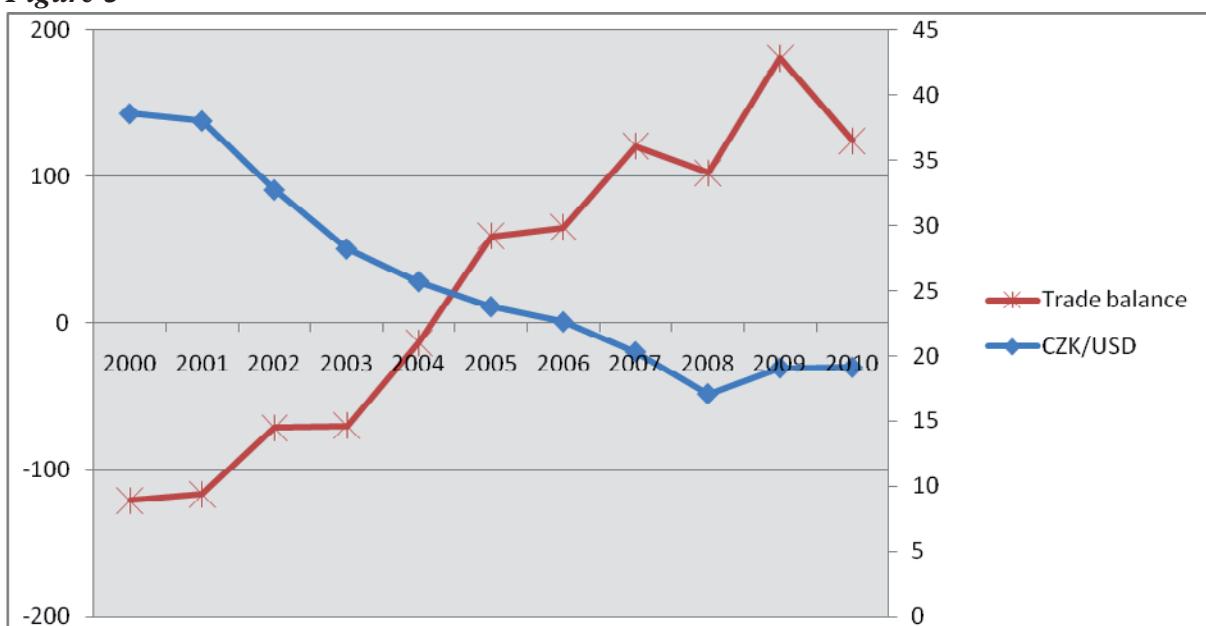
The relationships among the trade balance, GDP growth and CZK exchange rate (here represented by the CZK/USD exchange rate) followed a specific course of evolution. A generally valid statement that a strong domestic currency is usually an obstacle for exporting activities was

not fulfilled in the conditions of the Czech economy in the period 2000-2010. While the CZK/USD exchange rate went down from the 2000 average of 38.60 CZK to 19.10 CZK in 2010, that is, CZK was getting stronger, the trade balance, starting from negative values in the early 2000s (namely, - 120.8 bln. CZK in 2000) to positive values (the switch from negative to positive values took place in 2005, cf. Table 1). And CZK was growing stronger all that time. Figure 3 graphically illustrates this idea.

This situation is a good example of unstable validity of general laws of economics, which can take on unexpected individual manifestations under a particular economy's conditions. The reason for this - to a certain extent non-standard - development in the Czech Republic is, above all, the large volume of foreign investments coming to the country at the turn of the century, accompanied by modern and progressive technologies. Logically, the competitive ability of Czech products on the developed markets was improved. Adding to the formula the relatively low labour costs (in comparison with West Europe) on a highly qualified labour force, we can see that such qualitative factors were able to circumvent the export barriers represented by the strong domestic currency.

This non-standard circumstance is of course reflected in the similar relationship between the CZK exchange rate (i.e., CZK/USD) and the aggregate dynamics of the GDP growth. Correlation between these two indices was significantly negative in the entire period of 2000-2010 (cf. Tables 2 and 3). Regarding the above-mentioned non-standard evolution of the relationship between strengthening CZK and the trade balance (negative correlation), the long-term improvement of the trade balance value favourably influenced the dynamics of the Czech economy and the evolution of the relationship between the CZK strength and the GDP growth rate. This fact indicates that the Czech economy is small and open, considerably dependent on the world around it and, to a great extent, determined by the relationships between the import and export of goods and services.

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In conclusion, let us say that in transit economies, such as the Czech economy, we can observe many interesting phenomena, which may not always be in compliance with the postulates of economic theory. And sometimes may even be far from them. The point is that the economic transformation usually extends to a longer period of time than conjured on the basis of the property redistribution and the related modifications of economic processes. This is in particular valid for small, open economic systems, which are also more sensitive with respect to fluctuations of the economic cycle.

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