

# *Impacts of Financial Crisis on the Euro Introduction in the Czech Republic*

## *Dopady finanční krize na zavedení eura v České republice*

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### **Abstract**

This article deals with the issue of how the financial crisis and the economic recession influenced readiness of the Czech Republic to adopt the euro. Deficiency of the public finance has deepened and catch-up of the euro area price level has slowed down. The financial crisis and the recession have therefore complicated adoption of the euro and have delayed it. As the recession goes to its end, fulfilment of both criteria is improving. Besides, the article covers the question whether the financial crisis and the recession have influenced the expected benefits of the euro adoption. The interconnection of the Czech economy with the euro area is examined, as well as the need of a stable exchange rate. The interconnection is strong and increasing. The long-term appreciation of the crown exchange rate reduces competitiveness of Czech exporters. In the case of the euro adoption, the trade relationships would be more stable than with the crown. The weighted variation coefficient expressing volatility of exchange rates showed with the crown existence (during 2007 – 2010) the value of 5.92%, with the crown replaced by the euro it would be only 2.68%.

### **Keywords**

euro, euro area, euro area enlargement, maastricht criteria, nominal and real convergence, exchange rate stability, excessive deficit procedure, exchange rate volatility

### **Abstrakt**

Článek se zabývá otázkou, jak finanční krize a hospodářská recese ovlivnily připravenost české ekonomiky na zavedení eura. Došlo k prohloubení deficitu veřejných financí a ke zpomalení v dohánění cenové hladiny eurozóny. Finanční krize a recese tak přijetí eura zkomplikovala a oddálila. Po odeznění recese se plnění obou kritérií zlepšuje. Dále je zkoumána otázka, zda finanční krize a recese ovlivnily očekávané přínosy zavedení eura. Zkoumána je propojenost české ekonomiky s eurozónou a potřeba stabilního měnového kurzu. Propojenost je vysoká a rostoucí. Dlouhodobá apreceiace kurzu koruny oslabuje konkurenceschopnost českých exportérů. V případě zavedení eura by obchodní vztahy byly stabilnější, než v případě existence koruny. Vážený variační koeficient, vyjadřující volatilitu měnových kurzů, vykázal v případě existence koruny (v letech 2007 – 2010) hodnotu 5,92 %, v případě nahrazení koruny eurem by to bylo pouze 2,68 %.

## Klíčová slova

euro, eurozóna, rozšíření eurozóny, maastrichtská kritéria, nominální a reálná konvergence, stabilita měnového kurzu, procedura při nadměrném schodku, volatilita měnového kurzu

## JEL Codes

E 52, F 36

## Introduction<sup>1</sup>

The Czech Republic does not yet have the defined date on which it would like to adopt the euro. The original date of 1.1.2010 was cancelled in October 2006, without specification of a new date. Either the present central-right coalition cabinet from August 2010 does not intend to set the date of the euro adoption. The so called Coalition Agreement of July 2010 states: "In light of the current situation, we will not set a date for adoption of the euro at this stage. [...] If the single European currency evolves as a meaningful and sustainable project, we will prepare for the introduction of the euro in the Czech Republic."<sup>2</sup>

So far the last rejecting standpoint of the Government on the date of the euro adoption is reasoned in particular with impacts of the vanishing financial crisis and economic recession, specifically with (December 2010):<sup>3</sup>

- domestic economic problems like worsening condition of the public finance, interruption of convergence of the domestic price level with prices in the euro area, not improving structural characteristics of the labour markets;
- fiscal problems of a number of the euro area countries leading to uncertainty in international financial markets, fears of investors, potential reversals in flows of short-term capital and endangered stability of the crown if incorporated into ERM II.

The Government confirmed its rejecting standpoint also in the statement of the Prime Minister Petr Nečas in May 2011. More suitable than the euro is to have an independent currency with a flexible exchange rate. <sup>4</sup> President of the Czech Republic Václav Klaus even addressed the government in the autumn 2010 with a proposal to negotiate for the Czech Republic an exception regarding the euro similar to the exception of Great Britain or Denmark (opt-out), which was, however, rejected by the Prime Minister. <sup>5</sup> Also the position of the Czech National Bank to adoption of the euro before long expressed by the opinion of

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2 *COALITION AGREEMENT on the Formation of a Coalition of Budgetary Accountability, 2010, p. 44.*

3 *ASSESSMENT OF THE FULFILMENT of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area, 2010, p. 4 – 6.*

4 *It was at the European Economic Congress in Katowice. ([http://www.financninoviny.cz/tisk\\_clanku\\_view.php?id=638238&BACK=/eu/zpravy/necas-rozhodnuti-o-prijeti-eura-bude-ekonomicke-ne-politicke/638238](http://www.financninoviny.cz/tisk_clanku_view.php?id=638238&BACK=/eu/zpravy/necas-rozhodnuti-o-prijeti-eura-bude-ekonomicke-ne-politicke/638238))*

5 *<http://www.financninoviny.cz/zpravy/vyjednat-s-eu-vyjimku-na-euro-by-slo-podle-necase-tezko/561886>*

its representative Miroslav Singer upon his takeover of the position of the bank's Governor in June 2010, is unambiguously negative. The reason for that is deterioration of the budget position of the Czech Republic.<sup>6</sup>

The Czech Republic is not any exception with its decision to postpone the originally planned deadline for the euro adoption among the EU member states which have not yet adopted the euro (Table 1).

