Monetary Policy in a Highly Dollarized Economy: The Case of Peru

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Introduction

How dangerous is a two-currency regime? Is it fraught with peril as bigamy is in a marriage?

High levels of dollarization have persisted in many emerging market economies despite the drastic reduction of inflation rates during the 1990s, raising new policy questions. How much restriction on monetary policy does large-scale use of foreign currency pose? Can monetary policy actions continue to be effective to achieve price stability? Can stabilization based on monetary policy and a flexible exchange rate be welfare-optimal? This paper looks at the experience of Peru to provide some partial answers to these questions.

Dollarization developed in Peru over nearly three decades. It began in response to rising inflation during the 1970s and was strongly reinforced by interventionist policy actions—imposition of capital controls, prohibition on foreign currency holdings, and forced conversion of foreign currency deposits into domestic currency. The use of dollars jumped during and following a bout with hyperinflation between 1988 and 1990. Today, approximately 60 percent of bank deposits and 80 percent of bank loans are dollarized, despite a small recent reduction in that level.

Most central banks have chosen to deal with dollarization through a hard-peg exchange rate system. Peru chose instead to combine an independent monetary policy with a floating exchange rate. Seeking to anchor expectations and improve the transparency of monetary policy,
Peru in 2002 became the first highly dollarized country to adopt an inflation-targeting framework.

Despite the restrictions created by dollarization, stabilization has been highly successful. Inflation fell from 650 percent in 1990 to 1.1 percent in 2000, to –0.1 in 2001, and 1.5 in 2002. The exchange rate was similarly stable over those years.

Financial stability was severely tested between 2000 and 2002, first by a period of political uncertainty and change as an illegal government was replaced by democracy, and then by financial turbulence in neighboring countries. Throughout this period, the price level, inflationary expectations, the exchange rate, and international reserves all remained remarkably steady. Indeed, dollarization receded while the demand for domestic currency grew strongly, allowing the central bank to adopt a moderately expansionary monetary policy in support of economic recovery.

This paper reviews the case of Peru, asking whether the risks associated with dollarization are more manageable than commonly expected—or whether Peru is a special case. And to what extent is it necessary to distinguish among different types of dollarization?

The following section provides a general overview on what is meant by dollarization, including a short literature review. The next section describes the features of the dollarization process and the monetary policy framework in Peru. The paper concludes with some final remarks.

**General Framework**

**Dollarization and Types of Dollarization**

Dollarization occurs when persons switch from financial assets denominated in domestic currency to assets denominated in foreign currency, for the most part to protect financial wealth from domestic inflation and currency depreciation. Under this definition, the dollarization process is a spontaneous response by residents to an unstable economic environment. *Full dollarization* is a term used when a country officially adopts the dollar for all financial transactions.

If we look more closely at the motives for this switch, two types of dollarization can be distinguished. First, *currency substitution* takes place when dollar-denominated assets are used for transactions, as means of payment and as unit of account. This type of dollarization typically appears during periods of high inflation, when the costs of maintaining domestic currency for transactions are high, inducing people to move to dollar-denominated assets. Second, *asset substitution* results when dollar-denominated assets are chosen as a safer store
of value, usually under conditions of macroeconomic instability. Dollar assets may look safer, even during periods of monetary stability, if residents are nonetheless uncertain that stability will last.

The first stage of dollarization usually takes the form of asset substitution, that is, as a flight to safety. According to Calvo and Végh (1992), “store of value” is the basic function of money to which domestic money is most vulnerable. If high inflation persists, dollarization begins in the form of currency substitution, especially for durable goods. If inflation explodes, dollar pricing will extend even to nondurables.

**Literature Review on Dollarization**

The early work on currency substitution and dollarization stressed that high and variable inflation rates encourage a flight from domestic money and raise the demand for alternative assets, including those denominated in foreign currency. In the early 1980s, Ortiz (1983), Canto (1985), and Ramírez-Rojas (1985) claimed to have found evidence of currency substitution or dollarization in several Latin America countries. Several later studies provided explanations for asset substitution. Thomas (1985) developed the consumer portfolio selection model, in which dollarization depends on the relative rate of returns of domestic and dollar-denominated assets. Although evidence for rate-of-return differentials helps to explain swings in asset dollarization in a few countries—mainly in Eastern Europe (Sahay and Végh, 1996; Baliño, Bennett, and Borensztein, 1999)—the same model does not successfully explain dollarization in Latin America.

