

Dollarization: issues of implementation

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I. Introduction

1. *Why are we discussing exchange rates again?*

The financial turmoil that has characterized the second half of the 90s has reopened the debate on the appropriate choice of monetary and exchange regime. According to one view, fixed regimes provide inappropriate insurance against currency risk and lead to moral hazard, excessive short-term lending and potential financial crises. Therefore, countries should float their currencies in order to make investors face up to the real challenges involved.

According to an alternative view, the problem of financial turmoil is related to what we name original sin: a situation in which the domestic currency does not support long-term domestic markets and is not acceptable as a denomination for foreign loans. Countries with currencies characterized by original sin are bound to get in trouble in today's globalizing capital market. Companies and individuals will have to choose either dollar debts or short-term local currency debts and these will generate either a currency mismatch or a maturity mismatch. The financial system is then likely to get in trouble due to the fact that the mismatches are bound to generate liquidity and exchange rate crises that will be particularly disruptive.

Moreover, exchange rate and monetary policies do not work as usually advertised in countries with original sin. According to this view, such countries should seriously analyze the alternative of adopting a supra-national currency that can be used both for foreign and long term borrowing. As Latin American countries are substantially dollarized, especially in terms of their liabilities, such a currency is most likely the US dollar.

2. *Our focus: not whether but how*

In this paper, we will not discuss whether a country should dollarize or not. The paper assumes that the country has already decided to move in that. The question then is not whether but how. What are the pre-conditions? What are the accompanying policies? What are the policy issues in the implementation phase? How should economic policy be conducted after the economy is successfully dollarized.

3. *The supreme importance of political support*

The paper is mostly technical. However, the decision to dollarize is highly political, in the best sense of the word. It is a collective decision, enforced by the State and with implications for every member of society and even

for other countries as well. It will generate winners and losers and change the structure of the economy in significant and uncertain ways. It is a momentous decision, which should not be taken lightly or solely on the basis of technical considerations. It is critical that the countries considering dollarization carry out a serious, open and broad discussion of the subject and go forward only on the basis of a strong political consensus. Support from Congress, the business community, the financial sector, labor organizations and civil society is bound to be needed in order to put in place the necessary laws, regulations and reforms and in order to reap the full potential benefits of the new monetary regime. We take this to be the most important pre-condition for a successful dollarization.

But the technical issues and alternatives are bound to be part and parcel of the political discussion, since they go to the heart of the issue of feasibility and have implications for the magnitude and distribution of potential gains and losses. Hence, it is important to clarify what the technical issues are, not just for technical reasons, but also for political reasons. Hence, the paper also attempts to facilitate the political process.

II. Which type of dollarization to pursue?

As argued by Pedro Pou¹, there are three forms of dollarization, (i) unilateral, (ii) via a full monetary union with the US and (iii) through a bilateral agreement or treaty with the US. Full monetary union reflects more the type of monetary integration pursued by the 11 countries in Europe where a new currency was created and new institutions such as the European Central Bank have been formed with new rules to determine monetary policy. At the other extreme, unilateral dollarization would represent a policy of adopting the US dollar without any formal recognition or engagements of significance. The third possibility consists of adopting the dollar in the context of a limited agreement between the dollarizing country and the U.S.

We do not believe that monetary union with the U.S. is feasible – at least not today. There are clearly political reasons why this is so. The original leitmotiv for economic integration in Europe was peace. After the two bloody world wars of the 20th century, not to speak of the carnage in previous centuries, it became a major political goal to bring the different nations together. These wars reflected many cultural, linguistic and religious differences between the divers nations but also the presence of several powers of approximately equal weight. Otherwise long and protracted wars would not have been possible. France, Germany, Italy and the U.K. have economies of roughly similar size. By contrast, the US economy is about 10 times larger than the Brazilian economy and about 18 times larger than either Argentina or Mexico. This has many implications.

First, the strongest currency in Europe -the Deutsche Mark- never played the dominant financial role that the dollar plays today in the Americas. Essentially, until the adoption of the euro all Europeans saved and borrowed in their own

currency. This is not so in Latin America. Secondly, European countries have been relatively open (at least to each other) and (hence) have often attempted to subordinate monetary policy to the objective of maintaining stable exchange rates with their partners. By contrast, the US economy is very closed, and hence does not see its exchange rate as important enough to become a critical consideration in the pursuit of monetary policy. In fact, Euroland is now as closed as the U.S. and the European Central Bank's rule is that they target inflation, not a stable exchange rate. Hence, for European countries the adoption of the euro meant getting rid of the headache of managing monetary policy in order to keep their currencies in line with each other. The U.S. does not suffer from such pains and does not see anything broke that needs fixing.

Finally, while the U.S. is the major partner in trade, finance and investment for Latin America countries, the converse is not true. Still, , the U.S. is bound to want to protect its global role and not comprise it in a regional issue. Hence, monetary union, a la Europe is out of the question.

However, a monetary association treaty has been under discussion in various quarters and the U.S. Senate Banking committee has held several hearings on the subject. Obviously, a country would only consider a monetary treaty if it provided a better framework than any unilateral arrangement . Hence, one of the objectives of the paper is to discuss what should such a treaty include in order to ensure that bilateral dollarization is a superior alternative.

