

Currency boards and the euro

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An “international role of the euro” perspective

by

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Abstract: This paper analyses the four countries that have adopted a euro-based currency board from an “international role of the euro” perspective. It investigates whether they have economic characteristics different from (1) countries with other exchange rate regimes involving the euro as an anchor currency and (2) countries with a US dollar-based currency board. To this end, the paper reviews the macroeconomic record of Bosnia and Herzegovina, Bulgaria, Estonia and Lithuania as well as their degree of trade, economic and institutional integration with the euro area. In both respects, countries with a euro-based currency board have achieved impressive results which, however, seem not to be significantly different from those achieved by other countries whose exchange rate policy is oriented towards the euro. Conversely, countries with a euro-based currency board are more integrated with the euro area than countries operating a US dollar-based currency board are with their anchor country, the US. In line with standard optimal currency area theory, this might suggest that the costs of foregoing the use of an independent monetary policy and the ability to counter asymmetric shocks through nominal exchange rate changes are somewhat mitigated in the case of euro-based currency boards. However, the general caveat applies that integration can only be seen as a necessary, albeit not sufficient, condition for the sustainability of a currency board.

Keywords: currency board, international currency

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1. Introduction

The status of anchor currency under a currency board arrangement is one of the many features of an international currency like the euro. As the choice of an anchor currency is a decision taken unilaterally by the country that introduces a currency board, it does not involve any commitment from the central bank that issues the anchor currency. However, the analysis of the salient characteristics of various exchange rate regimes has become a key issue in the recent debate on sustainable exchange rate regimes and, beyond that, on the reform of the international financial architecture (ECB, 2003). Hence, the analysis of euro-based currency boards from this angle seems of broad policy interest.

As is well known, the 1990s were characterised by a strong revival of currency boards, next to dollarisation/euroisation, the other variant of the hard peg “corner solution” put forward in the ‘bipolar view’ on sustainable exchange rate regimes that had become popular after the 1997 Asian crisis. Indeed, a currency board is the most stringent form of anchoring, whereby the central bank agrees to supply or redeem without limit local currency for another currency at an established exchange rate (Bennett, 1994). Fallen into disuse in the post World-War II period, currency boards were introduced in the 1990s in Argentina and four European transition countries, namely Estonia, Lithuania, Bulgaria and Bosnia and Herzegovina. While the Argentinean currency board collapsed in 2002, currency boards in European transition countries have remained in place. Since 2002, all of them are based on the euro, as the euro replaced the Deutsche Mark as the anchor currency in 1999 in Estonia, Bulgaria and Bosnia and Herzegovina as well as the US dollar in 2002 in Lithuania.

In this paper, these four currency boards are analysed by taking an “international role of the euro” perspective. The focus is on investigating whether countries with a currency board based on the euro are special compared with, on the one hand, countries with other exchange rate regimes that also involve the euro as an anchor currency, and, on the other hand, countries with a US dollar-based currency board.

The euro is an international currency with a strong regional focus on the broad geographical vicinity of the euro area, in contrast to the US dollar, which has a more global scope. Indeed, the use of the euro as an anchor currency is in many areas complementary to other economic and institutional ties for which distance matters, such as trade and institutional linkages with the European Union (ECB, 2002). Against this background, euro-based currency boards are different from other currency boards as they display special features: geographical closeness, together with high trade, economic and institutional integration with the anchor country, the euro area. They are, however, not substantially different from other countries whose exchange rate policy is oriented towards the euro, which also display these special features.

The remainder of the paper is set out as follows. Section 2 briefly reviews the euro’s role as an international currency, with a special emphasis on its use as anchor currency. Sections 3 and 4 discuss

the experience of the four euro-based currency boards, analysing the role of the exchange rate regime as a stabilisation device. Section 5 focuses on a key characteristic of countries with a euro-based currency board, which is common to other countries that peg to the euro, namely their high degree of integration with the euro area. Section 6 concludes that the high level of integration mitigates the cost paid by countries that have adopted a euro-based currency board and foregone the use of an independent monetary policy, limiting their ability to counter asymmetric shocks through nominal exchange rate changes. However, the general caveat applies that a high level of integration can only be seen as a necessary, albeit not sufficient, condition for the currency board's sustainability.

2. The euro as an international currency: a strong regional focus¹

The euro is the second currency used internationally, with a gradually growing role. It has inherited this status from some of its legacy currencies, especially the Deutsche Mark. The internationalisation of the euro is essentially a market-driven process reflecting decisions made by market participants and, to some extent, policies of third countries' authorities. The ECB itself does not pursue the internationalisation of the euro as an independent policy goal.

A distinctive feature of the international role of the euro is its strong regional focus. Whereas the US dollar is an international currency that is used world-wide, the use of the euro as an international currency is most prominent in countries neighbouring the euro area, suggesting that its international role may in many fields be complementary to trade and institutional linkages with the European Union.

Indeed, the discrepancy between the euro and the US dollar in terms of regional outreach is manifold:

- *In capital markets*

Whereas the US dollar is the dominant currency of issuance in most regions of the world, outside the euro area, the euro is used as an international financing currency mostly in the US, non-euro area EU countries and in emerging market countries geographically closest to the euro area.

- *In the foreign exchange market*

While the US dollar is the main international vehicle currency, the euro inherited a regional vehicle currency role from the Deutsche Mark only in the Nordic as well as some central and eastern European countries.

¹ This section draws heavily on ECB (2002).

- *In third countries*

Whereas currency and asset substitution based on the US dollar can be observed globally, including countries with strong economic and financial links with the euro area (e.g. Russia and other CIS countries), the parallel use of the euro is geographically more limited. Data collected in the context of the euro cash changeover show that the euro has smoothly replaced legacy currencies, in particular the Deutsche Mark, as a parallel currency in central, eastern and southern Europe.

Geographical patterns are also evident when it comes to the role of the euro in countries' exchange rate strategies. Overall, the euro is the anchor currency of about 50 countries in the world. Exchange rate regimes adopted by these countries cover the full spectrum of possible options, from unilateral euroisation to looser forms of anchoring (Table 1), reflecting decisions unilaterally taken by the respective countries that do not involve any commitment from the ECB.

