



**EXCHANGE RATE REGIMES AND ECONOMIC
PERFORMANCE IN THE CARIBBEAN**

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Introduction

The issue of how to structure an appropriate exchange rate regime for countries have for a long time occupied the attention of economists (Friedman 1953, Frenkel, Goldstien and Masson 1991, Helpman 1981, Marston 1988, Obstfeld 1985 and Williamson 1982). The recent international financial problems have only served to intensify this debate. In spite of the amount of research into this issue, however, there is little consensus on the link between the choice of monetary regimes and economic performance. There are many reasons for this; at a theoretical level, it is difficult to delineate a clear relationship between the monetary regime and various economic performance measures because of the indeterminate nature of the causal relationship between the monetary regime and macroeconomic variables. For example, fixed exchange rate regimes are thought to have a positive impact on trade and output because it reduces exchange rate uncertainty. On the other hand it can also reduce trade and output by restricting relative price adjustments. Another reason for the difficulty of determining a clear and unambiguous relationship between the monetary regime and economic performance is the problem trying to distinguish between the impact of the monetary regime on economic performance from other factors impacting on economic performance.

In the Caribbean, the adoption of a flexible exchange rate regime by some countries have generated heated debates between the fixed and flexible regime countries as to the merits and suitability of the different regimes. Additionally, in the context of attempts to move to a monetary union in the region, where exchange rates between members may have to be multilaterally fixed and where one of the criterion for entry into the union is a strict 1.5% floating band standard for flexible regime countries, something of a divide has emerged between the fixed and flexible regime countries, especially on the macroeconomic performance under both types of regime.

Further empirical research on these issues seems, therefore, to be the only way of resolving

the policy dilemma of determining which monetary regime is most appropriate, especially in small open economies. To this end, this paper attempts to provide some empirical answers to questions surrounding the link between the exchange rate regime and economic performance in CARICOM countries and, by extension, help to clear up some ambiguities and differences of opinion that still surrounds the issue of different exchange rate regimes in the Caribbean

The paper is structured as follows. Section II looks at the classification system for exchange rate regimes; Section III looks at the evolution of exchange rate regimes in the Caribbean and the types of regimes that have emerged in the region; Section IV looks at economic performance in the areas of growth, inflation and fiscal discipline across regime types in the Caribbean, controlling for influences other than the exchange rate regime on performance; Section V concludes.

II A Classification System for Exchange Rate Regimes

Monetary regimes can be classified by the degree of discretion and flexibility they offer policy-makers. These regimes can also either be exchange rate based or monetary rule based frameworks. In fact, the customary distinction between fixed and flexible regimes masks the broad range of regimes which span a continuum from the classic single peg to basket pegs, cooperative agreements, currency boards, target zones, crawling pegs and dirty floats to pure floats.

The classification of exchange rate regimes has proven to be a very difficult task in the post-Bretton Woods era given the variety of regime types that have emerged and the rate of change in the regime types. Given the nature of this study, where the classification of the various exchange rate regime is central, we explore this matter in a little more detail.

Based on the International Monetary Fund's classification of exchange rate arrangements

which was introduced in 1975, there has been a shift over the years away from fixed regimes to more flexible ones. Under the classification scheme the percentage of International Monetary Fund members maintaining a fixed peg regime moved from 77% in 1975 to 36% by 1997. In this same period countries with floating regimes moved from 12% in 1975 to 25% in 1997. This shift from fixed to flexible regimes have been more pronounced in developing countries as the proportion of developing countries with pegged regimes moving from 87% in 1975 to 40% in 1997.

The existing classification scheme groups countries based on their degree of flexibility. This scheme has three main categories - pegged exchange rate, limited flexibility and flexible arrangements. In the first case, the exchange rate is fixed with respect to a single currency or a currency composite while the second category includes regimes in which the exchange rate is allowed to fluctuate within a band with respect to a single currency as a cooperative agreement. Flexible regimes are those in which the exchange rate floats freely or is managed. The distinction between freely floating and managed floating is dependent on the degree of and the nature of intervention by the monetary authorities in the foreign exchange market. In the first case, the market essentially determines the rate, with limited intervention to deal with excessive short-run fluctuations, without trying to establish any particular level for the rate. In managed floating systems, intervention by the central bank is needed to clear the foreign exchange market.

This scheme was revised slightly in 1982, with the main change being the introduction of new categories to account for managed floats and independent floats. The variability of exchange rates vis-a-vis their pegs was also looked at to try and determine the de facto nature of the regime.

This classification scheme has a number of deficiencies. These include the ambiguity about what the scheme is intended to measure. That is the wide spectrum of regime types make the traditional classification of fixed on flexible almost worthless. The small nuances inherent

in each regime are not always apparent from the present classification. More importantly, the differences between members formally announced or defined arrangement and their actual or de facto arrangement is a serious impediment to developing a comprehensive classification system. This problem reduces transparency and can create uncertainty about the role of the exchange rate arrangement in the overall policy framework.

In an attempt to overcome these deficiencies, supplemental information on members exchange rate regime is now attended. These include:

1. Information to determine whether members' announce regime coincide with what obtains in practice.
2. Information on members' choice of nominal anchors in monetary policy such as the exchange rate, monetary aggregates or direct inflation targeting. This information helps in determining whether a country is moving to greater flexibility, since countries tend to adopt additional and/or alternative anchors to ensure price stability when they move to more flexible regimes.

The additional information helps to highlight the similarities between regimes classified as different by the present classification system. This additional information has shown that there is movement within the class of pegged regimes to one more rigid forms such as currency boards. In terms of the flexible regimes, there has been a trend towards the authorities managing the exchange rate without having a pre-announced part for the rate.

These trends indicate that as capital flows become more pervasive, the more extreme regime types such as currency boards and free floats become more viable. In the case of currency boards a truly fixed rate is dependant on the commitment to implement a consistent set of policies whereas in free floats the exchange rate moves in response to the market (Fisher 1996).

Possible alternatives to the present system could be a system in which countries are classified according to their de facto policies or where information on exchange rate arrangements and nominal anchors are used to highlight possible inconsistencies in the mix of monetary policies and exchange rate arrangements. The new system would continue to classify countries according to their degree of flexibility but it would introduce a new category for countries operating under a currency board arrangement or adopting the currency of another country as legal tender.

A new system has been proposed (See IMF 1999) which seeks to correct some of the deficiencies of the present system. This proposed new system is based on members' de facto regime and their degree of flexibility.