III. Lessons from Europe

Lesson 1. Greater economic and financial integration is not a precondition

The debate on dollarization is taking place in the context of the adoption by 11 European countries of a common currency. The European experience provides some important lessons on the issue of adopting a supra-national currency. After all, the creation and adoption of the euro was an undertaking of enormous institutional portent that had to undergo dozens of political hurdles. And it did so in spite of two major arguments against it. First, according to the traditional optimal currency area (OCA) considerations, which are based on the degree of factor mobility and commonality of shocks, Europe was too disparate and with too low a level of economic and financial integration to justify a single currency. In fact, by OCA rules, the 11 countries that joined the euro are less apt to share a common currency than the 7 Central American and Caribbean countries analyzed by Stein and Talvi (1999). Hence, by European standards, much of Latin America is more than sufficiently integrated with the US and with itself to consider the feasibility of sharing a common currency.

Lesson 2. A common currency is more valuable than a sovereign currency

The second argument against the common European currency was the issue of sovereignty. Politics in Europe were asked to consider the convenience of renouncing the ability to conduct their own monetary policy and to empower an autonomous and technocratic Central Bank to make decisions for the whole area without the possibility of political participation in the decision-making process. In fact, in order to make a common central bank agreeable to the Germans, the other countries had to accept the adoption of essentially Bundesbank rules for monetary management. These include, among others, an extremely independent central bank with autonomous directors appointed to very long terms and with the sole objective of maintaining price stability. Not surprisingly, the ECB was located in Frankfurt.

The fact that the euro was accepted is evidence that in the political assessment of the trade-off between monetary sovereignty and the benefits of monetary union, Europeans did not find sovereignty of much value.

Lesson 3. The market can transform the pre-announced commitment to dollarize into a virtuous circle.

In addition, there are two important European lessons from the process of implementation itself. The first one is the virtuous circle between structural reform and market performance. A step-by-step process in which the adoption of a strong common currency is preceded by a set of healthy pre-announced reforms makes financial markets reward good reform performance with lower interest rates and less exchange rate pressures during the transition process. This reward in itself makes it easier for the governments to strengthen the fiscal and financial systems, in preparation of the monetary switch. We interpret from this that the decision to dollarize in an orderly and pre-announced manner can create the incentives to put in place a set of reforms that would not be feasible in the absence of that commitment.

Lesson 4. Dollarization is likely to lead to an initial boom

The second lesson is that the initial effects of adopting a common currency are more expansionary and significant in the countries that start with the weaker currencies. Hence, the euro is much more popular in Spain, Portugal and Italy than in Germany or France since the former countries have seen a larger drop in interest rates and inflation and an acceleration of growth and long term capital inflows. We interpret from this that the process of dollarization is likely to be characterized by initial reductions in inflation and real interest rates that will relieve pressures on fiscal accounts and financial systems while at the same time creating booming conditions. How to exploit these favorable conditions and how to prudently manage the boom is an important issue to which we will return.

IV. Preparing for dollarization: how to think of pre-conditions?

It is often argued that the requirements for dollarization are so demanding that those that would qualify would not stand to benefit much. Other proponents tend to view dollarization as a cure-all that will take care of fiscal, financial and real sector problems. In the context of this debate, how can one think of the issue of feasibility in a useful way? We propose to separate three different criteria to prepare a country for dollarization.

- What would make dollarization feasible?
- What would make dollarization the best among the available choices?
- What would make it successful?

1. *Minimum conditions for feasibility*

The truth is that there are very few minimum pre-requisites for dollarization. First, the government needs to be legally and constitutionally empowered to make the decision. In some countries the President can impose such a decision by decree. In others, the national currency is set in the Constitution. Getting the necessary legal authorization involves political support. In addition, the country needs to be able to buy back the currency in circulation and transform it into dollars. To do that it needs to secure sufficient international reserves. Table 1 asks whether the level of international reserves of 7 Central American and Caribbean Countries is sufficient for a unilateral dollarization. Column 1 shows the percentage of the stock of reserves that would be required to convert the currency in circulation. The number is lowest for El Salvador where with less than 20 percent of their existing reserves they could retire all the currency. The number is highest in the Dominican Republic where the total stock of reserves would not be sufficient to buy back the currency. In Column 2 we consider also the retirement of the bonds that the Central Banks issued for the purpose open market operations. In this case, neither Costa Rica nor Nicaragua could qualify for unilateral dollarization. Finally, in Column 3 we consider retiring all of the base money (including the reserve requirements of the bank) plus the bonds. By this tougher criterion, neither Belize nor Guatemala would qualify.

So, the minimum conditions are few, but not necessarily easy to achieve. However, in the context of a monetary treaty that included seigniorage sharing, as we discuss below, pretty much all 7 countries in our sample could meet this criterion.

If the country has fiscal and financial weaknesses or important rigidities of some other sort, it is bound to face problems. But the truth is that the weaknesses the country has are bound to generate problems no matter what exchange rate arrangement is chosen. So formally speaking, minimum technical requirements are few.

