Comments on Foreign Exchange Redux by Roberto Chang

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Agenda

1. Summary of the paper
2. Comments
3. General discussion

Summary

Reasons for FX intervention to be effective:

- Because domestic and foreign assets are imperfect substitutes. Changing relative supplies changes relative prices. A special case is the portfolio balance approach.
- Signaling channel. Intervention signals future policy actions, in particular regarding monetary policy. We could think that in EMEs they may also signal future policy regarding capital controls or further exchange rate management.

This paper (with some caveats because works in a fully dollarized economy) is based on imperfect asset substitutability.

- Central bank assets only reserves: f, liabilities, only sterilization bonds b. $f = b$
- Banks. Assets: sterilization bonds, b, and loans ℓ. Liabilites: foreign borrowing d, and net worth is k. $\ell + b = d + k$. *Only domestic agents can hold sterilization bonds*.
- Imperfect capital mobility sometimes (financial frictions): $d \leq \theta k$. If no financial frictions, banks can lend and borrow as much as they want, but sometimes the constraint binds.
- Households, among other things, decide how much equity to hold. But they face a constraint and $k \leq k'$. When this constraint binds, banks make extra-profits $(1 + \rho \geq 1 + r^*)$, and hence the borrowing constraint will be binding. There is a spread $\rho - r^*$.

$$d = \theta k' \text{ when } \rho \geq r^* \quad (1)$$

$$d \leq \theta k' \text{ when } \rho = r^* \quad (2)$$

- Even in an economy without domestic currency (!) sterilized intervention has effects because it changes consumption of home goods and exportables, and hence it affects the real exchange rate, the relative price. When the economy has a credit constraint, intervention, by changing credit supply and relative demands has real effects. How exactly?
- The action: selling reserves reduces b and loans increase when constraint is binding, stimulating credit and e (the RER) declines (equation in the middle of page 11), as long as the expansion in consumption and change in labor supply do not offset the value effect (solved numerically). there is no simple example to work analytically all the transmission mechanism of intervention.
- The opposite happens for reserve purchases: it is contractionary as long as it drives the economy to the binding region, and depreciates the real exchange rate.

Comments

- A purchase of reserves (to depreciate the exchange rate) is contractionary. But they are usually done to prevent a slowdown of exports. What is the rationale to intervene and trigger a slowdown?
- Sale of reserves. The increase in the spread induces credit constraints and slowdown, so intervention to induce an appreciation. No fear of floating? to me the most important (unwarranted in many cases) reason to sell reserves.
- This paper has an asymmetry: rationale to intervene to limit a depreciation but not an appreciation. Mine is the opposite for competitiveness reasons (is it currency manipulation?)