**Table 1:** Planned date for the enlargement of the euro area

Country	Original date	New date
<b>Bulgaria</b>	not determined	---
<b>Czech Republic</b>	1.1.2010; annulled on 25.10.2006	Not determined
<b>Estonia</b>	1.1.2007; 1.1.2008 (annulled on 31.10.2006)	1.1.2011
<b>Latvia</b>	1.1.2008; annulled in spring of 2006	1.1.2014
<b>Lithuania</b>	1.1.2007; Commission did not recommend the euro introduction (16.5.2006)	As soon as possible
<b>Hungary</b>	1.1.2010; annulled on 1.12.2006	Not determined
<b>Poland</b>	1.1.2012; annulled in the late 2009	Not determined
<b>Romania</b>	1. 1. 2015	---
<b>Sweden</b>	not determined (rejected in a referendum on 14.9.2003)	---
<b>Great Britain, Denmark</b>	permanent opt-out clause in third stage of EMU	---

Sources: Commission of the EC: *Report on the Practical Preparations for the Future Enlargement of the Euro Area. 2004-2010.*

Note: EMU = Economic and monetary union.

Adoption of the single European currency instead of the existing national currency is, however, a commitment resulting from the membership of the Czech Republic in the European Union.

The objective of this article is to answer two questions. First, how is readiness of the Czech economy for the euro adoption developing? Did the financial crisis and the following economic recession in 2009 have an impact on the conditions influencing adoption of the euro in the Czech Republic? We will consider this question by assessment of fulfilment of the criteria of the nominal and real convergence. Second, what are the expected benefits from introduction of the euro? Were those benefits influenced by the financial crisis and the economic recession? We will consider this issue from the point of view of development of the interconnection of the Czech economy with the economy of the euro area (international trade, direct foreign investments). This is followed by an analysis whether an independent national currency (the Czech crown) is more suitable than the single cur-

6 [http://www.financninoviny.cz/zpravy/klaus-jmeno-val-guvernerem-cnb-mirolava-singera/492769&id\\_seznam=6372](http://www.financninoviny.cz/zpravy/klaus-jmeno-val-guvernerem-cnb-mirolava-singera/492769&id_seznam=6372)

rency (the euro) regarding development of exchange rates of both currencies. To express volatility of exchange rates, we have used standard deviations and variation coefficients.

The mentioned objectives are reflected also in the structure of the article: first, development of the nominal and real convergence is treated, then the interconnection of the Czech economy with the euro area is covered, and finally the stability of exchange rates.

The article is based on the existing publications dealing with accession of the Czech Republic and other CEE countries into the currency union, namely Helísek et al. (2007, 2009), Lacina – Rozmahel et al. (2010), Kučerová (2005) and others. It takes over the results of the analysis *Assessment of the Fulfilment of the Maastricht Convergence Criteria* (2008, 2010) and of analyses of the International Monetary Fund about impacts of the single currency on the economic growth (Schadler et al.). General basis of the theory of monetary integration is drawn namely from De Grauwe (2005) and Lacina – Rusek et al. (2007).

## 1 Nominal and Real Convergence

### *Criteria of nominal convergence*

The criteria are usually identified as the Maastricht convergence criteria. Those include four criteria which must be fulfilled simultaneously and at the same time sustainably, i.e. not only as short-term at the expense of extraordinary measures.

**Criterion of price stability** is defined by the average inflation rate in three countries with the best results in the field of price stability (plus 1.5 p. p.). This requirement of low inflation is based on the unified monetary policy for the whole euro area. Fulfilment of the criterion of price stability in the Czech Republic is described in Table 2 (harmonized index of consumption prices, year average).

**Table 2:** Price stability criterion in the Czech Republic

	2007	2008	2009	2010	2011	2012	2013
<b>Inflation in 3 countries</b>	1.3	2.6	0.0	0.7	1.2	1.2	1.2
<b>Criterion</b>	2.8	4.1	1.5	2.2	2.7	2.7	2.7
<b>Czech Republic</b>	3.0	6.3	0.6	1.4	2.3	1.7	1.7

Source: *Assessment (2010)*, s. 9.

Notes: 2010 – 2013 outlook. Forecast for the Czech Republic is from *Macroeconomic Forecast. Czech Republic. (July 2010)*, forecast for European Union is from *Economic Forecast. European Commission (Spring 2010)*.

The inflation criterion was not fulfilled in 2007 and namely in 2008. It was caused in particular by a high increase in prices of energetic raw materials, increased regulated rent, increase in VAT rate from 5 % to 9 %, introduction of fees in health care area and increase in excise taxes on cigarettes. *Convergence Programme of the Czech Republic* assessed this increased inflation in 2008 as “a temporary and one-off event”.

Fulfilment of the price stability criterion in the coming years is, however, forecasted to be trouble free. This optimistic prognosis is fortified by the fact that the Czech National Bank moved from the beginning of 2010 to the inflation target lower by 1 p. p. compared to the preceding period (from 3 % to 2 %, in compliance with the inflation target of the European Central Bank – ECB), with tolerance of 1 p. p. in both directions.

**The criterion of feasibility of the public finance** should create sufficient space for fiscal expansion in the case when the universal monetary policy of ECB does not suit a specific country, in particular therefore in impacts of asymmetric shocks. The criterion is defined as max. 3 % of the deficit of the public finance in proportion to GDP and max. 60 % of the public debt in proportion to GDP.<sup>7</sup>

Development of this criterion in the Czech Republic is shown in Tables 3A, 3B.

According to the prognosis of late 2008, both parts of the fiscal criterion should be most probably fulfilled within several years. At that time, favourable development in this field was suggested (together with the so far favourable development of the real economy) also by the fact that in June 2008, the procedure on an excessive deficiency was terminated, which had been maintained by the Czech Republic since 2004. From this point of view, proposals to try the euro adoption in 2012 were justified.

**Table 3A:** The criterion of feasibility of the public finance in the Czech Republic (Assessment 2008)

	2005	2006	2007	2008	2009	2010	2011
<b>Balance of public finance system (in % to GDP)</b>							
<b>Criterion</b>	-3.0	- 3.0	- 3.0	- 3.0	- 3.0	- 3.0	-3.0
<b>Czech Republic</b>	-3.6	-2.7	- 1.0	- 1.2	- 1.6	- 1.5	- 1.2
<b>Public debt (in % to GDP)</b>							
<b>Criterion</b>	60.0	60.0	60.0	60.0	60.0	60.0	60.0
<b>Czech Republic</b>	29.8	29.6	28.9	28.8	27.9	26.8	25.5

Source: *Assessment (2008)*, p. 11 – 12.

