DOLLARIZATION:

MYTHS AND REALITIES

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February, 2001

Revised: March, 2001

I. Introduction

A number of proposals for reforming the "international financial architecture" have recently been advanced by academics, policy makers, and pundits of various types. These reform blueprints have included the imposition of controls on capital inflows, abolishing the IMF, and the creation of a global lender of last resort. But perhaps the most intriguing reform proposal is that emerging countries should completely give up their currencies, and adopt an advanced nation's currency as legal tender.

This proposal has come to be known as ***"dollarization,"*** and is being pushed with increased vigor by a small, but increasingly influential, group of economists.[1] What started as an intellectual, but mostly impractical idea, has recently become a real policy option. During the last few months some countries have either dollarized, or have announced that they are moving in that direction. In 2000, and in the midst of a major crisis, Ecuador abolished its national currency, the *Sucre*, and adopted the U.S. dollar as legal tender. El Salvador has recently announced that it plans to adopt the dollar during 2001, and Guatemala and Nicaragua are considering the option seriously.

At a general level, dollarization is being presented as the ultimate way for achieving credibility, growth, and prosperity. Countries that give up their currencies, we are told, will be unable to engage in macroeconomic mismanagement. Thus, public finances will stay in balance, and the external accounts will move within reasonable bounds. Dollarization-imposed macroeconomic stability, the story goes, will mean lower interest rates, higher investment, and superior economic performance. Current arguments in favor of dollartization have gone beyond traditional discussions on optimal currency areas. Indeed, dollarization proponents have recently argued that giving up the national currency is the right option for the vast majority – if not for all -- of the emerging nations.

What is remarkable, however, is that this rather drastic piece of advice – giving up the national currency – is being dispensed on the bases of very limited empirical and historical evidence. Dollarization supporters seldom expand on the historical record of those few countries that have been dollarized for some time. Moreover, they rarely spell-out the policies that should be implemented alongside this reform, nor do they refer in

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[1] Some times this policy is called "official dollarization" as a way of distinguishing it from currency substitution or "unofficial dolllarization." See Savastano (1992).

detail to the potential costs of adopting this monetary regime. This is equivalent to a physician prescribing a drug, without making clear what other steps the patient must take (stay in bed, abstain from drinking alcohol, say), and without explaining the drug's side effects, or its rate of success in clinical trials.[2]

The purpose of this paper is to remedy, at least partially, this situation, and to investigate the historical record of countries that have lived under a "dollarized" monetary system. As it turns out, this is a very small group of counties, most of which have operated under very special circumstances, and for which there are very limited data. In spite of the poverty of the data, I believe that it is possible to address some important historical questions regarding performance under dollarization. These include: (a) Historically, has dollarization provided an effective way for tying policy makers' hands, and for achieving "credibility." Another way of posing this question, is whether dollarized nations have indeed enjoyed fiscal and external balance. (b) Have dollarized countries experienced faster growth and lower inflation than non-dollarized ones. And, (c) how costly has macroeconomic adjustment been in dollarized countries. In standard macroeconomic models, economies with super-fixed exchange rate regimes and nominal price rigidities will have difficulties accommodating (real) external shocks.

Since Panama is the dollarized country with better and more complete data, much of this paper deals with the Panamanian economy. When the data permit it, however, I deal with the experiences of other dollarized nations. The paper is organized as follows. Section I is the introduction. In Section II I present some basic data on economic performance in dollarized nations, and I ask whether there have been significant differences in the behavior of dollarized and non-dollarized economies. In Section III I concentrate on the case of Panama, the largest country with a prolonged dollarization experience. Section IV is devoted to analyzing the way in which dollarized countries have been affected by external shocks. In particular, I inquire whether external shocks

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[2]   Recent papers by Moreno-Villalaz (1999) and Bogetic (2000) discuss some important characteristics of dollarized economies. For a lucid conceptual treatment of dollarization see Calvo (1999). See also the useful piece by Schuller (2000). For a debate on the merits of dollarization, see Edwards and Haussman (2001). Ricardo Haussman, the former Chief Economist of the Interamerican Development Bank, has been a vocal supporter of dollarization. Interestingly, and in contrast with the case of dollarization, there are now a number of studies on currency boards. See, for example, Baliño et al (1997), Schuler (1992) and Gosh et al (2000).

have tended to affect dollarized countries in a different way than other nations. Finally, in Section IV I provide some brief concluding remarks.

