

*Luis Felipe Céspedes*  
*Roberto Chang*  
*Andrés Velasco*

## 8 Dollarization of Liabilities, Financial Fragility, and Exchange-Rate Policy

**T**he conduct of monetary and exchange-rate policy is perhaps the most contentious aspect of the policy response to the Asian crisis and other recent crises in emerging markets. Many analysts, led by the IMF's Stanley Fischer, have contended that stopping the exchange-rate depreciation was priority number one. Confidence, a reversal of capital flows, and growth would follow. Enthusiasts of this policy pointed to the 1995 example of Mexico (Dornbusch 1998):

Mexico fully implemented a stark U.S.-IMF program of tight money to stabilize the currency and restore confidence. Starting in a near-meltdown situation, confidence returned and within a year the country was on the second leg of a V-shaped recovery. The IMF is unqualifiedly right in its insistence on high rates as the front end of stabilization.

Not everyone agrees. The attack on tight money was spearheaded by Joseph Stiglitz, then chief economist at the World Bank, who was not shy about making the headlines with criticisms of the

sister institution. These objections went far beyond the traditional criticism of tough policies to defend a fixed exchange rate: that they are too costly in terms of output or employment. In much of East Asia the policy seemed not only to be painful, but also ineffective. *The Global Economic Prospects* published by the World Bank (1998) worried that high interest rates had little success in reducing pressure on currencies or stabilizing investor confidence, while at the same time imposing large output costs. This was the case whether the initial package entailed new agreements with the multilateral institutions (Indonesia, Korea, Thailand) or not (Malaysia and the Philippines).<sup>1</sup>

That the chief economist of the World Bank should disagree with his institution's own policies is peculiar. Even more peculiar was that this debate should be taking place at all. After all, monetary policies are supposed to be countercyclical: a monetary expansion is presumably called for to offset a shock to productivity or world demand. But what Dornbusch is advocating is a procyclical monetary policy, tightening in response to adverse shocks. How can this be?

Conventional theory, as exemplified by the Mundell-Fleming model, does call for countercyclical monetary policy. And in order to make such policy possible, the exchange rate should be flexible.<sup>2</sup> The logic behind this prescription is due to Milton Friedman (1953). If prices move slowly, it is both faster and less costly to move the

1. Arguably the problems resulted from policies that were "too little, too late." Corsetti, Pesenti, and Roubini (1998), in particular, have maintained that the common perception that high interest rates were the prevalent East Asian response to the crisis is a half-truth at best. The fund has insisted on the policy, but whether countries have followed it is a different matter. There is also an issue of timing. Tight money was adopted with much delay in several countries, as Corsetti, Pesenti, and Roubini (1998) show.

2. With free capital mobility and fixed exchange rates, a monetary expansion is quickly undone, as the central bank is forced to sell reserves to defend the peg. The net result is a loss of reserves with no net expansion of the monetary base.

## Dollarization of Liabilities, Financial Fragility, and Exchange-Rate Policy 69

nominal exchange rate in response to a shock that requires an adjustment in the real exchange rate. The alternative is to wait until excess demand in the goods and labor market pushes nominal goods prices down. One need not be an unreconstructed Keynesian to suspect that such a process is likely to be painful and protracted. The analogy that Friedman used is revealing, and accurate: every summer it is easier to move to daylight savings time than to coordinate large numbers of people and move all activities by an hour.

That basic policy prescription is still found in textbooks and continues to be taught to undergraduates but has come under attack recently from both academic economists and policy gurus. The real-world trigger for this shift, of course, was the Asian crisis. Countries like Indonesia that let their exchange rates go early on endured substantial real depreciations and seemed, at least at first, to be more troubled than those countries that held on. An overshooting exchange rate was blamed for debt-service difficulties, bank and corporate bankruptcies, and, in some cases, rising inflation.

### *The New Skeptics*

The academic onslaught on countercyclical exchange rates includes the work of Calvo (1999 and 2000), Calvo and Reinhart (2000), Krugman (1999 and 2000), Stein, Hausmann, Gavin, and Pagés-Serra (1999), Hausmann, Panizza, and Stein (1999), and Aghion, Bachetta and Banerjee (2000). Details differ, but skeptical arguments about the usefulness of countercyclical monetary and exchange-rate policy are built upon the following blocks:

- *The transfer problem.* External shocks, such as a fall in export demand, may require large real devaluations to restore the trade balance or the current account to equilibrium.
- *Dollarization of liabilities.* If debts are denominated in dollars while firms depend on local currency revenues (or, more pre-

cisely, revenues increase with the relative price of goods produced at home), sharp and unexpected changes in relative prices matter for financial stability.

- *Balance sheets and risk premia.* If a sharp devaluation wreaks havoc with bank and corporate balance sheets, country risk premia will increase as foreign lenders become wary of lending to what seems like an increasingly risky economy.

This combination of factors is particularly prevalent in so-called emerging markets. It can cause, the skeptics argue, the domestic effects of external shocks to be magnified and made persistent. In other cases it opens the door to multiple equilibria, so that the mere expectation of a large devaluation causes one to occur; in turn, the devaluation damages financial health enough to validate pessimistic expectations.