The use of the euro as an anchor currency is strongest in the immediate vicinity of the euro area, the first of three "concentric circles" around it (Duisenberg, 2002), consisting of the EU Member States that have not yet adopted the euro and the EU acceding, accession and candidate countries. For instance, while Denmark pegs its currency to the euro within ERM II, out of the 13 EU acceding, accession and candidate countries only the currencies of the Czech Republic, Poland and Turkey do not have an explicit link to the euro.

A second "concentric circle" around the euro area comprises the other countries and regions neighbouring the EU, namely the western Balkans, the European part of the Commonwealth of Independent States, the Middle East and Northern Africa as well as sub-Saharan Africa. In the western Balkans, most countries have opted for either hard pegs or managed floating regimes based on the euro. Morocco and Tunisia de facto tightly manage their respective currencies against the euro. Moreover, the 14 countries of the CFA franc zone in central and western Africa have maintained a peg to the euro (originally to the French Franc) since the introduction of the single currency in January 1999.

Last, the rest of the world forms a third "concentric circle" around the euro area, the most distant one, where the euro does not play a role as an anchor currency. This contrasts with the US dollar's global reach as an anchor currency, which plays a role in exchange rate policies on several continents.

Table 1: Countries/territories using the euro as an anchor currency

Region	Exchange rate regimes	Countries
European Union (non-euro area)	ERM II	Denmark
	<i>Pro memoria</i> : Independent floating	Sweden, United Kingdom
EU Acceding countries	Euro-based currency boards	Bulgaria ¹ , Estonia, Lithuania
	Unilateral peg to the euro with +/-15% fluctuation bands	Cyprus, Hungary
	Peg arrangements based on a basket involving the euro	Latvia, Malta
	Managed floating with the euro as a reference currency	Romania ¹ , Slovak Republic, Slovenia
	<i>Pro memoria</i> : Independent floating	Czech Republic, Poland, Turkey ²
Western Balkans	Unilateral euroisation	Kosovo, Montenegro
	Euro-based currency boards	Bosnia and Herzegovina
	Managed floating with the euro as a reference currency	Croatia ³ , FYR Macedonia, Serbia
Other regions	Euroisation	European microstates, French territorial communities
	Peg arrangements based on the euro	14 members of the CFA Franc Zone, French overseas territories, Cape Verde, Comoros
	Managed floating with the euro as reference currency	Tunisia
	Peg arrangements based on the SDR and other currency baskets involving the euro	Israel, Seychelles, Botswana, Morocco, Vanuatu, Jordan, Libyan Arab Jamahiriya

Source: Updated from ECB (2002).

Notes: ¹Accession country whose application to the EU has been accepted and with which negotiations have started. ²Candidate country whose application to the EU has been accepted. ³Applicant country to the EU.

3. Euro-based currency boards

Once a monetary arrangement widely used, in particular in the British Dominions, currency boards had for a long time fallen out of fashion, being only used in small countries, like Brunei, Hong Kong or the Caribbean islands that are members of the Eastern Caribbean Currency Union (Gosh et al., 1998). This picture changed significantly in the 1990s, when Argentina introduced a currency board in March 1991. Estonia and Lithuania followed in 1992 and 1994. In 1997, Bosnia and Herzegovina as well as Bulgaria also introduced a currency board arrangement. Currently, there are nine currency boards operating (Table 2). Since the re-pegging of Lithuania's currency board from the US dollar to the euro on 2 February 2002, four of them are based on the euro. This compares with three currency boards with the US dollar as a currency of reference.

Table 2: Existing currency boards

Currency Board	Anchor currency	Date of creation	Remarks
Eastern Caribbean Currency Union	US dollar	1983	Members: Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines
Hong Kong	US dollar	1983	From 1935 to 1972, Hong Kong operated a currency board based on the British Pound. After its forced devaluation, the country switched to the US dollar as the anchor currency, before abolishing the arrangement until 1983.
Djibouti	US dollar	1949	Peg switched from the French franc to the US dollar in 1973
Estonia	Euro	1992	Originally based on the Deutsche mark
Lithuania	Euro	1994	The anchor was switched from the US dollar to the euro in February 2002
Bulgaria	Euro	1997	Originally based on the Deutsche mark
Bosnia and Herzegovina	Euro	1997	Originally based on the Deutsche mark
Macau	Hong Kong dollar		
Brunei Daressalam	Singapore Dollar	1967	The establishment of the currency board coincided with the introduction of the country's own currency.

Source: Authors' compilation.

Countries that have adopted euro-based currency boards have a number of common characteristics, namely (Table 3):

- *Small size, both in terms of GDP and population.* The combined GDP of economies with a euro-based currency board accounts for about 0.6% of euro area GDP at market exchange rates. Bulgaria, a USD 13 billion-economy, is the largest of the four countries, with a population of 8 million people;
- *High openness to trade,* with openness ratios ranging from roughly 145% of GDP in Estonia to about 75% in Bosnia and Herzegovina;
- *Closeness to the euro area,* as all countries are located within 1500 km from Frankfurt am Main;
- *Recent introduction,* as all currency boards were established since the early 1990s;
- *Deutsche mark legacy,* as the role of the euro as the anchor currency is inherited from the Deutsche Mark, except in Lithuania, which first started to peg the litas to the US dollar prior to the euro.

