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Peru: Selected Issues

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INTERNATIONAL MONETARY FUND

PERU

Selected Issues

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Approved by the Western Hemisphere Department

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Contents   Page

Tables

Figures

I. MACROECONOMIC STABILITY AND THE ROLE OF FISCAL POLICY [1]

1.   **During the recent years of strong growth and high commodity prices, the Peruvian authorities have conducted a prudent fiscal policy, maintaining a broadly neutral fiscal stance.** During 2004–08, while the revenue-to-GDP ratio increased 3.7 percentage points, the expenditure ratio rose only 0.9 percentage points (Figure 1). Expenditure control focused on current spending, and coincided with increasing government investment aimed at enhancing public access to infrastructure and social services. Overall, during 2004–08, the estimated fiscal impulse, measured as a structural balance loosening, averaged -0.2 percent of GDP, i.e., a broadly neutral fiscal stance.[2] Fiscal policy has also outperformed budgets approved by Congress, owing to higher-than-anticipated revenue, as well as the need to limit inflationary pressures. For instance, .in 2008, the balanced budget approved by Congress would have implied a procyclical fiscal impulse, as measured by the change in the estimated structural balance, of about 3 percent of GDP. However, in response to rising inflation, the authorities announced in April an operative target for the fiscal surplus of 2 percent of GDP, which is currently expected to be the outturn.

Figure 1. Government Revenue, Expenditure, and Fiscal Impulse, 2004–08
(Percent of GDP)
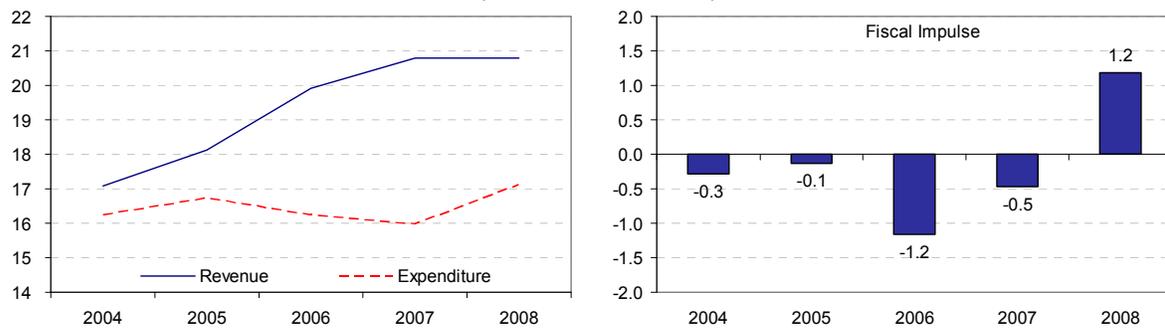
Source: Peruvian authorities and IMF staff estimates.

2.   **This chapter assesses the effectiveness of a neutral fiscal stance in minimizing the impact of shocks on the economy.** In particular, the analysis assesses how macroeconomic stability compares under a neutral fiscal stance and alternative strategies, such as a balance-budget approach. The paper also considers how the stabilizing properties of a neutral stance can be affected by errors in estimating potential revenue levels. This question is particularly relevant in an economy experiencing structural change, with a large informal sector, and when international commodity prices fluctuate widely.

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[1] Prepared by Daniel Leigh.

[2] A neutral fiscal stance is defined as no change in the structural fiscal balance (Lema and Moreno, 2008).

3.   **The analytical framework is provided by the Global Integrated Monetary and Fiscal Model (GIMF).** The model used here is a 2-country version of GIMF (Peru and the rest of the world) that shares many features with general equilibrium models introduced in central banks around the world. A key addition has been a model for the commodities sector, with commodity output modeled as an endowment. Commodity prices fluctuate with shocks to foreign industrial demand for these goods. The resulting swings in commodity prices generate fluctuations in government revenues. The model's fiscal transmission mechanism is based on multiple non-Ricardian features. The structural parameters regarding household preferences and firm technology are set following Kumhof and Laxton (2007), who calibrated GIMF for the case of Chile and the rest of the world.

4.   **Fiscal policy in the model includes a target for the fiscal surplus.** To reduce volatility from the business cycle and commodity-price shocks, the fiscal surplus is allowed to change with deviations of tax and commodity revenues from their trend levels. For the purpose of this paper, the fiscal rule is expressed as:

$$\frac{fbal_t}{gdp_t} = \phi^* + d\left(\frac{\tau_t - \tau_t^*}{gdp_t}\right) + d\left(\frac{x_t - x_t^*}{gdp_t}\right) \tag{1}$$

where $\frac{fbal_t}{gdp_t}$ is the fiscal balance-to-GDP ratio. If the response parameter $d = 0$, the fiscal balance is kept equal to ϕ^* at all times, regardless of the economy's cyclical position and all deviations of revenues from their trend levels are spent. Such an approach, defined here as a "balanced budget" approach, is procyclical. As the response parameter increases, a greater share of the cyclical excess revenue is saved. A neutral fiscal stance involves setting d equal to one. Such an approach corresponds to a structural fiscal rule (as implemented in Chile). The adjustment of fiscal policy in the model occurs through lump-sum transfers to all households, which are adjusted to achieve the desired fiscal surplus. The model is calibrated to Peru's historical fiscal performance. The steady-state fiscal balance, ϕ^*, is set equal to zero.[3] To investigate the role of errors in estimating potential revenues, the analysis modifies the fiscal reaction to include *perceptions* of potential revenues that may deviate persistently from the true potential revenues.

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[3] The results regarding the short-run stabilizing properties fiscal policies are robust to alternative values for the steady-state fiscal balance ϕ^*.

5.   **The key results are the following:**

- **In the context of persistently high commodity prices, Peru's broadly neutral fiscal stance has contributed substantially to macroeconomic stability compared to a balanced-budget approach.** Following a balanced budget approach, as in the case of the 2008 budget, or running a fiscal deficit, as implied by the 2007 budget, would have destabilized output and inflation, contributed to a real appreciation of the currency and potential Dutch disease" effects, and raised the burden on monetary policy in addressing inflation. To illustrate this point, Figure 2 reports the dynamics of GDP, inflation, interest rates, real exchange rates, and the current account following an increase in the foreign demand that raises the price of commodities by 50 percent. The shock raises domestic income, and results in an improvement in the external current account balance, leading to an increase in domestic demand. Monetary policy tightens in response to the higher associated inflation, inducing a real appreciation of the currency. A neutral fiscal stance implies that a larger proportion of the revenue increase is saved, and that smaller interest rate increases are required to stabilize inflation. The smaller interest rate increases also reduce the degree of currency appreciation, and imply less crowding out of private investment and exports in the noncommodity sector. By contrast, a balanced-budget approach implies a procyclical increase in spending that stimulates aggregate demand, and implies the need for more monetary tightening to address inflation.

- **The superiority of a neutral fiscal stance over a balanced-budget approach is robust to the inclusion of misperceptions regarding potential revenue levels.** In particular, the analysis suggests that a neutral fiscal stance offers greater macroeconomic stability than a balanced-budget approach even in the presence of misperception shocks, unless the severity of misperceptions is implausibly high.

- **Going forward, institutional reform to ensure the continuation of this prudent performance in an environment of volatile commodity prices is warranted.** In particular, the adoption of a structural-balance rule would formalize the broadly neutral stance followed in recent years, provide a medium-term anchor for fiscal policy, and strengthen the credibility of fiscal policy by ensuring a balanced budget over the economic cycle. To alleviate concerns on assessing the stage of the economic cycle, the authorities could consider establishing independent expert panels as in Chile (OECD, 2006).

Figure 2. Raw-Materials Demand Shock and Fiscal Policy Cyclicality
(Deviation from Steady State Baseline)
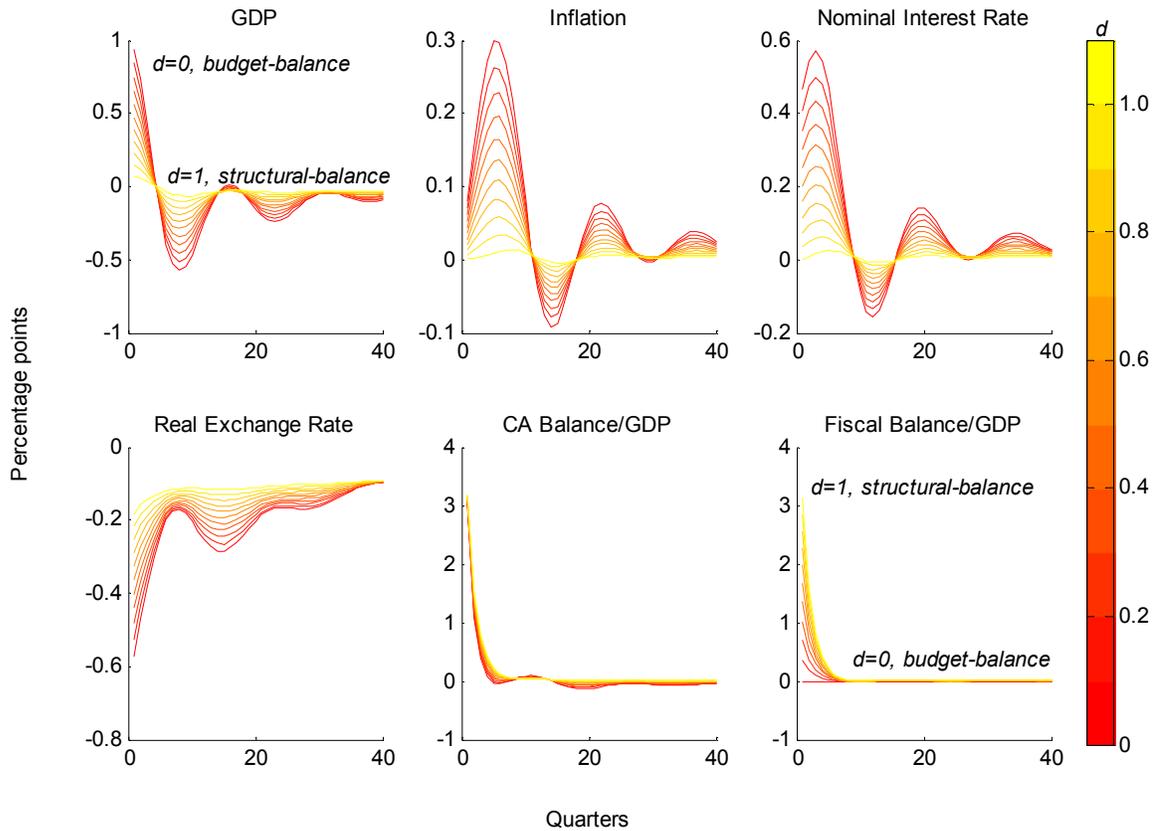
Source: GIMF simulations. Note: *d=0* corresponds to a balance-budget approach, while *d=1* corresponds to a neutral stance/structural-balance approach. The lines become lighter as the policy approach moves from *d=0* to *d=1*.

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II. DISENTANGLING THE MOTIVES FOR FOREIGN EXCHANGE INTERVENTION IN PERU[4]

6.   **Since the inception of its inflation-targeting framework (ITF) in 2003, Peru's central bank has frequently intervened in the foreign exchange market.** While ITFs are often associated with the implementation of flexible exchange rate regimes, Peru's ITF has been designed to allow the central bank to respond to the risks posed by the still high financial dollarization, including those generated by drastic exchange rate swings on the economy's balance sheets. In particular, intervention policy has sought both *"...the moderation of excessive exchange rate volatility [...] and maintaining a high level of central bank international reserves (NIR)"* (Armas and Grippa, 2006, pp. 4), including against the backdrop of high and sustained capital inflows recorded in the last few years.

7.   **The central bank's focus on** *exchange rate smoothing* **has been documented empirically.** In particular, Humala and Rodriguez (2008) have emphasized the presence of a *smoothing motive* for the period 1994–2007, with their evidence suggesting that foreign exchange intervention in Peru has been induced both by a volatility-reducing goal as well as an intention to moderate the deviations of the exchange rate from its trend.[5]

Figure 1: Foreign Exchange Intervention and Nominal Exchange Rate

Central Bank Intervention (as a share of market turnover)
Nominal exchange rate (PEN/US$, right axis)

Transition Period

Full-Fledged Inflation Targeting Regime

Source: Banco Central de la Republica del Peru.
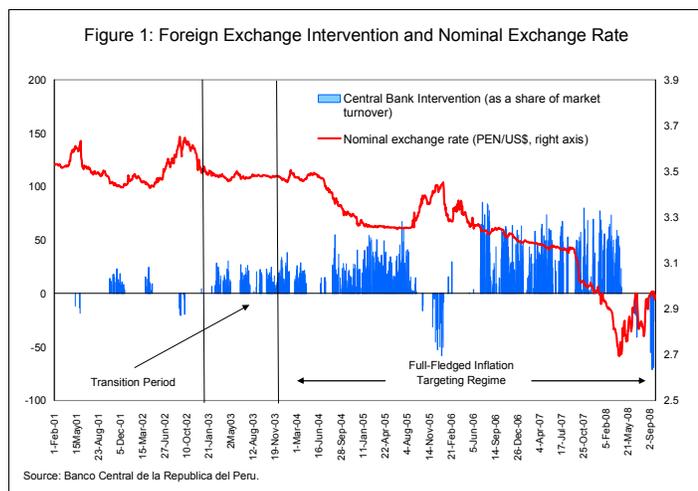
8.   **This paper looks further into the central bank's intervention policy from an empirical perspective.** It seeks to differentiate between the authorities' intention to *smooth exchange rate movements* from the explicit intention to accumulate reserves purely due to *precautionary* reasons. In particular, the paper studies the evolution in the relative weight of such motives in the intervention function since the inception of the inflation targeting regime and at detail over the past 18 months.

9.   **The findings suggest that while a** *smoothing motive* **for intervention predominated in the last few years, the importance of the** *precautionary motive* **has been increasing.** Peru's inflation targeting period has been characterized by large and significant parameters indicating a strong tendency to moderate exchange rate fluctuations, although this

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[4] This paper was prepared by Maria Gonzalez.

[5] Arena y Tuesta (1999) have also shown that foreign exchange rate intervention was geared toward reducing exchange rate volatility during the 1990s, prior to the implementation of the inflation targeting regime.

has declined over the last year. In contrast, the expected impact of the *precautionary motive* on the intervention function has gained strength—reflecting first the authorities' intention to accumulate a reserve buffer in the context of large capital inflows, and later their use of such buffer as global uncertainties heightened.

10. **The paper presents several estimations of the central bank's implicit foreign exchange intervention function.** The model is estimated with daily data between January 2001 to late September 2008, building over a widely known specification of the intervention function (see Appendix). This allows to differentiate empirically for the importance of the *smoothing motive* from the *precautionary motive* in the central bank's intervention decisions:

- **The estimation includes three simultaneous definitions of the *smoothing motive*:** first, limiting the speed of the exchange rate change from day to day; second, moderating the exchange rate deviation from a trend (given by the 90-day moving average), and third, reducing exchange rate volatility (measured as the GARCH-based conditional variance).[6]

- **The *precautionary motive* is measured as the gap between the level of the net international reserves relative to an implicit "optimal" reserve benchmark**. Such a benchmark is assumed to equal the total of public external debt plus dollarized deposits in the previous quarter (Jeanne and Ranciere, 2006; Batini and Peschiera, 2007).[7]

- **A measure on *inflation news* is also introduced,** to control econometrically for foreign exchange intervention aimed at supporting the inflation target.

11. **The exercise relies on standard estimation techniques.** In particular, the model is estimated through ordinary least-squares (Galati and Disyatat, 2007) to gauge the impact of the potential motives over the authorities' intervention in the foreign exchange market (see Appendix for a description of the expected signs on estimated coefficients). [8]

A. A Look at the Motives for Intervention Over the Broader Horizon

12. **A first estimation gauges the parameters of the intervention function over the inflation targeting period.** Specifically, the model is estimated for each year of the full-

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[6] Estimates based on the 90-day moving standard deviation do not alter the thrust of the results presented here.