Piterman (1998), Guidotti and Rodriguez (1991), Uribe (1995), and Sturzenegger (1997) developed models to explain the persistence of dollarization, even after the initializing causes (economic instability and high inflation) pass. These models explain this persistence by the cost of switching between currencies. Once domestic currency takes flight—reflecting that the public has found the ways to economize on its holdings of domestic currency—a reversal is difficult to bring about. In other words, the demand for real money balances is likely to exhibit “hysteresis” (Savastano, 1996). However, the switching cost emphasized in these models refers to currency and demand deposits, while the greater part of recent dollarization has been in time deposits, which is relatively costless to switch. The implication is that those models only explain currency substitution.

Savastano (1996) asks whether the institutional framework (rules and regulations governing access to foreign currency and foreign currency deposits) is sufficiently important to explain the degree of dollarization
across countries. In his study of dollarization in Bolivia, Mexico, Peru, and Uruguay, he stresses that foreign currency deposits in all cases were allowed in the domestic financial system after a period of economic instability.

Catão and Terrones (2000) develop a simple, partial equilibrium, banking model. They incorporate key structural characteristics of financial intermediation, which has featured prominently in the recent literature on the monetary transmission in emerging markets. They find that equilibrium dollarization varies with the external interest rate and devaluation risk; however, the direction and amplitude of such variations depends on initial dollarization level, the degree of bank competition, banks’ cost structure, the availability of tradable collateral in the economy, and the cost of loan enforcement.

Ize and Levy-Yeyati (1998, 2003) present a minimum variance portfolio model of dollarization in which agents hedge against macroeconomic risk on both sides of an underlying market equilibrium for credit, labor, or goods. They find that financial dollarization increases when the expected volatility of inflation rises in relation to that of the real exchange rate or, equivalently, when nominal shocks become preponderant relative to real shocks. Likewise, they derive important policy implications for countries that seek to limit asset substitution. Most importantly, they conclude that to reduce dollarization, countries should target inflation rather than the real exchange rate.

As we can see, most literature focuses on determinants of dollarization. However, Berg and Borensztein (2000) examine the implications of high dollarization for choosing the exchange rate regime and the information content of various monetary aggregates in developing countries. They conclude that high currency substitution argues for a fixed exchange rate regime, while the need for asset substitution implies the need for either a rigid or a more flexible regime. They also ask whether the most informative monetary aggregates include dollar assets. Based on a five-country analysis, they conclude that broader aggregates, including dollar assets, perform better than those that do not.

Ize (2001) analyzes the consequences of the type of dollarization on the effectiveness of monetary policy under an inflation targeting regime. He distinguishes among payment dollarization (currency substitution), financial dollarization (asset substitution), and real dollarization (dollar indexation of prices and wages). An economy with high real dollarization must present a high pass-through from domestic currency depreciation to inflation. Ize then argues that an economy that exhibits partial financial dollarization may still have an independent monetary policy.
Dollarization in Peru

Persistently high inflation reduces financial intermediation in the absence of mechanisms to protect financial assets against inflation. There are two usual ways to do that: dollar-denominated assets and inflation-indexed assets. A group of countries including Argentina, Bolivia, Peru, and Uruguay used the former as a means of hedging, while Chile, Colombia, and Brazil relied on the latter.

During the high inflation beginning in 1975, dollarization—defined as the share of foreign currency deposits in total private sector deposits of the financial system—grew from 2 percent in 1977 to 49 percent by 1984. A confiscation of dollar-denominated deposits in 1985 temporarily reduced the ratio to about 21 percent in 1989, but at the cost of an even deeper loss of confidence. Hyperinflation between 1988 and 1990 extended the loss of confidence to both dollar- and sol-denominated deposits and brought about a sharp decline in financial intermediation. Broad money over GDP fell to 5 percent of GDP. The credit market collapsed.

As shown in Figure 2.1, dollarization rose rapidly during hyperinflation. An augmented definition of dollarization, which includes dollar-
denominated deposits kept abroad, soared, showing the additional effect of capital outflows. By this measure, the dollarization of financial savings peaked in 1990. There is some evidence that dollars also became more important as a means of transactions during that period.

Dollarization became a means for the financial recovery that began in 1991. According to Baliño, Bennett, and Borensztein (1999), “allowing foreign currency deposits in the domestic financial system enhances the opportunity for reintermediation in economies that have undergone periods of very high inflation and unstable macroeconomic conditions, during which agents may have become reluctant to hold deposits in the banking system”—a statement that aptly applies to the recovery in Peru that began that year.