2. *Conditions to assure best choice*

Preconditions may also be understood at a second level. Namely, one can ask the question what conditions are necessary to ensure that dollarization is a better strategy than any alternative arrangement. To a large extent this is the focus of the accompanying papers by Hausmann (1999), Hausmann et al (1999) and Stein and Talvi (1999) as it is essentially the same question as what are the characteristics of a country which determine whether it should dollarize or not.

The debate has often been framed as a choice between fixed, floating or something in between, such as a crawling rate or band. We do not want to add to that debate here. However we would like to speak to the choice between a currency board and full dollarization. If we consider the differences between a pure currency board and full unilateral dollarization, then there are three technical differences which stand out: first, under a currency board, seigniorage revenue is preserved whereas it would be lost under full unilateral dollarization. Second, full dollarization would result in lower interest rates and in the absence of exchange rate mismatches. Finally, a currency board provides the option to adopt an alternative exchange rate regime at some future date. Whether dollarization is preferred to a pure currency board depends on whether the advantages of having seigniorage revenue plus the value of the exit option to another exchange rate system outweighs the cost of having a higher country risk premium. In this context, the experience of Argentina indicates that, even after 8 years of the Convertibility, there is a large and very volatile exchange rate risk, as observed in market prices. (see Rubinstein 1999 and Borenzstein 1999 for analyses in this regard).

3. Assuring success

A different set of conditions is needed to assure success. Here the most important definition of success is that the process maintains ample public support, years after its adoption. This is likely to happen if inflation declines, growth and employment pick up in a sustained manner, interest rates decline, credit becomes more widely available and longer term and the export activities maintain their dynamism. This will require a strategy to put in place supporting policies to assure success, the full exploitation of the virtuous reform circle, the prudent management of the likely initial boom, adequate precautions against external negative shocks and a good dose of good luck.

V. Dollarization: what is being given up?

In order to understand the policy issues that are involved in the decision to dollarize it is useful to consider first what is being given up. Here we would like to mention four broad categories.

1. The ability to manage monetary and exchange rate policy

2. The ability to print fiat money
3. The ability to guarantee the liquidity of bank deposits
4. The ability to default on the real value of nominal commitments

All these abilities represent options that governments have and can use at certain points in time, especially in difficult circumstances. However, markets know and understand that these options exist and hence tend to factor them in. For example, the option to devalue is perceived by the market as a risk, which is then reflected in higher interest rates and shorter maturities. Workers understand that the government has an option to inflate and consequently demand higher nominal wage increases or indexation. So the structure of contracts develops in such a way that it takes into account the presence of the options which the government has.

1. Giving up the ability to run an independent monetary and exchange rate policy

According to the textbook Mundell-Fleming model, if a country decides to float it can have control over its interest rates and use them counter-cyclically to manage aggregate demand so as to keep inflation low and growth stable. It can respond to low domestic activity by lowering interest rates. This will stimulate the activities that are dependent on credit, such as the construction and consumer durable sectors. In addition, under such circumstances the currency is likely to depreciate generating a further stimulus to the economy through improved competitiveness and greater net exports. If the country undergoes a bad external shock it can let the currency take the hit, thus stimulating the tradable sector. By contrast, if it fixes the exchange rate it will not have any control over interest rates and will not be able to use changes in the exchange rate to help stabilize the economy. It will not be able to lower rates to stimulate the economy nor will it be able to depreciate the currency to absorb external shocks.

However, the evidence suggests that floating regimes in Latin America do not work according to the textbook models (see Hausmann et al 1999). Countries with significant formal exchange rate flexibility used it very little. By contrast they seem to be forced into very pro-cyclical movements of their interest rates. For example, Mexico, Chile, Colombia, Peru and Venezuela were forced in 1998 to increase interest rates much more significantly than fixed rate countries such as Argentina, Panama and El Salvador. To the extent that they did devalue, the evidence suggests that such depreciations in net terms were contractionary, not expansionary. The broader evidence suggests that floating regimes tend to be more pro-cyclical and interest rates more dependent on world factors than countries that fix. In addition, floating tends to generate smaller financial systems and higher interest rates.

So for floating rate countries the decision to dollarize does not necessarily imply giving up an asset that has the characteristics that textbooks often associate with them. For countries that fix, dollarization implies a reduction in the risk of depreciation and hence lower interest rates. For both sets of countries, dollarizing implies doing away with original sin. It eliminates currency mismatches and allows for a better management of maturity structures, making the financial system safer and the economy less prone to financial turmoil.

While floating regimes in practice in Latin America have shown very little ability to play the anti-cyclical function that is often referred to in textbooks, it may be that a dollarized regime can use its financial policies in just such a way. During boom conditions, liquidity and capital adequacy requirements can be strengthened in order to limit the rapid expansion of banks' balance sheets. Since -even after dollarization- domestic credit will not be a perfect substitute of foreign borrowing, financial policies can be used as a counter-cyclical policy.