Table 3: Euro-based currency boards' main features

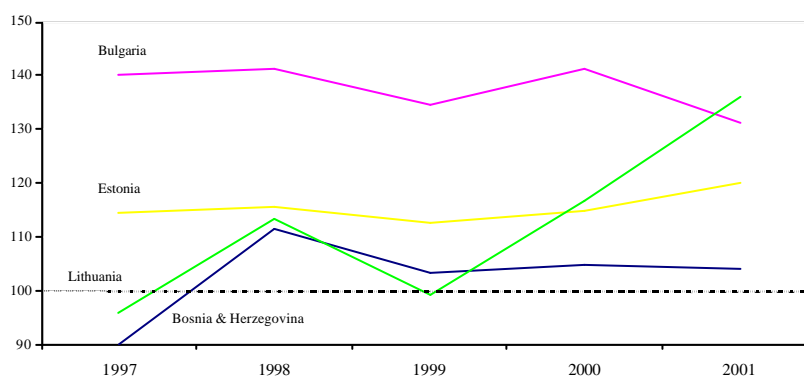
	Bosnia & Herzegovina	Bulgaria	Estonia	Lithuania
Country's GDP to euro area GDP (in %) ¹	0.1	0.2	0.1	0.2
Population	4.3 million	8.1 million	1.4 million	3.5 million
Openness to trade ³ (1995 – 2001 average)	74%	80%	145%	86%
Distance from Frankfurt (km)	1017	1392	1456	1237
Anchor currency prior to the euro	Deutsche Mark	Deutsche Mark	Deutsche Mark	US dollar ²
Official parity	1.9558 KM = 1 EUR	1.9558 BGN = 1 EUR	15.6466 EEK = 1 EUR	3.4528 LTL = 1 EUR
Backing assets	Net FX reserves	Gross international FX reserves in convertible currencies	Gold and convertible FX reserves	Gold and FX reserves in convertible currencies
Liabilities to be backed	Aggregate monetary liabilities	Aggregate monetary liabilities	Kroons in circulation	Litas in circulation

Sources: Ho (2002), EBRD (2002), IMF and authors' own compilation.

Notes: ¹At current exchange rates, in 2001. ²The euro replaced the US dollar as the anchor currency on 2 February 2002 (former official parity: 4 LTL = 1 USD). ³(Exports + imports)/GDP

All euro-based currency boards warrant full coverage of narrow monetary liabilities (notes, coins and banks' account balances) by liquid foreign reserves. This backing rule has been fully respected over the recent years, with central banks in Bulgaria, Lithuania and Estonia holding foreign assets up to 20% to 30% in excess of reserve money (chart 1).

Chart 1: Coverage of domestic money by FX reserves*
(as a %)



Source: IMF (International Financial Statistics) and Central Bank of Bosnia and Herzegovina.

Note: * Central bank's net foreign assets to reserve money; Net foreign reserves/monetary liabilities for Bosnia & Herzegovina.

This notwithstanding, unlike orthodox currency boards which tie the evolution of base money to that of the balance of payments, euro-based currency boards leave some scope for limited liquidity management. All of them impose reserve requirements on commercial banks (Ho, 2002) that may be used to influence liquidity conditions.² Turning to other monetary policy instruments, the Bank of Lithuania may provide overnight liquidity against collateral, while the Bank of Estonia has issued Certificates of Deposit (CDs) to drain liquidity. Likewise, funds deposited by the Banking Department of the central bank of Bulgaria with the Issue Department can be used to make collateralised loans to commercial banks in case of acute liquidity crisis.³

In addition to responding to liquidity shortages via standing facilities, liquidity management can also take the form of preventing such shortages from building up in the first place. Directly requiring or otherwise inducing commercial banks to hold larger reserves helps build a thicker cushion to safeguard the system against scrambles for liquidity and sharp peaks in interest rates. The strategy of cushion-building is especially apparent in Estonia and Bosnia and Herzegovina, where the deposit bases covered are broad and liquidity requirements are high (Ho, 2002).

Interestingly, in the recent years, other central banks in the area, like in the Czech Republic, Hungary, Latvia, FYR Macedonia, Poland, Slovakia or Slovenia might have drawn inspiration from currency board regimes, covering all or a large part of reserve money with net foreign assets. Obviously, this does not imply that they operate currency boards, as their respective currencies float, and they have not committed to defend an official parity, although they may endeavour to limit large exchange rate fluctuations. However, this may indicate that monetary authorities increasingly follow the stringent rule whereby reserve money has to be, at least, fully backed by liquid foreign assets; the same observation holds in Asia, where central banks have accumulated large foreign exchange reserves since the end of the 1997 crisis.

² For instance, the Bank of Estonia frequently modified reserve requirements to this end since its creation (Nonovsky et al., 2001).

³ The latter can also be done in Lithuania and Estonia, against excess reserves. After 1997, the Bulgarian National Bank (BNB) was restructured following the Bank of England model into an Issue Department and a Banking Department. The Issue Department holds all the BNB's monetary liabilities, comprising banknotes and coins, deposits from banks and non-government deposits, government deposits and the Banking Department deposit. These liabilities are backed by assets in foreign exchange and gold. The Issue Department invests the BNB's foreign assets subject to restrictions in terms of quality and liquidity explicitly stated in the law on the BNB. The Banking Department holds all other assets and claims on the central bank and acts as a fiscal agent of Bulgaria with the IMF.

4. Euro-based currency boards as a stabilisation device

Historically, currency boards functioned primarily as trade facilitators between the anchor countries and their respective colonies. In modern times, however, they have been mainly considered as an exchange rate regime that strongly contributes to macroeconomic stabilisation, by providing an external nominal anchor and preventing countries from conducting an independent monetary policy (see, for instance, Ghosh et al., 1998). Currency boards are also regarded as a device that is conducive to fiscal discipline⁴ as they rule out budget financing by the central bank (Alonso-Gamo et al., 2002). Moreover, fiscal discipline is required to (i) maintain the country's credit standing, since any deficit has to be financed by domestic private or international savings and (ii) to preserve sufficient leeway in case of a cyclical downturn.⁵ Lastly, currency boards are in need of a sound banking system (Santiprabhob, 1997), cleaned-up of bad loans and supervised according to international standards. This arises from the severe constraints put on the central bank's ability to act as a lender of last resort, since central bank funds cannot be provided in the event of a generalised shortage of liquidity. Only foreign exchange reserves held in excess of base money can be used in this case.⁶

The introduction of currency boards in Estonia, Lithuania, Bulgaria and Bosnia and Herzegovina indeed aimed at macroeconomic stabilisation. In Estonia, the currency board's launch in 1992 in the wake of the break-up of the former USSR coincided with the creation of the national currency.⁷ Lithuania followed in 1994, putting an end to a period of discretionary monetary policy and depreciation of its previous national currency, the talonas. Bulgaria introduced its currency board in response to the 1996-97 banking and hyperinflation crises. In Bosnia and Herzegovina, the creation of a currency, constitutionally enshrined in the Dayton Agreement of 1995 and part of the general post-war reconstruction effort of the country, was seen as an institutional device to break with the history of recurrent inflation and even hyperinflation in former Yugoslavia.⁸

⁴ However, as De la Torre, Levy Yeyati and Schmukler (2003) point out, a currency board *per se* does not bring about fiscal discipline.

