

Capital Flows to Low-Income Countries

DFID/IMF: Macroeconomic Challenges for Low-Income Countries

Philip R. Lane
Trinity College Dublin and CEPR

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Introduction

- Dedicated study of capital flows for LIC group
 - Literature mainly focused on advanced/emerging economies
- Strong policy motivation to understand capital flow dynamics
 - Macro-financial stability
 - Transmission of monetary/fiscal/ERR policies
 - Cross-country risk surveillance

General Approach

- Time-varying phases in global capital flows (“risk on, risk off”)
 - Examine 2003-2007 boom period (drivers of capital flows)
 - 2008-2009 crisis (global contraction in capital flows)
 - 2010-2012 recovery phase (“normalisation”?)
- Cross-country variation within each phase
- Related work: Milesi-Ferretti and Tille (2011), Forbes and Warnock (2012), Lane and Milesi-Ferretti (2012, 2013), Ahmed and Zlate (2013), Bruno and Shin (2013), Rey (2013)
- Also: Dorsey et al (2008), Ben Ltaifa et al (2009), Christiansen et al (2010), Dabla-Norris et al (2010), Alfaro et al (2012), Baldini et al (2012) and Mu et al (2013)

Conceptual Framework

- Net capital flows (current account): fundamental determinants (cycle;trend); risk factors
- Equity-debt mix in composition of capital inflows and capital outflows
- Domestic banking system; domestic financial markets
- Impact of gross levels of foreign assets and foreign liabilities on risk exposures
- Role of official funding in cross-border flows (official debt inflows; reserve outflows)
- Sectoral allocation of capital flows (banks, households, non-financial corporations, government)
- financial globalisation and long-term growth performance

Stylised Facts

- 41 country LIC sample [“non-fragile”]
- Also wider 100 country LIC+EM sample
- Features of external balance sheet
 - Significant net liability positions
 - Growing role for FDI liabilities
 - Portfolio equity flows and FDI outflows very small
 - Official reserves key component in foreign assets
 - IFI ratio low relative to advanced economies but high relative to many middle-income countries (role of official debt)

External Balance Sheet

| | 2002 | 2007 | 2009 | 2011 |
|---------------------|-------|-------|-------|-------|
| Foreign Assets | 31.7 | 36.1 | 36.0 | 35.0 |
| Debt Assets | 17.1 | 17.8 | 15.9 | 15.3 |
| FDI Assets | 0.3 | 0.5 | 0.5 | 0.7 |
| Foreign Reserves | 12.9 | 18.0 | 18.6 | 16.0 |
| Foreign Liabilities | 98.7 | 75.0 | 84.3 | 91.9 |
| Debt Liabilities | 73.5 | 35.8 | 50.3 | 42.2 |
| FDI Liabilities | 24.4 | 32.4 | 36.8 | 39.5 |
| IFI Ratio | 137.9 | 109.8 | 124.9 | 127.8 |

Percentage of External Debt that is Publicly Guaranteed

| | 2002 | 2007 | 2009 | 2011 |
|--------|------|------|------|------|
| Median | 85.7 | 79.2 | 76.5 | 75.4 |