But perhaps the most striking implication of the analysis is that monetary policy becomes ineffective in offsetting real shocks. In an open economy, an interest-rate cut operates primarily by allowing the exchange rate to devalue so as to make local products cheaper abroad. But if debts are dollarized, then a nominal devaluation might increase drastically the carrying costs of the dollar debt, generating a wave of corporate and bank bankruptcies and potentially causing output to contract.<sup>3</sup>

### *Skeptical Thoughts on the Skeptics' Arguments*

This recent line of thinking on the limitations faced by exchange-rate and monetary policy in emerging markets is extremely useful. It places our attention squarely where it should be: on the financial sector and its interaction with the rest of the economy. It is primarily

3. This danger has been stressed in some interpretations of the Asian crisis—particularly that of Corsetti, Pesenti, and Roubini (1998).

## Dollarization of Liabilities, Financial Fragility, and Exchange-Rate Policy 71

that sector that complicates the conduct of countercyclical policy. And, as we know from the work of Kaminsky and Reinhart (1999), financial and currency troubles increasingly tend to happen together.

But there are a number of caveats. Perhaps the most important is that, if a real depreciation is called for because of an external shock, it will take place regardless of the exchange-rate system. Policy will only determine the manner of adjustment. Under flexible rates the change in relative prices occurs suddenly and sharply. Under fixed rates or a currency board the real depreciation will take place slowly, as nominal prices fall. Throughout the adjustment period markets will anticipate the real depreciation, and hence domestic real rates will rise above world rates. And if there are doubts about the sustainability of the peg, interest rates will be even higher. At the end of the day, the real value of debt service will have risen relative to the price of haircuts. This process can conceivably wreck corporate and bank balance sheets just as surely as devaluation.

The other crucial theoretical point is that observing that debt is in dollars is not sufficient to conclude that a nominal and real depreciation will worsen the balance sheet of domestic firms. In Céspedes, Chang, and Velasco (2000) we study the point formally, using a model of a small open economy in which, as in Bernanke and Gertler (1989) and Bernanke, Gertler, and Gilchrist (1998), real exchange rates play a central role in the adjustment process, wages are sticky, liabilities are dollarized, and the country risk premium is endogenously determined by the net worth of domestic entrepreneurs. Hence all the basic building blocks are there for unexpected real exchange-rate movements to be financially dangerous and for flexible exchange rates to be destabilizing. Nonetheless, the Mundell-Fleming logic survives pretty much unscathed: flexible exchange rates do play an insulating role in the presence of real external shocks, and for some parameter values fluctuations in home output and investment are larger and more persistent under fixed

than under flexible exchange rates. Such conclusions hold despite potentially large balance sheet effects.

The intuition is as follows: after an external shock, the initial devaluation of the exchange rate tends to reduce net worth since debt is denominated in dollars. This could suggest that net worth is lower in the case of floating and therefore that the country risk premium and domestic interest rates are higher and future investment lower. But that conclusion turns out to be premature. The reason is that net worth also depends on the level of current output, which flexible rates help stabilize through standard channels. The net result is that following an adverse shock net worth may well be higher under flexible than under fixed rates.

Gertler, Gilchrist, and Natalucci (2000) arrive at a similar conclusion, also using a financial accelerator model la Bernanke-Gertler. Shocks have a much greater effect on the real economy under fixed rates than under flexible rates. This is because an exchange-rate peg forces the central bank to adjust the interest rate in a manner that enhances financial distress. Such an effect occurs even if debt is denominated in units of foreign currency.

What are the implications of this work for the conduct of monetary policy in the open economy? Under a flexible exchange-rate system, should the central bank cut rates in reaction to an adverse shock? Chang and Velasco (2000a) argue that in most circumstances they should, even if there is dollar debt, because a devaluation has at least two other, more conventional expansionary effects: it lowers domestic interest rates and it causes expenditures to switch toward domestic goods.

Aghion, Bachetta, and Banerjee (2000) and Christiano, Gust, and Roldós (2000) consider the same questions using models that stress the role of collateral in allowing domestic firms to borrow abroad. In this case, a nominal and real devaluation can lower the dollar value of such collateral, causing foreign lending and therefore domestic investment and growth to fall. Again, the key policy question

## Dollarization of Liabilities, Financial Fragility, and Exchange-Rate Policy 73

is, Should the home economy respond with an interest rate cut or a hike? The answer is, *it all depends*. In Aghion, Bacchetta, and Banerjee (2000), an interest rate cut is called for if the share of dollar debt is sufficiently small, and if the competitiveness effect of devaluation is strong enough. In Christiano, Gust, and Roldós (2000), if there are substantial substitution possibilities among factors of production, and diminishing returns are not too great, then an interest rate cut will produce an expansion; otherwise, it will produce a contraction.

