

Implementation of macroprudential policy in Peru

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Abstract

This article reviews macroprudential measures implemented in Peru to counter the boom-bust pattern of the credit cycle and mitigate the risks associated with dollarisation, the main vulnerability of the Peruvian financial system.

Keywords: macroprudential policy, financial dollarisation

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Introduction

The Great Financial Crisis (GFC) brought the global banking and financial markets to a standstill, undermining consumer and business confidence, and severely impairing the world's real economy. It also highlighted the need for macroprudential policies to mitigate systemic risk and safeguard financial stability.

In the case of Peru, the importance of a macroprudential framework became evident from the start of the century. After the Asian and Russian crises of the late 1990s, the domestic banking system saw a collapse in credit and a series of bank failures. Thus, the pillars of the current macroprudential framework – of critical importance for the effectiveness of monetary policy in a financially dollarised banking system – were already in place before the GFC, and helped the economy cope remarkably well with the adverse external conditions that emerged after the collapse of Lehman Brothers on September 15, 2008.

The macroprudential policies that were introduced were designed to curb credit growth and housing price inflation, prevent liquidity shortages and mitigate the risks associated with dollarisation by closely evaluating the interaction between real and financial economic variables. In emerging market economies (EMEs), sudden stops of capital flows and abrupt movements of exchange rates pose risks that merit close monitoring.³

Institutional framework for macroprudential policies in Peru

The Constitution grants the Central Reserve bank of Peru (BCRP) independence to pursue its aim of preserving the stability of the currency through the regulation of the money market and of the credit of the financial system. The Superintendence of Banks (SBS) issues regulation and supervises banks. The SBS attends the BCRP's board meeting quarterly where information is exchanged. The SBS must also attend every quarter the board meeting of the securities market regulator.

Many of the macroprudential policies implemented since 2008 have been closely coordinated. However, a key difference between the instruments used by the SBS and the BCRP is the source of the systemic risk they seek to mitigate. The BCRP's instruments target mainly liquidity risk, both in domestic and foreign currency (FC), and excessive credit growth, whereas the SBS's instruments focus primarily on strengthening the financial system's loss absorption capacity. In addition, policy measures, oriented to dispel the gestation of cycles, are used to limit the spillover of capital flows to domestic monetary conditions, particularly since advanced economy central banks started quantitative easing.

³ See Bachetta and Van Wincoop (2006) for a discussion on non-fundamental exchange rate volatility.

Macroprudential policies implemented in Peru

Effective implementation of macroprudential policies enhance financial stability which, in conjunction with macroeconomic stability, will foster less volatile and sustained growth. Peru is a successful EME in terms of macroeconomic and financial stability, and the substantial dedollarisation of the economy. Since the adoption of inflation targeting in 2002, headline inflation was on average 2.7%, core inflation 2.1%, for the period 2002–16. During the same period, financial dollarisation has declined steadily from almost 80% to less than 30%.

By contrast to other economies with inflation targeting regimes, Peru's regime factors in the effect of financial dollarisation on the monetary policy transmission mechanism and financial stability. The target range of 1–3% for headline inflation aims to encourage local agents to dedollarise their assets and liabilities. The active use by the central bank of additional monetary tools has the objective of limiting financial risks created by dollarisation. Reserve requirement ratios (RRRs) and the accumulation of foreign exchange (FX) reserves for precautionary motives are employed to limit the liquidity and solvency risks associated with exchange rate fluctuations while at the same time FX market intervention is used to limit "non-fundamental" exchange rate volatility.

Besides delivering low and stable inflation, the current monetary policy framework has also contributed to providing an effective response to the GFC by limiting spillovers to the domestic financial system. During the GFC, therefore, banks continued to provide credit to the private sector – at an even faster pace than in 2008 – and no bank failure occurred. This stands in contrast to the experience of the Asian and Russian financial crises of the late 1990s, which severely affected the Peruvian banking system, with bank loans dropping sharply and several small banks failing in 1999–2000.

The accumulation of international reserves and the pre-emptive increase in RRRs, both in domestic currency (DC) and FC, prior to the GFCs, allowed the BCRP to promptly inject liquidity into the financial system. This prompt response swiftly reduced the pressure on domestic interest rates. Overall, between October 2008 and March 2009, the BCRP injected liquidity equivalent to 9.3% of GDP. A variety of instruments were used: reduction in RRRs on DC and FC deposits, repurchase agreement operations of up to one year, FX swaps and direct FX sales. The resilience shown by the Peruvian financial system during such an episode of stress boosted confidence in the system and further reduced dollarisation.

By virtue of their institutional arrangement for coordinated macroprudential policies, the BCRP and the SBS were able to introduce complementary measures with the aim of preventing a boom-bust credit cycle, mitigating the risks arising from currency mismatching, counteracting the effects of short-term capital flows, curbing non-fundamental volatility of the exchange rate and reducing dollarisation.

These measures are summarised in Table 1, which shows the Peruvian macroprudential framework following the classification proposed by Claessens et al (2013) along the lines of macroprudential policy goals, such as enhancing resilience and dampening the credit cycle, together with dedollarisation as an additional relevant goal for Peru and the BCRP. Tools are classified according to their implementation methods; that is, whether they are based on capital, liquidity, assets

or taxation. The following sections present the macroprudential measures implemented in Peru in order to mitigate each one of the discussed risks.