II. Dollarization Experiences in Comparative Perspective

It should be stated at the outset that my interest – and the relevant policy question, I may add – is to understand how *independent* nations have performed under a dollarized monetary system. This means that in this paper I am not interested in analyzing the performances of provinces or states within a national entity. The reason for this should be obvious: countries contemplating dollarization are independent nations looking for an efficient monetary arrangement; they are ***not*** countries looking to be annexed by larger and more advanced ones.[3] Table 1 contains a list of independent countries that have had an official dollarized system during the 1970-1998 period.[4] As maybe seen, these are very small countries indeed. Many are, in fact, city-states fully integrated into their neighbors' economies – Monaco, Lichtestein and Andorra are good examples. The largest dollarized countries in Table 1 are Liberia and Panama. Only the latter, however, remains dollarized today; Liberia abandoned the system in the 1980s, when the government of President Samuel Doe decided to issue local currency as a way of avoiding the constraints imposed on the public sector by the dollarized system.[5]

Analyzing performance in small city-states has traditionally represented a challenge for economists. Data are usually not available, and when they are, they are of poor quality and cover selected variables only. In our case the problem is particularly serious, since data for Liberia -- one of only two countries with population over a million --, are of extremely low quality. Panama is the only dollarized country with a reasonably complete data set.

In this study I focus on the 1970-1998 period, and I use the best data available for as many of the countries in Table 1, as possible. In collecting the data I first turned to the

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[3] The focus on independent nations raises the question of whether we should concentrate on the period since independence, or on the complete period under analysis. The results reported in this paper refer to countries that have been independent for at least 5 years. If, however, different criteria are used, the results obtained are very similar to those reported here.

[4] By dollarized countries, I mean countries that use another nation's currency. I have excluded countries that use a common supra-national currency, such as the Euro.

[5] It is not easy to date unequivocally Liberia's abandonment of the dollarized system. In July 1974 the National Bank of Liberia (NBL) was opened. In 1982 the NBL began issuing five dollar coins, and in 1989 it began issuing five dollar notes. On Liberia's dollarization experience see Barret (1995) and Berkeley (1993).

World Bank data files. If the World Bank had no information – or if the data quality was deemed to be suspect --, I turned to the IMF and the United Nations. Overall, I was able to collect data on GDP per capita growth for 11 countries in Table 1 (a total of 286 country-year data points). Data on other variables of interest – inflation, fiscal deficit, the current account, investment and terms of trade --, are only available for a much smaller number of countries.[6] In the rest of this section I analyze the economic performance of the dollarized economies in Table 1. In order to provide a comparative perspective I also present data on two comparison groups: (1) A group of all emerging and advanced countries for which there are data. And (2), a group of all emerging countries where data are available. I excluded from both of these groups countries that have had a "super-fixed" exchange rate regime – dollarized or currency board. This means that my comparison groups are comprised of countries with a variety of exchange rate regimes, going from floating, to crawling, to pegged-but-adjustable. That is, I do not perform a "horse race" between dollarized countries and specific alternative regimes.

Table 2 contains summary data on, (a) GDP per capita growth; (b) inflation; (c) fiscal deficit; and (d) current account deficit. For each variable I present information on the first quartile, the median, the third quartile, and the mean. For GDP per capita growth I also present data on the standard deviation. Simple inspection of the data suggests that, when compared with either of the two non-dollarized groups, dollarized countries have had: (a) lower GDP per capita growth; (b) lower inflation; (c) similar, or slightly higher fiscal deficits; and (d) a higher median and lower mean current account deficit. Also, GDP growth has been more volatile in dollarized countries.[7]

In order to test formally whether these four variables have behaved differently across groups of countries, I estimated a series of tests for the equality of means and medians. I also computed a non parametric Kruskal-Wallis χ^2 tests on the equality of distributions. The Kruskal-Wallis χ^2 test is computed as:

(1) $K = \{ [12/ n(n + 1)] \Sigma (R_j^2 / n_j) \} - 3(n + 1),$

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[6] See Edwards (2001a) for a detailed discussion of the data available and of data sources.

where n_j is the sample size for the j group (j = 1,...m), n is the sum of the n_js, R_j is the sum of the ranks j group, and the sum Σ runs from j=1 to j=m.

The results obtained from these tests are reported in Tables 3 and 4. They show formally that: (1) GDP growth has been significantly lower in the dollarized countries than in non dollarized ones. (2) Inflation has been statistically lower under dollarization. (3) There are no statistical differences in the behavior of fiscal deficits or current account balances across dollarized and non dollarized nations. These results also show that inflation has been significantly lower in Panama. There are no significant differences between growth behavior in Panama and the other groups. Interestingly, the median fiscal deficit has been statistically higher in Panama than in the rest of the Latin American nations. I discuss this puzzling result in Section III.

The GDP growth comparisons in Table 2 refer to unconditional statistics. An interesting question is whether dollarized countries perform differently than non dollarized ones, after controlling by the fundamental determinants of growth. Results obtained from a panel regression using a (very) small number of data points for the dollarized economies, suggest the conditional rate of growth of per capita GDP is lower for dollarized than non-dollarized nations.[8] In these regressions – not reported here – the coefficient of the dollarized dummy is negative; its p-values, however, was rather high ranging from 0.16 and 0.11.

