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## The Efficiency of the Currency Board Arrangement

**Abstract:** The currency board arrangement has a relatively long history and it originated in the British colonies. In the period after the World War II, the interest in this arrangement died down, but it was revived with the initiation of the transition process in Eastern Europe, when the number of countries in this arrangement increased. The currency board arrangement has an influence on fast disinflation, but there is a dilemma about its performance in relatively stable conditions. The purpose of this paper is to make the comparison of selected performance (inflation and the current account deficit) of countries under the currency board arrangement with countries using other exchange rate arrangements, relying on the example of European economies in transition.

This paper confirms assumptions of the theory that countries under the floating exchange rate arrangement have the lowest current account deficits (measured as a percentage of GDP), while the countries under the currency board arrangement have significantly higher deficits. Contrary to expectations, it turned out that the rate of inflation is lower in countries under the floating exchange rate arrangement when compared to other countries under the currency board arrangement, which indicates a lower efficiency of this arrangement in a stable environment.

**Key words:** the currency board, inflation, the current account deficit.

**Jel code:** F31 and F32

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## 1. Introduction

Currency board is an institution which issues domestic currency with the full coverage of foreign currency (monetary gold and securities) based in fixed exchange rate (Dimtrijević and Fabris, 2010). It is based on a practical metalism theory and its goal is to increase the credibility of monetary reform, especially in underdeveloped monetary systems or after hyperinflation.

Currency board is usually introduced in small, highly open countries<sup>1</sup>, whose economies have faced macroeconomic instability in recent past. The key quality of currency board is that it guarantees the convertibility of local currency, price and monetary stability, while promoting foreign trade with convertible foreign exchange areas. (Bogetić, 1997) In addition to that quality, the strengthening of fiscal discipline and the inability to monetize the budget deficit is also attributed to the currency board. In fact, strict prohibition of lending to government imposes the policy of a balanced budget on the fiscal authorities.

Currency boards are, by definition, passive monetary institutions whose operating is primarily based on automatism, unlike the standard central banks that have a large dose of discretion. This nature of currency board gives rise to different reactions of experts. While some authors consider this feature the main advantage of currency board (Hanke and Schuler, 1994, Bogetic 1997), other authors, however, consider the inability of conducting an active monetary policy as the main disadvantage of a currency board and the reason for its cancelling (Roubini, 1998). According to them, the passive role of currency board leaves the economy at the mercy of market whims. If there is a reduction in money supply caused by, for example, a growing trade deficit, the contraction of economic cycle and job losses appear. In this case, there is no way for a decline of reserves in the banking system to be compensated by issuing of money by a central bank to banks and the economy. Table 1 shows the differences between the basic characteristics of an orthodox<sup>2</sup> currency board system in relation to the central bank.

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<sup>1</sup> The exception is Argentina which already had a currency board between 1991 and 2001.

<sup>2</sup> In orthodox currency board systems, there is no way to conduct an independent monetary policy, i.e. institutions whose sole purpose is to change money on demand at a fixed exchange rate and to hold at least 100% of reserves of foreign assets relative to the money in circulation, are very rarely seen today. Most of nowadays currency boards have a greater or a lesser degree of freedom in the use of certain monetary policy instruments (currency board alike).

**Table 1: A typical currency board versus a typical central bank**

	CURRENCY BOARD	CENTRAL BANK
1.	Usually supplies notes and coins only	Supplies notes, coins, and deposits
2.	Fixed exchange rate with reserve currency	Pegged or floating exchange rate
3.	Foreign reserves of 100 percent	Variable foreign reserves
4.	Full convertibility	Limited convertibility
5.	Rule-bound monetary policy	Discretionary monetary policy
6.	Not a lender of last resort	Lender of last resort
7.	Does not regulate commercial banks	Often regulates commercial banks
8.	Transparent	Opaque
9.	Protected from political pressure	Politicized
10.	High credibility	Low credibility
11.	Earns seigniorage only from interest	Earns seigniorage from interest and inflation
12.	Cannot create inflation	Can create inflation
13.	Cannot finance spending by domestic government	Can finance spending by domestic government
14.	Requires no "preconditions" for monetary reform	Requires "preconditions" for monetary reform
15.	Rapid monetary reform	Slow monetary reform
16.	Small staff	Large staff

Source: Hanke and Schuler (1994)

After detailed examination of Table 1, it is evident that orthodox currency board system is a theoretical concept rather than an active monetary institution. Nowadays, we are more concerned with a partial currency board (*currency board alike*). Hanke and Schuler here imply a currency board that retains a greater or a lesser number of monetary policy instruments.<sup>3</sup>

The second part of the paper analyzes the history of currency board, with particular emphasis on European economies in transition, and makes a comparison of actual performance in the period before the introduction of the currency board and in a certain number of years after the introduction of the currency board. The third section analyzes the efficiency of the currency board in relatively stable conditions, and compares the past five-year movement of inflation and current account deficit in countries that use the currency board arrangement with that in other countries.

