Rethinking Monetary Policy Objectives and Tools

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May 2014

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- Response to commodity prices, K inflows, and appreciation
- Forex intervention, reserve requirements, macro prudential measures

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- *If they are not*: balance sheets and their determinants (*asset prices* and *exchange rates*) crucial for aggregate demand.
- Also: *unconventional policies* matter

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- Inflation Targeting will need to adapt accordingly

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(M. Goodfriend, "How the World Achieved Consensus on Monetary Policy", *Jour. Econ. Perspectives* 2007)

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1. An *announced numerical inflation target*
2. An *explicit decision making framework* determining how policy instruments are adjusted in order to hit the target.
3. A high degree of *transparency* and *accountability*.

IT and the New Keynesian Model

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$$\pi_t = \beta E_t \pi_{t+1} + \gamma y_t$$

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- Aggregate demand given by the *IS curve:*

$$y_t = -\rho \left[i_t - E_t \pi_{t+1} - r_t^n \right] + E_t y_{t+1}$$

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  with i_t = short term nominal interest rate, r_t^n = *natural real rate of interest*
- A monetary rule of the Taylor type, such as

$$i_t = \alpha \pi_t + \mu y_t$$

Social Objectives and the Monetary Policy Problem

- The central bank is assumed to choose policy to minimize a *loss function* such as

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- But, crucially, a quadratic approximation of the representative agent's welfare has the above form (Woodford 2003)

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- Hence the central bank should *not* be charged with other goals, such as financial stability or smoothing exchange rates
- Control of the interest rate i_t *suffices* to determine equilibrium π_t and y_t, and hence welfare.
- *No need* for the central bank to resort to other tools, such as *unconventional policies.*

- First order conditions of the form $G_t(\pi_t, y_t, E_t\pi_{t+1}, E_t y_{t+1}, ...)$, determine optimal settings of the *target* variables. (Svensson's *inflation forecast targeting*)

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- Optimal policy only responds to information about *target* variables. Responding to news in *non target* variables is justified *only if* the latter have marginal predictive power about target variables.
- *Zero inflation* is optimal. (Here because of the *divine coincidence*.)

How the Consensus Collapsed: The Zero Lower Bound

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- Problem related to time inconsistency

The ZLB and Unconventional Policies

In advanced countries, the ZLB reached during the global financial crisis and prompted *unconventional* policies:

- *Quantitative Easing* (QE)
- *Credit Easing* (CE), both indirect and direct
- *Forward Guidance*

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Note: unconventional policies appeared earlier in emerging countries, and for different reasons (Chang 2007)

Unconventional Policies and Financial Markets

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- The basic New Keynesian model assumes perfect financial markets

Recap So Far: The Need to Incorporate Financial Frictions

- Otherwise, as R. Rajan stresses, unconventional policies represent a "step in the dark"

Financial Frictions, the New Keynesian Model, and Monetary Strategy

Balance Sheet Effects and the Financial Accelerator

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- *Asset prices* can matter a lot, since they determine real net worth

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2. More amplification and persistence of shocks
3. A negative shock to net worth can lead to recession (even if the shock is a *pure redistribution* of wealth, as may be implied by changes in relative prices)

Financial Accelerator in the Open Economy

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- And if financial frictions are stronger
- Exchange rate depreciation can be *contractionary*

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- The financial sector was not modeled as a *source* of shocks, only as an *amplifier*

