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Capital Inflows and Balance of Payments Pressures—Tailoring Policy Responses in Emerging Market Economies

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Policy Development and Review Department and Research Department

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Prepared by Atish Ghosh, Manuela Goretti, Bikas Joshi, Uma Ramakrishnan,
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Abstract

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Although capital inflows are generally beneficial to recipient countries, they also pose a challenge for the conduct of economic policy. This paper proposes a conceptual taxonomy to guide the design of policy responses in the face of capital flows. We explore how responses to capital surges should be differentiated based on the source of balance of payments pressures. We also examine whether the policy choices in emerging market countries conform to the taxonomy's predictions and find some correspondence, especially during periods of high global liquidity.

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I. INTRODUCTION

While capital inflows are generally beneficial to recipient countries, they can also complicate macroeconomic management by overheating the economy, deteriorating the external balance, and increasing the country's vulnerability to a change in market sentiment. Such challenges are especially important during periods of growing global liquidity. Between early 2003 and mid-2007, for instance, not only was there abundant global liquidity,¹ but also many emerging market economies (EMEs) ran current account surpluses, further contributing to positive balance of payments (BOP) pressures. Moreover, despite the recent turmoil in financial markets, many EMEs continue to face positive capital flows and balance of payments pressures.

Recognizing the importance of policy responses to capital inflows, the International Monetary and Finance Committee has called for work on the Fund's policy advice to emerging market economies in the design of policy responses (*IMFC Communiqué*, October 2007). The IMF's Executive Board has also called for additional research to provide guidance on policy choices.² Against this background, the October 2007 *WEO* examines the impact of different policy measures based on a large sample of developing, emerging markets, and advanced economies during surges in flows and concludes that nominal exchange rate appreciation and fiscal restraint are advisable during periods of large inflows as they limit real currency appreciation and foster better growth outcomes. Likewise, the October 2007 *GFSR* looked at the relationship between capital flows, market depth, and liquidity.³

This paper builds on the insights of the recent *WEO* and *GFSR* chapters to consider how the specific circumstances facing the country help refine the general policy prescriptions. A first question is whether policy should try to respond to the capital inflows or BOP pressures (i.e., a tendency for the nominal exchange rate to appreciate or reserves to accumulate). A country with a floating exchange rate regime would simply allow its exchange rate to appreciate in the face of positive BOP pressures. In practice, however, few central banks are truly indifferent to the level of their exchange rate, because of inflationary pressures, balance sheet exposures, or concerns about competitiveness. Moreover, even under a flexible regime, the country may wish to respond with fiscal policy.

Whether the country would want to respond depends, in part, on the nature of the capital flows (official versus private; FDI versus portfolio flows; fixed income versus equity), their expected duration (temporary versus persistent), and their impact on domestic balance sheets (such as the risk of exacerbating mismatches). It also depends on the country's net external asset (or debt) dynamics and the cyclical position of the economy. Thus capital-poor developing and EMEs may welcome capital inflows as long as debt sustainability and

¹ Periods of high global liquidity are identified based on the indicators in *World Economic Outlook* (April 2007).

² The Chair's Concluding Remarks on "Globalization, Financial Markets, and Fiscal Policy."

³ Earlier studies of the policy response to capital flows include Schadler and others (1993) and Ul Haque and others (1997).

financial system soundness are not jeopardized; conversely, a country may wish to build up savings abroad because its population is aging or because its exports depend on nonrenewable resources.

This paper proposes a conceptual taxonomy that can guide policy responses, while recognizing the need to account of country-specific factors in any policy recommendation. While the latter cannot be incorporated in a general framework, the taxonomy nevertheless serves to nuance—not overturn—the general recommendations of allowing the exchange rate to appreciate and to tighten fiscal policy in the face of capital inflows. The paper seeks to answer three questions:

- How should the policy response to capital surges in most EMEs be differentiated according to the source and magnitude of the BOP pressures?
- Do EMEs respond to capital inflows as the taxonomy would suggest?
- What is the effect of policy responses on the behavior of the real exchange rate?

The remainder of this paper is organized as follows. Section II discusses some stylized facts on recent capital flows to EMEs. Section III presents a conceptual taxonomy based on the differences in the nature and source of BOP pressures and discusses the policy responses for each category. This section also examines the evidence on whether the observed policy choices are consistent with the taxonomy's predictions. Section IV concludes.

II. RECENT CAPITAL FLOWS IN EMERGING MARKET ECONOMIES—STYLIZED FACTS

Over the past couple of decades, capital flows to emerging markets have followed several cycles, with a generally rising trend until end-2007.⁴ More precisely, as discussed in the October 2007 *WEO* chapter, there have been two episodes of large inflows in the past couple of decades; namely, the period in the early 1990s, which peaked prior to the 1997 East Asian crisis, and the period that has been building up since early 2002. For instance, annual net capital inflows to EMEs averaged slightly over 4 percent of GDP during 2004–06. These increases are a notch below the net capital inflows that preceded the East Asian crisis. It is worth noting, however, that the recent surge differs from previous ones in four respects. First, it is occurring against a backdrop of current account surpluses—not deficits. Second, private capital is playing a dominant role. Third, FDI accounts for a larger share of the total. Finally, the macroeconomic situation in most recipient EMEs is stronger—public sector deficits are smaller, exchange rate regimes are more flexible, inflation is lower, and foreign exchange reserves are larger.⁵