The results reported in this section, then, can be summarized as follows: (1) There is evidence that dollarized countries as a group have statistically grown at a significantly lower rate than non-dollarized nations. (2) Dollarized countries have experienced a significantly lower rate of inflation. (3) There is no evidence that dollarized countries have run more prudent fiscal policies than non-dollarized nations. In fact, the formal tests show that, statistically speaking, it is not possible to make a distinction between dollarized and non-dollarized countries. And (4), in terms of current account balances, dollarized nations' behavior has been no different than that of non-

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[7] There are 4,272 observations for GDP growth in all non-super-fixed countries; 3,378 observations for emerging countries; 750 for Latin American countries and 286 observations for dollarized countries. See Edwards (2001a) for more details on the data set.

[8] The lack of data makes this exercise difficult, however: While there are 286 observations for growth in dollarized countries, there are only 56 for investment, 58 for openness, and 58 for government expenditure. In the estimation I used random effects and GLS methods.

dollarized ones. Given the very small number of observations for the dollarized group, and the low quality of the data, these results are subject to stronger caveats than usual, and should be interpreted with care.[9]

III. Panama's Experience with Dollarization

Supporters of "dollarization" have pointed out to Panama's experience as proof of the merits of that system. Low inflation, macroeconomic stability, and low interest rates – including the existence of long term credit in nominal terms – are mentioned as some of Panama's most remarkable accomplishments (Moreno-Villalaz 1999, Bogetic 2000). In this section I provide a brief analysis of Panama's experience, and I argue that, in spite of some very important achievements, its record has been embellished.

A fundamental omission in virtually every recent account of Panama's economic experience refers to the country's heavy reliance on the IMF during the last 35 years or so. With the exception of a brief interregnum during the Noriega years, Panama has been almost permanently under the tutelage of the Fund. Since 1973 Panama has had 17 IMF Programs, the most recent of which was signed in late 2000, and is expected to run until late 2002. According to Mussa and Savastano (2000), during the last quarter of a century Panama has been the most assiduous user of IMF resources in the Western Hemisphere; since 1973, only Pakistan has had a larger number of IMF programs. The main factor behind this proliferation of IMF programs has been Panama's inability, until very recently, to control its public finances. Between 1973 and 1998 the fiscal deficit averaged 4% of GDP, and during 1973-1987 – a period of continuous IMF programs – it exceeded a remarkable 7% of GDP. In fact, it has only been in the last few years that Panama has been able to put its fiscal accounts somewhat in order.[10]

In 1904 Panama adopted the dollar as legal tender. Although there is a national currency – the *Balboa* --, its role is largely symbolic. There is no central bank and the monetary authorities cannot issue *Balboa*-denominate notes. Since 1970 Panama has had no controls on capital mobility, and has been financially integrated to the rest of the world. For decades Panama has been an important center for offshore banking, with a

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[9] The power of our non parametric tests is reduced when the number of observations in the two groups are very different.

[10] During some years Panama did not make actual withdrawals from the IMF funds. However, even during those years, the IMF had a fundamental role in overseeing the Panamanian economy.

large number of international banks operating in the country. A number of authors have argued that in Panama foreign banks play the role of "lender of last resort," a function usually performed by the national central bank. It should be noted, however, that in spite of dollarization and of the massive presence of international banks, Panama has been recently subject, as many other countries in Latin America, to massive banking crises. Indeed, in 1988-89 Panama suffered a major systemic banking crisis, where as a result of the weak "financial position of most state-owned and private commercial banks…15 banks ceased operations." (Beim and Calomiris 2001, p. 282). [11]

As may be seen from Table 2, Panama's most remarkable achievement is its very low rate of inflation. Between 1955 and 1998, it averaged 2.4% per annum, and during the 1990s it barely exceeded 1 percent per year. In addition to low inflation, Panama has posted a healthy rate of growth during the last four decades. Between 1958 and 1998, Panama's real GDP expanded at 5.3 percent per year. Although Panama's rate of growth has exceeded that of other dollarized economies, it has not been statistically different from that of non-dollarized conuntries. This is true independently of whether the non-dollarized comparison group is comprised of all nations, emerging countries, or only of Latin American countries (see the non parametric tests in Table 3).

Behind these achievements, however, hides Panama's serious addiction for IMF programs. In spite of not having a central bank, or a currency of its own, for years Panama failed to maintain fiscal discipline. Initially, these large fiscal deficits were financed through borrowing from abroad. And when the foreign debt became too high, the IMF stepped in with fresh resources. And when this was not enough, Panama restructured its foreign debt. This was the case in 1983, 1985 and more recently in 1996, when Panama finalized its Brady-deal negotiations.[12] Panama had its first IMF program in 1965. A year later the fiscal deficit was brought into check. In 1968, however, the fiscal accounts were again out of hand, and the IMF was called in once more. A remarkable nineteen-year period of uninterrupted IMF programs was thus initiated. Although in some of the early programs there were no withdrawals, the sheer presence of the IMF signaled that the monies would indeed be there when needed.

