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# On dollarization<sup>1</sup>

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## Abstract

The paper examines the case for dollarization in emerging market economies. It is claimed that dollarization becomes an attractive monetary regime when account is taken of recent financial turmoil in such economies. The case is further strengthened by the fact that these economies have a penchant for acquiring dollar debts (i.e., liability dollarization). However, exchange rate misalignment and deflation are potentially serious problems, unless appropriate fiscal and public sector prices policies are implemented, in addition to establishing a financial sector whose assets and liabilities face parallel relative price risks.

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## 1. Introduction

Recent worldwide turmoil in financial markets is triggering a major revision of the *conventional wisdom* about Emerging Market (EM) countries' macroeconomic management. As a result, the debate is wide open as to the set of policies and institutional arrangements that would ensure EM macroeconomic stability. Opinions range from those favouring further pursuit of market-friendly reforms to controls on capital mobility and even trade, and from dollarization to floating exchange rates. The debate on the appropriate exchange rate system, in particular, has taken centre-stage.

The 1997 Asia crisis (which seriously engulfed, although did not topple Hong Kong) raised serious questions about conventional crisis explanations (e.g., current account and fiscal deficits, low saving rates) and led to a noticeable shift of financial analysts' opinion towards favouring floating exchange rates. This followed from the observation that all crisis economies had displayed some degree of exchange rate rigidity. Interestingly, however, EMs' policy-makers have not been fully swayed by the argument and have continued pegging their currencies to the US dollar or the German Mark. Even self-declared floaters have, on occasion, intervened to limit foreign exchange rate gyrations.<sup>2</sup> To top it off, Argentina's President Menem in 1999 raised the stakes even further by proposing a dollarization plan according to which the peso would be fully replaced by the US dollar, accompanied by a monetary treaty with the US by which, among other things, the two countries would share Argentina's seigniorage.

Argentina's plan was an attempt to 'separate' its economy from other EMs (especially Brazil). The basic idea was that by eliminating currency risk, individuals would be better able to assess investment projects, thereby lowering country risk and helping to disconnect Argentina from the rest of EMs. Some of the ideas are familiar from the optimum currency area (OCA) literature (see, e.g., De Grauwe, 1994), but others have a distinctive ring about them. For example, since the dollarization project was partly a response to financial turmoil, banks, the financial sector and the capital account (of the balance of payments) were central considerations behind the plan. In contrast, OCA literature has little to say about financial issues.<sup>3</sup> This paper will attempt to fill that gap, and show that the pro-dollarization position is stronger than it would seem otherwise.

Before starting the substantive discussion, a few words about definitions are in order. I will say that a country is *partially dollarized* if a foreign currency (hereon identified with the US dollar) is used in any of the three classical roles of money, i.e., as a unit of account, means of payments, or store of value, the most relevant

<sup>2</sup> It is worth pointing out that there is hardly a case that resembles the textbook definition of floating exchange rates, in which money supply is set in complete oblivion of the nominal exchange rate. See Calvo and Reinhart (2002).

<sup>3</sup> For example, the Subject Index in De Grauwe (1994) does not contain the word 'financial,' and the text does not discuss any financial implication of OCAs or alternative foreign exchange systems.

being the first two. However, this definition is not very useful because most countries are already partially dollarized (if not on the asset side, e.g., bank deposits, then on the liability side). Thus, the subtext is that dollarization, although partial, is highly prevalent. Examples are Argentina, Bolivia, Peru, and Turkey where dollar deposits exceed 30 percent of the total.<sup>4</sup> Menem's proposal corresponds to what I will call *full dollarization*, the situation in which the country completely abandons the use of its own money (hereon identified with the *peso*), except perhaps for small change, as Panama's Balboa.

The paper is organized as follows. Section 2 will discuss initial conditions that characterize a typical EM, and will be essential background material for replying to dollarization critics in Section 3. Section 4 will study the rationale for the existence of liability dollarization even in a context of flexible exchange rates, which, as will be argued, is a key characteristic of EMs and has been totally ignored by the OCA literature. Section 5 concludes.

