Capital Flows and Balance of Payments Pressures: Tailoring Policy Responses

by

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Introduction

- Capital inflows are beneficial
  - reduce interest rates
  - relax financing constraints
- But they might also
  - complicate macroeconomic management
  - increase vulnerability to a sudden reversal
- Designing policy responses is particularly challenging during periods of global liquidity; overwhelming scale
- Further complicating matters, there are competing policy objectives and financial innovations that affect the effectiveness of the policy toolkit available to authorities

Recent IMF Work

- IMF Executive Board has called for more research to provide guidance on policy choices for EMEs; IMFC also

- October 2007 *WEO*
  - Examines macroeconomic effects of different policy measures during surges in capital flows. It concludes that nominal exchange rate appreciation and fiscal restraint during periods of large inflows can help limit real currency appreciation and foster better growth outcomes.

- October 2007 *GFSR*
  - Looks at the relationship between capital flows, financial market depth, and liquidity; it did not, however, examine how policy responses might be affected by recent financial developments in EMEs.

Focus of this Paper

- Proposes a **conceptual taxonomy** that can guide **policy responses in EMEs**

- We will recognize that recommendations must also take into account **country-specific factors.**

- Builds on the recent work in the WEO and GFSR

- Objective? To **nuance the traditional policy recommendations** —not overturn them

- Empirical work with sample of 50 EMEs

Main Questions

- How should the policy response to capital surges be differentiated based on the BOP pressure position as well as the source of these pressures?

- Do EMEs respond to inflows as the taxonomy would suggest after controlling for differences in balance sheets, cyclical positions, and institutional factors?

- Finally, how do macroeconomic outcomes—for now, as measured by the real exchange rate—relate to the policy responses described by the taxonomy?
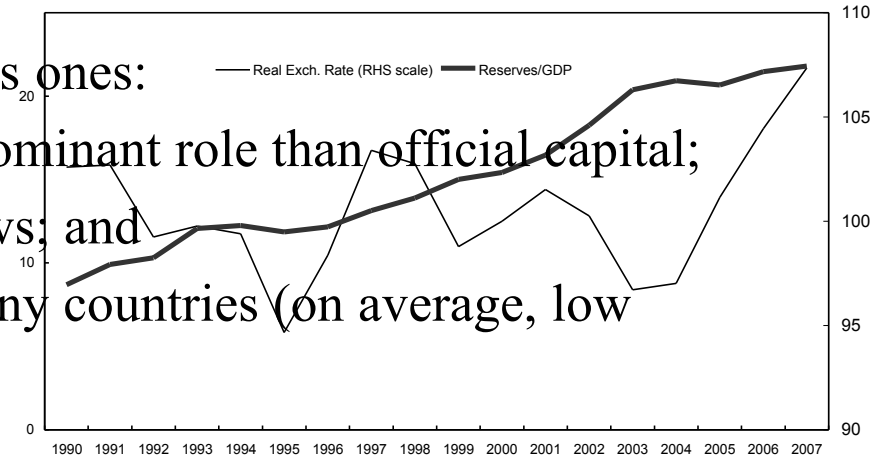
Stylized Facts

- Since 1990, capital flows to EMEs have followed several cycles.

  - Two episodes of large inflows:

    - First began in the early 1990s and peaked prior to the 1997 East Asian financial crisis

    - Second episode built up since 2002; and thus far has continued

  - Recent surge differs from previous ones:

    - private capital playing a more dominant role than official capital;

    - greater share of FDI in total flows; and

    - backdrop of CA surpluses in many countries (on average, low deficits)