<sup>3</sup> Thus, for example, Bosnia and Herzegovina has the ability to impose mandatory reserve to commercial banks, while other currency boards in Europe have the function of lender of last resort, however, they are limited to the amount of surplus of the reserve currency.

## 2. The Currency Board History

The currency board is not a new concept. In international practice, it first appeared in 1849 in the island of Mauritius. However, the theoretical basis for the creation of currency board can be traced in the so-called *Currency School* that dominated in the UK in the first half of the nineteenth century. (Schuller, 1992) In fact, we can say that currency boards draw their intellectual roots from the concept of the gold standard. British currency economists that were gathered around the Currency School advocated that excessive printing of money is the main cause of inflation. Consequently, they believed that the issuer of money should keep the equivalent amount of gold that should serve as the regulator of the money supply in the market. As a result of impact of the currency school, in 1844, the Bank of England gained a formal monopoly on printing money and the obligation of holding gold reserves which correspond to the amount of money in circulation. The golden base of a pound provided the stability basis for the next ninety years<sup>4</sup> because the government faced an obstacle of printing additional quantities of money that had no foundation in gold.

If we observe the history of the currency board, we can notice three characteristic periods. The first period lasted for a hundred years (mid-19th – mid-20th century). During this period, currency board became an extremely popular way of conducting monetary policy. During the previously mentioned period, some countries - mostly British colonies - tied their currencies to the pound, focusing on different goals.<sup>5</sup> The first truly orthodox currency board was created in 1913 in Western Africa as the West African Currency Board. There were two motives for its establishment; there was a desire for stability while simultaneously achieving currency seigniorage, which in the currency board represents the difference between the interest on the reserve currency and the costs of the release of domestic currency (Schuler, 1992). After that, many British territories decided to establish currency boards, such as the Eastern African currency board, the Central African currency board, the Middle East currency boards in Palestine, Jordan, Iraq, and so on. Currency boards were thriving during the period after World War II and remained popular until the 1950s.

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<sup>4</sup> Up to 1913 and the abandonment of the golden standard.

<sup>5</sup> Thus, for example, Mauritius introduced a currency board in 1849 as a response to the collapse of banks, while in the following year New Zealand, with the introduction of the currency board, intended to use the so-called Currency School doctrine postulates, which advocated the government monopoly on issuing money as opposed to the prevailing Free Banking doctrine at the time.

In the period from 1950s to early 1990s, the interest in monetary arrangements considerably diminished. The reasons for the disappearance of currency boards<sup>6</sup> were manifold, but they can be summarized as follows (Schuler, 1992):

- Keynesian doctrine of the time emphasized the positive role of government in creating economic trends during which the creation of a central bank was set as the priority;
- Given the fact that currency boards were usually established on territories under a direct or an indirect dominance of the United Kingdom, the desire for an independent central bank imposed as one of the key aspects of the newly acquired independence and the separation from the colonial past;
- During the validity of the Bretton Woods fixed exchange rate system, the British pound proved to be quite unstable<sup>7</sup>, and thus the currency boards that were tied to the pound<sup>8</sup> lost their credibility and gave the reason for the government to abandon them in favour of central bank.

The third period or, as it is called, the renaissance of the CBA institution (Bogetic, 1997) appeared in early 1990s. During this period, Argentina (1991-2001), Estonia (1992), Lithuania (1994), Bulgaria (1997) and Bosnia and Herzegovina (1997) adopted currency boards. The next section will further describe the creation and operation of currency boards in Estonia, Lithuania, Bulgaria and Bosnia and Herzegovina.

## 2.1. The history of currency boards in European economies in transition<sup>9</sup>

This section will show the emergence of currency boards in Estonia, Lithuania, Bulgaria and Bosnia and Herzegovina. It will explain the reasons for their introduction and show the achieved results in terms of GDP growth and inflation curbing in the period after their introduction. As a source of data we used the 2007 World Economic Outlook Database.

**Estonia** was the first country in the former Soviet Union to introduce its own currency and the first European country which decided to introduce the cur-

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<sup>6</sup> During this period, currency boards were kept only in a small number of island countries like Singapore, Hong Kong and the Falkland Islands.

<sup>7</sup> In the period from 1940 to 1967, the British pound was devalued several times and, from the initial level of \$4.03 it got to the level of \$ 2.40 for a British pound.

