



**Fifth Summit Meeting of Central
Banks on Inflation Targeting “Global Liquidity, Capital Flows and Policy
Coordination” organized by Banco Central de Chile**

**Presentation by José Darío Uribe, Governor of the Banco de la República in
Session IV: Policy Responses to Exchange Rate Pressure Stemming from Capital
Flows**

For several years capital flows have been an inexpensive and readily available source of funding for Emerging Economies, boosting domestic demand, credit, employment and production. However they have also been a concern due to their potential consequences for the allocation of real and financial resources across countries, sectors and time.

In particular, large capital flows are associated with:

1. Persistent real exchange rate appreciations (Caballero and Lorenzoni, 2007)
2. Credit booms and increased volatility (Mendoza and Terrones, 2008)
3. Asset and non-tradable prices booms (Jeanne and Korinek, 2010)
4. Vigorous growth of both labor demand and output, especially in non-tradable sectors (Bianchi and Mendoza, 2010)
5. Increased risk taking by the financial system (López, Tenjo y Zárata, 2012)

These facts imply that there are important imperfections in domestic and international financial markets that prevent economies from fully smoothing their consumption and allocating resources efficiently. This creates a series of challenges from the viewpoint of the policymaker.

Real Currency Appreciation

One of these challenges is the large and persistent real currency appreciation episodes which accompany capital inflows that are triggered by exceptionally low foreign interest rates.

When the currency appreciates due to temporary (although persistent) external factors, the medium and long run health of the economy may be at risk: demand for non-tradable goods and services increases, thus hurting the tradable sector for a

protracted period. Once the factors behind the appreciation subside or revert, non-tradable demand contracts. If the tradable sector faces financial constraints, its ability to recover is compromised and the economy experiences a large exchange rate overshoot.

These problems are amplified through credit dynamics. The real exchange rate appreciation may increase the value of non-tradable collateral used for borrowing (as in Kiyotaki and Moore, 1997) or reduce the risk-spreads in that sector (as in Bernake, Gertler and Gilchrist, 1999), while the opposite happens in the tradable sector. Therefore, aggregate credit and its composition should be carefully studied.

Financial Stability

A second challenge is the impact of capital flows on savings and investment decisions as well as on the types of assets and liabilities being used in the economy.

Capital flows may reduce domestic interest rates through several channels. Local policy rates may fall if the national currency is pegged to a reserve foreign currency, or if an inflation targeting central bank responds to a drop in inflation stemming from the appreciation of the currency. Further, given the policy rate, local risk premiums may become compressed and asset prices may rise excessively as a result of sustained capital inflows. Such effects may induce reductions in savings and increases in investment that end up pushing up the current account deficit.

The sustainability of an increased current account deficit may be called into question if capital inflows stop or revert. In addition to the macroeconomic adjustment entailed by such shifts, there may be financial disruptions reflected in a deterioration of loan quality and plummeting asset prices that curtail credit supply and deepen the contraction of aggregate demand and disturb the operation of the payment system.

Moreover, agents may be tempted to borrow at shorter terms to invest at longer horizons during the expansionary phase of the business cycle. Short-term debt flows raise liquidity, market or currency risk for the real sector and the financial system. This increases financial and real vulnerabilities and makes the adjustment of the economy after a possible sudden stop more painful.

Furthermore, a non-tradable credit boom can form because agents become too optimistic about future events (Fostel and Geanakoplos, 2008) or because they do not fully internalize how current individual borrowing decisions affect aggregate collateral values during downturns (Mendoza and Korinek, 2013). Thus, agents may either demand too many risky assets (relative to less risky ones) or take “too much” credit, especially for non-tradable activities.

Although not all capital-flow intermediated credit booms end in financial crises, the RER adjustments required once external conditions change and/or capital flows come to a sudden stop pose a serious risk to non-tradable sectors in the presence of large

currency mismatches. In countries in which housing is the main component of financial wealth, consumption contraction is significant and the welfare reduction is large afterwards.

To summarize, even if at first sight the resource reallocation induced by the RER appreciation appears efficient, financial frictions of different types may distort the allocation of financial and productive resources thereby creating a rationale for policy action.

Policy Responses: What Can Policy Do?

Policymakers are thus faced with the dilemma of how to take advantage of the virtues of capital flows while minimizing the destabilizing risks inherent to sudden stops in capital flows.

