



**BANCO CENTRAL DE RESERVA DEL PERÚ**

## **Fiscal policy considerations in the design of monetary policy in Peru**

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# Fiscal policy considerations in the design of monetary policy in Peru\*

Renzo Rossini, Zenon Quispe and Jorge Loyola †

## Abstract

*We evaluate the financial and real linkages between fiscal and monetary policy in Peru, and show that during the recent export commodity price boom, public finances supported the implementation of monetary policy. In particular, the reduction of the net public debt has translated into a greater capability by the Central Bank to sterilize its FOREX interventions. Also, an active policy to enhance the development of the local capital markets, using the issuance of public bonds denominated in local currency as a benchmark, has created the incentive to de-dollarize banking credit. On the other hand, difficulty in fine-tuning public investment around the business cycle in recent years has led to periods of a fiscal stance that does not counteract the real business cycle. This raises the question of the possibility of adopting a structural rule for the public sector balance, based on structural fundamentals.*

**Keywords:** Central Bank Monetary Policy, Fiscal Policy, Macroeconomic Stabilization.

**JEL classification:** E52, E58, E63.

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# 1 Introduction

According to the Peruvian Constitution, the Central Reserve Bank of Peru (BCRP) is an independent public institution that has the objective of preserving monetary stability through the regulation of money and bank credit. On this basis, monetary policy in Peru follows a modified form of inflation targeting, in which the policy interest rate is used to counteract deviations of inflation with respect to the target of 2% (price stability), but also includes a set of additional, unconventional, instruments aimed at avoiding an overreaction of bank lending.

Fiscal policy aims to create equal opportunities among citizens, ensure sustained growth and defend the public credit (ensuring fiscal solvency to avoid a financial crowding out). The last two objectives are related to the stabilization policies and the public sector asset and liability management, and therefore overlap with monetary policy. For this reason, the design and implementation of monetary policy take into account the impact on aggregate demand of a positive or negative fiscal impulse, and in this way the BCRP seeks not to overreact to or accommodate a fiscal shock. Additionally, in the short run, the monetary operations take into account the Treasury cash flow and other financial operations.

The surge of commodity prices in the last ten years has led to a significant increase in earnings in Peru, including tax revenue. This environment has been favorable to the surge in foreign direct investment and other forms of capital inflows, which have become a source of risk of macroeconomic overheating. To avoid a pro-cyclical stance, the public sector has achieved an annual financial surplus several times since 2006, and has reduced the size of the public debt, increased the size of the Fiscal Stabilization Fund, and augmented the amount of other public sector deposits at the BCRP. Given this favorable financial position, the fiscal authorities have adopted an expansionary stance to protect the economy from the adverse shock created by the international financial crisis in 2009.

In this article, we assess the policy coordination between the BCRP and the

Ministry of Finance at two levels: financial and macroeconomic stability. In the first part we show that Peru's fiscal policy has been able to save part of the non-structural revenues, complementing the monetary policy. In the second part, we evaluate Peru's fiscal stance in terms of its supporting role for macroeconomic stability.

## 2 Financial Policy Coordination

During the last ten years, average annual GDP growth in Peru has been 6.3%, reflecting, among other things, the increase of export commodity prices (see Figure 1 and 2), which on average grew 14% per year. The impact on revenues from the export boom has been significant, with tax revenues growing from 14% of GDP in 2001 to 18% in 2011. This has become more noticeable since 2005, given the increase in mineral prices in international markets. The average price of Peruvian exports was 126% higher in 2005-2011 than in 2001-2004. As a result, revenues from mining exports as a percentage of total fiscal revenues rose from 5.9% in 2005 to nearly 10% in 2011.