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[11] Bogetic (2000), in an interesting article, incorrectly states that in Panama "there have been no systematic banking crises (p. 192)"

[12] According to Beim and Calomiris (2001) Panama also restructured its debt in 1932.

Year after year, a new IMF program called for the strengthening of public finances. And, invariably, year after year, Panama failed to take serious action. After all, the authorities knew that the IMF was there, ready to bail them out. This continuous IMF presence was only broken in 1987, when as a result of General Noriega's confrontational policies, Panama was subject to severe U.S.-led economic sanctions. The IMF returned to Panama in September of 1990, with a monitored program. This was followed by lending programs in 1992 (22 months), 1995 (16 months), 1997 (36 months) and 2000 (22 months). Significantly, in the last few years the authorities have finally acknowledged the need for maintaining a solid fiscal position. Between 1990 and 1996 the country posted small public sector surpluses. By 1998, however, the public sector deficit had grown to almost 3% of GDP, and the IMF has estimated that during 2000 the deficit had declined to a more modest 1% of GDP. Why has the IMF been so willing to accommodate Panama's repeated macroeconomic transgressions? A full analysis to this issue is well beyond the scope of this paper, but political economy considerations – including the U.S. interest in maintaining the Canal Zone free of political turmoil --, are surely part of the answer.

In contrast with Argentina, a country with a super-fixed currency-board type of monetary regime, Panama has been largely successful in eliminating devaluation risk. This has been reflected in a relatively low cost of capital in international financial markets. Between 1997 and 1998, for example, the average daily spread on Panamanian par bonds was 464 basis points, lower than that of Argentine par Brady bonds, which averaged 710 basis points. Contrary to what dollarization supporters usually claim, however, Panama's cost of capital in international markets has *not* been the lowest in Latin America. In fact, as is illustrated in Figure 1, the spread over Panamanian bonds has been systematically and significantly higher than that over Chile's sovereign bonds of similar maturity.[13] Interestingly, Chile is a country that during the period under discussion experienced an overall increase in its degree of exchange rate flexibility. The comparison between Chile and Panama underscores the important point – not always

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[13] Bogetic (2000, p. 193) has claimed that "Panama's sovereign spreads have been consistently lower than in other Latin American countries." As figure 1 shows, this is not so. The spreads in Figure 1 correspond to daily data for Panama's 8 ½ % sovereign bond due in 2008, and Chile's 6 7/8 % sovereign bond due in 2009.

acknowledged – that dollarization does not by itself reduce country risk. In fact, during the last few years, and in spite of its improved fiscal performance, Panama has experienced a sizable country risk premium and has been subject to "contagion."

Recent discussions on dollarization have focused on the loss of seignorage that would result from unilaterally adopting a foreign currency. Supporters of dollarization have argued that this loss could be reduced if a monetary treatise is signed with the advanced country whose currency is adopted. This is not a new idea. In fact, it was proposed in 1972 by Harry Johnson within the context of the Panamanian experience.[14]

IV.   Accommodating External Disturbances under Dollarization

Macroeconomic models of open economies have traditionally emphasized the role of the exchange rate regime during the adjustment process. In principle, under super-fixed regimes a required depreciation of the equilibrium real exchange rate will have to take place through deflation. In the presence of nominal price and wage rigidities, this will lead to unemployment and slower growth (Dornbusch 1980). The actual quantitative importance of these deflationary forces is an empirical issue. In this section I use data from the dollarized nations to address this issue. In particular I ask the following two questions: First, what has been the effect of terms of trade shocks on dollarized nations' performance? More specifically, I ask whether these shocks affect dollarized countries differently than other (non-dollarized) countries. Second, I investigate whether macroeconomic adjustment episodes – and in particular major current account reversals – have been more costly in dollarized than in non-dollarized nations. Originally I intended to use data from a large number of dollarized countries; unfortunately, only Panama has data for all the variables of interest.

IV.1 Current Account Reversals and Terms of Trade Shocks

Table 4 contains data on terms of trade volatility, and on current account reversals for Panama and three comparison groups during 1970-98. Terms of trade volatility is defined as the standard deviation of the log of the relative price of exports to imports. I have defined a "current account reversal" as a situation where the current account deficit

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[14] In 1999-2000 a bill that would have allowed for the sharing of seignorage was introduced to the US Senate. Without support by Congress or the administration, however , the bill did not go anywhere.

has declined by at least three percent of GDP in one year.[15] The data in this table show that the frequency of current account reversals has been similar in Panama, in all the emerging markets in the sample, and in the (rest of the) Latin American nations. The mean current account reversal has also been similar in Panama and the other Latin American nations – 7.7% of GDP in Panama, and 8.1% of GDP in LAC. Finally, terms of trade volatility has been somewhat lower in Panama than in the comparison groups.