[7] Estimates based on alternative optimal reserve benchmarks measured as: (1) the 90-day moving average of NIR; and (2) the daily level of bank obligations in US dollars subject to reserve requirements (TOSE) are available upon request and do not alter our conclusions.

[8] Estimates based on a PROBIT model allows us to verify for the robustness of our estimates, and are available.

fledged inflation targeting framework in 2004–08 as well as the transition year (2003) to test for structural changes in the parameters of the intervention function.[9]

13. **The results suggest that:**

- **The *smoothing motive* has generally dominated the intervention function over the whole inflation targeting period.** The central bank has generally attempted to moderate large deviations of the exchange rate from its 90-day trend during the inflation targeting period, although in 2007 it has also focused on mitigating the acceleration of the exchange rate and exchange rate volatility (Figure 2, charts 1–3). Results also hint at a reduced importance of the *smoothing motive* in 2008, and greater tolerance for flexibility.
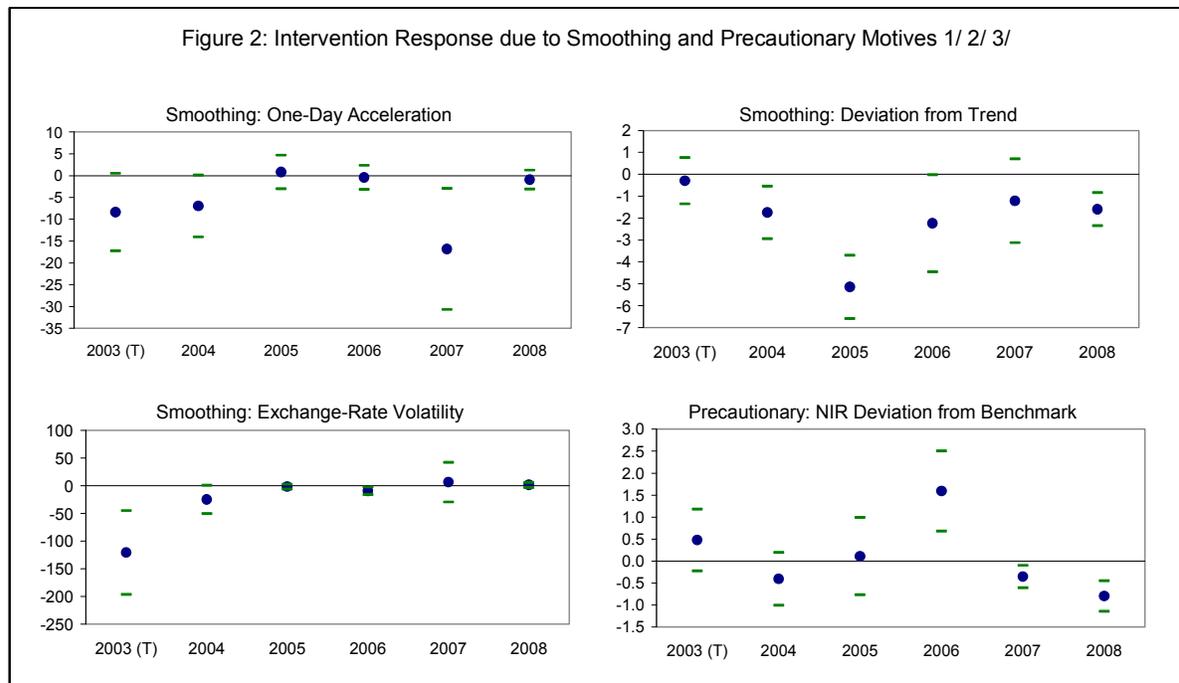
Figure 2: Intervention Response due to Smoothing and Precautionary Motives 1/ 2/ 3/

Source: Author's estimates
1/ OLS estimation, based on White-heteroskedasticity-robust confidence intervals, at 95 percent of confidence.
2/ Based on a measure of volatility equal to the conditional variance derived from a GARCH (1,1) model.
3/ Based on optimal reserves defined as the total of public external debt plus dollarized deposits in the previous quarter (Jeanne and Ranciere, 2006).

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[9] The stages of implementation are described in Armas and Grippa (2006) and Rossini and Vega (2007).

- **The *precautionary motive* has gained relevance in the last two years.** The desire to accumulate a comfortable level of reserves— equivalent at least to the level of public external debt plus US-dollar denominated deposits in the banking system—became statistically

Figure 3: Foreign Exchange Intervention and Precautionary Motive

Central Bank Intervention (as a share of market turnover)
Deviation of NIR from Optimal Reserve Level (as a share of Optimal Reserve level)

Source: Banco Central de la Republica del Peru.
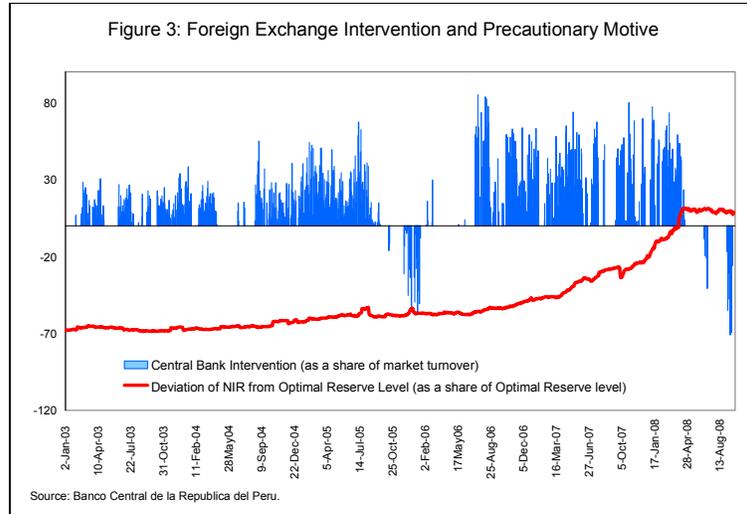
significant in 2007 and 2008 (Figure 2, chart 4). These results suggest the authorities' greater comfort in selling foreign exchange since mid-2008, as the central bank's reserve buffer exceeded the estimated optimal level (Figure 3).[10]

- **The central bank's intervention on any certain day is positively correlated to intervention in the previous day, generating "intervention episodes."** This "degree of persistence" was positive and statistically significant throughout 2003–08, explaining the clustering observed in the intervention data. The constant of the regression in the intervention function reflects the level of the central bank's "autonomous" intervention in the market—that is, the intervention that cannot be attributed to the authorities' *smoothing* or *precautionary motives.* However, such "autonomous intervention" has not been statistically significant during most of the period under analysis (Figure 4).

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[10] The estimated regression coefficient for the *precautionary motive* in 2006 is significant but with an unexpected positive sign, reflecting an increased reduction in the level of reserves when these were still below the benchmark given by public external debt and dollarized deposits.
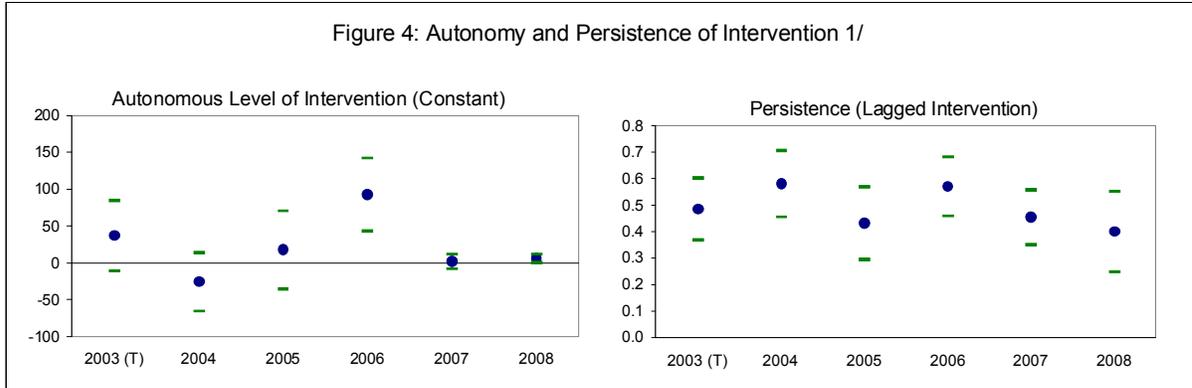
Figure 4: Autonomy and Persistence of Intervention 1/

Autonomous Level of Intervention (Constant)

Persistence (Lagged Intervention)

Source: Author's estimates
1/ OLS estimation, based on White-heteroskedasticity-robust confidence intervals, at 95 percent of confidence.

- **The *"inflation news"* have not generally had an impact on the level of intervention, confirming that Peru's ITF enjoys a high level of credibility**. Generally, if the central bank's Taylor-type rule is regarded as credible and effective, there would be no need to use foreign exchange intervention to assist inflation reach its official
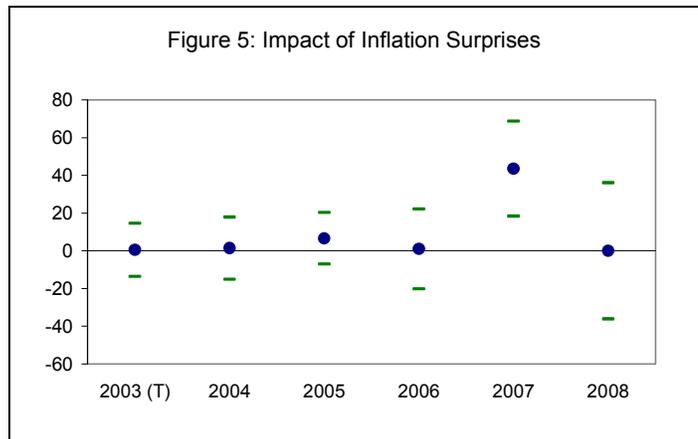
Figure 5: Impact of Inflation Surprises

Source: Author's estimates
1/ OLS estimation, based on White-heteroskedasticity-robust confidence intervals, at 95 percent of confidence.

target. This is consistent with estimating statistically insignificant coefficients for the impact of inflation news on the level of foreign-exchange intervention, as it occurs largely throughout the sample period (Figure 5). However, estimates also indicate that in 2007 there was a statistically significant effect of inflation surprises on foreign exchange intervention. This suggests that the central bank expected to raise its own policy rate ITF whenever inflation exceeded expectations, and was aware that such a policy decision would trigger further capital inflows. This effect, while still attesting to the credibility of the ITF, also hints at a weakening of monetary policy independence during 2007, as the high levels of global liquidity exacerbated the response of capital inflows to exchange rate differentials.

B. Recent Evolution of the Foreign Exchange Intervention Function

14. **Recursive model's estimates for the past two years confirm above's results:[11]**

- **The importance of the *smoothing motive* has diminished, but remains significant in the context of rising global uncertainties**. The magnitude of all of the coefficients of the implicit intervention function linked to the *smoothing motive* declined in recent months, suggesting that intervention is responding less than before to exchange rate movements, and that the central bank is tolerating greater flexibility (Figure 6). However, some of these coefficients—particularly those linked to the deviation of the exchange rate from its trend, and to the exchange rate volatility— have become statistically significant since the Summer of 2008, suggesting that while the central bank has greater tolerance toward exchange rate fluctuations, it continues to moderate them, in light of the risks posed by the deterioration in the global environment.

Figure 6: Intervention Response Due to Smoothing Motive 1/ 2/

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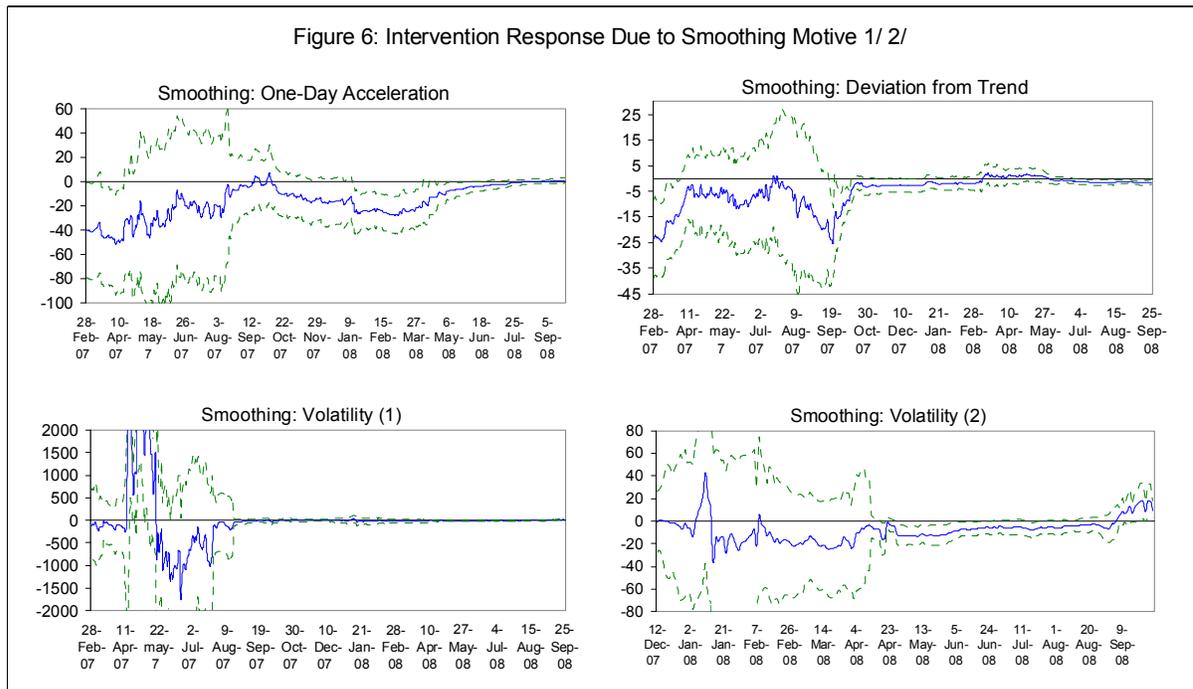
[11] The estimation covers September 2006 to September 2008, with a rolling 126-day sample window.

- **The *precautionary motive* has remained largely significant in the past two years.** Estimates indicate a tendency to build the reserve buffer throughout 2007, at the peak of the capital inflows. At the same time, there is evidence that the desaccumulation of reserves became more comfortable as the existing buffer rose relative to it benchmark level, and since the developments in global capital markets after mid-2008.

Figure 7. Precautionary: NIR Deviations from Benchmark

Source: Author's estimates
1/ OLS estimation, based on White-heteroskedasticity-robust confidence intervals, at 95 percent of confidence.
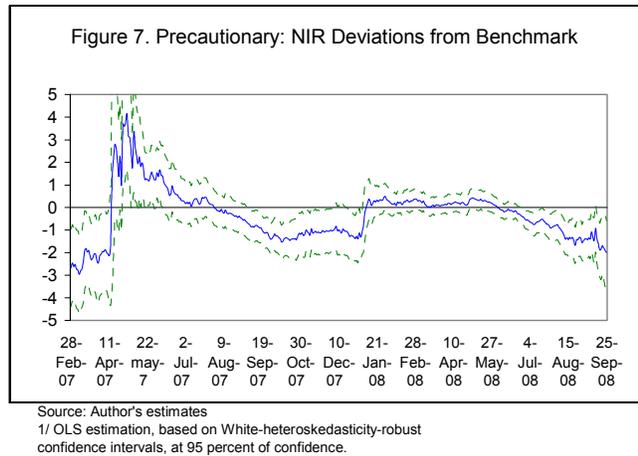
C. Conclusion

15.   **Peru's high dollarization, its need to rebuild reserves, and the presence of large capital inflows have been important factors driving foreign exchange intervention.** Evidence suggests that the authorities have frequently chosen to *smooth the exchange rate movements* to mitigate risks of sharp relative price adjustments that could stress the economy's balance sheets. Moreover, they have also become focused about maintaining a robust reserve buffer against contingencies that might emerge from external shocks— particularly given the uncertain global environment.

16.   **The results also suggest that greater exchange rate flexibility has accompanied the intervention policy.** In particular, estimates indicate that the authorities have balanced the heightened uncertainties in the international financial system by intervening somewhat less heavily to smooth the exchange rate path and moderate exchange rate volatility, thus allowing for a more rapid adjustment of the exchange rate to market conditions.