Figure 1: Mining-Related Fiscal Revenues and Export Price Index

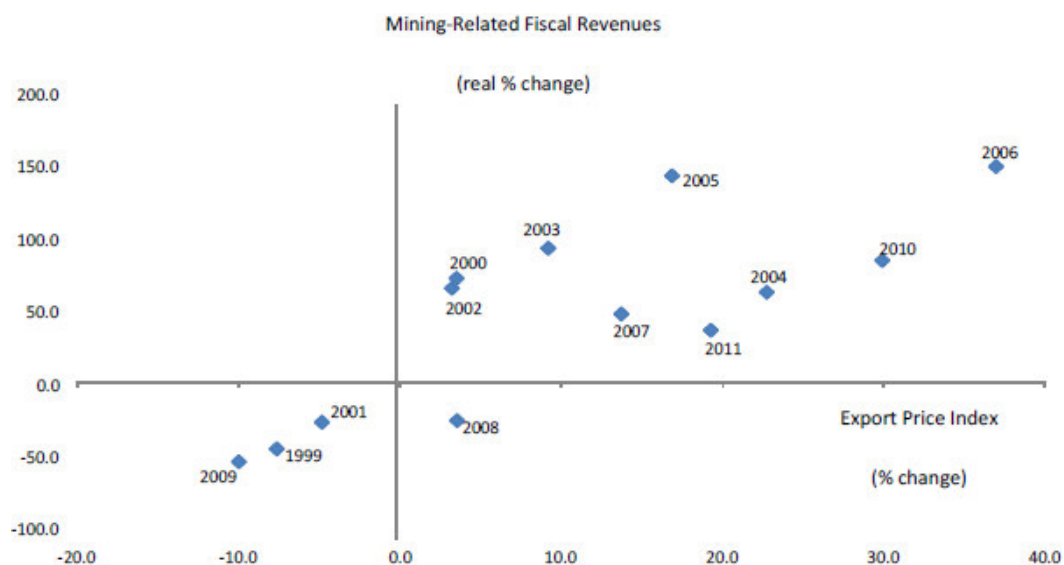
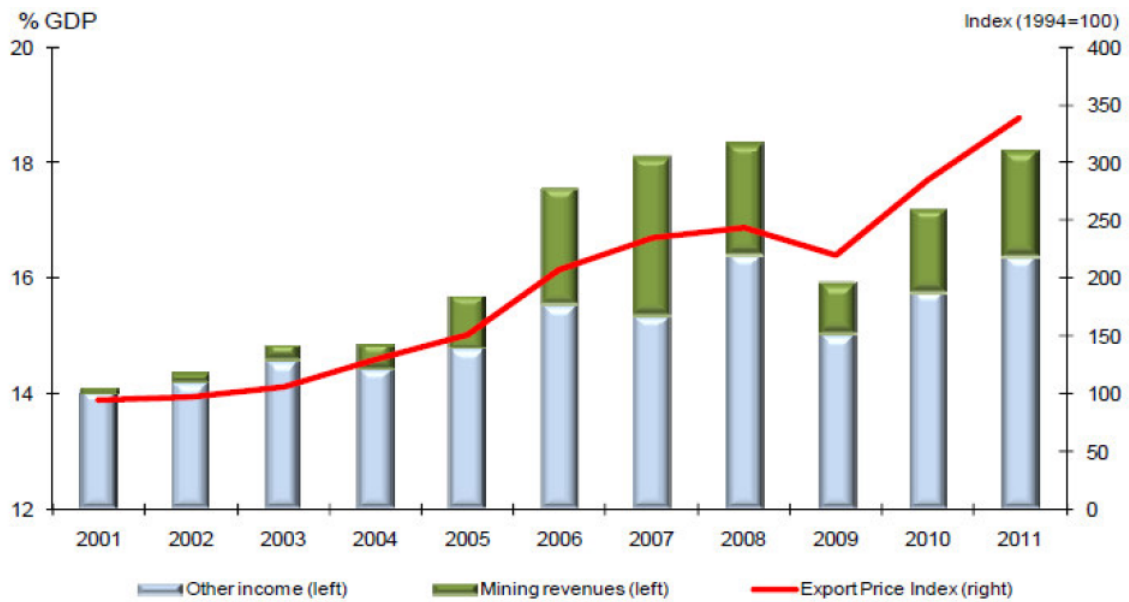


Figure 2: Central Government Revenues and Export Price Index: 2001-2011



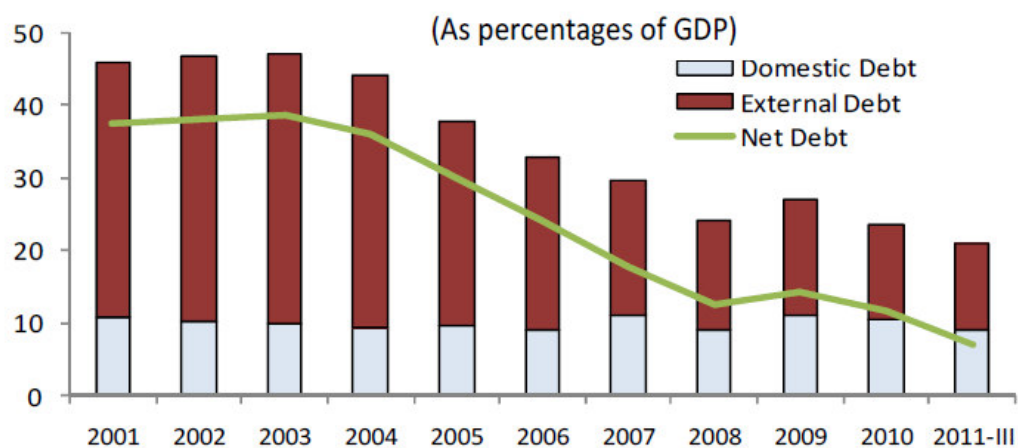
**Note:** Right axis= Export price index. Left axis= Government revenues as percentage of GDP.

The size of the expenditures in the public sector budget has not increased at the same pace as the tax revenue, resulting in a considerable reduction in the net debt of the public sector, from 38% of GDP in 2001 to 8% in 2011. This figure includes public sector liquid assets of about 14% of GDP. Regarding the latter, two major issues in the management of public debt in the last decade have to do with the increase in the share of domestic debt relative to the total public debt from 23% in 2001 to 43% in 2011; and a significant extension of the average debt maturity from 7 years in 2002 to 13 years in 2011 (see Table 1 and Figure 3). These fiscal results show that part of the non-structural revenues were saved.

Table 1: Public Debt Ratios

	2002	2006	2011
<b>Debt (As percentage of GDP)</b>			
Gross debt	46.7	33.0	21.8
Net debt	38.0	24.1	8.3
Domestic debt	10.2	9.2	10.3
External debt	36.5	23.8	11.5
<b>Average maturity (In years)</b>			
Domestic debt	4.6	10.3	15.1
External debt	7.8	8.0	11.7
Total	7.4	8.4	13.0
<b>Debt/Fiscal revenues</b> (Number of time)	2.71	1.62	0.98
<b>Debt service/Fiscal revenues</b> (In percentages)	30.5	21.0	18.7
<b>Non-residents holding of Treasury bonds BTP)/Total BTP</b> (In percentages)	-	26.8	45.4

Figure 3: Public Debt



The main components on the asset side of the public sector balance sheet are

BCRP obligations (9.2% of GDP), including Fiscal Stabilization Fund deposits (3.3% of GDP), other Treasury deposits (3.5% of GDP), and sub-national government deposits (2.1% of GDP). The Fiscal Stabilization Fund was created by the Fiscal Responsibility Act as a buffer during recessions (Table 2).

