Foreign exchange intervention in Peru

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Abstract

The unprecedented monetary expansion implemented by central banks in developed economies during recent years has induced an extraordinary flow of funds to emerging economies and supported high commodity prices. This has created upward pressures on the value of local currencies and a further expansion of available funds and lending. This situation gave rise to concerns about a possible misalignment of the real exchange rate relative to its equilibrium level, especially because it can be deemed a temporary response to the current phase of the cycle in developed economies, but with a potentially lasting negative impact on the tradable sector of the economy. In Peru, the response to this situation has been an intensification of sterilized intervention in the foreign exchange market and the use of reserve requirements on local banks' foreign currency liabilities, reinforcing macro-financial stability in an economy with a partially dollarized financial system. Both instruments have contributed significantly to reducing excessive exchange rate volatility, building up an international reserve buffer, and ensuring a normal flow of bank credit.

Keywords: monetary policy, central banking, foreign exchange intervention, reserve requirements

JEL classification: E52, E58, F31

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1. Introduction

The unprecedented monetary expansion implemented by central banks in developed economies during recent years has induced an extraordinary flow of funds to emerging economies and supported high commodity prices. This has created upward pressures on the value of local currencies and a further expansion of available funds and lending.

The response of Peruvian policy makers includes greater foreign exchange interventions and adjustments in reserve requirements by the Central Bank, accompanied by fiscal tightening and further prudential measures to prevent increases in foreign currency loans. The use of foreign exchange interventions as a possible tool needs to be assessed taking into account both the design and implementation of monetary policy. For this reason, this paper analyzes the difficulties associated with foreign exchange intervention and the possible solutions for facing them.

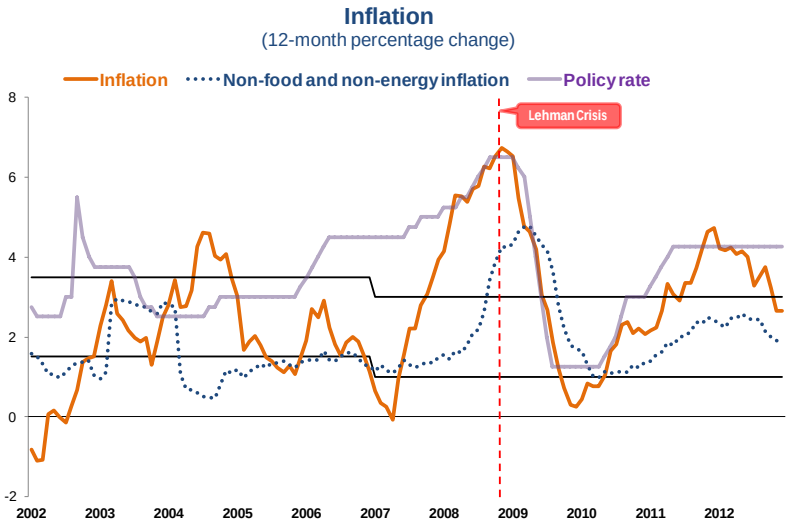
After introductory remarks in the first section, we explain in section two the general features of Peru's monetary policy framework, which can be characterized as a hybrid inflation targeting (IT) regime. Third, we discuss the general features and challenges of foreign exchange intervention as an instrument to address mainly macro-financial considerations in an economy with a partially dollarized financial system. Fourth, we assess the limitations of sterilization of foreign exchange interventions and the alternative policy tools used to ensure its effectiveness. In section five, the role of reserve requirement ratios (RRRs) imposed on banks' liabilities is explained, highlighting the strategy of using higher RRRs on dollar liabilities. Sixth, given the growing concern about a possible misalignment of the exchange rate from its equilibrium level, we discuss the estimation of the Equilibrium Real Exchange Rate (ERER) and the recent intensification of policy measures adopted to neutralize the currency appreciation resulting from the surge in capital inflows. The final section presents conclusions.

2. Monetary policy

Monetary policy in Peru follows an IT scheme, with the overnight interbank interest rate as operating target, with the aim of stabilizing the inflation rate at 2 percent ± 1 percent. Since 2002, the average annual inflation rate has been 2.6 percent and has been within the inflation target range in 39 percent of the months between January 2002 and January 2013.[4] Another important indicator for assessing this policy scheme is inflation expectations, which have remained well anchored within the target range in 92 percent of the months between January 2002 and January 2013.

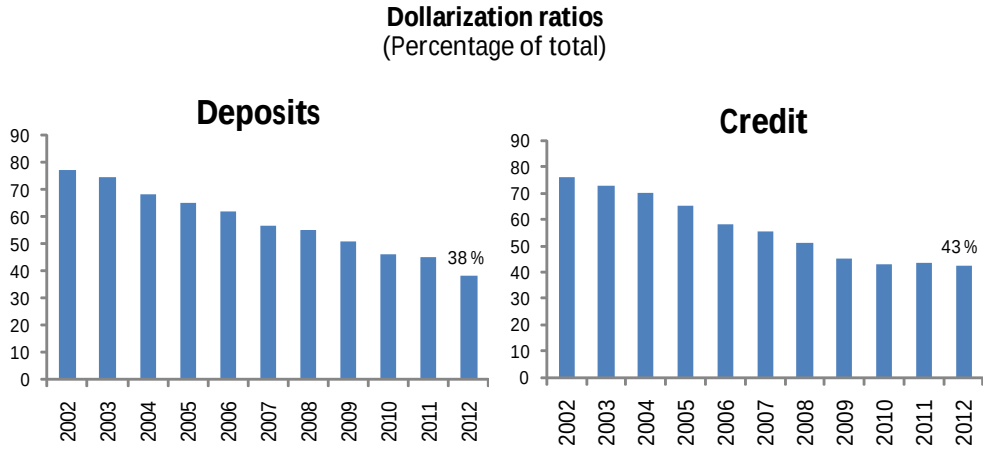
[4] The number of months with an inflation rate within the target range is 59 percent if we use the inflation indicator that excludes food and energy, the more volatile components of the CPI.

Figure 1



One characteristic of Peru's financial system is that an important share of its assets and liabilities are held in foreign currency. Even though this share has been declining in recent years, it is still an important source of financial vulnerability with respect to credit risks associated with abrupt movements in the exchange rate and risks associated with the availability of adequate levels of international liquidity. First, currency depreciation can increase the amount of non-performing loans and potentially induce a financial crisis. Second, banks' dependence on foreign currency liabilities can create pressures on international reserves when Central Bank liquidity support is needed. These two vulnerabilities have been identified by the Central Bank as the main reasons for intervening in the foreign exchange market and using higher RRRs on foreign currency liabilities.[5]

Figure 2



[5] Rossini and Quispe (2010) explain how the sudden stop of foreign credit lines during the 1998 Russian Crisis caused a deep financial crisis in Peru. A sharp depreciation and the decline of foreign funds paralyzed the flow of local credit, worsening the country's financial conditions. The two main lessons of this event were that foreign exchange intervention should be aimed at reducing exchange rate volatility, and that it is crucial to build a credible amount of international reserves in order to provide, when needed, liquidity support to financial intermediaries.