Actions to Confront Real Currency Appreciation

To deal with the exchange rate pressure stemming from capital flows and its impact on the sectorial composition of output fiscal measures constitutes a first line of defense. For instance, one policy prescribed by theory is to tax the booming sector (usually the non-tradable sector) and transfer resources to the affected one (the tradable sector). On paper, this prescription may work well; in practice, issues pertaining to assessing the duration of the shocks and the microeconomic and political economy aspects of subsidizing specific sectors are very difficult to overcome.

A more promising scheme is to raise domestic savings, especially to cope with a persistent appreciation of the currency stemming from structurally high terms of trade and the related FDI inflows. In the short and medium term, this must be accomplished by raising public savings coupled with policies that promote private savings. However, this option also has its limits. Increasing public savings beyond countercyclical responses may be achieved by means of distortionary taxation or cuts to necessary public spending. These costs must be weighed against the expected benefits from aiding tradable sectors.

A more controversial approach may be the use of monetary and FX policy to manage the sectorial implications of a persistent appreciation resulting from capital inflows. It can be argued that there is some merit in expanding the set of objectives in the loss function of the central bank to account, for instance, for RER deviations from long-run equilibrium. This occurs in the context of nominal frictions that may grant some effectiveness of monetary policy on the real exchange rate at some horizons. However, increasing the number of objectives to be attained with the same instrument (the interest rate) may hinder the credibility of monetary policy for achieving its basic long term goal of price stability and even its ability to smooth business cycles.

Furthermore, the use of the policy rate in response to the consequences of capital flows requires a careful study of the factors behind them. Capital flows coming from temporarily low foreign interest rates may call for a policy response that differs from the reaction that is appropriate when the inflows arise from pull factors such as better security or fiscal situations. Identifying whether these shocks are transitory or permanent is equally important, but difficult in practice.

Sterilized FX intervention may be thought of as another instrument for targeting a desired (real) exchange rate level, beyond merely accumulating reserves or correcting short term misalignments. Nevertheless, when the degree of financial integration and sophistication in the economy is moderate to high, sterilized FX intervention for this purpose may prove ineffective or effective over short spans at best. And even in situations in which effectiveness is ensured by imperfect substitution between different types of assets, sterilized FX intervention may have unintended consequences on credit supply and consumption volatility (Vargas et al. 2013).

Imposition of capital controls to offset persistent currency appreciation is another policy option that must be evaluated in terms of its benefits vis-à-vis the distortions that it may introduce. Potentially problematic issues arise as will be discussed below.

In sum, fiscal policy seems the first line of defense to confront the undesired sectorial effects of a capital flow-related persistent currency appreciation, although there are limits to their scope and effectiveness. The use of monetary and FX policy for this purpose is more controversial given the costs of compromising other objectives and unintended consequences. Resorting to capital controls is similarly contentious and, in any case, they must not be used as substitutes of adequate fiscal responses.

Actions to Preserve Financial Stability

Financial stability challenges posed by capital inflows are at least as important as sectorial ones. Financial conditions may be excessively loosened by the inflows and lead to rapid credit growth, low risk and term premiums, currency and term mismatches and overvaluation of assets. Here, as before, the question arises as to whether monetary policy should be burdened with an additional objective, e.g. curbing excessive credit expansion (Agénor and Pereira Da Silva, 2013).

In addition to the issue of new policy tradeoffs and credibility, there is the fact that the short-term interest rate is a blunt, and perhaps limited, instrument to deal with the consequences of capital inflows. As capital flows are usually accompanied by currency appreciation, and since the policy rate affects the overall economy, raising it to contain credit growth may harm precisely those agents and sectors which need credit the most during the appreciation phase. Making financing more expensive may stress those already financially stressed tradable firms even further.

Authorities may then consider using a wider range of policy instruments. To confront the challenges posed by credit dynamics induced by the intermediation of capital flows, financial regulation is an option. As mentioned before, capital flows may be largely intermediated through the domestic banking system (Kaminsky and Reinhart, 1999). This induces important liquidity and foreign currency risks that may come to fruition once capital flows come to a sudden stop. The literature has shown that Tobin taxes may correct the pecuniary externality that arises when private agents do not anticipate borrowing constraints that occasionally bind.

