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## **Capital Controls: A Meta-analysis Approach**

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## Capital Controls: A Meta-analysis Approach <sup>1</sup>

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Academics, financial market participants, and policymakers have once again demonstrated an interest in capital controls. In the present context, the discussion has largely focused on emerging markets' measures to curb capital inflows and/or to skew their composition away from more volatile types of flows (including the carry trade and portfolio flows). Similar discussions (with far less approval from official circles) took place in the early 1990s, as many emerging markets faced a similar surge in capital inflows. Unfortunately, there is enormous confusion about what experience tells us about their effectiveness.

The existing literature on capital controls has (at least) four serious issues that make it difficult to make meaningful comparisons across theoretical and empirical studies. We dub these "*the apples-to-oranges problems*" and they include: (i) The lack of a unified theoretical framework (say, as in the currency crisis literature) to analyze the macroeconomic consequences of controls; (ii) significant heterogeneity across countries and time in the measures implemented (even when they were in principle trying to achieve the same end); <sup>2</sup> (iii) multiple definitions of what constitutes a "success" (capital controls are a single policy

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<sup>1</sup> This note highlights some of the issues examined in Nicolas Magud, Carmen M. Reinhart, and Kenneth S. Rogoff, "Capital Controls: Myth and Reality—A Portfolio Balance Approach," NBER Working Paper 16805, February 2011.

<sup>2</sup> The measures span Tobin-like transaction taxes, reserve requirements on external borrowing or nonresident accounts, curbs on foreign exchange transactions, or outright bans on banks acceptance of nonresident deposits.

instrument-but there are many policy objectives)<sup>3</sup>; and (iv) the empirical studies are markedly heterogeneous and are disproportionately “overweighted” by the two poster children—Chile and Malaysia.<sup>4</sup>

In our recent paper, we delved into the details of this apple-to-oranges problem with the aim of defining a minimum common ground. We begin our analysis by explicitly documenting the kinds of measures that are construed as capital controls. Along the way, we describe the more drastic differences across countries/episodes and between controls on inflows and outflows as well a more subtle differences in types of inflow or outflow controls. Given that success is measured differently across studies, we standardize (to some degree) the results across studies. Inasmuch as possible, we highlight episodes that are less well known than the heavily analyzed cases of Chile and Malaysia.

Our results are based on a meta-analysis of 37 empirical studies. Table 1 provides a summary of the geographical coverage and broad-brush characteristics of this literature. The main findings can be summarized as follows:

*Capital controls on inflows, (i) make monetary policy more independent, (ii) alter the composition of capital flows, and (iii) reduce real exchange rate pressures (although the evidence on the latter is more controversial).*

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<sup>3</sup> “Success” is sometimes taken to mean that the measures were able to reduce the volume of inflows, affect their composition, dampen nominal (and/or real) appreciation of on the exchange rate, curb credit growth, and achieve a greater degree of monetary policy independence despite a managed or fixed exchange rate.

<sup>4</sup> Some studies are narrative-style case studies, others adopt a before-and-after approach, some involve pooled cross-country exercises, etc.

*Capital controls on inflows do not reduce the volume of net flows (and hence the current account balance).*

*As to controls on outflows, there is Malaysia and there is everybody else. In Malaysia, controls reduced outflows and may have given room for more independent monetary policy (the other poster child does not fare as well, in that our results are not as conclusive as for the Chilean controls on inflows). Absent the Malaysian experience, there is little systematic evidence of “success” in imposing controls, however defined. Perhaps this owes to a “selection bias” in that the outflow controls in these studies were uniformly introduced during unfolding financial crises.*

All of the above implies that whether imposing capital controls on inflows or outflows is effective depends critically on “initial conditions.” For example, in the case of Chile in the 1990s, capital controls were just one additional element within a broad set of economic reforms—perhaps trying to fine tune the effects of the economic policy and institutional reforms. Or in Malaysia, non-compliance with regulations could have been heavily penalized. In both cases, the effectiveness of capital controls should probably be evaluated “at the margin.” Furthermore, the “macroeconomic policy package” that accompanies the controls also matters. For example, the effectiveness of a Tobin tax-like measures (such as those adopted by Brazil in the mid-1990s and more recently) to deter inflows depends importantly on the central bank’s sterilization policies. While the transaction tax reduces the rate of return to foreign investors on the domestic bond (as intended), heavy sales of bonds by the central bank (to sterilize, or offset, the expansionary effects of foreign exchange purchases on the monetary aggregates) may drive short-term domestic interest rates sufficiently high that domestic bonds remain attractive to foreign

investors—despite the tax. Such a counterproductive policy “mix” has sometimes undermined the effectiveness of the controls.

