COPING WITH SURGES IN CAPITAL INFLOWS

Structure of the presentation

• Policy toolkit for managing inflow surges
• Evidence on effectiveness of capital controls
• Main messages

“The views expressed herein are based on “Capital Inflows: The Role of Controls” (Ostry, Ghosh, Habermeier, Chamon, Qureshi, and Reinhardt) and should not be attributed to the IMF, its Executive Board or its management

Presentation by Atish Rex Ghosh
Capital Flows Back on the Radar Screen

Net private capital inflows to EMEs (in percent of GDP)

Source: IMF's WEO database.
Capital Flows Back on the Radar Screen

- Much of the flows perceived to be temporary, driven by low interest rates in advanced economies
- Crisis has heightened concerns that inflows could inflate asset price bubbles, and lead to exchange rate overshooting, contributing to financial fragilities
- Macroeconomic and prudential challenges
- Capital controls again in the news
Managing Surges in Inflows

- Capital controls on inflows—residency-based restrictions on the movement of capital across countries
- Why potentially part of the toolkit?
  - Macroeconomic considerations
  - Prudential concerns
Macroeconomic Considerations

Capital inflow surge

Allow exchange rate appreciation if not overvalued

Reserves accumulation needed?

Lower interest rates if no inflationary /overheating concerns

Tighten fiscal policy as appropriate

Impose/strengthen controls on capital inflows taking due account of their effectiveness and multilateral impact

Risk of excessive borrowing directly from abroad?

Risk of domestic credit boom (esp. in FX)?

Accumulate reserves; Sterilize if inflationary concerns

Prudential concerns remain?

Strengthen prudential regulations

yes

no
Allow exchange rate appreciation if not overvalued
MACROECONOMIC CONSIDERATIONS

Capital inflow surge

Allow exchange rate appreciation if not overvalued

Reserves accumulation needed?

yes

Accumulate reserves; Sterilize if inflationary concerns

PRUDENTIAL CONCERNS
Macroeconomic Considerations

- Allow exchange rate appreciation if not overvalued
  - Reserves accumulation needed?
    - no
    - yes: Lower interest rates if no inflationary / overheating concerns
    - yes: Prudential Concerns
      - Capital inflow surge
      - Accumulate reserves; Sterilize if inflationary concerns
Allow exchange rate appreciation if not overvalued

Reserves accumulation needed?

Lower interest rates if no inflationary / overheating concerns

Accumulate reserves; Sterilize if inflationary concerns

Tighten fiscal policy as appropriate
Allow exchange rate appreciation if not overvalued

Reserves accumulation needed?

- Lower interest rates if no inflationary / overheating concerns
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Tighten fiscal policy as appropriate

Impose/strengthen controls on capital inflows taking due account of their effectiveness and multilateral impact
Macroeconomic Considerations  Prudential Concerns

Capital inflow surge

Risk of excessive borrowing directly from abroad?
- yes
- no

Risk of domestic credit boom (esp. in FX)?

Strengthen prudential regulations
Risk of excessive borrowing directly from abroad?

Risk of domestic credit boom (esp. in FX)?

Strengthen prudential regulations

Prudential concerns remain?

Impose/strengthen controls on capital inflows taking due account of their effectiveness and multilateral impact
MACROECONOMIC CONSIDERATIONS

Prudential Concerns

Capital inflow surge

Allow exchange rate appreciation if not overvalued

Risk of excessive borrowing directly from abroad?

yes

no

Reserves accumulation needed?

Risk of domestic credit boom (esp. in FX)?

yes

no

Lower interest rates if no inflationary / overheating concerns

Accumulate reserves; Sterilize if inflationary concerns

Strengthen prudential regulations

Tighten fiscal policy as appropriate

Prudential concerns remain?