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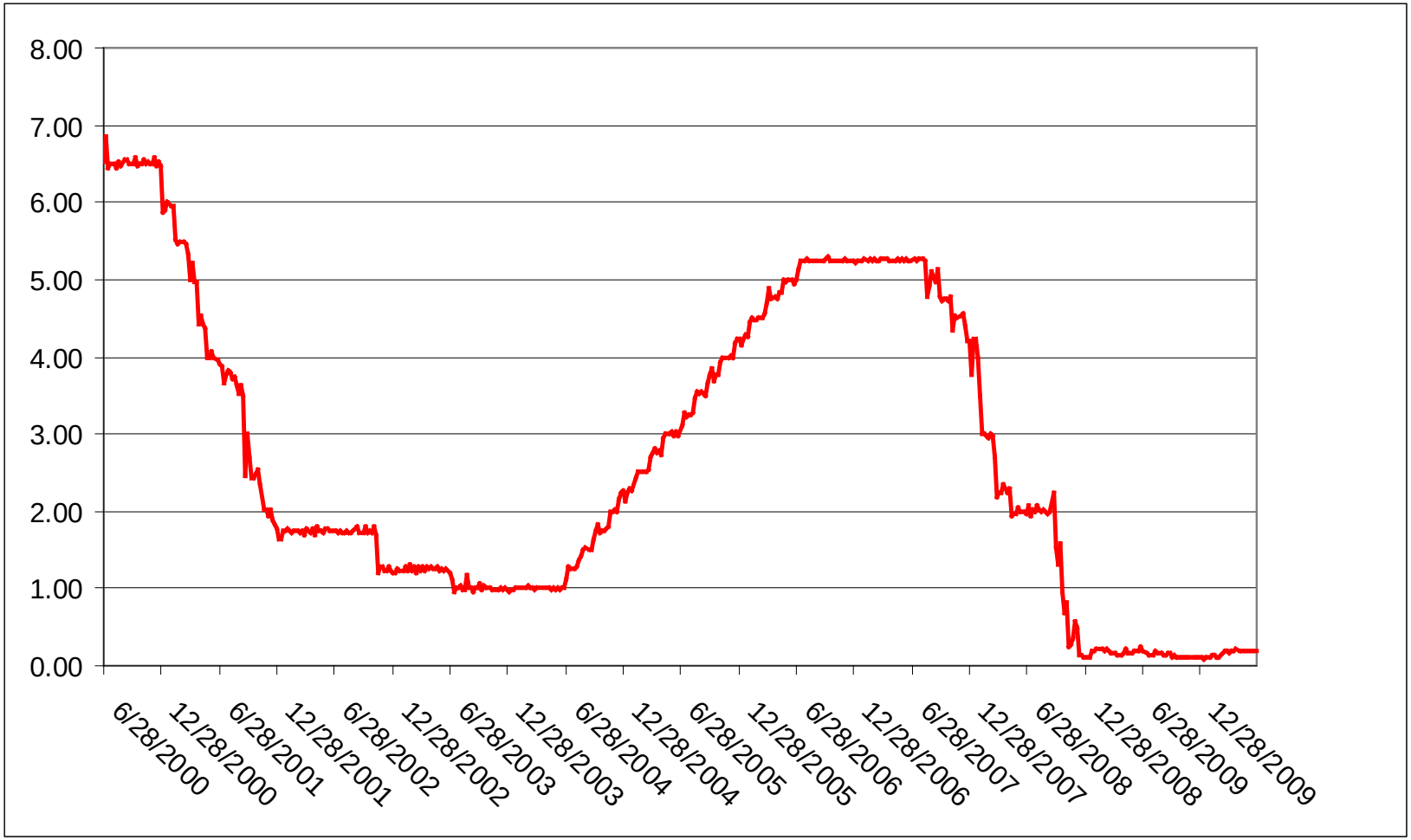
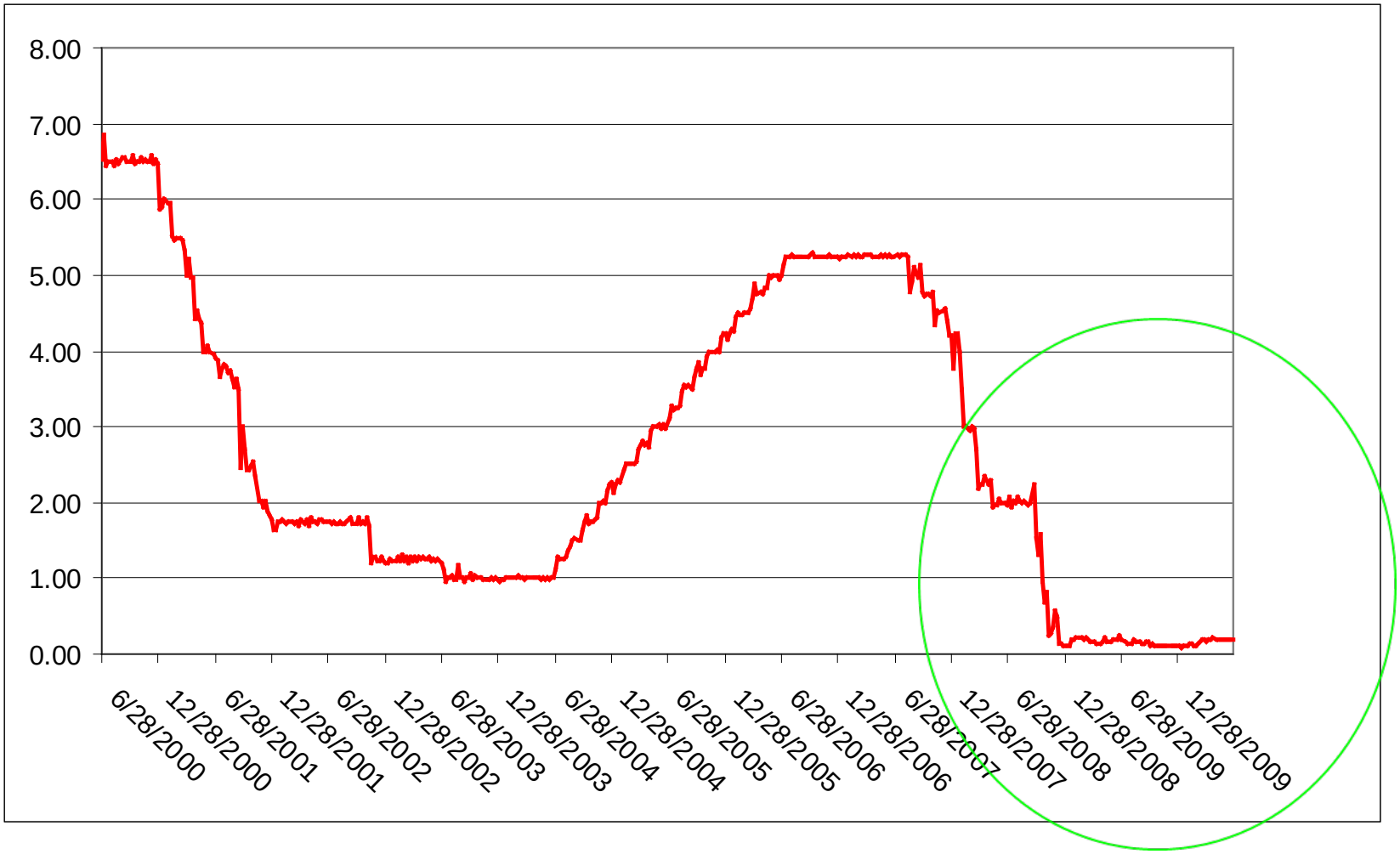
- Prominently: limiting currency mismatches
- Also: De-dollarization
- Finally: at times, emerging country central banks have resorted to FX intervention and capital controls attempting to manage exchange rates independently of inflation (see Cespedes, Chang, and Velasco 2014 for the Latin American experience)



US: Federal Funds Rate (Percentage)