It is clear from the proposed new system that there would still be some difficulties involved in trying to classify exchange rate regimes in the Caribbean. Countries such as the Bahamas, Barbados, Belize unambiguously fall into the fixed peg arrangement. For the OECS countries who are classified under the current system as fixed peg, however, the new system is still not satisfactory. The OECS is clearly a monetary union based on a currency board like structure but will be classified under the new proposed system as an arrangement with no legal tender. Neither the present or the proposed new system therefore has a category which can neatly accommodate the OECS group of countries which is really a hybrid monetary union/currency board arrangement.

In the case of countries in the Caribbean with flexible arrangements such as Guyana, Jamaica, Suriname and Trinidad and Tobago, the proposed new system also does not adequately classify these countries. Under the proposed new system Guyana and Trinidad and Tobago are classified as independently floating while Jamaica and Suriname are classified as managed floaters. The main difference between these two classes seems to be the degree of intervention in the market by the central bank, with the former class of countries using less

intervention and the latter class using more intervention. This is a fairly subjective criterion for a classification scheme, especially with the degree of intervention in both cases changing over time. It is more accurate we believe to class all these countries as managed floaters since the nature of these economies and the shallow nature of the foreign exchange market invariably requires central bank intervention to smooth out the market.

Based on the IMF's classification system with small modifications bearing in mind some of the concerns raised above, this study classifies Caribbean countries into three broad categories:

1. A fixed peg regime which includes the Bahamas, Barbados, Belize and, Guyana, Jamaica, Suriname and Trinidad and Tobago, before they switched to a floating regime.
2. A monetary union/currency board regime which includes all OECS countries.
3. A managed floating regime which includes Guyana, Jamaica, Suriname and Trinidad and Tobago after their regime switch in the 1990's.

III The Evolution of Monetary Regimes in the Caribbean

Monetary regimes in different CARICOM countries have evolved from a similar past into three broad regime types. This to a large extent was due to the influence of the monetary system set up by the British and Dutch for their colonies in the region and by the perceived needs of these newly independent territories. In what follows, a brief historical review of the development of monetary regimes in CARICOM countries will be outlined to provide perspective on the underlying factors driving changes in these regimes.

The Bahamas

In the Bahamas, as in other former British territories, the Central Bank evolved out of a currency board arrangement. The Currency Board introduced in 1919 was simply charged with the responsibility for the issuance and redemption of Bahamian currency. The natural development of the financial sector coupled with the devaluation of the Pound Sterling (to which the Bahamas Dollar was pegged) in 1967 intensified the call for new monetary arrangements to better deal with the changing environment. In particular, there was a need for discretionary exchange rate arrangements in light of the instability of the Pound Sterling which caused instability of the local currency under the currency board arrangement.

These problems eventually led to the introduction of a new monetary arrangements with the Bahamian Dollar which was now pegged to the US Dollar. This development together with an increasing need for better monitoring and supervision of the banking sector, led to the establishment of the Bahamas Monetary Authority (BMA) in 1968. The BMA was able to issue currency, supervise banks and advise government but was unable to set reserve requirements or use instruments of monetary and credit controls. The weaknesses inherent in this type of arrangements were subsequently exposed by the inability of the BMA to do anything about the sharp expansion in money supply that occurred as banks converted Sterling denominated assets to Bahamian dollar denominated assets. The BMA was similarly hamstrung when OPEC raised oil prices in the early 1970's creating balance of payments problems for the Bahamas. Indeed, one of the only policy option open to the authorities was to adjust the exchange rate, which was done very frequently between 1970 and 1974.

To address some of the shortcoming of the BMA arrangements, a fully fledged Central Bank was introduced in 1974. The Central Bank was charged with the responsibilities of the precursor BMA but it was also charged with managing the country's exchange control regulations, issuing and market development for government securities and the setting of reserve requirements. The central goal of monetary policy pursued by the Central Bank was

and still is to support the fixed parity between the Bahamas and US dollars, while allowing the pursuit of other development objectives. The main instrument of monetary policy was reserve requirements, changes in the Bank's re-discount rate, selective credit controls and moral suasion.

Barbados

The Eastern Caribbean Central Currency Area (ECCA), a currency board arrangement was discarded and a Central Bank set up in 1972. Under the ECCA the currency was partially backed and there were strict limitations on the extent of government borrowing from the monetary authorities. At the inception of the Central Bank, liquidity problems in the banking sector, rising inflation and a deteriorating balance of payments position, required a considerable degree of discretionary action to manage the situation. This would not have been possible under the currency board arrangement. Reserve requirements, credit controls and interest rate controls were introduced to manage the situation. The primary goal of the Central Bank was again to maintain exchange rate stability. As the importance of Sterling fell off, the Barbadian dollar was re-pegged to the US Dollar. The strong commitment to the peg in those early days was reflected in the level of reserve requirement - as high as 25% in the late 1970s. During the economic difficulties in the early 1980's and 1990's, the Central Bank was pressured into lending to the government in 1981 and 1991 which exacerbated the economic difficulties. This reflected the downside of discretionary policy under Central Bank arrangements, that is, the discretion to implement flawed policies.

Belize

The Belize Board of Commissions of Currency, a currency board, was established in 1884 and continued operations until 1976. In 1976, the Belize Monetary Authority (BZMA) succeeded the currency board and was vested with slightly broader powers than its precursor institution. In addition to issuing currency, it was expected to regulate commercial banking

operations, initiate appropriate monetary policies, be a banker to the government and to manage the country's foreign exchange reserves. The tools of monetary policy open to the BZMA were treasury bills, the re-discount rate, reserve requirements and selective credit controls. The BZMA was required to hold external assets of no less than 50% of the local currency in circulation and its domestic liabilities compared to 100% under the old currency board.

In 1982, the Central Bank of Belize was established. In addition to the powers of the previous BZMA, the Central Bank could also set minimum and maximum rates of interest. The new legislative framework also allowed the Central Bank to hold treasury bills up to 5 times its paid up capital and reserves. It also reduced the backing of external assets to 40%. Moreover, from 1993 the Central Bank was allowed to lend the government up to 20% of current government revenue, up from 15% which obtained previously.