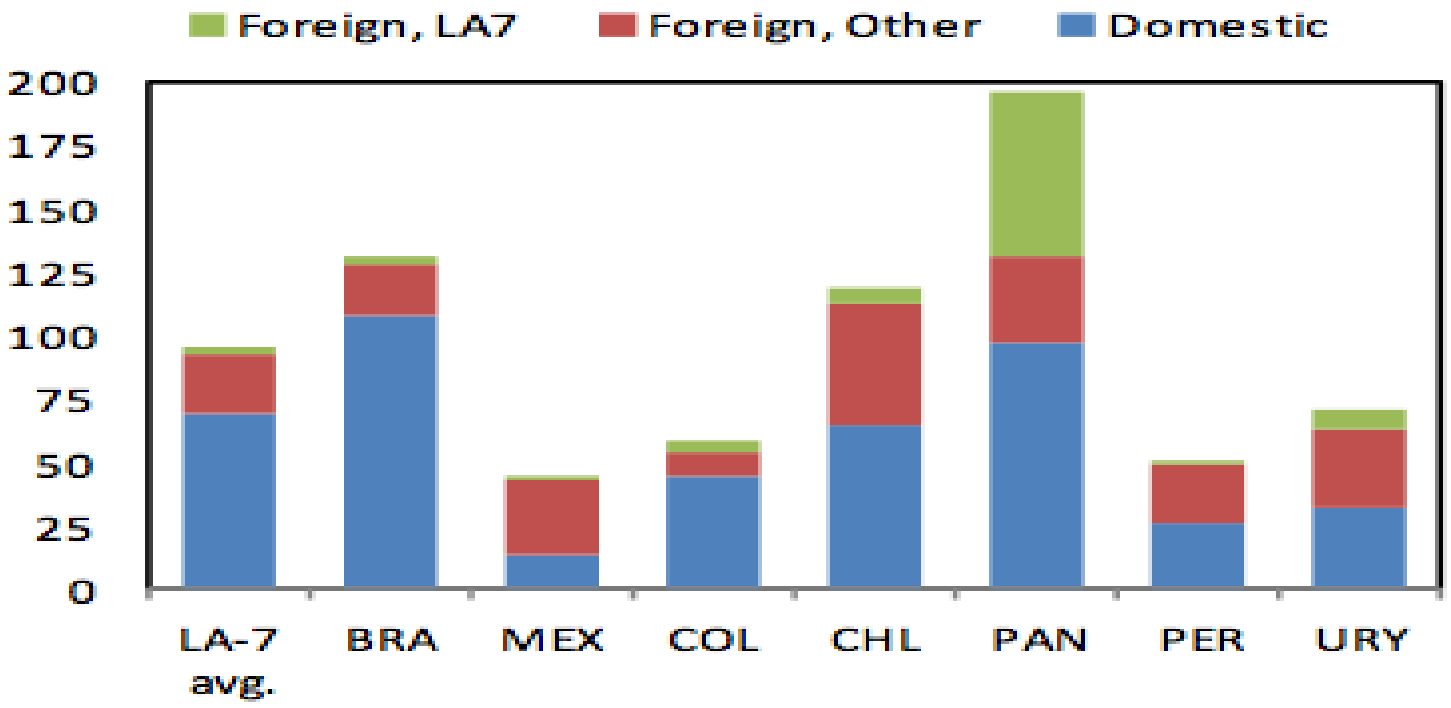
The key feature is the financial friction and how it is assumed to work. There are three constraints, external borrowing, only locals hold b, and households' equity constraint.

- The constraint ($d \leq \theta b$): why banks cannot use as collateral sterilization bonds? why can't they sell b? foreigners hold a relevant fraction of national debt.
  For example: $d \leq \theta(b+k)$
- In this case selling reserves would reduce b, as in this paper, but it would have two effects: more lending but tighter constraint because the collateral declines (!). If $\theta < 1$ the main channel still works, but the probability of reaching the constraint may decline significantly.

- Why households face an equity limit? can this be solved with foreign banks? That could be the first best solution to avoid (or mitigate) infrequent credit constraints.
- If there is a spread, why banks do not lend at a rate $r > r^*$? If the financial friction were endogenous it could be relaxed with a higher interest rate on foreign borrowing. This is done in 2.5 (equilibrium) but the spread is assumed to depend on $\ell = k + d - b$. More banks' net worth increases the spread (?) because this is more lending. Why not making dependent on $d - b - k$?.