Source: FRED, St. Louis Fed



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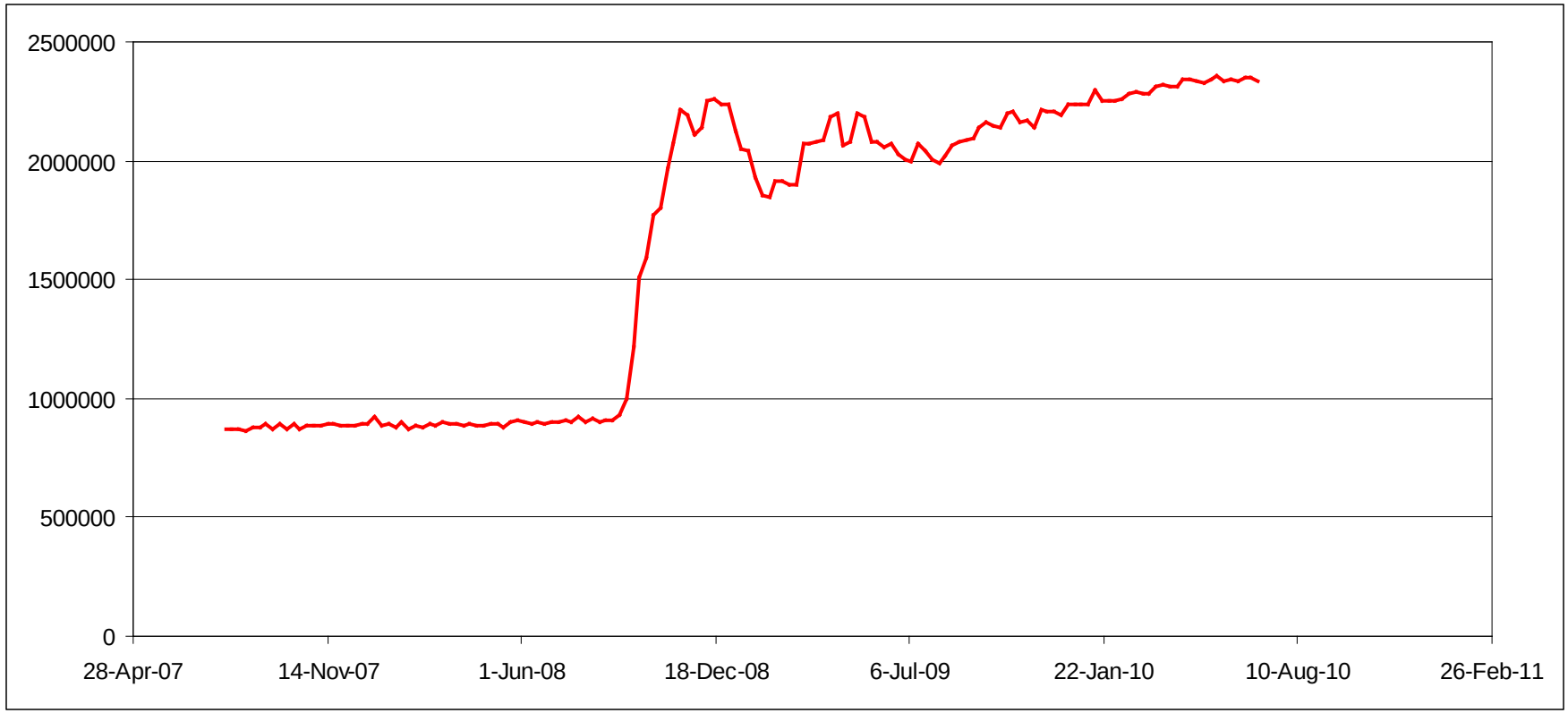
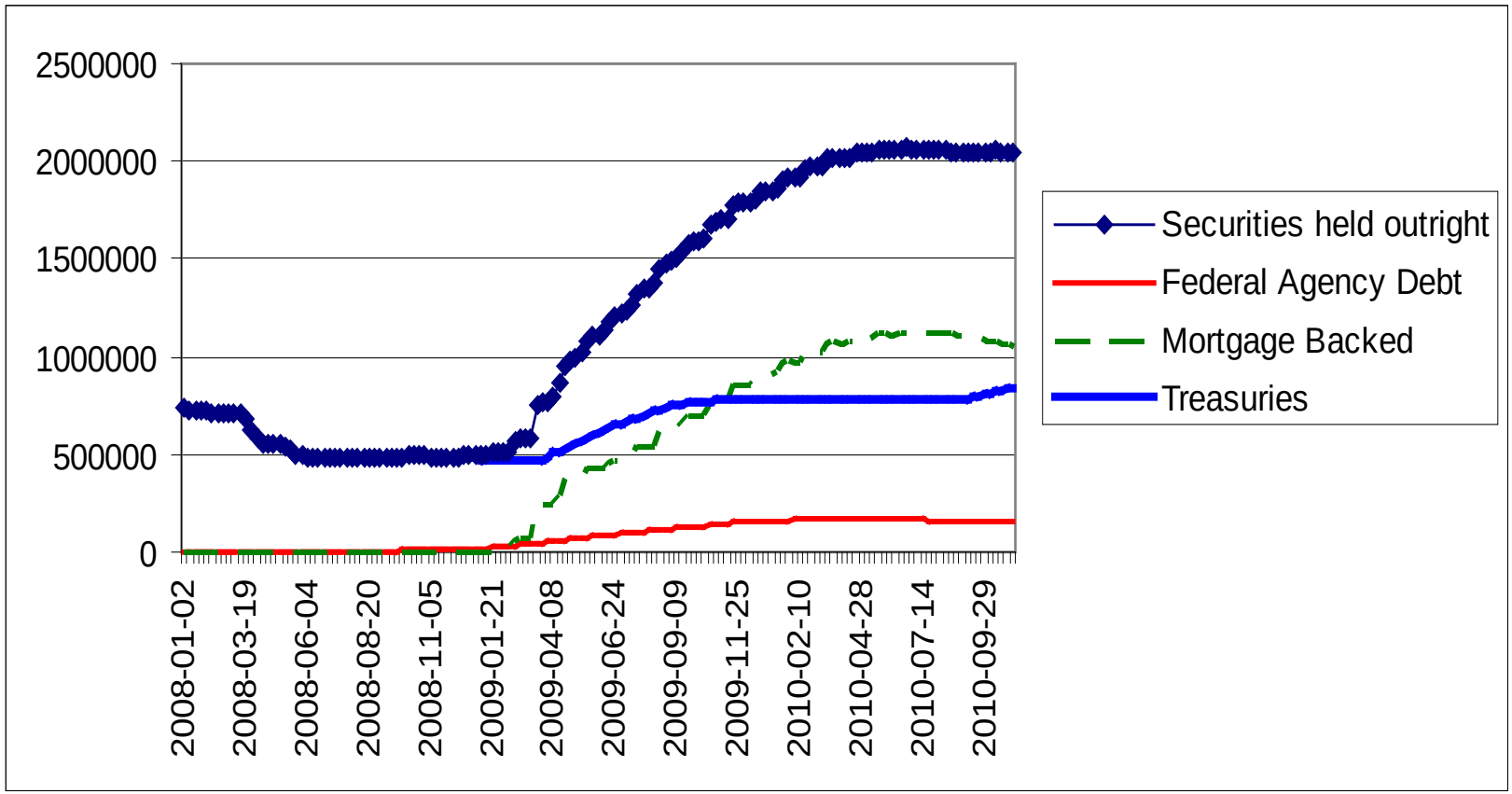
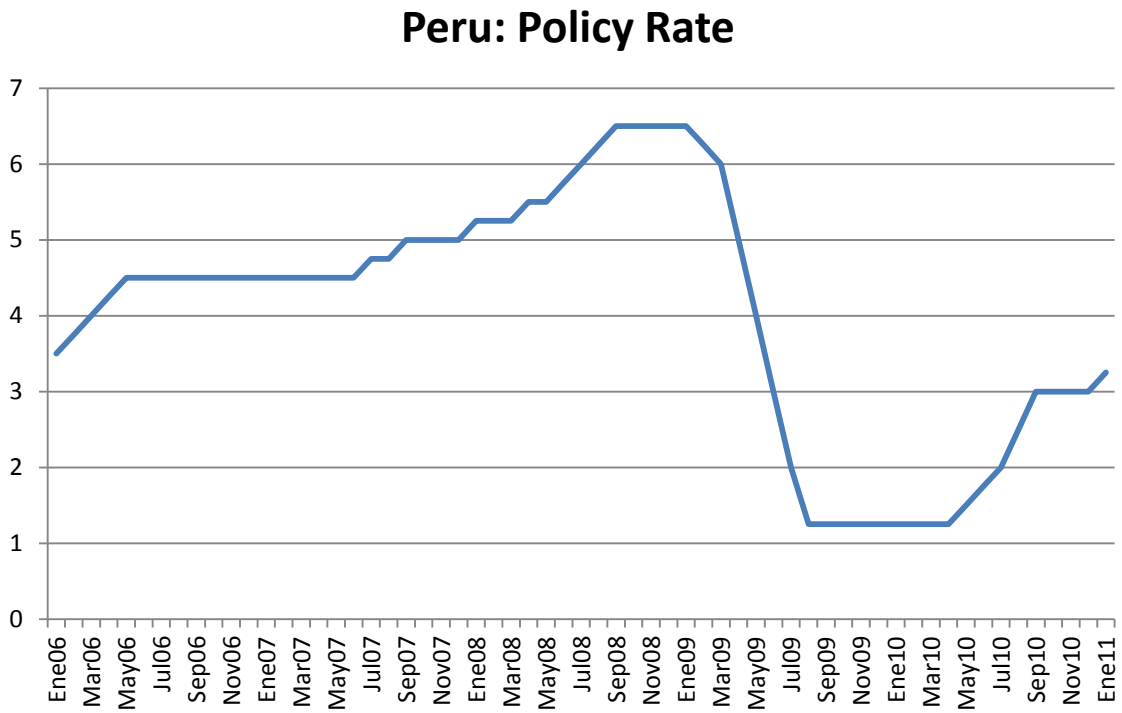