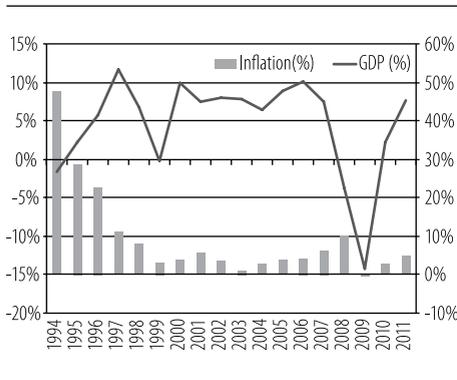
<sup>8</sup> A large percentage of currency boards used the pound as their reserve currency.

<sup>9</sup> In this chapter, the subject of observation is macroeconomic variables before the introduction of the currency board and a few years after their introduction.

rency board in the second half of the twentieth century.<sup>10</sup> The reasons for this were numerous: the elimination of inflationary pressures that have emerged due to the liberalization of prices after the transition to a market economy, establishment of a macroeconomic supply and demand balance and, eventually, solving the problem of chronic shortages of cash. (Vensel, Sorg, 2002)

After gaining independence in 1991, Estonia was determined to carry out a rapid monetary reform. This decision was further encouraged by a very bad situation that was caused by the loss of the main part of the CIS export market.<sup>11</sup> Despite

**Figure 1: GDP and Inflation in Estonia (1994-2006)**



Note: Inflation right-hand scale; GDP left-hand scale.

Source: Authors' calculation based on the World Economic Outlook data

conflicting opinions about the ways the monetary reform is implemented<sup>12</sup>, the newly elected Governor Kallas was able to impose a currency board arrangement, with the help of representatives of the IMF, which would in the shortest possible time provide a much-needed monetary stability as a necessary requirement for future reforms. (Knobl, Sutt, Zavoico, 2002)

How important it was to establish control over the rising inflation caused by price liberalization after the establishment of independence, can best be seen at Figure 1 which shows a continuous decline in inflation after the introduction of the currency board.<sup>13</sup>

<sup>10</sup> In Europe, currency boards have existed before the Second World War. In 1918/19, during the struggle of the Bolsheviks and the imperial supporters, and according to the recommendation of John Maynard Keynes, the currency board was introduced in North Russia and provided stability of the currency at the time of the greatest turmoil and enormous inflation of the Rouble in the rest of the Russia. Also, in 1923, a currency board was introduced in the free city of Danzig, which maintained stability of the currency even though the highest hyperinflation in the history raged in the neighbouring Germany. For more information, see (Schuler, 1992)

<sup>11</sup> Over 90% of sales in 1991 were conducted with the Commonwealth of Independent States.

<sup>12</sup> One of the ideas which the Estonian government came up with immediately after gaining independence was the introduction of vouchers, which would have equal value to the Rouble and increase the amount of money in circulation, and also avoid - at least at that moment - the question of determining the exchange rate arrangement.

<sup>13</sup> In truth, it should be recognized that the level of inflation - annually - was in double digits until 1998 (1994 - 47.6%, 1995 - 29%, 1996 - 23% 1997 - 11.1% 1998 - 8.2%). Source: CIA World Factbook

Disinflation was the cornerstone for the future growth of the economy. Despite the two crises in Estonia during the 1990s<sup>14</sup>, it can be noticed that Estonia achieved high growth rates during the years before the outbreak of the global financial crisis.<sup>15</sup>

However, it is important to note that the currency board arrangement - in and of itself - cannot provide the basis for such growth if many other conditions have not been met. As far as Estonia is concerned, these conditions represent the maximum commitment to maintaining a balanced budget, the closing of insolvent banks, and an ongoing commitment to maintaining the currency board regardless of the crises that have occurred periodically.<sup>16</sup>

The currency board in **Lithuania** was established on 1 April 1994 as a result of a compromise between the government and the Central Bank of Lithuania (Alonso-Gamma, et. al. 2002), which debated fiercely over the best way of stopping hyperinflation, as well as the stabilization of exchange rates. This debate resulted in a less rigid currency board system.<sup>17</sup>

The results of the introduction of a currency board - as in the case of Estonia - gave visible results within the first year of operation. Since the declared goals were to reduce inflation to an acceptable level and, consequently, the impact on inflation expectations, we can conclude that the CBA achieved excellent results. Inflation has halved in the first year, and subsequently took three more years to reach a single digit level.