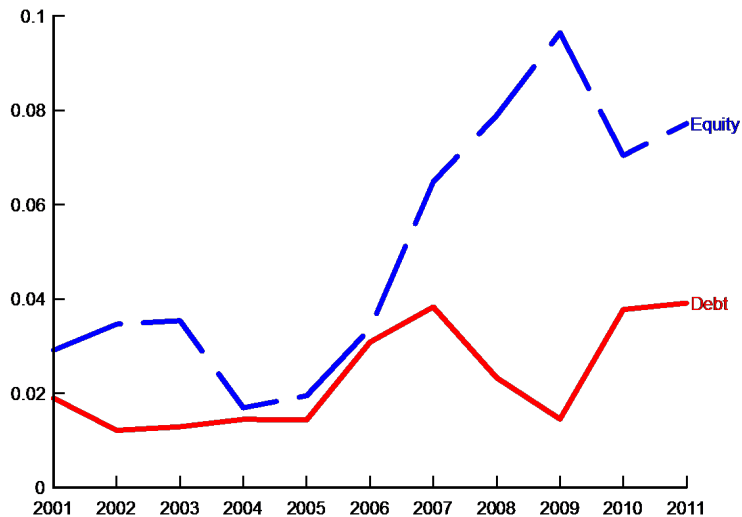
BIS Claims and Liabilities

| | All Assets | Bank Assets | Non- Bank Assets | All Liabs | Bank Liabs | Non- Bank Liabs |
|------|---------------|----------------|------------------------|--------------|---------------|-----------------------|
| 2002 | 4.6 | 1.1 | 3.4 | 11.7 | 5.3 | 4.7 |
| 2007 | 5.1 | 1.2 | 3.2 | 15.1 | 8.6 | 4.3 |
| 2009 | 5.5 | 1.0 | 3.5 | 11.3 | 5.8 | 4.2 |
| 2011 | 6.6 | 1.7 | 4.2 | 10.0 | 6.2 | 3.7 |

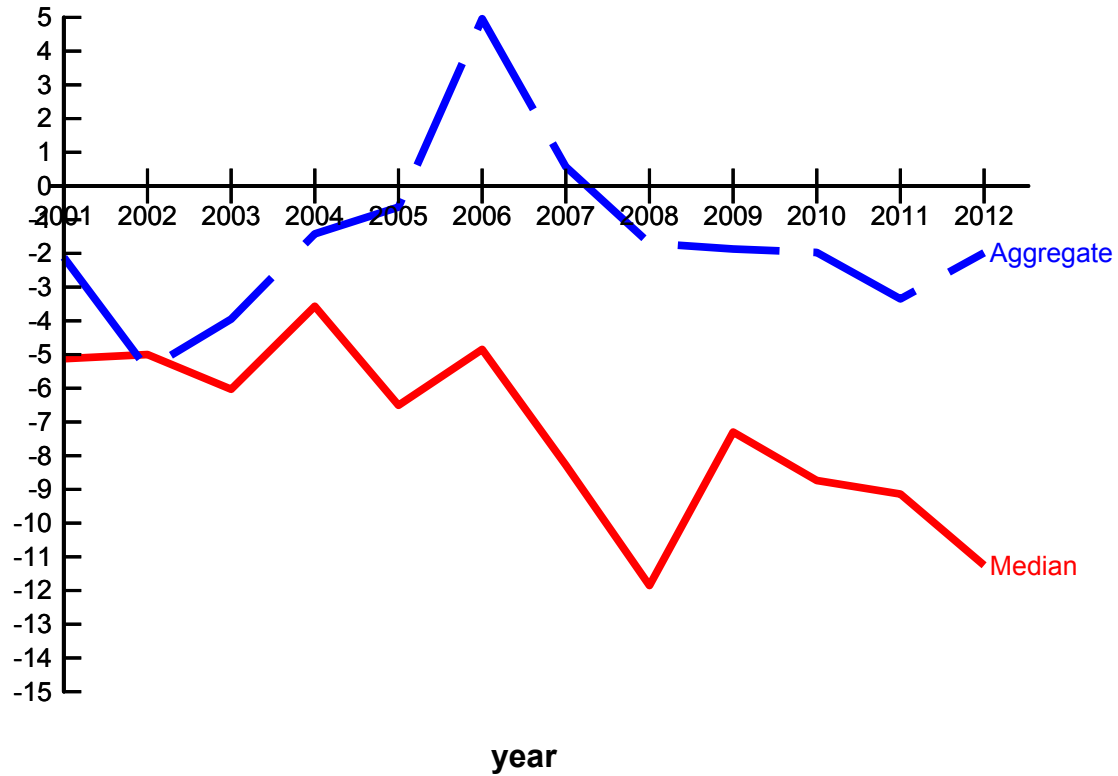
Financial Development Indicators

| | 2002 | 2007 | 2009 | 2011 |
|-----------------------------------|------|------|------|------|
| Stock Market capitalization | 6.3 | 15.1 | 16.1 | 17.2 |
| Domestic credit to private sector | 13.2 | 20.7 | 26.2 | 28.3 |