Notes: 2008 – 2011 forecast (note, that the evaluation is from 2008).

The economic recession and the needed reform of the public finance, however, strongly impaired those forecasts as to the deficit of the system of public finance. The Government of the Czech Republic estimates fulfilment of this criterion only in 2013.

7 The value 3 % was derived from the then proportion of 3 % of the public investments in GDP in Germany (so called golden rule, i.e. deficit should origin only as a result of funding from public investment expenses). 60 % was the average value of the public debt at the time of creation of the Maastricht convergence criteria (see BALDWIN, R.; WYPLOSZ, CH., *The Economics of European Integration*, 2006, p. 382).

**Table 3B:** The criterion of feasibility of the public finance in the Czech Republic (Assessment 2010)

	2007	2008	2009	2010	2011	2012	2013
<b>Balance of public finance system (in % to GDP)</b>							
<b>Criterion</b>	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
<b>Czech Republic</b>	-0.7	-2.7	-5.8	-5.1	-4.6	-3.5	-2.9
<b>Public debt (in % to GDP)</b>							
<b>Criterion</b>	60.0	60.0	60.0	60.0	60.0	60.0	60.0
<b>Czech Republic</b>	29.0	30.0	35.3	39.3	42.1	42.9	43.3

Source: *Assessment (2010)*, p. 11 – 12.

Notes: 2010 – 2013 outlook.

The criterion of the public debt is fulfilled even if the proportion of the debt to GDP quickly increases. According to the programme announcement of the Government, however, a balanced budget should be achieved in 2016 and the public debt should therefore start decreasing. This is one of the five main tasks set by the Government.<sup>8</sup>

**The criterion of exchange rate stability** requests at least two-year duration of the involved currency in the exchange rates mechanism ERM II with maintaining of so called normal fluctuation range without devaluation of the central parity towards the euro. While the exchange rate must not face so called severe tensions. The reason for this criterion is to undergo a “trial period” of a fix exchange rate (after the euro introduction, factors will develop influencing the export ability by depreciation, etc.) and for a long run to anchor exchange rate expectations.

For the time being, the Czech crown is not incorporated into ERM II mechanism, fulfilment of the exchange rate criterion can therefore be only simulated.<sup>9</sup> For the simulation, we will use the attitude of the European Central Bank which uses as the hypothetical central parity the average monthly exchange rate of the first month of the examined two-year period. In our procedure, we will take as the hypothetical two-year assessment period of staying in ERM II the two-year period prior to the outbreak of the financial crisis; this for the reason of elimination of this extraordinary factor. As the “milestone” of the transition of the mortgage crisis into the financial crisis, the failure of the American investment bank Lehman Brothers on September 17, 2008 is usually considered. The examined period therefore covers the months IX 2006 – VIII 2008. The hypothetical central parity is 28.38 CZK/EUR (in compliance with the above mentioned procedure of ECB). We will interpret the fluctuation range asymmetrically, 15 % in the appreciation direction (= 24.12 CZK/EUR) and 2.25 % in the depreciation direction (= 29.02 CZK/EUR).

The reason for application of this asymmetric fluctuation range is the fact that this range is monitored by European Commission in its Convergence Reports. While it is not excluded

<sup>8</sup> GOVERNMENT'S PROGRAMME ANNOUNCEMENT, 2010, p. 4.

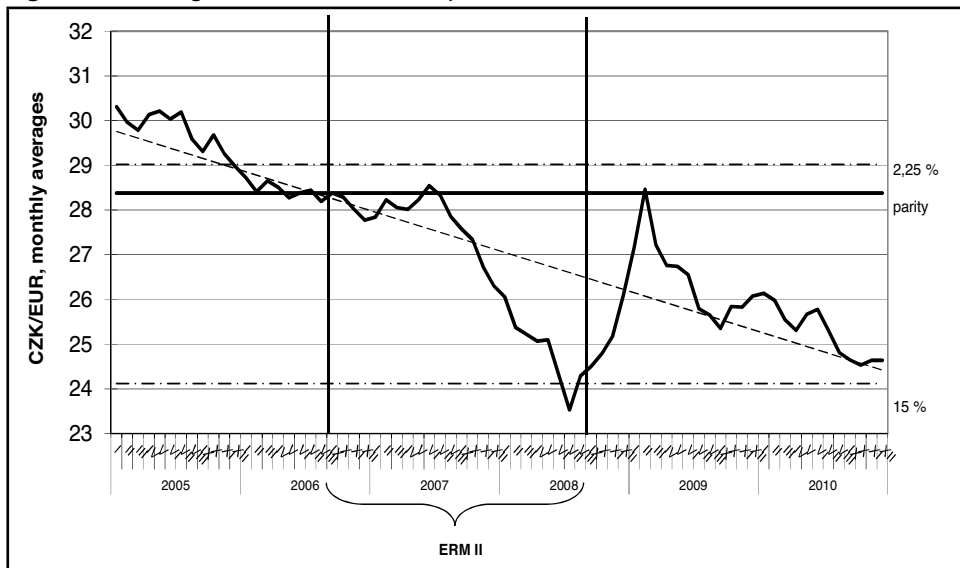
<sup>9</sup> The Czech National Bank (CNB) uses a different method for simulation. It takes adoption of the euro hypothetically on 1.1.2011 and the monitored period of 24 months in ERM II therefore starts in the second quarter 2008. The central parity is, in CNB method, the average exchange rate in the first quarter 2008.

that the reason for a failure to meet the criterion of exchange rate stability included movements under the 15 % limit (i.e. exceeding of the appreciation limit).<sup>10</sup> ECB (implicitly) tolerates fluctuation in a wider range of 15% in both directions.