Technical Appendix

17. **The paper presents a battery of estimations of the central bank's foreign exchange intervention function.** We estimate the model for daily data during the period January 2001 to late September 2008, building over a general specification of the intervention function widely used in the literature (Gersl and Holub, 2006):

$$I_t = \alpha + \beta_1 I_{t-1} + \beta_2 News_t + \gamma_1 \Delta \ln(e_{t-1}) + \gamma_2 \left\{ \ln(e_{t-1}) - \left[\sum_{j=1}^{N} \frac{\ln(e_{t-j})}{N} \right] \right\} + \gamma_3 Vol_{t-1} + \phi DevNIR_{t-1}$$

$$+ \sum_{i=1}^{K} \theta_i X_t^i + \varepsilon_t$$

Where:

- I_t is the amount of central bank intervention as a share of the foreign exchange interbank market turnover;

- $News_t$ represents the surprise on monthly inflation relative to survey data;

- $\Delta \ln(e_{t-1})$ and $\ln(e_{t-1}) - \left[\sum_{j=1}^{N} \frac{\ln(e_{t-j})}{N} \right]$ represent, respectively, the central bank's concern due to the one-day acceleration of the exchange rate and its deviation from a trend (given by its N-day moving average), where $N=90$ days;

- Vol_t reflects the degree of exchange rate volatility. For robustness, this is measured both as a simple N-day moving exchange-rate standard deviation and as a conditional variance derived from a simple GARCH model—both definitions are tested separately;

- $DevNIR_t$ denotes the difference of NIR from its desired precautionary level. For robustness, we test separately for the gap of NIR relative to the daily level of dollarized deposits, and to an "optimal" reserve benchmark given by the sum of public external debt and US dollar-denominated deposits in the banking system (Jeanne and Ranciere, 2006; Batini and Peschiera, 2007), the N-day moving average of NIR, and the daily level of bank US-dollar denominated obligations subject to reserve requirements (TOSE).

Table 1. Variable and Data Description

Variable	Name	Measure	Expected Coefficients	
			OLS	PROBIT
I_t	Persistence	Lagged foreign exchange intervention (US\$ million) as a share of the volume traded in the interbank foreign exchange market (US\$ million) **PROBIT** estimated on a dummy that takes a value of 1 when the absolute value of intervention is different from 0. **Source**: BCRP.	+,—	+
$\Delta \ln(e_{t-1})$	(Lagged) Acceleration	One-day change in spot rate, in percent; an appreciation has a negative sign. **PROBIT** estimated on the absolute value **Source:** BCRP.	—	+
$\ln(e_{t-1}) - \left[\sum_{j=1}^{N} \dfrac{\ln(e_{t-j})}{N} \right]$	(Lagged) Deviation of exchange rate from reference level	Deviation of the log of the exchange rate from its N=90-day moving average, in percent. For an appreciating exchange rate this variable will exhibit a negative sign. **PROBIT** estimated on the absolute value **Source:** author's calculations, with BCRP data on the exchange rate.	—	+
Vol_t	Exchange rate volatility	N=90-day moving standard deviation of the exchange rate. Conditional variance derived from a simple GARCH (1,1) model. **Source:** author's calculations, with BCRP data on the exchange rate.	+	+
$DevNIR_t$	Deviation of NIR from optimal reference level	▪ Difference of the central bank's NIR to the sum of public external debt and dollarized deposits in the preceding quarter, as a share of the total external public debt plus dollarized deposits of the previous quarter. ▪ Difference of the central bank's NIR to their N-day moving average, as a share of the average ▪ Difference of the central bank's NIR relative to the daily total of banking system obligations in US dollars subject to reserve requirements (TOSE), as a share of the TOSE. **PROBIT** estimated on the absolute value **Source:** author's calculations, based on BCRP data on daily net international reserves, daily TOSE and quarterly public external debt and dollarized deposits.	—	+
$News_t$	Inflation News	Surprise in monthly Inflation relative to Bloomberg's Survey expectation **Source**: BCRP and Bloomberg	0	0
Other Controls	Day of the Week (4), Post-Holiday	Dummy variables	+,—	+,—

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III.   CREDIT GROWTH: ANATOMY AND POLICY RESPONSES[12]

A.   Anatomy of the Recent Credit Expansion

18.   **The Peruvian economy has experienced several pronounced credit cycles over the past decades.** The hyperinflationary experience of the late 1980s virtually eliminated credit from the economy, while the financial stress and economic contraction of the late 1990s and early 2000s led to a sharp fall in the ratio of credit to GDP and per capita credit. The legacy of the hyperinflationary experience of the late 1980s continues to influence the financial sector in Peru, as dollarization of bank deposits and credit remains high, although decreasing in recent years (Figure 1). Financial deepening is low compared to the level of other emerging countries, with domestic capital markets yet to develop significantly, as commercial banks remain the main providers of credit.

19.   **In the current expansionary credit cycle, initiated in 2004, domestic currency loans have grown faster than those in foreign currency.** Credit growth has recovered strongly since 2004, although it still remains below previous peaks in the mid 1970s (in per capita terms) and in the late 1990s (in relation to GDP). In particular, the growth of credit in domestic currency has recovered more strongly for consumer loans and medium-sized firms, helping to reduce the still high level of credit dollarization.

20.   **Much of these developments reflect a combination of strengthened confidence in the local currency and financial innovation.**[13] Clients that previously had access only to informal credit markets are increasingly participating in the formal banking sector, including in the export-oriented agricultural sector. At the same time, there have been entrants to the consumer loan business, most notably foreign banks with new technologies and business models, including some linked to large retail stores. Banks have also significantly expanded their credit card business and introduced payroll-linked loans. As a result, bank loan portfolios have changed significantly since 2004, with consumer loans increasing their participation in total loans by about 10 percentage points.

21.   **The latest period of credit expansion has taken place in the context of a strengthened financial sector, including an improvement in the quality of banks' loan portfolios**. The strong economic expansion since the early 2000s, combined with improved prudential regulation and supervision and banks' risk management, have been reflected in a decline in nonperforming loans and higher provisions. The credit expansion has been led by large banks and microfinance institutions, with the most dynamic segments being loans in

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[12] Prepared by L. Breuer, G. Gasha and J.A. Peschiera.

[13] Current statistics are likely to overstate consumer lending and understate credit to medium-sized firms, as some firm owners take personal lines of credit and use credit cards for working and investment capital, which is currently classified as consumer loans. The SBS has established new categories of loans to better differentiate these loans.

Figure 1. Peru: Financial Sector Indicators

Credit cycles have been characterized by pronounced booms and busts.

Banking system credit to the private sector
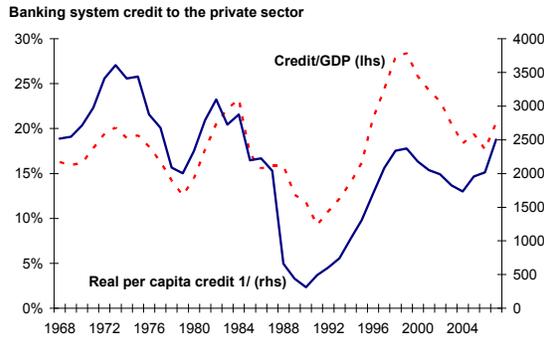
1/ Total credit measured in soles deflated by Lima's CPI.

Financial dollarization is high, but falling despite a recent increase in dollar deposits.

Banking system dollarization ratios
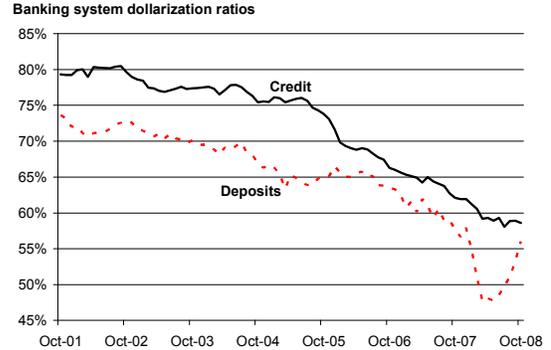
Peru's bank credit to GDP ratio is low compared to other emerging economies.

Banking system credit to the private sector 1/
(% GDP)
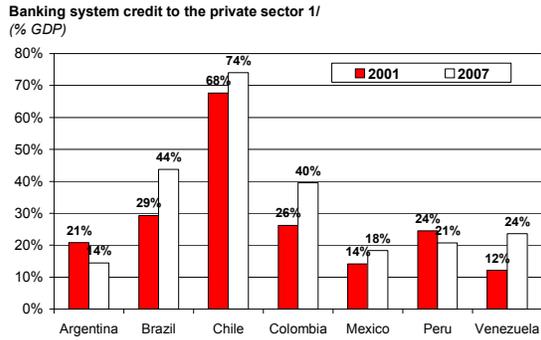
1/ Banking survey, Domestic Credit, Claims on private sector.

In recent years, loans in domestic currency have exceeded those in foreign currency.

Banking system credit to the private sector by currency
(yearly change in real terms)
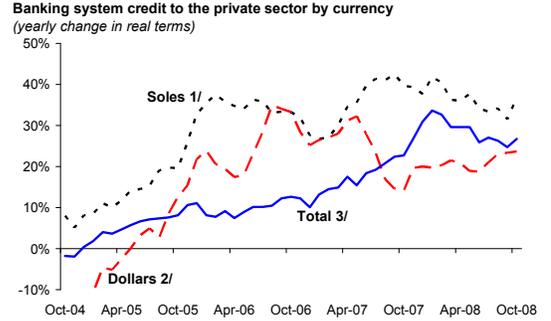
1/ Real credit in soles measured in soles. 2/ Real credit in dollars measured in dollars. 3/ Real credit in soles measured in soles plus real credit in dollars measured in soles using a fixed exchange rate.

Consumption loans have grown faster than other types of loans

Banking system credit by type of loan
(yearly change, last 12m)
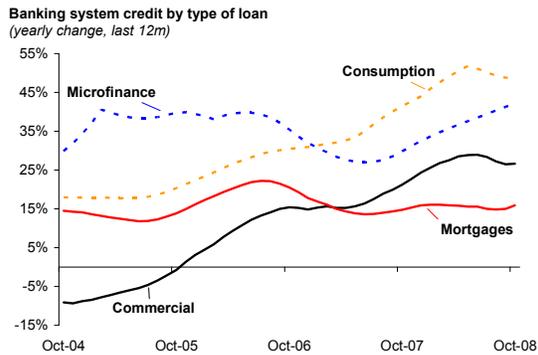
The expansion in the number of bank debtors signals financial deepening.

Banking system credit
(number of debtors, thousands 1/)
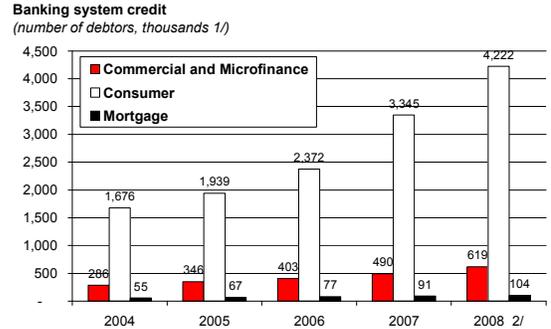
1/ A single debtor may be counted more than once if he has debts with more than one institution. 2/ October 2008.

Sources: SBS, BCRP; and staff estimates.

domestic currency for consumption and microenterprises, as well as foreign currency denominated mortgage loans.

Peru: Financial Indicators of the Lending Institutions

	Banks		Cajas Municipales		Cajas Rurales	
	Dec-03	Oct-08	Dec-03	Oct-08	Dec-03	Oct-08
Solvency						
Overall leverage 1/	7.5	8.4	6.2	5.2	6.0	5.3
Total liabilities / Social Capital and Reserves	10.7	17.6	8.2	6.5	7.5	7.0
Asset Quality						
NPL/Equity (%)	33.4	9.0	19.9	20.8	52.4	23.5
Provisions / NPL (%)	141.1	263.1	148.5	142.3	128.2	136.3
Profitability						
ROE (%)	10.8	30.7	31.9	24.6	8.0	13.7
ROA (%)	1.1	2.6	5.0	4.2	1.0	2.1
Liquidity						
Liquidity ratio in domestc currency (%)	32.9	36.0	23.9	19.9	18.0	23.8
Liquidity ratio in foreign currency (%)	43.9	53.9	37.9	40.6	31.6	62.2
Cash / Demand Deposits in domestic currency	0.27	0.39	na	na	na	na
Cash / Demand deposits in foreign currency	2.3	2.3	na	na	na	na

Source: SBS

1/ Data as of September 2008

B. Is There a Credit Boom?

22.   **The presence of a credit boom in Peru is assessed using the methodology developed by Mendoza and Terrones' (2008).**[14] A Hoddrick-Prescott filter is applied to monthly data of real credit (in logarithms), from January 1992 to October 2008, to determine the trend and standard deviation of the cyclical component of each series.[15] A credit boom is then identified when the cyclical component of credit exceeds a threshold of 1.75 standard deviations, which covers 95 percent of the credit cycle episodes.

23.   **The results of this analysis suggest that while financial system credit has decelerated recently, the growth of bank credit has been accelerating toward a "boom threshold" in recent months (Figure 2)**. The growth of financial system credit—which comprises banking activity and pension funds' financial investments—entered into a boom in 2007, and then decelerated markedly, reflecting the sharp fall in the value of managed assets in response to the sharp fall in stock prices that began in mid 2007. Bank credit approached the threshold in mid-2007, but this process moderated as the central bank increased reserve requirements and its policy interest rate, and the Superintendency of Banks tightened prudential regulations.

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[14] This follows the procedure described in Mendoza and Terrones' (2008).

[15] We only report results starting in January 2000 given data limitations in earlier periods.

Figure 2. Is There a Credit Boom in Peru? Total Credit

The financial system credit's cycle seems to be moderating down pulled by the drop in asset prices.

Financial system credit
(logarithm of real credit vs HP bands)
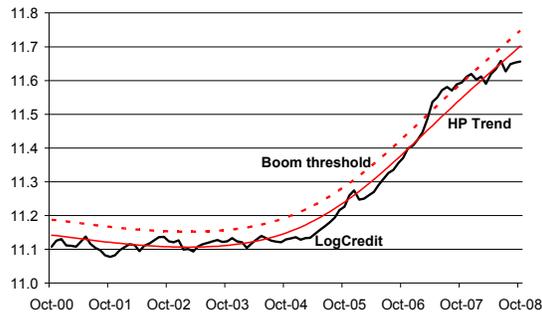
Banking system credit continues to display hefty rates of growth, approaching the boom threshold...

Banking System Credit
(logarithm of real credit vs HP bands)
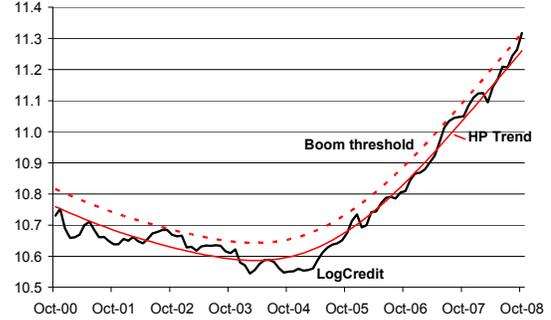
...as large banks continue to expand aggressively but below the boom signal.

Large Banks Credit 1/
(logarithm of real credit vs HP bands)
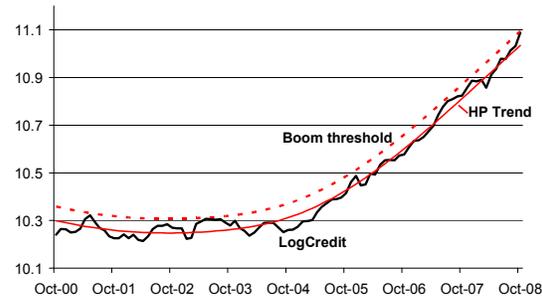
1/ Includes BCP, BBVA, Scotiabank and Interbank.