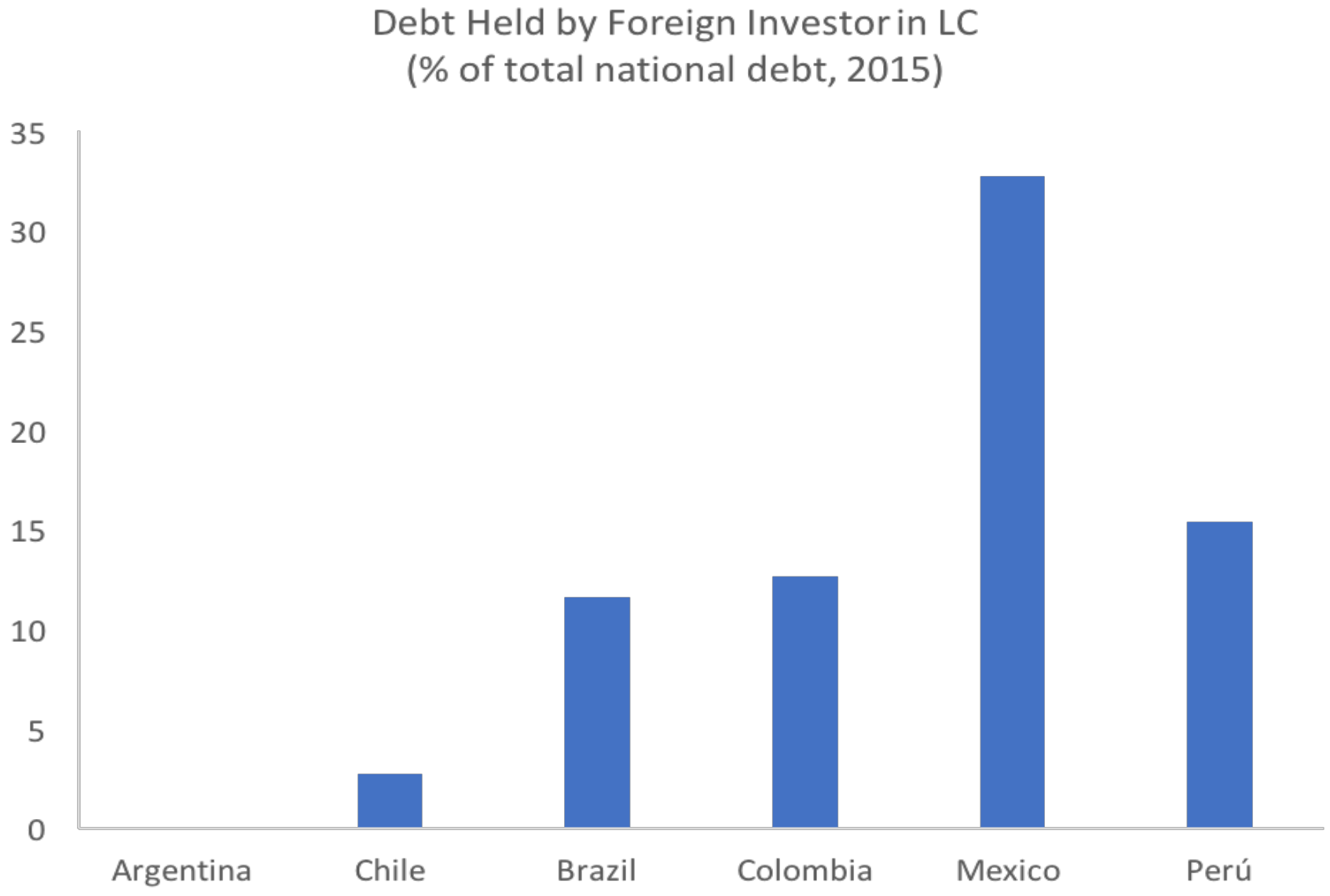
Figure 9. Commercial Bank Ownership[1]

(bank assets in percent of GDP)



Sources: National authorities; Bureau van Dijk; and IMF staff calculations.

[1] Year-end 2014 or latest available.


Debt Held by Foreign Investor in LC
(% of total national debt, 2015)
35
30
25
20
15
10
5
0
Argentina
Chile
Brazil
Colombia
Mexico
Perú

My interpretation

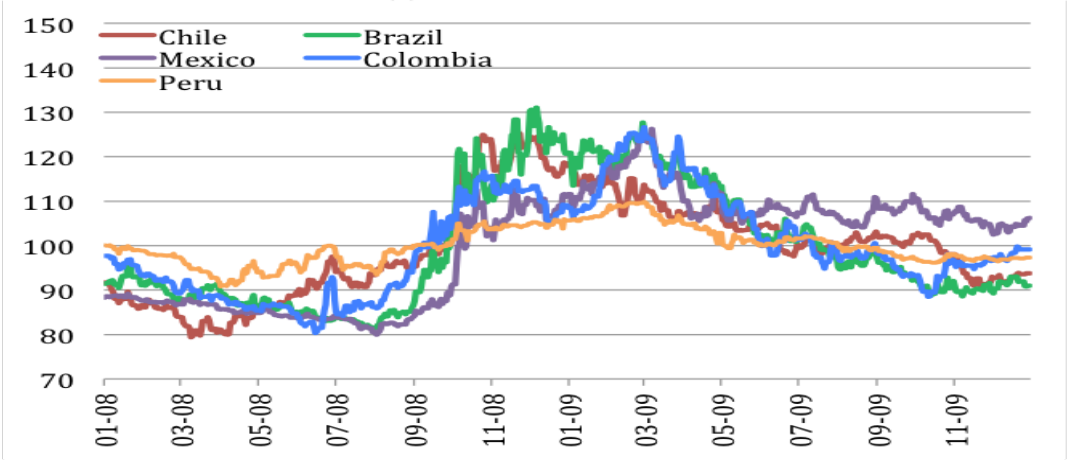
Sometimes countries face credit constraints, capital outflows, sudden stops etc. Central banks, to avoid a collapse of the currency, intervene by providing FX avoiding credit crunches, financial instability and inflation.