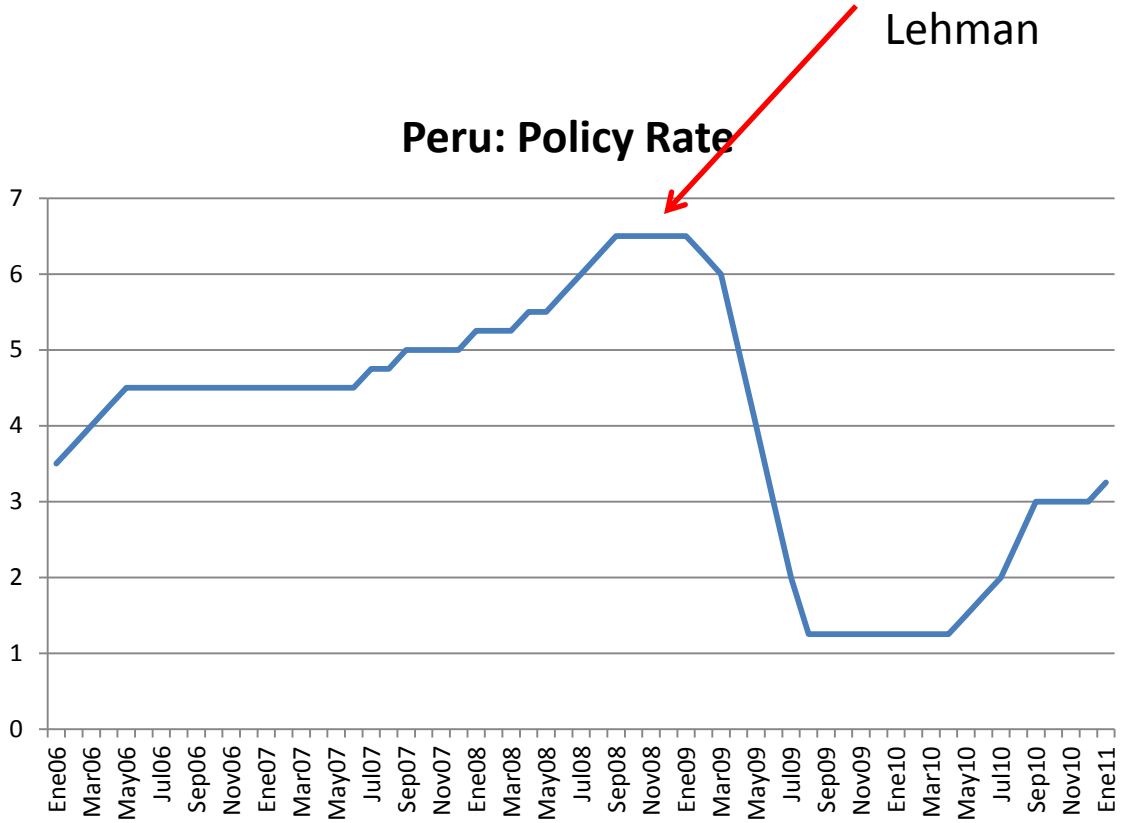
Federal Reserve: Total Assets
(Millions of US$)
Source: Board of Governors