IV.2 Adjustment and Growth: Panama's Experience in a Comparative Perspective

In this sub-section I use panel data for 1970-1998 to investigate whether terms of trade shocks and current account reversals have been more "costly" in Panama than in other (non dollarized) countries. The starting point is a the following growth equation:

$$(2) \quad GROWTH_{tj} = \beta\, INVGDP_{tj} + \varphi\, EDU_{tj} + \delta\, GOVCONS_{tj}$$
$$+ \phi\, OPENNESS_{tj} + \theta\, LOGGDPO_{j} + \gamma\, REVERSAL_{tj}$$
$$+ \lambda\, LOGTOT_{tj} + \xi_{tj}.$$

Where $GROWTH_{tj}$ is growth of GDP per capita in country j during year t; INVGDP is the investment to GDP ratio, EDU is a proxy for human capital, measured as secondary education attainement. GOVCONS is the ratio of government consumption to GDP, and OPENNESS is an index of the degree of openness (imports plus exports over GDP). REVERSAL is a variable that takes the value of one if the country in question has been subject to a current account reversal. LOGTOT is the log of the terms of trade. Finally, $LOGGDPO_{j}$ is the initial level of GDP (1970) for country j. The main interest of this analysis is the coefficients of REVERSAL and LOGTOT. The coefficient of the former will be negative if reversals are costly, the coefficient of LOGTOT is expected to be positive. In order to analyze whether these coefficients are different for Panama, I also interacted LOGTOT and REVERSAL with a Panama dummy. The error ξ_{tj} is assumed to be heteroscedastic, with a different variance for each of the k countries (panels).

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[15] When I used alternative definitions the results were similar to those reported here. On current account reversals see Milesi-Ferreti and Razin (2000).

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(3) \qquad E\,[\xi\xi\,'\,] = \begin{pmatrix} \sigma^2{}_1\,\mathbf{I} & 0 & \ldots & 0 \\ 0 & \sigma^2{}_2\,\mathbf{I} & \ldots & 0 \\ & . & . & . \\ . & . & . & . \\ 0 & 0 & \ldots & \sigma^2{}_k\,\mathbf{I} \end{pmatrix}
$$

Equation (2) was estimated using the feasible generalized least squares procedure (FGLS) suggested by Beck and Katz (1995) for unbalanced panels. The samples in the different estimations were determined by data availability. For details, see Edwards (2001a).

Since current account reversals are not drawn from a random experiment, the REVERSAL $_{jt}$ dummy is possibly correlated with the error term. In order to deal with this problem I follow the procedure recently suggested by Heckman et al (1997) for estimating *"treatment interventions"* models. This procedure consists of estimating the equation in question using observations that have a common support for both the treated and the non-treaded samples. In the case at hand, countries that experience a reversal are considered to be subject to the "treatment intervention."[16]

In Table 5 I present the results obtained from the estimation of various versions of equation (2), after making the correction suggested by Heckman et al (1997). Estimates are presented for the complete panel, for the emerging countries only, and for the Latin American and Caribbean nations. The results for the complete panel (including Panama), reported in column 1, are highly satisfactory. All the coefficients have the expected signs and are significant at conventional levels. These results suggest that current account reversals are costly, and de-accelerate the rate of growth in the country in question.[17] The coefficient of LOGTOT indicates that negative (positive) terms of trade shocks have a negative (positive) effect on growth. The results obtained when Panama interactive dummies are introduced are in columns (2)-(4). The coefficients for the Panama variables are always significant at conventional levels. According to the χ^2 tests the

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[16] From a practical point of view, a two steps procedure is used: (1) The conditional probability of countries facing a reversal – the *propensity score* -- is first estimated using a probit regression. Equation (2) is estimated using only observations whose estimated probability of reversal fall within the interval of estimated probabilities for countries with actual reversals.

[17] When the first differences of LOGTOT is introduced instead of the levels, the results are qualitatively similar.

hypothesis that the panama coefficients are jointly zero is rejected. More important, Panama's terms of trade coefficient is significantly *positive*, and Panama's current account reversals coefficient is significantly *negative*. These results indicate that external shocks in the form of terms of trade disturbances and current account reversals have had larger (negative) effects on Panama than in non-dollarized countries. This result holds independently of the group of non-dollarized nations used as a comparison.[18]

In an effort to understand better the results reported in table 5, I used the estimation from the complete panel (including Panama) reported in Column 1, to compute Panama's residuals. I then analyzed the value of these residuals during the years when Panama experienced current account reversals and large negative terms of trade disturbances. By pursuing this strategy I was particularly interested in analyzing whether the results in Table 5 were driven by the Noriega-crisis years (1988-90). This exercise shows that the finding that external shocks have been particularly costly in Panama are not driven by the Noriega crisis years.