## 2. Initial conditions

A great deal of confusion will be avoided in this debate if initial conditions are well understood. Typically, EMs start from a situation in which a large share of their assets or liabilities is denominated in foreign exchange. Thus, a discussion of the dollarization issue that ignores this fact (as is the rule in the OCA literature) and, say, ends up favouring no dollarization, is not only voting against adopting a foreign currency but it is also voting for *de-dollarization*, i.e., dismantling the institutions and laws that permit the use of foreign exchange. I have found that this implication is frequently missed by the critics of dollarization. It is therefore worth spending some time discussing *initial conditions* which are relevant for EMs, particularly those that are significantly different from advanced countries. In this section I will highlight two which seem especially relevant: (1) the role of external factors and (2) partial dollarization.

### 2.1 External factors

Several studies have shown that EMs are highly vulnerable to external factors. This was established in Calvo, Leiderman and Reinhart (1993) for several key Latin American countries. The paper shows that, for the whole sample, US variables like interest rates and the business cycle explain on average roughly 50 percent of the variance of variables such as the real exchange rate and international reserve accumulation. Results differ across countries but external

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<sup>4</sup> When foreign money is used as means of payments, in addition to domestic money, the case is customarily called 'currency substitution,' CS. There exists a large literature on CS, see Calvo (1996, Chapter 8) and IMF (1999).

factors are shown to be significant for every country in the sample.<sup>5</sup> Interestingly, countries in the sample displayed different exchange rate systems and political conditions (thus, for example, in the sample period Peru was being ravaged by Shining Path, the guerrilla group, while most of the other countries enjoyed peaceful and democratic systems). This suggests that US monetary policy, for instance, has an effect on EMs independently of their foreign exchange and political regimes. This is an important observation because a leading criticism of dollarization is that it exposes EMs to the monetary policy of the country whose currency they adopt (hereon identified with the US).

The finding that external factors were important for Latin America came as an unpleasant shock to multilateral institutions because the conventional wisdom was that economic performance is largely determined by *domestic* policy. Subsequent events drove this lesson home in even more brutal and unexpected ways, as the phenomenon of ‘contagion’ – an external factor largely unrelated to standard ‘fundamentals’ – appeared on the horizon in connection with the *Tequila* crisis (associated with Mexico’s 1994/5 BOP crisis). Argentina, for example, got severely hit despite barely trading with Mexico in goods or financial assets. In 1995 Argentina’s output fell by more than 4 percent and unemployment rose from 13 to 18 percent in a matter of months (that is why the word *contagion* virtually leaps up to one’s lips). A similar phenomenon took place in Indonesia following the Thai crisis.<sup>6</sup>

What explains contagion? The leading explanation is *imperfect information*, especially information about the macroeconomy and the financial sector. There are several reasons behind imperfect information, but I will highlight three that seem especially important: (1) short track records (especially in Latin America), (2) high government intervention (especially in Asia), and (3) size. I will discuss each one in turn.

### **(1) Short track records**

Several EMs have embarked on market-friendly reforms but the political systems that helped to launch them are relatively new, and their sustainability open to question. These reforms have largely been undertaken during a capital-inflow episode in which budget constraints were considerably relaxed. It is still unclear whether they will be sustainable during a protracted downturn, for example. Thus, EMs require more frequent monitoring than advanced, more stable, economies. High monitoring costs, in turn, lead to less information gathering.<sup>7</sup>

<sup>5</sup> These results have been replicated by other researchers. See, for example, Chohan, Claessens and Mamingi (1996), Dooley, Fernandez-Arias and Kletzer (1996), Fernandez-Arias (1996), and Eichengreen and Mody (1998).

<sup>6</sup> The first *international contagion* paper is Calvo and Reinhart (1996). See also Kaminsky and Reinhart (2000).

<sup>7</sup> Besides, since monitoring costs are likely to contain a significant share of *fixed* costs (e.g., macroeconomic analysis cannot be confined to a sector of the economy, and must take into account national political considerations), there are economies of scale in information gathering, which naturally lead to the creation

## (2) High government intervention

This applies especially to Asia because, as shown in World Bank (1993), their spectacular growth was largely shepherded by active government policy. However, as their governments proved incapable of forestalling economic collapse in 1997, previous certainties were replaced by a sea of uncertainty. Will previous regimes be reconstituted? How? Will these countries move to a more capitalist decentralized organization and if so, how? These are very large questions for which no analyst has a really good answer. Therefore, every new piece of information counts, and previously well-run economies like those in Asia become 'observationally equivalent' to Latin American countries where uncertainties derive from short track records.