Selected Federal Reserve Assets
(Billions of US$)
Source: Board of Governors



Source: Central Bank of Peru



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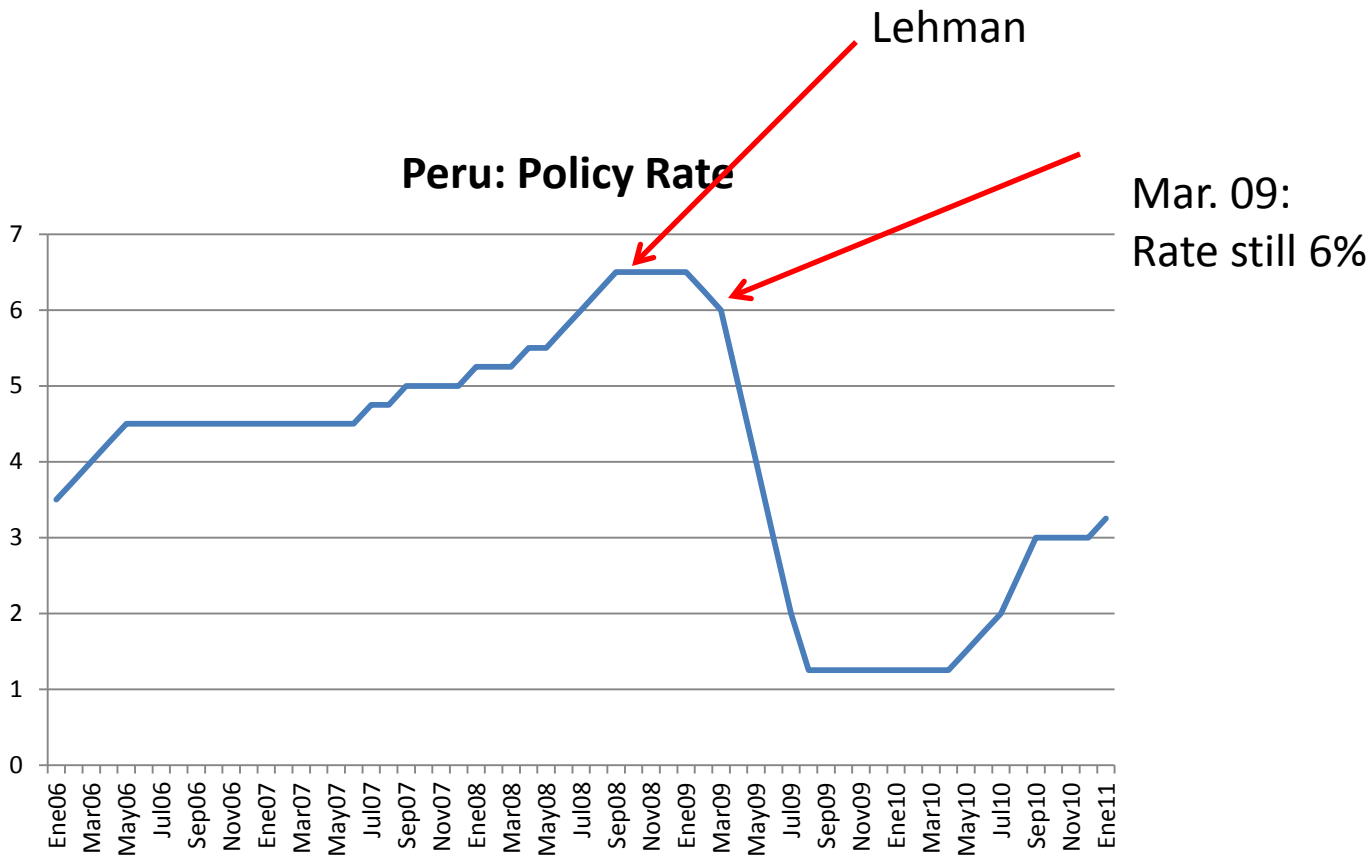
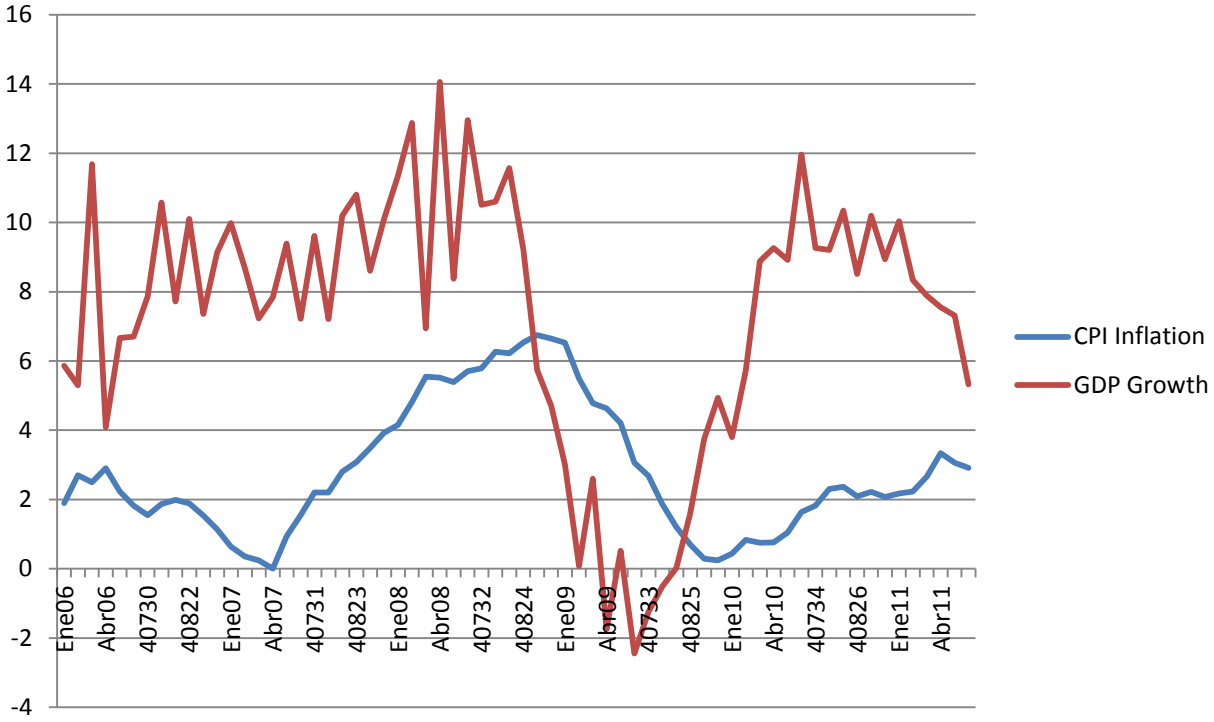