Impose/strengthen controls on capital inflows taking due account of their effectiveness and multilateral impact
Effectiveness of Capital Controls

- Evidence from empirical studies on the effectiveness of controls on aggregate inflows and REER mixed:
  - Cross-country analyses suggest controls dampen surges
    - E.g. Cardarelli, Elekdag and Kose (2007) and Kim, Qureshi and Zalduendo (2010)
  - Weaker evidence from individual country studies
  - Obvious endogeneity/econometric problems

- Stronger evidence linking controls to changes in the *composition* of capital inflows—key for financial fragility
<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Controls</th>
<th>Study</th>
<th>Did controls on inflows:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Study</td>
<td>Reduce the volume of net flows</td>
</tr>
</tbody>
</table>
| Brazil  | 1993–97| - Explicit tax on capital flows on stock market investments, foreign loans, and certain foreign exchange transactions.  
                  - Administrative controls (outright prohibitions against, or minimum maturity requirements for, certain types of inflows). | Cardoso and Goldfajn (1998)               | Yes (ST)                  | Yes (ST)                  | No                  |
|         |        |                                                                          | Reinhart and Smith (1998)              | Yes (ST)                  | Yes (ST)                  | No                  |
|         |        |                                                                          | Ariyoshi and others (2000)              | No                      | No                      | No                  |
|         |        |                                                                          | Edison and Reinhart (2001)              | Yes (ST)                 | Yes (ST)                 | No                  |
|         |        |                                                                          | Carvalho and Garcia (2008)             | Yes (ST)                 | Yes (ST)                 | No                  |
| Chile   | 1991–98| - Introduced URR on foreign borrowing, later extended to cover nondebt flows, American Depository Receipts, and potentially speculative FDI.  
                  - Raised the discount rate. | Valdes-Prieto and Soto (1998)           | No                       | Yes                     | No                  |
|         |        |                                                                          | Le Fort and Budnevich (1997)            | No                       | Yes                     | Yes                 |
|         |        |                                                                          | Larrain, Laban, and Chumacero (1997)   | No                       | Yes                     | No                  |
|         |        |                                                                          | Cardoso and Laurens (1998)             | Yes (ST)                | Yes                     | No                  |
|         |        |                                                                          | Reinhart and Smith (1998)              | Yes (ST)                | Yes (ST)                | No                  |
|         |        |                                                                          | Edwards (1999)                         | No                      | Yes                     | No                  |
|         |        |                                                                          | Gallego and Schmidt-Hebbel (1999)      | Yes (ST)                | Yes (ST)                | No                  |
|         |        |                                                                          | Ariyoshi and others (2000)             | No                      | No                      | No                  |
|         |        |                                                                          | De Gregorio, Edwards, and Valdes (2000)| No                      | Yes                     | Yes (ST)            |
|         |        |                                                                          | Edwards and Rigobon (2009)             | Yes                     | Yes                     | Yes                 |
| Colombia| 1993–98| - Introduced URR on external borrowing (limited to loans with maturities up to 18 months) and later extended to cover certain trade credits. | Le Fort and Budnevich (1997)            | Yes (ST)                | Yes                     | Yes                 |
|         |        |                                                                          | Cardenas and Barrera (1997)            | No                      | Yes                     | No                  |
|         |        |                                                                          | Reinhart and Smith (1998)              | No                      | No                      | No                  |
|         |        |                                                                          | Ariyoshi and others (2000)             | No                      | Yes                     | No                  |
| 2007–08 |        | - Introduced URR of 40 percent on foreign borrowing and portfolio inflows.  
                  - Imposed limits on the currency derivative positions of banks (500 percent of capital). | Concha and Galindo (2008)              | No                      | Yes                     | Yes (ST)            |
|         |        |                                                                          | Cardenas (2007)                        | No                      | Yes (ST)                | No                  |
|         |        |                                                                          | Clements and Kamil (2009)              | No                      | Yes                     | No                  |
### Table 1. Selected Cases of Control Measures on Capital Inflows (concluded)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Controls</th>
<th>Study</th>
<th>Did controls on inflows:</th>
</tr>
</thead>
</table>
| **Malaysia** | 1994      | - Prohibition against sale of short-term debt securities and money market instruments to nonresidents, and against commercial banks’ engagement in non-trade-related swaps or forward transactions with nonresidents.  
- Ceilings on banks’ net liability position.  
- Non-interest-bearing deposit requirement for commercial banks against ringgit funds of foreign banks. | Ariyoshi and others (2000)  
Tamirisa (2004) | Yes  
Yes  
No |
|           |            | 2006–08                                                                                                                                  | Ariyoshi and others (2000) | Yes  
Yes  
Yes |
| **Thailand** | 1995–96    | - URR imposed on banks’ nonresident baht accounts.  
- Introduced asymmetric open-position limits to discourage foreign borrowing.  
- Imposed reporting requirements for banks on risk-control measures in foreign exchange and derivatives trading. | Reinhart and Smith (1998)  
Montiel and Reinhart (1999)  
Edison and Reinhart (2001)  
Binici, Hutchison, and Schindler (2009) | Yes (ST)  
No  
No  
No |
|           | 2006–08    | - URR of 30 percent imposed on foreign currencies sold or exchanged against baht with authorized financial institutions (except for FDI and amounts not exceeding US$20,000). Equity investments in companies listed on the stock exchange were made exempt from the URR. | Reinhart and Smith (1998)  
Montiel and Reinhart (1999)  
Edison and Reinhart (2001)  
Binici, Hutchison, and Schindler (2009) | Yes (ST)  
Yes (ST)  
Yes (ST)  
No |