During the examined period, the exchange rate showed a clear instability (see Figure 1):

- its very slight fluctuation (not reaching the limits of the range) in the first half-year was followed by a strong appreciation with a slight exceeding of the appreciation limit of the fluctuation range in July 2008 (by 0.6 CZK/EUR),
- then followed depreciation which however did not reach the range limit, not only during the remaining month of the monitored period but also in the whole following period.

**Figure 1:** Exchange rate CZK/EUR development



Source: [http://www.cnb.cz/cs/financni\\_trhy/devizovy\\_trh/kurzy\\_devizoveho\\_trhu/prumerne\\_form.jsp](http://www.cnb.cz/cs/financni_trhy/devizovy_trh/kurzy_devizoveho_trhu/prumerne_form.jsp). Own preparation.

The only slight exceeding of the fluctuation range allows the conclusion on fulfilment of the criterion of exchange rate stability in this hypothetical assessment (during the first wave of the euro area member states, the Commission was tolerant to much higher and longer

<sup>10</sup> The fluctuation range 2.25% in both directions from mutual parity of countries included in former ERM was cancelled as a result of the currency crisis in 1993. The Commission, however, continues application of the narrower range in assessment with the following arguments: the Maastricht criteria were designed at the time when the narrow range was considered as normal; the broader range is not in fact the exchange rate stability; extension of the range was announced as temporary; the reason for extension was to confront speculations (in 1993), not to enable a higher variability of exchange rates (and therefore to mitigate the criterion – the author’s note). For more details see HELÍSEK, M., et al., *Vstup ČR do eurozóny, ERM II a kurzové konvergenční kritérium*, 2011, p. 11 – 12.

deviations, this even in the depreciation direction). Besides, in the monitored period, so called severe tensions were not monitored which are expressed in particular in a strong decrease in FX reserves or in a strong increase in interest rates compared to the interest rates in the euro area (Table 4).

**Table 4:** Indicators of „severe tensions“ in crown exchange rate development (2006 – 2008)

Quarter	Interest rate differential (p. p.)	Change of FX reservs (%)
2006 IV	- 1.0	- 4.6
2007 I	- 1.2	- 3.3
II	- 1.3	- 2.9
III	- 1.2	- 4.5
IV	- 0.9	- 0.8
2008 I	- 0.5	0.8
II	- 0.7	4.3
III	- 1.1	9.5

Sources: *www.cnb.cz (finanční trhy - peněžní trh - PRIBOR; statistika platební bilance – devizové rezervy ČNB)*; *www.sdw.ecb.europa.eu (Statistical Data)*. Own calculations.

Notes: Interest rate differential is difference between 3 M PRIBOR and 3 M EURIBOR (always expressed in quarterly averages); change in foreign exchange reserves of ČNB is an annual percentage change in the state of reserves at the end of quarter (reserves are expressed in EUR).

**Criterion of low long-term interest rates** means in other words the requirement of low long-term expected inflation rate, reflected by markets expectations into low nominal interest rate. This rate should not exceed by more than 2 p. p. the average of interest rates of three countries with the best results in the field of price stability. Fulfilment of this criterion is shown in Table 5, using ten-year government bonds traded on the secondary market (12-month averages).

**Table 5:** Criterion of long-term interest rates in the Czech Republic

	2007	2008	2009	2010	2011	2012	2013
<b>Average in 3 countries</b>	4.4	4.2	3.9	4.3	4.8	4.8	4.8
<b>Criterion</b>	6.4	6.2	5.9	6.3	6.8	6.8	6.8
<b>Czech Republic</b>	4.3	4.6	4.8	3.7	3.9	3.9	3.9

Sources: *Assessment (2010) p. 16.*

Notes: *2010 – 2013 outlook.*

The criterion of long-term interest rates is fulfilled by the Czech Republic without problems and the same conclusion can be made also for the coming period. Maintaining of the positive forecast of rating agencies, in the interest of domestic, as well as foreign investors, and therefore low earnings on those bonds should be contributed by the Government reforms in the field of public finance expressed in the above mentioned Government programme.



### Criteria of real convergence

Implementation of the single currency will mean a loss of separate national monetary and exchange rate policy. Economy of a new member of the monetary union should therefore be similar to the entire economy of the monetary union. For that integrated economy, a unified monetary policy of the central bank of the monetary union will be suitable, as well as other economic rules set as unified for the whole monetary union. Similar economic development and economic structure of individual members of the monetary union also reduces the risk of occurrence of so called asymmetric shocks, i.e. events impairing member countries of the monetary union in a different way.<sup>11</sup>

Similarity (harmonization) of economic development is achieved not only by nominal, but also by real convergence. It is expressed in particular by the following indicators:

1. Convergence of economic level leading to convergence of the expense, as well as costs side of the economy and contributing thereby to harmonization of business cycles.
2. Convergence of price levels is important regarding to development of inflation. In the case of high difference of price levels, there is a danger of a spontaneous catch up of the low price level of the accessing member with the price level of the euro area.
3. Harmonization of business cycles which is in compliance with the unified monetary policy of the central bank of the monetary union.

Comparison of the economic level and price level of the accessing country with indicators of the euro area is shown in Table 6. The economic level (GDP per capita, PPS) of the Czech Republic exceeds at present the comparable countries. The price convergence (comparative price level expressed in prices of the final consumption of households) still achieves poorer results.

**Table 6:** Real convergence one year before joining (in % of euro area 16)

	Slovakia 2008	Portugal 1998	Greece 2000	Czech Republic	
				2009	2010
<b>Economic level</b>	66.1	69.6	74.3	75.2	74.1
<b>Price level</b>	67.2	82.2	84.6	66.0	69.0

Source: <http://epp.eurostat.ec.europa.eu> (National accounts, Comparative price levels – Purchasing Power Parities). The number of euro area member states: 16 (from 2009). Own calculation.

Considering the long-term similarity of inflation rate in the Czech Republic and in the euro area, it is possible to expect convergence of price levels mostly through appreciation of the nominal (and therefore real) exchange rate. This also explains the temporary worsening of the development in 2009 with depreciation of the crown exchange rate (in

<sup>11</sup> The asymmetry consists either of different occurrence of shocks (only some countries of the monetary union are affected) or of different intensity of impact on individual countries.