The Peruvian macroprudential framework

Classified by goal and method of implementation

Table 1

	Enhancing resilience	Dampening the cycle	Dispelling gestation of cycle	Dedollarising the economy	Preventing network contagion or shock propagation from SIFIs
Capital Based Instruments					
Capital requirements (CR) or capital buffers (CB)	Risk-weighted CR. SBS 1996	Countercyclical CB. SBS 2008	CB on foreign currency loans due to exchange rate-credit risk. SBS 2012		CB for systemic risk, CB according to individual, sectoral and regional concentrations. CB for risk- taking and interest rate risk. SBS 2011
Provisioning	General provisioning. SBS 1997	Cyclical additional provisioning. SBS 2008			
Limits on dividend distribution		50% profit capitalisation, when cyclical capital within 75–100%. 100% if <75%. SBS 2011			
Liquidity based instruments					
Reserve requirements ratios (RRRs)	Higher RRR on foreign currency liabilities, short- and long-term external bonds, and borrowings. BCRP 1992, 1997, 2012	Cyclical changes in RRRs. BCRP 2007	120% RRR on non-resident deposits. BCRP 2008	Additional RRRs conditional on growth of total, mortgages and car foreign currency loans, BCRP 2013. Additional RR conditional on FC loan balances reduction. BCRP 2015	
Liquidity ratios (LR)	LR in domestic currency 8%, LR in foreign currency 20%. SBS 1997				Liquidity coverage ratio 80% 2014, 90% 2018, 100% 2019. SBS 2014

The Peruvian macroprudential framework (cont)

Classified by goal and method of implementation

Table 1

	Enhancing resilience	Dampening the cycle	Dispelling gestation of cycle	Dedollarising the economy	Preventing network contagion or shock propagation from SIFIs
Asset-based instruments					
Limits on loan-to-value and debt-to-income (LTV and DTI)		Additional CB for domestic currency mortgage with LTV ≤ 90% and LTV ≤ 80% for foreign currency. Additional CB for consumption loans. SBS 2012			
Limits on exchange rate risk (LER)				FC long-position < 50% of capital and FC short-position < 10% of capital. SBS 2012.	Daily spot foreign currency transactions ≤ 0.75% of pension funds (five-day foreign currency transactions ≤ 1.75%). SBS 2010
Limits on derivatives (LOD)				Max of 20% of capital in foreign currency net derivative position, SBS 2012. Additional RR on short-positions in foreign currency derivatives. BCRP 2015	Daily derivative foreign currency transactions ≤ 0.75% of pension funds (five-day transactions ≤ 1.75%). SBS 2010
Taxation, Levies					
Levy/tax on specific assets and/or liabilities			4% commission on third-party transactions with central bank CDs. BCRP 2010		

Credit boom and bust

Credit helps firms to fund profitable projects and expand investment smoothly, while allowing households to smooth consumption over their life cycle. However, credit booms may pose the risk of excessive leverage, maturity mismatches and funding gaps, which may endanger banks.⁴ Moreover, excessive credit growth and lenient credit conditions may lead to an increase in credit delinquency ratios, undermining the financial system as a whole.

⁴ See Mendoza and Terrones (2008) for a discussion of the consequences of credit booms.

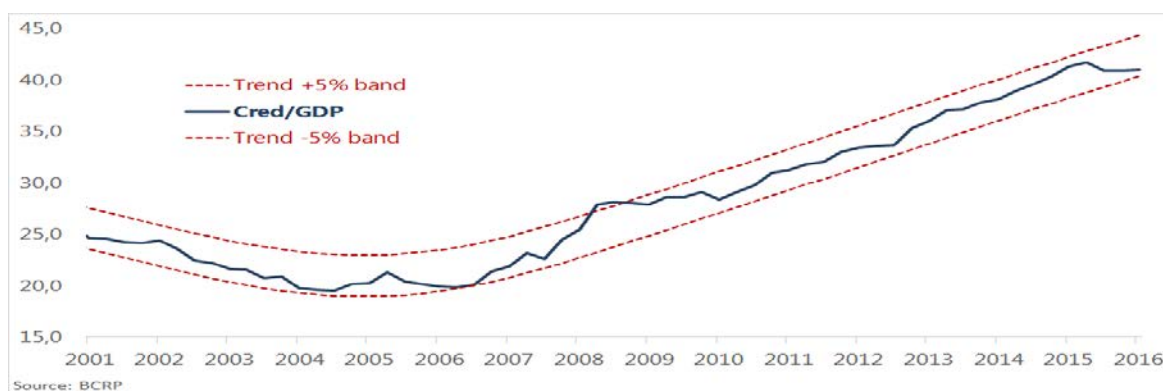
In Peru, the macroeconomic stability attained over the last 20 years has fostered sustained economic growth, primarily financed through domestic savings. Although the strengthening of the financial system through appropriate regulation and supervision that resulted in low loan delinquency ratios, Peru experienced an acceleration in credit growth from the second half of 2007. It reached levels above 20% annually between 2007 and 2011, pushing the credit-to-GDP ratio above its trend range by the first half of 2008 (Graph 1) and raising financial stability concerns.

To moderate credit growth, the SBS enhanced the solvency of the financial system by implementing a system of cyclical provisioning and higher capital requirements for consumer loans and mortgages, while the central bank managed the liquidity by introducing higher RRRs.

Bank credit to the private sector

Percentage of GDP

Graph 1



Dynamic provisions and countercyclical capital buffers

Dynamic provisioning seeks to moderate credit growth during credit booms. Excessive credit growth during economic expansions is associated with the procyclical behaviour of financial entities. During the bust, by contrast, financial entities cut back credit flows on the expectation of less favourable economic conditions and higher provisions against loan losses.⁵

In November 2008, against the background of strong credit growth, the SBS switched cyclical provisioning from voluntary (as it had been since 2003) to mandatory, and set up procedures for the evaluation and classification of borrowers. Mandatory procyclical provisioning went into force from 1 December 2008 (see Table 2 for details). Procyclical provisioning is applied to the stock of loans with a normal risk-category, and according to the type of loan and its required collateral. The required provision ranges from 0.3% to 1.5% of loan value.

In June 2009, as a consequence of the post-GFC economic slowdown, the SBS deactivated the rule for additional provisions, since the criterion "b" shown in Table 2 for its deactivation had been met when the 4.6% GDP annual average growth rate

⁵ Kyotaki and Moore (1997), and Bernanke, Gertler and Gilchrist (1999) formalised how the financial sector amplifies shocks to the economy, increasing the volatility of the business cycles.

during the last 12 months was 4 percentage points below the 10.3% GDP annual average growth during the previous 12 months (Graph 2).