Mid-sized banks are growing closer to their trend…

Medium Banks Credit 1/
(logarithm of real credit vs HP bands)
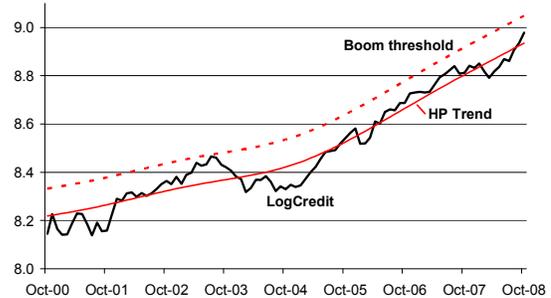
1/ Includes BIF, MiBanco, Financiero and Citibank.

...while small banks' credit growth seems to lag the market.

Small Banks Credit 1/
(logarithm of real credit vs HP bands)
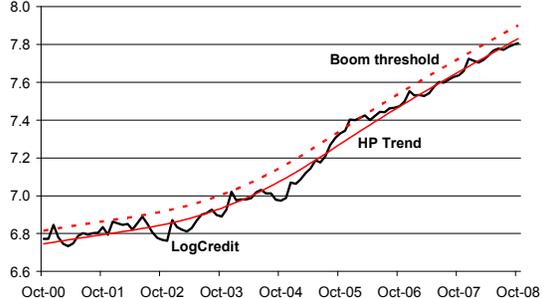
1/ Includes Falabella, Ripley and Comercio.

Cajas Municipales *and* Rurales *appear to have a relatively stable growth path.*

Cajas Municipales and Rurales Credit
(logarithm of real credit vs HP bands)
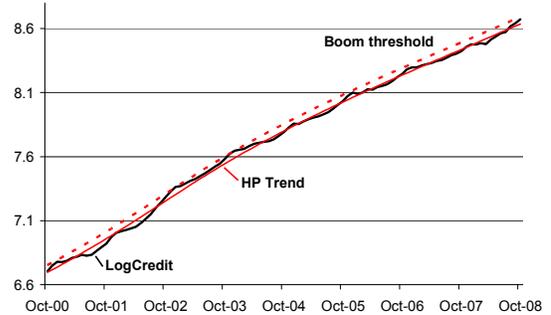
Sources: SBS, BCRP; and staff estimates.

24.   **The rapid expansion of bank credit has been driven by the largest institutions.**
The application of the methodology to large, medium and small banks shows that all these
institutions display robust growth, with the largest banks showing a positive deviation from
their trend, but still below the boom threshold. [16] At the same time, credit by the medium
sized and small banks appears to be growing along their trend. Overall, credit growth by
microfinance institutions (*cajas municipales* and *rurales*) shows no evidence of boom. A
decomposition by currency suggests that both credit in Nuevo Soles and U.S. dollars remain
below the boom threshold; however, credit in Nuevo Soles by microfinance institutions has
accelerated toward the boom threshold (Figures 3 and 4).

C.   The Policy Responses to Address Rapid Credit Growth

8.   **While credit growth remains strong, macroeconomic policies and prudential
regulations can moderate its pace while allowing for financial deepening.**[17] Macro
policies, including monetary, fiscal and exchange rate policies, affect credit by influencing its
price, while prudential policies (regulatory and supervisory) can make lending decisions
more or less expensive by affecting banks capital, liquidity and provisioning requirements, or
by influencing its supply through, for example, loan-to-value ratios.

9.   **A number of measures have been implemented to moderate the still high growth
of credit, while limiting the potentially negative effects of the global financial crisis
(Tables 1 and 2).** Over most of the past year, policies have aimed at moderating the rapid
rates of credit growth. However, in recent months, policies have continued to aim at
moderating rapid credit growth, while at the same time ensuring adequate levels of liquidity
in the financial system to avoid a sharp contraction of credit. The main measures
implemented by the authorities include:

> ➢ **Monetary Policy.** Starting in mid-2007, the central bank tightened monetary policy
> by raising reserve requirement in domestic and foreign currency and policy interest
> rates. Since September 2007 there has been a gradual unwinding of higher reserve
> requirements and increased provision of central bank liquidity to banks.

> ➢ **Exchange Rate Policy.** In recent years, the central bank had allowed for gradually
> increasing foreign exchange flexibility while aiming to protect financial stability
> given the still high level of dollarization. In recent months, however, greater central
> bank intervention has limited exchange rate volatility, while allowing a gradual shift
> of financial assets into U.S. dollars, in line with the experience of other countries.

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[16] We excluded from this analysis several small banks that entered the market in 2007 and 2008.

[17] See Hilbers et al. (2005) for a comprehensive review of policy options.

Figure 3. Credit Cycles in Domestic Currency by Type of Institution

Financial system credit in soles has slowed down significantly after a brief boom phase in 2007.

Financial system credit in soles
(deviation from HP trend)
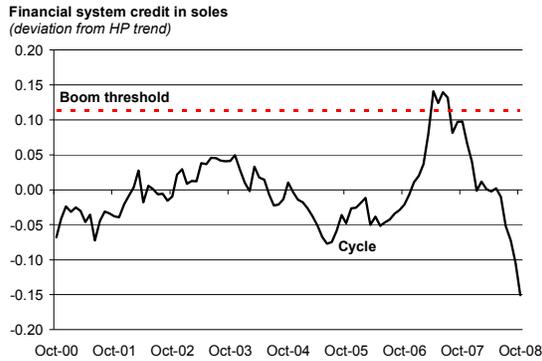
Banks' credit in soles remains strong, but far from the boom threshold…

Banking System Credit in soles
(deviation from HP trend)
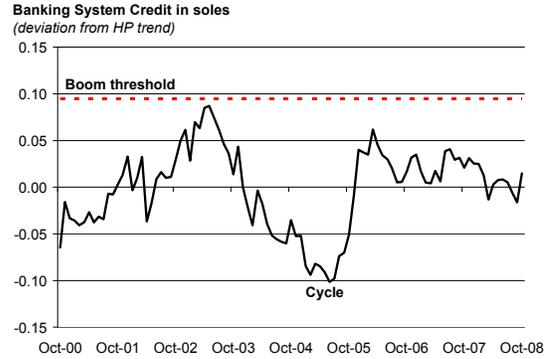
…reflecting mostly developments among large banks.

Large Banks Credit in soles
(deviation from HP trend)
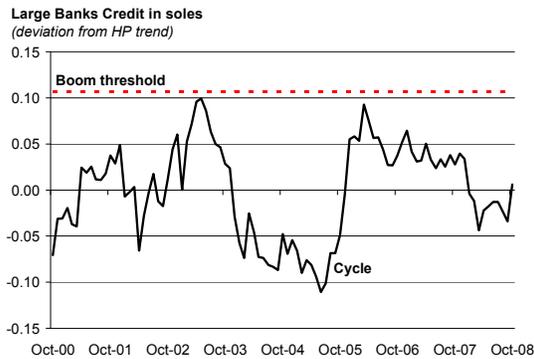
Volatility in medium banks' credit in soles seems to have fallen significantly in recent years…

Medium Banks Credit in soles
(deviation from HP trend)
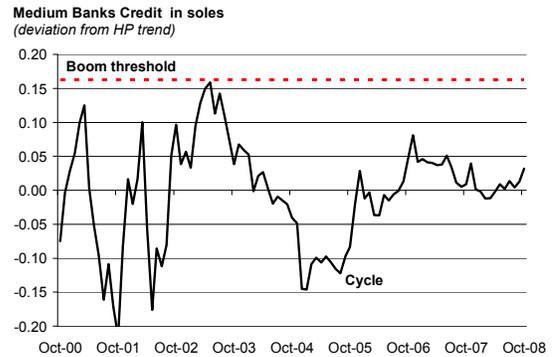
...and small banks' credit in soles has moderated.

Small Banks Credit in soles
(deviation from HP trend)
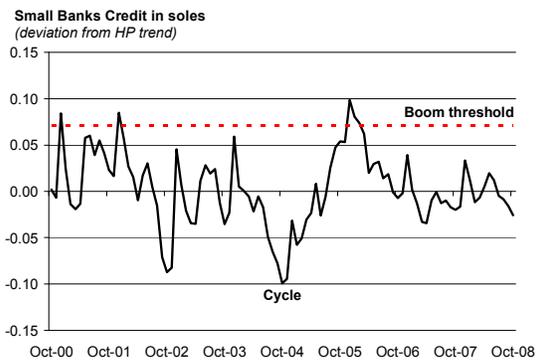
The Cajas' credit in soles is much closer to the boom threshold.

Cajas Municipales and Rurales Credit in soles
(deviation from HP trend)
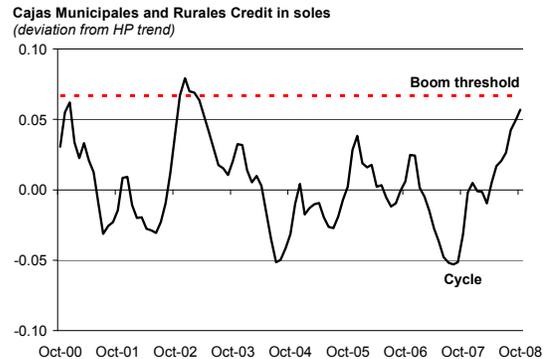
Figure 4. Credit Cycle in Foreign Currency by Type of Institution

Overall financial system credit in US dollars has also moderated in the last months.

Financial system credit in US dollars
(deviation from HP trend)
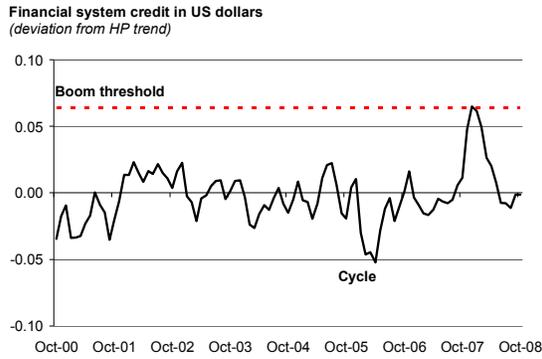
Banks' credit in US dollars has also remained below the boom threshold.

Banking System Credit in US dollars
(deviation from HP trend)
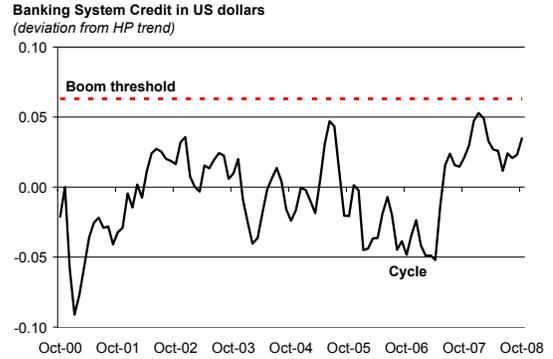
Large banks still display robust rates of growth...

Large Banks Credit in US dollars
(deviation from HP trend)
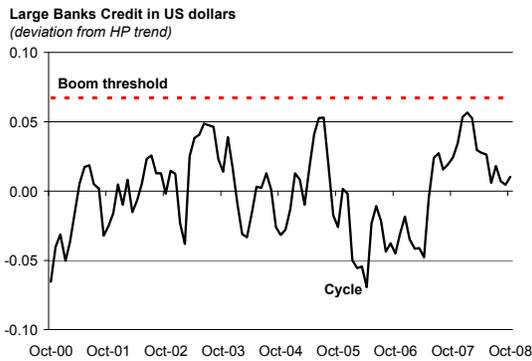
Mid-sized banks' credit in dollars is rebounding after a deceleration in early 2008…

Medium Banks Credit in US dollars
(deviation from HP trend)
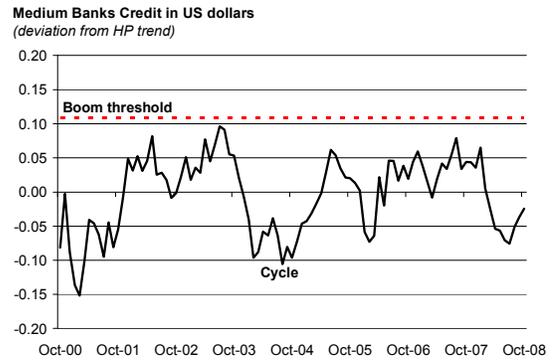
…a trend also observed for small banks.

Small Banks Credit in US dollars
(deviation from HP trend)
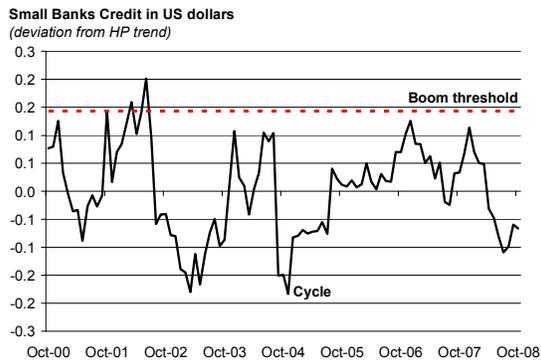
The Cajas seem to be cutting their exposure to dollar denominated credit.

Cajas Municipales and Rurales Credit in US dollars
(deviation from HP trend)
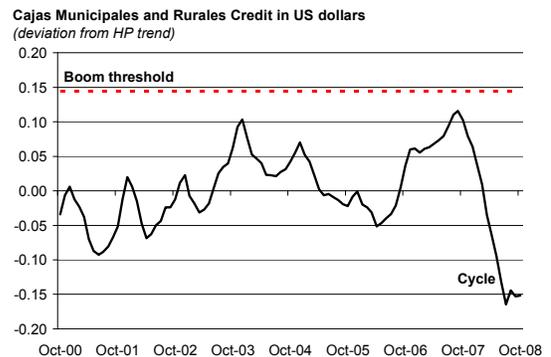
Table 1. Peru Macroeconomic Policy Response

Measure	Impact	Limitations	Peru
I. Fiscal Policy			
• Tightening/easing fiscal policy	• Help adjust expansionary pressures	• May be difficult in the short run • Limited room if fiscal position already tight, or if there is a need to compensate for the deceleration of activity in the private sector	• Prudent fiscal position maintained to minimize fiscal impulse. There may be scope for further tightening to support monetary policy. • However, there may be a need reconsider further tightening if the global financial crises hit harder than expected
II. Monetary Policy			
• Adjusting interest rates	• Reduce/increasing liquidity in the system	• Face constraints depending on the monetary regime, and conditions (e.g., dollarization). • May induce further capital inflows, exacerbating credit growth	• BCRP has increased interest rates in the last months. However, intense competition among banks has limited the pass through to lending rates.
• Reserve requirements (change in level, eligible assets and liability base).	• Induce more/less demand for reserves. • Increase in levels may be useful in one-off sterilization of excess liquidity	• Tax on financial intermediation potentially reversing financial deepening • May require continuous changes to close loopholes • High administrative costs • Relatively more effective for the dollarized part of the aggregates.	• BCRP increased reserve requirements in early 2008 to mitigate the negative effect of speculative short-term inflows. • However, the central bank has reduced reserve requirements recently to accommodate liquidity needs in the financial system in light of the global financial crisis.
• Liquid assets requirements, statutory liquidity ratios	• Could complicate rapid lending	• Negative impact on financial instruments development • High administrative costs (e.g., monitoring) • Higher costs of capital may induce excessive risk taking	• Liquidity requirements are strict. However, there may be scope to tighten requirements for microfinance institutions (e.g., minimum holding of BCRP instruments?)
III. Exchange Rate Policy			
• Increasing flexibility of exchange rate	• May reduce inflows by reducing predictability	• May be associated with greater exchange rate volatility, thus having negative balance sheet and competitiveness effects, in particular in shallow markets	• BCRP has allowed increased flexibility, but has also limited excessive volatility in light of the still high levels of dollarization

Table 2. Peru Prudential and Supervisory Policy Response

Measure	Impact	Limitations	Peru
I. Prudential Measures			
• Higher/differentiated capital requirements or risks weights based on loan type, maturity and currency composition of credit; incorporation of market and other risks in capital requirements	• Help reduce total lending • Enhance resiliency of banks' capital base against adverse shocks	• May not be effective in countries where capital requirements are already high • Regulations may get overly complicated and enforcement cumbersome, undermining the effectiveness	• General Banking Law amended in June 2008 to align capital requirements to Basel II, including for credit and market risks; minimum capital requirement increased from 9.1 percent to 11.5 percent
• Tighter/differentiated eligibility, loan classification and provisioning requirements (e.g., for consumer, mortgage loans)	• Help reduce lending by limiting its size, increasing provisioning resources • Enhance resiliency to shocks • Help avoid risks in market behavior	• May not be effective in countries where they are already high • May affect profitability and risk disintermediation • Regulations may get overly complicated and enforcement cumbersome, undermining the effectiveness • May raise the risk of borrowers switching to alternative credit sources	• SBS has been tightening loan classification and provisioning requirements for different types of loans: forex loans (unhedged borrowers) in 2006, consumer loans in 2007 and 2008. A new framework for assets classification and provisioning requirements aligned with Basel II will also enter into effect in 2010.
• Tightening net open positions	• Limit exposure to direct and indirect forex risks	• Need to be accompanied by regulations against indirect credit risks	• Forex risks are limited by a maximum net short position of 10 percent of capital.
• Procyclical provisioning	• Help build provisions during the business cycle, and smooth its volatility.	• It is inconsistent with some IAS	• SBS recently issued regulations requiring additional generic provisions starting in December 2008 to account for the economic expansion of the last years.
II. Supervisory Measures			
• More intensive on/off-site surveillance	• Provide systemic tool for assessing risks	• May require significant resources	• In the last years SBS has increased the number and scope of inspections.
• Use stress testing	• Provide a systemic market based tool	• Needs continued upgrade, and training of supervisors and banks	• Banks are required to present stress tests every quarter. SBS conducts stress test regularly, and staff is constantly trained
• Increase coordination with supervisors of nonbank entities	• Help monitor risks in the entire system	• None.	• CONASEV and SBS have signed MOU.