CPIS Debt Equity LIC



Current Account Balance: LIC Group



Empirical Approach

- 2003-2007 boom period
- 2008-2009 global crisis
- 2010-2012 recovery phase
- Time variation in global financial environment: allow for time-varying determinants of capital flows
- Net capital flows (current account)
- Debt inflows (total; private)
- FDI inflows
- FXRES outflows

2003-2007 Boom

$$FLOW_i^{0307} = \alpha^{0307} + \beta^{0307} X_i^{02} + \sigma^{0307} Z_i^{0307} + \varepsilon_i^{0307}$$

- GDP per capita
- Country size
- Natural resource endowment
- Level of domestic credit
- Population growth
- GDP growth
- Fiscal Balance
- Lagged stock position (stock-flow dynamics)

$$FLOW_i^{09} - FLOW_i^{07} = \alpha + \omega_1 FLOW_i^{07} + \omega_2 STK_i^{07} + \rho V_i^{07} + \varepsilon_i$$

- “Mean Reversion” ($FLOW^{07}$, STK^{07})
- GDP per capita
- Level and pre-crisis growth in domestic credit
- (Lane and Milesi-Ferretti 2011, 2012)

- Did capital flows “re-normalise”?
- Two exercises

$$FLOW_i^{1012} = \delta_0 + \delta_1 FLOW_i^{0307} + \delta_2 (FLOW_i^{09} - FLOW_i^{07}) + \varepsilon_i^{1012}$$

$$FLOW_i^{1012} = \alpha^{1012} + \beta^{1012} X_i^{09} + \sigma^{1012} Z_i^{1012} + \varepsilon_i^{1012}$$

Estimation Strategy

- LIC sample
- Expanded LIC+EM sample
 - LIC interactions: are LICs “different”?

Average Current Account Balance 2003-2007

| | (1) CAB | (2) CAB | (3) CAB | (4) CAB | (5) PCAB |
|------------------|---------------|------------------|------------------|------------------|--------------------|
| GDP_{02}^{PC} | 0.01 (.02) | 0.0 (.028) | 0.029 (.028) | 0.019 (.028) | -0.058 (.027)** |
| $NATRES_{02}$ | | 0.45 (.16)*** | 0.51 (.16)*** | 0.49 (.16)*** | 0.49 (.16)*** |
| $SIZE_{02}$ | | 2.8 (.79)*** | 2.8 (.83)*** | 2.6 (.84)*** | 0.23 (.28) |
| $POPGROW_{0307}$ | | -0.31 (.26) | -0.44 (.26) | -0.51 (.26)* | -0.35 (.25) |
| $GROW_{0307}$ | | | -0.79 (.45)* | -0.86 (.45)* | -0.61 (.44) |
| R^2 | 0.002 | 0.46 | 0.49 | 0.50 | 0.42 |
| N | 41 | 40 | 40 | 40 | 40 |

Debt Inflows 2003-2007

| | (1) DEBT | (2) DEBT | (3) DEBT | (4) DEBT | (5) PDEBT |
|-----------------|-------------------|------------------|------------------|---------------------|---------------------|
| GDP_{02}^{PC} | 0.034 (.015)** | -0.048 (.029) | 0.033 (.024) | 0.013 (.023) | 0.084 (.033)** |
| $FBAL_{0307}$ | | | -0.65 (.19)** | -0.38 (.19)* | -0.29 (.28) |
| $DEBTSTK_{02}$ | | | | -0.051 (.017)*** | -0.096 (.024)*** |
| R^2 | 0.1 | 0.17 | 0.32 | 0.58 | 0.61 |
| N | 41 | 40 | 40 | 40 | 40 |