This paper makes this point using a DSGE model, which is the standard for rigorous analytical work, but it needs empirical evidence to show that this is a relevant channel. It is interesting that intervention is not always effective and depends on whether credit constraints are binding.

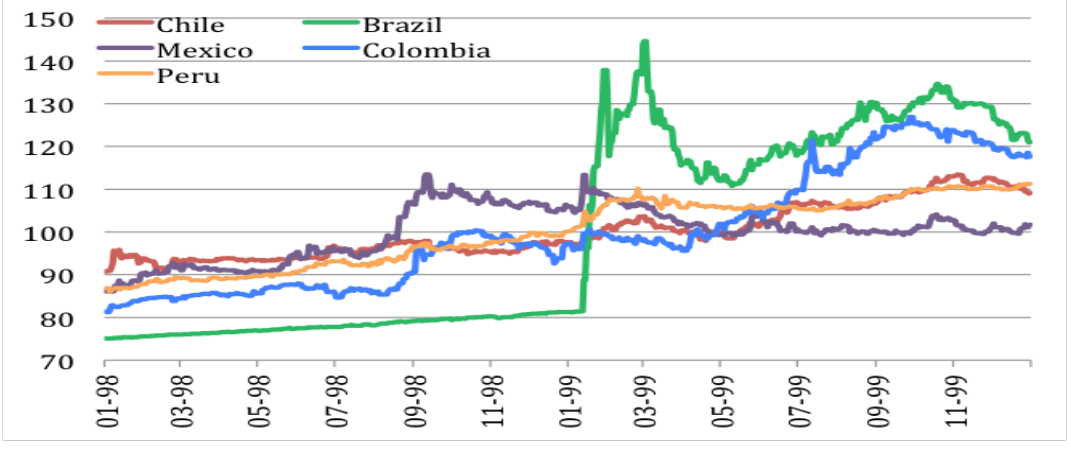
How important is this? I do not think that much. During the global financial crisis with huge swings in exchange rates, FX intervention was moderate. The challenge is to explain why they have so much reserves and use so little.

Figure 1. Exchange Rates
(period average=100)

(a) Global Financial Crisis



(b) Asian Crisis



Source: Bloomberg.

