International Journal of Business and Management Study – IJBMS
Volume 2 : Issue 1 [ISSN : 2372-3955]
Publication Date: 30 April, 2015

Price Convergence to the Euro Area and Preparedness of the Czech Republic for the Adoption of the Euro

Mojmir Helisek, Roman Mentlik

***Abstract*–A monetary union accession is preconditioned by sufficient real convergence of an acceding country to existing member countries of such monetary union. By default, the price level convergence criterion is described as a deviation of an acceding country's price level from the average price level of the euro area. The Czech price level is lower by 31.3% (2013). We believe this formulation of price convergence is not suitable. Weighted deviation of the Czech price level from the price levels of its main business partners is more cogent. According to the aforementioned new indicator, the Czech price level is only down by 24.5%. The paper also examines the correlation between the actual inflation and the perceived inflation in the euro area and in the Czech Republic, coming to a conclusion about expected significant increase in the perceived inflation after the euro introduction.**

***Keywords*–Real convergence, price convergence, comparative price levels, actual and perceived inflation**

I. Introduction

The euro area accession is subject to the fulfilment of the convergence criteria set down by the Maastricht Treaty. In addition to this binding *nominal* convergence criteria, each economy acceding to the euro area should follow the fulfillment of the *real* convergence criteria. They are not set down by European treaties; however, they ensue from economic rationality – from the calculation of costs and benefits of replacing the national currency by a single currency of the union.

The real convergence criteria mainly include the following:

- Convergence of economic level (GDP per capita) that expresses convergence of competitiveness of converging economies;
- Alignment of business cycles (quarterly changes in the real GDP in a year-to-year comparison) that expresses the current course of expansion/recession stages in the monetary union countries;
- Convergence of price levels, which is important in terms of the development of inflation. In case of a significant difference in the price levels, there is a risk of sudden convergence of the lower price level of an acceding member to the higher price level of the euro area. Therefore, countries with the same price levels should integrate.

The paper deals with the last of the above mentioned real convergence criteria. The special importance of this criterion consists in the concerns regarding the above mentioned sudden increase in the price level following an accession to the euro area. This view is widespread among the general public and is used by the opponents of the euro as probably the most frequent argument for refusing the euro.

In convergence analyses, the criterion is interpreted as a comparison of the price level in an acceding country with the average indicator for the euro area as a whole. In case of the Czech economy, such convergence is 68.7%. It is considered as insufficient compared to the economic level indicator – i.e. GDP per capita (as it amounted to 74.1% of the euro area average in 2013).

Furthermore, the price convergence has been interrupted as of 2009: "Owing to the crisis, the convergence process was also interrupted in the case of the price level of GDP, which has halted at around 70% of the euro area average".[1] [8, p. 16]. The interruption was first caused by the Czech koruna/euro (CZK/EUR) exchange rate depreciation during the crisis, with subsequent suspension of the exchange rate appreciation.

The objective of the paper is to create a new indicator of the real convergence price criterion that would be more cogent than the traditional indicator and subsequently compare the result of such new indicator with the traditional indicator.

Based on the existing experience, the euro introduction is associated with significant increase in the perceived inflation compared to the actual inflation. Should we also expect the same

Mojmir Helisek
University of Finance and Administration
Czech Republic

Roman Mentlik
University of Finance and Administration
Czech Republic

[1]Data apply to 2012; the euro area average relates to 17 countries.

development following the euro introduction in the Czech Republic? Consequently, another objective of the paper is to analyze the existing correlation of the observed and perceived inflation in the Czech economy and in the economy of the euro area.

The first part of the paper refers to key literature in this area. It is followed by the description of methods used. The third part of the paper comprises an evaluation of the measurement results and the discussion thereof. The conclusion summarizes the key findings.

II. Literature

The paper relies on the conventional definition of the economic convergence criteria of monetary union countries, specifically Baldwin, Wyplosz *Economics of European Integration* [1] and De Grauwe *Economics of Monetary Union* [4]. Various findings about monetary integration were also taken from Krugman, Obstfeld *International Economics* [7].

The preparedness of the Czech economy for the euro introduction is assessed, on an annual basis, in the joint study of the Czech National Bank and the Ministry of Finance of the Czech Republic *Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area* [8]. Detailed assessment of both nominal and real convergence is included in the annual *Analyses of the Czech Republic's Current Economic Alignment with the Euro Area* [2].