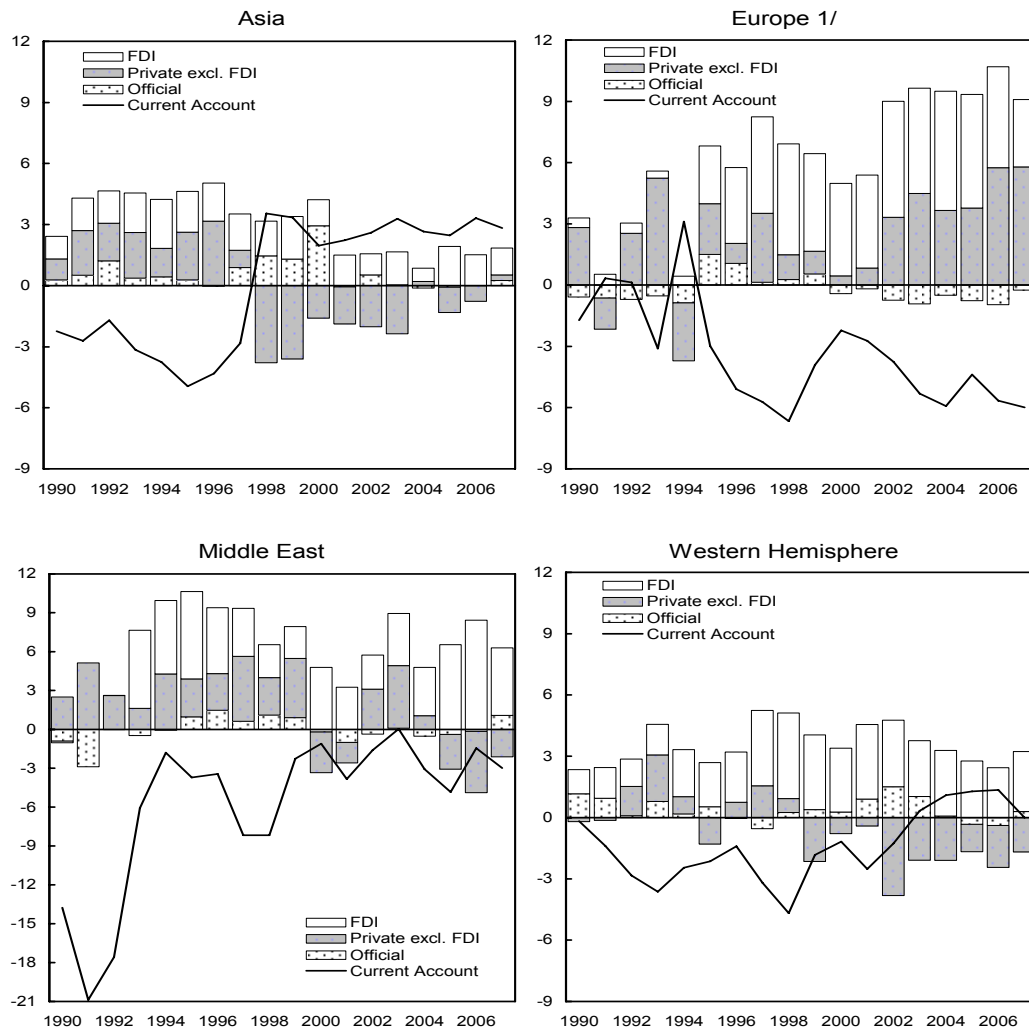
Among EMEs, however, there are important regional differences. The largest increase in reserves is in the Middle East (8 percent of GDP), followed by Asia (4 percent of GDP),

⁴ The discussion is based on simple averages for 50 “market access” EMEs; see Appendix I for the list of countries.

⁵ See *World Economic Outlook* (October 2007) for more details.

Central and South America (2 percent of GDP), and Europe (1 percent of GDP); see Figure 1. Moreover, while most regions experienced real exchange rate appreciation, in Asia, the Middle East, and Central and South America this took the form of higher inflation. In Europe, by contrast, reserve accumulation has been slow and inflation differentials have been small.

Figure 1. Regional Capital Flows in Emerging Market Countries (In percent of GDP)



Sources: International Monetary Fund; WEO database, and IMF staff estimates

1/ Turkey only until 1994. Includes transition economies from 1995 onwards.

Breaking down the sample of EMEs by region also suggests differences in the characteristics of capital flows (of course, these averages also mask important differences across countries). In Asia, the 1997–98 financial crisis marked a sharp turning point for the current account balance: from deficits of about 3 percent of GDP to surpluses of the same magnitude (Figure 1). With the exception of FDI, private capital flows have been negative, as have official flows with the repayment of official financing provided during the crisis. European countries, by contrast, have large current account deficits. These deficits were financed by

FDI until 2001; since then, non-FDI flows have grown in importance and now account for about one half of total external financing. In the Western Hemisphere and the Middle East, current account balances have improved—though, on average, still in deficit—and most inflows are in the form of FDI.

The consequence of this surge of capital flows is positive balance of payments pressures on the economy. On average, CPI-based real exchange rates have appreciated by 7 percent over the period 2002–07, and reserves have increased from about 18 percent of GDP at end-2002 to 22 percent of GDP by end-2007. While economic activity has remained above potential in many EMEs, inflationary pressures were subdued for much of the decade; though it is worth noting that this too has gradually changed owing to the pick up in commodity prices.

III. CAPITAL FLOWS AND BALANCE OF PAYMENTS PRESSURES—A TAXONOMY

The above discussion suggests some important differences in the nature and source of balance of payments pressures; as such, the appropriate policy response may be expected to vary as well. This section presents a simple conceptual taxonomy to highlight these differences and their implications for the policy response of EMEs. Before doing so, however, it is worth noting that the appropriate policy response should also depend on factors not explicitly included in the taxonomy. Indeed, individual country observations should not be thought as belonging to one category or the other; rather, it is a matter of degree that depends on country-specific factors—from balance sheets and cyclical positions to financial and institutional characteristics.