FDI Inflows 2003-2007

| | (1) FDI | (2) FDI | (3) FDI |
|---------------|-----------------|------------------|------------------|
| $SIZE_{02}$ | -0.86 (.37)* | -0.83 (.38)** | -0.82 (.37)** |
| $GROW_{0307}$ | | 0.49 (.2)** | 0.52 (.21)** |
| $FBAL_{0307}$ | | 0.21 (.1)** | 0.2 (.1)* |
| R^2 | 0.34 | 0.47 | 0.48 |
| N | 40 | 40 | 40 |

Foreign Reserves 2003-2007

| | (1) RES | (2) RES | (3) RES | (4) RES |
|-----------------|--------------------|-----------------|----------------|-----------------|
| GDP_{02}^{PC} | 0.032 (.007)*** | 0.014 (.014) | 0.02 (.013) | 0.021 (.013) |
| $FBAL_{0307}$ | | | 0.22 (.1)** | 0.23 (.1)** |
| R^2 | 0.32 | 0.40 | 0.52 | 0.53 |
| N | 41 | 40 | 40 | 40 |

2003-2007: Summary

- CAB positively related to natural resource endowment and country size
 - “Private” CAB negatively related to GDP-PC
- Debt inflows: GDP-PC; fiscal balance; negative stock-flow relation
- FDI inflows: country size; growth rate; fiscal balance
- Official reserve flows: fiscal balance

External Adjustment During 2008-2009

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-------------------------|------------------|-----------------|-------------------|--------------------|-------------------|--------------------|
| | ΔCAB | $\Delta PCAB$ | $\Delta DEBT$ | $\Delta PDEBT$ | ΔFDI | ΔRES |
| $FLOW_{07}$ | -0.16 (.14) | -0.41 (.22)* | -1.1 (.037)*** | -1.05 (.038)*** | -0.88 (.16)*** | 0.4 (.11)*** |
| GDP_{07}^{PC} | -0.004 (.12) | 0.01 (.03) | 0.017 (.014) | 0.043 (.017)** | -0.07 (1.2) | 0.035 (.019)* |
| $DCREDIT_{07}$ | 0.02 (.09) | 0.02 (.11) | -0.18 (.06)*** | -0.17 (.07)** | -0.04 (.05) | -0.24 (.087)*** |
| $\Delta DCREDIT_{0207}$ | 0.09 (.11) | -0.03 (.14) | 0.22 (.07)*** | 0.27 (.085)*** | 0.066 (.67) | 0.094 (.01) |
| $DEBTSTK_{07}$ | 0.04 (.047) | 0.01 (.06) | 0.001 (.03) | -0.07 (.04)* | -0.026 (.027) | 0.117 (.042)*** |
| $FDISTK_{07}$ | 0.11 (.056)* | 0.08 (.07) | -0.04 (.04) | -0.06 (.045) | 0.055 (.038) | -0.079 -0.05 |
| $RESSTK_{07}$ | -0.28 (.11)** | -0.2 (.15) | -0.002 (.06) | 0.056 (.078) | 0.007 (.06) | -0.48 (.09)*** |
| R^2 | 0.46 | 0.36 | 0.97 | 0.96 | 0.57 | 0.62 |
| N | 39 | 39 | 39 | 39 | 39 | 39 |

2008-2009: Summary

- Pervasive “mean reversion in flows” pattern
 - (Exception: reserves)
- Role of domestic credit; stabilising role of official reserves
- General message: capital flow volatility substantial even for LIC group

Shifts in Capital Flows, 2010-2012

| | (1) CAB | (2) DEBT | (3) FDI | (4) RES |
|-------------------------|------------------|----------------|------------------|------------------|
| α | -5.3 (1.5)*** | 4.3 (.6)*** | 0.19 (1.5) | 1.6 (.6) |
| $FLOW_{0307}$ | 0.77 (.14)*** | 0.14 (.11) | 1.8 (.3)*** | -0.23 (.12)* |
| $FLOW_{09} - FLOW_{07}$ | 0.58 (.16)*** | 0.05 (.03) | 0.99 (.21)*** | -0.087 (.052) |
| R^2 | 0.46 | 0.07 | 0.52 | 0.16 |
| N | 41 | 41 | 38 | 41 |