Inflation effects of the euro introduction, including the perceived inflation paradox, are discussed by, for example, Dedek in *Time of the Euro. Successes and Failures of the Common European Currency* [3]. *Measured Inflation and Inflation Perceptions in the Euro Area* [5] is an important study of the European Central Bank that addresses the perceived inflation following the euro introduction.

III. Methods

The common, traditional method for expressing the price level convergence of a new (potential) monetary union member is the comparison of its price level with the average price level of existing monetary union members. We proceed differently, as we compare the price level of an acceding country to the price levels of the main business partners of such country (i.e. Czech Republic) that are also members of the euro area.

We rationalize such approach by the fact that the alignment of price levels mainly takes place by comparing the prices of products (i.e. goods and services) traded between such acceding economy and its main business partners from the existing monetary union. However, the average indicator of the monetary union price level does not take into account the weight of business relations with specific business partners. To illustrate, let us mention the *Analyses of the Czech Republic's Current Economic Alignment* [2, p. 27] that state that the Czech price level "lagging well behind not only Austria and Germany, but also, to a lesser extent, Portugal and Slovenia".The latter two countries are being compared to the Czech Republic due to similar economic level. However, the share of these two countries in the Czech foreign trade only amounts to 0.5% and 0.8%, respectively.[2]

In order to determine the main business partners, we used the ratio of the foreign trade turnover with the given country to the total foreign trade turnover with the euro area. The foreign trade turnover represents the sum of export of goods and services and import of goods and services, always expressed in the national currency – i.e. in CZK. The shares of individual partners are then used using the total foreign trade turnover with the main business partners. Such shares are used as the weights for the subsequent determination of price level deviations of the country under review (i.e. Czech Republic) from the price level of its main business partners.

IV. Measurements and discussion

A. *Foreign trade*

The foreign trade data have been taken from the statistics of the Czech National Bank (balance of payments statistics). The main business partners in terms of the foreign trade of the Czech Republic with euro area countries are Germany, Slovakia and Austria, as shown in Tab. I.

TABLE I. FOREIGN TRADE OF THE CZECH REPUBLIC (2013)

Country / Exp. + Imp.	Euro area	Germany		Slovakia		Austria	
	bn CZK	bn CZK	%	bn CZK	%	bn CZK	%
Goods	2 951.0	1 468.4	49.8	418.0	14.2	209.1	7.1
Services	464.6	182.1	39.2	78.4	16.9	37.4	8.0
Total	3 415.6	1 659.4	48.3	496.1	14.5	246.5	7.2

Source: Czech National Bank (Balance of Payments Statistics). Own calculations.

We believe the share (i.e. 70.0%) of these three countries is sufficient in terms of further analyses. In

[2]In 2013, the Czech price level showed the highest deviation from the price level of Luxembourg (-42.7%) and Finland (-42.8%); with regard to nonmember states of the euro area, the highest price level deviation was recorded in respect of Denmark (-49.4%).

International Journal of Business and Management Study – IJBMS
Volume 2 : Issue 1 [ISSN : 2372-3955]
Publication Date: 30 April, 2015

our view, individual shares of the remaining 14 countries are insignificant.[3]

The shares of these three countries in the total trade of the Czech Republic are as follows:

- With Germany: 69.0%;
- With Slovakia: 20.7%;
- With Austria: 10.3%.

B. *Price levels*

The price level data have been taken from the statistics of Eurostat that show the price levels as the prices of final consumption by private households including indirect taxes. The comparative price levels constructed from them represent the ratio between the purchasing power parities and the market exchange rate for each respective country.

Tab. IIcontains data on the relations between individual price levels:

- Czech and German (Czech price level is lower by 30.4%);
- Czech and Slovak (price levels were exactly identical in the year under review);
- Czech and Austrian (Czech price level is lower by 34.0%);
- Deviation of the Czech price level from the average price level of the euro area (17members).

TABLE II. DEVIATIONS OF THE CZECH PRICE LEVEL, 2013 (IN %)

From the German price level	-30.4
From the Slovak price level	0.0
From the Austrian price level	-34.0
From the euro area average (17)	-31.3

Source: Eurostat (Comparative price levels). Own calculations.

Table IIIshows similar data, multiplied by the weight, determined as the share of the three countries in the Czech foreign trade with such countries, and the total deviation (sum).