2. Giving up the ability to print money

Governments in countries that have their own currency are able to generate an income, known as seigniorage, based on the difference between the value of the currency and the cost of producing it. Unilateral dollarization involves giving up this income which will then be appropriated by the U.S. For the countries of Central America and the Caribbean this loss represents about 1 percent of GDP (see Table 2), a quantity that is significant as a percentage of fiscal revenue in a normal year. However, even a country that has dollarized unilaterally might still gain revenues on other forms of money. For example, a dollarized country, just as any other country, may impose a non-remunerated reserve requirement on certain deposits. This will generate "seigniorage" revenue, as the Central Bank will be able to earn interest on the reserves. In this sense, the portion of seigniorage revenue generated by the commercial bank deposits at the Central Bank is not lost. Obviously, such a policy, may simply have the effect of driving financial intermediation off-shore. The appropriate use of this mechanism should be evaluated in line with taxation and financial policy and applied accordingly².

How could a monetary association treaty deal with the issue of seigniorage? Sharing seigniorage obviously implies an Act of Congress in each of the countries involved. Setting aside the issues of political consensus required to enact such legislation, we turn to the technical issues related to the mechanisms for sharing seigniorage revenue.

Conceptually, there are perhaps four alternatives to consider in terms of rules to share seigniorage. The first is simply to consider the current stock of notes and coins in circulation (in the hands of the public and in the

hands of the banking system). One way to think of the seigniorage income, is to consider this stock of money as similar to an interest free loan given to the state and hence the state gains the opportunity cost of the interest rate on this stock. An international interest rate applied to the stock of domestic currency in circulation then gives a first estimate of seigniorage income. The sharing might then be effected through an item each year in the US budget. Table 2 shows the magnitude of such income in 6 Central American and Caribbean countries. It is the variable defined as C2 and represents 0.3% of GDP on average.

A second alternative would be to arrange a currency swap with the US, whereby the US receives a dollar-denominated, non-interest-bearing bond equivalent to the dollar value of the domestic money in circulation in exchange for an equal amount of dollars. In this fashion the dollarizing country does not need to lower its reserves in order to buy back the national currency and can keep earning interest on those reserves. This income would be equivalent to that generated by the first definition but the actual flow of dollars would take place all at once at the beginning of the process. Such an approach would have several advantages: first, it would not require a budgetary appropriation each year, something that is difficult to the US to pre-commit to do, as the experience with the UN contributions indicates. Second, it provides automatically the necessary financial resources to effect the swap of currencies, thus drastically reducing liquidity impediments to dollarization. Finally it leaves the country with a stock of dollars which, can generate revenue, and which also can be used to support lender-of-last-resort functions.

However, although these two approaches have the advantage of simplicity, they do not consider further seigniorage income from increases in the stock of money in circulation. After dollarization, as the money in circulation rises in the future then extra-seigniorage revenue is gained. Table 2 presents an estimate of this revenue for 7 Central American and Caribbean countries during the 90s (labeled C1) and shows that it is about three times larger than the first seigniorage estimate. An alternative method might then attempt to take account of these future fluctuations. One option would be to attempt to monitor the flows of dollars to estimate more precisely the stock of dollars in the dollarizing country over time and set seigniorage flows according to those estimates. Potentially this alternative may be the most accurate in determining actual seigniorage income in the dollarizing country. However, at the same time it is clearly the most complicated. Although the US authorities do monitor dollars flowing out of the US to different countries not all countries monitor what subsequently happens to those dollars. Countries wishing to apply this alternative would have to set up adequate monitoring systems. Such systems might always be subject to question as to their accuracy and run the risk of creating disagreements between the parties. Moreover, a

further drawback is that in some countries a full monitoring system might also bring the fear of controls. However, the increased fears of controls due to the existence of accurate monitoring would go completely against the original motives for dollarization.

Much more practical would be to simply define a fixed rule. One precedent is the seigniorage sharing rules negotiated within the Euro-11 countries. The national central banks of the 11 countries adopting the Euro have the right to issue currency in the future (subject to the authorization of the European Central Bank). However, they must share the seigniorage revenue through a fixed formula with the other 10 countries. This formula depends on the GDP and population of the countries concerned. A second precedent is a the fixed formula adopted in the seigniorage sharing agreement between the South African authorities and Namibia.

Another possible fixed formula is that advocated by a paper from the Joint Economic Committee of the US Congress (1999). This formula is based on the idea that a dollarizing country would obtain a percentage of the total seigniorage income from US dollars worldwide, with that percentage given by the ratio of the original stock of domestic currency in the dollarizing country to the outstanding total stock of US dollars at the time of dollarization. This means that the country from the date of dollarization would gain or lose with the overall fluctuations in world dollar demand. In other words, dollarization under a monetary agreement with the US of this sort would imply that the dollarizing country would become a (non-voting) partner in the business of issuing dollars.

So far, we have talked in terms of average seigniorage income. However, the actual magnitudes tend to vary from year to year depending among other things on the growth of the economy, the inflation rate and the demand for real balances. Often in the past seigniorage has been used as a tax of last resort. This tax has tended to be used when other forms of taxation have not been available (during severe recessions or during periods of economic or political turmoil when other taxes have been difficult to collect). There is then an argument that a dollarizing country should then put in place mechanisms such that this 'tax of last resort' will not be necessary. One way to do this is to create other mechanisms such that funds are available in emergency circumstances. For example, Argentina is in the process of approving a law that would place a cap on fiscal deficits and set up a fiscal emergency fund. Some countries, which are dependent on commodities for a substantial part of fiscal revenues, may wish to set up commodity funds in similar vein to the Chilean copper fund.