Sources: Magud, Reinhart, and Rogoff (2007), and IMF staff.

Note: A blank entry refers to the cases where the study in question did not analyze the particular relationship. (ST) refers to cases where only short-term effects were detected.
Design of Controls

- Purpose of the controls:
  - Macroeconomic concerns - exchange rate appreciation
    - Can outflow liberalization help?
      - Sequencing of liberalization measures
    - Broad-based capital controls

- Financial stability concerns
  - Volume of inflows
  - Maturity structure of inflows

Prudential type controls targeting the financial sector
Design of Controls

- **Coverage of controls**
  - **Broad based**
    - if purpose is to limit the volume of inflows or
    - if financial market sophisticated
  - **Specific**
    - to change the maturity structure or
    - to address financial stability concerns
  - **Exempt flows**
    - FDI, unless used for circumvention
    - (minimum stay or verification requirement)
Types of controls
- Administrative
  - Can be discretionary, prone to corruption
  - But, if existing system of administrative controls
  - new administrative controls can be more easily integrated
- Market-based
  - More transparent,
  - Does not prohibit, only discourages flow by increasing cost of transaction
  - Requires setting the right rate of tax (URR)

No clear evidence on the effectiveness
Design of Controls

- **Implementation**
  - Administrative capacity in the central bank
    - Can be a constraint
    - Tax can be administered by the tax authority if more efficient
  - Role of banking sector
    - Needs adequate supervision of compliance
  - Monitoring of flows
    - Regular reporting of information by the financial sector involved in capital transactions

- **Communication with the market**
  - Signaling the intention to implement controls can reduce inflows
Design of Controls

- International obligations
  - IMF
    - Members are generally free to implement capital controls, except affecting Art VIII.
    - Also qualified by members’ obligations subject to IMF surveillance under Art IV
  - GATTS, OECD
    - Controls can be implemented only under specific conditions
  - BITs, FTAs
    - May include specific obligations
Evidence from the Recent Crisis

- External liability structure matters for crisis resilience
  - Debt and financial FDI (disguised debt flows?) → Larger output decline
  - Non-financial FDI and equity flows → More resilience
Evidence from the Recent Crisis

**Why?**

- Debt and Financial FDI imply credit/FX lending booms
- Ensuing credit/FX lending busts imply deeper recession
- Debt has residual effect controlling for domestic credit/FX lending booms
Table A1. Composition of Flows and Output Growth Decline, 2008–09 1/