A similar line of reasoning can be derived for capital controls as a complementary counter-cyclical policy to contain foreign indebtedness. Recent theoretical and quantitative models show that Pigouvian taxes to capital flows can restore the first best equilibrium as they attack the externalities that give rise to large and persistent RER appreciations and over borrowing (Mendoza and Bianchi, 2011 and Korinek, 2011). Thus, the policy implication in these models is that taxing capital flows is more of a complementary instrument than a last-resort line of defense as has been suggested by the IMF (Ostry et al, 2010).

As with other policy tools the use of these instruments is limited in practice by their effectiveness. Regulation of financial intermediaries may be very effective in countries with bank-based systems in which "shadow banks" and capital markets are not very important. In these cases, permanent regulation of currency and liquidity risk of the intermediaries may be a desirable option. Permanent regulation of non-financial firms may be impossible to enforce or lead to the emergence of unmonitored products and vehicles. In this case, Pigouvian and Tobin taxes, though desirable as a permanent corrective of externalities, may be eluded through means outside the supervision of authorities thus leading to an unwelcome situation in which the taxes are ineffective and the financial stability risks of the economy are not well gauged.

A practical way for economic authorities to proceed is to identify credit booms associated with capital inflows. Recent evidence has found that macroeconomic variables may contain information about the occurrence of credit booms in Latin America and they are shown to be preceded by large capital inflows and RER appreciation.

Moreover, an early warning system must evolve to capture changing patterns of capital inflows. For example, Turner (2013) has shown that after the global financial crisis ample international liquidity has been reflected in greater issuance of bonds by EME firms and in reduced risk and maturity premium. Thus, any assessment of capital inflow pressure in financial markets must go beyond the behavior of bank loans.

Early warning system signals could help authorities to reduce the extent of liquidity and foreign-currency mismatches by introducing transitory leverage caps on foreign-currency denominated assets and debts of domestic agents. Another possibility that

has been used is to raise countercyclical marginal reserve requirements as a tool for containing excessive domestic credit growth during periods of large capital inflows.¹

A key financial stability concern is foreign exchange liquidity. In addition to regulatory measures, the maintenance of adequate FX aggregate liquidity cushions is essential. To address the heightened foreign liquidity risk resulting from stronger capital inflows, the central bank should keep an appropriate level of international reserves.

The timing and mode of such an intervention are important policy questions. Countries may want to intervene opportunely in the FX market when the probability of a short term exchange rate misalignment is greatest. That way the intervention aimed at building an adequate level of reserves may be used simultaneously to curb short term exchange rate misalignments.

Despite the need to intervene in the FX market with some frequency, it is vital that authorities avoid providing implicit floors or ceilings for the exchange rate that could hamper private sector incentives to hedge from exchange rate risk. A perverse outcome of something similar to a fixed exchange rate regime is the emergence of large currency mismatches that would hinder the ability to conduct anti-cyclical monetary policy and compromise financial stability.

Conclusion

The challenges of capital inflows to the sectorial composition of output and financial stability require policy responses in several spheres. Fiscal and tax policy reactions are perhaps better suited to address the sectorial effects of sustained capital inflows, although they face limitations.

Permanent regulation of financial intermediary mismatches and countercyclical financial regulation are useful tools for confronting the financial stability risks stemming from capital inflows. Eventually, capital controls may be necessary to curb the undesired effects of the latter. However, their effectiveness may wane with time, as (potentially unmonitored) means may be found by the private sector to circumvent them. Thus, their use should be temporary.

In general, preserving a well capitalized and liquid financial system during the period of capital inflows is crucial to withstanding their reversal without traumatic adjustments of credit and aggregate expenditure. This is also important to enable countercyclical monetary and financial policy responses in the capital flow retrenchment phase.

¹ This is especially important for countries with an intermediate financial development. As financial markets deepen the country's ability to absorb capital inflows increases, however, sound financial regulation is still crucial, as the financial crisis in industrialized economies shows.

Monetary policy should preferably remain focused on price and short term output stability while allowing a substantial degree of exchange rate flexibility. The latter is essential to pursue countercyclical policy responses to exogenous shocks, as well as to limit the buildup of currency mismatches on the balance sheets of residents. Sterilized FX intervention is necessary to keep an adequate level of international reserves and mitigate foreign liquidity risk. Such intervention should be carried out opportunistically during periods when the perceived probability of short term exchange rate misalignments is large.