The beginning of disinflation was accompanied by deep liberalization of the financial system and of the economy in general. Full capital mobility was allowed, as well as freedom to hold financial assets denominated in foreign currency. This new regime helped to reverse capital flight. In particular, dollar-denominated deposits held abroad returned to the Peruvian financial system. As a result, banking credit to the private sector began to recover. Because of the fresh memory of hyperinflation and still-high inflation rates, no major change in the dollarization ratio occurred until 1993. Since then, the dollarization ratio has fallen slightly but steadily, from 68 percent in 1995 to 62 percent in 2001, while inflation was reduced to minimal levels (Figure 2.2).

**Asset Substitution Rather Than Currency Substitution**

As described, the persistently increasing inflation between 1975 and 1990, which culminated in hyperinflation, was the direct cause of dollarization, principally as a hedge to protect financial assets. In this section, we characterize the forms that dollarization took in Peru.

According to Savastano (1996), replacing the functions of domestic currency with foreign currency is a step-by-step process. Domestic currency usually first loses its role as a store of value, then its function as a unit of value, and finally its use as a means of exchange.

The use of dollars is highest as a store of value: 55 percent of financial system liabilities with the private sector are dollar-denominated. If Peruvians’ deposits abroad and dollar currency are included, the ratio goes up to 63 percent.

As a unit of value, the choice between domestic and foreign currencies is sharply differentiated according to the type of product. Thus, the dollar is used extensively to price real estate, vehicles, durable goods, intermediate goods and services traded between companies, executive...
salaries, and tourist-related services. On the other hand, the nuevo sol is the basis for most prices of nondurable goods and services, and also for wages.

As a means of exchange, the nuevo sol prevails over the dollar in terms of the number of transactions in the economy. The stock of currency in soles is about S/.5 billion (about US$1.4 billion, or 2.5 percent of GDP) and represents about 30 percent of total sol holdings of the private sector. The amount of currency held in dollars is unknown, but some econometric studies (Castillo, 1997) estimate about US$750 million, that is, a third of total currency.

The importance of domestic currency is evidenced in everyday transactions related to ATMs (cash machines), credit cards, and withdrawals-at-window. As shown in Table 2.1, about 6 million ATM operations are transacted in domestic currency each month, with a million operations in foreign currency. In terms of value, ATM sol transactions account for S/.1,051 million per month (about US$300 million), while dollar transactions account for S/.456 million (US$130 million) per month.

As can be seen in Table 2.2, data on transactions by other payment instruments bear out the ATM picture—that transactions are carried out mainly using domestic currency. ATM operations are a measure of low-value transactions; the dollarization ratio is 30 percent. If all financial system operations are considered, that ratio is about 35 percent. As
### Table 2.1. ATM Operations, 2000–01
(Monthly average)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Number of transactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. In domestic currency (thousands)</td>
<td>6,439</td>
<td>6,908</td>
</tr>
<tr>
<td>b. In foreign currency (thousands)</td>
<td>1,085</td>
<td>1,189</td>
</tr>
<tr>
<td>c. Dollarization ratio ($b/(a+b)$)</td>
<td>14.4%</td>
<td>14.7%</td>
</tr>
<tr>
<td><strong>2. Transactions’ value</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. In domestic currency (S/. million)</td>
<td>981</td>
<td>1,051</td>
</tr>
<tr>
<td>b. In foreign currency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S/. million</td>
<td>474</td>
<td>456</td>
</tr>
<tr>
<td>US$ million</td>
<td>136</td>
<td>130</td>
</tr>
<tr>
<td>c. Dollarization ratio ($b/(a+b)$)</td>
<td>32.6%</td>
<td>30.3%</td>
</tr>
</tbody>
</table>

Source: Central Bank of Peru.

### Table 2.2. Transactions by Payment Instrument, 2000–01
(Monthly average)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Debit cards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. In domestic currency (S/. million)</td>
<td>302</td>
<td>343</td>
</tr>
<tr>
<td>b. In foreign currency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S/. million</td>
<td>163</td>
<td>168</td>
</tr>
<tr>
<td>US$ million</td>
<td>139</td>
<td>176</td>
</tr>
<tr>
<td>c. Dollarization ratio ($b/(a+b)$)</td>
<td>46.1%</td>
<td>51.2%</td>
</tr>
<tr>
<td><strong>2. Credit cards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. In domestic currency (S/. million)</td>
<td>206</td>
<td>204</td>
</tr>
<tr>
<td>b. In foreign currency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S/. million</td>
<td>162</td>
<td>164</td>
</tr>
<tr>
<td>US$ million</td>
<td>44</td>
<td>40</td>
</tr>
<tr>
<td>c. Dollarization ratio ($b/(a+b)$)</td>
<td>21.2%</td>
<td>19.7%</td>
</tr>
<tr>
<td><strong>3. Checks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. In domestic currency (S/. million)</td>
<td>26,176</td>
<td>26,774</td>
</tr>
<tr>
<td>b. In foreign currency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S/. million</td>
<td>16,853</td>
<td>17,358</td>
</tr>
<tr>
<td>US$ million</td>
<td>9,323</td>
<td>9,416</td>
</tr>
<tr>
<td>c. Dollarization ratio ($b/(a+b)$)</td>
<td>35.6%</td>
<td>35.2%</td>
</tr>
<tr>
<td><strong>4. Total</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. In domestic currency (S/. million)</td>
<td>26,683</td>
<td>27,322</td>
</tr>
<tr>
<td>b. In foreign currency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S/. million</td>
<td>17,178</td>
<td>17,690</td>
</tr>
<tr>
<td>US$ million</td>
<td>9,506</td>
<td>9,632</td>
</tr>
<tr>
<td>c. Dollarization ratio ($b/(a+b)$)</td>
<td>35.6%</td>
<td>35.3%</td>
</tr>
</tbody>
</table>