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Foreign Liabilities</strong></td>
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<tr>
<td>Non-Financial FDI (% of GDP, 2007)</td>
<td>-0.071**</td>
<td>-0.086***</td>
<td>-0.087***</td>
<td>-0.090***</td>
<td>-0.087***</td>
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<td></td>
<td>(0.031)</td>
<td>(0.030)</td>
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<tr>
<td>Financial FDI (% of GDP, 2007)</td>
<td>0.195**</td>
<td>0.134</td>
<td>0.002</td>
<td>0.021</td>
<td>-0.045</td>
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<tr>
<td></td>
<td>(0.087)</td>
<td>(0.087)</td>
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</tr>
<tr>
<td>Debt Liabilities (% of GDP, 2007)</td>
<td>0.116***</td>
<td>0.116***</td>
<td>0.102**</td>
<td>0.091***</td>
<td>0.084*</td>
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<tr>
<td></td>
<td>(0.036)</td>
<td>(0.032)</td>
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<tr>
<td>Equity Liabilities (% of GDP, 2007)</td>
<td>-0.047</td>
<td>-0.039</td>
<td>-0.057</td>
<td>-0.040</td>
<td>-0.061</td>
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<tr>
<td></td>
<td>(0.064)</td>
<td>(0.051)</td>
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<tr>
<td><strong>Domestic Banking System Credit</strong></td>
<td></td>
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<tr>
<td>FX Credit (% of GDP, 2007)</td>
<td></td>
<td>0.153***</td>
<td>0.043</td>
<td>0.008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0534)</td>
<td></td>
<td>(0.069)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in Credit/GDP from 2003 to 2007</td>
<td></td>
<td></td>
<td>0.151***</td>
<td>0.101*</td>
<td>0.100</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(0.051)</td>
<td>(0.051)</td>
<td>(0.064)</td>
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<tr>
<td><strong>Other regressors:</strong></td>
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</tr>
<tr>
<td>Growth in trading partners 3/</td>
<td>-0.048**</td>
<td>-0.018</td>
<td>-0.038**</td>
<td>-0.054**</td>
<td>-0.047**</td>
<td>-0.053**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>(0.019)</td>
<td>(0.016)</td>
<td>(0.025)</td>
<td>(0.020)</td>
<td>(0.022)</td>
<td></td>
</tr>
<tr>
<td>Change in terms of trade 4/</td>
<td>-0.122</td>
<td>-0.017</td>
<td>0.0162</td>
<td>-0.084</td>
<td>-0.068</td>
<td>-0.029</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.099)</td>
<td>(0.122)</td>
<td>(0.100)</td>
<td>(0.102)</td>
<td>(0.101)</td>
<td>(0.113)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>3.49</td>
<td>0.873</td>
<td>2.857**</td>
<td>1.814</td>
<td>1.532</td>
<td>1.64</td>
<td>2.253</td>
</tr>
<tr>
<td></td>
<td>(2.19)</td>
<td>(1.545)</td>
<td>(1.269)</td>
<td>(1.138)</td>
<td>(1.785)</td>
<td>(1.495)</td>
<td>(1.504)</td>
</tr>
<tr>
<td>Observations</td>
<td>35</td>
<td>34</td>
<td>30</td>
<td>33</td>
<td>30</td>
<td>33</td>
<td>29</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.43</td>
<td>0.608</td>
<td>0.411</td>
<td>0.473</td>
<td>0.619</td>
<td>0.717</td>
<td>0.727</td>
</tr>
</tbody>
</table>

Note: Robust standard errors in parentheses; *, **, and *** denote statistical significance at the 1, 5, and 10 percent levels, respectively.

1/ Dependent variable defined as average growth in 2003-07 minus average growth in 2008-09. Positive coefficient indicates that the regressor is associated with a larger decline in the real GDP growth rate.


3/ Average annual real growth rate in trading partners over 2008-09 weighted by average export to GDP ratio in 2003-07 (in percent).

4/ Average annual percentage change in terms of trade over 2008-09.
## Table A2. Foreign Liabilities and Banking System FX-Credit and Credit Booms 1/

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>FX Credit (% of GDP 2007) 1/</th>
<th>Change in Credit/GDP 2/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial FDI (% of GDP, 2007)</td>
<td>1.305***</td>
<td>0.914**</td>
</tr>
<tr>
<td></td>
<td>(0.346)</td>
<td>(0.398)</td>
</tr>
<tr>
<td>Debt Liabilities (% of GDP, 2007)</td>
<td>0.389***</td>
<td>0.258**</td>
</tr>
<tr>
<td></td>
<td>(0.071)</td>
<td>(0.104)</td>
</tr>
<tr>
<td>Constant</td>
<td>-8.044***</td>
<td>-0.031</td>
</tr>
<tr>
<td></td>
<td>(2.838)</td>
<td>(0.045)</td>
</tr>
<tr>
<td>Observations</td>
<td>31</td>
<td>34</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.75</td>
<td>0.31</td>
</tr>
</tbody>
</table>

Note: Robust standard errors in parentheses. *, **, and *** denote statistical significance at the 1, 5, and 10 percent levels, respectively.