References

Agénor, P.R. and L.A. Pereira Da Silva (2013) *Inflation Targeting and Financial Stability: A Perspective from the Developing World*. Centro de Estudios Latinoamericanos and Inter-American Development Bank.

Bernanke, Ben S., Gertler, Mark and Simon Gilchrist, 1999. "The financial accelerator in a quantitative business cycle framework," *Handbook of Macroeconomics*, in: J. B. Taylor & M. Woodford (ed.), *Handbook of Macroeconomics*, edition 1, volume 1, chapter 21, pages 1341-1393 Elsevier.

Bianchi (2010) "Overborrowing and Systemic Externalities in the Business Cycle", Job market paper, (Forthcoming, *American Economic Review*).

Bianchi, Javier, and Enrique Mendoza (2010), "Overborrowing, Financial Crises, and Macroprudential Taxes", manuscript, Department of Economics, University of Maryland.

Borio, C. (2003) "Towards a Macroprudential Framework for Bank Supervision and Regulation?" Bank of International Settlements Working Paper No. 128.

Bruno, V. and H. Shin (2013) "Capital Flows and the Risk-Taking Channel of Monetary Policy" unpublished manuscript, Princeton University.

Caballero, Ricardo J. and Lorenzoni, Guido, *Persistent Appreciations and Overshooting: A Normative Analysis* (April 19, 2007). MIT Department of Economics Working Paper No. 07-13. Available at SSRN: <http://ssrn.com/abstract=981909>

Calvo, G. (1998). *Capital Flows and Capital-Market Crises: the Simple Economics of Sudden Stops*. *Journal of Applied Economics*, Vol. 1, No. 1, November 1998, pp. 35-54

Guillermo A. Calvo & Leonardo Leiderman & Carmen M. Reinhart (1993). "Capital Inflows and Real Exchange Rate Appreciation in Latin America: The Role of External Factors," *IMF Staff Papers*, Palgrave Macmillan, vol. 40(1), pages 108-151, March.

Fostel, A. and J. Geanakoplos (2008) "Leverage Cycles and the Anxious Economy" (with A. Fostel), *American Economic Review*, 98(4): 1211–1244.

Gourinchas P. O. and M. Obstfeld (2011). *Stories of the Twentieth Century for the Twenty-First*, National Bureau of Economic Research, Working Paper 17252.

Jeanne O. and A. Korinek, (2010). "Managing Credit Booms and Busts: A Pigouvian Taxation Approach," NBER Working Papers 16377, National Bureau of Economic Research, Inc.

Kiyotaki, Nobuhiro & Moore, John (1997), "Credit Cycles", *Journal of Political Economy* **105** (2): 211–248

Korinek, A. (2010). *Regulating Capital Flows to Emerging Markets: An Externality View*. University of Maryland, mimeo.

Kaminsky, G., and C. Reinhart (1999). "The Twin Crises: The Causes of Banking and Balance-Of-Payments Problems," *American Economic Review*, 89(3), 473-500.

R. E. Lipsey (2001) "Foreign Direct Investment in Three Financial Crises," NBER Working Paper No. 8084, January.

López, M. (2006) "House Prices and Monetary Policy in Colombia" *Ensayos Sobre Política Económica*, No. 50, Junio.

López, M., F. Tenjo y H. Zárate (2012) "The Risk-taking Channel in Colombia Revisited" *Ensayos Sobre Política Económica*, Vol. 30, No. 68, Junio.

Mendoza and Terrones (2008). "An Anatomy of Credit Booms: Evidence from Macro Aggregates and Micro Data," WP NBER 14049.

Mendoza, E. and A. Korinek (2013) "From Sudden Stops to Fisherian Deflation: Quantitative Theory and Policy Implications" NBER Working Paper No. 19362

Ostry, J. et al. (2010). "Capital Inflows: The Role of Controls," IMFS Staff Position Note, SPN/10/04.

Prasad, E. (2011). "Role Reversal in Global Finance" mimeo, Cornell University, Brookings Institution and NBER.

Turner, P. (2013). "Benign neglect of the long-term interest rate," BIS Working Papers 403, Bank for International Settlements.

Vargas H., A. González and D. Rodríguez (2013). "Foreign Exchange Intervention in Colombia," Borradores de Economía 757, Banco de la República, Colombia.