Capital Flows and Current Account Balance (in percent of GDP)
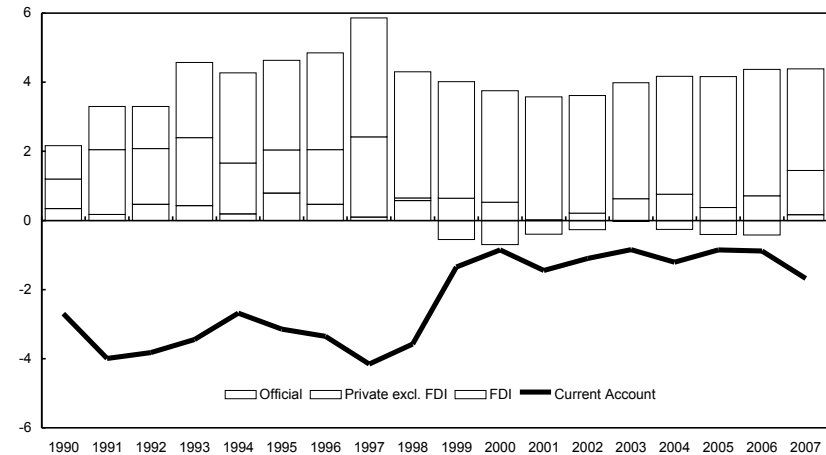
Real Exchange Rate (Index, 2000=100) and Reserves (in percent of GDP)

Stylized Facts (Concl.)

- Regional differences:
  - Also differences in the characteristics of capital flows (FDI vs. non-FDI)
  - Except for European TEs, current account surpluses (or low imbalances) are the norm
 - There is also a sharp contrast between the before and the after of the East Asian crisis
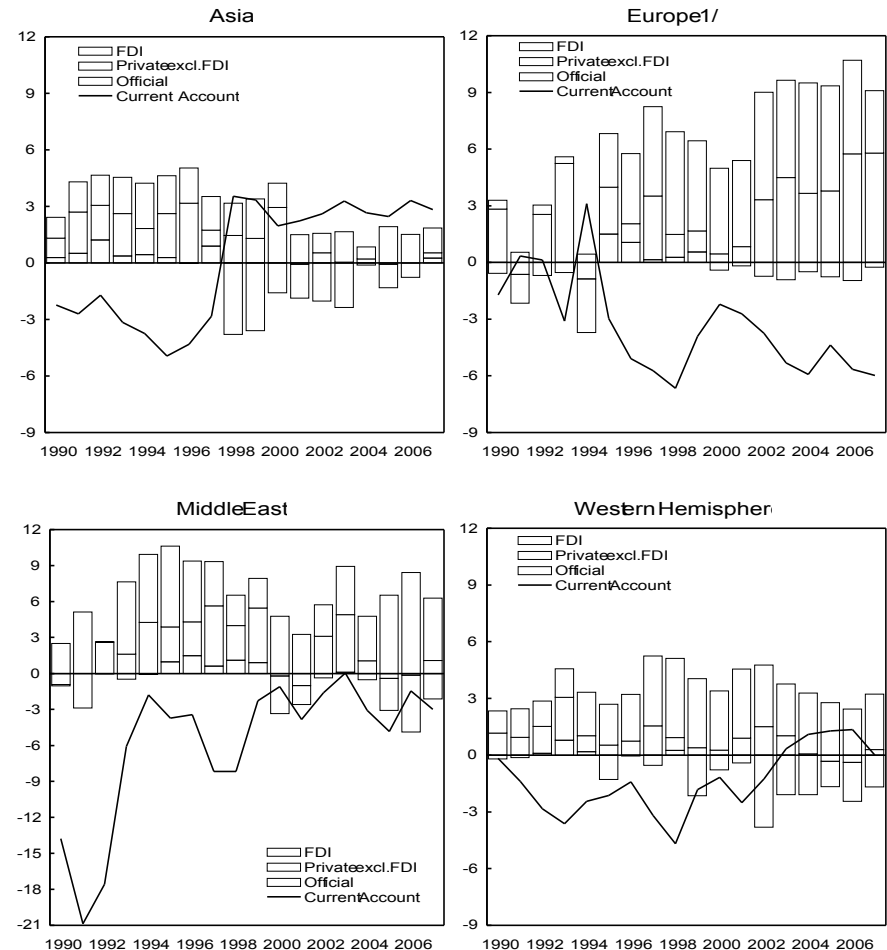
Sources: International Monetary Fund, WEO database, and IMF staff estimates

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

Stylized Facts (Cont'd.)