The Eastern Caribbean

The evolution of the monetary system in OECS countries went through three basic stages. The ECCA, a currency board, was established in 1965 as a successor to the British Caribbean Currency Board (BCCB) after Guyana and Trinidad and Tobago withdrew to form their own central banks. The BCCB required 100% Sterling backing for the BCCB dollar. The successor ECCA was only required to hold 70% backing in foreign assets, which was further reduced to 60% in 1975. The ECCA could also invest up to 10% of the estimated revenues of the participating governments in treasury bills and up to 15% of its demand liabilities in long term government securities. Even with its charged operating procedures, however, the ECCA still largely functioned as a money changer, a clearing system for banks and a means of affecting foreign payments on behalf of banks.

The second phase began when Barbados left the ECCA to set up its own Central Bank between 1972 and 1974. During this overlapping period both institutions cooperated to effect

a smooth transition. The Eastern Caribbean dollar was pegged to Sterling but as with other Caribbean territories its peg was switched to the US dollar in 1976.

The third phase began with the establishment of the Eastern Caribbean Central Bank (ECCB) in 1983 after several years of difficult negotiations. The ECCB had all the powers of a traditional central bank, that is, the bank could now regulate credit, fix interest rates, establish reserve requirements and carry out bank supervision. The rules based system of the old ECCA was, however largely preserved, especially the 60% backing by external assets required for the EC dollar. This would restrict the scope for monetary policy. Active monetary policy was therefore not used much except for a 4% floor on deposit rates. Nevertheless, the development objectives of the ECCB were still actively pursued, especially its capital market development programme.

The fixed parity to the US dollar has continued and the rate has not changed since 1976 when the EC dollar was re-pegged to the US dollar. The authorities have also moved to more flexible foreign exchange arrangements, with the removal of exchange controls on the current account in 1995.

Guyana

Guyana opted out of the BCCB in 1965 to form its own Central Bank. The Central Bank had all the powers normally associated with a central bank. The Guyana dollar was pegged to sterling until 1975 when the currency was pegged to the US dollar. By 1984, significant balance of payments and other problems were bringing heavy pressure to bear on the exchange rate. In an attempt to maintain some stability, the currency was devalued and pegged to a basket of currencies in 1994, with the US dollar serving as the intervention currency. Thereafter, various flexible regimes for the foreign exchange market were tried. In the face of a thriving black market in foreign currency, the government established the 'cambio system' which was designed to trade foreign exchange at market rates, in an effort to

eliminate the black market. Eventually, a floating exchange rate regime was introduced in 1990. The exchange rate is now determined on a daily basis by the average free market rates of all dealers, with the Bank of Guyana intervening from time to time to smooth out large temporary problems. The system moved to a fully flexible system in 1995 when exchange control regulations were abolished.

Jamaica

The monetary framework in Jamaica evolved out of the Board of Commissioners of Currency, a currency board which existed between 1939 and 1961 and had the statutory authority for the issue of the domestic currency. The Bank of Jamaica (BOJ) was established by the Bank of Jamaica Act in 1960 and commenced operations in 1961. The BOJ was responsible for exchange rate and monetary policy, as well as, for the regulation of banking in Jamaica. From 1961 to 1973 the Jamaican dollar was pegged to the Pound Sterling. However, as with other territories, the devaluation of Sterling and the fact that the US was now Jamaica's major trading partner led to the Jamaican dollar being re-pegged to the US dollar in January 1973. From as early as 1977, however, this fixed exchange rate regime had begun to unravel driven by external shocks, which created balance of payments problems. Despite active interventions by the BOJ, fiscal indiscipline and poor terms of trade began to put pressure on foreign exchange reserves and hence on the fixed peg. Between 1978 and 1983, therefore, there were a number of devaluations. In 1983, an auction system for foreign exchange was introduced which signaled the beginning of a flexible exchange rate regime in Jamaica. Between 1983 and 1988 there was a period of relatively good economic performance. In the aftermath of Hurricane Gilbert in 1988, however, the rebuilding exercises created large public sector deficits which once again placed pressure on the exchange rate. In 1990, therefore, the foreign exchange market was fully liberalised. Under this new system, the purchase and sale of foreign exchange was executed by authorised dealers and the exchange rate was determined by the interplay of the demand and supply for foreign exchange- in effect a change to a floating (managed) exchange rate regime. Exchange controls were abolished in 1992

to formalise the floating exchange rate regime.

Suriname

The Monetary arrangements in Suriname evolved in a slightly different way than the system in the British West Indies. Firstly, the Central Bank of Suriname was established in 1957, much earlier than those in the English speaking Caribbean. Moreover, prior to this a commercial bank was responsible for the issue of the Surinamese Guilder for more than 10 years, with the bank being assisted by the Bank Commissioner which provided guidelines for the conduct of monetary policy. There were amendments to the central bank legislation in 1968 and 1975, the first was designed to improve the ability of the Central Bank to regulate banks while the latter gave the Central Bank added powers of intervention in the areas of open market operations, lending to government and credit controls. In its early years, the Central Bank focused on managing inflation, encouraging growth and supporting the fixed parity of the Surinamese Guilder. Later, the Bank became very accommodating in its lending to government during the period of political instability (1980-1988). The Surinamese guilder remained fixed to the US dollar from 1970 to 1994. In that time there was only one devaluation, despite significant economic problems, especially huge balance of payment and fiscal deficits. As foreign exchange reserves fell, the authorities resorted to harsher trade and exchange restrictions. These restrictions led, however, to the development of a thriving black market in foreign currencies, as the Surinamese guilder was significantly overvalued at the official rate and since fiscal and balance of payment dis-equilibria were not corrected.

In an attempt to deal with these problems, a multiple or dual exchange rate system was introduced in 1992 with different fixed parity for certain exports and imports. By 1992, as much as 8 exchange rates were in use in Suriname. In 1993, a more flexible system of foreign exchange management was introduced where currencies were brought at quite competitive rates by financial institutions but the sale of such currencies were still restricted. These new arrangements posed a threat to the parallel market for foreign exchange but the restriction in

the sale of currency still gave that market the edge.

In July 1994, the various exchange rates were unified. The quoted exchange rate was now a weighted average of the bank and non-bank cambio rates. The demand side of the foreign exchange market in Suriname is, however, still regulated. The system is therefore not a float in the true sense of the word but a more restricted version of a floating exchange rate regime.

