

**POLICY MISALIGNMENTS OF THE CURRENCY BOARD
ARRANGEMENTS: ISSUES AND EXPERIENCES FROM
THE CARIBBEAN ECONOMIES**

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Abstract

Although a Currency Board is a simple monetary arrangement, there is a range of important policy issues that must be addressed by the domestic monetary authorities. If one defines policy misalignment as deviation from such policy rule then such mistakes have been associated with either external deficit or contradictory effects on GDP. This paper seeks to evaluate the exchange rate and interest rate misalignment in six Caribbean economies that have adopted Currency Board Arrangements.

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1. Introduction

Currency Board Arrangement (CBA) has played an important role in a number of cases of various countries' stabilization programs. According to the estimations of Enoch and Culbe (1998) there were 38 countries or territories operating under a currency board in 1960, 20 by 1970 and only 9 by the late 1980's. By the end of 2001, 14 CBA's were in operation (see table 1). According to Ghosh, Gulde and Wolf(1998), among them four are in economies under transition while pegged to only three currencies: the U.S.

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dollar (10 countries), the euro (3 countries), and the Singapore dollar (1 country).

Table 1. Currency boards in operation

Country/region	Years in operation	Peg currency	Special features
Antigua and Barbuda	36	U.S. dollar	Member of ECCB
Argentina	10	U.S. dollar	One-third of coverage is in U.S. dollar
Bosnia and Herzegovina	5	Euro	
Brunei Darussalam	34	Singapore dollar	
Bulgaria	5	Euro	Excess coverage ^a
Djibouti	53	U.S. dollar	Switched from French Franc to US dollar
Dominica	36	U.S. dollar	Member of ECCB
Estonia	10	Euro	Excess coverage ^b
Grenada	36	U.S. dollar	Member of ECCB
Lithuania	8	U.S. dollar	CB right to appreciate the exchange rate
St. Kitts and Nevis	36	U.S. dollar	Member of ECCB
St. Lucia	36	U.S. dollar	Member of ECCB
St. Vincent and the Grenadines	36	U.S. dollar	Member of ECCB

Note: ^a Excess coverage to deal with banking sector weaknesses. ^b Excess coverage for domestic monetary interventions. Sources: Baliño and others (1997); and Ghosh ET AL. (1998), own estimations. ECCB is East Caribbean Central Bank, CB means Central Bank.

In most of the cases a CBA was adopted after a failure of earlier stabilization programs. The main reason for countries adopting the currency board option is to pursue an anti-inflationary policy since the functioning of this arrangement increases the

credibility of monetary policy. A perception was developing that, to be credible, a renewed stabilization attempt would require a visible, rule-based system, such as a CBA. Economic credibility, low inflation, and lower interest rates are the immediately obvious advantages of a currency board since inflation and real interest rates would drop toward the levels of those in the country issuing the anchor currency. It is important to note here that, under the CBA, the central bank would lose its discretion to intervene since it can no longer be an unlimited lender of last resort to banks and to public companies in financial trouble.

Despite the current popularity, the failure of Argentina raises concerns about the cost associated with this policy option. The critics, although not disputing the potential advantages of a CBA, argued that the benefits may prove limiting or very short term, especially for countries that have weak banking systems or are prone to economic shocks. It was also argued that CBAs are not well-suited to diversified economies in many of which the authorities have developed sophisticated skills in monetary management. On the other hand, they are seen as desirable and indeed workable only in very special circumstances such as the small, open economies of city-states and small islands.

In this paper I examine the cost of this policy option by adopting a different approach. In my view one of the fundamental elements of the cost could be the national authorities' inability to use monetary policies, such as adjustments of domestic interest or exchange rates, to stimulate the economy; instead, under a currency board, economic adjustment will have to come by way of wage, eliminating output rigidities and price adjustments, which can be both slower and more painful. With a CBA in place for almost thirty years six Caribbean countries would provide a unique area for assessing the macroeconomic performance.