Source: Central Bank of Peru.
a means of payment, therefore, the use of dollars is more limited than as a store of value. It should be noted, however, that these figures do not include illegal transactions, which are often made in dollars.

A related point concerns the pass-through from sol depreciation to inflation. The pass-through for Peru between 1995 and 2000 is estimated to be around 12 percent, which is relatively low. Why? Precisely because prices are mostly set in soles and are not indexed to the U.S. dollar. Additionally, when the sol depreciates against the dollar, financial dollarization produces an immediate recessionary “balance sheet effect” that damps the effect on inflation. Over the medium run, the balance sheet effect could be offset by an increase in net exports as a result of the depreciation. Nevertheless, the size of the pass-through depends to some extent on the behavior of expectations. Perceptions may be subject to threshold effects, so pass-through could vary with the absolute size of the depreciation. Expectations are also affected by the conditions that brought about the depreciation. Rising pessimism over macroeconomic conditions could directly cause both depreciation and higher inflation. Given the ease of exchanging soles for dollars, a maxi-depreciation could suddenly increase the pass-through to inflation. This argues for central bank intervention in the foreign exchange market to reduce exchange rate volatility.

In summary, dollarization in Peru consists principally of asset substitution rather than currency substitution. In other words, the dollar prevails as a store of value, which has implications for financial intermediation and the way that durable goods are valued. However, the Peruvian sol prevails as a means of exchange, and pass-through from sol depreciation to inflation is relatively low.

A word of caution. As in any dollarized country, both the extent of dollarization and its effects on pass-through are difficult to measure. Therefore, the real value of currency denominated in foreign currency is based on estimates (Figure 2.3).

**Currency and Maturity Mismatches**

According to the dollarization literature (Baliño and others, 1999), there are two sources of risk in financial systems of dollarized economies. The first is a maturity mismatch between banks’ assets and liabilities in foreign currency; the second is a currency mismatch between nonfinancial private sector cash flows and their debts to the banking system.

The first risk, maturity mismatch, refers to the vulnerability to potential bank runs of foreign currency liabilities—for example, due to capital flights. To be able to face that risk, the financial system must
maintain a high level of liquid assets in foreign currency, as is the case in Peru.

Peru’s high level of foreign currency liquid assets are explained in part by its high reserve requirements on foreign currency deposits. The marginal reserve requirement established by the central bank was about 45 percent until 1998, during a period of high capital inflows, and it has since stayed at about 20 percent. The average reserve requirement is now 33 percent. At present, commercial bank dollar-liquid assets amount to 36 percent of total dollar liabilities, considering both domestic deposits and short-term foreign debts. Furthermore, the Central Reserve Bank of Peru (BCR) has a net international position equivalent to 35 percent of system dollar deposits, while the public sector holds dollar deposits at the BCR amounting to a third of banking system dollar liabilities to the private sector.

The second risk, currency mismatch, corresponds to the exchange rate risk when borrowers have an unbalanced position between cash flows and liabilities by currencies, particularly in nontradable sectors. A strong unexpected sol depreciation would likely increase nonperforming loans among companies with incomes in domestic currency and banking debts in foreign currency. For that reason, a central bank will be adverse to significant domestic currency depreciations to
protect solvency in the banking system (Baliño and others, 1999) and to avoid a recessionary effect.

The Peruvian financial system is protected by high standards for prudential requirements, cushioning potential negative shocks on the quality of loans. The most important change in the regulatory regime for banks has been the introduction of countercyclical provisions in 2000. Banks are required to increase provisions during a boom but are allowed a reduction when economic activity slows down. This regime offsets the customary procyclical behavior of banks and markets, underestimating risks during booms and exaggerating them during recessions.