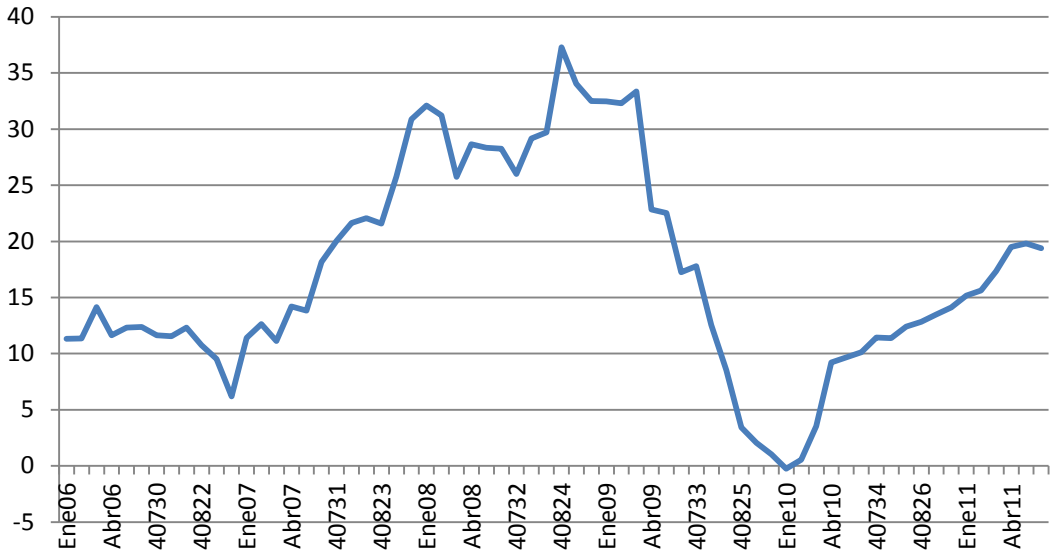
Source: Central Bank of Peru

Peru, CPI Inflation and GDP Growth
(Annual Percentage Rates)



Source: Central Bank of Peru

Peru, Bank Credit to Private Sector (12 month % growth)



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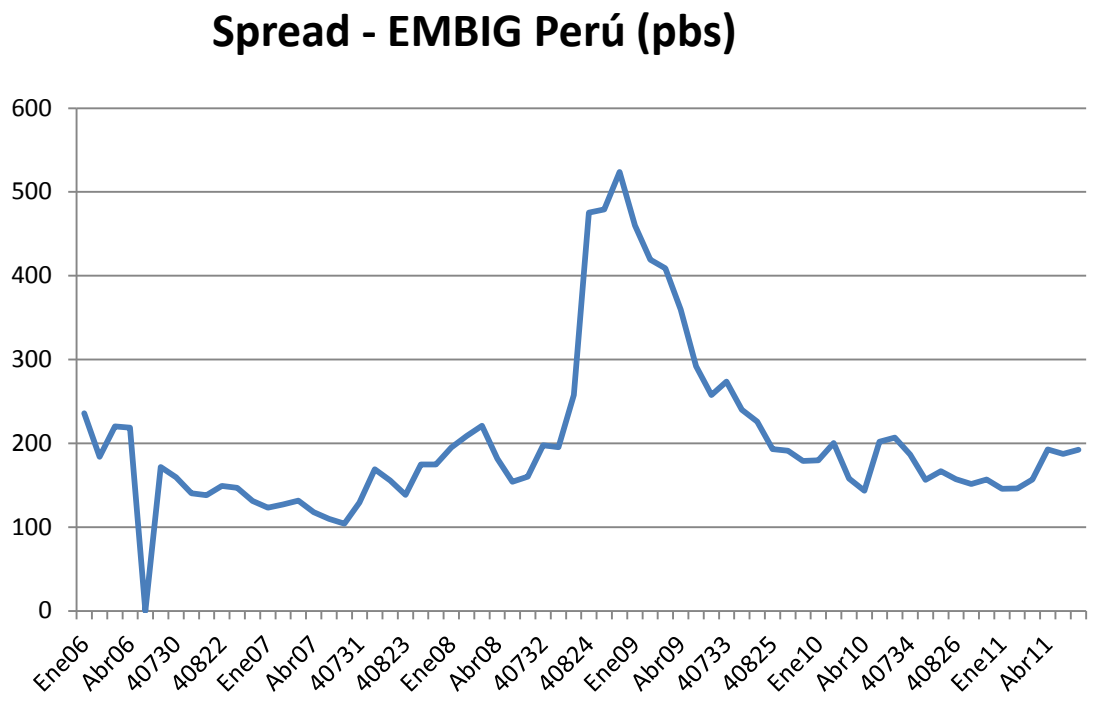