TABLE III. WEIGHTED DEVIATIONS OF THE CZECH PRICE LEVEL, 2013 (IN %)

From the German price level	-21.0
From the Slovak price level	0.0
From the Austrian price level	-3.5
Total weighted deviation	-24.5

Source: Eurostat (Comparative price levels). Own calculations.

The data in Tab. II and Tab. IIIsuggest that the weighted deviation identified using the new method (-24.5%) is **6.8 pp lower** than the deviation expressed by means of the traditional method (-31.3%).

[3]Other important business partners of the Czech Republic outside of the euro area countries are Poland and Great Britain (EU countries) and China and Russia (outside of the EU).

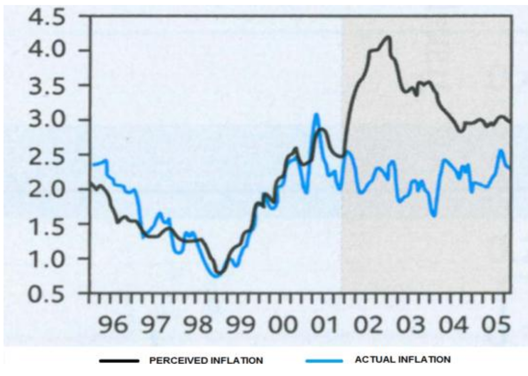
C. *Actual vs. perceived inflation*

While the actual inflation represents a measured result of the investigation relating to the price movement within a specific territory,the perceived inflation illustrates the sentiments of randomly selected consumers with regard to past price developments. Therefore, the actual inflation captures the actual price level development; the perceived inflation only shows the result of the subjective perception of the population[9, p. 23]. The term "perceived inflation" was mainly used in large euro area countries – i.e. Germany, Italy, and France – at the time of their transition to the euro.

At the moment of transition to the euro, there is no nonrecurring change in the market competition, purchasing power, production costs, market shares of individual entities, or any other fundamental economic factor. It is solely associated with the conversion and rounding based on predetermined rules. Surveys performed in the euro area countries suggest that the nonrecurring impact of the transition to the cash euro on inflation varies from 0.12 to 0.29 pp[5, p. 68]; or around 0.5 pp [1, p. 454]. On the other hand, the perceived inflation has increased in most existing euro area countries following the single currency introduction, mainly for goods of daily use compared to less frequently purchased goods [10, p. 4].

This may mainly be explained by the rounding up of new prices in euros in case of inexpensive goods, frequently purchased by households. Everyday purchases affect the inflation perception more than occasional purchases of goods, the prices of which only changed slightly or did not change at all.

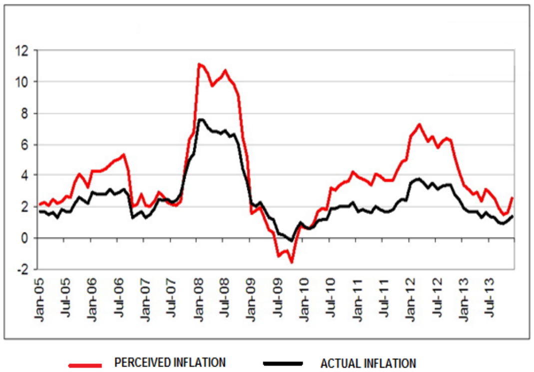
Let us compare the differences between the actual and perceived inflation for the euro area countries prior to the euro adoption (cash form) with analogical differences in the Czech Republic (Fig. 1 and Fig. 2).



Note: Actual inflation is measured by the Harmonized Index of Consumer Prices (HICP).Source: [1, p. 454]

Figure 1. Actual and perceived inflation in the euro area countries

In the case of the euro area inflation perceptions have been just about the actual inflation.



Note: Actual inflation is measured by the Consumer Price Index (CPI).Source: UniCredit Bank, Czech Statistical Office

Figure 2. Actual and perceived inflation in the Czech Republic

With the exception of two extreme fluctuations (in 2008 and 2012) was also similar development in the Czech Republic.

After the introduction of the euro in cash in 2002 was a significant one-way increase of perceived inflation over actual inflation (about 2 pp).

Using the similar development of differences between the actual and perceived inflation *prior* to the euro adoption, we may also substantiate the expectation of similar development of such difference *after* the euro adoption in the Czech Republic as well.

V. Conclusions

The replacement of national currency by the euro requires a sufficient nominal convergence to the euro area (the fulfillment of the Maastricht criteria) and sufficient real convergence. Among the indicators of real konvergence include especially the convergence of price levels.