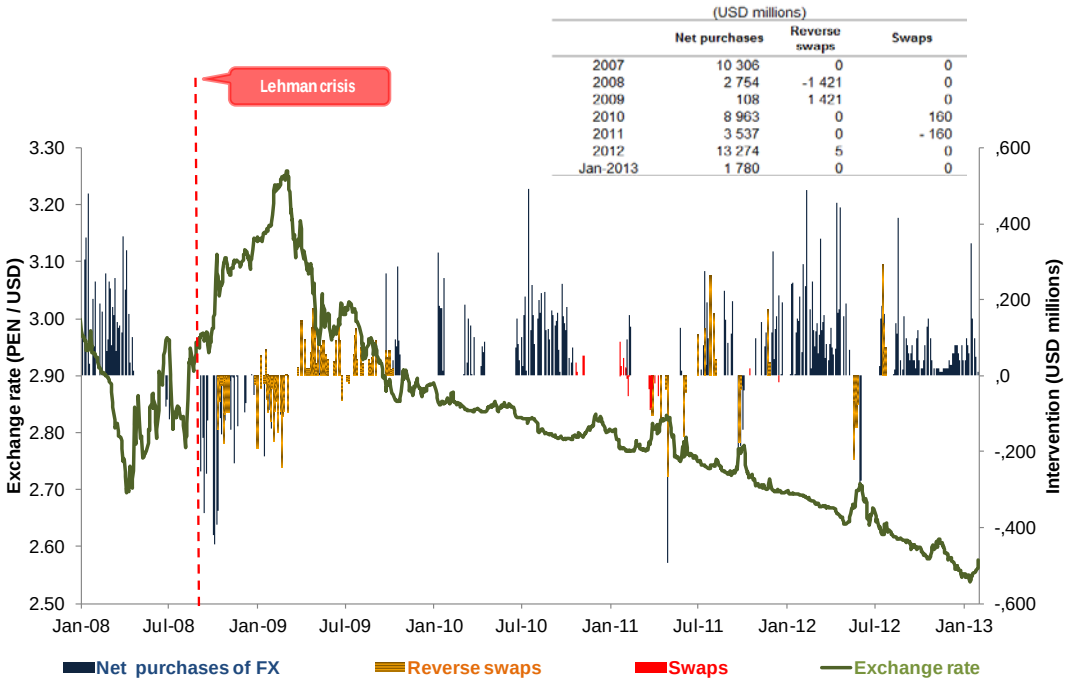
3. Foreign exchange intervention

The main purpose of foreign exchange intervention in Peru is to reduce the volatility of the exchange rate and to accumulate international reserves in order to prevent balance sheet effects on the partially dollarized financial position of the domestic private sector. Dollarization amplifies the reaction of financial intermediaries to sharp movements in their funding or to high exchange rate volatility. As a result, the economy is prone to credit booms and busts associated with flows of foreign currency deposits, foreign credit lines or other capital flows, and to exchange rate movements that affect the quality of the credit portfolio. Dollarization therefore alters the transmission mechanism of monetary policy and increases the liquidity and solvency risks of the financial system.

Foreign exchange interventions are carried out avoiding any signaling about the level of, or a possible ceiling or floor for, the exchange rate. No announcement regarding the amount of the interventions is made, because having to adjust this amount could have a high cost, and because the volatile nature of foreign exchange flows requires a more discretionary approach to Central Bank intervention.

Figure 3

Nominal exchange rate and net FX intervention



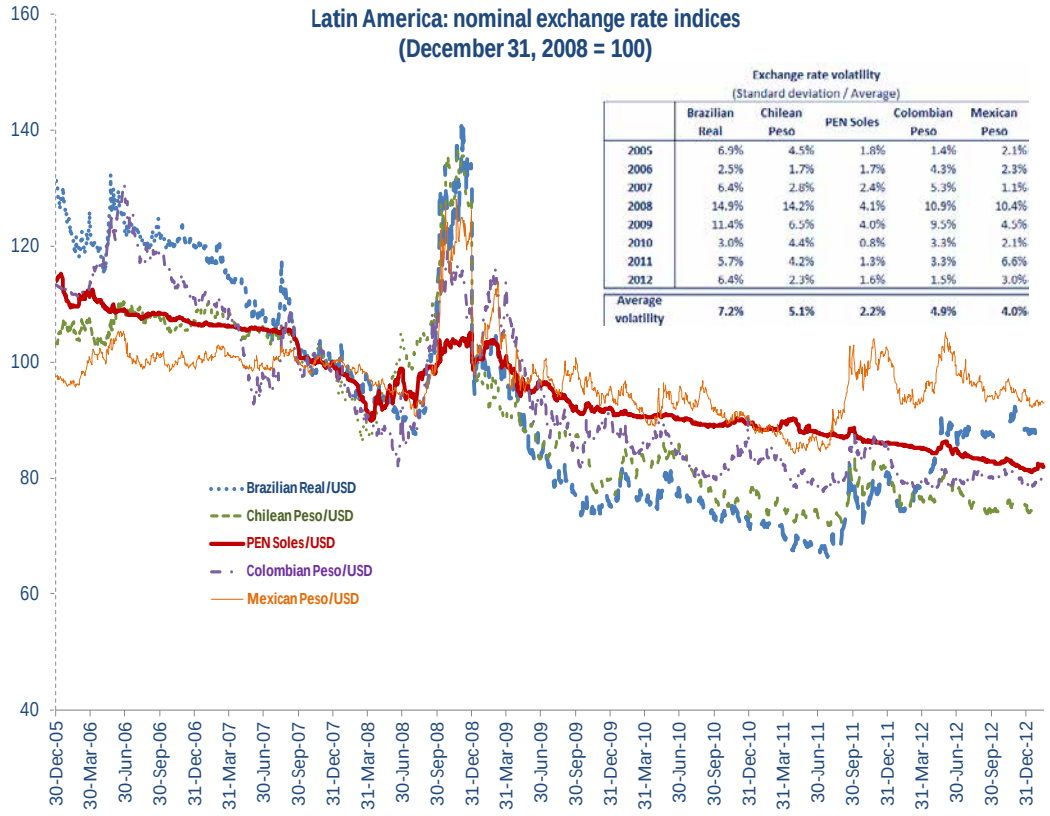
Interventions are implemented by purchases or sales of dollars in the spot market and by carrying out swaps and reverse swaps. Swaps and reverse swaps are used mainly when there are pressures from the non-delivery forward (NDF) market that could force banks to transfer this pressure into the spot market. In this regard, a swap operation with the Central Bank can provide temporary coverage against the risks involved in an NDF. Figure 3 shows that the Central Bank's daily foreign exchange interventions since 2007, which appear to be concentrated on the buying

side, are mainly oriented to reducing exchange rate volatility without influencing its trend.[6]

Indicators of relative volatility of the exchange rate among peer economies are an initial measure of the effectiveness of foreign exchange intervention (Figure 4). In Latin America, despite different levels of FOREX intervention, exchange rate trends look similar; however in some economies (such as Peru) the volatility is much lower.