⁵ Since fiscal policy is the only stabilisation device that remains in the hands of the authorities.

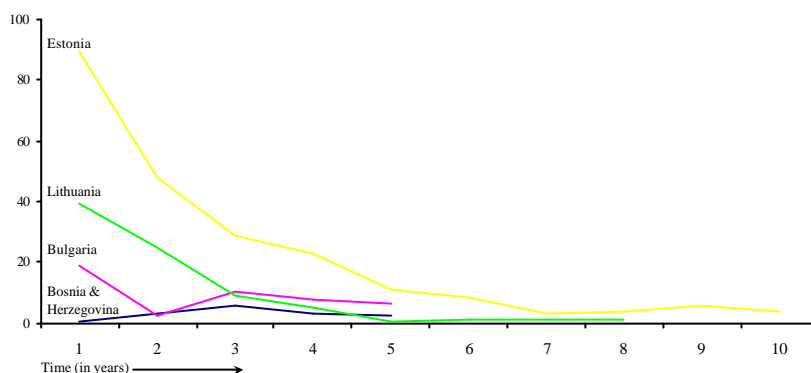
⁶ Alternatively, in countries with highly internationalised banking systems, foreign banks headquarters may act, *de facto*, as a lender of last resort. This could possibly be the case of the four countries that have adopted a euro-based currency board where the presence of foreign banks is high.

⁷ Or, to be more precise, with the restoration of the national currency phased out in 1939-1940.

⁸ In this respect, the currency board in Bosnia and Herzegovina has also been a useful institutional device to maintain unity within a multi-ethnic country with a complex constitutional structure (Coats, 1999).

Euro-based currency boards have helped achieve macroeconomic stabilisation.⁹ CPI-inflation decreased in Bulgaria from above 1000% in early 1997 to about 6% in 2002, in Estonia from 1000% in 1992 to about 3% in 2002, in Lithuania from about 70% in 1994¹⁰ to below 3% in 2002 (chart 2). In Bosnia and Herzegovina, inflation that had already dropped from triple-digit figures in the war years to slightly below 10%, by implicitly using the Deutsche Mark for a transitional period, decreased even further after the introduction of the currency board in 1997.

Chart 2: CPI inflation performance after the introduction of the euro-based currency board arrangement
(annual % change)



Source: IMF (World Economic Outlook).
Note: Bosnia & Herzegovina: 1998-2002; Bulgaria: 1997-2002; Estonia: 1993-2002; Lithuania: 1995-2002.

By the same token, interest rates dropped significantly, although they have not fully converged to euro area levels. The remaining spread is related inter alia to higher risk premia, lower liquidity, occasional periods of volatility (e.g. during the Russian crisis) and a more difficult lending environment, in particular in Bosnia and Herzegovina.¹¹ Interestingly, the experience of the Baltic countries with currency boards suggests that the exchange rate regime is not immune to contagion from international financial crises. When Russia defaulted on its government debt and abolished its peg to the US dollar in the summer of 1998, interest rates rose significantly, reflecting an increase in the risk premium, even though base money was covered by foreign assets. On the other hand, this increase proved to be fairly short-lived, underlining the robustness of the Baltic currency boards.

⁹ This is in line with the results of cross-country studies which show that hard pegs, in particular currency boards, have experienced lower inflation compared to economies operating under standard pegs, and substantially lower inflation compared to countries operating under floating rates (Gosh et al., 1998).

¹⁰ Against 400% in 1993.

¹¹ This is in line with the experience of currency boards operating before World War II, as higher overhead and the absence of well-functioning collateral markets in countries with a currency board led to an interest rate differential on loans of about 100-200 basis points compared to loan rates in Great-Britain.

Consequently, euro-based currency boards helped restore confidence in the domestic currency. For example, unofficial euroisation/dollarisation, measured by the share of foreign currency deposits to broad money, has been partially reversed in Bulgaria and Bosnia and Herzegovina, although it is still at a relatively high level, namely 40%.¹² In Estonia and Lithuania, unofficial euroisation/dollarisation increased somewhat from 1997 to 1999, but has stabilised at around 30%.

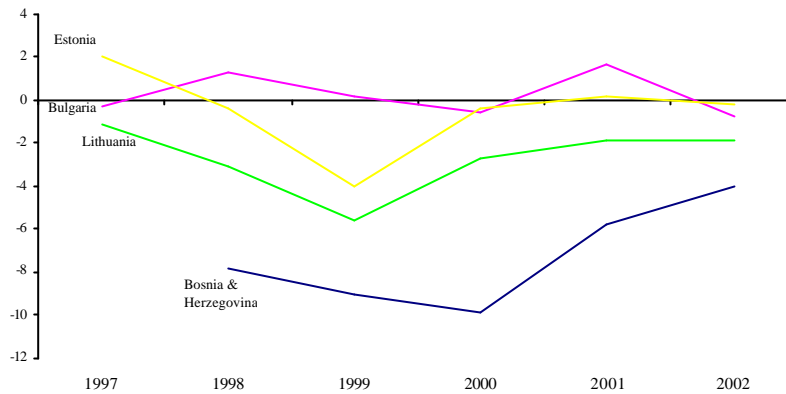
Achievements on the inflation and interest rate fronts have seemingly not come at the expense of real growth performance. Over 1998-2002, real GDP growth averaged about 4% per year in Bulgaria, Estonia and Lithuania and 7% in Bosnia and Herzegovina.¹³

As mentioned above, countries that accept the discipline of a currency board have to maintain sound macroeconomic policies. And indeed, general government balances were on average close to zero in Bulgaria and Estonia in recent years. In Lithuania, the general government deficit averaged 2.7% of GDP over 1997-2002, further to the fiscal slippage that followed the Russian crisis. However, it has been argued that the desire to maintain the currency board in spite of an unstable political environment and mounting spending pressures has been conducive to the subsequent fiscal adjustment (Alonso-Gamo et al., 2002). Finally, Bosnia and Herzegovina stands out as an exception, as the sustainability of public finances has been largely ensured by the international community in the past. Improving the fiscal situation remains one of the greatest challenges in the country.