- **More generally, the macroeconomic situation in most recipient EMEs is stronger**
  - public sector deficits are smaller,
  - inflation (even with recent pick-up) is much lower,
  - exchange rate regimes are more flexible, and
  - FX reserves have accumulated.
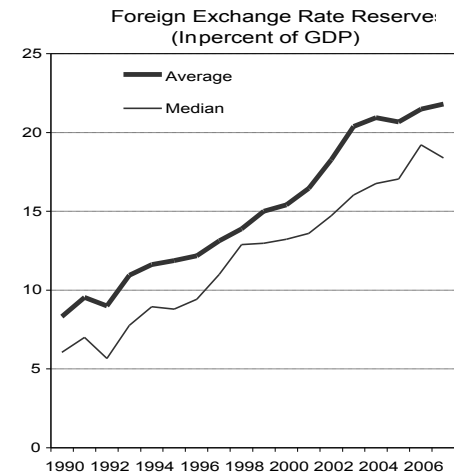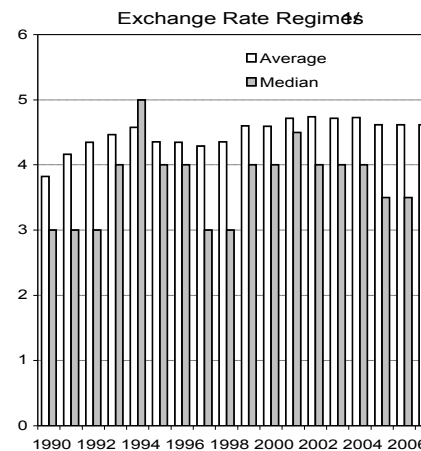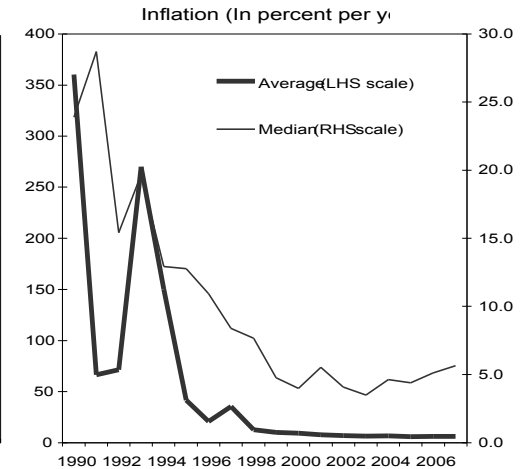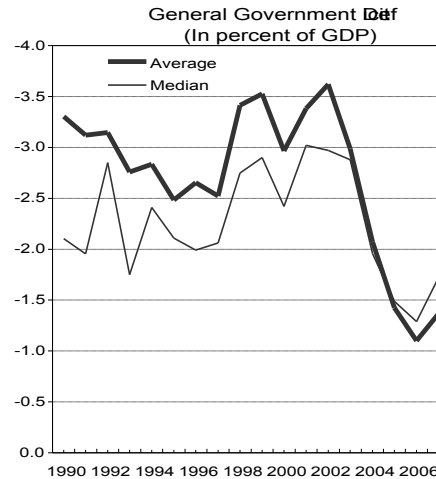
Source: International Monetary Fund; WEO database; AREAER and IMF staff estimates.
1/ A 1 represents a fixed exchange rate and an 8 is a freely floating regime AREAER classification.

Capital Flows and BOP Pressures – A Taxonomy

- A simple conceptual taxonomy highlights differences in BOP pressures and their implications for policy responses.

- Distinction based on current versus total capital flows.

- Look at + and - BOP pressures; a + represents a tendency for appreciation or for accumulation of reserves.

- Any caveats?

  YES. The appropriate policy response should also depend on country-specific factors, such as:

  - balance sheet variables,

  - cyclical position, and

  - financial and institutional characteristics.

Capital Flows and BOP Pressures – A Taxonomy (Cont'd.)

