



Economic Premise

JUNE 2010 • Number 19

Dealing with the Challenges of Capital Inflows in the Context of Macroeconomic Links

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In the wake of the recent global financial crisis, emerging markets have seen a significantly higher degree of volatility in their capital flows. At the onset, all countries experienced sudden stops and increases in risk premia. Following this initial period of uncertainty, financial markets began to differentiate between the countries, and while most developing regions have regained access to both debt and equity issuance, the pace of recovery of capital inflows has been particularly remarkable for some countries. Given the likelihood that the prevailing low interest rates in the developed world will remain for some time to come, and given the prospects of faster growth in emerging markets, it is likely that some emerging markets will experience significant surges in capital flows in the near future. This note examines potential policy responses to maintain macroeconomic and financial sector stability in the face of increased capital inflows.

Why Has the Issue of Capital Flows to Emerging Markets Surfaced Again?

The expansion of global liquidity¹ in response to the financial crisis and the consequent low interest rates in advanced economies have restarted large capital flows to emerging markets. Because of weaker bank lending though, overall capital flows

to emerging markets are still below 2008 and 2007 levels (see table 1).

Policy Challenges Presented by These Capital Flows

Capital inflows, and capital mobility more broadly, can yield many benefits: allow countries with limited savings to attract

Table 1. Gross Capital Flows to Emerging Markets (US\$ billions)

Capital flows	2008		2009		2010			
	Q1	Total	Q1	Total	January	February	March	Q1
Total	103	390	48	353	33	17	44	94
Bonds	12	65	18	115	21	5	21	48
Banks	71	257	22	129	4	5	10	19
Equity	20	68	8	109	7	7	13	27
Latin America	19	90	21	137	9	4	16	29
Bonds	5	20	10	62	8	2	10	19
Eastern Europe	36	157	6	72	12	2	9	24
Bonds	2	35	4	33	7	1	8	17
Asia	38	98	18	122	12	7	14	33
Bonds	3	7	5	16	7	2	0	9
Others	11	45	3	22	0	3	5	8

Sources: Dealogic; World Bank 2010.

financing for productive investments, foster the diversification of investment risk, and contribute to the development of financial markets.

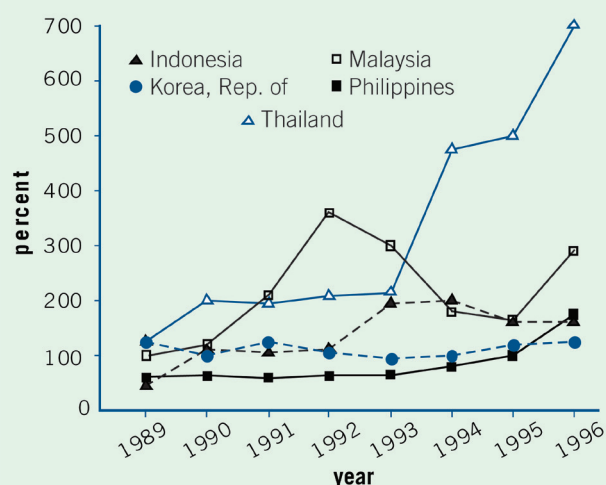
Nonetheless, capital inflow surges can be of concern to recipient economies. The current surge of inflows is likely to have a sizable transitory component to them because a major driver is the low interest rates in advanced countries that will most likely be reversed in the near future. Capital flow volatility can translate into significant macroeconomic volatility in the domestic economy. Even when capital inflows may be of a more permanent nature, reflecting equilibrium conditions, they can complicate macroeconomic management and entail tradeoffs in attaining macroeconomic objectives.