¹² Increasing confidence in the domestic currency in Bosnia and Herzegovina is additionally illustrated by the progressive conversion of Deutsche Mark banknotes held “under the mattress” into KM banknotes in the wake of the euro cash changeover. In the last three years preceding the euro cash changeover on 1 January 2002, the Central Bank of Bosnia and Herzegovina purchased from commercial banks (and shipped back to Germany) around EUR 3 billion worth of Deutsche Mark banknotes.

¹³ The high growth rates in Bosnia and Herzegovina in 1997 – 1999 partly reflect substantial foreign aid and a low initial base after the war in former Yugoslavia.

Chart 3: Evolution of the general government balance
(as a % of GDP)



Sources: Eurostat and IMF for Bosnia & Herzegovina.

The current account in the four countries is characterised by relatively high deficits, mainly reflecting sizeable capital inflows and, in the case of Bosnia and Herzegovina, foreign aid flows. In Bulgaria, Estonia and Lithuania, current account deficits averaged 5% to 10% of GDP, exhibiting significant volatility, while they reached 20% of GDP in Bosnia and Herzegovina.

In a nutshell, countries that have introduced a euro-based currency board seem to have achieved their stabilisation goal. Given the extreme monetary instability observed prior to the introduction of the currency board arrangement, the degree of stabilisation reached is remarkable. Indeed, with the exception of the current account, where figures are somewhat distorted due to official aid flows to Bosnia and Herzegovina, macroeconomic performance in countries with a euro-based currency board has on average been better than in other countries in the region (Table 4). However, statistical tests suggest that macroeconomic performance differences are not significant.¹⁴

¹⁴ These statistics are nonetheless based on a small number of degrees of freedom with 4 observations for the group of euro-based currency board countries and 13 observations for the group of other accession and western Balkan countries. Interestingly, although the average current account deficit in countries with a euro-based currency board over 1997-2001 is significantly higher than in accession and western Balkan countries, the median deficit, which is not distorted by outliers, is not.

Table 4: Macroeconomic performances of central, southern and eastern European countries
(Averages over 1997-2001)

Group of countries	Group mean	Group median
<i>Real growth (%)</i>		
• Euro-based currency boards	5.4	3.3
• Other accession and western Balkan countries ¹	3.0	3.2
<i>CPI inflation (%)</i>		
• Euro-based currency boards	6.5	6.4
• Other accession and western Balkan countries ¹	14.3	7.9
<i>Current account deficit (as a % of GDP)</i>		
• Euro-based currency boards	-12.5*	-8.3
• Other accession and western Balkan countries ¹	-5.7*	-6.7
<i>Budget deficit (as a % of GDP)</i>		
• Euro-based currency boards	-1.4	-0.6
• Other accession and western Balkan countries ¹	-3.3	-1.9

Sources: IMF (IFS and WEO), EBRD (Transition Report, 2002), authors' calculations.

Notes: ¹Albania, Croatia, Cyprus, Czech Republic, FYR Macedonia, Hungary, Latvia, Malta, Poland, Romania, Slovakia, Slovenia, FR Yugoslavia. *Mean equality between country groups is rejected at the 10% level of confidence. Mean equality between country groups was tested using a *t*-test. Median equality between country groups was tested using the adjusted median c^2 test.

Turning to structural reforms, euro-based currency board countries rank high on the EBRD's list of transition indicators (EBRD, 2002), although Bosnia and Herzegovina is again an exception. However, a comparison of these countries with other transition countries in their geographical vicinity, i.e. Latvia, Romania and FYR Macedonia, reveals that progress in structural reforms has been roughly similar. This suggests that other factors, such as EU accession in the case of the Baltic countries and Bulgaria or a common history regarding the former Yugoslavia's successors' states, have been more important to determine the pace of structural reforms.

Regarding the banking sector, the creation of a sounder environment has been high on the agenda in the recent years, as Bulgaria, Estonia and Lithuania adopted a currency board in the wake of a banking crisis. Indeed, tightened supervision, consolidation and liquidation of insolvent institutions as well as a massive entry of foreign banks have ultimately led to a more stable commercial banking sector. The share of bad loans in credit portfolios has decreased or remained roughly stable, while the participation of foreign banks – measured by their share in total banking assets – increased substantially. Again,

however, similar trends can be observed in neighbouring countries, indicating that progress in this area is not a particular feature associated with the introduction of a currency board.¹⁵

To wrap up, the introduction of a currency board based on the euro has been useful for the countries concerned. However, while the currency board has proven valuable, their macroeconomic and structural reforms record has been similar to that of other countries in the area, which seems to confirm that there is no superior exchange rate regime given policies that are consistent with economic fundamentals (ECB, 2003).

5. Euro-based currency boards: a strong record of integration with the euro area

When in the late 1990s several Asian, CIS and Latin American countries were hit by severe financial crises and turmoil on foreign exchange markets, Argentina was perceived as an island of stability, giving currency boards an additional boost of popularity. Not only were they regarded as an effective means of gaining credibility and achieving macroeconomic stabilisation, but they were also seen as one of the few sustainable exchange rate regimes (Fischer, 2001). This view is grounded in the classic “impossible trinity” or “inconsistent quartet” whereby the combination of unrestricted capital flows, a fixed exchange rate, monetary policy autonomy and openness to trade is incompatible. The crises in Asia, Russia and Brazil in the second half of the 1990s were interpreted as evidence for this and led to the so-called ‘bi-polar view’ on the sustainability of exchange rate regimes. The ‘bi-polar view’ argues that soft pegs are difficult to sustain in the context of freely mobile capital, as authorities are likely to be faced with policy dilemmas and/or self-fulfilling speculative attacks. Hence, only “corner solutions”, that is hard pegs, like currency boards, or free floats allegedly offer options for a sustainable exchange rate regime.