Table 2: Public Sector Balance Sheet  
(As percentages of GDP, September 2011 figures)

Assets		Liabilities	
<b>Central Reserve Bank</b>	<b>9.2</b>	Bonds (foreign currency)*	5.5
- Treasury	3.5		
- Sub-national governments and others	2.1	Other external debt	6.3
- Consolidated Pension Reserve Fund	0.3		
- Fiscal Stabilization Fund	3.3	Bonds (domestic currency)**	6.5
<b>Banco de la Nación</b>	<b>2.1</b>	Lima Municipal Bonds	0.0
- Treasury	0.2		
- Sub-national governments and others	1.9	Pension Recognition Bonds	1.6
<b>Commercial Bank</b>	<b>2.3</b>	Credits from Banco de la Nación	0.3
<b>Rest of Financial System</b>	<b>0.2</b>	Short-term	0.7
<b>Total</b>	<b>13.8</b>	<b>Total</b>	<b>20.9</b>
<b>Net Debt (Liabilities - Assets)</b>	<b>7.1</b>		

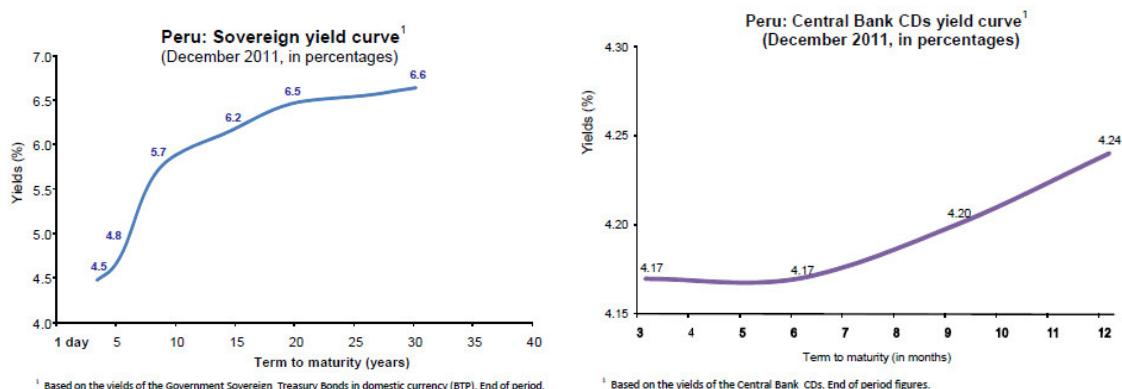
\* Include global bonds (US\$ 9 312 million) and bonds of financial system (US\$ 122 million of domestic debt).

\*\* Include sovereign bonds (US\$ 14 048 million) and debt exchange bonds (US\$ 682 million of domestic debt).

Since 2002, the fiscal authorities' liability management has contributed to creating a benchmark for issuances of long-term obligations in domestic currency. The actual size of public bonds in domestic currency placed in the local market is equivalent to 6.1% of GDP, with an average maturity of 15.7 years and a yield of 5.85%, representing 29% of the total public debt. The short end of the yield curve is made up of BCRP Certificate issuances with maturities of up to one year. As shown in Figure 4, the short- and long-run segments of the benchmark yield curve are well connected. BCRP Certificates were created in 1991 to sterilize FOREX intervention. The alternative of issuing public debt to sterilize the liquidity created by FOREX interventions has so far been discarded because of the lack of flexibility

of debt operations compared with monetary operations.

Figure 4: Treasury Bond and Central Bank CDs Yield Curves



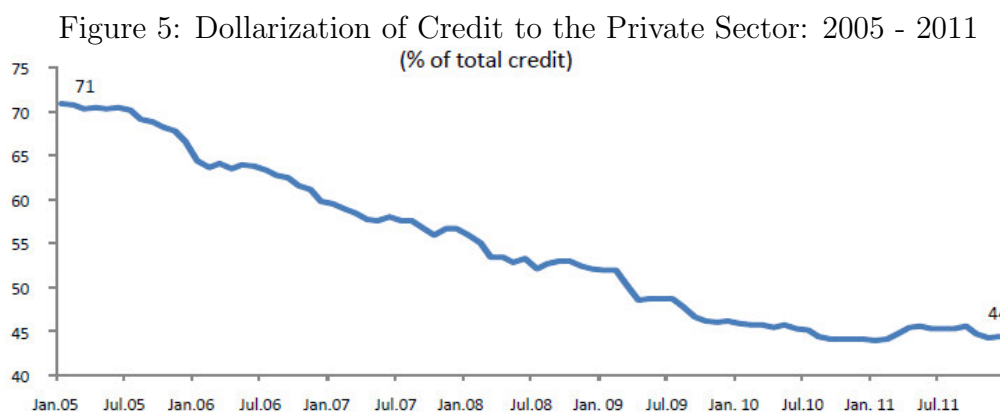
Public sector deposits at the BCRP are the main source of sterilization of FOREX operations (Table 3). The BCRP accumulates international reserves as a preventive measure, considering the risks associated with a partially dollarized financial system. FOREX intervention has reduced exchange rate volatility, thus avoiding deterioration in the quality of banks' loan portfolios. The size of net international reserves increased from 18.7% of GDP in 2006 to 27.8% of GDP in 2011. Reserve requirements (with higher rates on banks' short-term foreign exchange liabilities) provide another source of international reserves.