Similarly, the economic recovery during the first half of 2010 determined the activation of the higher provisions rule according to situation “b” in Table 2.

In September 2014, average annual GDP growth during the previous 30 months switched from 5% or above to slightly below 5% (4.99%), prompting the deactivation of rule “a” for provisions. As of October 2014, the last month of activation of the dynamic provisions, it accounted for 12.5% of total provisions (or 0.6% of credits classified as normal risk). At present, while the 30-month annual growth average remains below 5%, none of the activation criteria have been met and the rule remains inactive.

In 2011, the SBS adopted the countercyclical capital buffer, additional to the minimum regulatory capital requirement, which is applied to every financial entity, including all internationally and domestically active banks. It has the same activation rule as for procyclical provisioning, with the aim of dampening the financial cycle. The additional capital required ranges from 1.2% to 5.5% according to the riskiness of the loan type.

Loan dynamic provisions rule

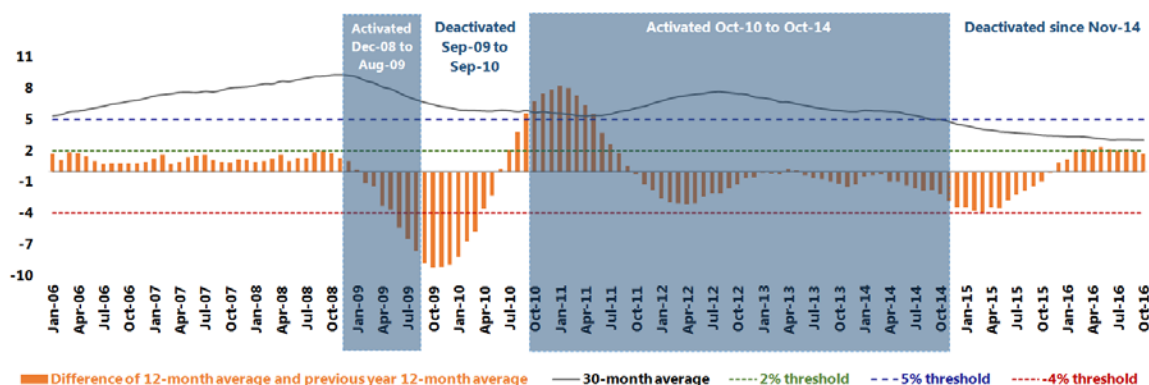
Table 2

	Activation	Deactivation
a.	Average annual GDP growth during previous 30 months from below 5% to 5% or above.	Average annual GDP growth during previous 30 months falls from 5% or above to below 5%.
b.	Average annual GDP growth during previous 30 months is above 5% and average annual GDP growth during the last 12 months is 2 percentage points above the average annual GDP growth of the previous 12 months.	Average annual GDP growth during the last 12 months is 4 percentage points below the average annual GDP growth of the previous 12 months.
c.	The average annual GDP growth during the last 30 months is above 5% in the 18 months since the deactivation based on item “b” of the deactivation rule.	

Activation and deactivation rules for dynamic provisions

Year-on-year percentages

Graph 2



Source: SBS, BCRP

Additional required capital for mortgage and consumer lending

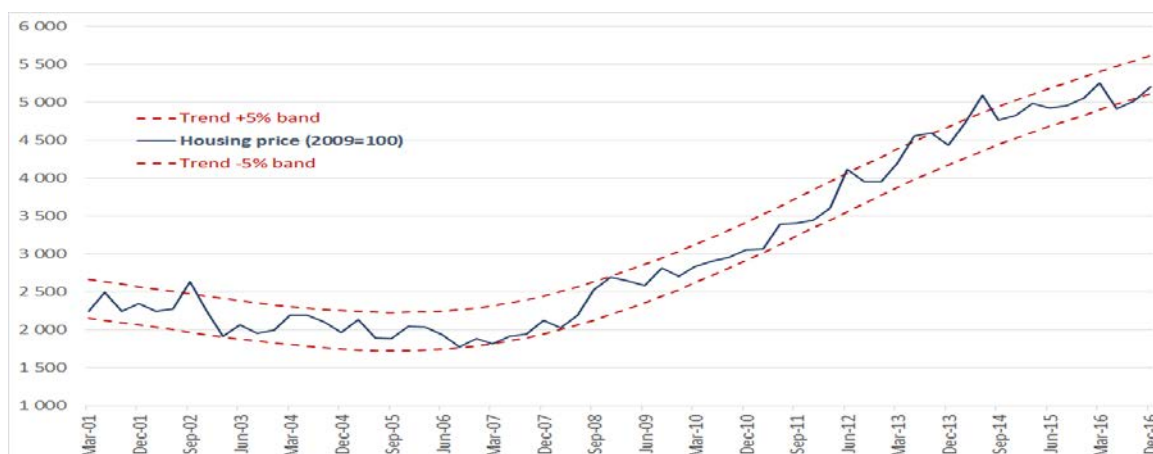
Growth in loans to households has been strong in recent years. From December 2002 to December 2012, mortgage and consumer lending grew at average annual rates of 17.3% and 19.3%, respectively; increasing their joint share of total lending from 20.5% to 35.2% and pushing house prices to the top of their trend range in the second half of 2012 (Graph 3). To tighten lending standards in the household sector, the SBS introduced in November 2012 higher capital requirements for household credit, with effect from January 2013.

The new regulation sets additional weighting factors for mortgage and consumer lending risks, in accordance with their type and characteristics (term, currency, interest rate etc). In the case of mortgages, the weighting factor depends on the loan-to-value (LTV) ratio, the term to maturity, whether the mortgage is for a first or second property, and whether it is at fixed or variable rate. For consumer lending, the weighting factors depend on the type of lending (agreement, car loans, revolving or non-revolving credit) and maturity.