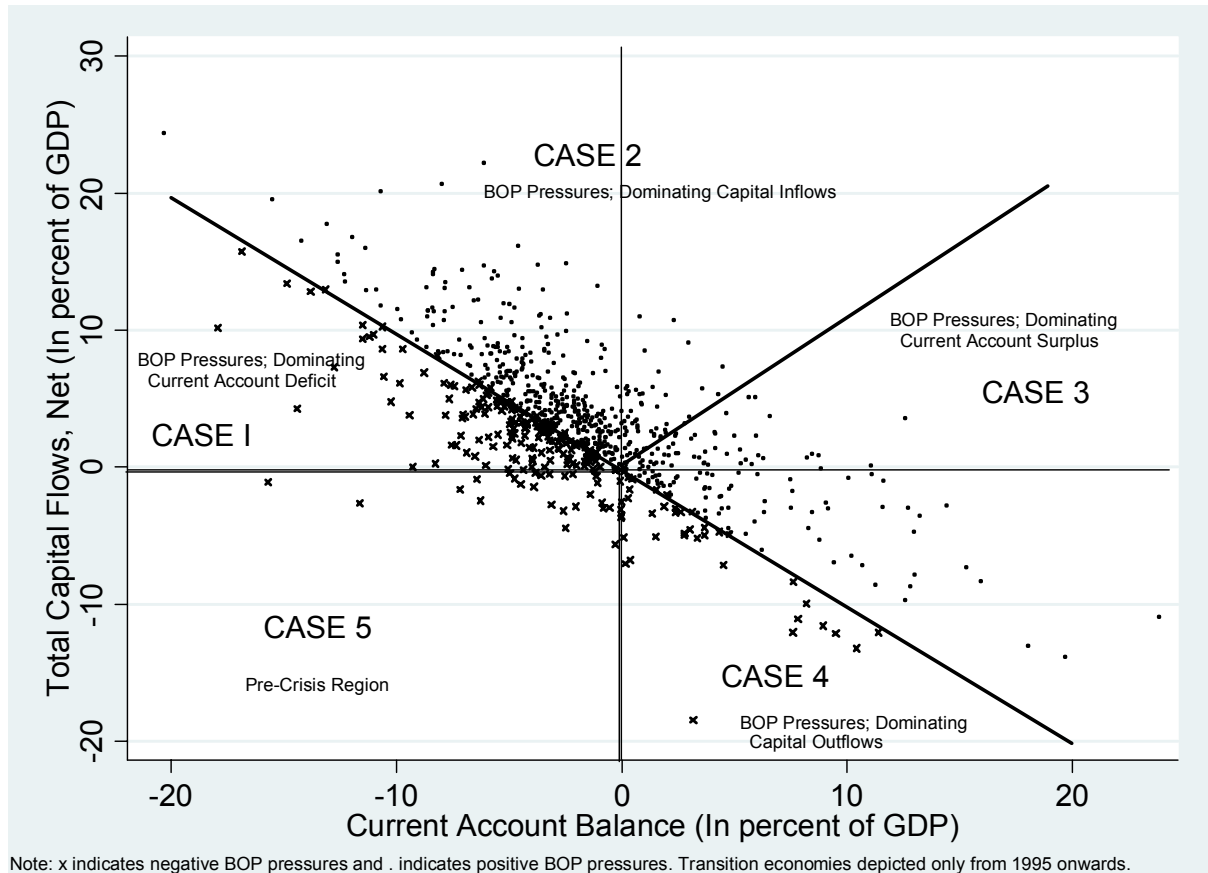
To develop a taxonomy of cases, it is useful to consider a two-dimensional representation of net capital flows (vertical axis)—where capital flows excludes transactions in reserves—and current account balances (horizontal axis), which can be segmented into five cases:

- **Case 1. Capital Inflows Responding to Current Account Financing Needs (northwest quadrant below the 45 degree line).** Capital flows are helping to finance the country's current account deficit. Although the net BOP pressure (defined as net total capital flows plus the current account balance) is negative, the dependency on capital flows might raise concerns about debt sustainability and the country's exposure to the risk of sudden stops (particularly if these are non-FDI flows). The premise is that capital flows are *responding* to the country's demand for external savings. Thus, if there are concerns about capital inflows, economic policies should a priori be geared to reducing the current account imbalance and cooling the economy.
- **Case 2. Capital Inflows in Search of Yield (northwest and northeast quadrants above the respective 45 degree lines).** In contrast to Case 1, here the “tail wags the dog”—rather than responding to the country's current account financing needs, net total capital flows are assumed to be driven by supply-side factors (i.e., abundant liquidity in search of yield).⁶ If the country has a current account deficit, then net total capital flows would substantially exceed this deficit. In contrast, if the current account

⁶ See Ghosh (1995).

is in surplus, then it would still be the case that the BOP pressures are dominated by the total capital inflows. Either way, such inflows are complicating macroeconomic management and policies would need to be geared toward reducing these capital inflows.

Figure 2. Taxonomy based on Total Capital Flows and Current Account Balances (In percent of GDP; annual data 1989–2007)



- **Case 3. BOP Pressures from Current Account Surplus (northeast quadrant under 45 degree line and southeast quadrant with positive BOP pressures).** In this case, capital inflows are assumed to be less important than the current account surplus; in fact, the surplus could be accompanied by small capital outflows and still represent positive BOP pressures. If the current account surplus is excessive (for instance, in terms of the evolution of the country's NFA position), then policies should seek to narrow it. By contrast, if the current account surplus is considered appropriate (in terms of net foreign asset dynamics), then policies to encourage capital outflows would be useful.
- **Case 4. Current Account Surplus Offset by Outflows (southeast quadrant under 45 degree line).** Outflows offset the current account surplus—negative BOP pressures.

- **Case 5. Pre-Crisis Region (southwest quadrant).** Reflects large capital outflows and current account deficits, perhaps portending a capital account crisis.