The results in Table 5 have been obtained assuming that the other variables in equation (2) remain constant. In reality, however, other things do change. In particular, terms of trade shocks and current account reversals are likely to result in a decline in investment.[19] In Edwards (2001a) I use a dynamic panel to estimate investment equations, and I find that this is indeed the case. Moreover, according to these results, terms of trade shocks and current account reversals have had a greater (negative) effect on Panama's investment ratios than on non-dollarized countries' investment. Overall, then, the results in Table 5, as well as those on investment ratios, indicate that during the period under consideration external shocks have generated higher costs – in the form of lower investment and slower GDP growth – in dollarized Panama than in the non dollarized nations.

V.   Concluding Remarks

The purpose of this paper has been to analyze the economic record of dollarized countries. In doing this I have made an effort to give dollarization the benefit of the

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[18] The results in Table 5 were obtained using a dummy variable for current account reversal. I also estimated the growth equations replacing REVERSAL with the reversals dummy interacted with the actual magnitude of the reversal. These results confirm those presented in Table 5.
[19]   See Edwards (2001b).

doubt; when judgenment calls had to be made, I deliberately tried to "favor" the dollarization position. For instance, I did not use the IMF's data on Liberia's GDP, I report extensive results for Panama – the best performing dollarizer --, and in many Panama calculations I excluded the Noriega crisis years. It should be emphasized once again, however, that because of serious data limitation, this study's conclusions should be interpreted with care. In some cases they are based on data for one or two countries only.

My main conclusion from this analysis is that the recent push for dollarization is a typical case of misleading advertisement. Most dollarization supporters have either ignored the record, or have embellished it. The reality is that the historical record is very limited, and concentrated on tiny countries. The largest one (Panama) has a population of less than 3 million people! As I wrote in the introduction, advocating dollarization is like recommending a new drug that has been subject to very limited clinical trials. Worse yet, the results of these trials are not particularly positive or encouraging, and they generate a number of serious questions. In terms of this medical analogy, a physician may still prescribe the untried drug to a terminally ill patient, but would not prescribe it to a rather healthy individual who has access to other treatment options.

In a nutshell, the analysis reported in this paper suggests that, when compared to other countries, the dollarized nations have: (a) grown at a significantly lower rate; (b) have had a similar fiscal record; (c) have not been spared from major current account reversals; (d) have had significantly lower inflation. Additionally, my analysis of Panama's case suggests that external shocks result in greater costs – in terms of lower investment and growth -- in dollarized than in non-dollarized countries. [20]

A particularly puzzling result is that dollarizers have not had a better fiscal performance than non-doillarizers. How, did they manage to be equally "irresponsible" on the fiscal side, and yet maintain their monetary regime and have very low rates of inflation? The answer to this query comes in two parts: First, the record shows that not all the dollarized countries maintained the system. For instance, when the fiscal constraint became too tight, Liberia abandoned dollarization. It is true that this development took place in the midst of a civil conflict, but political upheaval is a reality

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[20] In a recent paper Levy-Yeyeti and Sturzenegger (2001) find out that countries with flexible exchange rate regimes have grown faster than countries with fixed exchange rates.

of life among the poorer nations. Second, and as shown in section III, Panama has been able to run large fiscal deficits by accumulating a large stock of debt – that it occasionally restructures --, and by maintaining a very special relationship with the IMF. It is not obvious that the IMF will be so friendly to future dollarizers that do not have Panama's geopolitical importance.

It is important to clarify what this study does not say. It does **not** say that dollarization is a policy option that all emerging markets should avoid. It does say, however, that empirically we know very little about the costs and benefits of dollarization. It further says that when the limited record is investigated, it does not appear to be as positive as some analysts want us to believe. In that regard, the recent experiences of Ecuador and El Salvador should provide important information that will help us assess more fully the merits of dollarization in larger and somewhat more complex settings.

Overall, Mundell's (1961) optimal currency areas analysis continues to be the right approach for dealing with the dollarization question. There are good reasons to think that countries that are highly integrated in terms of factor mobility and trade, will benefit from having a common currency.[21] The benefits from such a policy could more than compensate the costs, including the loss of seignorage if the country dollarizes unilaterally. Countries with a high degree of unofficial dollarization, and foreign currency-denominated liabilities are also likely to benefit from dollarization. It is unlikely, however, that dollarization will be the most adequate option for all countries. Large countries that face volatile terms of trade, that are not deeply integrated to major economies, and whose financial sector operate mostly in terms of domestic currency are likely to incur in net costs if they dollarize. They will have difficulties in accommodating external shocks while, as suggested by the results in this papers, the alleged benefits in terms of low costs of capital, fiscal discipline and stability may, indeed, continue to be elusive.