Housing prices

Constant soles of 2009 per m²

Graph 3



As a result, consumer lending growth fell, while mortgage lending expansion remained relatively stable. The implementation of these macroprudential measures has meant that both lending categories have been backed by additional capital since January 2013.

Reserve requirement ratio

The RRR is the ratio of bank reserves to total liabilities. It represents funds that each bank must maintain in cash and deposits at the central bank to meet customer withdrawals. The RRR varies according to the type of liabilities and its maturity and may also be tailored to the behaviour of the asset side of the balance sheet. Indeed, one of the BCRP's recently introduced tools is a RRR on FC liabilities, set according to the evolution of bank credit to the private sector, with the aim of encouraging dedollarisation.

In the Peruvian case, the RRR has been raised countercyclically in order to moderate and stabilise credit growth. In September 2008, before the GFC deepened, RRRs were increased to dampen credit growth fuelled by capital inflows. However, during the crisis, the central bank responded by extending liquidity to the financial sector and reducing RRRs, among other measures. Given that overseas branches of financial entities were providing loans to domestic borrowers – particularly to corporations – the central bank extended RRRs to the liabilities of overseas bank branches in January 2011, preventing any circumvention of the RRR policy.

Financial dollarization and credit risk due to currency mismatch

In dollarised economies, there is a need to manage the risks associated to FC liquidity shocks and unexpectedly large exchange rate movements on financial liquidity and credit spreads. In the case of Peru, the liquidity and credit risks arising from exchange rate fluctuations are particularly relevant. FC liquidity risk is associated with the central bank's inability to print dollars, which significantly reduces its capacity to act as lender of last resort. On the other hand, credit risk arises from currency mismatches that increase the probability of default by agents borrowing in dollars but with cash flows in other currencies.

A currency mismatch on the balance sheet of domestic private agents may induce credit risk for the financial system because agents either do not properly internalise the currency risk or engage in moral hazard. A negative shock to the economy that leads the DC to depreciate increases the real debt of non-tradable firms (by reducing the net present value of dollar cash flows).⁶ The BCRP's dedollarisation programme, by generating incentives to diminish credit dollarisation, reduces bank asset exposure to currency risk arising from mismatches, and the spillovers and induced credit risks for financial stability that dollarisation generates.

Differentiated RRRs by currency denomination of liabilities

RRRs in FC are calibrated to increase the cost of lending and curb credit growth, or to increase the cost of using short-term external funding to expand local credit. In addition, since 2008 the BCRP has used RRRs in a more cyclical fashion by raising their average and marginal levels during capital flow surges, and cutting them during reversals. By increasing RRRs during periods of intense inflows, the BCRP reduces banks' incentives to lend in FC. At the same time, this creates buffers that reduce banks' vulnerability to reversals.

The GFC put the inflation target regime and financial risk control system to the test. Inflation ran above target during the first half of 2008, which called for higher domestic policy rates and a widening spread vis-à-vis foreign interest rates. The higher spread between the domestic policy rate and the US federal funds rate encouraged carry trades and short-run capital inflows in the run-up to the crisis. Growing bank liquidity levels arising from these capital inflows hindered the conduct of monetary policy and intensified appreciation pressures. In this context, in addition to raising the reference rate (from 4.5% in July 2007 to 6.5% in August), the BCRP increased RRRs on DC and FC deposits. The goal was to ensure an orderly expansion

⁶ These dynamics could potentially lead to a Fisherian deflation if balance sheet effects lead to fire sales of assets. For a discussion on the effects of fire sales on the financial system, see Shleifer and Vishny (2011).

of liquidity and credit. The BCRP also accumulated a significant amount of international reserves, through sterilized FX intervention.

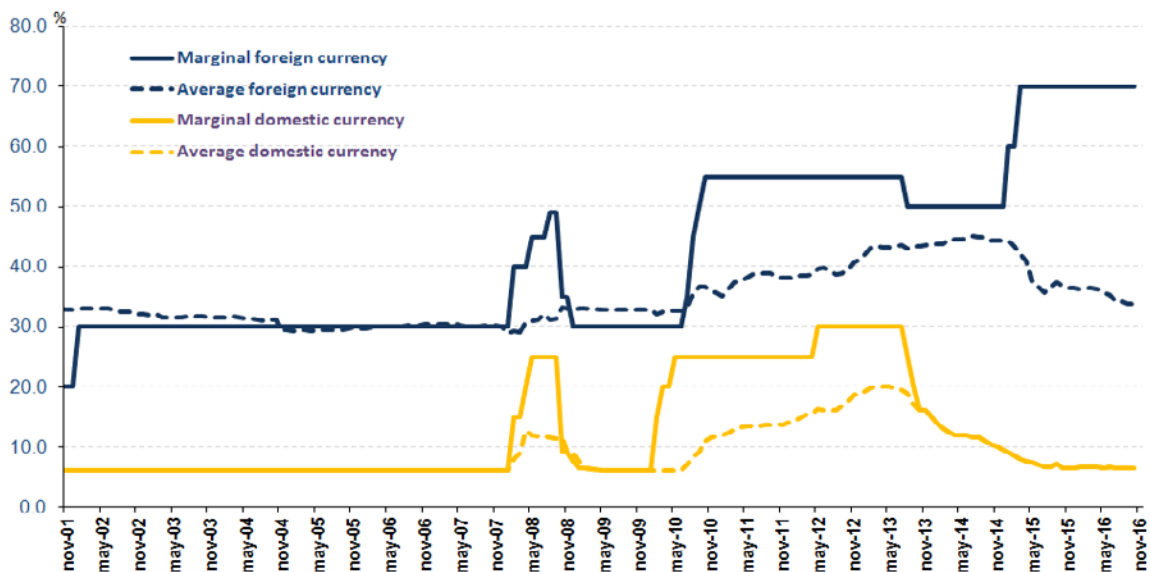
In September 2008, the BCRP responded immediately to the turbulence caused by the collapse of Lehman Brothers by injecting liquidity equivalent to a maximum of 9.3% of GDP through a wide range of instruments, including a reduction of RRRs to end-2007 levels, FX sales amounting to \$6.8 billion in the September 2008–February 2009 period, and the provision of liquidity through repo operations and currency swaps. These measures cushioned the domestic financial system from the effects of the crisis and facilitated a swift and sustained recovery of credit and economic growth from the second half of 2009. During the height of the GFC (October 2008–March 2009), access to credit was preserved and non-performing loans remained low.