Although the main objective - price stability - was achieved relatively quickly, the functioning of the CBA in Lithuania has not been free of obstacles. Besides the already mentioned unorthodox factors, the aggravating circumstance that was desecrating the spirit of the currency board was the permit to a commercial bank to withdraw the mandatory reserves in order to help the utilities sector financially, while the Lithuanian government was borrowing from abroad on the collateral basis in the form of foreign exchange reserves (Antic, 2008). In addition, the fis-

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<sup>14</sup> The crisis of the banking sector at end-1992 and the 1999 crisis caused by the Russian crisis and the devaluation of the Rouble

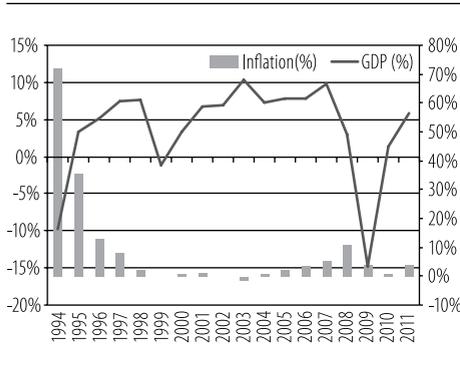
<sup>15</sup> In the period from 1994 to 2007, the Estonian real GDP rose to 144% (Source: the authors' calculations based on data from CIA World Factbook, 2010)

<sup>16</sup> The Russian crisis which had led to a decline in GDP in 1999 of 5.1% and the global financial crisis that caused a decline in real GDP of 13.9% from 2008 to 2009.

<sup>17</sup> The central bank was able to perform the function of the lender of last resort (limited to the amount exceeding 100% of foreign exchange reserves) and the function of money market operations in order to control liquidity of the financial system of the country.

cal deficit - in contrast to Estonia - was unacceptably high. Indeed, leaving the currency board appeared as an idea at one point, but in light of the Great Russian

**Figure 2: GDP and inflation in Lithuania (1994-2001)**



Note: Inflation right-hand scale; GDP left-hand scale.

Source: Authors' calculation based on the World Economic Outlook data

crisis in 1998, which did not pass by Lithuania, and the extreme instability in world markets, a decision was made to remain committed to the pursuit of the existing monetary policy.<sup>18</sup>

However, stability reached with the introduction of a currency board - despite all the problems named above - enabled a steady growth of the Lithuanian economy in the coming years.<sup>19</sup> Thus, it was proven that tackling the root of hyperinflation, which is usually the reason for the introduction of the CBA, contributes to the much-needed price stability of the country which, consequently, represents the necessary condition for the a smooth development of the economy in the future.

Prior to the introduction of their currency board systems, **Bulgaria** was in very bad shape. Bulgaria had defaulted on its international debt, narrowly escaped a revolution in late 1996, and was battling hyperinflation that had virtually wiped out its banking system and sent the real economy into a free fall (Hanke, 2007). The currency board was seen as a way to cope with constant financial instability that followed it since the beginning of transition to market economy, which escalated from 1996 to 1997 with the emergence of hyperinflation<sup>20</sup> and a drastic deterioration in the balance sheets of commercial banks.<sup>21</sup> The causes of these problems should be sought in the insufficiently fast or firm reforms and the paternalistic attitude that the government had over the economy. The reason for this

<sup>18</sup> In 1997, the Central Bank of Lithuania planned to leave the CBA since the primary objective - price stability - had already been achieved. However, the events in 1998 and a high exposure to shocks in the Lithuanian economy, convinced the officials that it is better to keep the CBA, at least as a nominal anchor, and to look for the solution out of the crisis on the other side, through fiscal adjustments.

<sup>19</sup> Apart from the fall in 1998 caused by the crisis in Russia;

<sup>20</sup> The inflation escalated from 1,71% monthly in March 1996 to 242% monthly in February 1997.

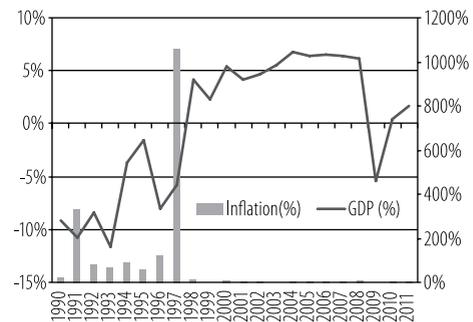
<sup>21</sup> At the beginning of 1997, nine of ten Bulgarian banks with more than 80% share in total assets, had a negative net worth. Even more than half of private banks went bankrupt.

is that the substantive policy change did not happen until 1997 (Pavlov, 1999). In fact, losses in the corporate sector caused by the collapse of the USSR<sup>22</sup> were mainly compensated by loans to the economy implemented by the state through commercial banks and the consequential deterioration of balance sheets of the banking sector and the growth of inflation. The BNB tried to solve the problem of inflation by increasing interest rates, but it achieved a negative effect as the cost of borrowing increased.<sup>23</sup> On the contrary, also in 1996, the tax revenues have declined from 40% of GDP to only 14%, while real GDP fell by more than 10% and further aggravated the already alarming situation. As a result of all these problems, people lost confidence in the national currency Lev, which was significantly depreciated during Q1 1997, from 487 Lev to 1,588 Lev for 1 US dollar (Gulde, 1999).