Trinidad and Tobago

The Central Bank of Trinidad and Tobago was established in 1964. Previously, Trinidad and Tobago had operated under the British Caribbean Currency Board which served basically as issuer of local currency which was backed 100% by Sterling. From 1964 to 1976, Trinidad and Tobago operated a system of fixed parity to the Pound Sterling. Thereafter, the local currency was pegged to the US dollar. The fixed parity system did not perform well in the face of falling oil prices. Monetary tightening in the form of higher reserve requirements, credit controls and re-discount rates were all inadequate to deal with this situation and the balance of payments and fiscal positions deteriorated. Exchange controls and direct trade restrictions were also used in an attempt to stem the decline in international reserves but these policy initiatives also proved to be inadequate. Indeed, exchange controls led to foreign exchange transactions increasingly being carried out outside of the formal financial sector and the Trinidad and Tobago dollar had to be devalued a number of times before 1993.

In 1988 therefore, the government resorted to seeking financial assistance from the IMF under the Compensatory Financing Facility and a Stand-by Arrangement and, later the World Bank under a Structural Adjustment Loan. Conditionalities under these programmes required the liberalisation of the trade, exchange and financial sectors. These shifts in the policy regime led in 1993 to the government taking the decision to abolish exchange controls on the current and capital accounts and to float the Trinidad and Tobago Dollar. The value of the Trinidad and Tobago dollar was now determined on the basis of daily demand and supply of foreign

exchange in the banking system, with the Central Bank intervening from time to time as the situation warranted.

The Three Type of Monetary Regimes that have Evolved In the Region

From the information contained above, it is evident, that although most monetary regimes in CARICOM evolved out of similar past, economic developments¹ and their own peculiar economic structures have played a large part in shaping the different regimes that are in place today. It is clear also that three distinct types of monetary regimes have developed in CARICOM countries. The first type, the currency union/currency board arrangement, is located in the group of countries in the Eastern Caribbean whose economies are dependent largely on tourism, agriculture, remittances and external assistance for hard currency. These countries recognising their vulnerability to external shocks have put in place a common currency and Central Bank (ECCB), fixed their currency to the US dollar and refrained from monetizing the public debt. Exchange controls were also put in place but they were and still are liberally administered. This region retains most elements of the rules based system, in that, it is still mandated by law that its local currency is backed by 60% of foreign assets. There are also limits on how much individual governments can borrow from the ECCB and monetary policy is not actively pursued. This arrangement has some elements of an orthodox currency board but discretion is still exercised, especially in the area of capital market development and the regulation and supervision of financial institutions. In terms of classification, therefore, the Eastern Caribbean monetary arrangement falls more neatly into the currency union/currency board class.

The second type of monetary regime that has evolved is located in countries which consider

¹ Changes to the international monetary system (the collapse of the Bretton Woods System), external economic shocks (changes in the price of oil and bauxite) and economic and financial liberalisation.

themselves large enough to have their own central banks and who have occasionally used monetary financing of the public debt. This has, however, been sparingly used because they are aware of their particular circumstances impose constraints on their ability to monetise public debt, preventing unsustainable expansions of the money supply. These countries maintain fix pegs with the US dollar and have capital controls in place. In Belize's case, the Central Bank must maintain foreign assets of not less than 40% as backing for the domestic currency and government is constrained to borrowing not more than 20% of average current revenues, features which are vestiges of the former currency board arrangement. Following Ghosh, Gulde and Wolf (1998), however, we classify this arrangement as a fixed peg regime rather than a currency board because the criterion of at least 50% backing of the local currency by external assets is not satisfied in this case. The monetary regimes in these countries could, therefore, most accurately be described as fixed peg arrangements with capital controls which are liberally administered and, with discretionary powers in the conduct of monetary policy.

The third type of monetary regime that has developed is the flexible rate arrangements or managed floating exchange rate arrangements. This type of regime has developed in the larger territories (commodity exporters) that have their own central banks and have not always been successful in maintaining the stability of their exchange rate as commodity prices fluctuated. The boom in commodity prices seems to have encouraged the expansion of the public sector beyond sustainable levels. The fall in commodity prices triggered falling exchange reserves, which, together with overly accommodating financing of fiscal deficits by the central banks, inevitably weakened the exchange rate in those countries. The adjustment programmes that followed had as part of them, financial liberalisation elements, which provided the bridge to the floating (managed) exchange rate regime.

In these countries the exchange rate is now determined by the interplay of the demand and supply for foreign exchange (mostly US dollars) with periodic intervention by the central bank to buy and sell foreign currency to moderate fluctuation in the rate. Capital controls have also

been abolished (except Suriname²) and although there are no restrictions on the central banks financing of fiscal deficits. Nevertheless, fiscal rectitude is the order of the day because the authorities recognise that endemic fiscal imbalances have serious implications for the stability of the exchange rate.

These three types have evolved over a period of exceptional change in the region and a good question would seem to be whether these types are going to continue evolving. For now, it appears that these monetary regimes are unlikely to change dramatically in the near future. What is evident is that there has been a marked trend to the liberalisation of the financial systems in the region, which has manifested itself in capital controls being increasingly liberally administered if not removed altogether. Even in the OECS, nationals of these countries can now keep foreign currency deposits of up to US\$100,000. The recent spate of currency crisis in Asia have, however, renewed debate on the question of whether more open (discretionary) approaches to the monetary regime is desirable, especially in small open economic systems. This increasing reservation has particular relevance to the removal of restrictions on the capital account of the balance of payments. One cannot therefore say with confidence that the trend to more open monetary systems will continue to have an impact on the evolution of monetary regimes in the Caribbean.

The structure of the exchange rate regime in place today is the result of different development paths taken. The open nature of all these economies means that the exchange rate regime is likely to have a significant impact on economic performance. In what follows we investigate whether the different regimes generated significantly different economic outcomes or whether they were mostly irrelevant to relative economic performance.

²
In the case of Suriname, however, there are still restriction in the demand side for foreign exchange.

IV Economic Performance under Different Exchange Rate Regimes

Characteristics of different regimes

Pegged regimes are supposed to limit excessive monetary expansion. This greater discipline it is argued also tends to generate greater confidence in the domestic currency which, in turn, leads to lower inflation for a given rate of monetary expansion. This greater confidence is also expected to lower real interest rates and promote faster output growth.

Arguments in favor of currency board arrangements center on their ability to solve time consistency problems (Kydland and Prescott 1977) and, in the context of the recent literature on currency crisis, their hypothetical ability to deter self-fulfilling runs and other undesirable multiple equilibria (Davies and Vines 1995).