The sharing or seigniorage, whether through a swap or through annual payments that can be then put as collateral, makes the dollarization process much easier to fund. Table 3 studies the effect on the level of reserves after dollarization with different swap schemes (or alternatively borrowing the net present value of seigniorage). The first column shows the current level of reserves as a share of M2. The second column shows the reserve level after a unilateral dollarization, where currency and central bank bonds are retired. Here we observe that three countries would be left with negative reserves. Column 3 shows the reserves that would be left if a swap were done equivalent to the dollar value of all the currency liabilities of the Central Bank. Here, all countries are left with positive reserves, but at a level that in some cases is low to assure an adequate preventive liquidity stock. Finally, column 4 shows the reserves after dollarization for the case in which the swap would be equivalent to the value of base money. In this case, the level of reserves would be very large relative to M2.

One important aspect of seigniorage is that it now accrues to central banks. This is an asset that does not appear adequately expressed in their current balance sheets. Consequently, balance sheets have often not been a major source of concern. In fact, banks with negative net worth in their published accounts have been able to operate without major problems for decades. Table 4 shows the accounting capital of the Central Banks of 7 Central American and Caribbean countries as a share of M2. It shows that for 2 of 7 the capital of the Central Banks is negative and large while it is only significantly positive in 3 countries. In reality, the Central Banks are not necessarily broke because seigniorage revenue represents a very substantial asset that is not adequately reflected in the accounts. In reality, if seigniorage were adequately factored in, these Central Banks would probably appear as very solvent. However, under unilateral dollarization this negative capital would become a real source of risk. The bank would actually risk defaulting on its obligations or would fund its yearly losses with a declining reserve level.

Hence, it is important that dollarizing countries develop a strategy to make their central banks solvent. Such a strategy should consider the seigniorage it can earn on the non-remunerated reserve requirements of the banking system. If the country plans to sign a monetary association treaty that includes seigniorage, this revenue could be used to capitalize the central bank. A strong central bank will be critical in order to act as the protector of financial stability in a dollarized regime.

3. Giving up the ability to guarantee the liquidity of deposits: the lender of last resort issue

There are two twin misconceptions about the lender of last resort issue. The first one consists of the belief that a central bank is always able to guarantee the liquidity of the domestic currency deposits of the banking system because it can always print enough money to convert deposits into cash, through lender-of-last-resort operations³. The second misconception assumes that since central banks in dollarized economies cannot print money, they lose completely this ability. We will argue that there is sufficient space between these two exaggerations to create an adequate solution to the issue under dollarization.

First, it is not true that a central bank has an unlimited ability to guarantee the liquidity of the domestic currency deposits. As the central bank issues more currency through last resort lending, either it will lose international reserves or the exchange rate will depreciate⁴. In fact, in several recent banking crises, such as those in Venezuela and Ecuador, the commitment of the Central Bank to provide liquidity led to a full-blown currency crisis. The perception that money supply was increasing in an unsustainable manner led to a collapse in money demand, a depletion of international reserves and a major depreciation of the currency. In Ecuador, in order to avoid hyperinflation the government was compelled to freeze deposits. Hence, unless a Central Bank plans to address a banking crisis by wiping out the value of financial assets and liabilities through hyper-inflation, it must see its ability to provide last-resort lending as limited by its stock of international reserves. In a crisis context, in which the central bank is providing last-resort lending, reserves should be expected to fall, more than one-for-one, for each peso of last-resort lending. This is so, because it should not expect the demand for money to go up in such a context. The additional domestic credit will likely be more than compensated with a reduction in international reserves.

So the ability of a central bank to provide last resort lending is limited, in the first instance, by its stock of international reserves, lest it is planning to cause a currency crisis. What about a central bank in a dollarized country? Here in principle the problem is the same. The lender of last resort function will be limited by the central bank's ability to mobilize international reserves in order to guarantee the convertibility of deposits into cash.

One concern is that a country that dollarizes must use its international reserves to convert the domestic currency into dollars bills and coins and hence subsequently will not have reserves to act as lender of last resort. As argued in the previous section, this will depend on the way the seigniorage sharing arrangement is set up. For example, if the monetary treaty decides on a mechanism based on a currency swap (ie: a swap of the dollarizing country's notes for US dollars), then the dollarizing country maintains the stock of reserves. If instead seigniorage is paid in annual amounts, this

flow can be used to collateralize a contingent liquidity facility either with international private banks or with the US authorities themselves. The size of this facility would be the net present value of the seigniorage flow.

A model for such a liquidity facility is provided by the Argentine contingent liquidity facility. This facility stands at over \$6bn. The average maturity of the facility is between 2 and 3 years and the facility is rolled over every 3 months such that the central bank always has a minimum average maturity of 2 years for these funds if called. In this facility the Central Bank of Argentina uses Argentine government bonds as the instrument (or collateral) on which repos are negotiated.