The GFC provided policymakers worldwide with an important lesson: monetary policy needs to, and can, take greater account of financial stability concerns. During the crisis, central banks in advanced economies made innovative policy moves, including forward guidance in order to steer expectations of future interest rates and quantitative easing. These policies spilled over to EMEs, which faced unprecedented capital inflows. Under these circumstances, monetary policy in Peru had to sail against the wind and apply a sort of quantitative tightening (Rossini et al (2015)). This implied an increase in RRRs (Graph 4).

Reserve requirements in DC and FC

Percentages of total liabilities of banks

Graph 4



Source: BCRP

Capital requirements for exposures to credit risks due to currency mismatches

Since November 2012, with the purpose of coverage for credit risks associated with currency mismatches, the SBS increased the risk weights for identified and non-identified exposures to 102.5 and 108.0%, respectively. The additional capital requirements helped prevent the development of excessive credit risk exposures related to currency mismatches. They also hampered the gestation of cycles by

inducing banks to decrease the share of domestic FC credit and offering new loans in DC. During 2013, DC credit to the private sector increased by 24.8% while FC credit grew by 1.5%; implying a reduction in credit dollarisation from 42 to 39%.

Higher capital requirement for mortgages in dollars

In Peru, dollarisation of mortgages and car loans remains very high. The BCRP and the SBS implemented specific macroprudential policies in order to reduce the structural and cyclical currency exposures of households. Since January 2013, the SBS has differentiated the required capital for mortgage and consumer credit, demanding a higher capital ratio for FC loans. For FC mortgage to purchase primary residence, if the LTV ratio of a fixed interest rate loan surpasses 80%, the bank is subject to a higher capital requirement ratio (for variable interest rate, the LTV threshold is 70%). If the mortgage loan is in DC, the corresponding LTV thresholds are 90% for fixed interest rate and 80% for variable interest rate loans.

Capital flows and exchange rate volatility

Capital tends to flow to economies with macroeconomic stability and attractive interest rates, often in the form of carry trades. However, an excessive increase in such capital inflows may generate credit bubbles and non-fundamental exchange rate volatility. Banks may be encouraged to provide lenient credit conditions and, if the inflows then come to a sudden stop, this may undermine the financial system and the economy in general, particularly if it is highly dollarised.

Capital inflows put appreciation pressures to the domestic currency. This was the case for the Peruvian currency, except in 2008–09 when the exchange rate reacted quickly in anticipation of the reversal of capital flows triggered by the deepening financial crisis. However, QE policies in the advanced economies soon restored capital inflows and appreciation pressures in EMEs. Since 2013, however, the Federal Reserve's announcement and implementation of tapering has confronted EMEs with new reversals and heightened exchange rate volatility.

In response, the BCRP has stepped up FX intervention. Excessive exchange rate volatility, in the context of high dollarisation and currency mismatches, creates uncertainty and negatively affects investment and funding decisions. The BCRP's net dollar purchases have allowed it to accumulate international reserves as a liquidity cushion against sudden stops and reversals of capital flows.

Carry trade-related speculative capital flows can create instability in financial markets due to their volatile behaviour. In Peru, the carry trade returns may have risen to as high as 12.7% in March 2008. In most carry trades, the investors did not hedge their exchange rate risk; indeed, the domestic currency appreciation to maturity of the trades implies an exchange rate gain.

With the goal of preventing short-term speculative capital inflows and to curb non-fundamental exchange rate volatility, the BCRP implemented a combination of macroprudential policies ranging from additional RRRs on non-resident deposits and short-term external bank borrowing, to limits on banks' FX positions and on the FX transactions of pension funds.

Higher RRRs for non-resident deposits

In April 2008, the BCRP applied a 40% RRR to non-resident deposits in the DC, which was further increased to 120% in July. This countercyclical measure was combined with a 4% commission on third-party transactions with central bank certificates of deposit (CDs).

This RRR was quickly reduced to 35% in 2009 to prevent sudden outflows of short-term capital. However, in September 2010, when turbulence in international financial markets receded, the BCRP reinstated the 120% RRR for these deposits to discourage inflows of short-term speculative capital. At the end of 2014, the RRR was reduced and set to a level similar to that on the rest of deposits in DC.

Higher RRRs on external short-term debt of the financial system

To reduce the domestic financial system's exposure to international financial markets, the BCRP increased RRRs on the short-term external debt of banks from 30% in February 2008 to 49% in September 2008. As the crisis deepened, the BCRP removed RRRs in October 2008 to prevent any sudden stop of external credit lines for banks or to compensate for reversals in capital flows. However, the sound external liquidity position of banks allowed them to voluntarily pay back their short-term external debt or to terminate their external credit lines. As of September 2008, short-term external debt accounted for less than 35% of total bank funding.

Since February 2010, in a context of intensive capital inflows, the BCRP reinstated RRRs on short-term external debt to 35% and gradually increased the ratio to 75% in October 2010. In response, banks extended the maturity of their external debt. From January 2011 to July 2013, the RRRs on short-term external debt have been reduced to 60% and from August 2013 to 50%. As of December 2013, the long-term external debt of banks rose to 85% of total external borrowing, increasing the stability of their funding. Since May 2012, to discourage capital inflows and to further reduce banks' reliance on external debt funding, the BCRP introduced a 20% RRR on long-term external debt (external loans or FX bonds issued abroad of more than three-year maturity) when it exceeds 2.5 times a bank's capital.