Expected depreciation is shaped by fundamental variables and by the weight of the amount of intervention relative to the previous stock of international reserves, implying that FOREX intervention plays the expected role in the formation of those expectations. An estimation of the relationship of the expected depreciation (measured as the deviation of the expected exchange rate 12 months hence from the current spot exchange rate) is presented in table 1. It varies directly with deviations of core inflation from the inflation target and inversely with deviations of USA core inflation from its inflation target; it also varies directly with the USA output gap. FOREX intervention, as a proportion of international reserves, seems to have an influence that takes the form of varying directly with expected devaluation, and contrary to what we should expect, it also varies directly with changes in the terms of trade.

Figure 4



[6] This result is documented in various studies on foreign exchange interventions: Arena and Tuesta (1999), Broto (2012), Humala and Rodriguez (2008), IMF (2009) and Rossini, Quispe, and Gondo (2008).

When we include the prior effective depreciation as an indicator of persistency, as well as the PEN-USD policy rate differential, the estimation improves, keeping the expected relationships. We also included the EMBI index for Peru as an indicator of country risk (which is positively correlated with expected depreciation). Finally, we included as an explanatory variable the deviations of the effective real exchange rate from the equilibrium real exchange rate (estimated, and presented in Table 10 and Figure 10) which, as expected, correlates negatively with the expected depreciation.

Table 1

Dependent variable: annual expected depreciation
Method: least squares
Date: 03/25/13 Time: 16:48
Sample (adjusted): 1999M11 2012M12
Included observations: 158 after adjustments

Variable	Coefficient	Standard error	t-Statistic	Probability
(Peru core inflation - inflation goal)$_{t-1}$	0.9714	0.1073	9.0530	0.0000
(USA core inflation - inflation goal)$_{t-4}$	-0.4595	0.2337	-1.9666	0.0511
USA output gap$_t$	0.1893	0.0393	4.8119	0.0000
(FOREX intervention$_t$ / NIR $_{\text{previous year}}$)	0.0719	0.0407	1.7676	0.0792
Annual depreciation$_{t-1}$	0.1930	0.0302	6.3941	0.0000
Policy interest rate spread (Peru-USA)$_t$	-0.3081	0.0627	-4.9148	0.0000
Terms of trade (annual variation)$_{t-1}$	0.0248	0.0097	2.5459	0.0119
Spread EMBI Peru$_{t-1}$	0.0036	0.0008	4.7267	0.0000
(FDI flow / Annual GDP)$_{t-3}$	-1.2221	0.5279	-2.3149	0.0220
(Real exchange rate - Equilibrium real exchange rate)$_{t-1}$	-0.1779	0.0682	-2.6080	0.0100

R-squared	0.8132	Mean dependent variable	1.1953
Adjusted R-squared	0.8005	S.D. dependent variable	2.6457
S.E. of regression	1.1817	Akaike info criterion	3.2389
Sum squared residuals	205.2824	Schwarz criterion	3.4521
Log likelihood	-244.8738	Hannan-Quinn criterion	3.3255
F-statistic	63.9938	Durbin-Watson statistic	0.9927

4. Sterilization

To sterilize the liquidity created by foreign exchange interventions, the Central Bank issues its own certificates with maturities of up to 18 months, auctioned on a daily basis. These are complemented by banks' required reserves and Treasury deposits. Table 2 shows a summary of the Central Bank balance sheet in percentages of GDP, where 12.2 percent represents sterilization through Treasury deposits (associated with a solid fiscal position), 9.4 percent is explained by required reserves, Central Bank Certificates explain 5.9 percent of the sources of net international reserves, and currency in circulation accounts for 6.3 percent.

In general, as shown in Figure 5, the Central Bank assets have higher yields than the interest rates on its liabilities, which also is reflected in its positive net income since 1992, the only exceptions being in 1994 and in 2012. The recent temporary switch, with higher yields on the liability side of the balance sheet relative to the

yields of the international reserves, is a particular event associated with the extremely low international interest rates, as in the case of December 2012 (Table 3), when the cost of sterilization (1.8%) was higher than the average yield on international reserves (1.2%).[7]

Table 2

Balance sheet of the Central Bank as of December 2012

(As percentage of GDP)

Assets		Liabilities	
International reserves	**34.1**	**Treasury deposits**	**12.2**
		In domestic currency	7.9
		In foreign currency	4.4
		Reserve requirements	**9.4**
		In domestic currency	4.1
		In foreign currency	5.4
		Central Bank's instruments	**5.9**
		Currency in circulation	**6.3**
		Other net liabilities	**0.1**

A possible drawback of sterilized foreign exchange intervention is the difficulty of anchoring the interbank interest rate to the policy rate. However, as shown in Table 4, interest rate volatility relative to exchange rate volatility declined significantly with the adoption of the IT scheme.

Table 3

Balance sheet of the Central Bank: interest rates as of December 2012

(In percentages)

Assets		Liabilities	
International reserves	**1.2**	**Treasury deposits**	**2.6**
		In domestic currency	3.1
		In foreign currency	0.2
		Reserve requirements	**0.8**
		In domestic currency	2.3
		In foreign currency	0.1
		Central Bank's instruments	**4.0**
		Currency in circulation	**0.0**
		Other net liabilities	**0.6**
		Total	**1.8**

[7] The Central Bank Charter establishes that "In the case of a loss… the reserves accumulated from previous surpluses shall be capitalized. If the reserve proves insufficient, within thirty days of the approval of the Central Bank Balance Sheet, the Treasury shall issue and deliver to the Central Bank nonnegotiable and interest-bearing debt securities equivalent to the outstanding amount."