2008 the price level towards the euro area was 69.7%). The Czech National Bank anticipates in next five years appreciation of the real exchange rate of the crown to the euro 2.0 – 3.4% a year.<sup>12</sup>

Also in the indicator of business cycle harmonizing of the Czech Republic with the euro area we can see a simultaneous course of the same cyclic phases, both recession, and expansion (Table 7). This cyclic harmonizing was strongly influenced by the recent economic recession. The following development (2010, 2011) does not show so distinct concord, the cycle phases, however, remain unambiguously identical.<sup>13</sup>

**Table 7:** GDP development (fixed prices, year-to-year changes, in %)

	2008	2009				2010				2011
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
<b>euro area (12)</b>	0.4	-5.0	-4.9	-4.0	-2.0	0.8	1.9	1.9	2.1	1.5
<b>Czech Republic</b>	2.5	-3.6	-4.7	-4.4	-3.2	1.0	2.3	2.8	3.5	2.0

Source: *Macroeconomic Forecast of the CR. October 2010, p. 8, 9 (for quarterly data 2009); January 2011, p. 4, 8.*

Notes: 2010 estimate, 2011 outlook. Annual data (euro area and Czech Republic) for 2009: -4.1 % and -4.1 %; for 2010: 1.7 % and 2.2 %. Euro area includes first 12 member countries of monetary union.

The overall assessment of development of the economic readiness of the Czech Republic for the euro adoption can be summarized as follows:

- the Czech Republic meets the nominal convergence criteria, with the exception of the deficit of the public finance;
- also the main real convergence criteria develop positively, with the exception of catch up with the euro area price level.

In both unfavourable indicators, the *impact of the economic recession can be seen*. As to the deficit of public finance, it was caused by a drop in the income and increase in the expenses of public budgets. As to the price level, it involved lack of confidence of investors in CEE currencies and depreciation of the crown rate in 2009. *Upon last traces of the recession, both of the indicators improved* (reduction of the deficit of public finance, return to the trend of appreciation of the exchange rate).

<sup>12</sup> ASSESSMENT OF THE FULFILMENT of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area, 2010, p. 18.

<sup>13</sup> ASSESSMENT OF THE FULFILMENT of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area, 2010, assesses this harmonizing that “this reflects the recent extreme global developments and has probably not increased the probability of greater future alignment of the business cycle in normal global economic conditions”, p. 5.

## 2 Anticipated Benefits from the Euro Adoption

The immediate benefit of the single currency adoption will be namely the stimulation effect on the foreign trade and on inflow of foreign direct investments (FDI). Besides, the possible influence of the euro adoption on decrease in interest rates and subsequently on investment expenses.

Utilization of the euro instead of the existing national currency brings about two changes in foreign trade (within trade with the euro area):<sup>14</sup>

- extinction of some transaction costs,
- extinction of the costs related with exchange rates risks.

Stimulation of foreign trade leads to an increased specialization, improvement of the principle of comparative advantages, more efficient allocation of production sources, increased productivity and stimulation of economic growth.

In this review it is possible to add that these are only the basic relationships. Ambiguous might be for example influence of increased specialisation of national economies. The economies can be more frequently and strongly affected by asymmetric shocks than economies with a similar production structure.<sup>15</sup> If the asymmetric shocks are frequent and strong the single currency with the unified monetary and exchange rate policy cannot be beneficial.

Implementation of the single currency also positively influences inflow of FDI through extinction of exchange rates risk:

- through stimulation of trade (export) competitiveness increases and FDI into the country, which is a member of the euro area, are becoming more attractive,
- besides, there is also FDI inflow from other economies non-members of the euro area if rating of the accessing country increases with its membership in the monetary union.

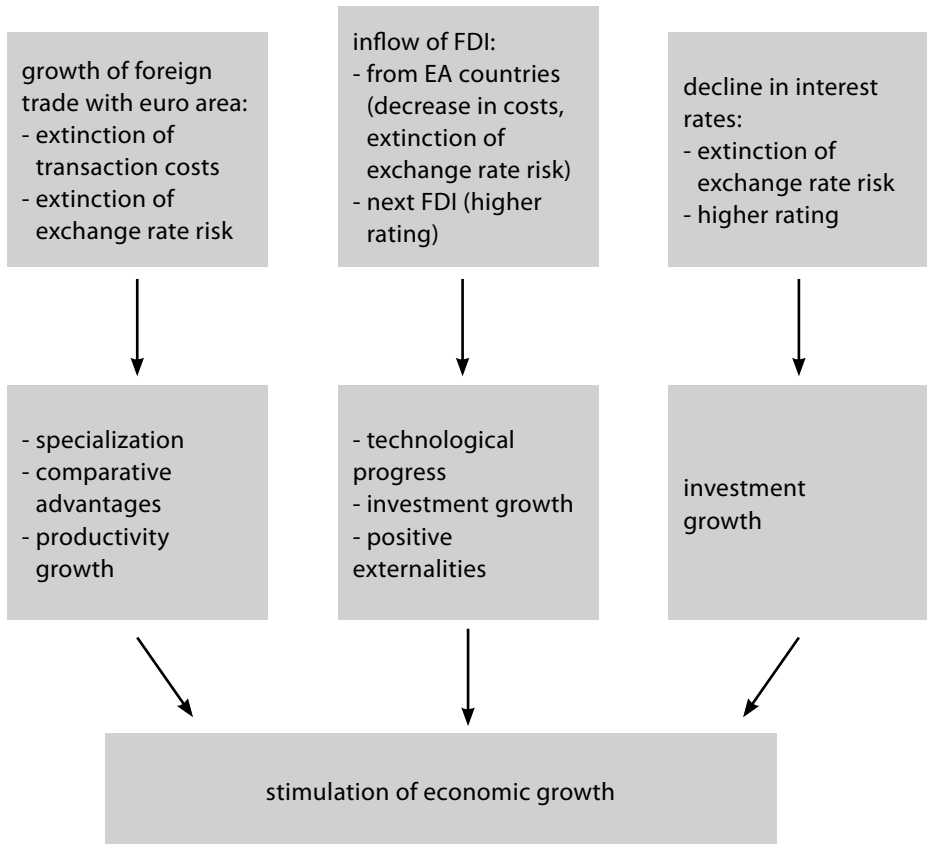
Influence of all three transmission channels (including hypothetic influence of the euro adoption on decreased interest rates) on GDP growth is expressed in Figure 2.