## (3) Size

The cost of learning about macro variables of a given country is, to a large extent, independent of size, while the expected return from information gathering is likely to be an increasing function of size. Besides, it could be argued that size is negatively correlated with volatility, making macroeconomic analysis more effective in large countries. As a result, small countries that run an independent macroeconomic policy may be excessively costly to monitor by financial analysts.

Point (3) directly connects with the central theme of the present paper. Dollarization may effectively increase the size of a given country because its monetary policy would just be that of the US, a large country. True, other policies might still be conditioned by local factors but, unless one can argue that these other policies totally replace the function of monetary policy, dollarization should result in lower uncertainty and greater incentives to learn about the dollarized country's specific conditions. Points (1) and (2) yield similar implications because dollarization—especially if carried out in the context of a Treaty with the US—increases both the predictability and credibility of monetary policy.

## 3. Dollarization: reply to critics

In this section I will present, and offer possible answers to, the main criticisms raised against dollarization. I will discuss three of these criticisms: (1) existence of asymmetric shocks, (2) absence of a lender of last resort, LOLR, and (3) debt deflation.

### 3.1 Asymmetric shocks

This is a standard argument against fixed exchange rates, first raised in Mundell (1961). Let us realistically assume that US monetary policy does not take

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of *specialist clusters* around which swarm a multitude of uninformed investors. For a discussion of this phenomenon, see Calvo (1998a, 1999a).

into account the business cycle in the fully dollarized country. Consider a shock that calls for a depreciation of the real exchange rate in the dollarized country but that has no effect in the US. Under these assumptions, US monetary policy will not change and, thus, real depreciation will call for a lower price level in the dollarized country. Thus, if prices/wages are downward inflexible, higher unemployment and/or capacity underutilization may result, a situation that might be avoided if the dollarized country conducted its own monetary policy (and devalued in nominal terms).

There are several ways in which this criticism can be answered. Let us start with an empirical observation: devaluations in Latin America have been contractionary (see Edwards, 1989) and in recent crises most countries have gone through recession, no matter how much the currency was devalued (an exception is Brazil, 1999). Moreover, devaluations in EMs are typically accompanied by high interest rates, occasionally fully offsetting the competitive edge provided by devaluation.

Devaluation is especially useless when the shock comes from the *capital account* (of the balance of payments), as when EMs are hit by contagion and face sharply higher interest rates.<sup>8</sup> In this instance, the shock would be essentially non-monetary. Yet, it could possibly be argued that a devaluation might still help to get the economy to the new equilibrium more quickly and, presumably, with minimum social cost. However, the argument is seriously flawed or at least incomplete for economies where firms have dollar liabilities (a common phenomenon in EMs with current account deficits, as will be argued in Section 4). Under these circumstances, a devaluation may provoke massive bankruptcies, generating a large social cost. Indonesia 1997 is a case in point. The crisis was exacerbated by devaluation because the private sector had taken short-term loans to finance non-tradable sector projects.<sup>9</sup>

Finally, it should be noted that real exchange rate misalignments can be fixed by commercial policy. A uniform import-tariff-cum-export-subsidy policy might do the trick. To replicate the effect of nominal devaluation, the uniform tariff/subsidy policy should be temporary, and phased out in the course of a few quarters.<sup>10</sup> This policy has several advantages over nominal devaluation: (1) it has natural upper bounds imposed by compliance incentives (e.g., beyond a certain rate, further tariff hikes would be evaded through smuggling, for example), and (2) it does not affect the real (international) value of assets and liabilities, implying that debt-related bankruptcies in the non-tradable sector discussed above would be less prevalent (although still bankruptcies may arise if non-tradables are produced by means of tradable goods). Moreover, the uniform tariff/subsidy

<sup>8</sup> In Calvo (1998b), I call this phenomenon 'sudden stop' and analyse its implications.

<sup>9</sup> The key question: why would firm and government borrowing be denominated in foreign exchange even under flexible exchange rates, will be discussed in Section 4.

<sup>10</sup> There will certainly be *credibility* problems with this kind of policy, but not necessarily more serious than in the case in which real exchange rate misalignment is resolved via nominal devaluations.

policy increases fiscal surplus if the country runs a trade deficit.