Figure 5

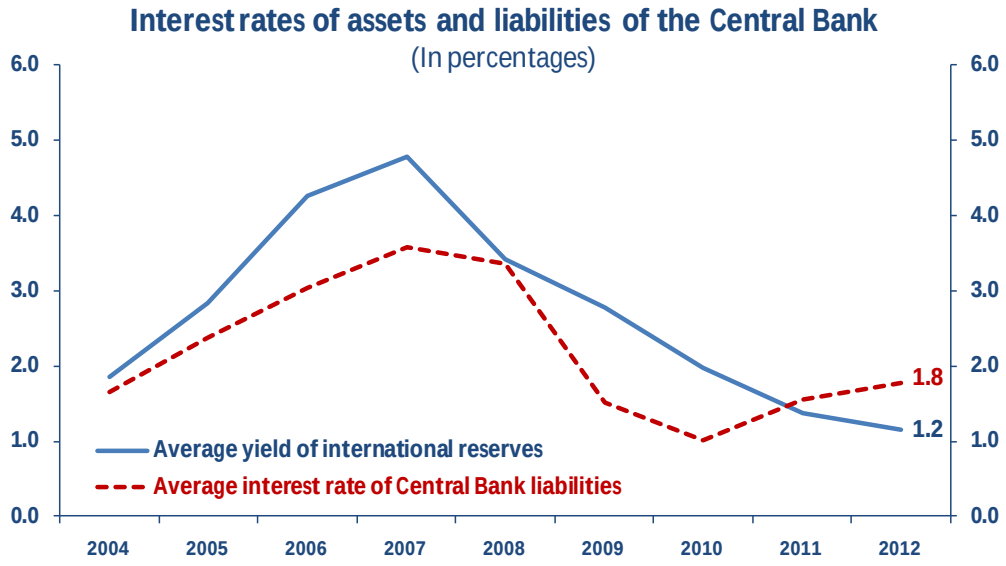


Table 4

Interbank interest rate and exchange rate: 1995-2012

		Degree of volatility		Ratio of relative volatilities (a)/(b)
		Interbank interest rate[1/] (a)	Exchange rate variation[2/] (b)	
Monetary targeting	1995	25.9	13.0	1.99
	1996	44.6	4.5	9.83
	1997	40.1	9.5	4.23
	1998	53.5	4.3	12.54
	1999	51.7	8.7	5.95
	2000	28.0	97.0	0.29
	2001	69.0	20.0	3.44
Inflation targeting	2002	48.6	37.1	1.31
	2003	15.6	18.9	0.82
	2004	8.6	7.0	1.23
	2005	2.5	10.5	0.23
	2006	5.8	9.4	0.61
	2007	4.8	5.6	0.86
	2008	10.0	30.1	0.33
	2009	62.5	11.4	5.47
	2010	35.1	9.7	3.60
	2011	7.6	13.6	0.56
	2012	0.4	7.5	0.05

1/ Ratio of the standard deviation of daily interbank interest rates to their annual average.
2/ Ratio of the standard deviation of daily annual variations of PEN/USD exchange rate to their annual average.

Another issue related to sterilized intervention is its potential ineffectiveness when the securities used to sterilize attract more funds from abroad, creating a vicious circle of intervention-sterilization-inflows. This may arise especially during periods of a persistent carry due to local interest rates that are higher than international interest rates, as in the current scenario of persistent and unusually low interest rates in developed markets. This situation may worsen if intervention causes

large reductions in exchange rate volatility, creating a scenario for safe bets without exposure in local currency investments and, therefore, a reduced need for hedging against exchange rate risk, at least in the short run.

The policies adopted by the Central Bank to improve the effectiveness of FOREX intervention are the following:

- 4.0 percent fee on transfers of Central Bank Certificates (issued for sterilization purposes) to non-financial agents in general.
- Most of the sterilization operations are carried out using Treasury deposits and reserve requirements, the two representing up to 78 percent of the total balances of sterilization instruments (which also include Central Bank Certificates).
- In order to close a possible liquidity parking spot in a local asset, the RRR on local currency deposits held by non-resident investors in domestic banks is 120 percent, which generates no incentive to pay any interest for these deposits. This measure was adopted in April 2008, when a capital inflow surge increased PEN deposits by 35 percent from December 2007 to April 2008.

Additionally, the policies adopted by the Central Bank to allow a degree of volatility in the exchange rate in order to prevent predictability about its future path and to reduce incentives for non-resident investments in local currency have changed the form of intervention, with the aim of increasing exchange rate volatility.

- Since August 2012, the volatility of the daily amount of intervention has been reduced, with more stable amounts of intervention even during upward exchange rate movements. Intervention amounts are kept unannounced.
- Table 5 shows that when the volatility of the amounts of daily interventions decreased, the exchange rate volatility moved in the opposite direction.

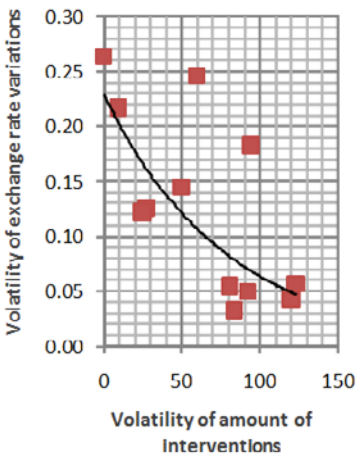
Table 5

Standard deviations of daily amount of foreign exchange interventions and of exchange rate variations

	Intervention (1)	Exchange rate variations (2)
Jan 2012	84	0.03
Feb 2012	120	0.04
Mar 2012	80	0.05
Apr 2012	123	0.06
May 2012	94	0.18
Jun 2012	0	0.26
Jul 2012	60	0.25
Aug 2012	92	0.05
Sep 2012	27	0.13
Oct 2012	50	0.14
Nov 2012	10	0.22
Dec 2012	24	0.12

(1) Standard deviation of daily amount of foreign exchange interventions in each month.
(2) Standard deviation of daily annual variations of the PEN/USD exchange rate during each month.

Graphical representation



Despite these measures, the main asset in local currency used for parking capital inflows has been Treasury bonds in domestic currency. Table 6 shows that the amount and share of non-resident investors in Treasury bonds have been constantly growing since 2010. However, it can be said that the overall contribution of public finances to counteracting the negative effects of capital inflows can be measured by the evolution of the net public debt, which decreased from 47 percent of GDP in 2003 to 20 percent in 2012.