- To develop the following taxonomy, consider a two-dimensional representation of net capital flows and current account balances

Note: 'x' indicates negative BOP pressures. Highlighted countries corresponds to 2006. Transition economies depicted only from 1995 onwards.
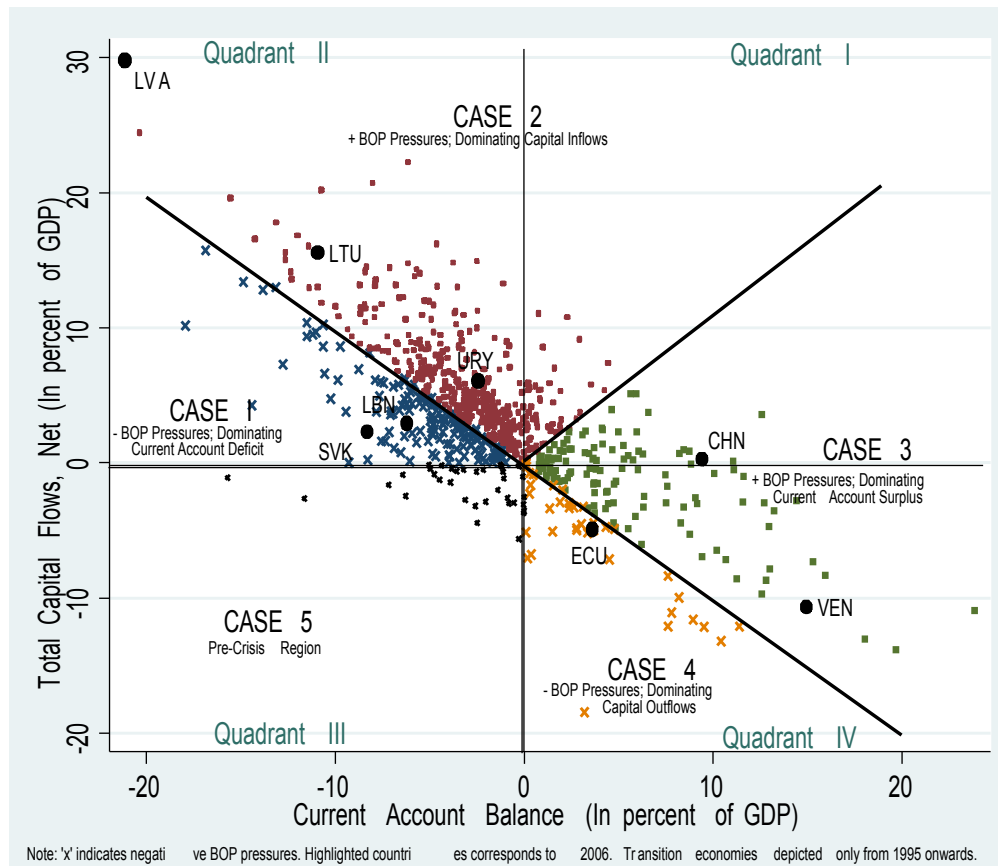
Capital Flows and BOP Pressures – A Taxonomy (Cont'd.)

- ❑ **Case 1.** Capital Inflows Responding to Current Account Financing Needs (Quadrant II below the 45 degree line)
- ❑ **Case 2**. Capital Inflows in Search of Yield (Quadrant I and II above the respective 45 degree lines)
- ❑ **Case 3**. BOP Pressures from Current Account Surplus (Quadrant I below 45 degree line and Quadrant IV with positive BOP pressures)
- ❑ **Case 4**. Current Account Surplus Offset by Outflows (Quadrant IV below 45 degree line)
- ❑ **Case 5**. Pre-Crisis and Crisis Region (Quadrant III)

- The above classification is an **illustration** of how countries' circumstances can be mapped to the taxonomy based on total capital flows and current account balances

- Whether—or to what extent—a country belongs to a single case is a matter of judgment that depends on a country's own circumstances; e.g., balance sheet and cyclical positions