All these issues simply imposed the awareness that a new solution must be sought within a stable, transparent and - if possible - the rule-based system such as a currency board, which will as soon as possible make the shift from the recent past and introduce financial discipline and stability to the country. Maybe the hyperinflation itself contributed to the parliamentary consensus on the introduction of the CBA in Bulgaria as one of the basic requirements for the introduction of the monetary arrangement. An additional factor that led to the currency board choice was the failure of previous stabilization programs that had not given any results.

Bulgaria - as well as Estonia and Lithuania - was not without a result. If we observe the rate of inflation before and after the introduction of a currency board (Figure 3), we can see immediate results which brought back inflation to single-digit values after just two years.

**Figure 3: GDP growth and Inflation in Bulgaria (1990-2006)**



Note: Inflation right-hand scale; GDP left-hand scale

Source: Authors' calculation based on the World Economic Outlook data

<sup>22</sup> Over 80% of Bulgarian exports went to the USSR.

<sup>23</sup> As an illustration of the growing costs of government borrowing is the fact that Bulgaria in 1996 paid 10.1% of the GDP for the cost of servicing interest on the government debt.

Besides curbing inflation and the growth rate of real GDP, there was a sharp drop in interest rates on government bonds, which brought a huge relief to government spending and a better reallocation of state resources.<sup>24</sup>

The essence of a successful disinflation in Bulgaria is the fact that the two main hyperinflationary channels were intercepted – the BNB loans to the government and commercial banks. Thus, the state was prevented from wasteful behaviour and the BNB imposed a strict discipline to banks that must result in the curtailment of hyperinflation.

The inflation rate - it is interesting to mention - declined substantially in April 1997, i.e. two months before the official introduction of the CBA.<sup>25</sup> The reason for this may be the double impact that the currency board has in reducing hyperinflation – using the effect of discipline, which is reflected in limiting the growth of money supply, and the effect of trust, which influences inflationary expectations that are built in the expected rate of return after the announced establishment of the CBA (Beck et. Al, 2003).

**Bosnia and Herzegovina** – in addition to other challenges that Estonia, Lithuania and Bulgaria were facing – Bosnia and Herzegovina (BH) had the additional problem of a war devastated economy and complicated political-economic system with two entities and *de facto* four currencies in circulation.<sup>26</sup> As such, it was facing the next challenges (Kovacevic, 2003):

- The transition from a war to a peacetime economy,
- The transition from planned to market economy and
- The transition from the status of the former Yugoslav republic to an independent state.

Establishing a currency board was built into the Dayton Peace Agreement from 1995. Operationalization itself lasted longer than in other states due to the specific political situation in BH, causing the currency board to start on 11 August 1997. If one bears in mind the political scene of the country at the end of the war, a great division of the society and the existence of actual states in the country, the

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<sup>24</sup> In March 1997, the interest rate on treasury bonds reached the level of 600% per annum, and after a parliamentary consensus on the introduction of CBA, it fell to 100%, and only few weeks after the official start of operation of the CBA, it fell to 6% per annum. (For more, see Bogetic, 1997)

<sup>25</sup> The currency board was officially introduced on 1 July 1997.

<sup>26</sup> Yugoslav Dinar, Croatian Kuna, Bosnian Dinar and German Mark.

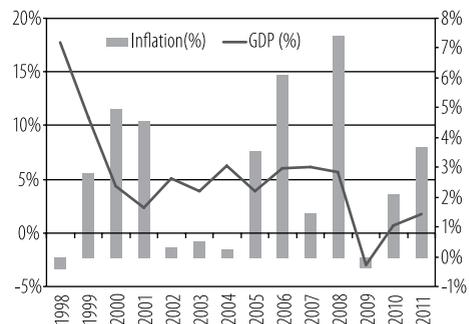
existence of four currencies in circulation, it can be easily concluded that alternatives to the currency board, in fact, never existed.

It is important to note that the currency board in Bosnia and Herzegovina is the closest to its orthodox concept. The only difference lies in the fact that the CBA in BH can affect the rate of mandatory reserves. Probable reason for this additional conservatism in relation to the above mentioned examples is the specific political situation in the time when the CBA was being created in Bosnia and Herzegovina.