Table 1. Descriptive Statistics, 1989–2007 (In percent of GDP)

	1989-2007			1999-2007		
	Current account balance	Total capital flows	BOP pressures	Current account balance	Total capital flows	BOP pressures
	Case 1			Case 1		
Number of observations	181	181	181	81	81	81
Mean	-6.8	3.9	-2.9	-5.5	3.8	-1.8
Standard deviation	7.5	4.1	6.4	4.0	3.1	2.2
	Case 2			Case 2		
Number of observations	447	447	447	223	223	223
Mean	-3.7	7.0	3.3	-4.1	7.7	3.5
Standard deviation	4.3	5.7	3.6	5.3	6.1	3.2
	Case 3			Case 3		
Number of observations	158	158	158	112	112	112
Mean	6.3	-1.8	4.5	7.0	-2.1	4.9
Standard deviation	5.3	4.2	3.4	5.7	4.6	3.5
	Case 4			Case 4		
Number of observations	38	38	38	20	20	20
Mean	3.6	-5.8	-2.1	5.1	-7.3	-2.2
Standard deviation	3.2	4.2	2.8	3.5	5.0	3.3
	Case 5			Case 5		
Number of observations	36	36	36	14	14	14
Mean	-3.1	-1.7	-4.8	-1.6	-1.8	-3.3
Standard deviation	3.4	1.4	3.4	1.5	1.7	1.7

Source: IMF, *World Economic Outlook*.

The above flows-based conceptual taxonomy provides definitions of different circumstances under which a country might be facing balance of payments pressures; and, in particular, capital inflows. Whether—or to what extent—a country fits into any single case will be a matter of judgment that depends on a country’s own circumstances, including the balance sheet and cyclical position of the economy. In fact, capital flows in some Case 1 countries are not only financing and responding to the country’s current account deficit, but also helping to fuel that deficit by causing a consumption boom and overheating the economy (as happened in East Asia prior to the 1997–98 crisis); thus, the country could be considered to be closer to a Case 2 and the policy response would change accordingly. As such, the classification in Figure 2 is an **illustration** of how countries’ circumstances can be mapped to the taxonomy based on total capital flows and current account balances. Moreover, since the focus of this paper is primarily on capital inflows and positive balance of payments pressures, the discussion and analysis in the remainder of this paper refers only to the policy responses in Case 1 through Case 3.

While this flows-based taxonomy is useful, two caveats bear emphasizing. First, although each policy option is discussed separately, policy responses should be considered as a *package* of measures, including their mix. Second, the two dimensional taxonomy does not

take account of net foreign asset position dynamics or the cyclical position of the economy. While how these modify the appropriate policy responses are discussed below when relevant,⁷ and the empirical work in the next section includes controls to take account of these factors.

A. Expected Policy Responses

Case 1

In Case 1, the premise is that capital flows are *responding* to the country's need for external savings. In such a case, an exchange rate appreciation would worsen the current account balance; thus, policies should seek to limit nominal and real exchange appreciation (Figure 3).

The main instruments in this case are monetary and fiscal policies, which should be tightened to help dampen economic activity and narrow the current account deficit. Inasmuch as capital was responding to the deficit, this would also reduce capital inflows.

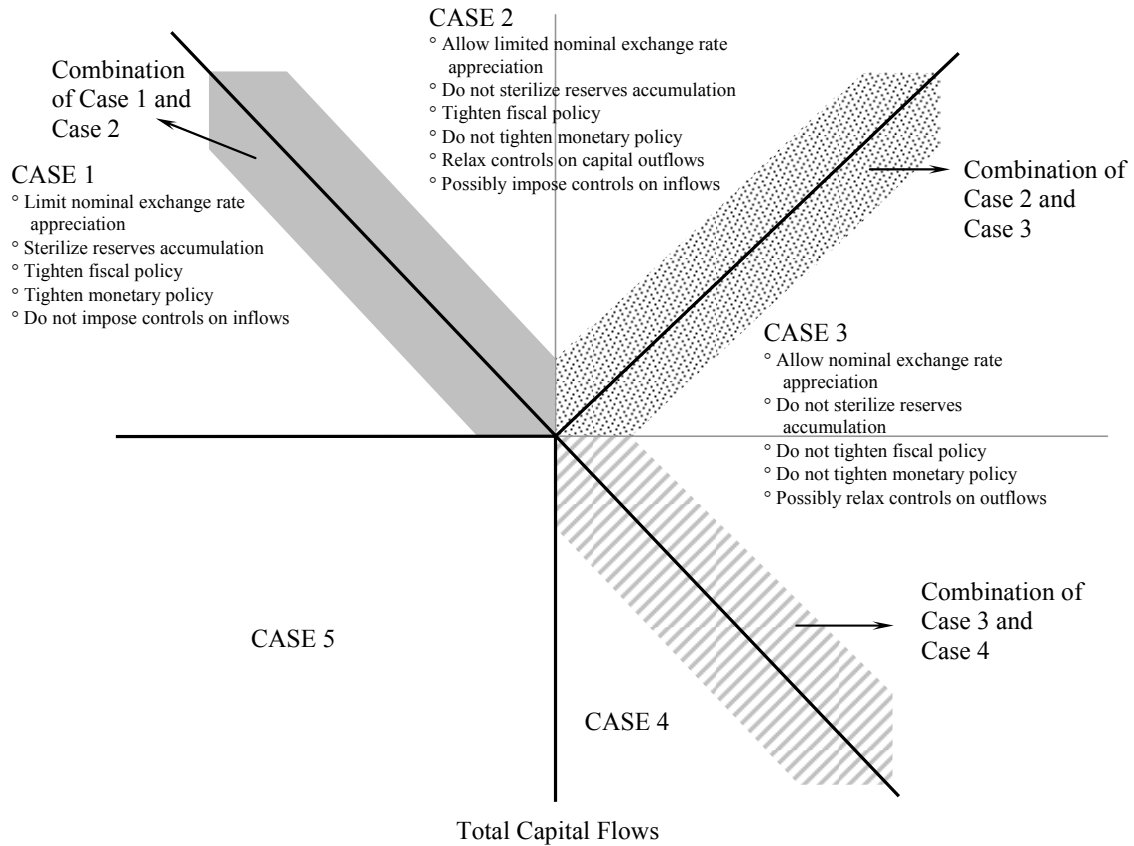
A discussion of policy responses would be incomplete without discussing prudential measures and controls. For Case 1 countries, neither imposing controls on inflows nor removing controls on outflows makes much sense without first tackling the current account deficit.⁸ That said, anything that can help shore-up external financing while corrective monetary and fiscal policies are implemented might serve to reduce vulnerabilities.