The ‘bi-polar view’ was seriously undermined by the collapse of the Argentinean currency board in January 2002. Suddenly, the pendulum reversed and currency boards faced much criticism (e.g. Mussa 2002). The Argentinean case gives further evidence that any exchange rate regime, including a “corner” regime, needs to be compatible with the overall policy framework. This includes macroeconomic stability, the degree of capital account liberalisation and financial stability, the patterns of trade and financial linkages as well as participation in regional co-operation arrangements (ECB, 2003).

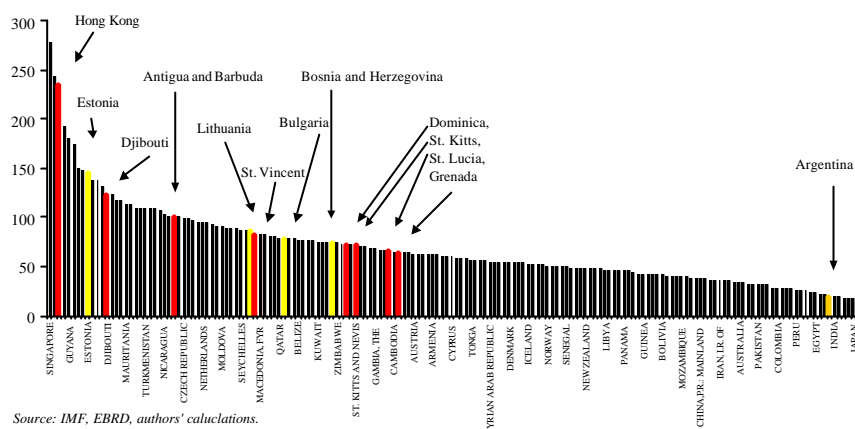
Against this background, euro-based currency boards have one special characteristic that makes them fundamentally different from Argentina: they are much more open and integrated with their anchor country, the euro area, than Argentina was with the US. In line with the standard optimal currency area

¹⁵ See Mehl and Winkler (2002) for a detailed analysis of developments in financial sectors of transition countries in South Eastern Europe.

literature, this may make them – ceteris paribus – more sustainable over the long run, as an independent domestic monetary policy is a priori less needed.

As opposed to the countries with euro-based currency boards and the US dollar-based currency board countries in the Caribbean, Djibouti and Hong Kong, which are highly open economies, Argentina was in the recent years one of the most closed economies in the world (Chart 4).

Chart 4: Openness ratio - currency boards vs. countries with other exchange rate regimes*



Moreover, due to its geographical, historical and structural characteristics, Argentina has a rather diversified export and import structure in terms of regional destination and source. In other words, trade links do not offer a clear guidance to select an anchor currency, in contrast with countries with a euro-based currency board (chart 5). Over 1995-2001 indeed, the EU was their largest trading partner, with an average trade share ranging from 40% to 60% of total trade.¹⁶ Moreover, trade links with the EU have strengthened considerably over the last years in Bosnia and Herzegovina, Bulgaria and Lithuania, where the share of EU trade was still below 40% in 1995. As a result, monetary orientation towards the euro in these countries has been underpinned by a significant re-orientation of trade.¹⁷

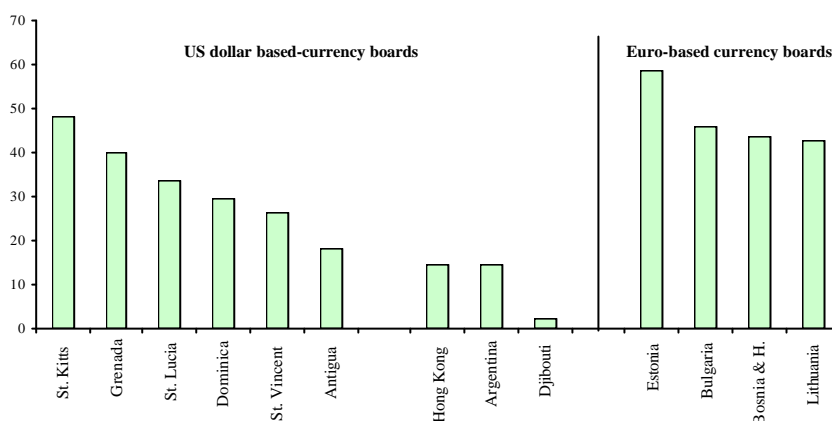
¹⁶ One ought to look also at invoicing shares, but data are not available. Trade shares can be taken as rough proxies.

¹⁷ As explained below, this does not imply that the exchange rate regime has caused this re-orientation of trade, as similar trends can be observed for other countries in the region.

Argentina, however, conducts less than 20% of its trade with the US.¹⁸ Moreover, during the 1990s, it continued to trade more with Brazil and the EU than with the US. This is in marked contrast with other US dollar-based currency boards, in particular the ECCA countries, where the US is also the dominant trading partner, even though their trade links with the anchor country are weaker than those between countries with a euro-based currency board and the EU.¹⁹ Moreover, in the case of the ECCA countries, integration with the US is also strong due to significant tourism flows. Tourism is the mainstay of the ECCA economies, and US tourists account for roughly 40% of all stay-over arrivals.

Chart 5: Trade integration of currency boards

(Trade with anchor country as a % of total trade, average over 1995-2001)



Source: IMF, authors' calculations.

The integration of euro-based currency boards with the euro area is also significant in terms of foreign direct investment (FDI). EU firms are the most important foreign investors in the Baltic countries and in Bulgaria.²⁰ In Lithuania, while at the beginning of the 1990s FDI was dominated by US firms, the share of EU firms in total FDI has steadily grown, reaching more than 60% end-2000. It is comparable in Bulgaria. In Estonia, about 80% of the inward FDI stock originated from EU countries end-2001, mainly from neighbouring Finland and Sweden. Again, the situation is very different in the case of Argentina. Thus, in the years 1996 – 2001, the share of US FDI in total FDI to Argentina was

¹⁸ The choice of the US dollar as an anchor in the early 1990s was known by Argentinean authorities to be sub-optimal from an optimal currency area perspective. Economy Minister Cavallo originally wanted to peg the Argentinean peso to a basket of the US dollar and the Deutsche Mark, but decided against on the grounds of transparency and comprehensibility, choosing the simpler 1 peso = 1 US dollar rate.