Following the current Argentine scheme the dollarized country could set up a liquidity facility with private creditors who presumably would be content to provide finance guaranteed by US sovereign risk at still finer rates given the quality of the collateral. However, another possibility might be that the US authorities would provide such a facility. A paper from the Office of US Senator Mack, for example, suggests that the US Treasury's Exchange and Stabilization Fund should be re-thought and in the future used with this purpose for dollarizing countries with collateral provided by the seigniorage revenue flows.

In the above we refer specifically to the lender of last resort power of the Central Bank that might be lost through dollarization. However, there is a wider question of whether, and if so how, a lender of last resort function should be instrumented in the first place.

Some argue (Hanke) that a country should not even have a lender of last resort for banks as this may do more harm through moral hazard than good by enhancing financial stability during a period of stress. According to this view it is an additional benefit of (unilateral) dollarization that the lender of last resort powers of a central bank are reduced. Others suggest that central banks have generally shown too much discretion in their lender of last resort role and that clearer and more transparent rules should be advanced. This was the source of a famous debate at the end of the last century between Bagehot and the Bank of England (Bagehot 18734). However, the position of most central banks is that discretion is necessary and even desirable. On the one hand, it limits moral hazard by not promising across the board rescues. On the other hand, it allows them to intervene in case financial stability is threatened. Still, it is not obvious that these operations need to be effected through a central bank or that a central bank needs to have its own funds to play this role. Fischer (1999) argues that there are many different models for such operations and some successful models may not need significant amounts of central bank reserves.

In our view, the central bank lender of last resort is an important but restricted function which should be limited to those cases where solvent banks face a liquidity problem and cannot get private liquidity support due to information (or ‘lemon’) type problems or, more controversially, where a sudden bank failure might provoke systemic problems.

Moreover, although dollarization may imply the reduction in central bank reserves (in order to purchase the outstanding notes in circulation), it certainly does not imply that central bank reserves will necessarily fall to zero. In addition, the central bank should adopt an active liquidity policy based on a combination of own reserves, remunerated liquidity requirements on the banking system and additional credit lines in order to restore to a significant extent lender of last resort powers.

Finally, many central banks either explicitly or implicitly guarantee payment systems operations. In particular, where net payment systems operate (i.e. those that are based on end of day compensation clearinghouses) Central Banks at times may extend substantial liquidity to ensure smooth operations. Losing the ability to print money also implies making sure that the Central Bank has the resources to back up any guarantee it has provided to such systems. There is then an argument that a dollarizing country should ensure that its payment system is well designed and that in particular there is adequate protection such that the necessity to extend significant amounts of liquidity. This protection might take the form of adequate guarantees or collateral in a net settlement payments system or moving to a real time gross settlement system. As a footnote we note that for countries which maintain significant liquidity in a Central Bank through high liquidity or reserve requirements, the cost of moving to a real time gross settlement system is relatively low.

4. Giving up the ability to default on the real value of nominal commitments

We now turn to a set of abilities that can adequately be called options of last resort. In other words, they are degrees of freedom that countries would generally only use in exceptionally bad circumstances. If the country has made frequent use of these options in the past then it must make sure that the conditions that gave rise to their use are not repeated after dollarization. The policies that we advocate in this section then, by reducing the probability of reaching such appalling circumstances, are then much more than compensatory. In other words, countries that dollarize and adopt the set of policies that we discuss here would, in our view, be much better off than countries which had not dollarized and hence retained degrees of freedom which are essentially only to be used in crisis situations. In other respects, since these options are costly, and as mentioned above change the structure and prices of all sorts of contracts in

the economy, abandoning the option through dollarization may eliminate or significantly reduce some of the problems.

In the past, inflation flare-ups, usually associated with massive collapses of the exchange rate have occurred because of some unsustainable trend in the economy. These have usually been associated with fiscal or financial problems. In these contexts, a massive depreciation and inflation can wipe out the real value of nominal liabilities and thus bring obligations in line with available resources. Corporate borrowers see their unsustainable bank debt decline in real value with the bailout borne by the depositors. The de facto expropriation the public's real savings resurrects banks and corporations. Lax budgetary rules and inability to limit entitlements and discipline other forms of government spending creates nominal obligations that spiral out of control. Through a burst of inflation, these obligations are cut down in real terms. A domestic public debt that spirals out of control can be brought back into line through a burst of unexpected inflation. The inability to negotiate reasonable wages, in either the public or the private sector can generate either a fiscal or a competitiveness problem that is then corrected through depreciation and inflation.