While this prescription holds in general for Case 1 countries, it gets modified to the extent that external sustainability (solvency and liquidity) is not a concern and the economy is operating well below potential. Since, in Case 1, BOP pressures are negative, if external sustainability is not a concern, there is essentially no problem of capital inflows. As such, no policy response would be required. If, in addition, the economy is operating well below potential, expansionary monetary and fiscal policies may be appropriate (this is where the general prescription for Case 1 countries gets overturned). It might still best to avoid an appreciation of the nominal (and hence real exchange rate), however, as the country has a current account deficit and maintaining external competitiveness would be important, even if the deficit is not excessively large.

⁷ The exposition does not discuss *unorthodox* policy responses; e.g., the possible role of tax policies not only in tightening fiscal policy, but also in terms of their effect on resource allocation. Some of these measures could target certain types of capital flows—as opposed to targeting all capital inflows (for example, real estate investment). The merits of such specific tax measures are two-fold: targeting overheating in a specific economic activity and reducing broader speculative activity and volatility. The drawbacks however, are also two-fold: they might lead to distortions in resource allocation, and they act as the equivalent of capital controls, with the usual attendant costs.

⁸ To the extent that the capital inflow is fueling the current account deficit (making the country a “blend” between Cases 1 and Case 2 above), reducing the availability of foreign savings (by imposing controls) or tightening prudential regulations on bank lending (if this is the source of external finance) could play a useful role.

Figure 3. Policy Responses—Flow Approach



Case 2

In Case 2 countries, the *tail wags the dog*—capital flows are assumed to be supply-side determined rather than responding to demand factors. Thus, the country should typically allow some nominal exchange rate appreciation (unless the country has a current account deficit whose sustainability is in doubt). Piecemeal appreciation should be avoided, however, as the *expectation* of an appreciation would itself attract larger inflows, whereas a sufficiently large appreciation, by making investment in the country more expensive, would deter further inflows.

Given the accumulation of foreign exchange reserves, a further decision is whether or not to sterilize its monetary impact. Sterilization would be particularly unsuitable in this case because capital flows are assumed to be driven mainly by supply-side factors—the search for yield. In fact, by perpetuating higher interest rates, sterilization is likely to foster continued capital inflows. Relatedly, monetary policy should not be tightened because the resulting higher interest rates are likely to exacerbate the capital inflow problem. What if the country is facing inflationary pressures? Its only recourse in this case would be to allow the nominal exchange rate to appreciate and to tighten fiscal policy, which serves to lower interest rates and reduce inflows—unless perceptions of a more “prudent” fiscal policy leads to a larger

decline in the risk premium demanded by investors.⁹ In practice, despite this clear policy prescription, previous studies have found that few countries exercise fiscal restraint when global liquidity is high.¹⁰ Finally, for Case 2 countries imposing controls on inflows could potentially be useful—though experience to date suggests their effectiveness is limited and their administrative and distortionary costs are high.¹¹

Under what circumstances do these policy prescriptions get modified? Essentially if the country has a current account deficit that is large relative to what is desirable from an intertemporal or debt sustainability perspective. In such case, the country is better-off by limiting the exchange rate appreciation and tightening monetary policy, especially if there is a risk of overheating.

Case 3

Countries in Case 3 should allow the nominal exchange rate to appreciate (rather than accumulate reserves), particularly if the BOP pressures reflect large current account surpluses. Again, the appreciation should not be piecemeal as that would likely encourage further capital inflows.¹² To the extent that the current account surplus is considered broadly appropriate (from the perspective of net foreign asset dynamics), BOP pressures can be relieved by removing or relaxing controls on capital outflows. A tricky question is whether to loosen or not fiscal policy. Loosening fiscal policy would deteriorate the current account surplus and reduce the positive BOP pressures. On the other hand, it would also increase interest rates and encourage capital inflows. To the extent that the positive balance of payments pressures reflect current account surpluses, the surplus is considered excessive from the perspective of net foreign asset dynamics, and the economy is not facing inflationary pressures, fiscal policy should, on balance, be loosened. The implications for monetary policy are less ambiguous. Monetary policy should not be tightened, nor should the accumulation of reserves be sterilized—both of which would encourage further capital inflows. If the country is facing inflationary pressures, its only recourse is to allow further appreciation of the exchange rate, tighten fiscal policy, or otherwise encourage capital outflows.

B. Observed Policy Responses and Outcomes: What is the Evidence?

To what extent do countries respond to capital flows and positive BOP pressures as suggested by the taxonomy? This sub-section explores this question. The exercise is positive

⁹ Schadler et al. (1993) argue that fiscal consolidation was an important factor attracting capital flows to developing and emerging market countries in the late 1980s and early 1990s.

¹⁰ A recent *World Economic Outlook* chapter on capital inflows (October 2007) shows that fiscal restraint works well as a policy response to large inflows. Schadler et al. (1993) show that while fiscal restraint was advisable to prevent overheating and appreciation, but only one country (Thailand) out of the six in their study did so.