The next part of the paper examines the performance of CBA. It then focuses on the inflation and interest rate effects and by employing a macro fundamental data set for these Caribbean

countries I investigate the effects of exchange and interest rate misalignment in section 3. Conclusions follow.

2. The Performance of Currency Boards

A currency board combines three elements: an exchange rate that is fixed to an "anchor currency", automatic convertibility (that is, the right to exchange domestic currency at this fixed rate whenever desired), and a long-term commitment to the system, which is often set out expressly in the central bank regulations .

Generally speaking this policy option can be considered as an extension of fixed exchange rate but having different institutional set up. Consequently, the debate regarding the relative merits and cost of this policy option goes back to the old discussion related to the cost of stabilization or anti-inflation policies either by pegging the exchange rate or by adopting exchange rate targeting.

From the theoretical work in this area, it could be argued that the high credibility of the currency board contributes to the immediate halt of inflation with no output cost¹. In particular, Calvo and Vegh (1994) examining the evidence on stopping high inflation argue that by using the exchange rate as a nominal anchor hyperinflations have been stopped immediately with relatively minor output cost. In contrast, exchange rate-based stabilization in chronic inflation countries have resulted in a sluggish adjustment of the inflation rate, sustained real appreciation of the domestic currency, current account deficits and an initial expansion in economic activity followed by contraction. Luis *et al.* (2000) extending a signaling model initially developed by Drazen and Masson (1994) showed that currency boards can improve welfare even with high unemployment persistence.

¹ This so-called "balance of payments" theory (Liviatan (1986) maintains that inflation increases are due to increases in inflationary expectations, triggered by depreciation of the exchange rate, which are then accommodated by the monetary authorities or through wage indexation.

In a number of empirical works undertaken mainly by IMF researchers -see Ghosh A., Gulde A. and H. Wolf (1998) Drazen A. and Masson P. Gulde A. J. Kahkonen and P. Keller. (2000)- comparative statistics and econometric analyses are provided which confirm that, historically, CBAs have done better than even other fixed exchange rate regimes. In contrast to fears often raised by opponents of currency boards, Ghosh, Gulde, and Wolf (1998) did not find that existing currency boards had any negative effects on growth and that the discipline effect, in other words the constrained rate of money growth in countries that adopted this policy option, has significantly constrained the average inflation. In the same line of research Gulde *et al.* (2000) examining the experience of three countries candidates for EU membership with CBAs (Estonia, Lithuania, and Bulgaria) and assessing the inflation and growth performance argues that the outcome was quite favourable.

On the other hand, Roubini (1998) raises the issue of exchange rate appreciation and uses the experience from transition economies such as Estonia that adopted a currency board in 1992 and Lithuania that adopted a currency board in 1994. In both countries, the move to a peg has been associated with a large real appreciation of their currency. The author remarks that in Estonia the real appreciation of the currency has been equal to over 70% while in Lithuania the real appreciation has been 59%. In 1992, Estonia ran a current account surplus equal to 3.4% of GDP; this had turned into a current account deficit of 6.8% of GDP in 1996 and was expected to be almost 9% of GDP in 1997. In Lithuania, a current account deficit of 3% of GDP in 1994 had turned into a current account deficit of about 10% of GDP in 1996 and 1997.

The issue of real appreciation is also raised by Luis *et al.* (2000) arguing that the Hong-Kong dollar has experienced a substantial real appreciation during the period of CBA. Similarly, the cases of Latin America and the Baltic countries were associated with substantial real appreciation following the currency board operation.

As already mentioned CBA is often argued to be desirable for economically small countries. Ultimately, the small open economies constituting the Organization of Eastern Caribbean States (Antigua and Barbuda, Dominica, St. Lucia, St. Vincent, St. Kittis and Grenada) and which are members of the Eastern Caribbean Central Bank (ECCB)², can be considered as an ideal place for reviewing the relative merits and cost of CBA while at the same time examining how these economies have fared. With the currency board in place since 1976 the six examined countries experienced a significant growth of GDP and considerable monetary stability until the mid 1990's (see McCarthy 1996).