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14 See for example DE GRAUWE, P., *Economics of Monetary Union*, 2005, p. 80. Generally for benefits and costs of the joint currency see e.g. LACINA, L.; ROZMAHEL, P., et al., *Euro: ano – ne?*, 2010, more generally e.g. KUČEROVÁ, Z., *Teorie optimální měnové oblasti a možnosti její aplikace na země střední a východní Evropy*, 2005.

15 This fact was pointed out by P. Krugman. In his opinion, trade integration between members of the monetary union leads to regional concentration of production (so called concentration and agglomeration effect) which results in specialization of national economies. That specialization then increases the risk of asymmetric shocks. The risk, however, can be mitigated if the regional concentration of production exceeds national borders. These issues are covered e.g. by DE GRAUWE, P., *Economics of Monetary Union*, 2005, p. 24 – 27.

**Figure 2:** Euro and economic growth



Source: own creation.

Notice: EA = euro area.

According to the study of the European Commission *EMU@10: successes and challenges after 10 years of Economic and Monetary Union*<sup>16</sup> the single currency had the following benefits for the member countries of the monetary union:

- mutual trade of the euro area members has increased during the past 10 years from one quarter to one third of GDP; one half of this trade growth is attributed to removal of exchange rates risk and lower costs,
- increased FDIs inside the euro area from one fifth to one third of GDP; two thirds of this FDIs increase are attributed to introduction of the euro.

The same impacts can be expected also for replacement of the Czech crown with the euro.

<sup>16</sup> COMMISSION OF THE EC, 2008, p. 4.

The study of the International Monetary Fund, collective of authors under S. Schadler, qualifies the aggregate impact of the euro introduction on economic growth in central and east European countries as 2 – 7 % increase in GDP during 20 years (with the exception of Poland where it is 1 – 3 %).<sup>17</sup>

Benefit of the single currency increases together with the increasing interconnection of the accessing country economy with the present countries of the monetary union. Interconnection of the Czech economy with the euro area countries is provided in Table 8 where not only a high, but also an increasing link with the euro area can be seen.

**Table 8:** Interconnection of the Czech Republic with the euro area

<b>Export + import (goods and services)</b>		
	2004 (EA 12)	2009 (EA 16)
<b>Total (billions CZK)*</b>	3 939.3	4 825.7
<b>With EA (billions CZK)</b>	2 284.0	3 056.8
<b>% with EA</b>	58.0	63.3
<b>FDI in the Czech Republic (stand end of year)</b>		
	2004 (EA 12)	2009 (EA 16)
<b>Total (billions CZK)</b>	1 280.6	2 241.5
<b>From EA (billions CZK)</b>	1 017.6	1 886.7
<b>% from EA</b>	79.5	84.2

Sources: [http://www.cnb.cz/cs/statistika/platebni\\_balance\\_stat/](http://www.cnb.cz/cs/statistika/platebni_balance_stat/) Own calculations.

Notes: \* community principle. State of FDI at the end of 2009 was calculated by adding the flows quantites from 2009 to the state of FDI at the end of 2008. EA = euro area in composition according to the current situation in these years.

Adoption of the euro is, of course, linked also with certain costs and risks which can be divided into four groups:<sup>18</sup>

- loss of autonomous monetary and exchange rates policy which results in the need to achieve high nominal and real convergence of the Czech Republic with the euro area;
- imminent growth of price level linked with e.g. rounding up of prices (it is, however, rather an issue of so-called perceived inflation than a real inflation increase);
- administrative and technical costs of the transition to the euro like re-pricing costs, software setup, training of employees, etc. (costs carries by companies themselves);
- specific costs in the banking sector, both of the central bank (production and change of new cash), as well as commercial banks (decreased income from foreign exchange transactions).

<sup>17</sup> SCHADLER, S., et al., *Adopting the Euro in Central Europe, 2005*, p. 15. For the Czech Republic, the mentioned interval 2 – 7 % is applicable.

<sup>18</sup> LACINA, L.; ROZMAHEL, P., et al., *Euro: ano – ne?*, 2010, p. 45 and following. Risks are similarly described already in *The Czech Republic's Euro-area Accession Strategy, 2003*.

### 3 Stability of Exchange Rates

Can it be expected that the single European currency will bring about a higher stability in relationships of the Czech economy with foreign countries?

The strategic document of the European Commission *Europe 2020* which searches outcome from the financial crisis and economic recession and lessons from them attributes in this context great importance to the single currency: "The common currency has acted as a valuable shield from exchange rate turbulences for those Member States whose currency is the euro."<sup>19</sup>

Similarly, also the International Monetary Fund, specifically its former General Director D. Strauss-Kahn, expresses the stabilizing impact of the euro:

- although the exchange rate of the euro towards the dollar is also sometimes subject to stronger variations they, however, by far do not reach the intensity of currency crises which (implicitly expressed) could happen in the case of separate national currencies;
- instead of appreciation of the euro, there would be appreciation of the German mark which would, however, be much stronger; political and business pressure would follow on devaluation of currencies linked to the mark;
- possible changes in parities would lead to withdrawal of capital from those risky countries, followed by an increase of the risk premiums and interest rates and slowing down of the economic growth;
- performed devaluations would be followed by inflation pressures.