Large surges in capital inflows can lead to strong upward pressure on the exchange rate and contribute to macroeconomic overheating, widening current account imbalances through an appreciating exchange rate as well as inflationary pressures and asset price bubbles to the extent that a nominal exchange rate appreciation is resisted and monetary sterilization is either not undertaken or is ineffective (box 1). The financial sector generally plays an important role in amplifying these asset price bubbles and can exacerbate macroeconomic challenges. And in the process, the financial itself sector can become vulnerable, particularly in the context of weak institutions. If financial markets are segmented—as is the case in many emerging markets to the degree that some borrowers can only access external borrowing through the banking system, then a “credit channel”² may be operative, meaning that changes in bank credit can influence investment or consumption (Bernanke and Blinder 1988, 1992). Specifically, inflows into the banking sector that are then extended as credit to the private sector can lead to the validation of demand that would otherwise be liquidity constrained (see figure 1). In other words, banks can further exacerbate macroeconomic cycles. Even if some banks are unable to borrow or issue bonds abroad directly—as is likely to be the case with smaller domestic banks—these banks may play a role indirectly. This can happen if residents who are able to raise funds abroad then deposit their externally borrowed funds in these domestic banks, and if these smaller banks then extend credit to firms and consumers who would otherwise be liquidity constrained. Moreover, because banks are only required to hold a certain proportion of their funds in reserve, the money supply multiplier operates so that banks can extend credit by several times of any initial increase in deposits. Because banks direct much of their credit to sectors such as real estate and the stock market, they also play a role in asset inflation, which can occur with inflows of private capital. If asset price inflation leads to an increase in the collateral value of banks’ clients, against which banks lend, the cycle can be reinforced. Bank portfolios and balance sheets can become vulnerable with exposure to risky sectors (for example, real estate, foreign exchange, and maturity mismatches; box 1).

Box 1. Examples of Capital Inflows and Banking Sector Vulnerability

Foreign exchange (FX) mismatches: Following the surge in capital inflows into East Asia in the early to mid-1990s, there was a rapid increase in FX exposures (with the ratio of FX liabilities to FX assets) of the banking systems in several countries, including Thailand, Indonesia, and Malaysia.

Figure B.1. Ratio of Banks’ FX Liabilities to FX Assets



Maturity mismatches: Using bank level data from 18 emerging economies, Aysun (2006) investigates the impact of capital flows on bank’s maturity mismatches and finds a statistically significant positive relationship between the two and that further maturity mismatches play a key role in determining external vulnerability. Specifically, the study finds that maturity mismatches increase significantly during periods of high capital inflows and banks with high maturity mismatches report larger losses if there is a capital reversal—despite being more profitable in more tranquil periods.