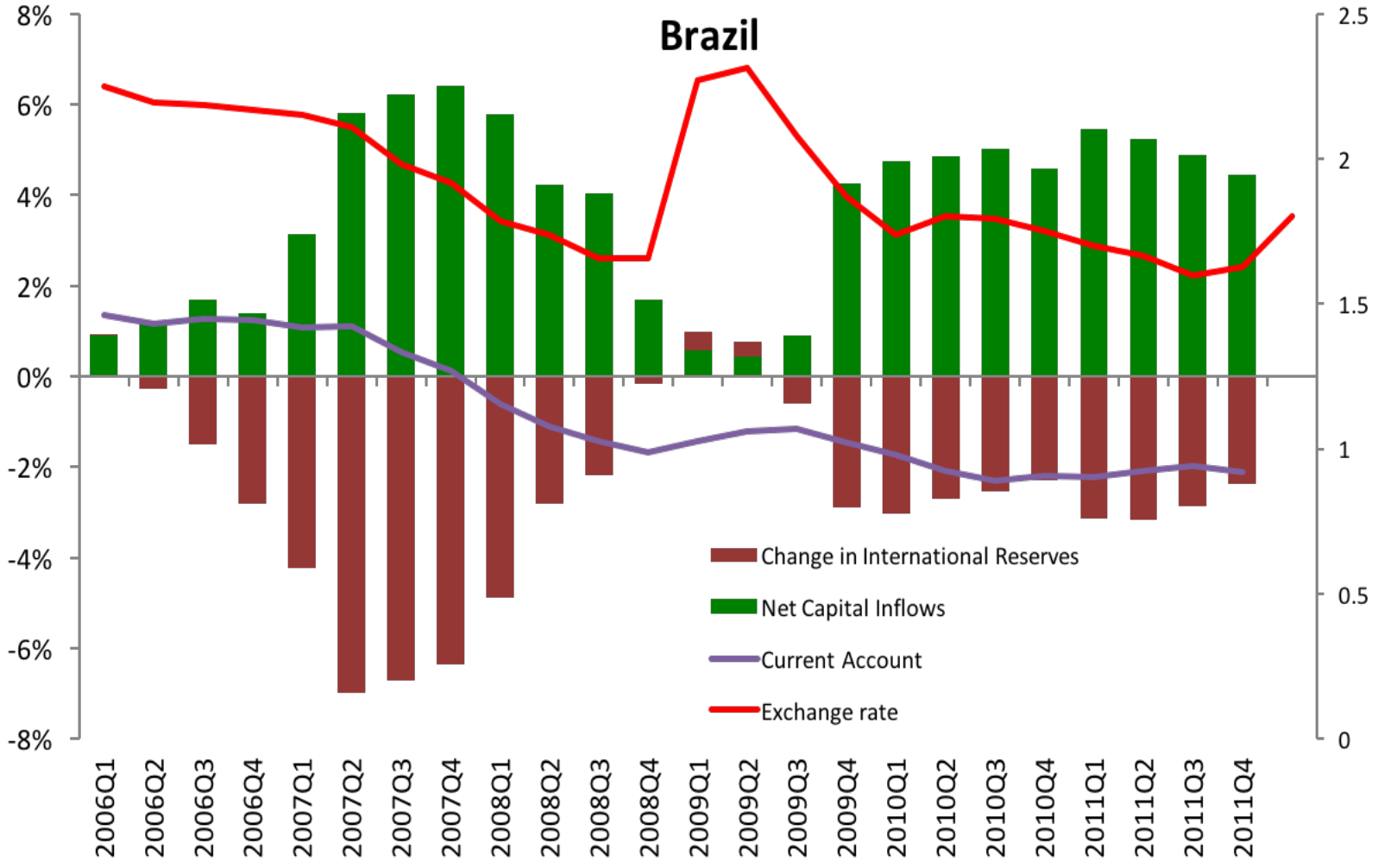
Table 2. Maximum Decline of Reserves*
(percentage)

	Asian Crisis		Global Financial Crisis	
	12-months	Pre-Post	12-months	Pre-Post
	(1)	(2)	(3)	(4)
Argentina	-9.2	-2.4	-7.9	-10.9
Brazil	-53.5	-49.4	-3.1	-9.6
Chile	-17.4	-20.2	4.2	-9.8
Colombia	-16.2	-22.7	1.7	-3.3
Mexico	-0.1	-4.9	-14.1	-14.9
Peru	-17.9	-21.0	-13.9	-18.5
Venezuela	-32.3	-33.6	-34.4	-38.9
Average	***-20.9***	***-22.0***	***-9.7***	***-15.1***
Median	***-17.6***	***-21.5***	***-8.8***	***-12.9***
China	3.8	2.8	8.5	-1.4
India	-7.6	-9.2	-20.4	-21.6
Indonesia	-18.4	-23.9	-11.9	-17.4
Korea	-40.2	-40.2	-23.5	-24.1
Malaysia	-28.5	-28.9	-29.6	-30.4
Philippines	-27.4	-31.6	3.0	-2.2
Thailand	-34.9	-32.0	-7.4	-5.8
Average	***-21.9***	***-23.3***	***-11.6***	***-14.7***
Median	***-24.7***	***-26.4***	***-11.7***	***-16.1***

* The decline of reserves is measure as the maximum decline in 12 months from January 1998 to January 2001 for the Asian Crisis and from April 2008 to April 2010 for the global financial crisis, and the maximum decline from the maximum level reached before the crisis—January 1997 to August 1998 for the Asian crisis and April 2008 to September 2008—and the minimum post crisis—September 1998 to January 2001 for the Asian crisis, and October 2008 to April 2009 for the global financial crisis.
Source: IMF-IFS.

General discussion

- Why central bank accumulate reserves and do not use them? Precautionary and mercantilist reasons. Because the optimal level of precaution depends on reserves held by other economies this induces reserves inflation.
- The mercantilist motive is asymmetric: depreciation is liked appreciation disliked.
- Purchasing FX triggers some offsetting capital inflows, which implies effectiveness is limited (not zero).
- But what about the evidence that countries that accumulate reserves have also a greater balance in the current account (IMF-EBA, 2014; Chinn, 2017; and Gagnon, 2017). Conflicting results that need further research.