Table 6

Treasury bonds in domestic currency and total net public debt

	Treasury bonds in local currency		Share of foreign investors %	Net public debt (Percentage of GDP)
	In millions of PEN soles	As percentage of GDP		
2002	6 017	3.0	0	47
2003	6 497	3.0	0	47
2004	6 672	2.8	0	43
2005	11 555	4.4	23	39
2006	13 009	4.3	25	32
2007	22 304	6.6	23	28
2008	22 354	6.0	23	26
2009	23 889	6.2	17	26
2010	31 718	7.3	38	23
2011	31 293	6.4	42	21
2012	31 723	6.1	54	20

5. Reserve requirements

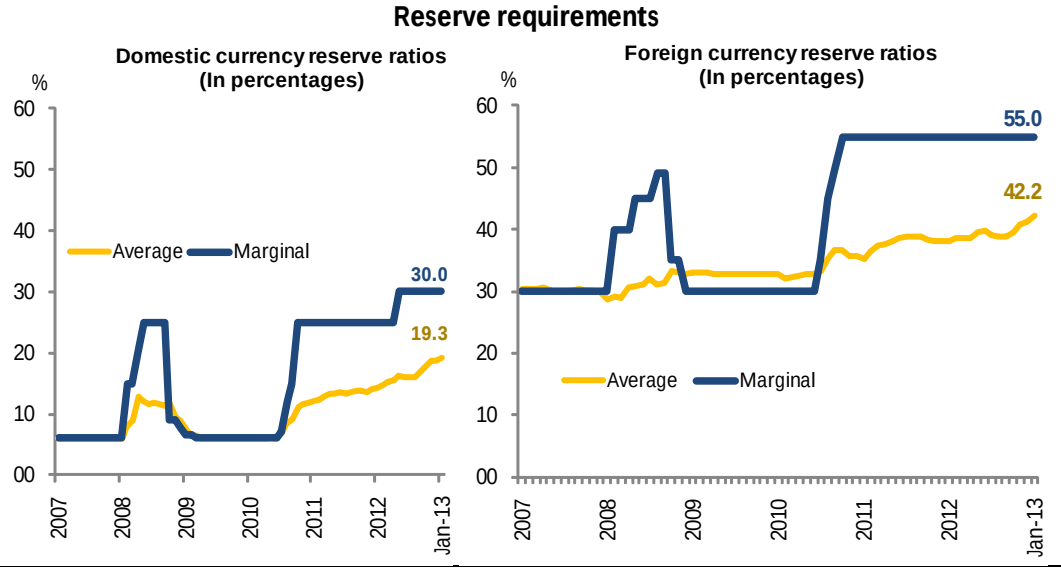
Partial financial dollarization creates vulnerabilities for macro-financial stability: (i) if the local currency depreciates, the quality of credit deteriorates, and (ii) a possible decline in foreign currency deposits associated with a crisis of confidence or a sudden stop of external credit lines may induce a systemic liquidity crisis.

To reduce liquidity risks, the Central Bank of Peru has maintained a higher RRR on foreign currency liabilities, with an even higher RRR on external short-term credits. The design of this instrument takes into account the different sources of macro-financial risks linked to the structure of financial institutions' liabilities. For example, the RRR is 19.3 percent for domestic currency liabilities, 42.2 percent for foreign currency liabilities, 60 percent for foreign short-term credit lines, and 120 percent for non-resident investors' local currency deposits.

The recent moves in reserve requirements on banks' domestic and foreign currency liabilities (table 7) have been carried out, changing the average RRR. The main effect of the recent increase in the average RRR in foreign currency has been a

200 basis-point increase in the overnight interbank interest rate and in the prime rate for foreign currency loans (155 basis points).[8]

Figure 6



The main objective of RRR changes is to avoid credit expansions financed by a sharp rise in capital inflows. These flows are directly sterilized in the form of international reserves. Table 8 shows balance of payments flows over the last decade, in particular the increasing size of the financial account, albeit mostly long-term in nature, and the size of the stock of international reserves.[9] Table 9 shows that foreign exchange intervention is not the only important source of international reserve accumulation (59 percent on average), but that Treasury deposits and reserve requirements (18 percent on average) also are.

With international reserve accumulation, the Central Bank gains resources to react against adverse events, such as a credit crunch originated by capital outflows or a run on foreign currency deposits. In contrast with what happened in 1998, during the recent financial crisis that followed the collapse of Lehman-Brothers, the Central Bank of Peru was able to inject liquidity by an equivalent of 9 percent of annual GDP during the fourth quarter of 2008, thus ensuring adequate bank credit during the crisis.[10] For this reason, the Central Bank argues that the accumulation of international reserves through foreign exchange interventions and higher RRRs are key preventive measures. Table 10 shows that the level of international reserves covers a substantial share of potential international liquidity draw-downs.

[8] Between September 2012 and January 2013, the average RRR on dollar deposits has been raised by 250 basis points.

[9] The amount of mining investments in Peru for 2012-2016 is equivalent to USD 30.6 billion, or 15 percent of the 2012 GDP. The production of copper, which represented 7.3 percent of world output in 2012, will increase by 130 percent in 4 years.

[10] The measures adopted during the fourth quarter of 2008 included foreign exchange sales (and the reduction of the maturity for the sterilization of Central Bank Certificates), a reduction in reserve requirements, and one-year liquidity facilities. The Central Bank also reduced the policy rate, demonstrating the monetary independence gained when the interest rate was no longer used as a tool to avoid currency depreciation. See De Gregorio (2009).

Table 7

Reserve requirement ratios 2010-2013

	Legal minimum required ratio	Domestic currency		Foreign currency			
				General regime		External liabilities	
		Marginal requirement for deposits	Policy increases in the average ratio	Marginal requirement for deposits	Policy increases in the average ratio	Short-term	Long-term
Feb.10	6%			30%		35%	0%
Jul.10	7%			35%		40%	0%
Aug.10	8%	12%		45%	0.10%	50%	0%
Sep.10	8.5%	15%		50%	0.20%	65%	0%
Oct.10	9%	25%		55%	0.20%	75%	0%
Jan.11	9%	25%		55%		60%	0%
Feb.11	9%	25%	0.25%	55%	0.25%	60%	0%
Mar.11	9%	25%	0.25%	55%	0.25%	60%	0%
Apr.11	9%	25%	0.50%	55%	0.50%	60%	0%
May.12	9%	30%	0.50%	55%	0.50%	60%	0%
Sep.12	9%	30%	0.50%	55%	0.50%	60%	0%
Oct.12	9%	30%	0.50%	55%	0.50%	60%	0%
Nov.12	9%	30%	0.75%	55%	0.75%	60%	0%
Jan.13	9%	30%	0.25%	55%	0.75%	60%	0%
Feb.13	9%	30%		55%	1.00%	60%	0%
Mar.13	9%	30%		55%	0.50%	60%	0%
Apr.13	9%	30%		55%	0.25%	60%	0%