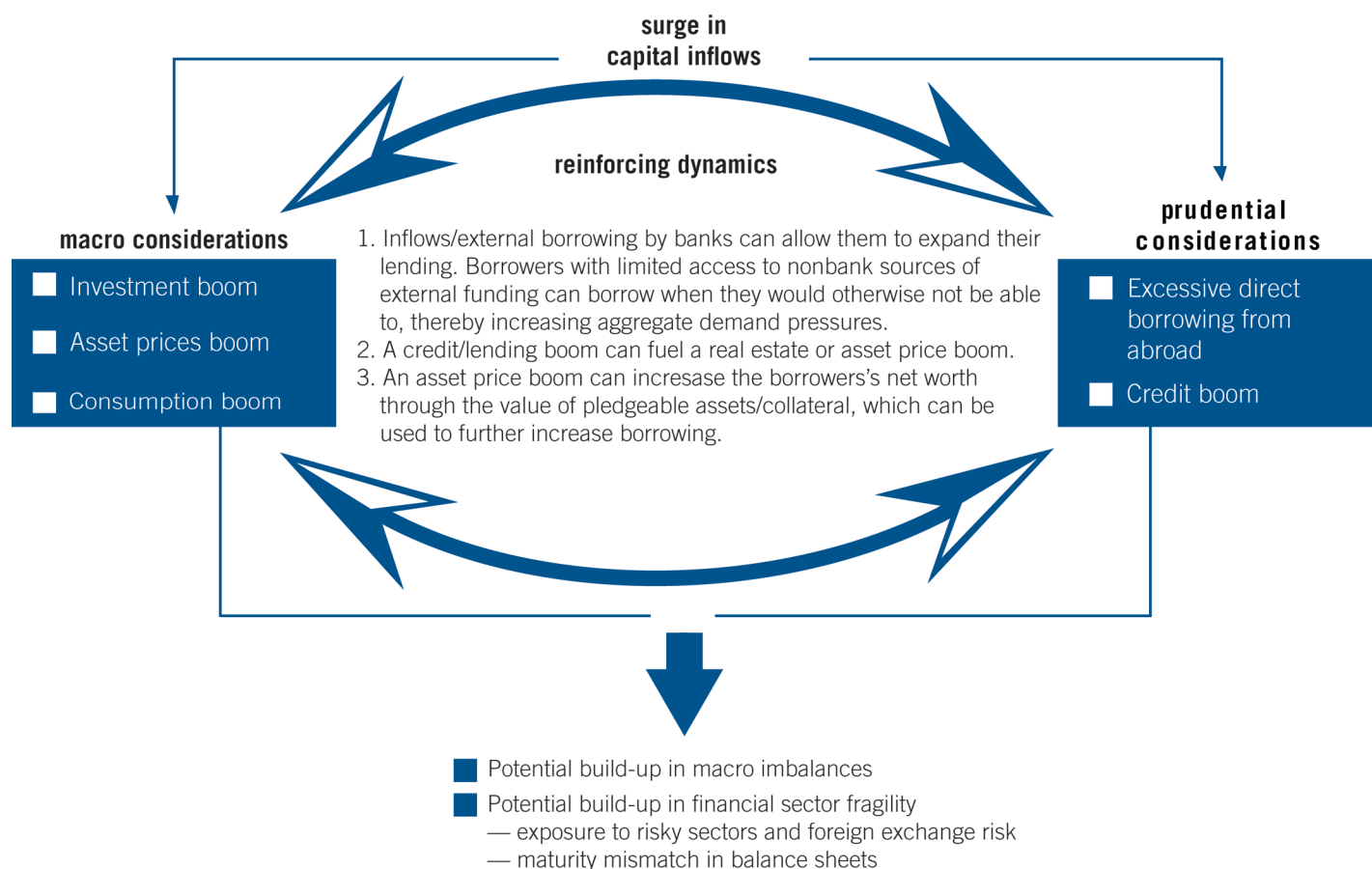
Source: Author’s compilation.

Appropriate Policy Responses Are State Contingent

Macroeconomic Policies³

Given the potential impacts of capital inflows, countries generally have three objectives: i) avoiding domestic macroeconomic overheating; ii) avoiding a buildup in financial sector fragility; and iii) avoiding a loss of competitiveness through exchange rate appreciation, which is of particular importance when the surge in capital flows is deemed likely to be temporary. So what are some of the policy options available? Not surprisingly, the policy options depend on the prevailing domestic macroeconomic conditions and the key objectives (see figure 2). A combi-

Figure 1. Interaction of Capital Inflows, the Macroeconomy, and Financial Sector Concerns



Source: Author's compilation.

nation of policies should be used to avoid excessive tradeoffs in its macroeconomic objectives. For example, a country may be able to sustain some appreciation of the exchange rate and undertake some sterilization and some fiscal tightening to achieve its exchange rate and domestic macroeconomic objectives.