Table 3: Peru: Central Reserve Bank Balance Sheet  
(As percentages of GDP, September 2011 figures)

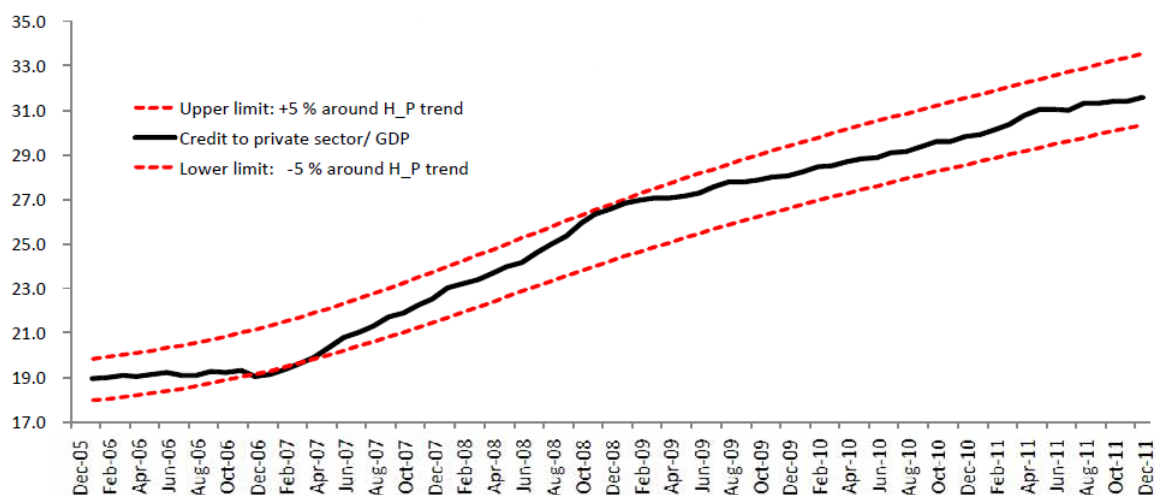
Assets	Liabilities
<b>International reserves 27.8</b>	Public sector deposits 10.9
	In domestic currency 7.1
	In foreign currency 3.8
	Reserve requirements 7.8
	In domestic currency 2.2
	In foreign currency 5.7
	Central Bank instruments 3.3
	Cash holdings 5.2
	Other liabilities 0.5

Inflation targeting in Peru, as described in Rossini et al. (2011), gives special consideration to financial stability, given the weakness associated with financial dollarization (see Figure 5). Therefore, additional instruments, like reserve requirements, are used to avoid significant swings in bank credit like those than can emerge from sharp exchange rate fluctuations, bank runs on dollar deposits, and capital inflows. In this regard, close attention is paid to deviations of bank credit as a percentage of GDP with respect to the trend (Figure 6). In terms of policies, there are preventive measures to ensure an adequate level of bank liquidity, using reserve requirements kept at the Central Bank in the form of international reserves.



One consideration regarding sterilized interventions is the net cost of the additional monetary liabilities, compared with the returns on international reserves. Table 4 shows that in 2011 the returns from international asset management (1.52%) were above the average cost of the BCRP's liabilities (1.45%). This result is influenced by the zero cost of the currency and the interest paid on public sector deposits. It is worth mentioning that the valuation effect of exchange rate fluctuations on the BCRP's net foreign currency assets is not part of its profit and loss statement, since it is registered in a separate line in the capital account. Despite the lack of general accounting rules for central banks, the rationale for this method to register valuation changes is that a depreciation of the currency should not generate profits, nor should an appreciation create accounting losses.

Figure 6: Total Credit to the Private Sector (as percentage of GDP)



**Note:** At constant exchange rate. The trend is calculated using Hodrick Prescott filter.

Figure 7:

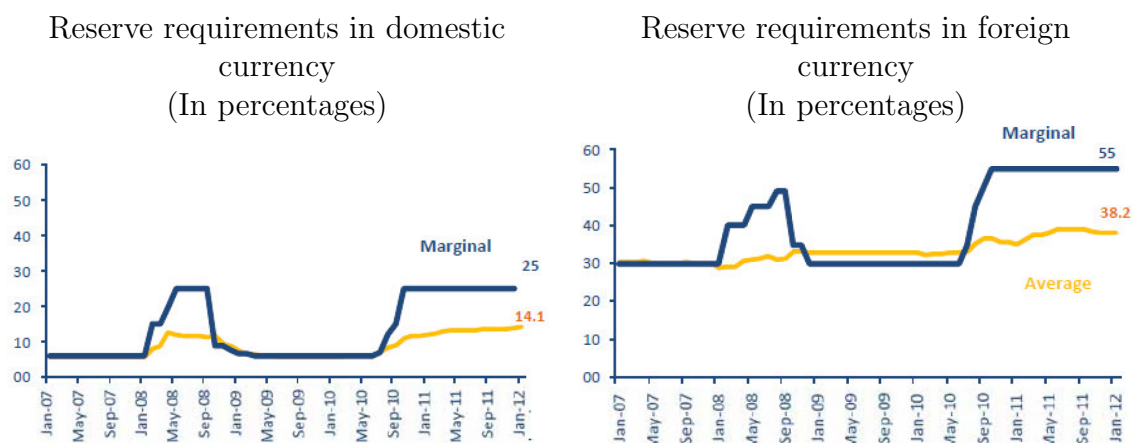


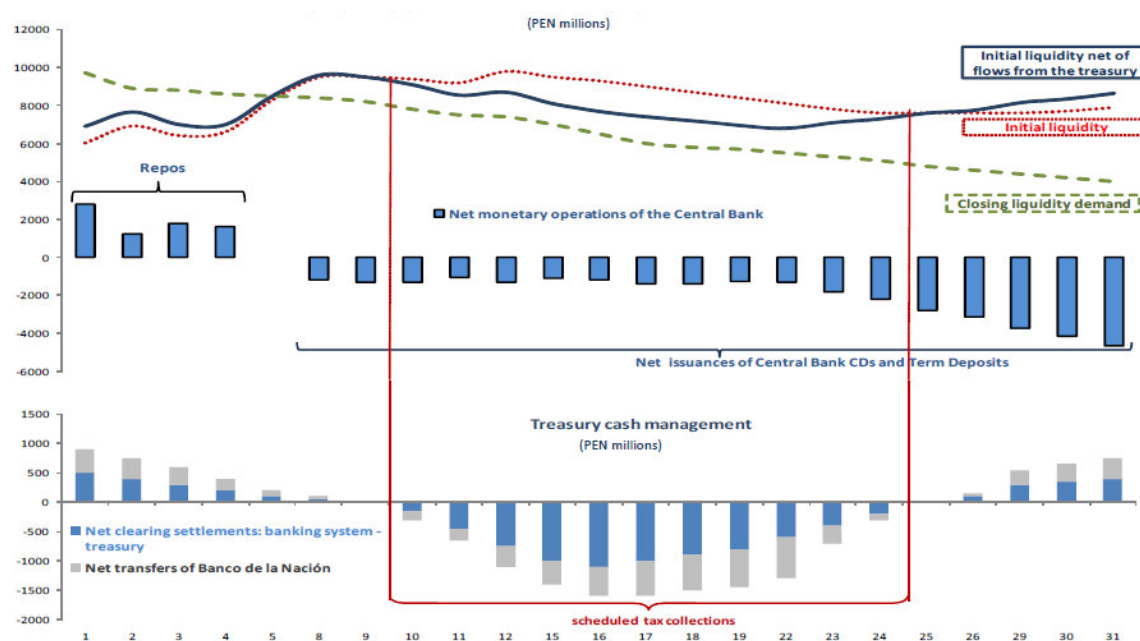
Table 4: Peru: Average yields and funding costs of the Central Bank balance sheet (In percentages, November 30, 2011 figures)

Assets		Liabilities	
International reserves	1.52	Funding costs	1.45
		Deposits of the public sector	2.35
		In domestic currency	3.51
		In foreign currency	0.11
		Reserve requirements	0.27
		In domestic currency	0.64
		In foreign currency	0.10
		Central bank instruments	3.92
		CDs	3.88
		Term deposits	4.00
		Cash holdings	0.00
		Other liabilities	0.26

Policy coordination at the operational level is also a critical dimension of monetary and fiscal policy coordination. At the macro level, monetary programming frameworks can be instrumental in preventing inconsistencies in the policy mix, whereas the coordination of operations is of critical importance for the day-to-day implementation of monetary and fiscal policies at the microeconomic level.

As shown in Figure 8, the considerations of the daily Treasury cash management shape the liquidity management of the BCRP to ensure adequate liquidity for the desired closing liquidity demand of private banks. This is more evident during the scheduled tax collection period, when private banks transfer liquidity to the Treasury and the BCRP responds with open market operations to preserve the liquidity of the system.

Figure 8: Daily liquidity position of the banking system at the Central Bank (PEN in millions)



### 3 Macroeconomic Policy Coordination

As part of the institutional framework governing the relationship between fiscal and monetary policy in Peru, the BCRP is explicitly forbidden to finance the public sector with loans or purchases of government securities. Also, the government is obligated to request BCRP advice and publish it together with official fiscal forecasts. Finally, the BCRP is required to inform the Ministry of Finance if a given policy affects the BCRP’s ability to fulfill its mandate. The Fiscal Responsibility and Transparency Law (1999) includes a combination of a target for the

nominal fiscal deficit and a ceiling for the expansion for non-financial public sector expenditure (Table 5). These targets are not adjusted for non-structural effects, and do not necessarily ensure a countercyclical stance. Table 6 outlines the main goals and structure of the Treasury Cash Management Committee (CMC).

Table 5:

<b>Macro-fiscal Rules</b>	
Deficit rule	The annual deficit of the non-financial public sector (NFPS) cannot exceed 1% of GDP.
Expenditure rule	The annual increase in consumer spending of the central government shall not exceed 4% in real terms. Consumer spending includes spending on salaries, pensions, goods, and services.
Debt rule	NFPS debt must not be increased by more than the amount of deficit corrected for the difference attributable to changes in currency parities, issues of recognition bonds, changes in deposits and debt taken by the NFPS.
<b>Fiscal Stabilization Fund (FEF)</b>	
Funding sources	The FEFs regular funding sources are the fiscal surpluses of the Treasury obtained at the end of each year. The accumulated savings cannot exceed 4% of GDP. Any additional earnings are used to reduce debt. The FEF balance at December 31, 2011 was U.S. \$ 5.6 billion.
Uses	The FEF can be used if the current revenue, in terms of GDP, falls more than 0.3 percentage points below its average level of the last 3 years. In this event, the amount that exceeds the declining limit of 0.3% of GDP, and up to 40% of the current balance of the FEF, will be used to cover poverty alleviation programs, as a priority.
<b>Exceptions to the rules</b>	
Exceptional events	In the event of national emergency or international crisis, the Congress may suspend up to a maximum of three years the implementation of any of the fiscal rules outlined above. For instance, during 2009-2010 this exception to the rule was activated in order to meet the costs of the international financial crisis.