The main picture which emerges from the external sector is that both the exports and imports grew over the entire period of the CBA. Looking across the real exchange rate developments all countries experienced significant real exchange rate changes, as shown in figure 1, while the nominal exchange rate was pegged on US dollar. This exchange rate misalignment was more evident during the 1990's when the domestic currencies experienced a considerable real appreciation. As expected not only did the CBA result in an exchange rate misalignment but it was also associated with interest rate misalignment.

Evidence shown in figure 2 indicates that rarely was the domestic interest rate aligned to the US dollar, the former rate being consistently lower than the USA rate for the period before 1991. A lower interest rate indicates a monetary contraction which in turn reduces output, and thus inflation, through the Phillips curve. The gap between the actual rates and the policy rule is particularly wide in the early 1980's and late 1990's, as shown in figures 1 and 2, especially in comparison with the relatively small gap of the period 1988-1994.

² Member of the ECCU are Anguila, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kittis and Nevis, St. Lucia and St. Vincent and The Grenadines. For the purpose of this paper we focus those adopted CBA.

Figure 1. Ex-Rate Misalingment

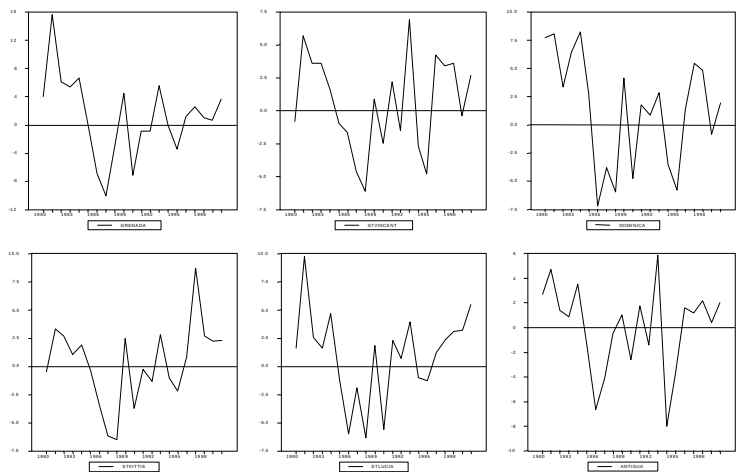
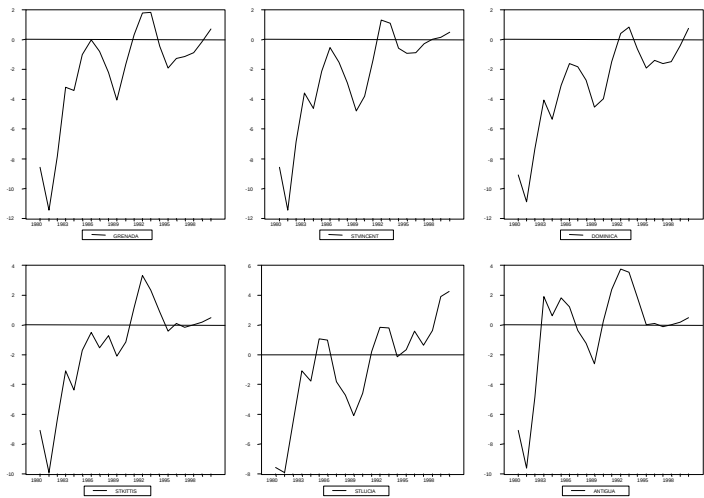


Figure 2. Interest Rate Misalingment



The growth slanginess of the last years and the increasing current account deficit raise concerns about the effectiveness of CBAs. The pegged rigidity prevents the monetary authorities from utilizing planned exchange rate devaluations to stimulate exports and employment and offset upward interest rate pressures. One of the factors, *inter alia*, which affected earnings to these countries from exports was the fluctuations in exchange rates particularly for the euro and the pound sterling. The depreciation of these currencies reduced the domestic currency earnings from the exports (mainly of bananas and sugar) and might have increased the cost of tourism services to Europeans. The current account deficit for the examined countries widened in 2001 representing 20 per cent of GDP compared to 16.7 percent in 1998. Of course, the external deficit and lower growth may depend on factors other than the exchange rate regime but this variable is typically cited in the literature.