Table 8

Balance of payments and international reserves (Percentages of GDP)

	Current account	Financial account	NIR[1/] flows	Long-term financing	NIR[1/] balances
2002	-1.9	3.6	1.7	4.1	16.9
2003	-1.5	1.0	1.0	2.6	16.6
2004	0.1	3.0	3.5	3.3	18.1
2005	1.5	0.2	1.8	2.1	17.8
2006	3.2	0.4	3.4	3.3	18.7
2007	1.4	8.0	9.7	7.2	25.8
2008	-4.2	6.7	2.8	6.6	24.5
2009	-0.6	1.9	1.5	6.6	26.0
2010	-2.5	8.8	7.1	9.9	28.6
2011	-1.9	5.2	2.7	6.8	27.6
2012	-3.5	10.7	7.6	10.6	32.1

1/ NIR: net international reserves

Table 9

Sources of international reserves accumulation

	NIR flows (Millions of USD)	Sources (Percentages of total NIR flows)				
		Total	FX intervention	Reserve requirements	Treasury deposits	Other
2002	985	100	13	19	37	31
2003	596	100	167	-82	-23	38
2004	2 437	100	76	1	15	8
2005	1 466	100	52	85	-40	2
2006	3 178	100	90	-22	8	24
2007	10 414	100	68	11	6	15
2008	3 507	100	14	53	-1	34
2009	1 939	100	-2	-40	55	87
2010	10 970	100	82	11	3	4
2011	4 711	100	7	29	54	11
2012	15 175	100	78	11	7	4

Table 10

Coverage of net international reserves
(In millions of USD)

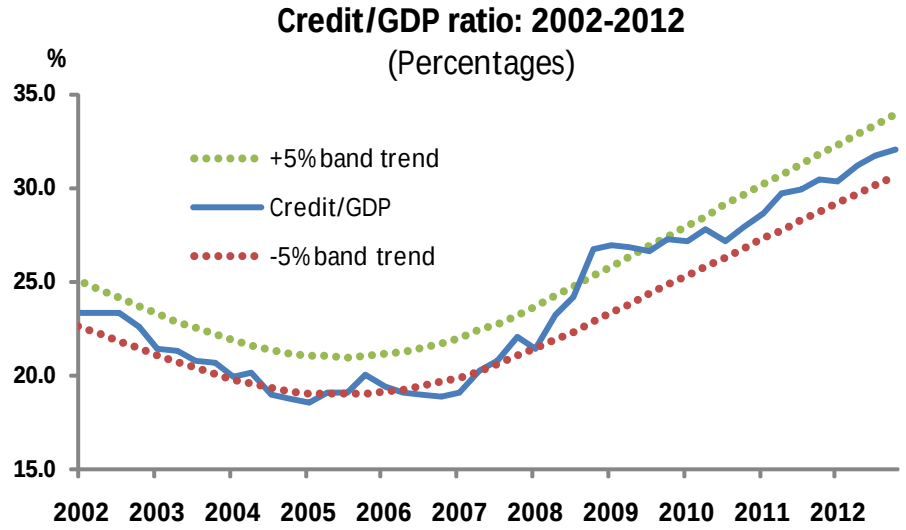
	Net international reserves (a)	Potential outflows			Coverage ratio (a)/(b)
		Short-term external liabilities[1/]	M4[2/]	Total (b)	
2002	9 598	2 589	12 343	14 932	0.64
2003	10 194	2 525	12 774	15 299	0.67
2004	12 631	2 769	15 135	17 904	0.71
2005	14 097	3 208	17 815	21 023	0.67
2006	17 275	3 220	21 286	24 506	0.70
2007	27 689	6 098	27 939	34 037	0.81
2008	31 196	6 240	33 519	39 759	0.78
2009	33 135	4 726	38 900	43 627	0.76
2010	44 105	6 315	48 695	55 010	0.80
2011	48 816	6 325	58 134	64 459	0.76
2012	63 991	7 522	69 011	76 533	0.84

1/ Includes the maturing component of long-term external liabilities.

2/ Total deposits. Includes domestic currency deposits and currency under the assumption of currency substitution.

The effectiveness of foreign exchange intervention in contributing to macro-financial stability, especially in containing a credit expansion resulting from capital inflows, is assessed using indicators of a sustainable band for the credit-to-GDP ratio and for housing prices. Figure 7 shows that the evolution of the credit-to-GDP ratio has been kept mostly within the boundaries of the tolerance range, except during the run-up to the Lehman crisis, when a substantial surge in inflows was behind the temporary excess.[11] In fact, 2012 ended with a 16.3 percent credit expansion, above the 9.0 percent nominal GDP increase, but more moderate than the previous year (23.9 percent).

Figure 7



A second front on which the effects of capital inflows can be assessed consists of possible financial excesses in the housing market and the risk of a price bubble. The mortgage market is still small in Peru, representing only 4.5 percent of GDP, but its growth rate in terms of the volume of credit (25.7 percent in 2012) and of prices (13.2 percent annually on average in 2008-2012) raises questions about a housing boom and an eventual crash. To track this risk, the Central Bank follows different housing price indices and the price-to-annual-rent ratio as an indicator of the time required to recover an investment in the housing market. Figure 8 shows that prices are mostly within the safe risk band, and that in recent months they have tended to stabilize. Additionally, the price-to-annual-rent ratio is tending to stabilize at around 15, without an upward trend.[12]

Changes in reserve requirements on foreign currency liabilities affect not only lending rates, but also the interest rate in the interbank foreign currency money market – the relevant rate for pricing in the derivatives market. In this regard, the higher the interbank interest rate in the foreign exchange funds market, the higher the cost of selling foreign exchange in the forward market. These developments have been more evident recently, when the rate in the funds market was 4.25 percent in domestic currency and 5.0 percent in foreign currency, independently of the Fed rate. In this regard, reserve requirements create room for

[11] See IMF (2009) for an ample discussion.