Table 6:

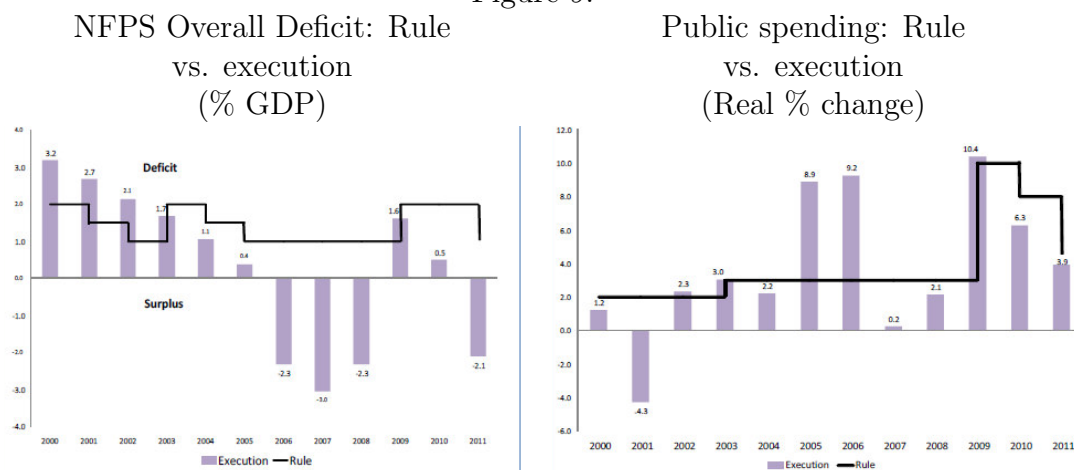
<b>Cash Management Committee (CMC)</b>	
Functions	The CMC evaluates and approves, on a monthly basis, the expenditure control and financing operations of the Treasury.
Treasury cash flow (definition)	Flow of funds associated with the cash revenues and expenditure profiles in domestic and foreign currencies from the national, regional, and local government entities. The General Director of Treasury and Public Debt of the Ministry of Economy is in charge of the management of the fund.  The cash flows are centralized and managed through the Treasury's main account at the Central Bank.
Members	The CMC is composed of 5 members, including the General Manager of the Central Bank, the Vice Minister of Economy, the General Manager of the Banco de la Nación, the General Director of Treasury and Public Debt, and the General Director of the Public Budget. The importance of the Treasury's cash management for the monetary policy design justifies the inclusion of a representative of the Central Bank on the CMC.

The charts in Figure 9 show the limits established by the Law of Fiscal Responsibility and Transparency with respect to the deficit and expenditures for each year and the execution of these variables. Since 2003, the deficit has been consistent with the rules, although in 2009 and 2010 it was necessary to establish waivers approved by the Congress as a result of the global financial crisis. In 2005 and 2006, public spending growth was above the targets set by the rule, as exceptions approved by the Congress. These deviations have given rise to discussions about the need to replace the growth targets with limits to the structural balance.

BCRP independence includes the ability to establish its policy goals and decide which instruments to use, and, as consequence, policy coordination with the Ministry of Finance is mainly based on the consideration of the actions of the other

body. This process includes the publication of the Ministry of Finance and BCRP macroeconomic forecasts in the semi-annually Multiannual Macroeconomic Framework Memoranda (MMM) and the quarterly Inflation Report, respectively. Table 7 shows the sequence for the publication of these forecasts during the year. As a result of this coordination in the forecasting process, the Ministry of Finance and BCRP forecasts and final data tend to be quite similar.

Figure 9:



The Ministry of Finance’s statistics and figures on the budget policy goals are taken into account by the BCRP to generate its own projections, but there could be forecasting differences due to different assumptions in crucial variables like terms of trade and nominal and real GDP growth. However, government expenditure figures tend to be similar, as they reflect the annual budget’s policy goals.

Table 7: Timeline of Macroeconomic Projections

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Monetary Policy</b>			Inflation Report:t, t+1,			Inflation Report:t,t+1, t+2			Inflation Report:t,t+1, t+2			Inflation Report:t,t+1, t+2
<b>Fiscal Policy</b>					MMM:t, t+1, t+2, t+3,			Revised MMM:t, t+1, t+2, t+3				

To assess the impact of the fiscal stance on aggregate demand, the BCRP calculates a modified form of the indicator for the structural balance to take into



account the effect of export prices on tax revenues: the actual balance of the consolidated public sector is adjusted not only for the effect of the output gap on tax revenues, but also for the effect of the deviation of the average export price (relative to a long-run trend) on the income tax paid by the mining sector.

Equation 1 shows how the structural balance ( $SB_t$ ) is calculated adjusting the public sector balance ( $PB_t$ ) for the effect of the output gap ( $CE_t$ ) and export prices ( $PE_t$ ) on taxation. In order to assess if the real intention of the fiscal policy is to contract or expand the economy, the indicator used is the change of the structural balance, or the fiscal impulse ( $FI_t$ ). When positive,  $FI_t$  shows a policy expansion, and when negative a contraction.