1/ FX-denominated banking system credit (in % of GDP).

2/ Change in banking system credit/GDP over 2003-07.
Probit of pre-crisis capital controls on crisis dummy suggests more resilience

### Table A3. Capital Controls and Growth Crisis 1/

<table>
<thead>
<tr>
<th>Controls on 2/</th>
<th>[1]</th>
<th>[2]</th>
<th>[3]</th>
<th>[4]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall Inflows</strong></td>
<td>-2.026*</td>
<td>-2.644**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.043)</td>
<td>(1.329)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FDI Inflows</strong></td>
<td>-0.032</td>
<td>1.939</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.206)</td>
<td>(1.583)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Equity Inflows</strong></td>
<td>2.057</td>
<td>3.443**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.376)</td>
<td>(1.722)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bond Inflows</strong></td>
<td>-4.054*</td>
<td>-8.548**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.294)</td>
<td>(3.708)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Growth in trading partners 3/</strong></td>
<td>-0.010</td>
<td></td>
<td>-0.030**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td></td>
<td>(0.014)</td>
<td></td>
</tr>
<tr>
<td><strong>Change in terms of trade 4/</strong></td>
<td>-0.107**</td>
<td></td>
<td>-0.145*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.054)</td>
<td></td>
<td>(0.085)</td>
<td></td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>-0.712*</td>
<td>-1.480*</td>
<td>-0.900**</td>
<td>-3.097***</td>
</tr>
<tr>
<td></td>
<td>(0.385)</td>
<td>(0.812)</td>
<td>(0.351)</td>
<td>(0.882)</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td><strong>Pseudo R-squared</strong></td>
<td>0.117</td>
<td>0.240</td>
<td>0.168</td>
<td>0.368</td>
</tr>
</tbody>
</table>

Note: Robust standard errors in parentheses. *, **, and *** denote statistical significance at the 10, 5 and 1 percent levels, respectively.

1/ Crisis is coded as equal to one if the decline in the country's real GDP growth (2008-09 relative to 2003-07) is in the lowest 10th percentile of the sample.
2/ Capital controls based on the Schindler (2009) index averaged over 2000-05 (the last year covered in the database is 2005).
3/ Average annual real growth rate in trading partners over 2008-09 weighted by average export to GDP ratio in 2003-07 (in percent).
4/ Average annual percentage change in terms of trade over 2008-09.
Evidence from the Recent Crisis

- Probit of pre-crisis capital controls on crisis dummy suggests more resilience

1/ Growth crisis defined as output growth decline in bottom decile of sample of emerging market economies.
We conduct a number of sensitivity analysis, including:

- Dropping Baltics
- Extending the sample of countries
- Using alternative measures of crisis (e.g. change in GDP growth as opposed to crisis dummy)

Findings remain fairly robust:

- Pre-crisis capital controls continue to point to more resilience
- Debt liabilities remain associated with FX Credit; Financial FDI with credit booms
- Financial FDI remains associated with sharper contractions
Conclusion

- Capital inflows fundamentally good: additional financing for productive investment, risk diversification, etc.
- But sudden surges can pose macro-prudential challenges:
  - Recent evidence does suggest that capital controls improved resilience to crisis.
  - Not surprising since source of the initial shock was global financial markets.
  - Recent experience also confirms conventional wisdom that FDI/Equity flows are safer while Debt flows are riskier; But suggest closer attention should be paid to financial sector-FDI, which can embody some of the riskier types of flows.
Conclusion

- Capital controls appropriate for inclusion in toolkit in specific circumstances:
  - Currency overvalued
  - Further reserve accumulation undesirable
  - Inflation/overheating concerns
  - Limited scope for fiscal tightening
  - Prudential framework still leaves high risk of financial fragility