3. Interest Rate and Exchange Rate Policy Misalignments

As noted earlier according to the large empirical literature testing the currency board effects on the economy the CBA has a stabilizing influence in inflation and results in growth. On the other hand the critiques are rather limited in numbers and the main concerns raised by the opponents of CBA focus on the fixed exchange rate regimes' vulnerability to speculative attacks and the macro instability. In this paper I take a rather different position and I argue that the extra credibility comes at a price which is the forgone output and the loss of competitiveness since the CBA enforces real appreciations. The adoption of a CBA and the decision to anchor the exchange rate has meant that the countries gave up autonomy over monetary policies since the functioning of this policy option is associated with two main monetary policy rules, among others.

According to the first monetary policy rule the domestic exchange rate is fixed to an "anchor currency"; the second monetary policy rule can be derived implicitly from the first rule using the uncovered interest rate parity condition: $\Delta s_{t+k} = r_t - r_t^*$ where Δs_{t+k} represents the exchange rate changes, r_t and r_t^* the domestic and

foreign interest rate respectively, in the case where $\Delta s_{t+k}=0$ then $r_t=r_t^*$. Thus the second rule states that because of the fixed exchange rate feature of the CBA the domestic interest rate was constrained to be close to the interest rate of the pegged currency. The degree of closeness depends on the size and the duration of deviation from PPP.

The observed appreciation of domestic currencies can be attributed to the adoption of the restrictive monetary stance by the authorities as part of the currency board policy involving a reduction in fiscal deficit. Buiter and Jewitt (1981) provide an eloquent exposition of this view point. If inflation adjusts sluggishly (this is because there is a degree of nominal inertia in wages) then a reduction in monetary growth, they claim, leads to an increase in domestic real interest rates and a temporary appreciation of the real exchange rate.

Accordingly, the reduction in current and future monetary growth announced as part of the CBA provided the immediate catalyst for the appreciation of the domestic currency and the expected recession. Another reason of appreciation is that when the major trading partners are depreciating, then the rigidity of the nominal exchange rate results in real appreciation. On the other hand CBA tends to align domestic to anchor currency interest rates.

Therefore, it can be argued that the conducted monetary policy was constrained by the strict monetary policy rules imposed by CBA.

Adopting a CBA, however, requires knowing how the underlying deviations from equilibrium values influence the economic fundamentals. This can be done very simply. Once one has focused on a particular policy rule, there is a way to use history to check whether the policy rule would work well³. In this case the

³ The monetary rules or misalignments output relationship has long occupied a central position in macroeconomics. Examples of this approach

CBA rules would serve as a normative guide to the decisions to set both interest rate and exchange rate. Then any deviations of interest rate set by the central bank can be considered excessive monetary tightness or ease. Similarly, the current nominal exchange rate may differ from the equilibrium exchange rate.

The reason for this is that the economic policy sometimes moved further away from the policy rules, since interest rates and real exchange rates are formulated from the domestic economic conditions.

The countries that had adopted CBA and faced aggregate real shocks or vulnerability to the external shocks may be unable to change the exchange rate or to adopt the interest rate according to the face of business cycle. In both cases the cost is the reduced ability of the central bank to set the interest rates in the face of the domestic economic system-wide liquidity needs.