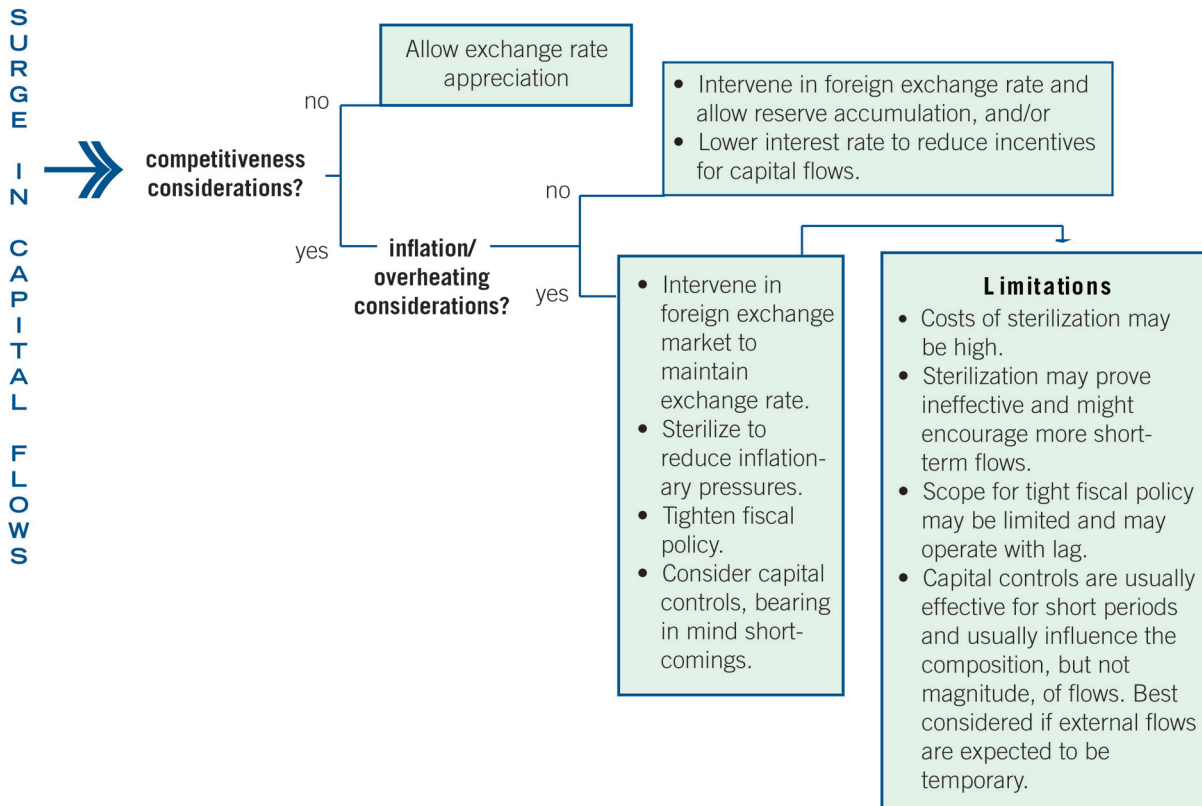
Exchange rate adjustment. Allowing the exchange rate to appreciate may be the first policy option for a country with an undervalued exchange rate. Allowing the exchange rate to adjust toward its equilibrium rate can mitigate the transmission of global liquidity and capital inflows. An exchange rate appreciation in countries where the exchange rate is not misaligned, however, can have significant repercussions on the economy, particularly on the competitiveness of the tradeables sector. And in countries with a fixed exchange rate regime, the need to preserve the credibility of the exchange rate peg may preclude the policy option of a temporary change in the exchange rate level.

Intervention in the foreign exchange market. If losing competitiveness is a concern, and the exchange rate is not undervalued, countries may intervene to keep the exchange rate at the current level or to slow the appreciation. Intervention may also be useful in economies that need to increase their reserves. How-

ever, if inflation and domestic macroeconomic overheating are a concern, sterilization of the liquidity injected by interventions may be necessary. But sterilization can be costly: the difference between the interest rate paid by the central bank to the commercial banks to drain liquidity and the interest rate received on official reserves will likely reduce central bank profitability, especially under high global liquidity conditions that keep interest rates in advanced economies low. Moreover, sterilization may: i) elicit further inflows by maintaining the differential between domestic and international lending rates, particularly if the market expects an appreciation of the exchange rate—and the flows are likely to be short-term flows that are more responsive to interest rate differentials; ii) encourage domestic borrowers to switch to foreign currency borrowing and liabilities, potentially raising financial stability concerns; and iii) be limited by the size of the country's financial market.

Fiscal policy. Fiscal tightening can support tight monetary policy by reducing the budget's financing needs and thus allowing for lower domestic interest rates (and less incentives for capital inflows). Fiscal tightening could also mitigate asset bub-

Figure 2. Macroeconomic Policy Responses Depend on Macroeconomic Objectives and Constraints



Source: Author's illustration.

bles directly by reducing aggregate demand growth and supporting a capital account adjustment. However, significant fiscal adjustment is not always feasible at the necessary time and may involve a lag.