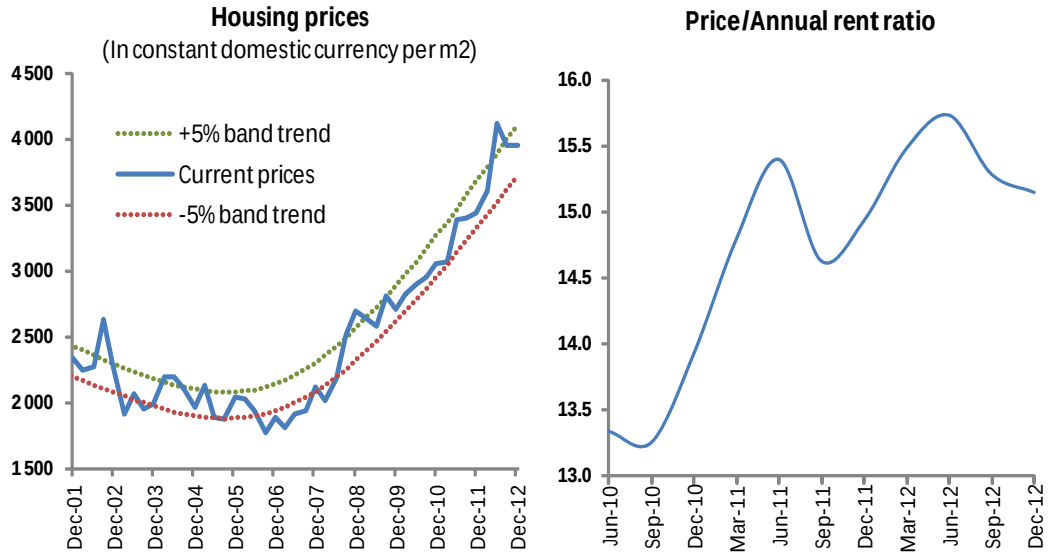
[12] See Cubeddu, Tovar and Tsounta (2012).

maintaining an independent monetary policy with less intervention in the foreign exchange market. Figure 8 shows the evolution of the interbank interest rate for dollar loans and the average RRR on foreign currency liabilities, showing the effect of changes in reserve requirements on this interest rate. Therefore, independently of the level of international interest rates, reserve requirements create room for a more effective monetary policy.

An issue concerning the effectiveness of reserve requirements is the degree to which currency substitution of liabilities is subject to this instrument in the case of other liabilities. For example, long-term credits and bonds issued by banks are not exempt from reserve requirements. As a result, banks' foreign liabilities are mostly long-term, and the amount of these obligations has grown substantially. To limit this source of financing, the Central Bank has introduced a ceiling equivalent to 2.2 times a bank's share capital.

Figure 8

Housing market



Another form of substitution induced by persistently high RRRs comes from local firms' borrowing directly from commercial banks abroad or issuing their own bonds. This form of disintermediation in Peru is favored by asymmetric tax treatment that imposes a lower income tax rate on the earnings of foreign suppliers of funds (4.49 percent, in contrast to the local 30 percent income tax rate). As a result, there has been a recent round of international bond placements by local firms, as well as increasing borrowing from abroad. In the absence of a possible correction of tax asymmetries, the wedge between local and foreign interest rates created by reserve requirements cannot be maintained for a long period when some form of prudential measure or capital control over these kinds of inflows is in place. These controls will affect the financing costs of projects that are needed for sustained growth, creating room for more neutral policies like equal tax rates or prudential measures to reduce excesses or imbalances in individual firms.[13]

[13] For example, an additional capital requirement on assets subject to exchange rate risk or excessive leverage, specifically targeting inflows, rather than more intrusive and distortionary capital controls.

Figure 9

Interest rate for loans in foreign currency in the interbank market and average reserve requirement

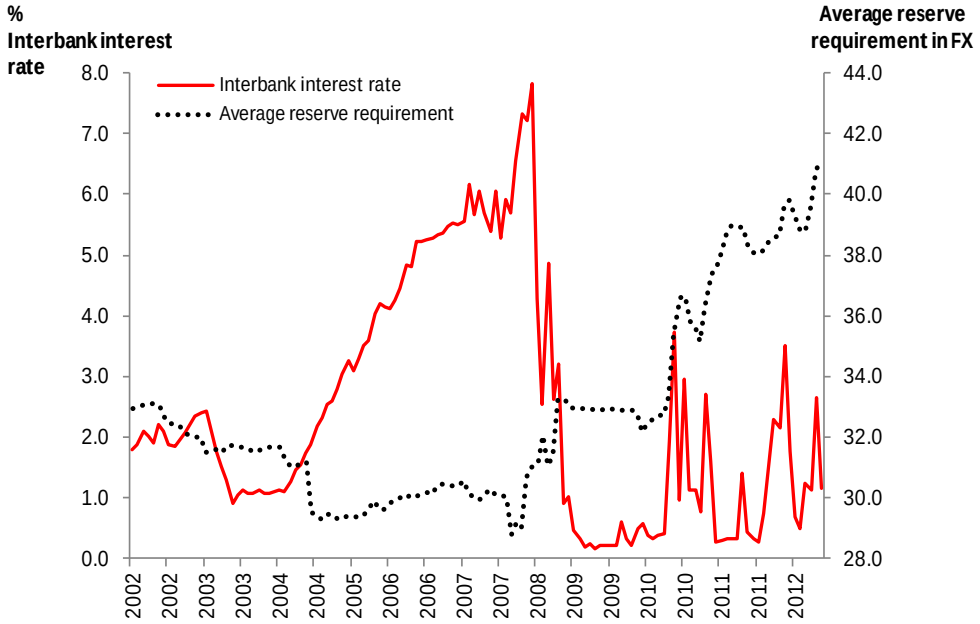
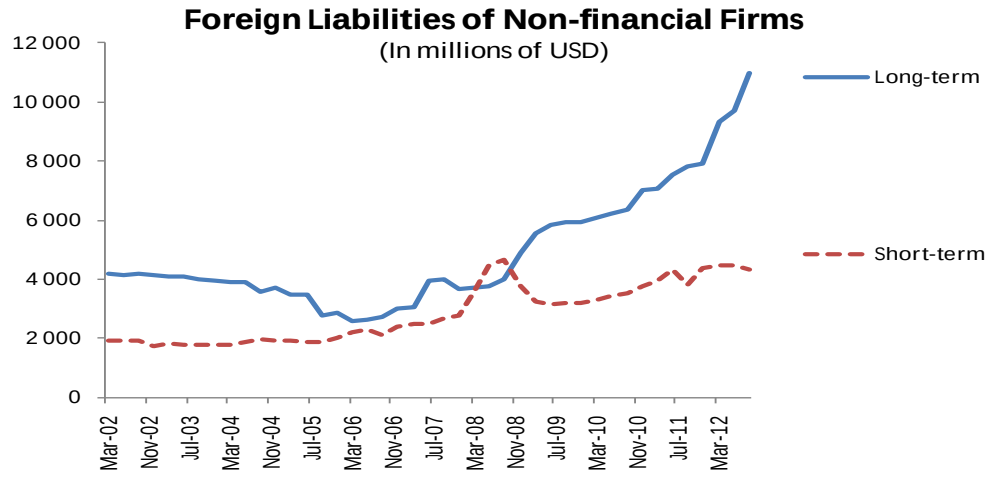


Figure 10



6. Real exchange rate

The effective real exchange rate has declined 10 percent between 2011 and 2012, reflecting mainly the effect of significant capital inflows, in particular those related to project financing in the mining and energy sectors. However, this would become a policy issue if there was evidence of a possible real exchange rate misalignment relative to its equilibrium level. We present estimation of the ERER, considering as fundamentals the trend of the terms of trade, government expenditure, public debt,

domestic vs. trade partners' productivity, interest rate differentials, the output gap, and the degree of openness of the economy (Table 11 and Figure 11).