In addition, the development of the foreign exchange forward market has reduced the exchange rate risk for nontradable sector firms. The ratio of foreign exchange forward sales to the public over total banking system credit to the private sector in foreign currency has increased from around 3 percent in 2001 to 7 percent in July 2002.

Pereyra and Quispe (2002) tried to estimate economic sectors’ sensitivity to this currency mismatch using information on export income and dollar debt by economic sector. The most worrying mismatch exists in the “commerce and other services” sector, which receives 57 percent of total loans to the private sector. The size of this risk, however, is lessened by the low level of financial intermediation in Peru compared with other countries in the region (Table 2.3). As shown below, the negative impact of a shock on the banking system to the rest of the economy would thus be small.

In summary, though financial dollarization generally increases the vulnerability of banking systems, Peru enjoys a degree of protection because of its high dollar-liquidity levels, high standards of prudential requirements for the financial system, continuous development of the foreign exchange forwards market, a low level of financial intermediation, and a strong and increasing presence of foreign banks that are accustomed to prudential standards and discipline.

<table>
<thead>
<tr>
<th>Country</th>
<th>Financial Intermediation, 1999 (Credit to GDP, in percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peru</td>
<td>25.1</td>
</tr>
<tr>
<td>Colombia</td>
<td>37.5</td>
</tr>
<tr>
<td>Brazil</td>
<td>47.8</td>
</tr>
<tr>
<td>Mexico</td>
<td>49.0</td>
</tr>
<tr>
<td>Chile</td>
<td>52.1</td>
</tr>
</tbody>
</table>

Source: Central Bank of Peru, Bulletins.

Table 2.3. Financial Intermediation, 1999

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Some economists believe that high dollarization argues in favor of a hard peg or a complete dollarization regime. However, in an economy like Peru’s, which has already reached low rates of inflation and a moderate fiscal discipline, the benefits of such a regime are low compared with costs such as increased vulnerability to external shocks.

The probability of an external shock is relatively high in Peru, especially because the terms of trade are extremely volatile. This reflects the high share of commodities in exports—about 69 percent of the total. As Figure 2.4 shows, Peruvian business cycles are strongly correlated with terms-of-trade fluctuations.

A floating exchange rate allows nominal exchange rate changes to affect the real exchange rate in the short run because of the low pass-through. The economy can thus absorb external shocks, avoiding deflationary pressures that could otherwise intensify a recession.

However, it must be recognized that prudential and other cushions do not eliminate the risk of recession from the balance sheet effect in Peru. Because of high financial dollarization, a currency mismatch could increase the real sol debt of firms in the nontradable sector without a corresponding increase in their incomes. This debt could in turn increase the probability of a widespread default to the financial system.

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**Figure 2.4. Cyclical Components of GDP and Terms of Trade, 1993–2002**

(Monthly series in percent of trend components)

![Graph showing cyclical components of GDP and terms of trade](image)

Source: Central Bank of Peru.
The argument in favor of floating exchange rate regimes has been reinforced by recent experiences in Latin America. Those countries with a floating exchange rate have suffered fewer costs—in the form of output variability, for example—when faced with international financial crises.

**Monetary Policy in Peru’s Highly Dollarized Economy**

One effect of financial dollarization is an underdeveloped market for monetary instruments denominated in domestic currency, especially those with long maturities. The lack of a yield curve reduces the efficacy of the monetary transmission mechanism. In order to reduce the degree of financial dollarization, the central bank must convince economic agents of its commitment to international-level inflation rates. Low inflation produces a virtuous circle, reducing dollarization, while less dollarization raises the power of monetary policy. Similarly, as liabilities become less dollarized, credit to the private sector grows more rapidly. This happened between 1993 and 2001; dollarization fell from 68 to 55 percent of financial system liabilities to the private sector, while credit in soles rose at 25 percent a year over that period. During 2002, the credit to the private sector grew 7.2 percent, while in dollars it decreased 3.4 percent. This may be explained by economic agents trying to minimize currency mismatches.

**Monetary Policy Regime: Inflation Targeting**

At the onset of 2002, the BCR adopted a monetary policy regime based on inflation targeting, under which monetary decisions regarding the operational target are based on the assessment of inflation determinants, especially inflation expectations measured through surveys, the growth rate of monetary aggregates, the evolution of real GDP, and the exchange rate. The target approved for annual inflation is 2.5 percent, with a maximum allowed deviation of 1 percentage point above or below that rate. The transition to a formal inflation-targeting framework has been carried out gradually—a legal framework consistent with price stability (1993); the announcement and accomplishment of inflation targets (1994); and the process of more open, more predictable monetary policy (2000–01).