Limits on exchange rate risk exposure

A bank's exchange rate risk exposure is usually defined as its net FC asset position (assets minus liabilities) or, more globally, as its overall net FC asset position, after accounting for its net FX derivatives position. Both indicators are usually measured as a proportion of a bank's capital. The net FX derivatives position may act as a hedge. But it may also increase FX exposure. To reduce banks' overall FX exposure, the SBS has reduced the limits on overall over-purchasing or over-selling of FC since February 2010. Consequently, since December 2012, the maximum overall long FX position limit is set at 50% of a bank's capital, which is consistent with the level of dollarisation, while the overall short FX position limit is set at 10% of a bank's capital.

The initial cut in the limits, in February 2010, caused banks to reduce their average exchange rate exposure from 25% of capital in January 2010 to 5% in December 2010. Furthermore, in January 2011, the SBS set a limit of 40% of capital, or a maximum of PEN 400 million, on the absolute value of a bank's net FX derivatives position. This limit, together with subsequent reductions in October 2011 and December 2012, indirectly restricted the net FX asset position, which encouraged

dedollarisation. The reduced limit indirectly curbed non-resident trading in the forward market, thus moderating the pressure on the exchange rate.

Limits on the FX operations of pension funds

Peruvian pension funds managed a portfolio equivalent to 20.5% of GDP as of December 2016. Their importance in domestic financial markets implies that their currency transactions can generate sizeable currency fluctuations. Since June 2010, the SBS introduced limits to the FX operations of pension funds with a daily maximum of 0.85% of total assets under management and a five-day maximum of 1.95%. Since January 2013, these limits have been reduced to 0.75% and 1.75%, respectively. Such a measure helps to prevent network contagion.

Macroprudential policies to prevent shock propagation from SIFIs

- In September 2010, the SBS introduced more stringent rules for the computation of bank capital, strengthened capital requirements, and imposed concentration limits and single counterparty limits.
- Implementing Pillar II of Basel III, the SBS has applied additional capital requirements. It established higher capital requirements for concentration risk (according to economic sector and region), variations in banking book interest rates, risk-taking propensity (Basel II), and cyclical fluctuations and market concentration (Basel III).
- Furthermore, in December 2012, the SBS introduced a Liquidity Coverage Ratio and a liquid investment coverage ratio for financial intermediaries, with a view to strengthening their liquidity management.
- The BCRP has gradually increased the operational limit for the overseas investments of pension funds, from 10.5% of funds in October 2006 to 36.5% in December 2013.

Dedollarising the economy

In 2013, the BCRP implemented additional RRRs with the objective of inducing a faster reduction of credit dollarisation. Financial institutions with growth of dollar-denominated loans above certain BCRP-established thresholds were subject to such requirements. Based on the dedollarisation policy evaluation of Castillo et al (2016), we now discuss the rationale for the application of these measures. We also look at their effectiveness in achieving the main objective of reducing dollarisation-related currency mismatches.

Main features of the dedollarisation programme 2013–16

As a permanent feature, the BCRP sets higher RRRs for FC than DC deposits. This difference increases the cost of financial intermediation in FC, thereby reducing the incentive for dollarisation.

In March 2013, the dedollarisation programme started with the establishment of additional RRRs on FC liabilities tied to the evolution of FC mortgage and car loans. The stock of these loans as of February 2013 was set as a reference point and growth

rates of 10 to 20% above it led to additional RRRs. These were set to 0.75 percentage points for banks exceeding the first threshold, and 1.5 percentage points for those exceeding the second one. In October 2013, a similar additional RRR was established and linked to a broader definition of credit, including all loans to the private sector denominated in FC (except for those financing international trade). In this case, additional RRRs increased by 1.5 percentage points when total outstanding credit in FC (excluding credit for trade) exceeded 1.05 times the reference stock (which was set to September 2013), 3.0 percentage points when this definition of total foreign credit exceeded 1.10 times the reference, and 5.0 percentage points when it exceeded 1.15 times the reference.

In December 2014, the BCRP modified the previous framework pertaining to additional RRRs defined in terms of threshold levels to a new set-up requiring reductions in dollar-denominated loans balances. Under the new rules, banks had to reduce, by June 2015, the stock of total credit in FC (excluding foreign trade operations as well as operations with terms longer than four years and amounts over US\$10 million) to at least 95% of the comparable balance as of September 2013. Otherwise, banks faced additional RRRs on their total FC liabilities that were proportional to the gap between their current stock and the desired balance. This measure became more demanding in December 2015, since banks had to reduce their dollar loan balances to at least 90% of the September 2013 balance.

Banking FC credit, excluding trade loans

Graph 5



With these measures, the BCRP aimed to reduce potential systemic risks by providing incentives for banks to reduce their FC credit balances, without discouraging foreign trade operations and focusing on credit sectors that were more vulnerable to high dollarisation. As of December 2016, the reduction in total FC credit, excluding credit for trade operations, was significant, with levels below the threshold established by the BCRP for that month. Moreover, all individual banks achieved the reductions in total FC credit set by the BCRP.