According to the traditional price convergence indicator, the Czech price level was 31.3% below the average price level of the euro area in 2013. For comparison,theyearbefore the entryinto the euro area, i.e.in 2008, the price levelin theSlovakRepublic was 32.3% below the average price levelof the euro area.

The objective of this paper is to construct a new, more cogent indicator – specifically a weighted price level deviation for an acceding country (Czech Republic)from the price levels of its main business partners. According to this indicator, the Czech price level is lower by 24.5%. The difference is not too distinct – mere 6.8 pp; however, it shows better preparedness for the euro area accession compared to the traditional indicator.

The existing development of the Czech actual and perceived inflation suggests that we should expect significant increase in the perceived inflation above the actual inflation after the adoption of the euro. The central economic authorities should take this fact into account in the preparation for the euro adoption.

Acknowledgment

This paper is one of the outputs of the research projects "Introduction of the euro in the Czech Republic – progress in preparations or change of obligation?", funded as part of a specific university research at the University of Finance and Administration in 2014.

References

[1] Baldwin, R., Wyplosz, C., 2012. *Economics of European Integration*. Fourth Editon. London, McGraw-Hill.

[2] Czech National Bank, 2013. *Analyses of the Czech Republic's Current Economic Alignment with the Euro Area*. http://www.cnb.cz/miranda2/export/sites/www.cnb.cz/en/monetary_policy/strategic_documents/download/analyses_of_alignment_2013.pdf [1.2.2014]

[3] Dedek, O., 2014. *Doba eura. Uspechy i nezdary spolecne evropske meny* [*Time of the Euro. Successes and Failures of the Common European Currency*. In Czech only]. Linde, Praha.

[4] De Grauwe, P., 2007. *Economics of Monetary Union*. Seventh Edition. Oxford, Oxford University Press.

[5] European Central Bank, 2007. *Measured Inflation and Inflation Perceptions in the Euro Area.* In: Monthly Bulletin, May 2007.

[6] European Commission, 2009. *The Euro and Prices: Changeover-related Inflation and Price Convergence in the Euro Area.* Economic Papers 381, June 2009. http://ec.europa.eu/economy_finance/publications/publication15287_en.pdf [14.2.2014]

[7] Krugman, P., Obstfeld, M., 2006. *International Economics. Theory and Policy*. Seventh Edition. Boston, Addison Wesley.

[8] Ministry of Finance of the Czech Republic and the Czech National Bank, 2013. *Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area*.

http://www.zavedenieura.cz/en/documents/fulfilment-of-maastricht-criteria [1.2.2014]

[9] Smrckova, G., 2010. *Vnimana inflace - novy fenomen po zavedeni eura v hotovostni podobe.* Disertacni prace [Perceived inflation – new phenomenon after euro introduction in cash form. Doctoral thesis. In Czech only]. https://www.email.cz/download/i/BrDi25Mec_Fv4fMsVx4IfVSYahkv44ibMPTAwefYpTfYSGGk34bTS5jPYlGkW27dged6aY0/G%20Smrckova%20disertace.pdf [1.2.2014]

[10] Stix, H., 2007. *Perceived Inflation and the Euro – Why High? Why Peristent?* http://www.econ.jku.at/members/Department/files/ResearchSeminar/stix-oct2007.pdf [14.2.2014]

Internet resources

[1] Czech National Bank: Balance of payments statistics. http://www.cnb.cz/cs/statistika/platebni_bilance_stat/publikace_pb/bezny_ucet_pb_tc/ [14.7.2014]
[2] Czech Statistical Office: Inflation. http://www.czso.cz/csu/redakce.nsf/i/mira_inflace [14.7.2014]
[3] Eurostat: Comparative price levels http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00120 [14.7.2014]
[4] UniCredit Bank: Index vnimane inflace [Index of perceived inflation] http://www.unicreditbank.cz/web/o-bance/tiskove-centrum/analyzy/komentar-patrika-rozumberskeho-k-indexu-vnimane-inflace [14.7.2014]

About Authors:

Mojmir Helisek is an Associate Professor at Faculty of Economic Studies, University of Finance and Administration, Prague, Czech Republic. His research interests are European integration, international finance (currency crises) and macroeconomics.

Roman Mentlik is currently a PhD student at Faculty of Economic Studies, University of Finance and Administration, Prague, Czech Republic. He prepares doctoral thesis on “Prospects for the introduction ofthe euro in the Czech Republic”.