Any deviation from the currency board settings is associated with a cost. A positive/negative reading of this misalignment is a measure in basis point of the cost to the country adopting this arrangement, when monetary policy is not being set based on the macroeconomic conditions in country. With CBA in place whenever there is a deviation from these equilibrium values there is a disturbance for the economy either contractionary or expansionary. I can characterize such deviations as policy ‘misalignments’ and see if these had an adverse impact on the economy since the fears often expressed by opponents of currency boards focus on the growth performance and the output effects as well as on the loss of competitiveness. The cost of this foregone policy option depends on several factors, mainly on fiscal adjustment and labor market flexibility.

A number of regression estimates were made to try to clarify some of the relations discussed in the previous section. In order to

includes the econometric policy evaluation research in Taylor 1979, 1993 and McCallum (1988).

illustrate this nontrivial problem I will investigate the output and current account effects of exchange rate and interest rate misalignments by employing a data set from the international financial statistic of IMF covering the six CBA cases for the period 1980–2000. I estimated the interest rate misalignment as the difference between the short term deposit rate and the interest rate of the anchor currency. In addition, I estimated the difference between the fixed exchange rate and the ‘equilibrium’ exchange rate, this being for my purposes the real effective exchange rate (REER).

The equations below represent the most basic model estimated in this study. Because there is a multiplicity of different theories and factors relating to this, the proposed relationships are not derived from a particular theoretical model, but are designed to be sufficiently simple to test the basic hypotheses.

$$\Delta CA_{it} = \text{constant} + \hat{\alpha}(\Delta REER)_{it} + \hat{\alpha}(\Delta REER)_{it-1} \quad (1)$$

$$\Delta Y_{it} = \text{constant} + \hat{\alpha}(\text{Intdif})_{it} + \hat{\alpha}(\text{Intdif})_{it-1} \quad (2)$$

where ΔCA_{it} and ΔY_{it} represents the current account and GDP changes respectively, REER stands for the real effective exchange rate changes, while Intdif stands for the interest rate differential between short term interest rates. In order to minimize potential problems arising from non-constant variance and autocorrelation, the Kmenta (1986) autoregressive-heteroscedastic model was applied.

This model employs non-restrictive assumptions by allowing both variance and autocorrelation parameters to vary among cross-sectoral units. This allows the intercept term to be estimated separately for each country.

Table 2 presents estimation results for equation (1). As expected, the coefficient of exchange rate misalignments is negative and significant, thus indicating that real exchange rate appreciation negatively affected the current account. Similar results were obtained

regressing GDP differences on the absolute value of interest rate misalignment (table 2).

Table 2. Fixed Effects panel Regressions-OLS

	Ex-rate misalignments	Interest rate misalignments
Constant	4.75* (1.460)	
(ÄREER)	-0.266* (0.083)	
(ÄREER) _{it-1}	-0.8478 (1.416)	
Constant		2.15* (0.893)
(Intdif) _{it}		-0.47* (0.020)
(Intdif) _{it-1}		0.17* (0.030)
R ²	0.734	0.691

*indicates statistical significant.

En line with the previous results the interest rate diverge is sufficient to cause a contraction of GDP. Another important finding of the above regression is that GDP should depend not only on current deviations from target values but also on past values. The coefficients on lagged Indif are also significant and roughly of the same magnitude. Hence the results provide further support for the view that the estimated misalignments are contractionary.

4. Conclusions

Currency boards can be considered as sophisticated skills in monetary management and in particular in anti-inflationary policies providing quick credibility to the inconsistent monetary policy.

Although the fears often raised by opponents focus on the output cost little work has been devoted to the effects of this policy option. In this work I estimated the exchange rate and interest rate misalignment and found significant negative effects of such deviations on output and on the current account.

These findings support the hypothesis that even if economic arguments favor a CBA, its operational feasibility will depend on

whether the issues relating to the expected domestic conditions are effectively addressed by the domestic economic conditions.

Furthermore, the analysis of this paper provides a guidance to Eastern Caribbean Central Bank as to how it should conduct monetary policy on the need for openness to the rest of the world and in the face of external shocks.

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⁴ <http://pages.stern.nyu.edu/~nroubini/asia/CurrencyBoardsRoubini.html>