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[21]   Recent interesting work by Frankel and Rose (2000) suggests that belonging to a monetary union increases a country's trade significantly. Whether this (potential) effect will be enough to offset the costs of dollarization is still an open question.

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Figure 1:
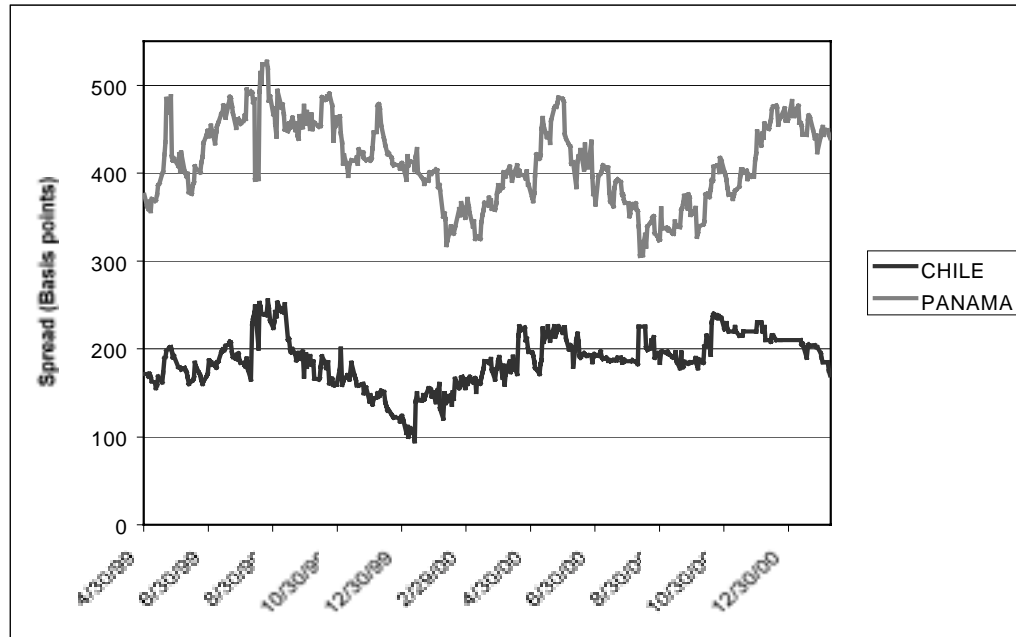**Sovereign Bonds Spreads: Chile and Panama, 1999-2001**

Table 1
Fully Dollarized Independent Nations, in 1970-98

Country	Population	Currency Used	Since
Andorra	73,000	French franc, Spanish peseta/ euro	1278
Kiribati	82,000	Australian dollar and own coins	1943
Liberia	2,900,000	US dollar	1847 - 1982
Liechtenstein	31,000	Swiss Franc	1921
Marshall Islands	61,000	US dollar	1944
Micronesia	130,000	US dollar	1944
Monaco	32,000	French franc/Euro	1865
Nauru	10,000	Australian dollar	1914
Palau	17,000	US dollar	1944
Panama	2,700,000	US dollar	1904
San Marino	26,000	Italian lira/euro, own coins	1897
Tuvalu	11,000	Australian dollar, own coins	1892

Sources: Bogetic (2000), and The Satesman's Yearbook (Several Editions). A few other, very small territories, colonies and self governing regions use foreign currencies, such as Niue (New Zealand dollar), Norfolk Islands, Cocos (keeling) Islands (Australian dollar), Pitcairn Island (New Zealand dollar and US dollar), Tokelau (New Zealand dollar), Turks and Caicos Islands (US dollar), Cook Island (New Zealand dollar), Northern Cyprus (Turkish lira), Greenland (Danish krone), Guam (US dollar), Montenegro (German mark/euro), Northern Mariana Islands (US dollar), Puerto Rico (US dollar), Saint Helena (pound sterling), American Samoa (US dollar), UK's Virgin Islands (US dollar), and US's Virgin Islands (US dollar).

Table2
Economic Performance in Dollarized and Non Dollarized Economies
(1970-97)

	Dollarized	All Non-Super Fixed Countries	Emerging Markets (non-Super Fixed)	Panama
A. Annual Per Capita GDP Growth (%)				
1st quartile	-2.28	-1.10	-1.70	-0.44
Median	0.49	1.87	1.71	1.80
3d Quartile	2.74	4.37	4.61	3.46
Mean	0.16	1.38	1.20	1.31
Standard deviation	8.00	6.55	7.13	4.56
B. Yearly Inflation (%)				
1st quartile	1.26	3.99	4.49	1.00
Median	3.92	8.54	9.58	1.82
3d Quartile	7.30	16.17	18.39	4.59
Mean	5.28	46.37	56.32	3.49
C. Annual Fiscal Deficit (as % of GDP)				
1st quartile	0.14	0.69	0.59	-0.58
Median	4.62	2.98	2.93	4.62
3d Quartile	7.51	5.96	6.01	4.59
Mean	4.00	3.66	3.65	3.64
D. Current Account Deficit (as % of GDP, yearly)				
1st quartile	-3.56	-0.01	0.53	1.76
Median	4.33	3.20	4.07	4.34
3d Quartile	8.62	7.21	8.28	8.40
Mean	2.22	4.09	4.82	4.26

Sources: World Bank, IMF and United Nations.