- Combination of policies is the expected outcome

Combination of Policy Responses

CASE 2
Allow limited nominal and real exchange
 rate appreciation (depending on CA)
Do not sterilize reserves accumulation
Tighten fiscal policy
Do not tighten monetary policy
Relax controls on capital outflows
Possibly impose controls on inflows

Combination of
Case 1 and
Case 2

Combination of
Case 2 and
Case 3

CASE 1
Limit nominal and real exchange rate
 appreciation
Sterilize reserves accumulation
Tighten fiscal policy
Tighten monetary policy
Do not impose controls on inflows

CASE 3
Allow nominal and real exchange rate
 appreciation
Sterilize reserves accumulation depending
 on inflation
Do not tighten fiscal policy
Do not tighten monetary policy
Possibly relax controls on outflows

Current Account
 Balance

Combination of
Case 3 and
Case 4

CASE 5

CASE 4

Total Capital Flows

Combination of Policy Responses (Cont'd.)

- Figure summarizes the available policy options for each case

- **Exchange Rate Flexibility**

  - Nominal exchange rate appreciation most appropriate for countries with positive (and dominating) CA balances

    - Thus, appreciation appropriate in Case 3

    - In Case 1, appreciation would worsen the CA

    - Case 2 is more ambiguous since it covers both CA surpluses and deficits

  - But decision to allow nominal appreciation, however, will also depend on other factors, including the exchange rate regime, the level of reserves, ability to sterilize the reserve accumulation, the cyclical position of the economy, and the response to other policy instruments

Combination of Policy Responses (Cont'd.)

- **<u>Monetary and Sterilization   Policy</u>**
  - Sterilization may not be suitable in Case 2 (likely lead to higher interest rates and greater inflows)
  - More generally, how should monetary policy respond to capital inflows?
    - Case 1: Tightening may be required to dampen economic activity, narrow the current account deficit and hence capital flows
    - Case 2: Loosening more likely since a tighter stance—by raising interest rates—is likely to attract even more inflows
    - Loosening may be needed in Case 3 to reduce the CA surplus (stimulate activity) and to encourage capital outflows (lower interest rate)—both of which should alleviate BOP pressures
  - Inflationary factors and the cyclical position of the economy, however, would be at the fore of any central banks' policy reaction function
  - Accumulated liabilities may also warrant a nuanced policy reaction.

# Combination of Policy Responses (Cont'd.)

- **Fiscal Policy**
  - Based on the taxonomy,
    - Case 1 should tighten fiscal policy to help correct the current account deficit
    - Case 2 countries could also benefit from tightening (it would lower interest rates and reduce capital inflows—unless perceptions of a more "prudent" fiscal policy leads to a larger decline in the risk premium demanded by investors)
    - Case 3 countries would have the least need to tighten (and could even loosen) fiscal policy
  - In practice, however, the few countries in the end implement such fiscal policy restraint when global liquidity is high

Complex Policy Decisions

- Other factors would also play a role in choosing policy responses
- Liquidity:
  - Case 1 countries in 1997 (shaded circles) had low liquidity and many suffered the consequences of sudden stops. Similarly, some countries also faced liquidity problems in 2007 (hollow circles)
  - But not as clear pattern in Case 2
- Cyclical position:
  - Case 1 ALWAYS above potential
    - No below potential circles
  - Case 2 NOW above potential
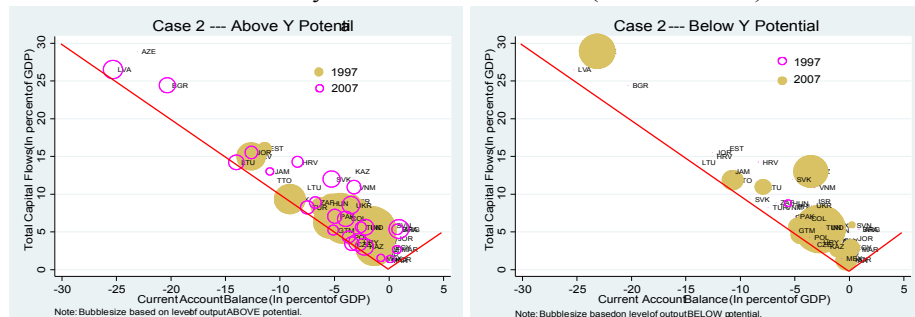   - Few 2007 circles below potential