➢ **Prudential Regulation and Supervision.** Prudential measures have been strengthened to minimize credit and market risks in the financial system. The Superintendency of Banks has approved the following norms:

- ✓ *Foreign currency induced credit risk*. Banks are required to constitute additional provisions—1 percent on the entire portfolio in dollars—if "unhedged" borrowers are not properly identified, or adequate provisions have not been already established for foreign currency loans.

- ✓ *Consumer loans*. Banks are required to consider in their lending decisions the overall exposure of borrowers with the entire financial system. Banks have to provision at least 20 percent of the "unused" part of any type of consumer lines—including credit card lines and revolving credit.

- ✓ *Capital requirements and minimum capitalization ratios*. In line with Basel II, capital requirements for all types of risks, including credit, market and operational risks have been introduced. In addition, the minimum capitalization ratio have been increased from the current 9.1 percent to 11.5 percent—a schedule of implementation have been established until December 2010.

- ✓ *Asset classification and provisioning requirements*. Information and asset classification requirements have been tightened, and provisioning rates have been increased.

- ✓ *Procyclical provisions*. A novel framework for procyclical provisions has been introduced (see Box 1 for a detailed description).

- ✓ *Enhanced supervision*. SBS has increased the number of on-site inspections, in particular in medium and small banks, and microfinance institutions. For off-site inspections, banks are now required to present, at least once every quarter, detailed stress tests of credit, market, and liquidity risks.

11.   **While the policy response has been appropriate and comprehensive, additional measures could be considered.** The authorities used a broad range of policy tools and were quick to react to a rapidly deteriorating international environment. As the prospects for the international economy remain uncertain, and thus, its impact on Peru, the authorities could consider the following measures:

- Preserving a broadly neutral fiscal stance would allow monetary policy to be the first line of defense against the impact of the global slowdown.

- Continue to prioritize the reduction and simplification of reserve requirements. Some international experiences—such as those in Brazil and Chile—suggest that complex

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Box 1. Procyclical Provisions

The Peruvian authorities issued in November 2008 a regulation requiring financial institutions to constitute procyclical provisions. The main characteristics of the new requirements are as follows:

Procyclical Provisioning Rates. The following provisioning rates will be applied to all performing loans whenever the procyclical rule is activated, in addition to the generic provisioning rules already in place:

Type of Credit	Generic Rate	Procyclical Rate
Corporate	0.70%	0.45%
Microfinance	1.00%	0.50%
Consumption	1.00%	1.00%
Mortgage	0.70%	0.40%

Thresholds activating and deactivating Procyclical Provisions. The procyclical provisioning will be activated whenever one of the following scenarios occurs:
(i) The average of the y-o-y GDP growth of the last 30 months reaches a threshold of 5 percent or more.
(ii) The average of the y-o-y GDP growth of the last 30 months is already above 5 percent, and the average of the y-o-y GDP growth of the last 12 months is higher in 2 percent to this same indicator one year before.
(iii) The average of the y-o-y GDP growth of the last 30 months is already above 5 percent, and the rule has been deactivated by rule (b) below for 18 months.

The rule will be deactivated whenever one of the following occurs:
(i) The average of the y-o-y GDP growth of the last 30 months moves from a level above 5 percent to one below it.
(ii) The average of the y-o-y GDP growth of the last 12 months is 4 percent lower than the value of this average one year before.

Additional General Considerations: (i) The moving averages will be computed using monthly information of the y-o-y GDP growth as calculated by the Central Bank of Peru; (ii) The procyclical provisions cannot be reverted in any case; and (iii) When deactivated the buffer built by the constitution of the procyclical provisions can be reallocated to specific provision for nonperforming loans if needed.

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reserve requirements frameworks introduce distortions and tend to be circumvented if implemented for a long period of time.

- Further strengthen supervision, including of microfinance institutions. The authorities need to closely monitor developments in this segment, in particular given the observed weaknesses in the management of credit and market risks of these institutions.

- Closely supervise consumer and microenterprises portfolios of banks and microfinance institutions, including by requiring the weakest institutions to increase their capital, as needed, to build buffers to face potential shocks derived from the global financial crisis.

References

Hilbers, P.; Otker-Rober, I.; Pazarbasioglu, C.; and Johnsen, G., "Assessing and Managing Rapid Credit Growth and the Role of Supervisory and Prudential Policies," IMF Working Paper, WP/05/151.

Mendoza, E. and Terrones, M., "An anatomy of Credit Booms: Evidence from Macro Aggregates and Micro Data," NBER Working Paper, W14049.

IV. REGIONAL DISPARITIES AND PUBLIC TRANSFERS[18]

25.   **This chapter discusses the impact of the current system of intergovernmental transfers on poverty in Peru, and discusses options for enhancing the system based on international practice.** The current system of intergovernmental transfers in Peru embeds a limited equalization component, as some transfers are allocated taking into consideration the expenditure needs of the local population, while others—particularly those associated to natural resources—accrue only to mineral or hydrocarbon producing regions. This chapter finds that while equalization transfers could help addressing local poverty, those related to natural resources seem to have had limited impact on poverty, possibly owing to their earmarking or budget under-execution. The government has implemented several initiatives in recent years to enhance the effectiveness of equalization instruments. This chapter describes options for further enhancing and enlarging the existing equalization instruments.

A.   Poverty Alleviation, Regional Disparities and the Decentralization Process

26.   **The significant reduction in poverty across Peru has taken place along with persistent and even growing regional disparities**. Poverty declined by about 9.4 percentage points in Peru during 2005–07, but the gains have not been evenly distributed. Urban, Selva and Coast areas benefited more than Rural and Sierra areas from the reduction (Table 1). Most departments experienced a decline in their poverty figures during the period 2005–07. However, regional inequality has not been reduced (or may even have increased), according to statistical measures of inequality. Relative mean deviation and Gini coefficients for poverty rates increased from 0.16 and 0.22, respectively in 2005 to 0.18 and 0.25, respectively in 2007. Poverty continues to be the highest in Huancavelica, and higher in the Sierra and Selva than in the coast.

Peru: Evolution of Poverty Rates Across Departments (in percent)
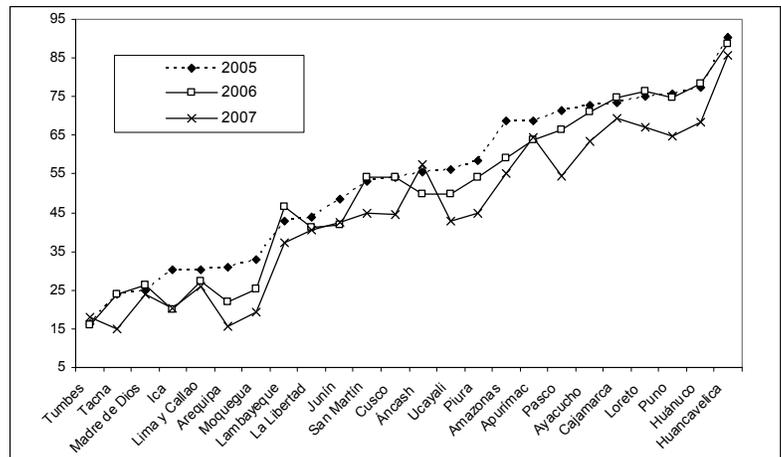
Source: INEI based on ENAHO.

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[18] Prepared by Mercedes García-Escribano.

Table 1. Peru: Evolution of Poverty Rates, 2005–07
(in percent)

	2005	2006	2007	changes		
				2005-06	2006-07	2005-07
Area						
Urban	36.8	31.2	25.7	-5.6	-5.5	-11.1
Rural	70.9	69.3	64.6	-1.6	-4.7	-6.3
Natural region						
Coast	34.2	28.7	22.6	-5.5	-6.1	-11.6
Sierra	65.6	63.4	60.1	-2.2	-3.3	-5.5
Selva	60.3	56.6	48.4	-3.7	-8.2	-11.9
Total	48.7	44.5	39.3	-4.2	-5.2	-9.4

27.   **Continuing regional disparities are a challenge to the success of the poverty alleviation and decentralization process.** Regional disparities reflect very different economic endowments and economic structures, which in turn impact on the departments' revenue bases and capabilities to respond to differential spending needs of the population. Unless regional disparities are taken into consideration in the decentralization design, and in particular, in the intergovernmental system of transfers, subnational governments will not be able to provide similar access to public services across the country and the decentralization process may result in growing socio-economic imbalances. Acknowledging these challenges, the legal framework of the current Peruvian decentralization process, which started in 2003, states that decentralization should tackle poverty, guarantee access to basic public services across all the country, and lead to a more equal country from an economic and social perspective. [19,20]

B.   The Equalization Role of Intergovernmental Transfers in Peru

The current system of transfers

28.   **Subnational governments rely heavily on transfers to finance their expenditures.** The resources of local governments include local revenues and transfers from the central government. Transfers amounted to about 77 percent of local current revenues in 2007, and include shared-revenues (such as for natural resources like canon, which predate the existing decentralization initiative), specific project transfers (for example, for social programs such as *Vaso de Leche*) and equalization transfers, such as FONCOMUN (Table 2). Local governments may also borrow in the domestic or international capital markets subject to the

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[19] There was a renewed interest in decentralized governance with the election of the Toledo administration in 2002 to better address the sizable geographical income disparities. President García in 2006 also decided to move forward the decentralization process and launched a "shock descentralizador" to accelerate the transfer of functions to subnational governments.

[20] Framework Decentralization Law of 2002 (Law No. 27783).

fiscal rules established in the legislation.[21] Regional governments are also highly dependent on central government transfers, as no taxes have been created to fund their expenditures.

Table 2. Peru: Current Revenue Sources of Subnational Governments, 2007

	(million of soles)	(percentage)
Local governments		
local revenues 1/	2,687	23
transfers		
shared-revenues 2/	5,473	46
other transfers 3/	3,646	31
Total	11,806	100
Regional governments		
local revenues 1/	553	5
transfers		
shared-revenues 2/	2,009	17
other transfers 3/	9,029	78
Total	11,591	100

1/ Taxes, nontax revenues and contributions. Nontax revenues
include fees, fines, and revenues from the sale of goods and services
2/ Canon, derechos de vigencia, renta de aduanas.
3/ Foncomún, FONCOR, Vaso de Leche, and other transfers.

29.   **Some transfers have an equalizing role, while others respond to resource endowments.** The Regional Compensation Fund (FONCOR) and the Municipal Compensation Fund (FONCOMUN) are distributed to regional and local governments, respectively, according to population, poverty and unmet basic needs (Annex 1). To better target FONCOR transfers to regional needs, the authorities modified the methodology in 2007 and again in 2008, as explained below, for calculating the coefficients used for distributing transfers under FONCOR. Others, such as those associated to natural resources (canon and royalties), accrue exclusively to producing and surrounding areas.[22]

30.   **While increasing in recent years, natural resource transfers may have led to rising regional disparities.** Natural resource transfers have experienced a significant increase in recent years due both to the proliferation of new mining projects, as well as higher commodity prices. Canon and mining royalty amounted to nearly 2 percent of GDP in 2007, compared to about 0.2 percentage points of GDP in 2001, exceeding the increase experienced by equalization transfers during the same period.[23]

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[21] Fiscal Decentralization Law of 2004 (Decree Law 955).

[22] However, within the provinces and regional governments, natural resource transfers tend to be distributed taking into consideration some of the needs of the local population.

[23] Equalization transfers increased by 0.3 percentage points of GDP during 2001–07.

Evolution of Equalizing and Natural-Resource Transfers,
2001–07 (million soles)
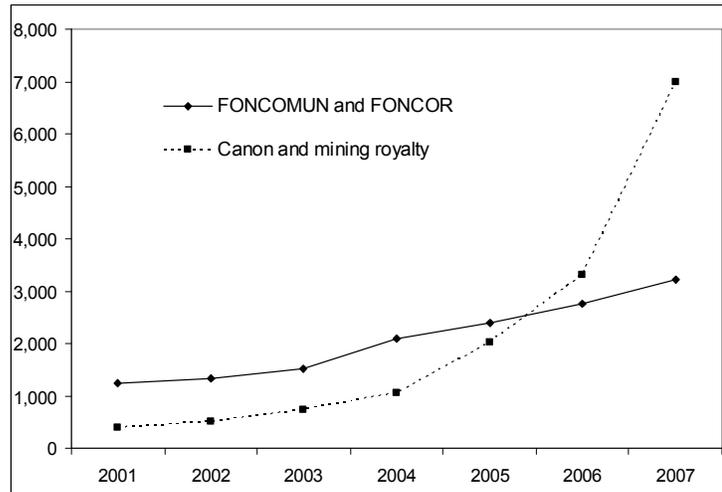
By Department: Equalizing and Natural-Resource Transfers,
2001–07 (million soles)
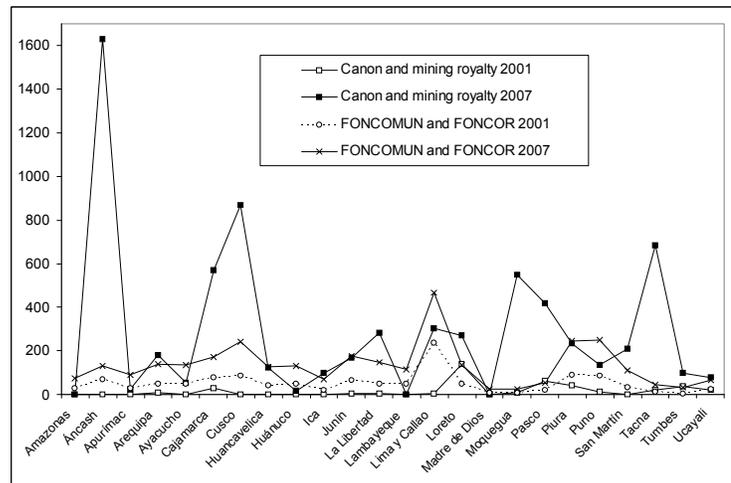
Impact of transfers on poverty

31.   **Equalization transfers seem to have reduced poverty in recent years.** A
regression of the change in poverty rates between 2005–07 on a range of per capita transfers
received by each department during 2005–06 suggests that equalization transfers had helped
reduce poverty.[24,25] Results show that FONCOMUN transfers helped lowering extreme

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[24] A negative coefficient would indicate that departments receiving more of this kind of transfer experienced
bigger declines in poverty rates.