Imposition of capital controls. When available macropolicy options are not sufficient, or cannot provide a timely response to an abrupt or large surge in capital inflows, capital controls may be a useful tool. However, the efficacy of capital controls may be of limited duration; empirically, capital controls have been found to enable countries to initially reduce the pressures on the exchange rate and to maintain a difference between domestic and foreign interest rates, but over time, countries were generally not able to achieve both the interest rate and exchange rate targets. Moreover, to be effective even for a limited duration, controls need to be comprehensive and need to be forcefully implemented. Capital controls have also been found to be more effective in affecting (lengthening) the maturity of the flows and generally less successful in affecting the overall magnitude of the flows. Such controls tend to lose effectiveness when the return on the controlled transaction exceeds the cost of circumvention, providing the incentives for market participants to circumvent the controls, which is easier to do in countries with more developed and sophisticated financial markets. Hence, capital controls may be best used in circumstances

where the surge in inflows is deemed to be driven by factors that are likely to quickly reverse.

Prudential Regulation and Supervision to Reduce Financial Sector Vulnerability

Empirical evidence suggests certain types of capital inflows can make a country vulnerable to financial crisis. In particular, as already discussed, flows intermediated through the banking sector can fuel credit booms, asset price bubbles, and foreign exchange lending, with the banks themselves becoming vulnerable in the process.

The objective of strengthened prudential regulation and supervision is to reduce financial sector vulnerability and limit systemwide distress to avoid potential output losses associated with financial instability. Traditionally the focus has been on microprudential regulations, that is, regulations that concentrate on individual financial institutions, such as certification of those working in the financial sector, rules on how financial institutions operate, and measures to ensure stability of the individual financial institution.

Increasingly—particularly following the onset of recent global financial crisis—attention has turned to the importance of macroprudential policies and regulations. Macroprudential policy can be defined as policies that focus on the financial system as a whole and treat aggregate risk as partly endogenous with respect

to the collective behavior of financial institutions. A macroprudential approach recognizes the interdependence and endogeneities in the system that can lead financial institutions to behave homogeneously, and in turn, reduces the resilience of the financial system. The premise underlying macroprudential regulations is that relying on individual bank regulation and supervision at a microlevel is not sufficient. Indeed, in some cases microprudential regulations—in as much as they can sometimes encourage homogenous behavior of institutions in periods of distress—can exacerbate the problem.⁴ As Persaud (2009a, 20) stresses:

Wherever possible micro prudential regulations need to be designed in a way that minimizes macro-prudential consequences and, given that this will not always be possible, micro-prudential regulation must be complemented with macro-prudential regulations.

The macroprudential (or systemic) regulatory frameworks have two dimensions: first, managing cross-sectional risk distribution across the financial system at any given time and second, addressing the evolution of the aggregate risk over time. The challenge in the first dimension is to deal with common (related) exposures to similar asset classes or links among them. The key issue of the second dimension is to deal with pro-cyclicality, or how systemwide risk is amplified over the credit cycle, by interactions within the financial system as well as between the financial system and the real economy. “During expansions, declining risk perceptions, rising risk tolerance, weakening financial constraints, rising leverage, higher market liquidity, booming asset prices and growing expenditures mutually reinforce each other, potentially leading to the overextension of balance sheets” (Borio 2009). Dampening the pro-cyclicality of the financial system is increasingly being regarded as a priority (Brunnermeier et al.

2009; Calomaris 2009; Mayes, Pringle, and Taylor 2009; De Larosiere Group 2009; G-20 2009; FSF 2009).

Countercyclical macroprudential regulation can be introduced either through banks’ provisions and/or through their capital. It is important that this be accomplished using simple rules to ensure that regulators cannot relax them in boom times.