### 3.2 Lender of Last Resort, LOLR

There are circumstances in which banks can be subject to essentially self-fulfilling runs (see Diamond and Dybvig, 1983). Bank runs, in turn, may have deleterious effect on output and employment. Hence, a LOLR could enhance welfare by stopping bank runs by the timely provision of extra credit (see Fischer (2000) for a recent survey of the literature with special reference to international considerations). Critics of dollarization claim that this function could be seriously impaired by dollarization, unless the country has access to the Fed's discount window. A common error, however, is to think that the LOLR role is inextricably linked to the ability to print base money. Actually, there are alternative ways of providing bank liquidity. For example, the Treasury and the central bank could (1) create a *stabilization fund* or (2) set up contingent credit lines with private banks, where in both instances the funds would be earmarked for bank runs.<sup>11</sup> Credit lines are likely to be cheaper under dollarization because there exists no risk of devaluation-related bankruptcies. Finally, (3) the country could sign a Treaty with the US for seigniorage sharing. Schematically, if international reserves held by the country are denoted by  $R$ , and the US Treasury Bill rates by  $r$  (assumed constant for the sake of simplicity), then the country in question would be receiving seigniorage equivalent to  $rR$ . If, say, the entire  $R$  is utilized to retire domestic base money, then, without a Treaty, the country would relinquish all seigniorage. However, the country could offer the following deal to the US: we will swap our reserves for dollar bills and a US-government consol yielding  $\theta rR$  per unit of time, where  $0 < \theta < 1$ . This should be attractive to the US because it lowers its debt burden. Moreover, the country in question could discount the consol in the capital market and create a stabilization fund. Clearly, if the market interest rate were also equal to  $r$ , then the size of the stabilization fund at the start would be  $\theta R$ . In the case of Argentina, for example, this type of arrangement would quite easily generate upwards of US\$10 billion (see Calvo, 1999b).

### 3.3 Debt deflation

This problem was highlighted in Keynes (1931) and Fisher (1933) in connection with price deflation in the thirties. The central assumption is that interest rates on loans are not state contingent (as was largely the case then, and is still now, especially in EMs). Therefore, an unanticipated collapse in prices may lead to bankruptcies, even though the borrowing firms are efficient. Thus, if bankruptcy

<sup>11</sup> Alternative (2) has been implemented in Argentina through put options with international banks. It should be pointed out, however, that stabilization funds should be safely kept aside for use during crises. Otherwise they may be diverted to other purposes, as happened recently in Mexico and Thailand with international reserves that had been acquired through sterilization operations. For the case of Mexico, see Calvo and Mendoza (1996).

is socially costly, debt deflation carries a deadweight loss. Fisher (1933) argues that this phenomenon (labeled *debt deflation*), is a major factor behind Great Depressions. Although dollarization critics have not raised the debt deflation spectre, I believe it is perhaps the most serious threat to a dollarized economy. This is especially relevant for EMs that are open to international trade and whose terms of trade vary widely (e.g., Chile, Venezuela), and independently of the US price level. This is so because a price collapse in the country in question is unlikely to trigger an offsetting response by US monetary policy.

However, debt deflation will not be remedied by devaluation if firms are liability dollarized. If goods are fully tradable, the debt deflation problem remains intact. On the other hand, if goods are non-tradable (e.g., real estate), devaluation is likely to lower their relative prices with respect to tradables, worsening the debt-deflation problem.

To lessen the probability and deleterious effects of debt deflation, the government could take the following steps. First, make loan-loss provisions an increasing function of the borrower's output price (relative to some 'normal' standard that could itself vary over time). Second, help to develop future markets for CPI, Real Estate and other relevant prices, to be used by domestic borrowers as hedging instruments. To provide further incentives, loan-loss provisions could be made a negative function of the use of those instruments by borrowers.

In summary, exchange rate flexibility is neither the only, nor the best, way to respond to the problems that are associated with dollarization.