¹¹ For a discussion on the effectiveness of capital controls see Cardenas and Barrera (1997), Cardoso and Goldfajn (1998), Dooley (1995), Edwards (1999), IMF (2000), and Cordella (2003).

¹² In Case 3 countries, if exports are mainly of nonrenewable resources and there are hysteresis effects of an appreciation on nontraditional exports, then it is likely that the authorities might seek to limit appreciation.

rather than normative: even if the empirical work finds that countries do not behave as the taxonomy would suggest, this does not imply that they should not. Conversely, even if it is found that countries do behave as the taxonomy suggests they should, it does not necessarily follow that the taxonomy is correct—though it does suggest that the taxonomy reflects authorities' behavior. Finally, it is worth noting that the represented policies should not be considered in isolation but as a package aimed at stemming BOP pressures. Thus, the discussion below should be viewed as a convenient way of summarizing policy responses rather than as formal hypothesis testing.¹³

The policy reaction functions examined cover various policy instruments; specifically, measures of exchange rate appreciation and volatility (both nominal as well as real), monetary policy and sterilization variables, and fiscal policy measures.¹⁴ The goal is to examine how policies respond “per unit” of BOP pressures (as measured by the sum of net capital flows and the current account balance or, in the case of sterilization, by the change in central bank NFA) in each of the three cases of interest in the taxonomy—these are the columns referenced as covering the period 1999–2007 in Figure 4.¹⁵ Moreover, as previously noted, the actual policy mix will depend on the economy's cyclical position and other country-specific and global factors. To this end, Figure 4 also presents columns that include these controls, and cover both the period 1999–2007 as well as the years within that period when global liquidity was high.¹⁶

Nominal Exchange Rate Flexibility and Nominal Exchange Rate Volatility

As discussed above, faced with balance of payments pressures a first decision is whether to allow a nominal exchange rate appreciation. Countries in Case 1 should be the least welcoming to such an appreciation as this could exacerbate their current account deficit, while those in Case 3 should be the most welcoming as their BOP pressures stem in fact from their current account surplus. What is the evidence? Panel A in Figure 4 suggests that this is the observed policy response—at least once controls for the output gap, external liquidity and solvency, and the exchange rate regime are included in the analysis (the striped and light shaded columns). Indeed, while all three cases appear to experience—on average—limited nominal exchange rate appreciation, Case 1 countries have the least, followed by Case 2 and Case 3 countries. This pattern is particularly evident when global liquidity is high. This is consistent with an effort to resist appreciation pressures that could worsen current account

¹³ The activity index is constructed by combining inflation rates and output gaps into one index, where each component enters the constructed index with mean 0 and variance 1.

¹⁴ The results are based on an unbalanced panel dataset of 50 EMEs using annual data over the period 1999–2007.

¹⁵ Given the small sample size of Case 4 and Case 5 (see Table 1), these are excluded from the econometric estimations. Moreover, as previously noted, Case 1 through Case 3 are the most interesting for the purposes of this paper as they represent either cases with positive BOP pressures and/or cases with positive capital flows. In effect we are carrying out econometric estimations where the lagged values of other policy variables are added together with controls for the country's cyclical position—debt-to-GDP ratio, short-term debt-to-reserves ratio, inflation, and exchange rate regime. The estimations include both country and time dummies.

¹⁶ Periods of high global liquidity are identified as described in the footnotes to Figure 4 and *WEO* (April 2007).

imbalances. While the exchange rate experiences some appreciation in both Case 2 and Case 3 countries, Case 3 countries experience the largest appreciation pressures when global liquidity is high. These conclusions are also consistent with the evidence on exchange rate volatility, where Case 1 countries allow the lowest volatility and Case 3 allow the largest volatility (Figure 4, Panel B).¹⁷

Monetary Policy and Sterilization

Turning to monetary policy, the taxonomy would suggest the greatest tightening for Case 1 countries to help narrow the current account deficit. For Case 2 countries, monetary tightening risks raising interest rates and attracting more inflows.¹⁸ Also, tightening would not be appropriate for Case 3 inasmuch as it could lead to larger current account surpluses and exacerbate capital inflows. Although all three cases are characterized by some monetary loosening, Case 1 has the least, followed by Case 3, with the greatest loosening among Case 2 countries. (Figure 4, Panel C).¹⁹ A similar logic dictates that Case 2 should make the least use of sterilization—this perpetuates high interest rates, thus exacerbating capital inflows. While there is partial sterilization in all three cases, the least sterilization seems to occur among Case 2 countries—the columns in Figure 4, Panel D are close to zero, where a value of -1 implies full sterilization and 0 implies no sterilization.²⁰

Fiscal Policy

By the logic of the taxonomy, Case 1 countries should undertake the most fiscal tightening per unit of BOP pressures in order to reduce the current account deficit. Case 2 countries should also tighten fiscal policy to stem capital inflows that respond to high interest rates. Case 3 countries should generally not tighten fiscal policy, as this would increase their current account surplus. The taxonomy's implications are borne out, though only in times of high global liquidity (Figure 4, Panel F).²¹ Specifically, at times of high global liquidity, fiscal policy is tightened the most in Case 1 countries (to reduce the current account deficit), followed by Case 2 (to reduce interest rates and capital inflows), and the least in Case 3, where fiscal tightening would exacerbate the positive BOP pressures by improving the current account balance.

¹⁷ The exchange rate volatility indicator is defined as the absolute value of the monthly percentage change of the nominal exchange rate over the previous 12 months and averaged over a 12-month horizon (Ghosh and others, 2002). The flexibility indicator reflects the change in the exchange rate but without the absolute value.

¹⁸ The effect of monetary tightening on the current account balance is ambiguous as it would appreciate the exchange rate—leading to lower exports—but also dampen economic activity, lowering imports.