Since a currency board is essentially an extension of pegged regimes the difference between these two regime types is largely one of degree. Thus, currency boards are expected to have greater discipline and confidence when compared to pegged regimes. This extra credibility, however, comes at a price. Currency boards are more constraining on credit policy and the ability of the authority to adjust the exchange rate par. More generally, the cost depends on the susceptibility of the economy to shocks and the absence or ineffectiveness of alternative policy instruments. Another cost is the reduced ability of the central bank to act as lender of last resort in the face of liquidity problems.

Friedman (1953) has been the main proponent of flexible regimes. He argued that these regimes are desirable because they facilitate national relative price adjustment which helps the BOP to adjust, particularly when domestic wages and prices are sticky. This helps to maintain the relative competitiveness of countries. Others have argued that flexible regimes generate too much exchange rate uncertainty which hampers investment and trade. It is therefore obvious that much of the questions about the suitability of various monetary regimes

in different environments remains largely unanswered, especially in the Caribbean³. This research seeks to address some of these questions.

The above comparison highlights the fact that there are some fundamental institutional differences between different monetary regimes which should predispose them to facilitate certain economic outcomes. The important questions, however, relate to how they actually perform in areas such as inflation, monetary discipline, fiscal management and economic growth. The review of the evolution of monetary regimes in the region was also instructive as it served to highlight the performance of various regimes as the economic environment changed.

The central issue of this paper in spite of the discussion of the features of various monetary regimes, is their ability to promote prudent fiscal management, maintain price stability and facilitate growth. It is therefore important to review how key economic indicators have changed as monetary systems evolved in the Caribbean. To facilitate this review, the countries in the region would be categorized as either fixed peg, currency union/currency board or floating (managed) and the average performance under these three types of monetary regimes analysed.

Data and Methodology

The data used is annual data for Antigua/Barbuda, Dominica, Grenada, St. Kitts, St. Lucia, St. Vincent, The Bahamas, Barbados, Belize, Guyana, Jamaica and Trinidad and Tobago covering the period 1983 to 1998. Data on real economic growth rates, overall fiscal balance, inflation and a host of control variables including the growth rates of the monetary aggregates, interest rates, government expenditure, the growth rate of exports, investments, international reserves, external debt and foreign direct investments were taken from the IMF's International

³ The exception to this is a study by McCarthy and Zanalda (1996) on Caribbean countries.

Financial Statistics and central banks in the region. Based on our classification⁴ of countries into different exchange rate regime classes, the currency union/currency board class (CUCB), resulted in a data set for this group which comprised observations for OECS countries for the full period. The fixed peg observations comprised information on The Bahamas, Barbados and Belize for the full period, Guyana and Jamaica for the period 1983 to 1989 and Trinidad and Tobago for the period 1983 to 1992. The floating regime data set comprised information for Guyana and Jamaica for the period 1990 to 1998 and for Trinidad and Tobago for 1993 to 1998. Suriname was excluded because of data problems. In trying to determine whether the difference in exchange rate regime impacted on economic performance we adopt an eclectic approach. Firstly, the average performance in the areas of economic growth, inflation and fiscal discipline under the three regime types is compared adjusting for the potential bias caused by outlier observations, contamination across regime class⁵ and for problems with the classification system chosen. To buttress this analysis, we also explore the link between exchange rate regime more formally through regression analysis, where the significance of the regime type on economic performance is evaluated through regime dummies correcting for determinants of economic performance other than the exchange rate regime.

Economic Growth

The literature on relative growth performance under alternative exchange rate regimes is not expensive. Some authors (Aizenman 1991) have argued that pegged regimes promote faster economic growth through higher investment rates generated by lower risk premium, especially in countries with very open economies. Some have argued otherwise that more flexible regimes promotes growth by facilitating faster adjustments to shocks as well as, through increased trade (Friedman 1953, Cushman 1983, Bailey, Tavlas and Ulan 1986, Dixit 1989,

⁴ Based largely on the IMF's classification system.

⁵

That is where policies pursued in the past manifest themselves in results later on when the regime may have changed. In such cases, it would be incorrect to ascribe those results to the new regime.

Chosh, Gulde, Ostry and Wolf 1997). The literature on the Caribbean has also identified foreign exchange (Bennett 1981), exports and openness in general (Mc Intyre 1992), government expenditure (Belgrave and Craigwell 1995) and financial deepening (Bourne 1986) as growth determinants. It is clear from the literature that the determination of whether growth is higher under fixed regimes than under more flexible regimes remains unsettled.

The average growth rate over the full sample averaged 3.1% with significant differences across regimes type. The currency union/currency board (CUCB) countries averaging 4.6%, the floating regime averaging 2.8% and the fixed peg regime 1.3%. To deal with the potential bias that can result from a few unusually high or low growth rates (g) which can distort the assessment of relative growth performance, a scaled measure, $\frac{g}{1+g}$ (which reduces the

impact of outliers) was also used to assess relative performance. Using this scaled measure the ranking changes slightly with the CUCB countries (0.96) now ranked 2nd and the floating regime countries (1.05) ranked 1st. The pegged regime group (0.7) remains last. The relative differential between groups is of course much smaller as expected. (See Appendix 11)

Some may argue, however, that the performance of the pegged regime class is distorted by the fact that it includes countries which should not really be considered fixed pegs because of the frequency of change to their nominal exchange rate. To account for this potential bias, we divided the fixed peg class into two groups "frequent adjusters" and "infrequent adjusters", with the former group made up of Guyana, Jamaica and Trinidad and Tobago in their pre-float years and the latter group including The Bahamas, Barbados and Belize. With this revised classification, the "frequent adjusters" registered an average growth rate of -1.09% while the "infrequent adjusters" registered an average rate of 2.48%. With this adjustment the latter group (which may be viewed as the real fixed peg group because they pursued policies which were broadly consistent with the need to maintain the peg) is still last but much closer to the "floaters".

Comparisons across regimes may also be distorted by contamination across regime class,

that is, policies pursued under one regime type may manifest themselves in terms of economic outcomes under another regime type. In this case attributing the economic performance to the new regime may be misleading. To adjust for this potential problem we computed the average after omitting from the data set observations for the year of regime change, as well as, two years prior to and two years after the regime change. This change only affect the fixed peg regime and the floating regime. When these adjustments were made the average for the fixed peg countries moved from 1.29% to 1.34% while the average for floating rate regime countries moved from 2.78% to 3.04%. This seems to suggest that there was some level of contamination, particularly from the fixed peg to the "floaters" but it was not strong enough affect the relative ranking.