The inflation targeting regime implemented in Peru takes into account the following channels of monetary policy transmission:

- **Interest rates.** The effect of changes in domestic nominal interest rates on private consumption and investment decisions and, thus, upon aggregate demand.
• **Inflation expectations.** The effect of changes in expectations on economic agents’ pricing processes and on real interest rates, which are relevant for consumption and investment decisions.

• **Exchange rates.** Effects on aggregate demand in opposite directions. On one hand, a sol depreciation changes export and import prices in terms of soles, with an expansive real effect. On the other hand, the wealth effect due to financial dollarization slows down the economy. Furthermore, the exchange rate has a direct impact on inflation because of the relative importance of the share of tradable goods in the consumption basket used to calculate the Consumer Price Index. However, this pass-through effect from depreciation to inflation, currently about 12 percent, is not very important.

During the first semester of 2002, the stance of monetary policy in Peru was expansive (with an interbank interest rate around 2.5 percent) and consistent with an inflation rate lower than the target, in a context of weak economic activity. This policy was apparently understood by economic agents and induced the desired response from the private sector, enhancing the transmission mechanism of monetary policy.

Of course, the transmission mechanism will improve as financial dollarization declines. In order to encourage such a process, it is crucial to gain confidence on long-run control of both the level and variability of inflation. As discussed, Ize (2001) shows a portfolio model in which higher variability of inflation with respect to the exchange rate endogenously favors higher financial dollarization of the economy.

**Operational Target**

Like Japan and Mexico, Peru targets a monetary aggregate related to banking reserves. In particular, the BCR targets the overall current account of commercial banks at the central bank. Under such an arrangement, a negative shock affects both interest rates and the exchange rate, in contrast to the traditional interest rate target that concentrates on the effect on the exchange rate.

An interest rate target has two advantages. First, it communicates a clear signal about monetary policy stance to the public. The interest rate is a more visible, more easily understood indicator. Second, interest rates are more predictable, favoring lending and borrowing in soles. This type of operational target is consistent with higher variability of the exchange rate than a banking reserves target.

However, given the financial dollarization of the Peruvian economy, a sudden and sharp sol depreciation could negatively affect the financial system by means of the balance sheet effect. Targeting banking
reserves reduces the probability of sharp, unexpected depreciations, so that shocks that increase depreciation expectations are distributed between the exchange rate and the interest rate. By targeting banking reserves, the central bank induces a level for the interbank interest rate when there are no shocks.

It could be argued that a bubble in the foreign exchange market is not sustainable and that markets will automatically correct that deviation, eliminating the need to target banking reserves. However, the transition period could needlessly endanger financial markets in a dollarized economy.

To improve transparency and communication with the public, the central bank has announced the operational target on the first Thursday of each month since February 2001 (that is, it announces the total current accounts of commercial banks at the central bank). This is provided along with the reference levels for the interest rates for the discount window and deposit facilities.

This improvement in transparency and communication with the financial markets has induced a decrease in the variability of the interbank interest rate (Figure 2.5). The lower interbank interest rate volatility favors the reduction of financial dollarization because it reduces the uncertainty of yields and long-term investment costs in soles (Table 2.4), so that economic agents are more prone to lend and borrow in domestic currency.

**Figure 2.5. Reserves with the Central Bank, 2001–02**

*)(In S./ million)*

Source: Central Bank of Peru.
It is worth mentioning that since the central bank first announced its operational targets and reference levels for interest rates for the discount window and deposit facilities, the interbank interest rate has always fallen within the range defined by these reference levels. An exception (April, May, and June 2001) was related to turbulence in the domestic financial market due to political uncertainty during the elections held in June 2001 (Figure 2.6).

A clear trend in declining interest rates is related to the fall of foreign interest rates, lower depreciation expectations, and the ease in monetary policy stance. The interbank interest rate, for example, decreased from 16 percent in June 2001 to 3 percent in August 2002. This, in turn,

<table>
<thead>
<tr>
<th>Year</th>
<th>Average</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>12.9</td>
<td>4.8</td>
</tr>
<tr>
<td>1998</td>
<td>19.0</td>
<td>6.7</td>
</tr>
<tr>
<td>1999</td>
<td>14.9</td>
<td>4.9</td>
</tr>
<tr>
<td>2000</td>
<td>12.8</td>
<td>2.5</td>
</tr>
<tr>
<td>2001</td>
<td>8.3</td>
<td>0.9</td>
</tr>
<tr>
<td>Jan–Aug 02</td>
<td>2.6</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Source: Central Bank of Peru.