Introducing countercyclical bank provisions has already occurred in Spain and Portugal. The Spanish provisioning system requires higher provisions when credit grows more than the historical average, linking provisioning to the credit cycle. Under this system, provisions built up during an upswing can be accumulated in a fund which can then be drawn down in a slump to cover loan losses. This counters the financial cycle as it discourages (but does not eliminate) excessive lending in booms and strengthens the banks during bad times. Countercyclical bank regulation can also be introduced via capital requirements. Table 2 lists several proposals for dealing with cross-sectional or pro-cyclical risks.

Summary

The benefits of capital inflows notwithstanding, large surges of capital inflows can pose challenges to macroeconomic and financial sector stability. The appropriate response to deal with the challenges posed by large capital inflows depends on the specific country conditions. The recent financial crisis has also highlighted the importance of broadening the toolkit to include macroprudential regulations as well as the traditional microprudential regulations to safeguard the macroeconomic and financial sector stability. Much of the debate now centers on exactly how these macroprudential regulations should be

Table 2. Proposals to Reduce Macroprudential Risks/Consequences

Objective: To reduce the risk of pro-cyclicality

Automatic or indexed increases in capital adequacy of institutions when aggregate borrowing (or some other index of systemic riskiness) in an economy or a sector is above average (Persaud 2009).

Link capital adequacy to macroprudential factors reflecting maturity mismatches, credit expansion and asset prices, with a multiplicative effect that would be greater in a boom than during de-leveraging (Brunnermeier et al. 2009).

Objective: To reduce cross-sectional risk

Impose capital ratios based on the individual institutions contribution to systemwide risks (Borio, Furfine, and Lowe 2001; Brunnermeier et al. 2009).

Impose capital charges on behavior that is typically common across banks compared to that which is idiosyncratic, that is, areas where banks are susceptible to herding behavior and where there is a high correlation of balance sheet risk (for example, real estate lending). This could include loan-to-value ratios for property loans or restrictions on income gearing.

Design capital surcharges based on interbank correlations of returns (Acharya 2009).

Design capital surcharges based on co-movements of banks’ risks (for example, co-value at risk; Adrian and Brunnermeier 2009).

Objective: To reduce systemic risk by better matching of risk taking with risk bearing in the financial system capacity

Systemic rules to incentivize financial firms to better match risk taking with risk-taking capacity, for example, capital requirements for maturity mismatches (administered in a way that reduces also pro-cyclicality).

Source: Author’s compilation.

designed and what changes may be needed in regulatory structures to implement these regulations effectively.

Notes

1. For the purpose of this article, global liquidity is measured by the GDP-weighted average of reserve money and M2 of the United States, the United Kingdom, the Euro area, and Japan.

2. The “credit channel” view also implies that monetary policy can work not only through its impact on the bond market interest rate, but also through its independent impact on the supply of intermediated loans. For this, three conditions must hold: first, intermediated loans and open market operations must not be perfect substitutes for some firms on the liability side, that is, some firms must depend on bank credit alone for financing; second, the central bank must be able, by changing the quantity of reserves available to the banking system, to affect the supply of intermediated loans: the intermediary sector as a whole must not be able to insulate its lending activities from shocks to reserves, either by switching from deposits to less reserve intensive forms of finance (for example, certificates of deposit, commercial paper, equity, and so forth) or by paring its net holdings of bonds.

3. See also background papers on macroeconomic policy responses from which this section draws: J. Ostry, A. R. Ghosh, K. Habermeier, M. Chamon, M. S. Qureshi, and D. B. S. Reinhardt, “Capital Inflows: The Role of Controls” (IMF Staff Position Note SPN/10/04, Washington, DC, 2010); IMF, “Chapter 4: Global Liquidity Expansion: Effects on “Receiving” Economies and Policy Response Options,” in *Global Financial Stability Report: Meeting New Challenges to Stability and Building a Safer System* (Washington, DC, 2010).

4. For example, selling an asset when it appears to be risky may be considered as prudent response for an individual bank and is supported by much current regulation. But if many banks do this, the asset price will collapse, forcing risk averse institutions to sell more and leading to general decline in asset prices, higher correlations and volatility across markets, spiraling losses, and collapsing liquidity. Microprudential behavior can cause or worsen systemic risk (Persaud 2009b).

About the Author

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