¹⁹ With the exception of St. Kitts, where the share of the US in total trade accounts for 50%.

²⁰ There is only limited evidence available regarding the regional breakdown of FDI to Bosnia and Herzegovina. However, this evidence suggests that next to the other former Yugoslav republics, EU countries have been key foreign investors in the country.

constantly lower than 20%. In three of these years, FDI from the US did not even account for 10% of total FDI.

Clearly, the main link between the US and Argentina was financial, due to a high and rising degree of unofficial dollarisation²¹ and the sizeable foreign-currency (mainly US dollar) denominated debt. Throughout the 1990s, the US dollar was the dominant currency of denomination of international bonds issued by Argentina.²²

Turning to euro-based currency boards, interestingly such financial considerations played a role in the choice of the anchor currency only in Lithuania and Bosnia and Herzegovina, which were subject to high currency and asset substitution based on respectively the US dollar and the Deutsche Mark. In Bulgaria and Estonia, by contrast, authorities decided to establish a currency board based on the Deutsche Mark notwithstanding the rather strong dollarisation of the financial system. For example, when the currency board was established in 1997, outstanding Bulgarian sovereign bonds were US dollar-denominated. The influence of the US dollar in these countries' financial systems seems to remain substantial as, early-2002, euro-denominated deposits accounted for only 30% of foreign currency deposits in Bulgaria and about 50% in Estonia (ECB, 2002). In Lithuania, the euro's share in foreign currency deposits was still negligible, confirming that the 2002 re-pegging of the litas to the euro was motivated by, and in line with, the increasing trade integration of Lithuania with the euro area and the EU accession process.²³

Last, and perhaps more importantly, countries with a euro-based currency board are different from all countries with a US dollar-based currency board as they are part of a far-reaching institutional and political process that aims at ultimately integrating them with their anchor area. While Estonia and Lithuania, as acceding countries, are expected to join the EU on 1 May 2004, Bulgaria, as an accession

²¹ Informal dollarisation was encouraged by allowing loans and deposits to be denominated in US dollars in order to rebuild the financial sector ravaged by hyperinflation. De la Torre, Levy Yeyati and Schmukler (2003) consider the persistence of unofficial dollarisation in Argentina as a sign that the currency board did not achieve its goal, namely strengthening the credibility of the Argentinean peso.

²² However, after 1999, euro-denominated issues accounted for a very large share of Argentina's international bond issues.

²³ In general, countries with a euro-based currency boards are less integrated in international financial markets than, for example, Argentina, partly preventing them from reaping fully the benefits associated with financial globalisation. At the same time, however, they have been less exposed to volatile capital flows and sudden changes in market sentiment (see the overview provided by Prasad, Rogoff, Wei and Kose, 2003). De la Torre, Levy Yeyati and Schmukler (2003) even argue that access and openness to international financial markets contributed to the vulnerability of the Argentinean currency board. Allegedly, the pro-cyclicality of international capital flows undermined efforts of fiscal consolidation in good times and fuelled fiscal problems in bad times by sharply increasing Argentina's marginal costs of capital.

country, aims at joining in 2007. Bosnia and Herzegovina is not an accession country but, together with other western Balkan countries, was given at the European Council in Feira in June 2000 the status of “potential candidate for EU membership”. Moreover, Bosnia and Herzegovina is a full participant in the Stabilisation and Association Process, the policy framework of the EU that aims at bringing western Balkan countries closer to the EU, through, inter alia, a free trade area and closer standards.

These institutional links have some implications on the exchange rate regime, most prominently on acceding countries, as the *acquis communautaire* is a road map for integration with current EU Member States in various aspects of economic policy. Upon accession, the monetary and exchange rate policies of the new Member States become a matter of common interest. In particular, new EU members are expected to enter at some point the Exchange Rate Mechanism II and, at a later stage, finally adopt the euro (Padoa-Schioppa, 2003).²⁴

The high level of trade, economic and institutional integration of euro-based currency boards with the euro area and the EU is noteworthy compared to the level of integration of Argentina and other US dollar-based currency boards with the US. However, it is not significantly higher than that reached by the other countries in the region that orient their exchange rate policy to the euro, i.e. many of the acceding countries in central and eastern Europe and almost all the remaining western Balkan countries that are part of the Stabilisation and Association process.²⁵ Against this background, notwithstanding their particular exchange rate regime, countries with a euro-based currency board are similar to their neighbours in terms of economic and monetary relations with the euro area.

Having said this, the fact that euro-based currency boards are located in a “ring of countries” with close economic and monetary links to the euro area may provide them with one particular benefit: lesser distortions by large nominal exchange rate fluctuations in their common trade relations. This is probably most obvious in the case of Bosnia and Herzegovina, where trade relations with the former Yugoslav republics and Hungary are particularly strong. Bulgaria, Estonia and Lithuania trade significantly with the remaining acceding countries located in their vicinity and – in the case of Bulgaria – other countries in the western Balkans. Interestingly, among the major trade partners of

²⁴ As far as accession countries with a currency board are concerned, the ECOFIN council declared in November 2000 that euro-based currency board arrangements, while not a substitute for participation in ERM II, may participate in ERM II with the currency board as a unilateral commitment enhancing the discipline within ERM II. Hence, countries that operate euro-based currency boards deemed to be sustainable might not be required to go through a double regime shift, i.e. of floating the currency within ERM II and then re-pegging it to the euro later. However, such arrangements will be assessed on a case-by-case basis and a common accord on a central parity would have to be reached.

²⁵ With regard to economic linkages, similar statement can be made for the ECCA countries with regard to the US dollar, as overall the Caribbean is a US dollar area.

countries with a euro-based currency board, only Russia (and Turkey for Bulgaria) did not orient their exchange rate strategy towards the euro.²⁶ Reflecting this orientation, currency boards in the Baltic States came under pressure when the ruble was devalued and experienced a period of turmoil in financial and exchange markets in 1998/1999.