Table 2.4. Soles Interbank Interest Rate
(In percent)

Figure 2.6. Interbank Interest Rate and Central Bank Policy Rates
(In percent)
affected other market interest rates: the up-to-a-year lending interest rate decreased from 21 percent in June 2001 to 14 percent in August 2002; the corporate prime interest rate decreased from 13 percent to 4 percent during the same period; and the average deposits interest rate decreased from 8 percent in June 2001 to 3 percent in August 2002.

Because of the current uncertainty on Latin American financial markets, sol depreciation expectations have again risen. The sol has depreciated around 5 percent against the dollar in 2002, though this represents one of the smallest depreciations in the region.

Monetary and Foreign Exchange Operations

Central banks in developed countries usually use domestic treasury bonds to carry out open market operations for monetary purposes. These operations allow monetary regulation; the use of treasury bonds reduces the risk for the central bank, given that these assets are normally liquid and safe.

With the exception of foreign currency, there was no equivalent asset in Peru. For reasons of fiscal policy and the virtually nonexistent capital market, no liquid and safe security was available for monetary operations during the previous decade. For macroeconomic reasons, it was better to create money through foreign currency purchases in order to recover international reserves, avoiding any expansion of the central bank’s domestic assets.

Foreign exchange interventions consisted mainly of dollar purchases and, very occasionally, sales of foreign currency by the central bank. These interventions affected base money through the injection (or withdrawal) of liquidity (Figure 2.7). Nowadays, these interventions are performed in an occasional fashion and only to reduce the exchange rate volatility generated by economically inconsistent speculative behavior.

In order to regulate the seasonal liquidity of the banking system, the central bank buys and sells its own certificates of deposit in domestic currency papers (called CDBCRP). That stock came from sterilized interventions carried out since 1994. This now amounts to around S/.2 billion, or 30 percent of base money. The expansion of monetary operations with CDBCRP allowed the interest rate of these securities to become a benchmark (up to one year) in the domestic financial markets (Figure 2.8).

That benchmark has been complemented by the recent development of an active public debt market in domestic currency. The treasury placed domestic currency bonds in nominal terms (BTP) last year with two- and three-year maturities. Institutional investors (banks and pension funds) are the most active participants, both in the primary and secondary markets (Figure 2.9).
Figure 2.7. Daily Exchange Rate Interventions by the Central Bank of Peru\(^1\)

\(\text{(In millions of U.S. dollars)}\)

Source: Central Bank of Peru.

\(^1\)Purchases: positive values. Sales: negative values.

Figure 2.8. Central Bank Certificates of Deposits in Domestic Currency

\(\text{(Stock in S/. million)}\)

Source: Central Bank of Peru.
Following the issue of treasury bonds, the private sector has placed corporate bonds in domestic currency at nominal interest rates for the first time. This better financial alternative allows them to match their incomes and expenditures in terms of currencies. In 2000, 23 percent of securities were issued in soles. By 2002, this figure had grown to around 45 percent. Currently, the largest firms issue bonds predominantly in local currency (Table 2.5).

Table 2.5. Auctions of Private Bonds and Commercial Papers, 1999–2002

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</thead>
<tbody>
<tr>
<td>Total securities</td>
<td>612</td>
<td>100</td>
<td>2,328</td>
<td>100</td>
<td>2,908</td>
<td>100</td>
<td>1,343</td>
<td>100</td>
</tr>
<tr>
<td>In nuevos soles</td>
<td>0</td>
<td>0</td>
<td>178</td>
<td>8</td>
<td>958</td>
<td>33</td>
<td>538</td>
<td>40</td>
</tr>
<tr>
<td>Inflation indexed</td>
<td>144</td>
<td>24</td>
<td>356</td>
<td>15</td>
<td>543</td>
<td>19</td>
<td>65</td>
<td>5</td>
</tr>
<tr>
<td>In U.S. dollars</td>
<td>468</td>
<td>76</td>
<td>1,794</td>
<td>77</td>
<td>1,407</td>
<td>48</td>
<td>740</td>
<td>55</td>
</tr>
</tbody>
</table>

Source: Central Bank of Peru.
In addition, at the end of daily operations, financial entities can make the following operations (window facilities):

- **Monetary regulation credits.** These credits are designed to cover transitory liquidity shortages in the financial entities. The discount rate is high enough to discourage the use of central bank funds and promote the interbank loan market. This instrument ensures that the central bank is regarded exclusively as a lender of last resort.

- **Transitory foreign currency purchases ("swaps").** The central bank purchases foreign currency from financial institutions with a commitment to buy it back the following day. The financial cost of this instrument is highest between the domestic currency depreciation (while the operation takes place) and the commission set by the central bank.