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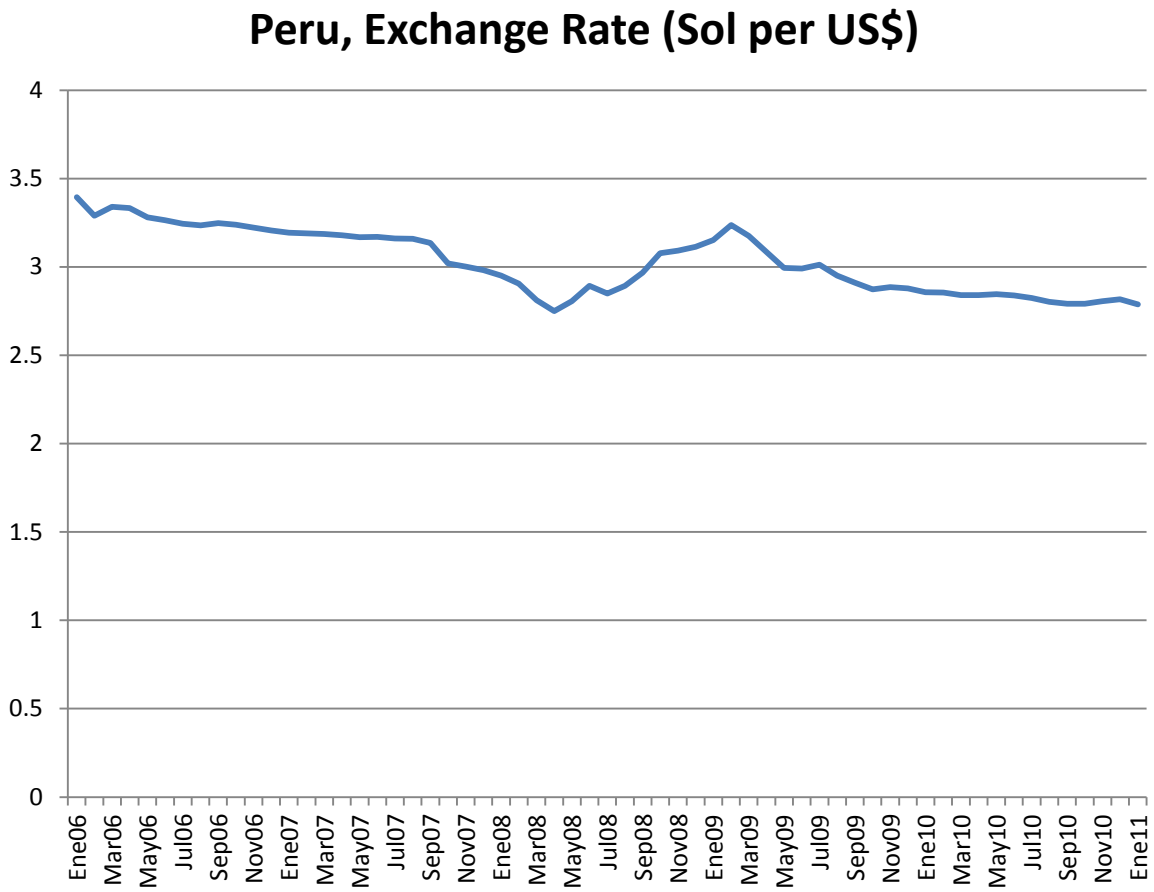
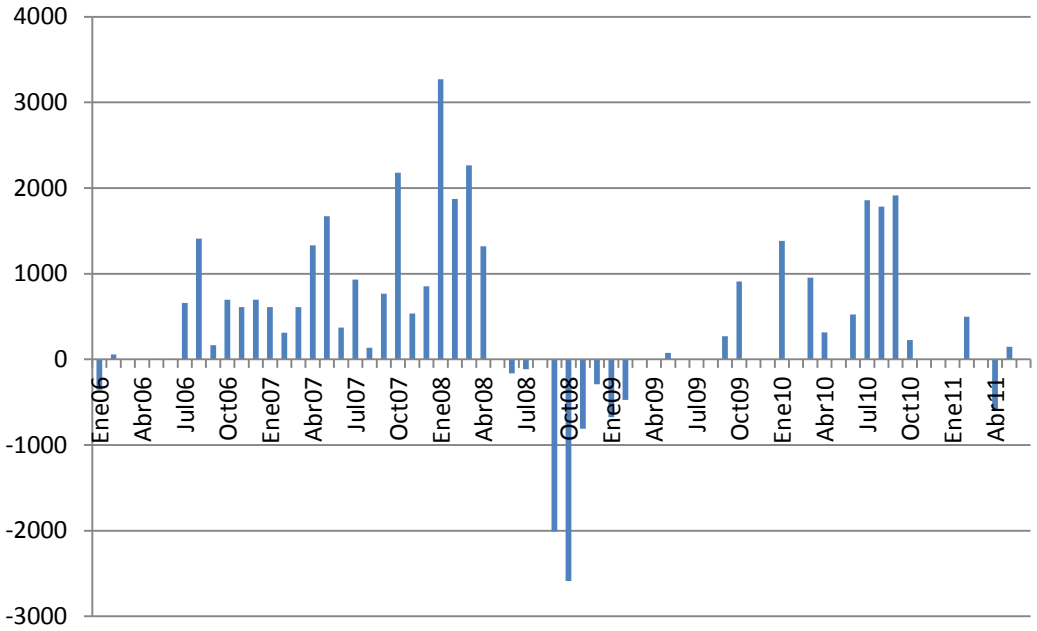


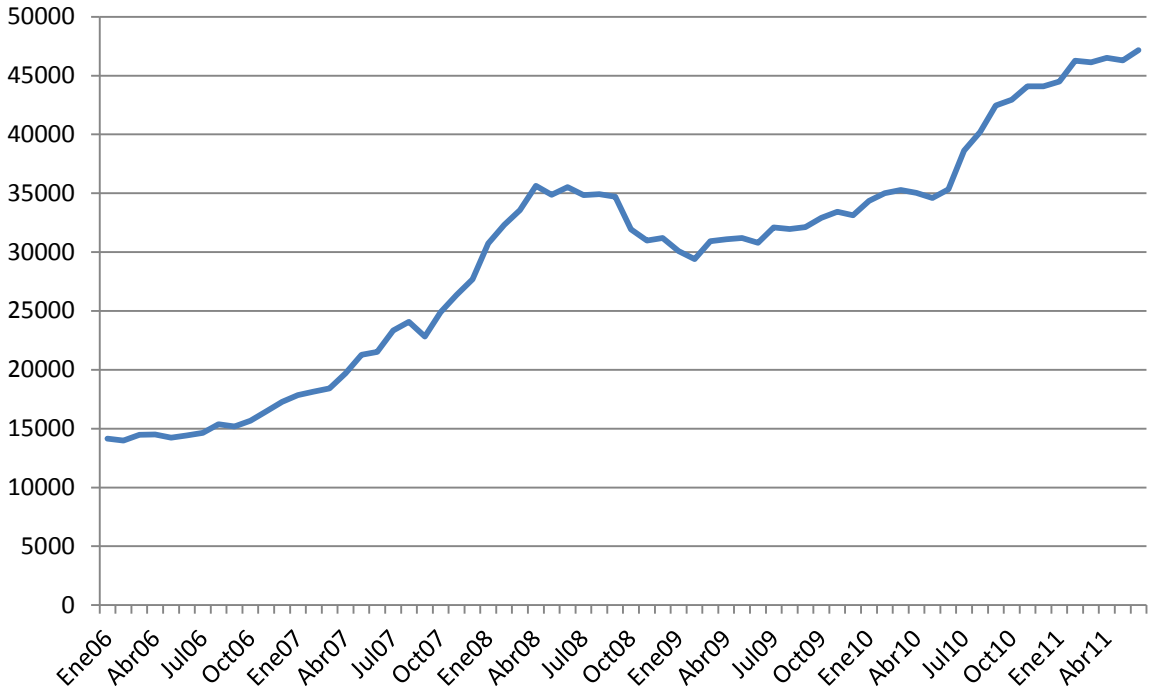
Source: Central Bank of Peru

Peru: Central Bank Dollar Purchases (US$ million)