All these mechanisms may in fact be self-fulfilling. The fear that a burst of inflation may occur can keep interest rates high for a sufficiently long time to the point that ex post real rates are just unaffordable, causing corporate and bank insolvency. Fear that the government will use inflation to keep its debt down may cause the interest rate on the domestic debt to stay at such high levels that it prompts the fiscal inability to service the debt. Knowledge that their entitlements or wages may be wiped out through a burst of inflation may cause people to demand very large nominal increases that the government can then only afford through a burst of inflation. Hence, dollarization by credibly breaking those time-inconsistency problems may by itself help prevent the occurrence of these crises. However, it is best not to rely only on this mechanism, since the process by which society may learn to impose on itself the right budget constraints can be slow and costly. Therefore, it is prudent to analyze those elements in the existing rules that create the need for recurrent bursts of inflation.

a) The financial sector

This is not the place for a detailed discussion of the full spectrum of financial sector policy and we refer the reader, in particular, to the G22 working party report on strengthening financial sectors. All countries should ensure that they have banking systems that have reasonable levels of solvency and liquidity. Bank supervision should be capable of monitoring solvency and the central bank should make sure that the system is sufficiently liquid. Public

sector safety nets should be well-designed and as transparent as possible (see IMF guidelines on transparency). Deposit insurance mechanisms should preferably be limited and funded through risk-related premia. Direct public intervention in the banking system in our view, need not be zero but public sector banks should be subjected to the same regulatory and supervisory discipline as public banks such that no additional fiscal liabilities are created.

Bankruptcy procedures should be adequate to allocate property rights efficiently and quickly in case of default, so as to minimize their economic costs. This is particularly important for countries envisioning dollarization, since they are renouncing devaluation as a way of defaulting on the real value of financial commitments. Therefore it is important that they develop alternative efficient ways to deal with bankruptcy. In this respect, there should also be a consistent set of 'exit' rules for banks, so that problem institutions can be efficiently disposed of.

As we have argued above, we believe that the credible announcement of the dollarization policy is likely to bring down local interest rates (in local and in foreign currency) and stimulate the economy. Indeed, it is likely that the economy will enter a boom as the economy dollarizes. During this period of boom great efforts can be made to strengthen financial system regulations. On the one hand, during the boom the government should tighten financial system regulations in order to 'lean against wind' of credit expansion and ensure that a greater cushion of capital and liquidity is accumulated during this phase in order to build the strength needed to face future downturns. On the other hand, it is in the boom phase that it is actually easier for banks to comply with stricter standards.

Adequate financial regulation and supervision is important for all countries, not only those that want to dollarize. After all, Latin America has had among the costliest banking crises in world history. However, those that want to dollarize may have the economic opportunity and the political occasion to strengthen their systems. By making a new round of financial reforms part of the dollarization plan countries can get into the same virtuous circle that took place in Europe.

b) Fiscal sustainability and public debt

Imposing a budget constraint on the fiscal process is a challenge in any regime. The common problem is endemic in fiscal matters and is characterized by the fact that all members of society would

want others to pay for their pet projects through the public purse. This creates a bias towards greater spending and deficits. Lack of adequate constraints on the decisionmaking process is one of the causes behind fiscal deficits in Latin America (BID 1997).

Dollarization implies losing the possibility of defaulting on the real value of nominal obligations that become unsustainable. Dollarizing countries may benefit from the fact that low inflation makes the budget more stable in nominal terms and hence commitments may become more transparent. In fact, the uncertainty over the nominal budgets, characteristic of higher inflation countries makes it harder to impose budget constraints on spending agencies (see Aizenman and Hausmann, 1996). So dollarization may facilitate fiscal discipline. But again, it would not be wise to depend on this mechanism to assure sustainable fiscal commitments. It would be worthwhile to perform a review of the sustainability of certain existing entitlement programs such as pension schemes for public employees, social security systems, health and education systems among others. It would also be wise to check the buoyancy of tax revenues. Often countries put in place tax holidays to the most dynamic sectors of the economy so that the tax burden falls on the slow moving activities. This tends to depress the ability to sustain the tax ratio. More recently, governments have provided guarantees to private sector projects in infrastructure. These contingent liabilities are often not well accounted for in the budgetary procedures.

Hence, any country would be wise to strengthen its budgetary rules, institutions and accounting schemes. Adopting a very prudent cyclically adjusted fiscal deficit might ensure medium term sustainability and a greater ability to sustain the budget in bad times. Dollarizing countries have the additional goal of accommodating the fact that they can no longer get out of unsustainability through inflation. However, dollarizing countries are likely to benefit from the reduction in the cost of servicing the public debt and of an increased access to external finance. This creates the opportunity to strengthen the fiscal position both in terms of its solvency and its ability to withstand negative shocks through rainy day funds and sufficient fiscal reserves. By making fiscal reform part of the process of dollarization countries can replicate the virtuous cycle of reform that was observed in Europe.

Dollarizing countries may also need to pay heed to the debt position of the non-financial private sector. At the very least we advocate monitoring the overall debt position of the country including the private sector. Indeed, in most countries in the

region, the tax regime favors debt-finance over equity-finance and we would suggest that this type of distortion should be removed and arguably the tax system should in fact favor equity over debt finance.

c) The labor market

A country with a floating exchange rate also has the possibility of using an exchange rate depreciation to default on the real value of nominal wage commitments. Thus countries with legislation that for example ensures that employers cannot reduce nominal wages can still effect a real wage reduction through inflation. A dollarizing country loses this degree of freedom. Hence, nominal rigidities will have more bite after the economy dollarizes.