6. Conclusions

This paper has highlighted a key structural characteristic of countries with a euro-based currency board, namely their high degree of integration with the euro area and the EU in trade, economic and institutional terms.

In this respect, euro-based currency boards, although they were established for stabilisation purposes, also reflect the traditional purpose currency boards are set up for, namely real integration with the anchor country.²⁷ This reduces the probability of asymmetric shocks, mitigating the implicit cost of foregoing monetary policy for adjustment purposes. Of course, this real integration can also be achieved with other exchange rate arrangements involving the euro as an anchor currency, as suggested by the experience of other acceding countries and south-east European countries. At the same time, as countries with a euro-based currency board are located in a region where most countries orient their monetary and exchange rate policies to the euro, also trade relations between these countries are less distorted by high exchange rate fluctuations. Overall, euro-based currency boards contribute to and benefit from the regional focus of the international role of the euro as an anchor currency. This regional role of the euro as an anchor currency, compared to the more global outreach of the US dollar, probably has positive implications, as it favours a higher degree of integration with anchoring countries, thus enhancing the long-run sustainability of those which have adopted a currency board. It also suggests that, although the world economy is increasingly globalised, regional patterns still matter.

Of course, strong real and institutional integration is only a necessary, but not a sufficient condition for the sustainability of any fixed exchange rate regime. Fiscal policy, for example, is another key factor, as amply demonstrated in the Argentinean case. Moreover, accommodating demands for rapid wage increases may endanger external competitiveness. Finally, although progress has been significant over

²⁶ Just recently, representatives of the Central Bank of Russia stated that in the future Russia's exchange rate policy would be targeted at a real exchange rate, based on a currency basket with a 60% weight for the US dollar and a 40% weight for the euro.

²⁷ By re-pegging from the US dollar to the euro, Lithuania suggests that real integration has shaped monetary arrangements. Likewise, looking at the history of the European construction, higher economic integration, i.e. the move from a mere common market to a single market, was conducive to within-countries exchange rate stability and, eventually, monetary union (Padoa-Schioppa, 2001).

the last years, structural reforms and change are still incomplete. As is well known, difficulties in any of these areas may present challenges to any fixed exchange rate arrangement (Padoa-Schioppa, 2003). Hence, a high degree of real integration should not be seen as guaranteeing the sustainability of a hard peg, like a currency board arrangement, even though it facilitates its operation.

References

- Alonso-Gamo P., Fabrizio S., Kramarenko V., Wang, Q. (2002), "Lithuania: history and future of the currency board arrangement", *IMF Working Paper*, 02/127
- Bennett, A.G.G. (1994), "Currency Boards: Issues and Experiences", IMF Paper on Policy Analysis and Assessment, PPPA/94/18, Washington, D.C.
- Coats, W. (1999), "The Central Bank of Bosnia and Herzegovina: Its History and Its Issues." in Blejer M. and Skreb M., eds, *Central banking, monetary policies, and the implications for transition economies*, Boston, Dordrecht and London: Kluwer Academic.
- De la Torre, A., E. Levy Yeyati and S.L. Schmukler (2003), "Living and Dying with Hard Pegs: The Rise and Fall of Argentina's Currency Board", Policy Research Working Paper No. 2980, The World Bank, Washington, D.C.
- Duisenberg, W. (2002), "The official use of the euro in "three circles" around the euro area", speech delivered at the informal ECOFIN Council on the international role of the euro, Oviedo, 14 April 2002.
- EBRD (2002), Transition Report, London.
- Edwards (2002), "The Great Exchange Rate Debate After Argentina", NBER Working Paper, No. 9257, Cambridge, MA.
- European Central Bank (2002), *Review of the international role of the euro*, Frankfurt am Main
- European Central Bank (2003), *Exchange rate regimes for emerging market economies*, Monthly Bulletin, February, pp. 51-62.
- Fischer, S. (2001), "Exchange Rate Regimes: Is the Bipolar View Correct?" Distinguished Lecture on Economics in Government, Delivered at the Meetings of the American Economic Association, New Orleans, January 6, 2001
- Ghosh A; Gulde A.-M., Wolf H. (1998), "Currency boards: the ultimate fix?" *IMF Working Paper*, No. 98/8
- Ho, C. (2002), "A survey of the institutional and operational aspects of modern-day currency boards", *BIS Working Paper*, No. 110.
- Feldstein, M. (2002), "Argentina's fall: lessons from the latest financial crisis." *Foreign Affairs*, March/April, 2002.
- Mehl, A. and A. Winkler (2002), Financial sector and economic development: evidence from southeast Europe, paper presented at the KfW conference on "Innovative approaches to financial sector development in volatile environments", Berlin, 7 November 2002
- Mussa, M. (2002), *Argentina and the Fund: From Triumph to Tragedy*, Policy Analysis in International Economics 67, Institute for International Economics, Washington, D.C.
- Nenovsky, N., Hristov K., Mihaylov M. (2001), "Comparing currency board automatic mechanism in Bulgaria, Estonia and Lithuania", mimeo.

- Padoa-Schioppa, T. (2001), *Increased Capital Mobility: A Challenge for the Regulation of Capital Markets*, in: Siebert, H. (ed.), *The World's New Financial Landscape: Challenges for Economic Policy*, Berlin et. al., Springer-Verlag
- Padoa-Schioppa (2003), "Trajectories towards the Euro and the Role of ERM II", *International Finance*, 6 (1), pp. 81-94, forthcoming.
- Prasad, E., Rogoff, K., Wei, S.-J. and M. Ayhan Kose (2003), *Effects of Financial Globalization on Developing Countries: Some Empirical Evidence*, March, Washington, D.C.
- Santiprabhob, V. (1997) "Bank soundness and currency board arrangements: issues and experience", *IMF Paper on Policy Analysis and Assessments*, PPAA/97/11
- Thimann, C. (ed.) (2002), *Financial sectors in EU accession countries*, ECB, Frankfurt am Main
- Worrell, D. (2003), "A Currency Union for the Caribbean", IMF Working Paper No. 03/35. Washington, D.C.