Calculating the precise macroeconomic results for the immediate post-war period for the entire territory of BH is problematic because the available data for the period from 1995 to 1997 refer only to the Federation of BH.<sup>27</sup> For this reason, the data for this period are unreliable and we use data from the time a currency board was introduced, i.e. from 1997. They can be shown in the following figure. The currency board, as shown in previous examples, demonstrated effectiveness in curbing inflation since the introduction of the CBA, inflation ranged up to 6%, and usually below 3% per annum.<sup>28</sup>

Looking at these examples of countries that introduced a currency board in the early 1990s we can note significant anti-inflation effects, without any exception: hyperinflation disappears in the first years after the establishment of a currency board and is retained at low levels thereafter. Obviously, the reason for the strong decline of inflation may be primarily due to the credibility that the currency board established. In terms of gross domestic product, we can see a general trend of growth, which varies from country to country, depending on the political stability and the commitment to economic reforms and a healthy macroeconomic environ-

**Figure 4. GDP and Inflation in Bosnia and Herzegovina (1998-2006)**



Note: Inflation right-hand scale; GDP left-hand scale

Source: Authors' calculation based on the World Economic Outlook data

<sup>27</sup> From 1995 to 1997, the National Bank of Bosnia and Herzegovina (it refers only to the BH Federation) operated on a system called the pseudo currency board, where one DM could be exchanged for 100 BH dinars.

<sup>28</sup> It is important to mention that a part of BH, the Republic of Srpska, suffered a hyperinflation in the period from 1992 to 1994 because it was using the Yugoslavian dinar.

ment. Or to quote Karl Schiller<sup>29</sup>, “Stability is not everything, but without stability, everything is nothing.”

### 3. Empirical Study of the Impact of the Exchange Rate Arrangement on Inflation and the Current Account Deficit

In this section, the research topic is the comparison of the current account deficit (expressed as % of GDP) and inflation in countries under the currency board arrangement with the countries under other exchange rate arrangements. The authors observed the movement of an isolated current account deficit and inflation in relation to the exchange rate arrangement. This is a simplification, but it is not uncommon in literature.<sup>30</sup> Given a relatively long time period during which this arrangement is being applied to European economies in transition, this part of the paper gives the answer to the question about the effectiveness of this arrangement in relatively stable conditions.<sup>31</sup>

European economies in transition are subject to observation, and the classification of exchange rate arrangements, which is taken from the International Monetary Fund, is shown in the table 2.

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<sup>29</sup> West German Minister of Economy (1966-1972).

<sup>30</sup> For more details see: Kuttner, Kenneth and Adam Posen (2001) "Beyond Bipolar: A Three-Dimensional Assessment of Monetary Frameworks," Working Papers 52, Oesterreichische Nationalbank.

<sup>31</sup> Beyond the fact that this region faced the effects of the global financial crisis, the authors use assumption that it was a stable period due to the fact that observed variables inflation and current account deficit had a declining trend.

**Table 2: Classification of countries by exchange rate arrangement**

Country	Exchange rate arrangement
Bosnia and Herzegovina	Currency board
Bulgaria	Currency board
Estonia	Currency board
Lithuania	Currency board
Croatia	Fixed exchange rate
Latvia	Fixed exchange rate
Macedonia	Fixed exchange rate
Ukraine	Managed float
Georgia	Managed float
Moldova	Managed float
Romania	Managed float
Serbia	Managed float
Albania	Free floating
Czech Republic	Free floating
Hungary	Free floating
Poland	Free floating

Source of data: IMF (2010), *Annual Report on Exchange Arrangements and Exchange Restrictions*, Washington.

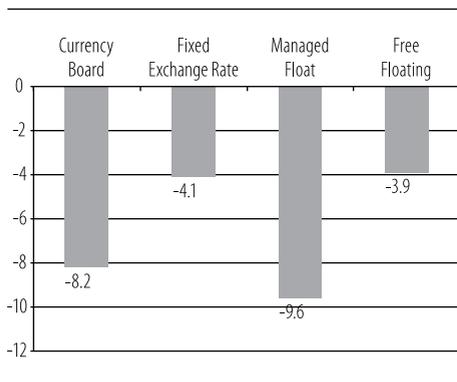
### 3.1. The impact of the currency board arrangement on the current account deficit

Classical economic theory assumes that the advantage of the free floating exchange rate arrangement is the fact that it provides a balanced balance of payments. Namely, if there is a current account deficit, it will impact the growth of demand for foreign currency, which will lead to the weakening of the national currency, which will further lead to the price increase of imported goods denominated in local currency. Expensive imports lead to the reduction of imports, leading to a gradual current account balance. At the same time, domestic products denominated in foreign currencies become cheaper, which stimulates the growth of exports.