To deepen our understanding of our assessment of the empirical literature, we develop a portfolio balance approach in which foreign investors have to decide under uncertainty the share of their portfolio investment to allocate in short- vs. long-term flows. We find that conditional on the elasticity of short-term capital flows to total capital flows, the same capital controls could result in either an increased, unaltered, or decreased level of short-term flows as well as total capital flows. Thus, it is not clear that capital controls in two countries—even if exactly equally implemented—will necessarily be equally effective (or effective at all!). We also model the conditions under which *price-capital-controls* (taxes imposed on the rate of return of short-term capital flows) generate the same effect on capital inflows as *quantity-capital-controls* (restrictions to the quantity of capital flows permitted). Interestingly, we find that that the degree of equivalence depends on the level of short-term capital flows at the moment that the controls are put in place. Thus, we obtain a model that shows that only under very specific conditions will capital controls be effective in achieving its goals, consistent with the documented evidence.

How do our results square with current policy thinking on capital controls? The consensus view, oft stated by IMF officials and policy economists, is that market friendly capital controls on short-term capital inflows could be effective, although over time that effectiveness may be eroded as markets find more and more creative ways to avoid the controls. Even this cautious statement might exaggerate the effects of capital controls, because so much academic attention has been focused on cases where the initial conditions were favorable and because of excessive emphasis on just the Chilean and Malaysian

episodes. Our results balance the discussion by broadening the set of capital controls episodes substantially, including for example less well known capital control episodes such as those in Czech Republic, Spain, Peru, Colombia, and others.

Finally, we note that our analysis is narrowly focused on capital controls aimed at selectively influencing flows in and out of international markets. In practice, many developing countries such as China and India, adopt a broad array of controls that drastically affect both domestic and international markets. Reserve requirements are an important example of an instrument that is used heavily in many developing countries, and affects both internal and international financial integration.<sup>5</sup> We leave this critical topic to future research.

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<sup>5</sup> See Reinhart and Reinhart (1999).

**References**

Magud, Nicolas, Carmen M. Reinhart, and Kenneth S. Rogoff, "Capital Controls: Myth and Reality—A Portfolio Balance Approach," NBER Working Paper 16805, February 2011.

Reinhart, Carmen M. and Vincent R. Reinhart, "On the Use of Reserve Requirements in Dealing with the Capital-Flow Problem," *International Journal of Finance and Economics*, Vol. 4 No.1, January 1999, 27-54.

Table 1. Selected Features of the Empirical Studies

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|   |  |
|---|--|
| Total number of studies   | 37   |
| Studies <b>not</b> referring to Chile, inflows (1990) and Malaysia, outflows (1997) | 21   |
| Other episodes include:   | Brazil, Colombia, Czech Republic, Malaysia (1989), Malaysia (1994), Thailand, Spain  |
| Type of Study   | Percentage of studies  |
| Capital inflows (percentage)  | 59   |
| Capital outflows (percentage)   | 27   |
| Combination   | 14   |
| Description of measures   | Country coverage   |
| Capital controls on inflows, 23 episodes  | Indonesia (1990), Indonesia (2010), Malaysia (1989), Philippines (1992), Philippines (2009), Russia (2010), South Africa (2010), Thailand (1988), Thailand (2010), South Korea (2009), Turkey (2010), Argentina (2001), Brazil (1992), Brazil (1996), Brazil (2010), Chile (1990), Colombia (1991), Colombia (2002), Colombia (2007), Czech Republic (1992), Czech Republic (2008), Mexico (1990), Peru (2009) |
| Capital controls on outflows, 5 episodes  | Argentina (2001), Brazil (1999), Malaysia (1997), Spain (1992), Thailand (1997)  |
| Degree of “Technical Rigor”   | Percentage of studies  |
| High  | 51   |
| Medium  | 16   |
| Low   | 33   |

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