Following the approach of Ghosh, Gulde, Ostry and Wolf 1997, we attempt to determine whether growth varies across regime type controlling for factors other than the exchange rate regime. Based on the literature in this area growth is generated either through greater factor accumulation and/or greater productivity. We investigate the link between growth and the exchange rate regime by first regressing real GDP growth on lagged growth in government expenditure (ge) as the proxy for fiscal stimulus and lagged growth in the international reserves to GDP ratio ($irgdp$). As in Ghosh, Gulde, Ostry and Wolf (1997), we first exclude the proxy for investment which in our case is the ratio fixed capital formation to GDP ($fcgdp$), as well as, the growth rate of trade⁶ (gr) which is used as a proxy for productivity growth.

The coefficient on the exchange rate regime dummies should therefore capture the growth in factor accumulation and productivity effects. The coefficient on the currency union/currency board dummy is both positive and significant (2.43), indicating that growth in this group was about 2.4 times higher than the floating regime group. The coefficient on the pegged regime dummy is insignificant. The coefficient of the currency union/currency board dummy remains significant and positive as the factor accumulation and productivity proxies are included. The coefficient on the pegged regime dummy remains insignificant. The coefficient on the investment and productivity proxies are both positive but only the productivity proxy is significant. The results seem to indicate that there is a significant difference in growth

⁶ Trade is defined as imports plus exports.

performance between the currency union/currency board regime and the floating regime with the former performing better, even when controls for the investment and productivity effects are included. The same cannot be said for the relative performance between the pegged regime and the floating regime, probably because the growth performance between these two regimes is not significantly different.

(See Appendix 1)

Inflation

The literature on the relationship between the exchange rate regime and inflation mostly predicts a positive correlation between exchange rate regime flexibility and inflation (Alogoskoufis 1993, Alogoskoufis and Smith 1991, Obstfeld 1995 and Dornbusch 1982). The literature on the Caribbean also seems to share the view (Holder and Worrell 1985, Thomas 1994). Other authors held a different view (Romer 1993, Quirk 1994, Svensson 1993 and Tomell and Velasco 1995) arguing that flexible regimes may in fact generate more discipline.

Determinants of inflation in the Caribbean also include import prices (Joefield - Napier 1975, Thomas 1994, and Nicholls, Christopher - Nicholls and Leon 1995, Holder and Worrell 1985 and Downes 1985) and expansionary monetary policy (Nicholls, Christopher - Nicholls, and Leon 1995 and Joefield - Napier 1975)

The average inflation rate for the full sample is 7.29% with significant differences across regime classes. The CUCB group averaged the lowest rate at 3.03% followed by the pegged regime at 7.76% and the floating regime at 22.9%. As with the analysis of relative growth performance across the three regimes, we again make adjustment for the potential bias caused by outliers, classification problems and contamination caused by regime shifts. When the scaled measure was computed for inflation the average for the full sample was 0.616 with the CUCB regime at 0.475, the pegged regime at 0.709 and the floating regime at 0.905. The relative inflation performance ranking is therefore robust, implying that the actual relative performance was not distorted by outliers. When the "frequent adjusters" were excluded from

the pegged regime the average inflation rate fell to 3.36%, very close to the performance of CUCB regime but still higher. The average rate for the "frequent adjusters" was 16.56%. These results imply that the "frequent adjusters" may have skewed the average inflation rate for the pegged regime upwards and that they may in fact not belong to the group of "real peggers" such as The Bahamas, Barbados and Belize. Adjusting for possible contamination across changed regimes as before, the average rate for the pegged regime falls from 7.76% to 6.91% and the floating regime average rate falls from 22.9% to 15.41%, however this still does not affect the relative rank of the three regimes. The average inflation performance across regimes therefore seems to be robust even when adjusting for factors that distort average inflation performance. (See Appendix 11)

In this section following the approach of Ghosh, Gulde, Ostry and Wolf (1997) we attempt to determine by using a simple model whether inflation performance differ across different exchange rate regimes controlling for other determinants such as income growth, money growth and the rate of interest. To this end, a money demand function is an analytical schema in which these issues can be explored. A simple representation of a money demand function is outlined below.

$$\frac{mv}{p} = \gamma^{\alpha} i^{\beta} \quad \alpha, \beta > 0$$

where m is broad money, p is the consumer price index, y is real output, i is the nominal interest rate and v is the residual velocity controlling for income interest and income effects. Taking logarithms, first differences and re-arranging terms yield:

$$\Delta \ln \left[\frac{mv}{p} \right] = \alpha \Delta \ln m - \alpha \Delta \ln y + \beta \Delta \ln i + \Delta \ln v$$

That is differences in inflation can be caused by different growth rates for the money supply, real GDP, interest rates, as well as, by differences in residual velocity. Different inflation performance across regimes might be due to different rates of monetary growth (with lower

growth in the monetary aggregates implying greater monetary discipline. Moreover, as noted by Ghosh, Gulde, Ostry and Wolf (1997) a pegged regime may also raise money demand by reducing uncertainty about monetary policy which may be partly reflected in lower levels of interest rates. Lower interest rates tend to raise money demand which means lower average inflation for a given rate of monetary expansion. This sequence of relationships is of course blunted by the fact that for many countries interest rates are set administratively.

As with economic growth performance we formally explore the link between differential inflation performance across exchange rate regimes by regression analysis controlling for factors other than the exchange rate regime which may impact on inflation performance. We estimate two regressions, one in which the inflation rate (inf) is regressed on exchange rate dummies, one each for the currency union/currency board ($Dcucb$) and pegged regimes ($Dpeg$), real GDP growth (g) and openness ($open$). The openness variable (the ratio of imports plus exports to GDP) is thought to engender greater discipline on the part of policy makers because of the high cost of overly expansionary monetary policy in open economies and the discipline of international arbitrage constraints (Romer (1993), Lane (1994)). We then include the growth rates of broad money ($m2$) and the three month deposit rate (tmd) to control for the credibility and discipline effects.