[25] We also include as explanatory variable the GDP growth of the department over the period 2005–06 to
control for differences in growth rates across departments. The average growth in Peru is captured in the
constant term. The analysis is also replicated for extreme poverty as dependent variable.

poverty, while the rest of the transfers, including canon, did not lead to a significant decline in poverty (Table 1 in Annex 2).[26] The negative coefficient on the constant indicates that the improvement in macroeconomic performance—particularly economic growth—across Peru helped lowering poverty.

32.   **The empirical analysis also confirms that poor regions have been less effective in using equalization transfers.** The initial poverty rate and interaction terms between the transfer variables and initial poverty rates are added in the regression as explanatory variables. A positive coefficient on the interaction variables would indicate that departments with higher poverty rates were less effective in the use of that type of transfer. Results in Table 2b (Annex 2) suggest that areas with higher rates of extreme poverty were less effective in using FONCOR, FONCOMUN and other specific transfers.[27] This result could be explained by the fact that poor subnational governments are more likely to face public financial management limitations.

33.   **Several factors could have driven the lack of impact of canon transfers on poverty rates.** Earmarking of natural resource transfers to capital spending was extensive during the period under evaluation.[28] Earmarking could have resulted in an under-execution of canon due to the limited capacity of subnational governments to undertake the steps required for the formulation and approval of investment projects aiming to guarantee that investment projects meet some standards. The decentralization of the National System of Public Investment (SNIP), as well as the establishment of technical assistance regional offices (see below) will likely lead to an increase in capital spending at the subnational level.

Government's response

34.   **The government has taken important measures in recent years to better target transfers**. These measures include the modifications to the FONCOR coefficients, the opening of Technical Assistance offices for public investment in the regions, and the creation

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[26] The results are robust to excluding the three subnational governments with the highest nonresponse rates in the ENAHO 2005 (i.e, Lima and Callao, Apurímac and Piura) from the regression sample (Table 3). When excluding these three observations, the coefficient on FONCOMUN continues to be negative although it is not statistically significant for explaining the decline in extreme poverty (Table 3b). Moreover, when poverty change is the dependent variable, the coefficients on the variables FONCOMUN, and FONCOMUN and FONCOR have the correct negative sign (Table 3a).

[27] The interaction terms between extreme poverty and transfers continue to be statistically significant and correctly signed when excluding Lima and Callao, Apurímac and Piura from the sample (Table 4b). Further, in contrast to using the full sample, the coefficients on FONCOMUN and FONCOR become negative in Table 4a and the impact of other transfers becomes statistically significant in explaining the decline in poverty.

[28] Earmarking of canon has been eased. In particular, the 2009 budget allows using up to 20 percent of canon transfers for infrastructure maintenance.

Peru: Execution Rates of Investment Financed with Canon and *Renta de aduanas* by Regional Governments, 2007
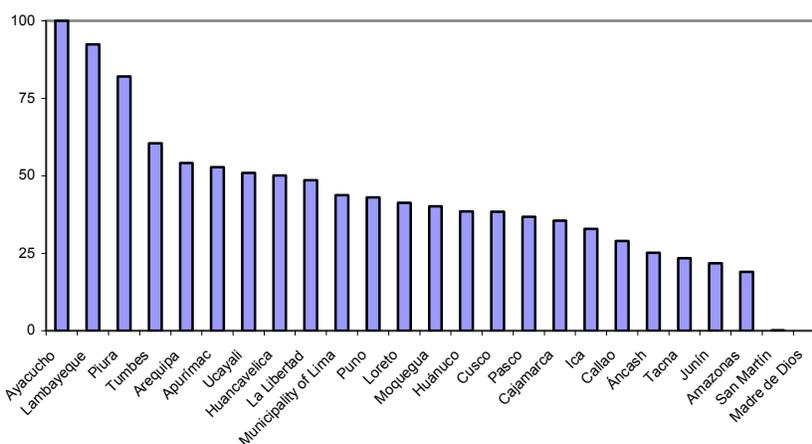
Source. Boletín de Transparencia Fiscal.

of the Regional and Local Investment Fund (*Fondo de Promoción a la Inversión Pública Regional y Local*, FONIPREL). In particular:

- ***The allocation of FONCOR changed in 2007 and again in 2008—with effect in 2008 and 2009, respectively—to make it more equalizing***. There was a concern that FONCOR did not closely match unmet basic needs, for example, in the cases of Huancavelica, Huánuco, Madre de Dios, Amazonas, San Martin, Ayacucho and Apurímac.[29] The new formulas take into consideration the gap between regional needs (which are a function of population, poverty, geographical location, and a performance indicator related to the execution of investment projects) and shared-transfers that the region receives (including canon and royalties).

- ***With the decentralization of the SNIP, twenty-four technical assistance regional offices have been established***. Regional offices were opened to provide support to subnational governments in the formulation and approval of investment projects with the aim of preserving the quality of public investment.

- ***FONIPREL has successfully allocated its resources according to subnational government needs.*** FONIPREL was created in October 2007 and started its operations in 2008 to help address infrastructure disparities across Peru. Subnational governments bid for FONIPREL resources to cofinance social and investment projects, with the amount of cofinancing in the range 50–90 percent depending on

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[29] *Informe Anual sobre el proceso de descentralización* (2008).

population needs and FONCOR transfers.[30] The 2008 budget allocated S./
650 millions to the fund and the 2009 budget raised the resources of FONIPREL by
S./ 1,567 million.

Coefficients for FONCOR Distribution, 2007–09
(Departments sorted by poverty in 2007)
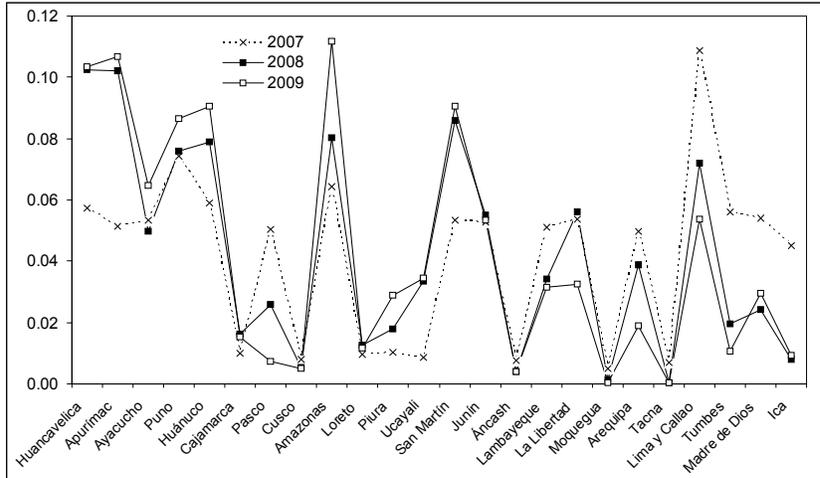
FONIPREL in 2007 (soles per capita) 1/
(Departments sorted by poverty in 2007)
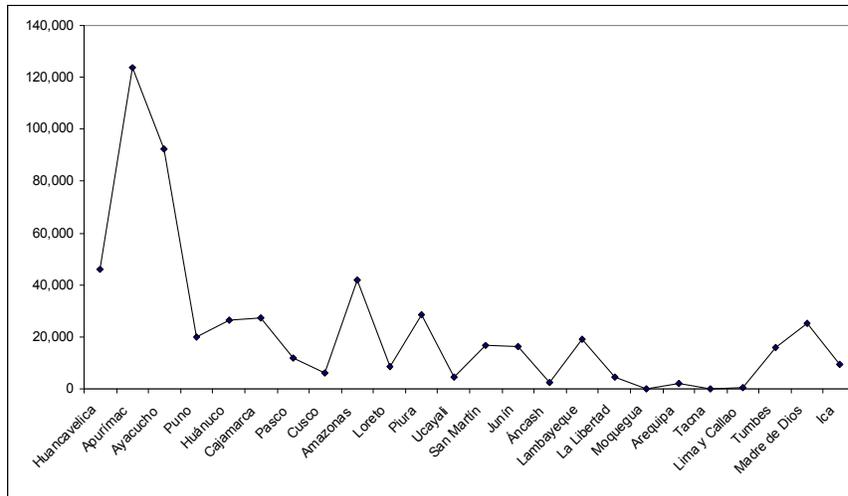
1/The total amount of FONIPREL resources assigned during 2007 to specific
subnational government projects was S./ 377 million soles.

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[30] Cofinancing increases with higher unmet population needs—proxied by malnutrition, female illiteracy and
lack of access to water, sewage, and electrification—and lower FONCOR transfers.

C.   Some Further Reforms for Consideration[31]

35.   **There exists scope for further enhancing and enlarging the current equalization instruments.** An equalization system should ensure that subnational governments can provide similar level of public services at a comparable level of tax-effort. Therefore, an equalization scheme should aim at filling the gap between expenditure needs, revenue capacities, and other central government transfers (such as special purpose transfers).[32]

36.   **An increasing number of countries are putting in place a fiscal equalization scheme with allocation coefficients based on an integrated approach.** In contrast to the current system in Peru, an integrated approach focuses on expenditure needs and revenue capacities in determining fiscal equalization transfers. Examples of countries with an integrated equalization transfer are Australia, Denmark, Germany, Japan, Korea, the United Kingdom, China, and Ethiopia. An integrated approach presents considerable advantages since it allocates transfers in a manner that promotes equity and efficiency. Schemes determined only by revenue-capacities would be efficient, but may not be equitable since they would favor subnational governments with lower costs for providing public services. On the other hand, ignoring revenue capacities would penalize those subnational governments that have made greater efforts at enhancing their capacity to tax locally.

37.   **Establishing an integrated equalization scheme is complex.** There may be different views concerning the role of the public sector in the provision of services; the specification of a "standard" across subnational governments; and differences in perception concerning the interests of subnational governments and the central government. Nationwide average per-capita expenditures and tax rates are usually used to proxy the standard levels of expenditures and revenues.[33] But even averages may pose difficulties. Canada uses a five-province

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[31] This section follows E. Ahmad and R. Thomas (1997).

[32] $FG_i = E_i - R_i - TR_i$, where FG stands for the fiscal gap for a subnational government, i; E for subnational government's expenditure needs; R stands for revenue capacities; and TR for other central government transfers. The relative size of the fiscal gap for a subnational government determines its share of the pool of resources for redistribution under the equalization scheme. Revenue capacity would capture the effort of a subnational government to raise revenues from its own-tax revenues and fees.

[33] Assuming that the revenue base of a subnational government i is proportional to its GDP, the revenue capacity could be calculated as

$$R_i = GDP_i \sum_i OR_i \Big/ \sum_i GDP_i$$

where OR stands for own-revenues. The expenditure needs for i, E, could be calculated as

$$E_i = \sum_j I_i^j G^j$$

where I^j is the index of relative need for the expenditure category j and G^j is total expenditure in j accross subnational governments. Expenditure categories could include education and health. The index of relative need

(continued)

standard, excluding the wealthier provinces with a concentration of natural resources. The reason is that using an average standard across all the provinces would lead to a level of equalization transfers that could pose macroeconomic difficulties for the central government. In a poor country, the average level of expenditures may be too low in relation to acceptable norms for local expenditures.[34] In this case, the central government could use supplementary special-purpose transfers to provide for the perceived needs subject to the central government's own revenues and borrowing constraints.

38.   **In addition to the allocation coefficients, the success of a transfer system depends on the pool of resources to be distributed.** The total pool of resources could be formula driven as in Canada, Germany, or Mexico, or arbitrarily determined by the central government. The use of formulas provides clarity for determining the exact amount of transfers. Volatility of revenues should also be avoided, thus, it is an argument against assigning natural resource revenues to subnational governments.

39.   **A full reform of the intergovernmental transfer system, including the natural resource transfers, may be difficult to implement without widespread political consensus.** Political difficulties led some countries to follow a gradual approach to reform their equalization systems. Mexico, for example, approved a reform to the intergovernmental transfer system in 2007 that included a hold harmless provision. Such a provision converted the amount of the transfer in the year preceding the reform into a lump-sum fixed in nominal terms, and applied the new allocation coefficients to the increases in the pot of resources to be distributed. In other words, in each year following the reform, each Mexican state would receive a fixed payment equal in nominal terms to the total transfer from federal government in the year preceding the reform; plus a transfer of additional funds based on the new distribution formula.

40.   **Public financial management considerations are also key to address regional disparities.** Limited capacity to effectively use public resources could result, as explained above, in transfers not having a major impact on the social and economic development of the recipient region. Thus, reforms to the intergovernmental transfer system cannot be disentangled from efforts to enhancing the public financial management capacity of subnational governments.

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for each of the expenditure categories could be calculated using social indicators, such as infant mortality rate, share of population in schooling age, and share of population over 65 (Ahmad, E. et al. 2007).

[34] When limited information on expenditures is available, the share of expenditure needs, *E,* could be derived by assigning equal weights to a simple population share and the inverse per capita income share.

D. Conclusion

Although there is scope to enhance the system of intergovernmental transfers in Peru, political and capacity constraints may limit reform options. To address this, Peru could follow the gradual approach with a hold harmless provision followed by other countries such as Mexico to ensure that the reform is politically viable as no subnational government would lose from the reform. Also, the public financial management constraints of subnational governments have to be taken into consideration to guarantee the effective use of transferred resources. Key steps include improving the execution capacity of subnational governments, which could be achieved by strengthening the capacity of the technical assistance offices at the local level to assist local government or by further involving the private sector. The generation of timely and comparable information of subnational government finances, which would enable local jurisdictions to be judged against one another, is also a key step to engender accountability in the use of transfers.

Figure 1. Peru: Allocation by Department of Intergovernmental Transfers, 2007 (soles per capita)

Equalizing transfers (FONCOMUN and FONCOR)

a. Sorted by poverty rates
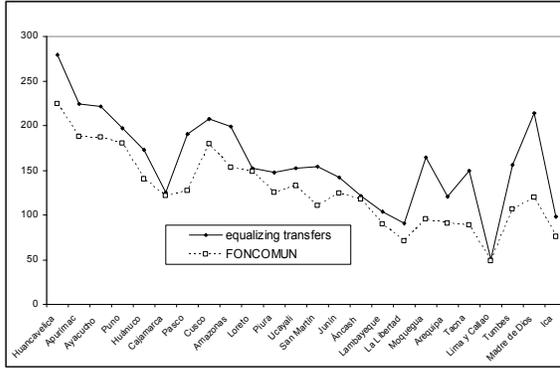
b. Sorted by income per capita
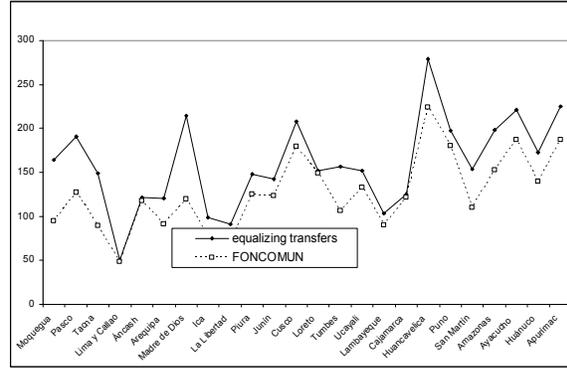
Natural resource transfers (canon and mining royalties)

a. Sorted by poverty rates
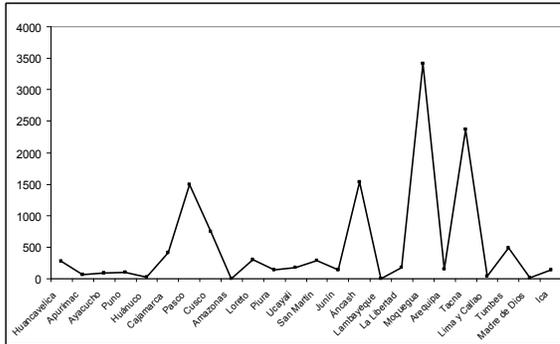
b. Sorted by income per capita
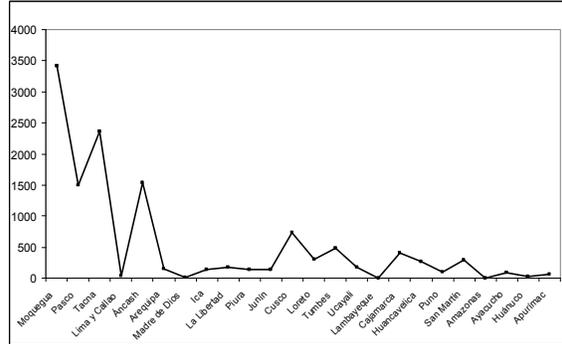
Note. Data source INEI. Poverty rates for 2007; income per capita constructed with the income in 2006 and population in 2007.