Brazil
8%
6%
4%
2%
0%
-2%
-4%
-6%
-8%
2.5
2
1.5
1
0.5
0
Change in International Reserves
Net Capital Inflows
Current Account
Exchange rate
2006Q1
2006Q2
2006Q3
2006Q4
2007Q1
2007Q2
2007Q3
2007Q4
2008Q1
2008Q2
2008Q3
2008Q4
2009Q1
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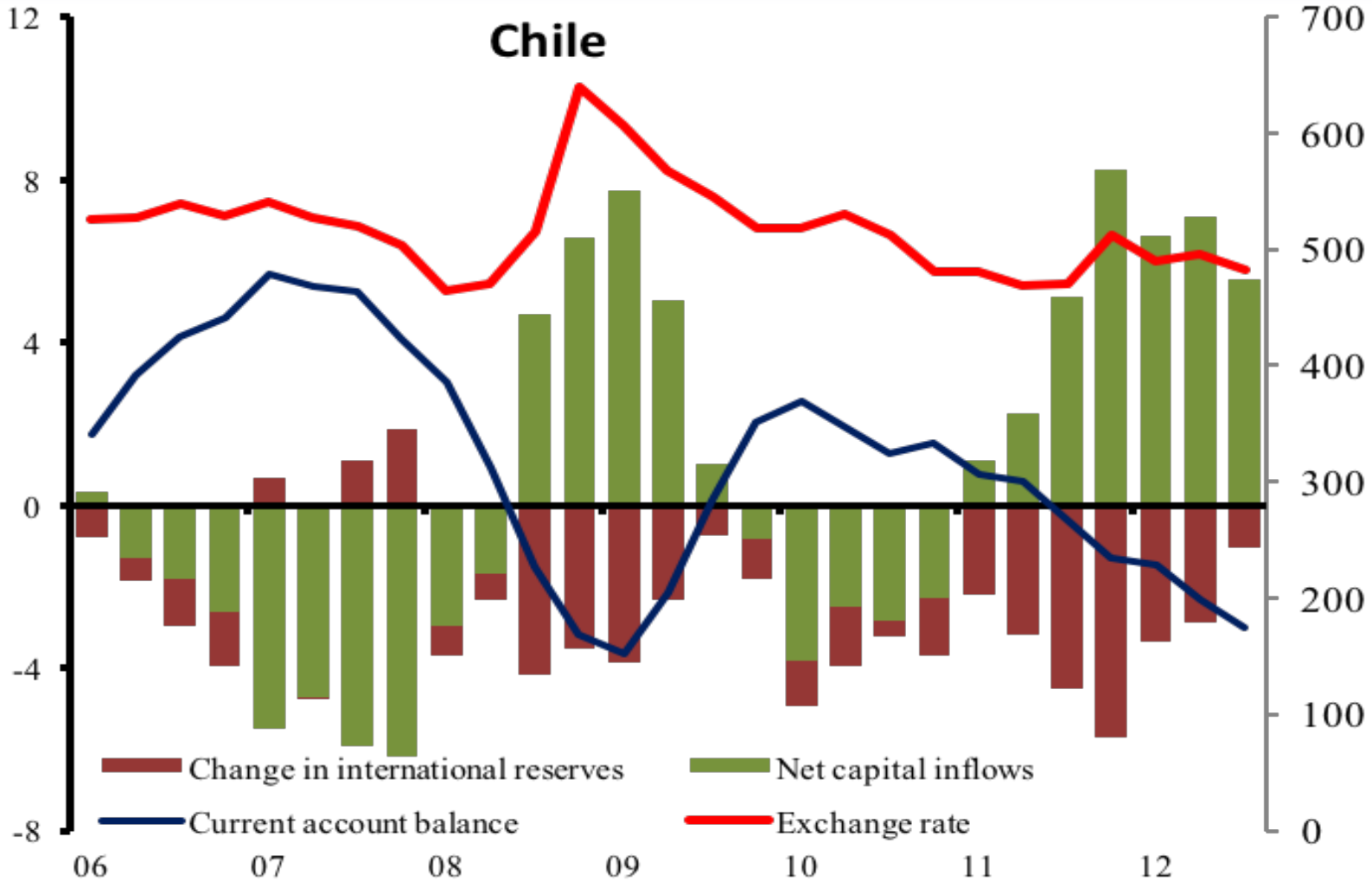
2010Q3
2010Q4
2011Q1
2011Q2
2011Q3
2011Q4