$$SB_t = PB_t - CE_t - PE_t \quad (1)$$

$$FI_t = -(SB_t - SB_{t-1}) \quad (2)$$

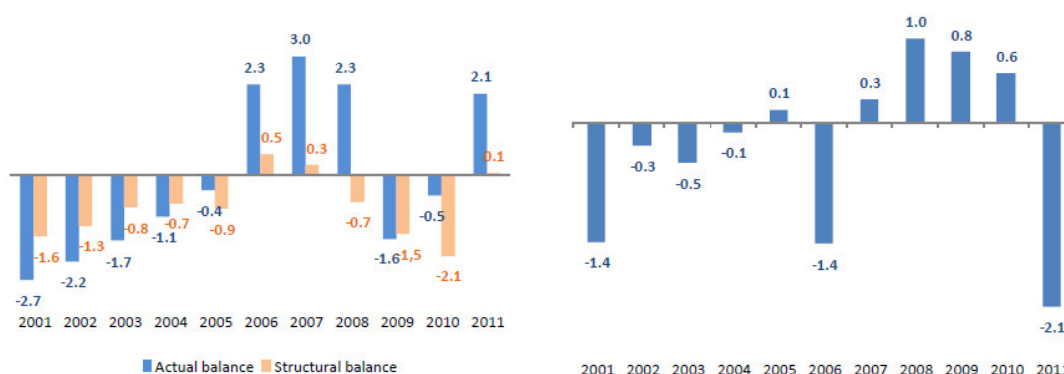
Table 8 shows the evolution of the public sector actual and structural balances. It can be verified that the unadjusted fiscal balance does not necessarily reflect the real fiscal stance. For example, in years of apparent fiscal contraction like 2005, 2007, and 2010, the structural balance showed a fiscal expansion.

Table 8: Structural Balance of non-Financial Public Sector  
(% of potential GDP)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Public Sector Balance (PB)	-2.5	-2.1	-1.6	-1.0	-0.4	2.3	3.1	2.4	-1.6	-0.5	2.1
Cyclical component	1.0	0.8	0.8	0.3	-0.5	-1.8	-2.7	-3.0	-0.2	-1.5	-2.0
- Impact output gap (CE)	1.0	0.7	0.7	0.6	0.3	0.0	-0.4	-0.9	0.4	0.0	-0.2
- Impact of terms of trade (PE)	0.0	0.1	0.1	-0.3	-0.8	-1.8	-2.3	-2.1	-0.6	-1.4	-1.9
Other adjustments	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1	0.3	-0.1	0.0
Structural Balance (SB)	-1.6	-1.3	-0.8	-0.7	-0.9	0.5	0.3	-0.7	-1.5	-2.1	0.1
Fiscal Impulse (FI)	-1.4	-0.3	-0.5	-0.1	0.1	-1.4	0.3	1.0	0.8	0.6	-2.1
<u>Memo:</u>											
Output gap	-5.1	-3.8	-3.8	-3.3	-1.6	0.0	1.9	3.8	-1.9	0.1	0.7
Export price gap <sup>1</sup>	-30.4	-27.4	-16.7	18.4	42.4	95.3	93.6	62.5	32.1	60.7	70.1

<sup>1</sup> Using 10 year window.

Figure 10:  
Actual and Structural Balances  
of the Non-Financial Public  
Sector: 2001-2011  
(As percentages of GDP)



The BCRP's Inflation Report presents estimates of the structural fiscal balance to show the differences with the public sector balance (Figure 10). The BCRP identifies the size of the temporary factors affecting public sector earnings and measures the fiscal impulse to establish if fiscal policy is accommodative or tight.

The ability of fiscal policy to contribute to stabilizing macroeconomic activity can be assessed estimating the multipliers of different components of the fiscal result. Using a structural vector auto-regression (SVAR) model, with variables such as current income and expenditure, capital expenditures, real GDP, terms of trade, and the balance of the monetary base, it can be established that only capital expenditures have a multiplier <sup>1</sup> generating an impact on GDP greater than 1, and statistically different from zero (Table 9). This implies an important difficulty, since capital expenditures take time to design and implement; in consequence, using them to stabilize the economic cycle could have an untimely effect, producing an involuntary pro-cyclical fiscal stance.

Table 9: Fiscal Multipliers

Effect on GDP of an increase of PEN S/.1.00 in:			
	Current Revenues	Current Expenditures	Capital Expenditures
Initial effect	-0.44	0.78	1.36
<b>Effect after 1 year</b>	<b>-0.32</b>	<b>0.59</b>	<b>2.46</b>
Effect after 2 years	-0.38	0.52	2.63

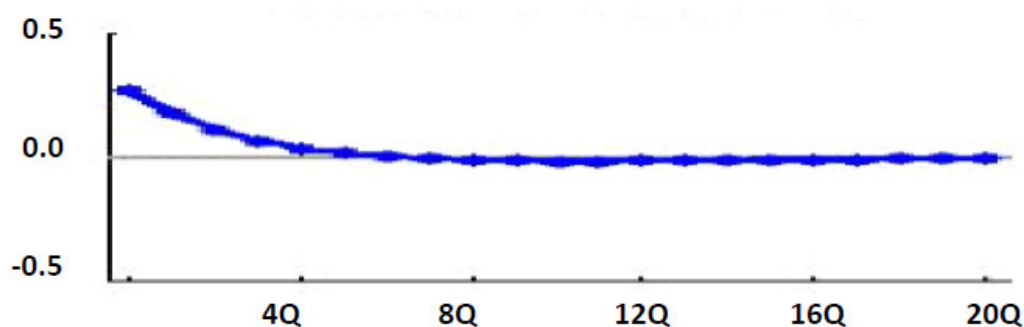
Source: SVAR calculations.