Banks credit dollarisation

Percentages of total credit

Table 3

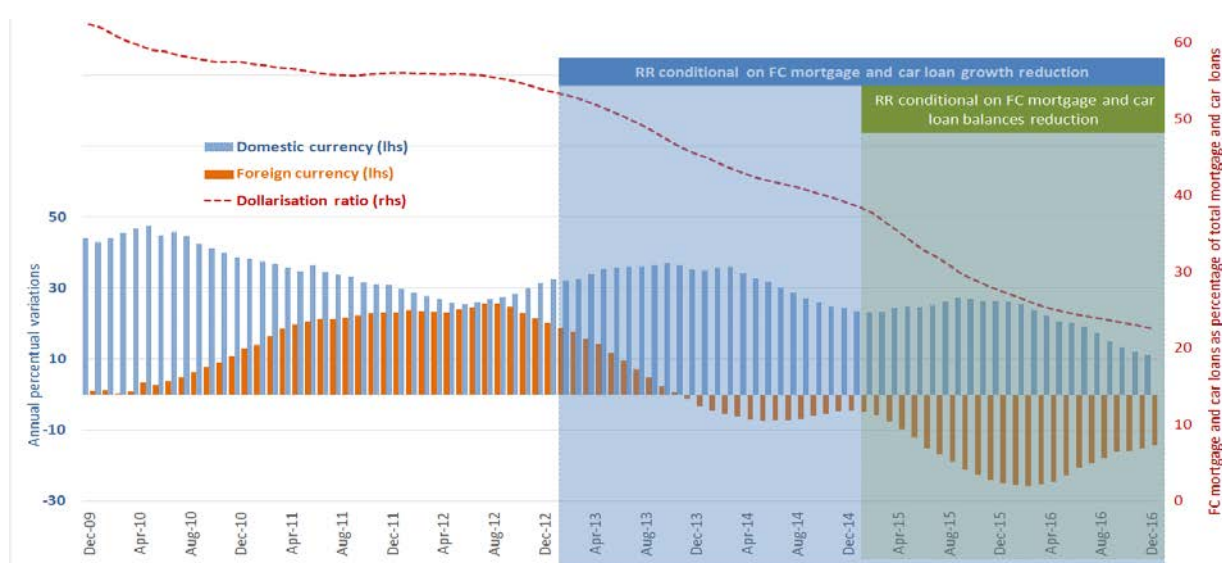
	Dec-11	Dec-12	Dec-13	Dec-14	Dec-15
Firms	55.0	53.8	51.1	48.4	38.7
Large firms	70.6	72.4	65.7	59.8	46.5
Medium Size firm	68.0	65.9	62.2	59.3	47.6
Small firms	16.6	14.6	12.3	11.5	8.8
Households	25.1	23.9	22.0	20.0	15.9
Consumer Loans	9.8	9.7	9.9	9.6	7.9
Vehiculares	69.7	76.5	74.8	68.9	44.6
Tarjetas de crédito	6.3	6.4	6.8	6.6	6.4
Resto	7.2	6.1	5.9	5.9	6.0
Mortgages	49.1	44.8	38.5	33.9	26.8
Total	44.7	43.0	40.7	38.3	30.5

Graph 5 shows the shift from FC to DC bank credit since 2013 with the implementation of the RRR conditional on the growth reduction of FC loans and balances. Total dollar credit dropped from 45 to 29% from December 2011 to December 2016

A similar set of rules applied for car and mortgage loans denominated in FC. In this case, by June 2015 banks had to reduce their stock of such loans to at least 90% of the balances held as of February 2013. In December 2015, the RRR was adjusted to reduce the stock of dollar-denominated car and mortgages loans to 85% of the balance held on February 2013.

Car and mortgage bank FC loans

Graph 6



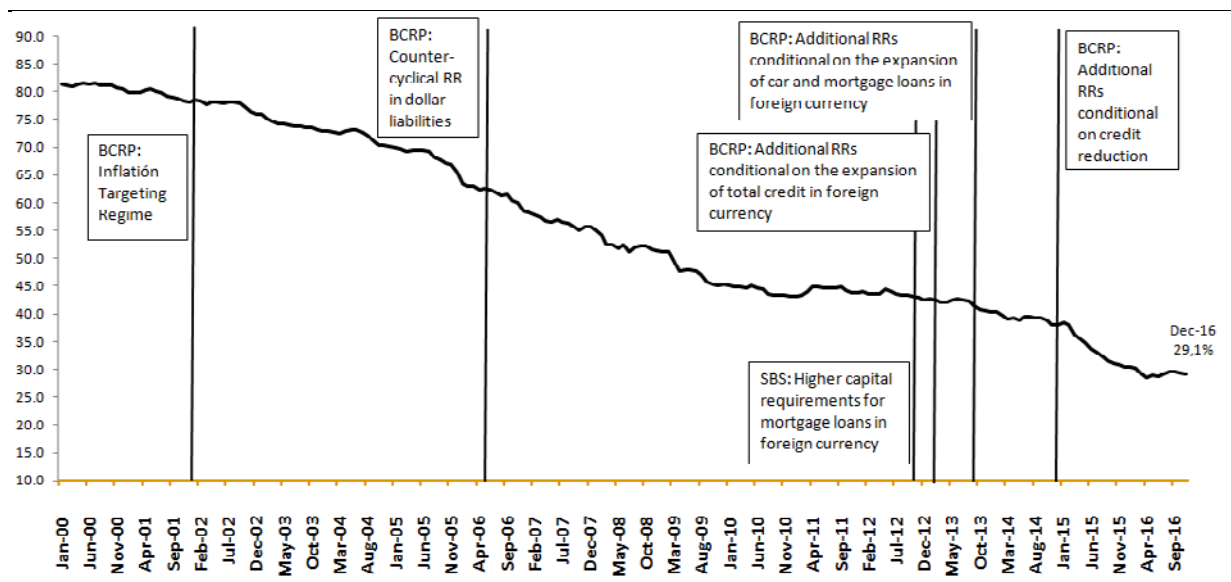
Graph 6 shows the substitution from FC to DC mortgage and car loans since 2013. The implementation of RRRs conditional on a reduction of growth these FC loans encouraged dedollarisation. Consequently, as of December 2015, aggregate FC mortgage and car loans were equivalent to 67% of the February 2013 balance. By November 2016, this figure had fallen even further to 58.8%, much lower than the level required by the BCRP for December 2016. Thus, the dollarisation of mortgage and car loans dropped from 53% in February 2013 to 23% in December 2016. The reduction of dollarisation was widespread across credit market segments, as Table 3 illustrates.