"So there is no question that the euro has contributed to the stability of its member countries during this crisis."<sup>20</sup>

Can we document these conclusions about the stabilizing impact of the euro by empiric evidence? We will treat this question by assessment of volatility of exchange rates as follows:

- exchange rate CZK/EUR which has the decisive influence on the foreign trade of the Czech Republic;
- exchange rate USD/EUR which is the decisive exchange rate for the euro area countries.

Table 9 expresses the standard deviation of the exchange rates, i.e. the spread of the exchange rate (quadratic average of deviations of individual values from their arithmetic average) in individual months of the specific monitored period (in currency units) and the variation coefficient, i.e. the ratio of the standard deviation to the arithmetic average of the exchange rate during the same period (in %).

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<sup>19</sup> COMMISSION OF THE EC, 2010, p. 24.

<sup>20</sup> STRAUSS-KAHN, D., *The Euro at 10: the Next Global Currency?*, 2008, p. 3 – 4.

**Table 9:** Volatility of exchange rates CZK/EUR and USD/EUR

Period	Standard deviation CZK/EUR	Variation coefficient (%)
- pre-crisis	1.421	5.48
- crisis period	0.973	3.73
- subsequent period	0.554	2.20
<b>whole period</b>	1.120	4.34
Period	Standard deviation USD/EUR	Variation coefficient (%)
- pre-crisis	0.072	4.89
- crisis period	0.071	5.11
- subsequent period	0.115	8.52
<b>whole period</b>	0.102	7.24

Source: CZK/EUR: [http://www.cnb.cz/cs/financni\\_trhy/devizovy\\_trh/kurzy\\_devizoveho\\_trhu/index.html](http://www.cnb.cz/cs/financni_trhy/devizovy_trh/kurzy_devizoveho_trhu/index.html).

USD/EUR: [http://epp.eurostat.ec.europa.eu/portal/page/portal/exchange\\_rates/data/database](http://epp.eurostat.ec.europa.eu/portal/page/portal/exchange_rates/data/database)  
Own calculations.

There are three examined periods:

- 12 months of the pre-crisis period from September 2007 to August 2008,
- the crisis period from September 2008 to the end of 2009 (16 months),
- the following period (12 months of 2010).

The table shows various volatility of exchange rates in individual periods; surprisingly the rates do not have the highest volatility during the crisis (this applies also to the rate CZK/USD – see below). Besides, we can see almost double volatility measured by the variation coefficient of USD/EUR (7.24 %) compared to CZK/EUR (4.34 %) for the whole monitored period of 40 months, except for the pre-crisis period. The foreign trade of the euro area members with third countries (rate USD/EUR) was therefore subject to a higher instability than the foreign trade of the Czech Republic (with an independent currency – the crown – exchange rate CZK/EUR) with the euro area countries.

This conclusion must, however, be detailed:

- into the foreign trade of Czech exporters, the long-term trend of the crown appreciation is unfavourably reflected (see Figure 1) which weakens competitiveness of Czech exporters,<sup>21</sup>

<sup>21</sup> Experience of exporters is presented in the opinion of the largest Czech exporter, Škoda Auto in Mladá Boleslav: "The present value of the Czech crown does not correspond the strength of our economy. It is drawn up by speculations on financial markets. The appreciation has a negative impact on exporters; for Škoda Auto, an appreciation by 1 crown results in a loss of around one billion crowns." (Radek Špicar, *Hospodářské noviny* 19. 1. 2011). Available on <http://byznys.ihned.cz/c1-49507610-firmy-uz-se-naucily-zit-se-silnou-korunou-presto-vyvoj-sleduji-s-obavami>.

- even with the relatively low volatility of the exchange rate, there is still the risk of lost confidence of investors and “escape” from the crown which can develop into a currency crisis. Such mistrust towards the crown was reflected in the deterioration of the exchange rate in the period July 2008 – February 2009 of 28.3 % (see Figure 1). In the case of the single currency with a strong proportion in the turnover of the global foreign exchange market, the currency crisis is very improbable.

The financial crisis and the related increased volatility of exchange rates increased the mistrust towards the currency of our small open economy. This is contributed also by so called regional viewpoint of investors which views a priori “with suspicion” the economic development of central and eastern European countries. Regardless appreciation of the crown, forint, as well as of zloty (since the middle of February 2009), mistrust of investors towards that region has survived. According to analysts of the American investment bank Merrill Lynch, a number of central and eastern European countries’ currencies might have been hit by the crisis: “For a number of currencies, a fully fledged crisis may not be ruled out given the sharp moves of the recent days that suggest plummeting investor confidence. There is no single currency for which the near-term outlook is positive in the region.”<sup>22</sup>

This viewpoint of investors was not even influenced by a statement of central banks of six countries (Czech Republic, Slovak Republic, Hungary, Poland, Bulgaria, Romania) a few days before that as to simplified and misleading information about their economies. Namely the fact was stressed that each country has its specific economic situation and it is not a homogenous region. Moreover, investors should differentiate among the EU member countries and non-member countries.<sup>23</sup>

The above mentioned analysis of impacts of exchange rates on stability of foreign trade relationships is followed by simulation of replacement of the crown with the euro and we will compare that stability with the real situation, i.e. with the actual existence of the Czech crown.

Let us suppose for simplification, that all business transactions with the euro area countries are carried out in the euro and all remaining transactions are carried out in American dollars. The proportion of transactions in these two currencies is seen in Table 8 (63.3 % and 36.7 %). Volatility of the rate CZK/USD is expressed in Table 10.

**Table 10:** Volatility of exchange rate CZK/USD

Period	Standard deviation CZK/USD	Variation coefficient (%)
- pre-crisis	1.454	8.50
- crisis period	1.459	7.69
- subsequent period	0.932	4.88
<b>whole period</b>	1.588	8.61

Source: own calculations.

<sup>22</sup> Bloomberg, *Eastern European Currencies Close to Crisis, Merrill Lynch Says, 2009.*

<sup>23</sup> COMMON POSITION OF CEBS MEMBERS, 2009.