It can be seen that there has been a recent appreciation of both the equilibrium and effective real exchange rates, but with a certain degree of deviation from equilibrium. This has prompted initiatives to tackle strengthening the local currency.

The policy measures announced by the authorities are the following:

i. The Central Bank has stepped up the amount of foreign exchange intervention (USD 1.78 billion in January 2013).

ii. The Central Bank raised the average RRR on foreign currency liabilities by 75 and 100 basis points in January and February 2013, respectively.

iii. The limit for the exemption from reserve requirements on long-term liabilities has been reduced from 2.5 to 2.2 times the bank's capital.

iv. A 25 percent deduction on investments of local banks abroad has been introduced.

v. The Central Bank increased the limit for pension funds' investments abroad from 30 to 32 percent of their total managed funds.

vi. The Treasury announced a fiscal surplus target of 1 percent of GDP for 2013, and a USD 1.8 billion plan of foreign debt prepayments. Additionally, the Public Stabilization Fund will be increased from USD 7.2 billion to USD 8.4 billion.

vii. Recently the Superintendency of Banks (SBS) approved a set of policies to contain risks related to foreign currency indebtedness. The main changes are:

    a. Regulatory capital requirements are defined according to type of credit – mortgage loans, revolving and non-revolving consumer loans – and the currency in which the loans are granted, and greater requirements for credit in foreign currency have been established.

    b. To control foreign exchange risks, the SBS reduced the limit of the overall oversold position from 15 to 10 percent of regulatory capital, the limit of the overall overbought position from 60 to 50 percent, and the limit of the absolute value of the net position in financial products derived from foreign currency from 30 to 20 percent of capital.

viii. The Ministry of Finance's structural reform agenda includes completing new trade arrangements, launching infrastructure projects with private sector participation, and implementing a reform of capital markets.

The deviations of the real exchange rate from its equilibrium level can be addressed through measures with short-term impact, but this is also an opportunity to accelerate reforms to improve productivity and competitiveness. According to comparative surveys,[14] Peru is lacking in elements like infrastructure, labor market flexibility, development of institutions, and education. Therefore, progress in these

[14] World Economic Forum (2012). On the trade side, Peru has signed free trade agreements, now in force, with 22 countries (USA 2006, China 2009, Chile 2006, and the EC 2012, among others), and additional agreements will soon become effective. The other components on the structural reform front are an expansion in infrastructure through concessions and PPPs, and a reform of capital markets.

areas is urgent, while macroeconomic policies, like foreign exchange intervention and other measures, are instruments with short-lived effectiveness.

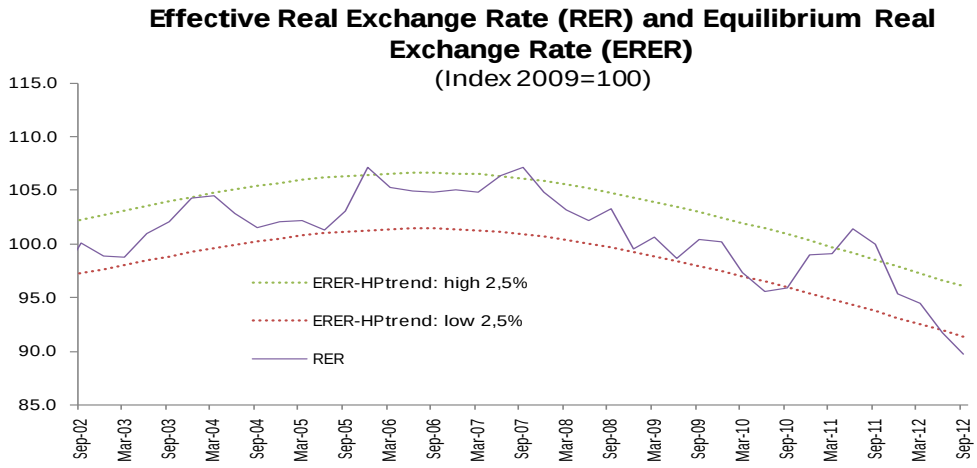
Table 11

Determinants of the equilibrium real exchange rate

Dependent variable: real exchange rate
Method: least squares
Sample: 2002Q1 2012Q3

Variable	Coefficient		t-Statistic
C	5 470.2		4.5
Public expenditure (t)	-193.0		-3.4
Terms of trade (t-2)	-0.7		-3.6
Relative productivity (t-2)	-23.6		-4.2
(Policy interest rate - FED interest rate) (t-1)	-13.1		-4.4
Output gap (t-2)	-3.7		-3.6
External public debt	6.5		1.8
Relative openness to trade (t-2)	-6.0		-2.3
R-squared	0.86	Mean dependent variable	100.80
Adjusted R-squared	0.83	S.D. dependent variable	3.97
S.E. of regression	1.64	Akaike info criterion	3.99
Sum squared resid	93.67	Schwarz criterion	4.32
Log likelihood	-77.75	Hannan-Quinn criterion	4.11
F-statistic	30.27	Durbin-Watson statitic	1.29

Figure 11



Concluding remarks

Foreign exchange interventions and reserve requirements on dollar liabilities are two monetary policy instruments that have been used to reinforce macro-financial stability in an economy with a partially dollarized financial system. Both instruments have contributed significantly to reducing excessive exchange rate volatility,

building up an international reserve buffer, and ensuring a normal flow of bank credit.

The recent massive increase in international liquidity has created concerns about the possible misalignment of the real exchange rate relative to its equilibrium level, especially because it can be deemed a temporary response to the current phase of the cycle in developed economies, but with a potentially lasting negative impact on the tradable sector of the economy. The domestic response to this situation has been an intensification of sterilized intervention in the foreign exchange market and the use of reserve requirements on local banks' foreign currency liabilities. Additionally, changes in the fiscal liabilities management and further prudential supervision measures are being introduced by the Treasury and by the Supervisory Agency to limit the exposure of local agents to foreign exchange risks. In view of these considerable challenges to real sector competitiveness, the acceleration of the structural reform agenda must be an important part of the policy effort.

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