Fixed exchange rate arrangements (currency board being the most rigid form) lead to overestimation of national currencies over time, which could stimulate imports and discourage exports. Therefore, based on theoretical assumptions, it will be reasonable to expect that countries in the currency board arrangement

will have a higher external current account deficit (expressed as % of GDP) compared to countries with the free floating exchange rate arrangement in place.<sup>32</sup> Namely, in the CBA, the exchange rate is a not variable that the state can use in order to depreciate undesirable developments in the balance of payments, therefore, the appearance of the current account deficit is imminent in this monetary arrangement (Galic, 2008). On the basis of empirical observations of the countries under the currency board arrangement, Schuller (1992) came to the conclusion that many currency board systems have experienced simultaneous deficits in the current account and growth in the supply of money and that there has been no obvious link between the two. The ECB (2006), analyzing the external current account deficit on the example of the economies in transition, came to the conclusion that the largest current account deficits were in countries under the currency board arrangement. Mehl and Winkler (2003) came to the same conclusion when European economies in transition are concerned, stating that “the current account in the four countries is characterized by relatively high deficits, mainly reflecting sizeable capital inflows and, in the case of Bosnia and Herzegovina, foreign aid flows.”

**Figure 5: Current account deficit in % of GDP (2006 – 2010, average)**



Source: Authors' calculation

In order to confirm or challenge this hypothesis, we are looking at the average amount of the current account deficit in the past five years in selected economies in transition relative to their exchange rate arrangement. As a source of data we used the 2011 World Economic Outlook Database.<sup>33</sup> The results are shown in the figure 5.

Empirical data have confirmed the findings of the theory, and it turned out that countries in the fluctuating exchange rate arrangement have the lowest current account deficits (as % of GDP). Countries under the currency

<sup>32</sup> Unfortunately, the studies of the links between the external current account deficit and a currency board are left out in literature so the resources that can be cited are very scarce.

<sup>33</sup> The authors are aware that this type of analysis is rather simplified because it shows only the impact of the exchange rate arrangement on the external current account deficit and the other factors that may affect the balance of payment trends are ignored. However, we believe that in the case of a large number of countries, the impact of these factors is diminished.

board arrangement have the deficits twice as big; a somewhat unexpected result is that countries under the fixed exchange rate arrangement have slightly worse current account deficits when compared to countries under the free float arrangement. The worst result was achieved in the group of countries under the managed float arrangement.

### **3.2. The impact of the currency board on inflation**

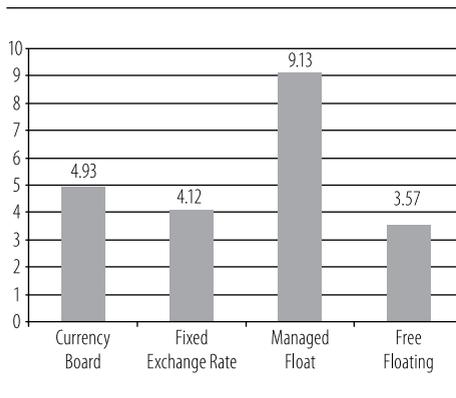
If we start from the postulates of economic theory, we can expect the countries under the currency board arrangement and with the fixed exchange rate will have a lower inflation rate. Specifically, that is when an exchange rate plays the role of a nominal anchor, which, when controlled and fixed, provides high credibility of economic policy and low inflation (Dimitrijevic and Fabris, 2007). The argument is that there can be an inflationary bias when monetary policy is set with full discretion. A central bank that wants to fight inflation can commit more credibly by fixing the exchange rate. When workers and corporate managers have low expectations of inflation, they set their wages and prices accordingly. The result is that the country is able to attain a lower level of inflation for any given level of output.

Bearing in mind that the currency board is the most credible form of the exchange rate, in accordance with the postulates of economic theory, it should be expected that countries under this arrangement have the lowest rate of inflation. Such a conclusion was made by Ghosh, Gulde and Wolf (1998) who showed that countries in the currency board arrangement had 4 percentage points lower inflation than countries under other pegged exchange rate arrangements in the period from 1970 to 1996.