Panel A. Balance Sheet Characteristics—Case 1 and Case 2 (1997 and 2007)
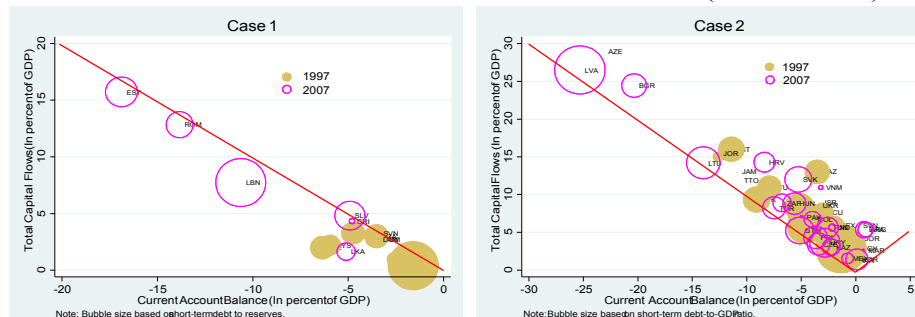
Panel B. Cyclical Position for Case 1 (1997 and 2007)
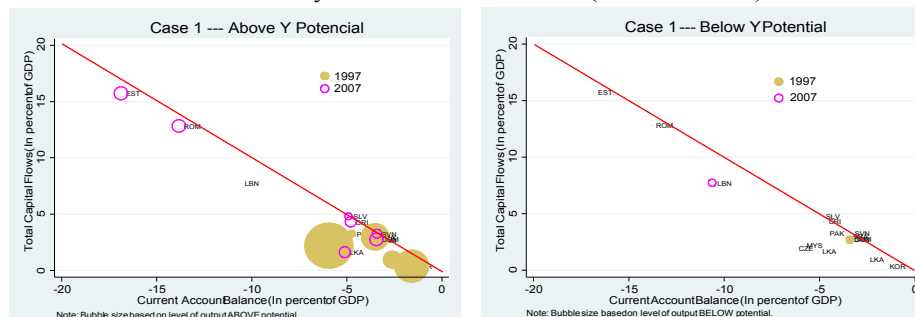
Panel C. Cyclical Position for Case 2 (1997 and 2007)

Empirical Evidence on Policy Responses

- Empirical challenge is to examine the policy response observed in Case 1 through Case 3 after controlling for balance sheet and cyclical positions, and key institutional characteristics (e.g., exchange rate regime). Also country and time dummies.

- As said before, policies should not be considered in isolation, but as a package aimed at stemming BOP pressures.

- Estimation is based on an unbalanced panel dataset; 50 EMEs using annual data over the periods 1990–2007 and 1999–2007.

- Data subsets are also examined to assess if policy responses vary during (i) periods of low and high global liquidity or (ii) periods of low and high output gaps or economic activity.

Empirical Evidence on Policy Responses (Cont'd.)

- Dependent variable: Various policy instruments—Measures of both exchange rate flexibility and volatility, monetary policy and sterilization variables, and fiscal policy measures

- Explanatory variables: Foreign exchange flows data interacted with a dummy for the case to which each observation belongs (NFA scaled by RM is used for sterilization), lagged values of the other policy variables, and controls for (i) the country's cyclical position and (ii) liquidity/solvency ratios (its debt-to-GDP ratio, its short-term debt-to-reserves ratio), (iii) inflation, (iv) exchange rate regime, and (v) country and time dummies

Empirical Evidence on Policy Responses (Cont'd.)