Annex 1. Peru: Distribution of Equalization and Shared-Transfers

	Origin	Use	Distribution
Equalization transfers			
Regional Compensation Fund (FONCOR)	Privatization, concession receipts and ordinary resources of the treasury.	Earmarked to capital expenditures.	The formula was changed in 2008 to make the allocation more equalizing. Now, it takes into consideration population, poverty rate, unmet basic needs, geographical location, and performance indicator related to the execution of investment projects.
Municipal Compensation Fund (FONCOMUN)	Collections from the tax for the promotion of municipalities (2 percentage points VAT surcharge).	Financing either capital or current expenditures.	Takes into consideration poverty rate, population, infant mortality and gaps in meeting basic needs.
Natural resource shared-transfers			
Mining royalty	100 percent of the mining royalty	Financing or cofinancing of productive investment that promotes sustainable economic development. 5 percent to research at universities.	Producing areas
Canon	50 percent of the income tax collections of extractive industries. Depending on the sector, it also includes royalties, a percentage of service contract fee, or a percentage of the value of production.	Investment projects with regional or local impact. 20 percent to universities and research. Up to 20 percent to infrastructure maintenance and to the selection of investment project.	Producing areas. The allocation has been changed several times; the most recent change was approved in 2005.
Camisea development fund (FOCAM)	25 percent of the gas royalties from the fields 88 and 56 net of canon and other deductions.	Financing economic and social investment, infrastructure maintenance, and environmental protection. 10 percent to universities.	Areas crossed by the gas pipes. Distribution takes into account the pipe length, population, and unmet basic needs.
Other shared-transfers			
Rentas de aduanas	2 percent of the custom duty		Areas where the custom are located.

Note. The table does not reflect the Intergovernmental fund for the decentralization (FIDE), the Investment Fund for the development of Ancash (FIDA), and the recently created Regional Investment Fund.

Annex 2. Regression Results

Table A1. Regression of Change in Poverty Rate on Central Government Transfers—Full Sample

(Dependent variable: change in poverty rates between 2005-07 in department i)

a. Poverty rates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(canon)	0.63					0.6	0.63	0.51
	(1.31)					(1.10)	(1.19)	(0.94)
log(foncomun+foncor)		1.11				0.79		
		(0.38)				(0.23)		
log(foncomun)			0.82				0.67	
			(0.27)				(0.21)	
log(foncor)				0.8				
				(0.72)				
log(other transfers)					-0.29	-0.1	0.01	-0.65
					(0.28)	(0.07)	(0.01)	(0.45)
growth PIB per capita	-0.06	-0.03	-0.03	-0.04	-0.01	-0.06	-0.06	-0.04
	(0.68)	(0.36)	(0.31)	(0.44)	(0.13)	(0.52)	(0.56)	(0.39)
Constant	-9.91	-13.5	-11.76	-10.31	-5.76	-13.53	-13.46	-9.63
	(3.94)***	(0.85)	(0.73)	(2.40)**	(0.89)	(0.84)	(0.80)	(1.29)
Observations	24	24	24	24	24	24	24	24
R-squared	0.08	0.01	0.01	0.03	0.01	0.08	0.08	0.11

b. Extreme poverty

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(canon)	0.17					0.54	0.36	0.28
	(0.33)					(1.02)	(0.71)	(0.48)
log(foncomun+foncor)		-3.18				-6.07		
		(1.11)				(1.81)*		
log(foncomun)			-5.2				-6.02	
			(1.80)*				(1.99)*	
log(foncor)				0.41				
				(0.36)				
log(other transfers)					0.58	1.93	1.22	0.83
					(0.54)	(1.53)	(1.12)	(0.54)
growth PIB per capita	0.07	0.09	0.08	0.07	0.05	0	0.01	0.03
	(0.76)	(1.10)	(1.04)	(0.80)	(0.54)	(0.04)	(0.13)	(0.26)
Constant	-6.33	11.66	21.6	-7.11	-9.07	14.01	17.38	-11
	(2.39)**	(0.74)	(1.41)	(1.62)	(1.39)	(0.90)	(1.09)	(1.39)
Observations	24	24	24	24	24	24	24	24
R-squared	0.04	0.09	0.17	0.04	0.05	0.2	0.22	0.06

Other transfers comprise derechos de vigencia, aduanas, recursos ordinarios, and other central government transfers.
All transfers to departments are expressed in per capita terms and deflated (2003=100).

Note. Other transfers comprise *derechos de vigencia*, *aduanas*, *recursos ordinarios*, and other central government transfers.
All transfers to departments are expressed in per capita terms and deflated (2003=100).

Table A2. Impact of Poverty Rates on the Effective Use of Transfers—Full Sample

(Dependent variable: change in poverty rates between 2005-07 in department i)

a. Poverty rates

	(1)	(2)	(3)	(4)	(5)	(6)
log(canon)	1.00					-0.08
	(0.65)					(0.04)
log(canon)*poverty 2005	-0.01					0.01
	(0.30)					(0.34)
log(foncomun+foncor)		-2.25				3.80
		(0.29)				(0.35)
log(foncomun+foncor)*poverty 2005		0.12				0.01
		(0.76)				(0.05)
log(foncomun)			1.04			
			(0.11)			
log(foncomun)* poverty 2005			0.12			
			(0.66)			
log(foncor)				0.38		
				(0.12)		
log(foncor)*poverty 2005				0.01		
				(0.14)		
log(other transfers)					-3.00	
					(1.13)	
log(other transfers)*poverty 2005					0.06	
					(1.11)	
growth PIB per capita	-0.04	-0.01	0.02	-0.03	-0.01	-0.06
	(0.41)	(0.13)	(0.23)	(0.29)	(0.14)	(0.42)
poverty 2005	0.00	-0.78	-0.77	-0.09	-0.43	-0.76
	(0.03)	(0.84)	(0.80)	(0.32)	(1.24)	(0.72)
Constant	-10.10	9.45	-6.28	-6.19	15.26	7.04
	(1.16)	(0.22)	(0.13)	(0.48)	(0.84)	(0.15)
Observations	24	24	24	24	24	24
R-squared	0.11	0.11	0.16	0.07	0.11	0.25

b. Extreme poverty

	(1)	(2)	(3)	(4)	(5)	(6)
log(canon)	-0.12					-0.09
	(0.17)					(0.14)
log(canon)*extreme poverty 2005	0.02					0.04
	(0.55)					(1.07)
log(foncomun+foncor)		-1.63				2.23
		(0.55)				(0.53)
log(foncomun+foncor)*extreme poverty 2005		0.29				0.02
		(2.20)**				(0.08)
log(foncomun)			-0.15			
			(0.04)			
log(foncomun)*extreme poverty 2005			0.31			
			(2.03)*			
log(foncor)				-0.95		
				(0.81)		
log(foncor)*extreme poverty 2005				0.10		
				(1.96)*		
log(other transfers)					-1.72	
					(1.35)	
log(other transfers)*extreme poverty 2005					0.12	
					(2.30)**	
growth PIB per capita	0.09	0.11	0.14	0.08	0.06	-0.01
	(1.12)	(1.70)	(2.03)*	(1.19)	(0.81)	(0.05)
extreme poverty 2005	-0.25	-1.86	-1.93	-0.58	-0.98	-1.48
	(1.50)	(2.43)**	(2.26)**	(2.68)**	(2.74)**	(1.73)
Constant	-1.38	7.83	-0.15	2.15	10.18	1.76
	(0.37)	(0.49)	(0.01)	(0.45)	(1.20)	(0.10)
Observations	24	24	24	24	24	24
R-squared	0.38	0.50	0.48	0.48	0.51	0.60

Note. See table 2.

Table A3. Regression of Change in Poverty Rate on Central Government Transfers—Reduced Sample 1/

(Dependent variable: change in poverty rates between 2005-07 in department *i*)

a. Poverty rates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(canon)	0.65					0.62	0.55	0.51
	(1.33)					(1.15)	(1.03)	(0.94)
log(foncomun+foncor)		-2.69				-2.62		
		(0.70)				(0.62)		
log(foncomun)			-2.48				-2.45	
			(0.66)				(0.65)	
log(foncor)				-0.16				
				(0.11)				
log(other transfers)					-1.1	-0.41	-0.74	-1.03
					(0.98)	(0.32)	(0.62)	(0.68)
growth PIB per capita	-0.07	-0.02	-0.03	-0.03	0.01	-0.04	-0.03	-0.02
	(0.78)	(0.29)	(0.41)	(0.37)	(0.12)	(0.37)	(0.29)	(0.23)
Constant	-9.52	7.89	6.16	-6.35	-0.43	7.44	8.26	-5.21
	(3.65)***	(0.37)	(0.31)	(1.08)	(0.06)	(0.35)	(0.38)	(0.62)
Observations	21	21	21	21	21	21	21	21
R-squared	0.1	0.03	0.03	0.01	0.06	0.14	0.14	0.12

b. Extreme poverty

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(canon)	0.23					0.55	0.37	0.31
	(0.41)					(0.94)	(0.66)	(0.51)
log(foncomun+foncor)		-3.5				-6.1		
		(0.84)				(1.35)		
log(foncomun)			-6.32				-6.23	
			(1.63)				(1.56)	
log(foncor)				1.61				
				(1.02)				
log(other transfers)					0.91	1.91	1.13	0.61
					(0.74)	(1.37)	(0.90)	(0.36)
growth PIB per capita	0.07	0.09	0.08	0.06	0.04	0	0.02	0.03
	(0.74)	(1.03)	(0.95)	(0.69)	(0.42)	(0.03)	(0.15)	(0.23)
Constant	-6.73	13.49	27.58	-11.85	-11.23	14.32	18.93	-15.01
	(2.28)**	(0.59)	(1.34)	(1.91)*	(1.48)	(0.62)	(0.82)	(1.62)
Observations	21	21	21	21	21	21	21	21
R-squared	0.05	0.08	0.17	0.09	0.07	0.19	0.21	0.11

Note. See Table 1.

1/ The sample excludes Lima and Callao, Apurímac and Piura because of their high nonresponse rates in ENAHO 2005.

Table A4. Impact of Poverty Rates on the Effective Use of Transfers—Reduced Sample

(Dependent variable: change in poverty rates between 2005-07 in department i)

a. Poverty rates

	(1)	(2)	(3)	(4)	(5)	(6)
log(canon)	0.24					0.24
	(0.14)					(0.12)
log(canon)*poverty 2005	0.01					0.01
	(0.21)					(0.18)
log(foncomun+foncor)		-10.87				-6.76
		(1.07)				(0.53)
log(foncomun+foncor)*poverty 2005		0.21				0.14
		(1.11)				(0.55)
log(foncomun)			-4.90			
			(0.38)			
log(foncomun)* poverty 2005			0.15			
			(0.70)			
log(foncor)				-6.69		
				(1.38)		
log(foncor)*poverty 2005				0.11		
				(1.31)		
log(other transfers)					-4.73	
					(1.76)*	
log(other transfers)*poverty 2005					0.07	
					(1.40)	
growth PIB per capita	-0.05	0.00	0.01	-0.02	0.02	-0.03
	(0.54)	(0.03)	(0.07)	(0.26)	(0.18)	(0.18)
poverty 2005	-0.09	-1.23	-0.89	-0.54	-0.56	-1.35
	(0.56)	(1.18)	(0.79)	(1.51)	(1.61)	(1.18)
Constant	-4.44	57.09	23.43	25.08	28.33	62.32
	(0.48)	(1.01)	(0.36)	(1.20)	(1.53)	(1.04)
Observations	21	21	21	21	21	21
R-squared	0.16	0.16	0.14	0.19	0.26	0.35

b. Extreme poverty

	(1)	(2)	(3)	(4)	(5)	(6)
log(canon)	-0.14					-0.02
	(0.18)					(0.03)
log(canon)*extreme poverty 2005	0.02					0.04
	(0.58)					(0.86)
log(foncomun+foncor)		-3.87				0.62
		(0.82)				(0.10)
log(foncomun+foncor)*extreme poverty 2005		0.33				0.05
		(2.07)*				(0.19)
log(foncomun)			-0.55			
			(0.10)			
log(foncomun)*extreme poverty 2005			0.31			
			(1.77)*			
log(foncor)				-3.77		
				(1.54)		
log(foncor)*extreme poverty 2005				0.18		
				(2.24)**		
log(other transfers)					-2.45	
					(1.55)	
log(other transfers)*extreme poverty 2005					0.15	
					(2.34)**	
growth PIB per capita	0.08	0.12	0.14	0.09	0.06	0.00
	(1.01)	(1.64)	(1.85)*	(1.23)	(0.73)	(0.03)
extreme poverty 2005	-0.28	-2.12	-1.96	-0.94	-1.17	-1.73
	(1.42)	(2.27)**	(1.98)*	(2.67)**	(2.70)**	(1.61)
Constant	-1.10	20.39	2.06	14.53	15.70	12.64
	(0.25)	(0.79)	(0.07)	(1.38)	(1.45)	(0.44)
Observations	21	21	21	21	21	21
R-squared	0.38	0.50	0.48	0.53	0.53	0.62

Note. See Table 3.

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V. BALANCE SHEET VULNERABILITIES IN A DOLLARIZED ECONOMY[35]

41.   **Peru's balance sheets have shown significant resilience to global financial turmoil over the last decade.** In 2000–01, Peru weathered well the global shocks that adversely affected other Latin American countries, with the economy remaining stable and even achieving robust growth, even though it ranked as one of the most dollarized in the region.[36] As shown by Rosenberg et al (2005), much of this resilience hinged from the central bank's reserve buffer, which helped contain external rollover risks and avoid the negative expectations that could cause self-fulfilling bank runs.

Real GDP in selected Latin American countries (1995=100)

Source: International Financial Statistics and staff's calculations.
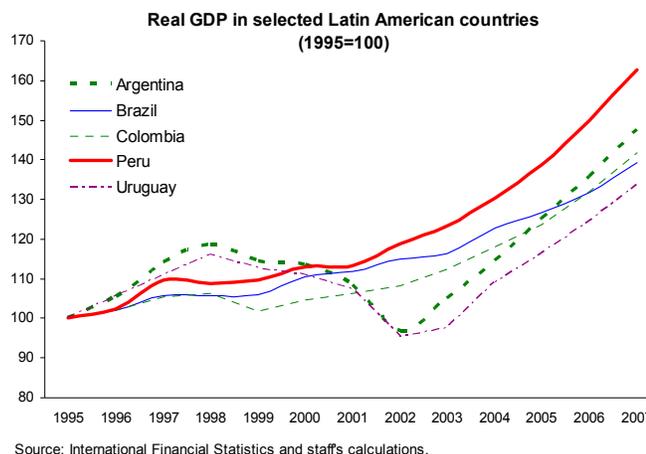
42.   **In more recent years, Peru's international investment position has continued to strengthen significantly.** Between end-2005 and end-September in 2008, the economy's net international liabilities fell from 33 percent of GDP (US$26.3 billion) to 23 percent of GDP (US$29 billion). The improvement was, however, not uniform across all sectors—with the combined public sector turning from a net liability position of about 10¼ percent of GDP into a net asset position of 12½ percent of GDP, while private positions recorded some increase in their net liabilities.