The theory results have also been confirmed by a number of other empirical studies. Observing the example of European economies in transition, Mehl and Winkler (2003) concluded that the currency boards in Bulgaria, Estonia, Lithuania and BH brought price stability. Tui and Kwan (2010), observing the example of Hong Kong, found that this arrangement reduced price volatility. Schuller (1992) concluded that inflation has generally been lower and GDP growth per capita higher under currency boards than under central banks. Ghosh et. al (2000) concluded that the currency board arrangements have been successful in providing credibility after a period of high inflation and quite successful in this respect. Posse and Kuttner (2001), after observing the exchange rate as the key variable in an isolated environment, came to the conclusion that countries which adopted

the currency board arrangement were more effective in lowering inflation than countries which adopted the fluctuating exchange rate arrangement.

**Figure 6: Annual rate of inflation (2006 – 2010, average)**



Source: Authors' calculation

However, the results are the opposite of what economic theory suggests (Figure 6). Namely, the lowest average inflation rates were registered in a group of countries under the floating exchange rate arrangement, while the worst results (as well as the movement of the current account deficit) were registered in a group of countries under the managed floating arrangement. Explanation of this result can be found in the fact that the exchange rate, as a nominal anchor, is very efficient in terms of hyperinflation or high inflation, while its efficiency is lower at lower rates of inflation. However, we should bear in mind other structural characteristics of countries that are in this arrangement.

#### 4. Summary and Conclusion

The currency board arrangement is usually introduced when the current monetary arrangement does not give satisfactory results, especially in the form of low credibility and high inflation. This arrangement, which has a long history, is applied now to four European economies in transition. This arrangement has proved very efficient when it comes to lowering high inflation. Therefore we can conclude that in the period of its introduction, this arrangement achieved good results in all four observed European transition economies.

Given the fact that the European economies in transition continued to apply this arrangement for many years after the lowering of inflation, there is a question of whether it is efficient in a relatively stable environment, that is, whether an “exit option” should be pursued.

The authors concluded that the application of this arrangement in the long run leads to overvaluation of national currencies and thus the current account deficit is almost twice as big as that of countries with the fluctuating exchange rate.

As for the inflation rate, it turned out that countries in this arrangement have almost 1.5 percentage point higher rate of inflation than countries under the floating exchange rate arrangement. One can therefore conclude that the currency board arrangement is less efficient in stable conditions.

The paper showed that countries under the managed float exchange rate arrangement had the worst performance compared to those who are not under the same arrangement.

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## Annex

**Table 3: Current account deficit, % of GDP (2006 – 2010)**

Country	2006	2007	2008	2009	2010
Bosnia and Herzegovina	-7.966	-10.716	-14.47	-6.865	-6.037
Bulgaria	-17.53	-30.245	-23.262	-9.97	-0.786
Estonia	15.332	-17.191	-9.734	4.529	3.565
Lithuania	-10.699	-14.56	-13.442	4.464	1.846
Croatia	-6.972	-7.555	-9.157	-5.548	-1.925
Latvia	22.49	-22.329	-13.068	8.626	3.579
Macedonia	0.816	-6.538	-13.86	-6.42	-2.783
Ukraine	-1.501	-3.694	-7.086	-1.475	-1.875
Georgia	-15.13	-19.66	-22.629	-11.238	-9.813
Moldavia	-11.379	-15.315	-16.303	-8.544	-10.867
Romania	-10.389	-13.426	-11.635	-4.189	-4.233
Serbia	10.181	-15.96	-21.096	-6.892	-7.111
Albania	5.644	-10.371	-15.206	-14.03	-10.11
Czech	-2.945	-3.299	-0.581	-1.128	-2.442
Hungary	7.605	-6.923	-7.299	-0.462	1.569
Poland	-2.479	-4.762	-4.827	-2.229	-3.287

**Table 4: Annual inflation (2006 – 2010, end-year)**

Country	2006	2007	2008	2009	2010
Bosnia and Herzegovina	4.548	4.944	3.809	-0.03	3.076
Bulgaria	6.081	11.58	7.188	1.638	4.446
Estonia	5.14	9.567	6.978	-1.71	5.416
Lithuania	4.495	8.15	8.469	1.271	3.629
Croatia	2.067	5.786	2.826	1.862	1.915
Latvia	6.757	14.03	10.4	-1.37	2.398
Macedonia	3.078	6.667	4.101	-1.64	2.956
Ukraine	11.65	16.55	22.34	12.33	9.096
Georgia	8.778	10.98	5.548	2.983	11.24
Moldavia	14.08	13.11	7.339	0.441	8.1
Romania	4.961	6.602	6.323	4.764	8
Serbia	6.606	11.02	8.603	6.578	10.29
Albania	2.513	3.057	2.162	3.7	3.4
Czech	1.69	5.474	3.614	0.984	2.303
Hungary	6.5	7.398	3.502	5.6	4.2
Poland	1.4	4	3.3	3.5	3.1