Table 3
Tests for Equality of Means and Medians in
Dollarized and Non Dollarized Economies
(1970-97)

	Dollarized vs. All Countries	Dollarized vs Emerging Countries	Panama vs Latin America
A. GDP per Capita Growth			
Means (t)	2.91 (0.04)	2.20 (0.03)	-0.68 (0.49)
Medians (χ^2)	27.56 (0.00)	17.49 (0.00)	0.16 (0.69
B. Inflation			
Means (t)	4.35 (0.00)	4.27 (0.00)	4.52 (0.00)
Medians (χ^2)	17.10 (0.00)	17.13 (0.00)	17.05 (0.00)
C. Fiscal Deficit			
Means (t)	0.37 (0.71)	0.38 (0.70)	1.37 (0.17)
Medians (χ^2)	0.51 (0.47)	0.52 (0.48)	3.63 (0.05)
D. Current Account Deficit			
Means (t)	0.97 (0.34)	1.37 (0.18)	0.03 (0.98)
Medians (χ^2)	2.62 (0.11)	0.22 (0.75)	2.44 (0.12)

p-values in parentheses

Table 4
χ^2 Tests for Dollarized and Non Dollarized Economies
(1970-97)

	Dollarized vs. All Countries	Dollarized vs Emerging Countries	Panama vs Emerging Countries
A. GDP per Capita Growth			
χ^2	24.82 (0.00)	15.82 (0.00)	0.11 (0.92)
B. Inflation			
χ^2	20.99 (0.00)	24.74 (0.00)	23.42 (0.00)
C. Fiscal Deficit			
χ^2	0.79 (0.37)	0.84 (0.36)	0.84 (0.36)
D. Current Account Deficit			
χ^2	0.16 (0.69)	0.09 (0.78)	0.09 (0.78)

p-values in parentheses

Table 5
Terms of Trade Volatility and Current Account Reversals:
Panama's Experience in Comparative Perspective
(1970-1998)

	Panama	All Countries	All Emerging Countries	Latin America and Caribbean
Variability of (log of) terms of trade	0.133	0.248	0.267	0.236
Incidence of CA Reversals (% of years)	24.1%	20.4%	23.3%	22.9%
Average magnitude of CA Reversals (% of GDP)	5.6	4.2	10.4	11.2

Table 6:
Growth and External Disturbances

(Feasible Least Squares with Heteroskedastic Panels, 1970-1998)

Sample	All	All	Emerging Markets	LAC
INVGDP	0.171 (11.89)	0.169 (11.80)	0.207 (11.51)	0.174 (4.24)
EDU	0.023 (3.40)	0.023 (3.40)	0.049 (4.32)	0.070 (2.27)
GOVCON	-0.082 (-5.52)	-0.081 (-5.45)	-0.118 (-6.40)	-0.150 (-2.74)
OPEN	0.005 (2.13)	0.005 (2.07)	-0.001 (-0.60)	-0.017 (-1.28)
LOGGDP0	-0.146 (-1.22)	-0.135 (-1.16)	-0.382 (-2.05)	-0.269 (-0.60)
REVERSAL	-1.085 (-4.69)	-1.028 (-4.43)	-0.602 (-2.15)	-1.882 (-3.50)
REVERSAL$_{-1}$	-0.419 (-1.82)	-0.372 (-1.61)	-0.209 (-0.75)	0.037 (0.07)
LOGTOT	0.996 (2.27)	0.986 (2.25)	0.717 (1.44)	0.906 (1.03)
PANAMA* REVERSAL	-	-4.273 (-1.99)	-4.606 (-2.13)	-3.421 (-1.75)
PANAMA* REVERSAL$_{-1}$	-	-3.910 (-1.82)	-3.73 (-1.73)	-4.396 (-2.01)
PANAMA* LOGTOT	-	0.504 (1.83)	0.531 (1.90)	0.617 (2.13)
Panels	88	88	68	21
No. of Observations	1686	1686	1253	415
Log Likelihood	-4501	-4497	-3558	-1166
χ^2	-	8.56 (0.03)	880 (0.03)	7.79 (0.05)

Note: Assymptotic t-statistics in parentheses. Constants are not reported. The χ^2 statistic corresponds to the log-likelihood test for the joint exclusion of the variables interacting with the PANAMA dummy; the null hypothesis is rejected in all cases.