43.   **This note examines the evolution of the balance sheets in different sectors.** It shows that while some important vulnerabilities are still present, most sectors have continued to post improvements in their balance sheets, including through the strengthening of their net foreign currency and net-short term positions. Nonetheless, it is also apparent that the very significant international reserve buffer built by the central bank in recent years continues to play a crucial role in ensuring the overall resilience of the Peruvian economy.

Peru: International Investment Position (In US$ million)

Source: Peruvian authorities and staff's calculations.

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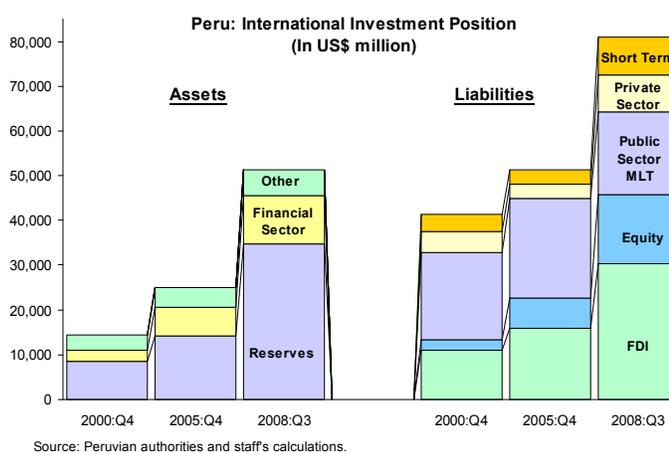
[35] Prepared by Maria Gonzalez.

[36] In 2001, Peru ranked as the third most dollarized economies in Latin America, behind Bolivia and Uruguay.

A. Public Sector

44.   **The public sector balance sheet gained much resilience in recent years.** The authorities' strategy has involved active public debt reductions of over US$3.5 billion, including through two pre-payments of Brady bonds in 2007–08. As a result, total public debt fell from 37¾ percent of GDP in 2005 to 23¾ percent of GDP in September 2008; the average maturity of public debt has risen to around 11½ years, and the share of

foreign-currency denominated debt declined from 75 percent in 2005 to around 60 percent. Moreover, the combined public sector has become a net external creditor since mid-2007, overcoming its long-standing currency mismatch. At the same time, traditional external and financial vulnerability indicators suggest that Peru's rising reserve buffer has strengthened the economy's shield against temporary external and financial sector shocks.
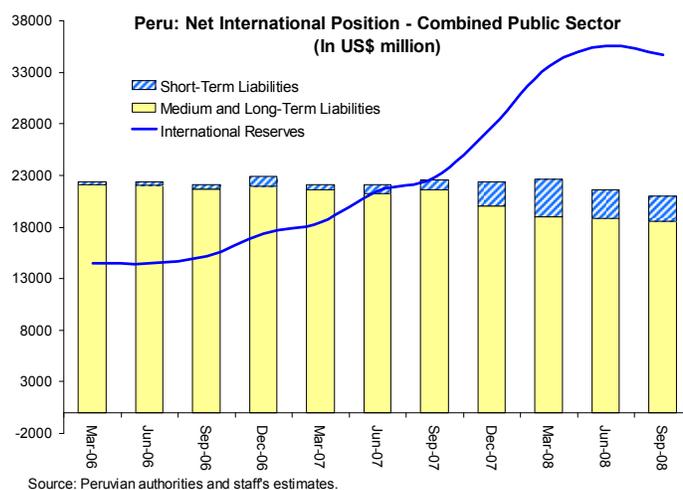
45.   **Nonetheless, some vulnerabilities remain—mainly related to a potential emergence of contingent liabilities in the financial sector.** In particular, risks stem mostly from the liabilities that, for example, could be generated in the case of a large systemic shock

in the banking system, which held some US$16.7 billion in foreign currency deposits as of mid-November 2008.[37] Under this hypothetical case, the central government would be responsible to cover the US dollar-denominated deposits legally protected under the Deposit Insurance Fund (DIF)—amounting to about US$9.2 billion—especially as the DIF's resources currently stand only at about 2 percent of total insured deposits.

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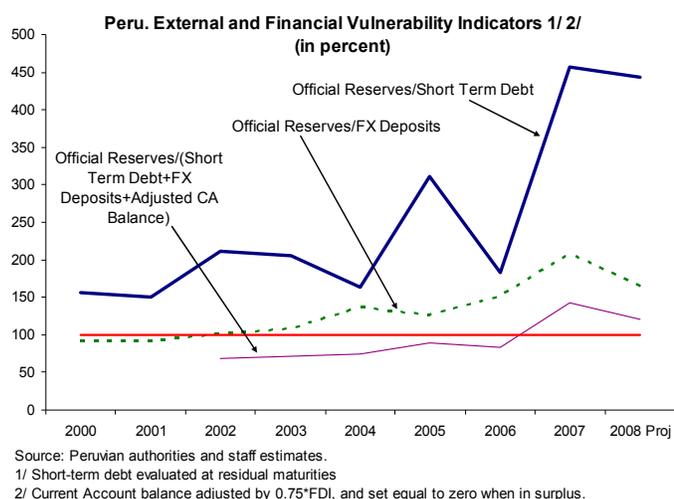
[37] This amount corresponds to about half of the banking system's broad money.

B. Banking Sector

46.   **Peru's high dollarization has long posed important risks to the banking system, but these are well-covered by central bank's reserves.** The natural mismatch between the banks' short-term FX liabilities and their FX short-term assets has risen moderately in nominal terms—by US$3.7 billion— over the last three years. However, bank's reserve deposits at the central bank, along with the central bank's

Peru: Liquid Dollar Assets Versus Bank's Short-Term Dollar Liabilities
(In millions of US dollars)
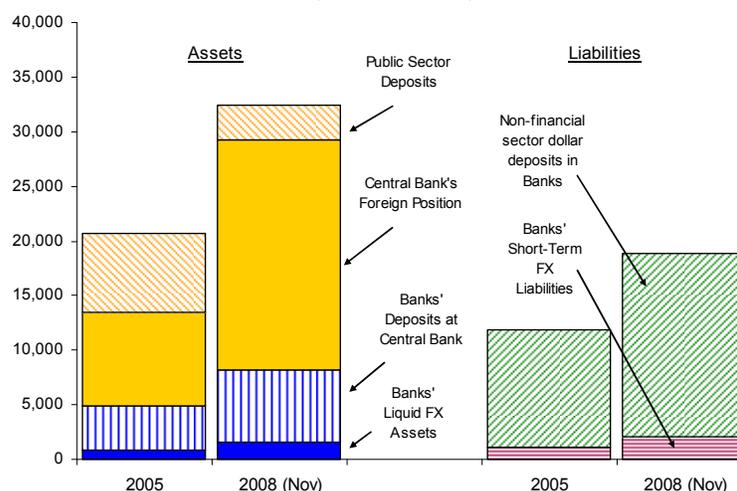
Source: Peruvian Authorities and staff's estimates.

own net foreign position provide more than sufficient coverage to these liabilities. Moreover, the banking sector has become significantly less dollarized in recent years, particularly in the case of sectors without natural hedges (such as consumption and services). The share of foreign-currency denominated loans over total loans has remained have remained stable only for over 4 percent of the total portfolio—allocated to highly-hedged sectors (such as mining).

Table 1. Peru: Bank Loans and Dollarization Coefficient per Economic Sector
In millions of Nuevos Soles, unless otherwise indicated

Type of Loan	2001		2005		2008 1/	
	Total	Dollarization coefficient (in percent)	Total	Dollarization coefficient (in percent)	Total	Dollarization coefficient (in percent)
Commercial and to Microenterprises	**30.3**	**82**	**30.9**	**74**	**62.6**	**66**
Primary Sector	2.2	93	2.5	86	3.3	78
Mining	2.4	95	2.1	95	4.2	97
Manufacturing	8.5	86	10.0	81	18.0	70
Construction	1.1	80	0.8	85	2.0	76
Commerce	6.7	71	6.0	62	13.7	58
Services	8.0	81	8.9	68	19.5	61
Other	1.4	75	0.6	55	1.8	49
Mortgages	**3.6**	**95**	**6.5**	**96**	**10.3**	**71**
Consumption	**3.2**	**51**	**6.3**	**32**	**17.2**	**19**

Source: Peruvian authorities and staff estimates.
1/ As of end-November.

47.   **The banking sector's balance sheet has also gained resilience against currency-related shocks**. While total credit dollarization remains high at 56 percent, the ongoing de-dollarization process has contributed to a reduction of the foreign-exchange induced credit risk, particularly that stemming from unhedged borrowers. Relative to 2005, banks have also become more resilient to a depreciation of the local currency. However, with banks having reduced their net foreign exchange asset position in US dollars since 2007, a depreciation event would have a slightly higher negative impact on the system's capitalization than it would have had a year ago.

Table 2. Peru: Banking sector stress test to currency-related risks 1/ 2/

	Market Exchange Rate Risk			Foreign-Exchange Induced Credit Risk		
	2005 FSAP Update 1/	June 2007	August 2008	2005 FSAP Update 1/	June 2007	August 2008
Initial Banking System CAR	13.5	12.1	12.4	13.5	12.1	12.4
New Banking System CAR	11.8	12.0	12.2	9.9	10.2	11.2
Change in CAR (in percent)	-12.6	-0.8	-1.5	-26.7	-15.7	-9.9
Memorandum Items						
Share of Loans in Foreign Currency (percent)	75.7	65.0	58.9			
Net Foreign Exchange Open Position / Capital	24.2	28.6	10.8			
Stress Scenario 2/	20 percent depreciation					

Source: Staff Estimates
1/ Data as of December 2004.
2/ Both the 2005 FSAP Update and the SBS methodology determined the 20 percent depreciation by the 99 percent confidence
   level of the normalized distribution of the monthly changes in the exchange rate in the period January 1997 to December 2004,
   and January 1991 to February 2006 respectively.

C. Corporate Sector

48.   **In the nonfinancial corporate sector, the average firm has significantly improved its net foreign position in recent years, particularly at the short-end.** Available data on a sample of over 120 nonfinancial sector corporates[38] suggest that the average firm's negative net foreign liability position narrowed by about US$19 billion between 2000

Peru: Corporate Sector - Net Foreign Position of the Average Firm
(In US$ million)

FX Short-Term Assets - FX Short-Term Liabilities
FX Long-Term Assets - FX Long-Term Liabilities
Total FX assets - Total FX liabilities

Source: Economatica and staff calculations (see Kamil, 2008).

and 2006, while the average short term position turned into net assets in the same period.
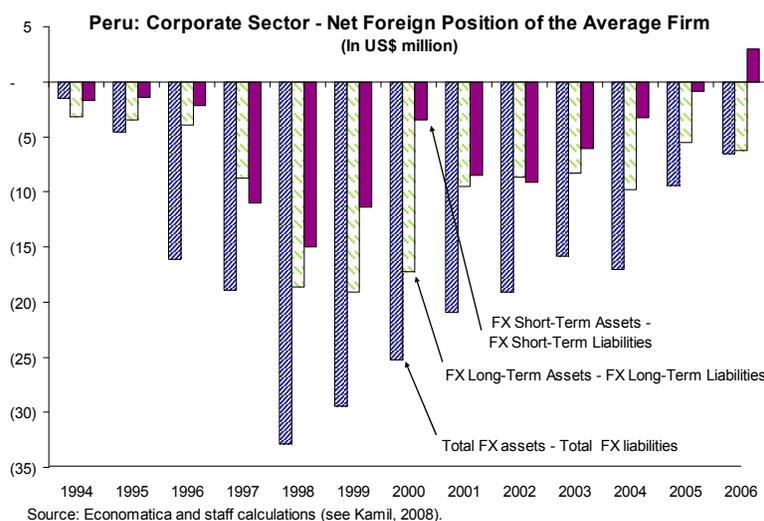
[38] This analysis is based on data provided by Kamil, Herman, 2008, "A New Database on the Currency and Maturity Composition of Firms' Balance Sheets in Latin America: 1992-2007," (unpublished: Washington: International Monetary Fund).

This accompanied a more general tendency to de-leverage, in both local and foreign currencies.

49.   **Improvements were reflected both for corporates in the exporting and nonexporting sectors.** Owing to its natural hedges, the average exporting firm presented both smaller net foreign currency liabilities and short-term currency liabilities than the nonexporting sector. Nonetheless, the average firm in both types of sector significantly reduced its net liability position between 2000 and 2006—and both types of firms had turned their net short-term liability positions into net short-term asset position by 2005–06, thus significantly reducing their overall exposure to exchange-rate related shocks.
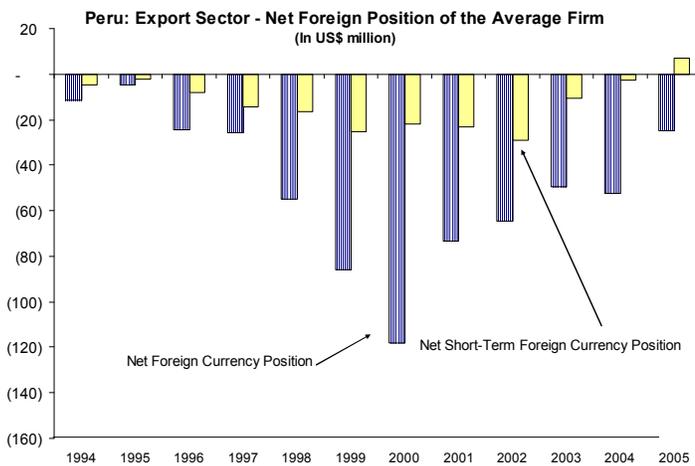
Source: Economatica and staff calculations (see Kamil, 2008).
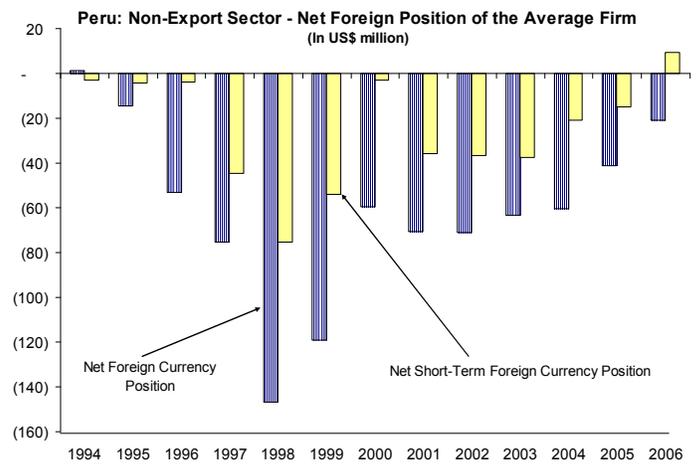
Source: Economatica and staff calculations (see Kamil, 2008).

D.   Household Sector

50.   **At the household level, foreign-currency exposures emerge from the presence of consumer and mortgage credit in US dollars.** Using consumer and mortgage loan data to approximate the pattern of household indebtedness suggests that foreign-currency exposures have declined consistently since the beginning of the decade. In particular, nonhedged borrowers have moved toward debt in local currency, although the total level of indebtedness per household has risen.

Table 3. Peru: Consumer and Mortgage Loans
(In thousands of Soles, unless otherwise indicated)

Loans	Number of Debtors	Total Loans		Loan per Capita	
		Local Currency	Foreign Currency	Local Currency	Foreign Currency
Mortgage					
2001	33,284	185,913	3,390,328	5.6	101.9
2005	66,555	274,734	6,196,406	4.1	93.1
2008 1/	104,791	2,973,401	7,323,359	28.4	69.9
Consumer					
2001	1,154,317	1,560,580	1,638,868	1.4	1.4
2005	1,938,821	4,269,238	2,008,523	2.2	1.0
2008 1/	4,277,283	13,940,206	3,273,927	3.3	0.8

Source: Peruvian authorities and staff calculations
1/ As of end-November.

51.   **A recent assessment by the Peruvian authorities suggest that the vulnerability of households' balance sheets to exchange-rate shocks is contained.** Stress tests on mortgage-market debtors based on end-2006 data suggest that a depreciation 20 percent of the *Nuevo Sol* could raise the amortization burden on low-income household by 5–6 percentage points—to about 35 percent, a still manageable level.

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