In the first regression the coefficient on the $Dcucb$ is -15.0 while the coefficient on $Dpeg$ is -11.37 indicating that both the currency union/currency board and pegged regimes are associated with lower inflation when compared to the floating regime. The coefficient of (g) is -0.37 indicating that countries with relatively higher economic growth rates experienced lower average inflation. All the coefficients are significant at the 5% level of significance. When money growth and interest rate changes are included the coefficients on $Dcucb$ and $Dpeg$ fall in absolute values to -12.2 and -9.3 respectively and significant. The coefficient of $m2$ is 0.35 and significant but the coefficient of tmd is insignificant. Thus, even controlling for monetary growth (discipline effect) inflation remains lower under the currency union/currency board and pegged regimes. The decline in the absolute size of the regime dummy coefficients in the second regression and the fact that the interest rate coefficient is

insignificant suggests that discipline effect (and virtually no credibility effect) accounted for much of the better inflation performance of the more inflexible regimes. The evidence therefore suggests that pegging the exchange rate generates better inflation performance and, the more rigid the peg, the better the performance. (See Appendix 1)

Fiscal Discipline

Few studies have compared the actual fiscal performance of economies operating under these different regime types. Tornell and Velasco (1995a and b) are among the small number of authors who have investigated this issue in a formal analytical framework. This has been the case in spite of a great deal of informal discussion on the link between exchange rate regimes and fiscal discipline. In the Caribbean, the situation is no better. Only work by Rolle (1994) and Anyadike-Danes and Francis (1993) touch on this issue in a region that has had more than its fair share of experimentation with the exchange rate regime.

Conventional economic thinking on this issue is that fixed exchange regimes provide more discipline than flexible regimes (Aghevli and Khan (1991), Giavazzi and Pagano (1988) and Frenkel, Goldstein and Masson (1991)). This hypothesis is based on the argument that under a fixed rate regime, a lax fiscal stance will lead to a deterioration in international reserves, balance of payments problems and the eventual abandonment of the peg. The collapse of the peg also implies political and reputation costs for policy-makers and politicians.⁷ The costs associated with this therefore leads policy-makers to adopt a disciplined approach to fiscal management. This alludes to the political economy aspect of the decision on an exchange rate regime. Collins (1996) reasons that it may be more politically difficult⁸ to adjust a fixed peg than it would be undertake a similar nominal adjustment under a managed float because the latter is much easier to disguise.⁹ This seems to fit well with the high drama normally

⁷ Cooper 1971 argues that stepwise devaluations are often associated with political upheavals and the fall of governments.

⁸ See Edwards 1996.

⁹ See Johnson 1969 who argues otherwise, stating that under fixed exchange rate regimes adjustment

associated with a decision to devalue a fixed peg. A series of small depreciations under a managed float on the other hand is less likely to attract such widespread attention.

A fixed peg can also be viewed as a commitment to a future inflation rate, which disciplines policy-makers to adopt a prudent fiscal and monetary policy stance towards the achievement of that rate. Many authors have in fact argued that the exchange rate can serve as a nominal anchor and as a means of establishing credibility for stabilisation programmes (Corden (1994), Edwards (1992) and Giavazzi and Pagano (1988)). On the other hand, flexible regimes allow the fiscal authorities greater flexibility with revenue at the expense of a lack of commitment to future inflation targets (De Kock and Grilli (1993)). It is this flexibility in fiscal policy, which leads some economists to believe that the fiscal authorities would be less disciplined, accepting higher inflation at the margin in the pursuance of other objectives. The implication again is that a fixed rate regime elicits a more disciplined fiscal stance from policy-makers than would be the case if they operated under a flexible regime. In a sense, this line of reasoning suggests that a flexible regime signals to economic agents its predisposition to be less fiscally disciplined in order to pursue other policy objectives.

There are of course both theoretical and empirical problems with this line of argument. From a theoretical standpoint, some have argued that it is unclear why a devaluation under a fixed exchange rate regime is more politically costly than a depreciation under a flexible regime. Moreover, the political costs associated with devaluations are difficult to identify and quantify (Tornell and Velasco 1995). Moreover, Tornell and Velasco argue that under a flexible exchange rate regime imprudent fiscal management has costs as well. The difference, however, is in the inter-temporal distribution of these costs. With fixed regimes indisciplined fiscal behaviour manifests itself first in falling reserves or increasing debt. This behaviour can therefore continue for some time after the indisciplined stance has begun (depending on the initial level of international reserves and the countries initial debt overhang) before there has to be adjustment. It is only when countries approach the limits in terms of external reserves and

takes place through reserves losses and external debt which are difficult to monitor because of central bank secrecy and forward foreign exchange operations.

foreign financing does the cost¹⁰ of these imprudent policies really begin to impact on the country. In flexible exchange rate countries, however, the effect of an imprudent fiscal stance tends to manifest itself almost immediately in the exchange rate and prices¹¹.

Under both regime types therefore costs are incurred for lax fiscal policies. The difference, however, is that under flexible regimes the costs are incurred up front whereas under fixed regimes they tend to impact with a time lag. Tomell and Velasco also argue that if inflation is costly to the authorities or if they have inflation control as a main objective, then flexible rates may in fact provide more fiscal discipline by forcing costs to be paid up-front.

Using the overall fiscal balance to GDP ratio as our indicator of fiscal discipline, we explore the fiscal discipline across regime types. The average for this indicator for the full sample is -0.44 with substantial differences across regime types. The average for the CUCB countries was -0.027, it was -0.067 for the pegged regime countries and it was -0.042 for the floating regime countries. As before we adjust for potential biases caused by outliers, classification problems and contamination across regime classes. When the scaled measure is used the averages are -0.030, -0.099 and -0.051 for the CUCB, pegged and floating regimes respectively. The ranking is not affected. Adjusting for classification problems, we again reclassify the pegged regime countries into the "frequent" and "infrequent adjusters". The average for these groups are -0.145 and -0.028 respectively. This re-classification now means that the average for the "infrequent adjusters" is virtually the same as that of the CUCB group, with the "frequent adjusters" ranked as the worse performers. There appears therefore to be two separate groups within the fixed peg regime which causes problems for the assessment of relative performance. When we correct for contamination the average for the floating regime is now -0.032 whereas the pegged regime is -0.163. The floating regime's average is now very close to that of the CUCB regime. It therefore seems to be clear evidence of contamination flowing from the pegged regime to the floating regime. In fact, if

¹⁰ High debt service payments, import restrictions, foreign exchange scarcity and reduced growth.