Chile
12
8
4
0
-4
-8
700
600
500
400
300
200
100
0
06
07
08
09
10
11
12
Change in international reserves
Net capital inflows
Current account balance
Exchange rate

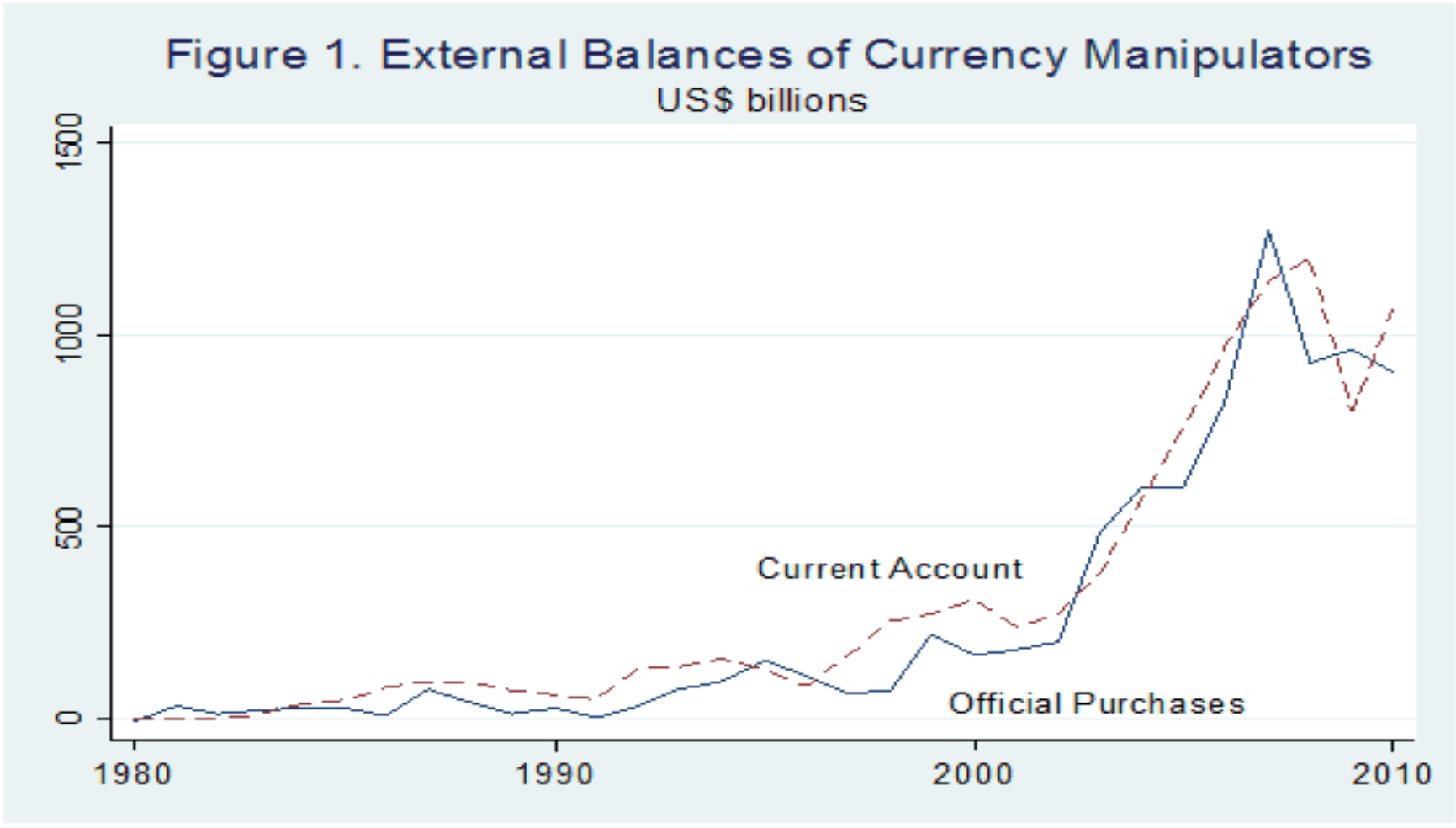


Figure 1. External Balances of Currency Manipulators
US$ billions
1500
1000
500
0
1980
1990
2000
2010
Current Account
Official Purchases