There is then an argument that dollarizing countries may need to reconsider labor market regulations to ensure that there are other ways to increase the flexibility of the labor market. Restrictions on nominal wage reductions sit uncomfortably in a dollarized country. However, at the same time it is a natural concern to ensure that workers' rights are protected. This is not the place for a detailed discussion on seeking the right trade-off in labor market legislation in a Latin American context. We simply wish to point out that dollarization gives employed workers greater stability in the real value of their wages. It would make sense to make sure that the widest possible number of workers shares this benefit. A dollarizing country may wish to consider some labor market reforms as part of its preparation for dollarization.

In particular, a history of inflation may have left some price indexation clauses in contracts. These clauses protect workers from unexpected changes in inflation. They do generate inflationary inertia and real wage rigidity under more flexible regimes, but they can be even more damaging under dollarization. Backward looking indexation may trap the economy in an overvalued low employment equilibrium. Hence, it is particularly important to purge the contractual framework from indexation prior to dollarization.

However, the dollarization process is likely to take place in the context of an economic boom. It is then very likely that whatever nominal rigidities there are in the labor market at that time the time of dollarization are likely to be non-binding. Hence, the period of economic boom would be an excellent opportunity to introduce the appropriate labor market reforms.

But labor market reform should not be seen as a precondition for dollarization. According to the comparative index of labor market rigidities compiled by Gustavo Marquez, the 7 Central American and Caribbean countries that we have been studying have labor markets that are more flexible than Panama's.

VI. Implementing dollarization: a to do list

In this section we describe a template for a potential strategy towards dollarization.

1. Develop the basis for a broad national consensus. Seek the widest possible public debate of the issue and attempt to garner the support from political parties, and from the representative organizations of labor, business, banking and civil society.
2. Explore with the U.S. administration and Congress the feasibility of a monetary association treaty with.
3. On the basis of an assessment of the political feasibility of the project, decide whether to proceed to the announcement of a program of dollarization preceded by the adoption of policies to assure its success.
4. The policy reform program should try to assure fiscal sustainability, financial sector solvency and liquidity and the ability of the labor market to cope with real shocks without recourse to devaluation or inflation.
5. The process should set a timetable of about 2 to 3 years for full dollarization with intermediate deadlines in order to assure that the market and the political process generate forward momentum.
6. Assure that the Central Bank will have sufficient dollars with which to convert not only the total currency in circulation but also the stock of bonds and securities issued by the Central Bank in domestic currency as tools for monetary intervention.

Prepare a report on fiscal sustainability and propose a reform of budget institutions in order to strengthen medium terms

 - Reform of the banking sector laws to make the necessary changes to accommodate dollarization and in order to assure the solvency and liquidity of the system. Clarify exit rules for banks in trouble.
 - Adopt the necessary changes to eliminate indexation rules in labor contracts. Expand the scope of issues that can be negotiated at the firm level through collective bargaining. Reduce restrictions on job creation and facilitate job mobility.
 - Modernize bankruptcy procedures in order to make the resolution of default situations less costly.
7. The process should set a timetable of about 2 to 3 years for full dollarization with intermediate deadlines in order to assure that the market and the political process generate forward momentum. Attach deadlines for some of the reforms, associated with the dates of the process.

8. Develop a plan for the Central Bank. The plan should include the following items.
- First, it must assure that the Central Bank will have sufficient dollars with which to convert not only the total currency in circulation but also the stock of bonds and securities issued by the Central Bank in domestic currency as tools for monetary intervention. The Bank should be left with sufficient reserves after dollarization to form the basis of a lender of last resort function. This will depend on the nature of seigniorage treatment in the monetary association treaty.
 - Make sure that the Central Bank will be solvent after dollarization, when it loses its traditional source of seigniorage. This will require a clearing of the accounts between the Central Bank and the public sector.
 - Prepare a new Central Bank Law to clarify its now restricted functions as a guardian of financial stability.
 - Develop a liquidity policy (preventative) based on the Bank's own reserves, liquidity requirements on the banking system and contingent credit lines, possibly collateralized with seigniorage revenue (depending on the nature of the monetary association treaty)
 - The Bank should be prepared to issue coins, as it is seldom efficient to use dollar coins. In a transition period it can reassign values to the old coins so that they have useful denominations for transactions.
 - The Central Bank should monitor and “lean against the wind” of the likely credit boom by choosing relatively high initial liquidity requirements on banks and monitoring their capital adequacy.
9. Develop a timetable for the following issues:
- Date at which the exchange rate with the US dollar will be set.
 - Date in which the dollar becomes legal tender.
 - Final date in which the local domestic currency bills will be legal tender
 - Announce a rule for the conversion and reinterpretation of old long-term contracts in domestic currency that expire after the dollarization date. All new long-term contracts signed in the interim period should clarify how they will deal with dollarization.
 - Specify a domestic dollar rate at which financial contracts that are indexed to a local interest rate will be converted. Ideally there should be such a market and the Central Bank should have the capacity to publish those rates
 - Specify a window of time in which new accounting rules will have to be implemented by the corporate sector.
10. Specify a timetable for the mode of operation of the payment system during the transition to dollarization.

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