Our discussion yields at least two lessons. First, the recent emphasis on the relationship between exchange rates and financial variables is here to stay and, as argued at length in Chang and Velasco (2000b), has important implications for exchange rate theory and policy. Second, it is at least too early to conclude that, because of dollarization of liabilities and financial imperfections, policymakers should give up on the hope of carrying out countercyclical monetary and exchange-rate policies. There are circumstances in which those policies will work as conventional theory predicts. And of course, policymakers can also endeavor to correct distortions that pose limitations for macropolicy: with stronger local banks, deeper markets for domestic currency debt, and more independent monetary authorities, there will be even more scope for cushioning the shocks that inevitably hit economies.

### *References*

- Aghion, P., P. Bacchetta, and A. Banerjee. "Currency Crises in an Economy with Credit Constraints." Unpublished manuscript, MIT and Lausanne, June 2000.
- Bernanke, B., and M. Gertler. "Agency Costs, Net Worth, and Business Fluctuations." *American Economic Review* 79 (1989): 14–31.
- Bernanke, B., M. Gertler, and S. Gilchrist. "The Financial Accelerator in a Quantitative Business Cycle Framework." NBER Working Paper 6455, March 1998.

- Calvo, G. "Fixed vs. Flexible Exchange Rates: Preliminaries of a Turn-of-Millennium Rematch." May 1999. At <http://www.bsos.umd.edu/econ/>.
- Calvo, G. "Capital Market and the Exchange Rate with Special Reference to the Dollarization Debate in Latin America." April 2000. At <http://www.bsos.umd.edu/econ/>.
- Calvo, G., and C. Reinhart. "Fear of Floating." Paper presented to the Conference on Currency Unions, Hoover Institution, Stanford University, May 2000.
- Céspedes, L. F., R. Chang, and A. Velasco. "Balance Sheets and Exchange Rates." NBER Working Paper No. 7840, August 2000.
- Chang, R., and A. Velasco. "Dollarization of Liabilities, Balance Sheet Vulnerability and Monetary Policy." Manuscript, Harvard University, May 2000a.
- Chang, R., and A. Velasco. "Exchange Rate Regimes for Developing Countries." *American Economic Review* 90 (2) (2000b): 71–75.
- Christiano, L., C. Gust, and J. Roldós. "Monetary Policy in a Financial Crisis." Manuscript, Northwestern University, November 2000.
- Corsetti, G., P. Pesenti, and N. Roubini. "What Caused the Asian Currency and Financial Crises? Part I: Macroeconomic Overview." NBER Working Paper 6833, December 1998.
- Dornbusch, R. "After Asia: New Directions for the International Financial System." At <http://web.mit.edu/rudi/www/>.
- Eichengreen, B., and R. Hausmann. "Financial Fragility and Exchange Rates." Paper presented at the Annual Conference of the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 1999.
- Friedman, Milton. *Essays in Positive Economics*. Chicago: University of Chicago Press, 1953.
- Galí, J., and T. Monacelli. "Optimal Monetary Policy and Exchange Rate Volatility in a Small Open Economy." November 1999.
- Gertler, M., S. Gilchrist, and F. M. Natalucci. "External Constraints on Monetary Policy and the Financial Accelerator." Manuscript, New York University, 2000.
- Global Economic Prospects and the Developing Countries*. Washington, D.C.: World Bank, 1998.
- Hausmann, R., U. Panizza, and E. Stein. "Why Do Countries Float the Way

## Dollarization of Liabilities, Financial Fragility, and Exchange-Rate Policy 75

- They Float?" Working Paper No. 418, Inter-American Development Bank, 1999.
- Hellman, T., K. Murdoch, and J. E. Stiglitz. "Addressing Moral Hazard in Banking: Deposit Rate Controls vs. Capital Requirements." Unpublished manuscript, 1994.
- Kaminsky, Graciela L., and Carmen M. Reinhart. "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems." *American Economic Review* 89 (3) (June 1999): 473–500.
- Krugman, P. "Balance Sheets, the Transfer Problem and Financial Crises." In *International Finance and Financial Crises*, ed. P. Isard, A. Razin, and A. Rose. Kluwer Academic Publishers, 1999.
- Krugman, P. "Analytical Afterthoughts on the Asian Crisis." At <http://web.mit.edu/krugman/www/MINICRIS.htm>.
- Krugman, P., and L. Taylor. "Contractionary Effects of Devaluation." *Journal of International Economics* 8 (August 1978): 445–56.
- Lizondo, J. S., and P. Montiel. "Contractionary Devaluation in Developing Countries: An Analytical Overview." IMF Staff Papers 36, March 1989, pp. 182–227.
- Obstfeld, M., and K. Rogoff. "Exchange Rate Dynamics Redux." *Journal of Political Economy* 103 (1995): 624–60.
- Obstfeld, M., and K. Rogoff. "New Directions for Stochastic Open Economy Models." *Journal of International Economics* 50 (2000): 117–54.
- Stein, E. H., R. Hausmann, Michael Gavin, and C. Pagés-Serra. "Financial Turmoil and Choice of Exchange Rate Regime." Working Paper, Research Department, IADB, January 1999. Also at <http://www.iadb.org/oce>.