¹¹ Of course it could be argued that even in a flexible regime the monetary authorities can intervene also to put of adjustment by using their reserves to intervene in the market.

the "frequent adjuster" are removed from the sample the CUCB, real fixed peg and floating regimes had very similar experiences with fiscal discipline with the CUCB, real pegged and floating regimes ranked in descending order of discipline. (See Appendix 11)

We now formally assess the relative fiscal discipline performance across the three regime types adjusting for factors other than the regime type which impacts on fiscal discipline. Following Tomell and Velasco (1995) we use the debt to GDP ratio (*dgdg*) as a control in the regression analysis. We also used the growth rate of real GDP (*g*), the international reserves to GDP ratio (*irgdg*) and the treasury bill rate (*tbr*). With the overall fiscal balance regressed on *irgdg*, *g* and the dummies for the CUCB and pegged regimes, both regime dummies are insignificant with only *irgdg* significant (0.20). When *dgdg* and *tbr* are included the regime dummies remain insignificant. The significant variables in the second regression are *irgdg* with coefficient 0.21, *egd* with coefficient -0.03 and *tbr* with coefficient -0.002. Many other alternative specifications generated much the same results - that the exchange rate regime had no significant differential impact on fiscal discipline across the three regime types. This seems to be in congruance with the results of the relative average performance comparisons when the potential distortions were adjusted for - there were very little difference on fiscal discipline across all three regimes. (See Appendix 1)

V Conclusion

This paper reviewed both the theoretical debate, as well as some empirical evidence that looks at whether different exchange rate regimes generate different economic performances in three main areas - economic growth, inflation and fiscal discipline. All other things being equal. The theoretical debate leaves many questions unanswered. In many instances, the literature takes conflicting positions, often dependent on the peculiarities of model structures and assumptions about the incentive structure of policy-makers.

The evidence as presented here for selected Caribbean countries does help a little in this regard since it seems that there is in fact significant differences in performance across the

three regime classes with respect to inflation and to some extent in economic growth. In terms of fiscal discipline, however, it does not seem that a difference in exchange regime matter for performance in this area. In terms of inflation, it seems that the discipline effect had in significant part to play in moderating inflation in pegged regimes, especially in the more rigid form of the pegged regime - the CUCB arrangement. It is surprising, however, that given the strictures placed on government borrowing from the central bank in the CUCB group that they did not register significantly different performance in the area of fiscal discipline.

Another insight is that countries apparently falling into one group based on ex ante classification criteria may not really be a true member of that group, generally because their mix of policies is inconsistent with the maintenance of the peg, that is the policy mix is inconsistent with the exchange rate regime. Based on this it is apparent that countries such as The Bahamas, Barbados and Belize operated very different arrangements to countries such as Guyana, Jamaica and Trinidad and Tobago in their pegged regime years. They should therefore be classified differently, meaning the CARICOM may have four exchange rate regimes instead of three.

On a related point, the results also highlight the importance of the mix of fiscal policies, debt management policies and monetary management policies to the process of determining countries' regime classification. Probably we should not be talking about exchange rate regimes at all but policy regimes. It may be may simply be (as Collins (1996) has argued), that countries which undertake sensible macro-economic policies in the context of their specific environment (whether under fixed or flexible exchange rate regimes) can produce good economic results. Abstracting from the exchange rate regime, the experiences of different countries with fiscal adjustment seem to indicate that the consistency of the policy stance across the range of policy areas and, a policy regime which generates the least indirect costs (in terms of government revenue foregone, stability and short-term income losses) offers the best hope of achieving good macro-economic and real sector performances.

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APPENDICES

Appendix I
Table A
Growth

Variable	(1) Coefficient	(2) Coefficient
C	0.14	-6.19
Dcucb	2.43*	3.04*
Dpeg	-0.72	-0.04
ge (-1)	2.93	0.78
ingdp (-1)	8.64*	11.56*
fcfgdp	-	0.08
gt	-	1.68*
AR (1)	.038*	0.34*
	R ² =0.29	R ² =0.31

* Significant at the 5% level

Table B
Inflation

Variable	(1) Coefficient	(2) Coefficient
C	19.56*	13.41*
Dcucb	-15.00*	-12.25
Dpeg	-11.37*	-9.33
Open	0.62	0.084
g	-0.372*	-0.415*
Tmd	-	1.479
M ₂ G	-	0.349*
AR (1)	0.684	0.535*
	R ² =60	R ² =0.65

* Significant at the 5% level

Table C
Fiscal Discipline

Variable	(1) Coefficient	(2) Coefficient
C	-0.084*	-0.005
Dcuch	-0.028	-0.025
Dpeg	-0.007	-0.039
ingdp	0.174*	0.208*
g	0.001	0.001
dgdg	-	-0.035
tbr	-	-0.002
AR (1)	0.764*	0.686
	R ² =0.61	R ² =0.63

*Significant at the 5% level

Appendix II

OVERALL FISCAL BALANCE TO GDP

Average	Scaled Average	Regime Classification	Contaminations
all = -0.044 cucb = -0.027 peg = -0.067 float = -0.042	all = -0.059 cucb = -0.030 peg = -0.044 float = -0.051	frequent adjustments - 0.145 infrequent adjustments - 0.028	peg = -0.163 float = -0.032
GROWTH			
all = 3.11 cucb = 4.56 pey = 1.29 float = 2.78	all = 0.87 cucb = 0.96 peg = 0.70 float = 1.05	frequent adjustments - 1.09 infrequent adjustments 2.48	peg = 1.34 float = 3.08
INFLATION			
all = 7.29 cucb = 3.03 peg = 7.76 float = 22.90	all = 0.616 cucb = 0.475 peg = 0.709 float = 0.905	frequent adjustments 16.56 infrequent adjustments 3.36	peg = 6.91 float = 15.41
Money Growth			

all = 13.51 cucb = 11.02 peg = 12.22 float = 27.37	all = 0.904 cucb = 0.901 peg = 0.896 float = 0.941	frequent adjustments 16.07 infrequent adjustments 10.29	peg = 12.01 float = 17.54
Three Month Deposit Rule			
all = 8.07 cucb = 5.79 peg = 8.09 float = 17.11	all = 0.865 cucb = 0.847 peg = 0.869 float = 0.926	frequent adjustments 10.98 infrequent adjustments 6.64	peg = 10.71 float = 16.08
Export Growth			
all = 0.094 cucb = 0.039 peg = 0.0995 float = 0.293	all = 0.289 cucb = 0.025 peg = 0.789 float = 0.17	frequent adjustments - 0.18 infrequent adjustments - 0.052	peg = 0.079 float = 0.17
INVESTMENT			
all = 0.275 cucb = 0.309 peg = 0.209 float = 0.333	all = 0.211 cucb = 0.233 peg = 0.172 float = 0.245	frequent adjustments 0.217 infrequent adjustments 0.205	peg = 0.207 float = 0.352