Source: Central Bank of Peru

Peru: Net Foreign Reserves (US$ Million)



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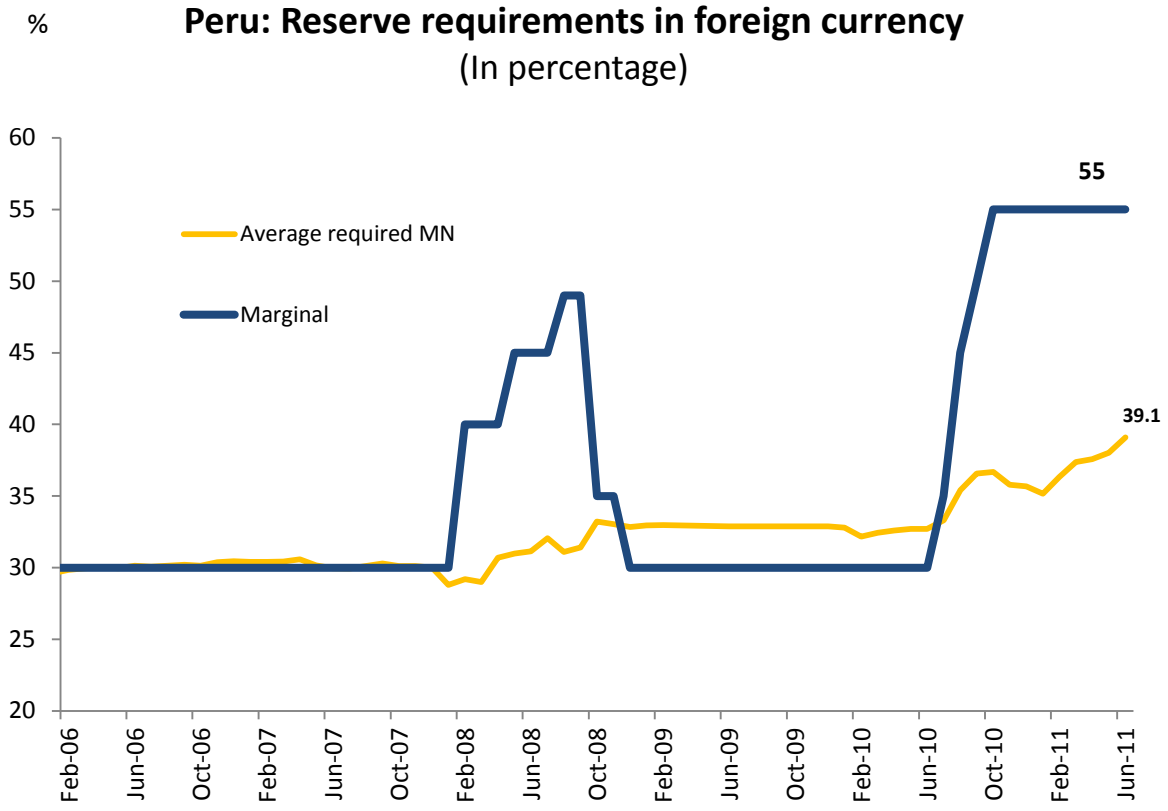

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Financial Intermediation and the Monetary Framework

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- A large share of capital flows in and out of emerging economies are intermediated
- So: urgent to model financial intermediation in a more satisfactory way
- We review some recent efforts, and what they mean for tools and objectives

Modeling Banks: the IO Approach

- The *Industrial Organization Approach* assumes agents (banks) endowed with the ability to produce an asset (loans) via a production function that includes a liability (deposits) as input
- This is tractable and allows for the introduction of "financial shocks" or "crises"
- But *ad hoc*: much hinges on the financial intermediation technology
- So this approach gives little information about how financial regulation interacts with monetary policy, or whether financial shocks can be endogenous and related to the rest of the economy

Examples of the IO approach

1. The series by Christiano, Motto, and Rostagno: bank's technology of the form

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2. The papers by Curdía and Woodford (e.g. 2009) have a similar technology

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- Because of the financial intermediation technology (the IO approach!) lending rates are higher than deposit rates

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Curdía-Woodford

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- The wedge between them is time varying and reflected in the interest rate spread

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3. Loss function has to be augmented with the marginal utility wedge:

$$L_t = \pi_t^2 + \varphi_y y_t^2 + \varphi_\Omega \Omega_t^2$$

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3. For monetary policy to be able to affect Ω_t, marginal financial intermediation costs must depend on the volume of credit.
4. So the properties of the "black box" are critical to understand how different policy tools might work

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As mentioned, many central banks in open economies had already departed from textbook IT before the global crisis, especially in terms of exchange rate intervention and accumulation of foreign reserves. The latter would turn out to be crucial later, especially after Lehman.

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Recent attempts: Medina and Roldos (2013), Céspedes, Chang and Velasco (2012), Benigno, Chen, Otrok, Rebucci, and Young (2012), BIS project on IT and Financial Intermediation in Latin America

Final Remarks

Implications for Policy Objectives

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- Other probable targets: exchange rates, financial stability, interest rate spreads
- It may be that the appropriate mandate for the central bank should include these additional objectives only at some times (e.g. financial stress)

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- The resulting framework will allow for the analysis of *unconventional* policy tools which, at this point, remain badly understood
- It may well be that the new tools will be assigned to the new objectives, leaving conventional interest rate instrument to focus on inflation
- Educated guess for open economies: the management of international liquidity and access to it (perhaps via reserves accumulation) will become a preeminent concern

Terima Kasih!