¹⁹ Monetary policy is measured by the change in economic growth and inflation relative to the change in broad money—an increase represent a tightening of monetary conditions.

²⁰ Sterilization is represented by the effect of the change in net foreign assets (scaled by the level of reserve money) on the change in net domestic assets (also scaled by the level of reserve money).

²¹ Fiscal policy is represented by the fiscal impulse; that is, the change in the difference between the regular and the cyclically-adjusted general government balance—an increase represents a tightening of fiscal conditions.

Aggregate Macroeconomic Outcomes

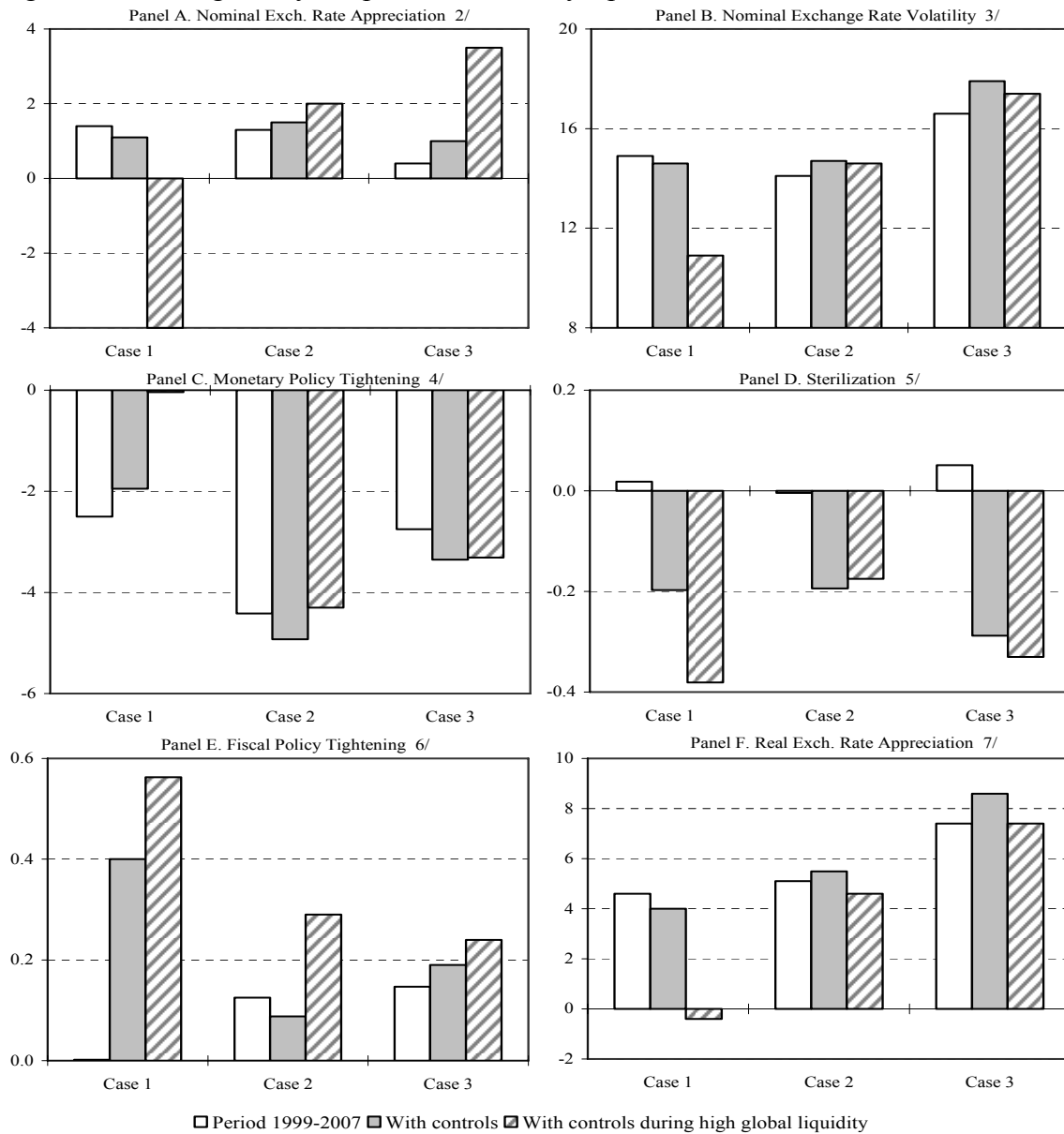
The results seem to indicate that EMEs do not resort to any single policy response to capital flows, but rather use the full portfolio of possible instruments to varying degrees according to the circumstances they are facing. Since economic policies should not be considered in isolation but rather as a package of measures to help stem BOP pressures, a key “summary statistic” of the overall effect of policies is the real exchange rate. What conclusions can be derived from the real exchange rate? In Case 1 countries, the goal is to limit the appreciation of the real exchange rate to reduce the current account deficit and the need for capital inflows.²² By contrast, in Case 3 (where the BOP pressures reflect current account surpluses), an appreciation would reduce the current account surplus and help relieve BOP pressures; thus, policymakers should be less concerned about allowing a real exchange rate appreciation or an increase in its volatility. In between these extremes is Case 2, for whom the implications are more ambiguous. If there is a current account surplus, the real appreciation could help relieve the BOP pressures. However, this case also includes countries with current account deficits, where limiting appreciation might be advisable.

What is the evidence? The pattern is largely borne out. Case 1 countries experience the smallest real exchange rate appreciation per unit of BOP pressure—and even a small depreciation when global liquidity is high (Figure 4, Panel F).²³ Case 2 countries experience slightly greater real appreciation, especially in the high global liquidity sample. Finally, when global liquidity is high, the real exchange rate appreciation is greatest for Case 3.