#### 4. Liability dollarization

Liability dollarization is an issue that has recurred several times in our discussion.<sup>12</sup> Here I will present a rationale for its existence. To start off, consider a small country in which wages and the prices of all domestically traded goods are denominated in local currency. If the economy is closed to the international capital market, and the share of international trade is small, then one can conceive of plausible circumstances in which liability dollarization is negligible. This situation is more likely, the higher the volatility of the exchange rate, especially if the latter is uncorrelated with the country's fundamentals. This leads to the conjecture that truly floating exchange rates in EMs would discourage liability dollarization and, therefore, that one should not take liability dollarization as immutable and unrelated to the exchange rate regime. I will now argue that this

<sup>12</sup> Interestingly, *liability dollarization*, as opposed to *asset dollarization* (e.g., dollar deposits in local banks) has received no attention in standard currency-substitution literature. See Calvo (1996, Chapter 6), and IMF (1999). Recent literature, however, has been giving growing attention to this phenomenon, see for instance Jeanne (1999a&b, 2000) on the signaling role of foreign currency debt, and Hausman (2001), Aghion *et al.* (2001) and Chamon (2001).



reasoning is incomplete because it leaves out crucial EM characteristics. When those are brought to bear on the discussion, conclusions could be radically different.

The first key observation is that EMs have depended and will probably depend on foreign savings (i.e., current account deficits), especially foreign loans, for growth. Foreign loans are normally denominated in foreign exchange. One reason for this is institutional. Regulation typically prevents banks from exhibiting a large mismatch between the currency denomination of their assets and liabilities. Foreign banks which are funded abroad, and thus in foreign exchange, have a preference for dollar lending. Therefore, bank peso loans interest rates will exhibit a premium higher than could be accounted for by exchange-rate risk, thus creating incentives for dollar borrowing.

Another reason is informational. Exchange rates are difficult to predict, both for structural and policy-incentive considerations. For instance, (1) monetary aggregates in EMs are more volatile than in advanced countries (see Hausmann and Rojas-Suarez, 1996), possibly reflecting higher money demand volatility, and (2) EMs' governments tend to be co-opted by their corporate sectors (Phelps, 1999).<sup>13</sup> Point (2) implies that EM governments will have incentives to devalue, for example, in order to relieve the corporate sector from its debt obligations, if a sizable share is denominated in domestic currency. These informational difficulties are likely to make the costs of informed peso lending very large, since informed investors would have to have a clear and minute-by-minute picture of the macroeconomy, including political considerations. What about *uninformed* international lending? If international lenders and domestic borrowers shared the same priors about the exchange rate and both were, say, risk neutral, then peso lending could still take place in equilibrium (given that domestic firms' revenue contains, as a general rule, peso risk). However, domestic firms are likely to have better information than uninformed international lenders (UILs), simply because the former operate in the EM, read its newspapers, listen to its radios, etc. Thus, if the UILs are aware of this informational asymmetry, they would have reason to be wary when domestic firms increase their supply of peso-denominated bonds. A *Lemon's Problem* arises that is akin to the situation highlighted in Calvo (1998 a). Peso borrowing sends a mixed signal to the UILs: on the one hand, firms may genuinely need more financing but, on the other hand, peso borrowing may be the result of firms knowing that the currency will be devalued. Thus, firms that intend to borrow for genuine reasons will find peso rates (adjusted for devaluation expectations) much higher than dollar rates. Consequently, the above discussion shows that international peso lending may be limited when informed investors are involved – because information is very costly – and, also, when UILs are involved – because there may be a Lemon's Problem.

<sup>13</sup> This could be partly explained as a remnant of their protectionist history, and the lack of a solid capitalist tradition.

The discussion so far has focused on the private sector, although the same considerations apply to government. In addition, government, in contrast with the private sector, *can* devalue and, therefore, there is an extra reason for foreign investors to be wary about peso-denominated government debt. By changing denomination composition in favour of dollar liabilities, the government could lower the peso premium, benefiting both the government and the private sector.<sup>14</sup>

## 5. Final words

Dollarization is, without any doubt, a momentous policy decision and not all EMs could be suited for the move. However, this paper has argued that its plausibility is greatly enhanced if one takes into consideration EMs' initial conditions. A key one is *liability dollarization* which limits the desirability of exchange rate flexibility. In the absence of dollarization, countries may converge to a system in which exchange rates are relatively fixed but, given that devaluation is always a possibility, peso interest rates remain high (*peso problem*). The latter, in turn, militate against borrowers that are segmented from the international capital market (e.g., small- and medium-sized firms producing non-tradable goods) and, thus, interferes with democratic growth, and the development of a truly competitive home-goods market.

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<sup>14</sup> For further discussion, see Calvo (1996, Chapter 12).

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