- **Overnight deposits.** Overnight deposits in both domestic and foreign currency at the central bank (one-day remunerated deposits) contribute to monetary regulation by automatically absorbing liquidity surpluses and reducing the variability of commercial banks’ total current accounts held at the central bank.

### Liquidity Issues

During the 1990s, strong capital inflows were induced by the economic reforms that were taking place in the Peruvian economy. To reduce the rate of growth of banking system loans to the private sector, the central bank set a high foreign-currency reserve requirement. This measure reduced the danger of overheating from excessive demand growth. In addition, the growth in banking system liabilities required a corresponding increase in foreign-currency liquid assets to face possible unexpected capital outflows.

As described, in the 1990s the strong capital inflow increased deposits in the banking system, and the introduction of the foreign-currency reserve requirement increased the central bank’s net foreign assets (net international reserves, NIR). In this way, central bank NIR grew US$3.4 billion between 1991 and 1997 as a result of the reserve requirement, while total NIR went from US$0.5 billion at the end of 1990 to US$10.2 billion at the end of 1997. At present, they are around US$9.6 billion and US$3.3 billion because of the foreign currency reserve requirement.

Currently, Peru’s central bank NIR are made up from three sources: the net international position of the central bank, which is around US$3.2 billion; financial system foreign currency deposits at the central bank, which sum up to US$3.5 billion (around US$2.7 billion are
the result of the reserve requirement); and public sector foreign currency deposits at the central bank (US$ 2.9 billion).

Due to globalization, several international liquidity indicators have been constructed to monitor a country’s ability to pay its short-term foreign debts. NIR over public and private sector’s short-term foreign currency debts ratio is one type of indicator; and in the case of Peru, it is 1.4 times, showing the country’s adequate liquidity position. The structure of NIR among the central bank, the public sector, and the financial system minimizes the possibility of moral hazard. This might occur if the liquidity ratio of one of these three were to induce the others to take an excessive risk, expecting that the first would hedge it. The foreign reserve requirement is thus important in reducing the financial system’s exposure to excessive risk.

The high level of financial dollarization is another reason why Peruvian commercial banks have adequate reserves. These reserves enable the central bank to support banks as a lender of last resort in the event of liquidity crises, without placing the country’s solvency at risk.

**Final Remarks**

Dollarization in Peru is high, but it is mostly limited to the use of dollars as a store of value, or asset substitution. During the long inflationary period between 1975 and 1990, economic agents ran toward assets denominated in foreign currency in order to minimize losses in financial wealth. However, even though inflation has been drastically reduced over the past 12 years, financial dollarization shows strong persistence.

The present high financial dollarization in Peru poses questions regarding the effectiveness of central bank actions. One crucial question concerns the optimal exchange rate regime. Because dollarization in Peru does not involve major currency substitution and because the economy is subject to external instability, a floating exchange rate is arguably preferable to a peg or to a full-dollarization regime.

In a context of free capital mobility, an exchange rate freely determined by the market ensures the possibility of an independent monetary policy. This is what Mundell calls the “impossible trinity.” However, the dollarization of liabilities, in particular those of agents that generate their inflows in domestic currency, is an important challenge to the independence of monetary policy because of the balance sheet effect. Huge, abrupt exchange rate movements may destabilize financial market conditions, with perverse effects over real economic activity.

Unfortunately, the balance sheet effect is not the central bank’s only problem. Another important feature of dollarized economies is their
lack of financial instruments denominated in domestic currency, especially with long-term maturities. The effect of monetary policy on aggregate demand through the conventional monetary channel is not strong in countries lacking long-term interest rates for securities denominated in domestic currency.

Despite the restriction of high financial dollarization, the central bank in Peru has opted to adopt an explicit inflation targeting framework to anchor actual and expected inflation. This is based on the expectation that real dollarization will remain low, as reflected by a low “pass-through” coefficient. Indeed, anchoring inflation is the only lasting way to achieve substantially reduced dollarization. In a context of low and stable inflation, perverse balance sheet effects will be reduced and the monetary channel will be improved, with more instruments denominated in domestic currency.

A final challenge in financially dollarized economies is how the central bank is to act as lender of last resort. In the case of Peru, the BCR has established high reserve requirements on dollar deposits. Complementarily, the banking and insurance supervision institution (SBS) has established a liquidity requirement on short-term dollar liabilities.

These have been lessons from the experience in Peru—and how we manage our “monetary bigamy.”

References


Pereyra, Carlos, and Zenón Quispe, 2002, “¿Es conveniente una dolarización total en una economía parcialmente dolarizada?” Revista de estudios económicos (Lima: Central Reserve Bank of Peru), Vol. 8.