Table 2. Evidence of Tailored Policy Responses 1/

	Period				Global liquidity (1999-2007)				Economic activity (1999-2007)			
	1990-2007 [1]		1999-2007 [2]		Low [3]		High [4]		Low [5]		High [6]	

Nominal exchange rate flexibility; an increase represents an appreciation

Net flows interacted with:												
dummy for case 1	-0.013	***	-0.003		-0.001		-0.020	**	-0.010		-0.010	
dummy for case 2	0.004		0.002		0.004		0.007	*	-0.001		0.010	*
dummy for case 3	0.006	*	0.006		0.005		0.012	***	0.004		0.021	**
R-square	0.12		0.11		0.07		0.47		0.10		0.73	
# observations	491		305		160		145		217		88	

Nominal exchange rate volatility; an increase represents greater volatility

Net flows interacted with:												
dummy for case 1	-0.022	***	-0.003		0.003		-0.014	**	-0.010		0.002	
dummy for case 2	0.002		0.006	*	0.000		0.008	***	0.005		0.005	
dummy for case 3	0.012	***	0.013	***	0.012		0.009	***	0.013	***	0.019	***
R-square	0.25		0.26		0.16		0.56		0.18		0.84	
# observations	491		305		160		145		217		88	

Monetary policy; an increase represents tightening

Net flows interacted with:												
dummy for case 1	-0.514	**	0.551	*	0.288		0.416		0.647	*	1.093	**
dummy for case 2	-0.200		-0.508	***	-0.384		-0.668	***	-0.511	***	-1.150	*
dummy for case 3	0.058		-0.602	**	-0.506		-0.527		-0.280		-0.510	
R-square	0.15		0.17		0.20		0.26		0.20		0.65	
# observations	626		379		205		174		281		98	

Sterilization; -1 implies full sterilization and 0 implies no sterilization

NFA interacted with:												
dummy for case 1	-0.248	***	-0.215	*	-0.133		-0.379	**	0.128		0.306	***
dummy for case 2	-0.003		-0.190	***	-0.257	*	-0.170	*	-0.157		0.289	
dummy for case 3	-0.126		-0.339	***	-0.501	***	-0.381	*	-0.279	**	0.402	*
R-square	0.13		0.19		0.21		0.31		0.17		0.75	
# observations	593		344		172		172		273		71	

Fiscal policy; an increase represents tightening

Net flows interacted with:												
dummy for case 1	-0.125	**	0.398	**	0.523	*	0.375	**	0.418		0.536	***
dummy for case 2	0.022		-0.037		-0.054		-0.029		-0.095	*	0.105	
dummy for case 3	0.188	*	0.043		0.072		0.064		0.049		-0.024	
R-square	0.10		0.16		0.17		0.37		0.17		0.49	
# observations	626		379		205		174		281		98	

Source: Staff estimates.
Note: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

Empirical Evidence on Policy Responses (Cont'd.)

- The coefficients for **nominal exchange rate flexibility and volatility** have the desired signs in most regressions, though not always statistically significant. The results are particularly consistent with the taxonomy during periods of high global liquidity.

- **Monetary policy** tightening takes the expected sign during 1999-2007, suggesting that as net capital flows rise, monetary policy should be tightened in Case 1 and loosened in Case 2 and Case 3

- The impact of **sterilization** provides a mixed picture; a coefficient of -1 would imply full sterilization and 0 would imply no sterilization. The results indicate that an increase in NFA leads to a decline in net domestic assets but by less than -1, suggesting partial sterilization

- The estimation results for **fiscal policy** are also broadly in line with the taxonomy during the post-Asian crisis period

Empirical Evidence on Policy Responses (Concl.)

- ## Conclusions

  - The results suggest that EMEs do not overwhelmingly resort to any one policy response to capital flows. Indeed, all four policy responses have, to varying degrees, a role to play in dealing with capital flows

  - More importantly, however, the reaction functions are broadly consistent with the priors described by the conceptual taxonomy proposed in the paper

  - Although the results are not always statistically significant and vary across sub-samples, they suggest that the policy emphasis seems to vary from case-to-case and by period

Empirical Evidence on Macroeconomic Outcomes

- Economic policies should not be considered in isolation, but as a package of measures to help stem BOP pressures