Graph 7, illustrates the evolution of credit dollarisation along with the dates of the three most important prudential policies adopted to foster dedollarisation: the counter-cyclical adjustment of RRRs in dollars by the BCRP; the increase in capital requirements set by the SBS in 2012; and the dedollarisation Programme of the BCRP. Credit dollarisation started to decline persistently after the adoption of the IT regime in 2002. Then, from 2010 to 2012, associated with very low international interest rates and an expected appreciation of the local currency, a moderating decreasing trend was observed. During this period, the BCRP increased average and marginal RRRs several times to counter the impact of external financial conditions on credit dollarisation. However, the most significant change in the dedollarisation trend was observed in 2015, after the BCRP adjusted its dedollarisation programme. As can be seen in Chart 7, the downward trend in credit dollarisation accelerated from 2013 (and with more intensity during 2015). This period coincided with the application of the dedollarisation programme and also with the increase in expected depreciation of the exchange rate, which increased the expected cost of borrowing in dollars.

Evolution of credit dollarisation in Peru

Percentages

Graph 7



Injecting liquidity in soles to support the dedollarisation of credit

- Banks that had their balance sheets matched by currency before the programme ended up with a short position in dollars after substituting (converting) dollar-

denominated loans already on their balance sheets for sol-denominated loans. This meant that banks needed a means of regaining their neutral position with respect to the dollar.

- Strong incentives to denominate all new loans in DC meant that banks needed long-term funding sources in soles in order to avoid a currency mismatch. These were particularly scarce given that private agents expected strong depreciation of the sol and thus preferred to save in dollars.

The BCRP realised that the first effect would imply more demand for dollar instruments. Banks would hedge their positions by purchasing dollars either in the spot or forward market, generating pressure on the exchange rate. Given the prudential objective of low FX volatility, the BCRP considered this scenario undesirable. Thus, it was decided that the dedollarisation programme would require a BCRP-provided hedge instrument.

Repos for credit substitution were introduced to support the conversion of loans in FC into loans in DC. In such operations, banks purchase dollars from the BCRP and simultaneously perform a currency repo using these dollars as collateral (a restricted deposit at the BCRP). As a result, banks' customers obtain loans in soles, while the banks maintain the same amount of assets in dollars. The repo for credit substitution provides banks with a dollar-denominated asset (the restricted deposit in dollar that serves as collateral for the repo) and a sol-denominated liability (the repo itself). Such operations cancel the effect of credit substitution (which increases soles assets and decreases dollar assets) on banks' dollar exposure.

Repos for credit expansion were designed to support credit growth in DC. Through this instrument, banks can use part of their RRRs in FC (up to an equivalent of 10% of their total liabilities subject to these requirements, which was extended to 20% in December 2015) to make currency repos with the BCRP, obtaining long-term funding in DC.

These new types of operation have been instrumental in facilitating a smooth reduction in credit dollarisation, particularly during 2015, when banks faced a shortage of DC funding as depositors increased their preference for saving in dollar-denominated deposits. In addition, banks faced excess FC liquidity, generated both by the substitution of dollar loans for soles loans and by the increase in dollar deposits. The repos for credit substitution and credit expansion contributed to swap the excess of banks' funding in FC into funding in DC, which allowed them to rapidly expand credit in DC without creating pressures on domestic interest rates. Credit expansion in 2015 was mostly financed by repo operations with the BCRP.

The dedollarisation programme achieved the goal of reducing credit dollarisation. However, deposit dollarisation did not follow. The reason is that agents' expectations of strong depreciation of the sol – associated with the normalisation of the Federal Reserve's monetary policy – led to a strong shift in deposits from soles to dollars. Depreciation favours dedollarisation of credit but has the opposite effect on deposits. Thus, the BCRP had to provide long-term funding instruments in DC to the financial system in order to maintain control over monetary conditions in DC. Most of these instruments relied on banks' dollar liquidity as collateral for currency swaps.

Looking forward, unwinding the instruments deployed by the BCRP in 2015 will require a decline in deposit dollarisation that corresponds to credit dollarisation. This will only be the case when depreciation expectations ease. However, this might not be enough. It is quite plausible that given the right conditions (appreciation of the

sol, for example), credit dollarisation could increase again if the measures implemented by the BCRP in the last three years are phased out. Low inflation and a stable exchange rate will provide incentives for private agents to dedollarise deposits but when the winds change again, particularly with regards to the exchange rate, policy will have to be in place to ensure the dedollarisation process.

Conclusions

The institutional arrangement for coordinated macroprudential policies in Peru allowed the implementation of reinforcing measures by the BCRP and the SBS, in a scenario of fiscal discipline enforced by the MEF. Such policies helped prevent boom-bust movements in credit, avoid balance sheet risks due to currency mismatches, counteract the effects of short term capital flows, prevent non-fundamental volatility of the exchange rate and reduce the economy's main vulnerability by inducing financial dedollarisation.

In economies affected by financial dollarisation, such as Peru, credit risk is heightened by the non-fundamental volatility of the exchange rate. Large DC depreciation can lead to higher default rates among firms with currency mismatches and affect borrowers' balance sheets by altering their income flows and loan repayment capacity. Therefore, macroprudential policies that can prevent any excessive risk-taking behaviour and limit its negative effects are central to an effective conduct of monetary policy. Implementing these tools while preserving monetary stability is possible and necessary. Furthermore, bolder measures aimed at reducing vulnerabilities, such as credit dollarisation, can significantly enhance financial stability, thereby creating space for traditional monetary policy to fulfil its primary role.

Peru's macroprudential policy toolkit includes liquidity-and asset-based instruments, combined with the accumulation of international reserves and FX-intervention in spot and forward markets as tools for enhancing resilience of the financial system, dampening the cycle, hampering the gestation of cycles, dedollarising the economy and preventing network contagion and shock propagation through SIFIs. These policies to limit systemic risks gained importance over the last decade, particularly given the current international context characterised by high uncertainty associated with the normalisation of the Federal Reserve's monetary policy and volatility in the terms of trade for emerging market economies (resulting in particularly from movements in commodity prices).

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