²² The exchange rate volatility indicator is defined as the absolute value of the monthly percentage change of the real exchange rate over the previous 12 months and averaged over a 12-month horizon. The flexibility indicator also reflects the change in the real exchange rate but without the absolute value.

²³ The results described in this section hold even more strongly when a reduced sample is used. Such sample is intended to focus the empirical work on the “most extreme” observations for each case. The sample includes the one-third of all the observations in each case that are farthest from the boundaries of each case. In effect, as noted in Figure 3, the reduced sample drops observations that are on either side of the diagonals or close to the origin.

Figure 4. Tailoring Policy Responses to Country-Specific and Global Factors 1/



Source: IMF, *World Economic Outlook*.

1/ Columns with controls are derived from fixed effects estimation with time dummies. They include controls for 'other' (lagged) economic policies (fiscal and monetary policy, exchange rate flexibility, and sterilization) and for initial conditions (output gap, liquidity (short-term debt-to-reserves), solvency (debt-to-GDP), and exchange rate regime. These columns cover both the period 1999-2007 as well as the years within that period with high global liquidity. The latter are the years in which the growth rate of capital flows to EMEs exceeds GDP growth rates in advanced economies (G7 only) by more than 10 percent and builds on liquidity indicators discussed in the WEO (April 2007).

2/ An increase represents an appreciation and a decline a depreciation (in percent per year).

3/ An increase represents greater volatility in the exchange rate; the absolute value of changes (in percent per year).

4/ An increase represents greater monetary tightening; the change in velocity (in percent).

5/ Numbers close to zero represent no sterilization while those close to -1 represent full sterilization; change in net foreign assets (scaled by reserve money) on the change in net domestic assets (scaled by reserve money).

6/ An increase represents higher fiscal tightening; change in the difference between the general government balance and the cyclically-adjusted general government balance (in percent of GDP).

7/ An increase represents an appreciation and a decline a depreciation (in percent per year).

IV. CONCLUSIONS

Recent capital inflows and large current account surpluses have resulted in positive balance of payments pressures in many EMEs. In other cases, capital inflows were critical to finance current imbalances. Depending upon such factors as the evolution of the country's net foreign asset position, the central bank's holdings of foreign exchange reserves, the form of the capital flows and the structure of domestic balance sheets, and the cyclical position of the economy, these capital inflows need not pose a problem—and indeed may be welcome for enhancing growth prospects. To the extent that they do, however, some policy response is required.

This paper develops a simple conceptual taxonomy to identify the circumstances under which various policy responses might be appropriate. In large measure, the implications of the taxonomy are a matter of degree: as such, the framework can help inform judgments about the correct policy response, but cannot replace the need for such judgment. While the taxonomy is largely founded on flow factors (current account balance and total capital flows), the discussion (and empirical work) also takes account of other considerations, including the current account balance (in relation to net foreign asset dynamics) and the cyclical position of the economy. In practice, other country-specific factors would also need to be considered.

In general, there is some correspondence between the policy implications of the analytical taxonomy and observed policy choices of EMEs—especially at times of high global liquidity, which is when capital inflows to emerging market countries are much more likely to be a problem requiring a policy response. Thus, Case 1 countries exhibit smaller nominal exchange rate appreciation, greater sterilization and monetary and fiscal tightening relative to Case 2 and Case 3. And comparing Case 2 and Case 3, the latter shows greater exchange rate appreciation, monetary tightening and sterilization, but less fiscal tightening—again, as would have been implied by the taxonomy. While this does not “prove” that the taxonomy is correct, it does provide some suggestive evidence in favor of it.

But while the *pattern* of policy responses is broadly consistent with the taxonomy, this does not necessarily imply that actual policy stances have responded appropriately to the BOP pressures. For example, as the taxonomy would predict, Case 1 countries have—to a greater degree than the other cases—tightened fiscal policy in response to BOP pressures, but this does not mean that the fiscal stance is necessarily correct: in level terms, it may be too tight or too loose. Also, while Case 1 countries have tightened monetary policy *relative* to Case 2 and Case 3 (as the taxonomy would predict), in level terms monetary policy was actually loosened.

In applying this framework to draw policy prescriptions, therefore, four challenges remain. First, to determine the right “level” at which to pitch policies—i.e., not just the pattern across cases. Second, to anticipate where the country will be in terms of the taxonomy over the relevant planning horizon. Indeed, it would be interesting to examine what can be learnt from the transition experienced by countries over consecutive years. The third challenge relates to taking account of the country-specific factors that are not captured by the taxonomy and have

not been included as controls (e.g., financial soundness indicators). Fourth, even though the taxonomy has discussed a possible role for capital controls, this remains an area for research; in particular, to examine whether the effectiveness of controls, especially on inflows, has diminished with rapid financial innovation and globalization.

In conclusion, though capital flows pose formidable challenges and the appropriate policy response is tied to country-specific factors, the taxonomy presented in this paper may provide useful guidance on how to structure a country's policy response to these inflows.

Appendix I. Market Access Developing Countries in Sample

Argentina	Korea
Azerbaijan, Rep. of	Latvia
Brazil	Lebanon
Bulgaria	Lithuania
Chile	Malaysia
China, P. R.	Mexico
Colombia	Morocco
Costa Rica	Pakistan
Croatia	Peru
Czech Republic	Philippines
Dominican Republic	Poland
Ecuador	Romania
Egypt	Russia
El Salvador	Slovak Republic
Estonia	Slovenia
Guatemala	South Africa
Hong Kong	Sri Lanka
Hungary	Thailand
India	Trinidad and Tobago
Indonesia	Tunisia
Iran, I. R. of	Turkey
Israel	Ukraine
Jamaica	Uruguay
Jordan	Venezuela, Rep. Bol.
Kazakhstan	Vietnam

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