The difficulty of synchronizing fiscal policy with the need to reduce the output gap has been given rise to periods of pro-cyclical fiscal policy. These events can be explained by the tendency to maintain an expansionary (or a contractionary) fiscal stance once the recession (or boom) is over. This has an important consequence: monetary policy has a greater responsibility for finetuning aggregate demand during the business cycle. For example, despite the recovery in 2010 from the external shock of 2009, the fiscal policy was maintained in an expansionary mode. The forecasting process of the BCRP includes the evaluation of a fiscal shock to aggregate demand, whose impact is estimated with a policy parameter of 0.24 and a

<sup>1</sup>We would like to acknowledge the assistance received from Mr. Guillermo Ferreyros, who carried out the calculation of fiscal spending multipliers, Mr. Enrique Serrano, for computing the output gap response to the fiscal impulse within the quarterly forecasting model of the Central Bank, and Mr. Luis Rizo Patron, for the satellite estimations of the relationship between the fiscal impulse and the output gap.

maximum policy lag of 6 quarters (Figure 11).

Figure 11: Response of output gap to 100 bps of fiscal impulse

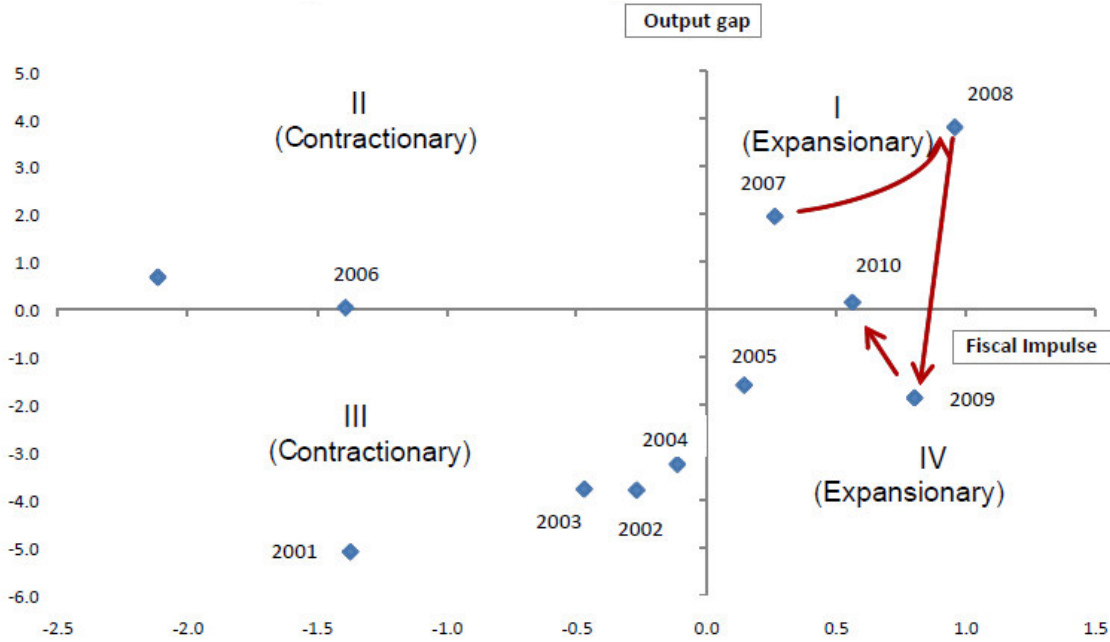


Source: Quarterly Forecasting model, BCRP.

Figure 12 shows the sequence of fiscal policy decisions in Peru around the Lehman Brothers bankruptcy, which demonstrates the lagged impact of those policy changes.

For example, between 2007 and 2008, and from 2009 to 2010, despite the improvement of the output gap, the fiscal stance was maintained in an expansionary mode. Conversely, in 2008 and 2009 the fiscal impulse was of a similar magnitude in both years despite the significant contraction in economic activity.

Figure 12: Procyclical and Countercyclical Policies



In order to contrast the fiscal policy decisions with some theoretical structural fiscal rule, which could be identified with the fiscal impulse ( $FI_t$ ) as the policy reaction to the previous level of the fiscal impulse ( $FI_{t-1}$ ) and to yearly deviations of the output gap ( $OG_t$ ), we can check if the fiscal policy actions were systematically countercyclical according to the following rule in equation 3:

$$FI_t = \delta FI_{t-1} + \gamma OG_t; \gamma < 0 \quad (3)$$

The estimation of the relationship between the fiscal impulse and the output gap in equation 4 confirms that the difficulty in fine-tuning public investment around the business cycle in recent years has led to the adoption of a fiscal stance that does not counteract the real business cycle. In particular, the parameter of the output gap presents an opposite sign than the expected, and without significant explanatory power. This result holds when we estimate the equation looking for an optimal lag structure. This raises the question of the possibility of adopting a structural rule for the public sector balance, based on structural fundamentals

such as the one presented in equation 3.

$$FI_t = \underset{(2.54758)}{0.365} FI_{t-1} + \underset{(0.81548)}{0.069} OG_t \quad (4)$$

## 4 Conclusions

We have evaluated the financial and real links between fiscal and monetary policy in Peru, and have shown that during the recent export commodity price boom, the public finances supported the implementation of monetary policy. In this regard, the reduction of the net public debt has been translated into greater Central Bank capability to sterilize its FOREX interventions. Also, an active policy to enhance the development of the local capital market, using the issuance of public bonds denominated in local currency as a benchmark, has created the incentive to dedollarize bank lending.

On the other hand, difficulty in fine-tuning public investment around the business cycle in recent years has led to periods of a fiscal stance that does not counteract the real business cycle. This raises the question of the possibility of adopting a structural rule for the public sector balance, based on structural fundamentals.

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