- Response of the real exchange rate is a key "summary statistic" of the overall effect of policies

	Period		Global liquidity (1999-2007)		Economic activity (1999-2007)	
	1990-2007 [1]	1998-2007 [2]	Low [3]	High [4]	Low [5]	High [6]

FULL SAMPLE

Real exchange rate flexibility; an increase represents an appreciation

Net flows interacted with:						
dummy for case 1	-0.023***	-0.006	0.002	-0.021**	-0.010	-0.005
dummy for case 2	0.005*	0.004	0.004	0.008**	0.001	0.005
dummy for case 3	0.012***	0.012***	0.013	0.013***	0.011***	0.019**
R-square	0.27	0.28	0.21	0.46	0.29	0.75
# observations	491	305	160	145	217	88

Real exchange rate volatility; an increase represents greater volatility

Net flows interacted with:						
dummy for case 1	-0.028***	-0.006	0.006	-0.017**	-0.011	0.003
dummy for case 2	0.003	0.008*	0.000	0.009***	0.005	0.002
dummy for case 3	0.018***	0.018***	0.017	0.011***	0.018***	0.019**
R-square	0.29	0.35	0.27	0.55	0.31	0.82
# observations	491	305	160	145	217	88

REDUCED SAMPLE 2/

Real exchange rate flexibility; an increase represents an appreciation

Net flows interacted with:						
dummy for case 1	-0.022***	-0.016**	-0.015***	-0.016*	-0.013	-0.003
dummy for case 2	0.006**	0.007**	0.008*	0.000	0.003	-0.003
dummy for case 3	0.015***	0.020***	-0.001	0.012**	0.017*	0.027***
R-square	0.63	0.54	0.85	0.85	0.43	0.97
# observations	170	107	47	60	65	42

Real exchange rate volatility; an increase represents greater volatility

Net flows interacted with:						
dummy for case 1	-0.027***	-0.008	-0.011**	-0.011*	-0.012*	0.006
dummy for case 2	0.005	0.005	0.002	0.001	0.001	-0.007
dummy for case 3	0.025***	0.023***	0.012	0.007*	0.003	0.026***
R-square	0.62	0.46	0.81	0.75	0.51	0.97
# observations	170	107	47	60	65	42

Source: Staff estimates.
Note: ***, **, and * indicate significance at the 1, 5, and 10 percent levels respecrively.
1/ Fixed effects estimation.
2/ One-third of the "most extreme" observations in each case, that is, the farther away from neighboring cases. Actual number of observations might be slightly smaller than one-third owing to data used in the econometric estimation.

Empirical Evidence: Macroeconomic Outcomes (Concl.)

- **<u>Conclusions</u>**
  - Case 1: Decline in real exchange rate volatility in response to positive BOP pressures, both in the full as well as the reduced sample
  - Case 2: Increase in volatility in all of the estimated equations, although not always statistically significant
  - Case 3: Results are the most consistent with the priors described by the taxonomy
  - In most cases, the results are even stronger when limiting the sample to (i) high global liquidity years or (ii) high economic activity/high inflations years

Conclusions

- The implications of the taxonomy are a matter of degree. Thus, the framework can help inform judgments about the correct policy response, but cannot replace the need for such judgment.

- Having said so, there is some close correspondence; FP in Case 1, ER in Case 1 and Case 3, MP and S in Case 2 (but also in other cases).

- Periods of high global liquidity are quite unique; taxonomy seems to work better.

- <u>Issues still to be dealt with</u>?

  - Determining the right "level" at which to pitch policies, not just the pattern

  - Anticipating where the country will be in terms of the taxonomy over the relevant planning horizon; e.g., studying the transition of countries in consecutive years

  - Accounting for country-specific factors that are not captured by the taxonomy and have not been controlled in the empirical work (e.g., financial soundness indicators, financial depth indicators, FDI versus other forms of capital flows)

  - Possible role of capital controls remains an area for future research. In particular, their possible decline in effectiveness will need to be examined in the period that has followed the post-East Asian crisis—the period of rapid financial innovation and globalization—still needs to be examined