We will evaluate the conditions of exchange rate stability of the foreign trade in two examined situations, this using the weighted variation coefficient:

1. with the crown existence: exchange rates CZK/EUR were used (variability 4.34 % weighted 0.63) and CZK/USD (variability 8.61 % weighted 0.37),
2. after replacement of the crown by the euro: exchange rates EUR/EUR were used (variability 0.00 % weighted 0.63) and EUR/USD (variability 7.24 % weighted 0.37).

Having considered the proven absence of mutual relationships in stability of exchange rates in individual periods (pre-crisis, crisis and subsequent), we will focus only on the result for the whole examined period.

The result is as follows:

- the weighted variation coefficient had, for trading in EUR and USD, the value of 5.92 %,
- in the case of replacement of the crown by the euro, it was only 2.68 %.

The examined period was therefore linked with a 2.2 times higher variability of exchange rates than in the hypothetical non-existence of the crown.

## Conclusions

The Czech Republic has already performed a number of legislative and organizational preparation measures for the euro adoption. In October 2003, *The Czech Republic's Euro-area Accession Strategy* was adopted which was updated in August 2007. National Coordination Group for the Introduction of the Euro was established with the Finance Ministry in 2005 with six permanent working groups. In October 2006, the Government approved the *Choice of the Scenario for the Euro Adoption in the CR* through a big-bang, i.e. a once-off introduction of the cash and non-cash euro. The most important document is *The National Euro Changeover Plan for the Czech Republic*, approved by the Government in April 2007. The response to those steps was appreciation by the European Commission in July 2007. The Czech Republic was marked as a good example of timely preparation even without setting the deadline.<sup>24</sup>

The financial crisis and economic recession complicate the Czech Republic namely fulfilment of the criterion of public finance deficit. On 2.12.2009, the Commission renewed the procedure with the Czech Republic with the excessive deficit. The Commission recommended the yearly reduction of the structural deficit by 1 % GDP and therefore the deficit of 3 % is to be achieved by 2013.<sup>25</sup> In the opposite case, there is a danger of limitation of the inflow of financial resources from the EU funds.

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<sup>24</sup> COMMISSION OF THE EC. *Fifth Report on the Practical Preparations for the Future Enlargement of the Euro Area*, 2007, p. 10.

<sup>25</sup> EUROPEAN COMMISSION, 2010, *technical Annex*, p. 41.

Global financial crisis and recession have resulted in some countries in an increasing interest in a fast adoption of the euro. This leads to debates whether to mitigate, in the interest of a fast enlargement of the euro area, the criteria for approval of its enlargement. One expression of such efforts was the proposal of IMF of early April 2009. Mitigation of the criteria for accession of the euro area would be linked with a “quasi” membership in the euro area in such a form that the new member country would not have representation in ECB.<sup>26</sup> The proposal was rejected both by the Commission, and by ECB. ECB commented on the opinions about mitigation of the criteria entirely unambiguously: not only the binding requirements for a high degree of feasible convergence remain valid, but also the convergence criteria will be interpreted and implemented in a strict way.<sup>27</sup>

While there had been lately some discreet efforts to influence the Commission and ECB towards higher tolerance in interpretation of fulfilment of the Maastricht convergence criteria, then the financial crisis, on the contrary, made this interpretation stricter. There is, however, another impending complication. Also such proposals have emerged to complete the existing Maastricht criteria with requirements for monitoring of the quality of the candidate country banking system.<sup>28</sup> Assessed in words of the main economist of European Bank for Reconstruction and Development E. Berglof: the euro area members started to support proposals increasing the requirements for accession the monetary union.<sup>29</sup>

The objective of the Czech Government is, according to its programme announcement, to achieve in 2013 a deficit of the public budgets of 2.9 % and in 2016 to accomplish a balanced budget. Adoption of the euro would, in this context, be real in 2015. Accession of the Czech Republic to the euro area in early 2015 (purely hypothetical for now) would have the following time schedule:

- in spring 2012 submission of the application for ERM II accession,
- ERM II accession on 1. 7. 2012 (min. by the end of June 2014),
- decision of the EU Council about “withdrawal of the exception” in autumn 2014, setting of the conversion coefficient,
- dual marking of prices (one month after the setting of the conversion coefficient until expiry of one year after the euro adoption),
- approximately three-month “preparatory stage” for completion of technical preparations, started production of the euro cash,
- transition to the euro on 1. 1. 2015.

Then a two-week period would follow with a dual circulation of the crown and the euro, withdrawal of the crown cash.

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26 IMF URGES EASTERN EU TO ADOPT EURO, *The Financial Times Limited*, 2009.

27 Address of a member of the ECB Executive Board Jürgen Stark at the conference on possibility of the euro adoption in Iceland. STARK, J., *The adoption of the euro: principles, procedures and criteria*, 2008.

28 The proposals were presented at the conference of central bankers organized by ECB on the occasion of 10 years of the euro in Frankfurt in November 2008 (<http://www.ecb.int/events/conferences/html/cbc5.en.html>).

29 BERGLOF, E., *Slamming the Euro Door*, 2008.

Adoption of the euro in the Czech Republic is complicated by consequences of the economic recession. Besides, economic problems of Greece, Ireland and some other countries of the euro area have led to discrediting of the single currency, although the currency mostly is not the cause of the problems. Discrediting of the euro influences unfavourably the political climate for the euro adoption.

The Czech economy is, however, strongly linked with the euro area and these mutual links are increasing in the course of time. The financial crisis and the economic recession did not change anything in this fact. The Czech crown exchange rate shows a long-term trend of appreciation towards the euro which reduces competitiveness of Czech exporters. In the case of the euro adoption, moreover, our trade relationships would be more stable than with the crown (expressed by weighted variation coefficient). Besides, the Czech crown is not protected in any way against possible currency crisis. The increasing interconnection of the Czech economy with the euro area economy and the needed stable exchange rate remain the main reason for adoption of the single currency.

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