Capital Flows During 2010-2012 Recovery Phase

| | (1) CAB | (2) DEBT | (3) FDI | (4) RES |
|-----------------|-------------------|----------------|------------------|---------------|
| GDP_{09}^{PC} | 0.1 (.043)** | -0.57 (1.9) | -0.07 (.039)* | -1.3 (1.5) |
| $NATRES_{09}$ | -0.11 (.2) | -0.03 (.09) | 0.31 (.18)* | 0.11 (.07) |
| $SIZE_{09}$ | 0.04 (.012)*** | -0.18 (.57) | -1.6 (1.1) | 0.16 (.44) |
| $DCREDIT_{09}$ | -0.04 (.1) | 0.013 (.04) | 0.07 (.08) | 0.02 (.03) |
| $GROW_{1012}$ | -1.5 (.74)** | 0.52 (.32) | 1.2 (.6)* | 0.32 (.27) |
| R^2 | 0.47 | 0.32 | 0.48 | 0.31 |
| N | 37 | 37 | 34 | 37 |

2010-2012: Summary

- Mixed picture
 - Partial re-emergence of pre-crisis distribution
 - Still, also persistent shifts in capital flow patterns
 - 2010-2012: difficult to link to individual regressors

Low-Income Countries: Differences Vis-a-Vis Emerging Economies, 2003-2007

| | (1) CAB | (2) PCAB | (3) DEBT | (4) PDEBT | (5) FDI | (6) RES |
|--------------------------------------|------------------|------------------|-------------|--------------|------------|------------|
| <i>LICDUM</i> | | 75.3 (35.6)** | | | | |
| <i>GDP₀₂^{PC}</i> | | -8.3 (4.0)** | | | | |
| <i>POPGROW₀₃₀₇</i> | -1.2 (.34)*** | | | | | |

Low-Income Countries: Differences Vis-a-Vis Emerging Economies, 2008-2009

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--|------------------|---------------|-------------------|-------------------|--------------|-------------------|
| | ΔCAB | $\Delta PCAB$ | $\Delta DEBT$ | $\Delta PDEBT$ | ΔFDI | ΔRES |
| <i>LICDUM</i> | | | | -38.2 (17.3)** | | -34.4 (14.9)** |
| <i>FLOW</i> ₀₇ | 0.41 (.14)*** | | -0.33 (.11)*** | -0.59 (.18)*** | | 1.15 (.3)*** |
| <i>GDP</i> ^{PC} ₀₇ | | | | 5.2 (2.2)** | | 5.7 (2.0)*** |
| <i>DCREDIT</i> | | | -0.16 (.07)** | -0.16 (.07)** | | -0.3 (.07)*** |
| $\Delta DCREDIT$ ₀₇₋₀₉ | | | 0.22 (.08)*** | 0.32 (.09)*** | | |
| <i>DEBTSTK</i> ₀₇ | | | 0.12 (.04)*** | | | 0.11 (.04)*** |
| <i>FDISTK</i> ₀₇ | 0.12 (.05)** | | -0.07 (.04)* | | | -0.15 (.04)*** |
| <i>RESSTK</i> ₀₇ | -0.19 (.11)* | | | | | -0.34 (.11)*** |

Low-Income Countries: Differences Vis-a-Vis Emerging Economies, 2010-2012

| | (1) CAB | (2) DEBT | (3) FDI | (4) RES |
|---|------------------|-----------------|------------------|-------------------|
| <i>LICDUM</i> | -4.6 (1.5)*** | 3.5 (1.1)*** | | 1.5 (.75)* |
| <i>FLOW</i> ₀₃₀₇ | | | 1.33 (.27)*** | -0.69 (.18)*** |
| <i>FLOW</i> ₀₉ – <i>FLOW</i> ₀₇ | 0.35 (.2)* | | 0.9 (.18)*** | -0.17 (.07)** |

Low-Income Countries: Differences Vis-a-Vis Emerging Economies, 2010-2012

| | (1) CAB | (2) DEBT | (3) FDI | (4) RES |
|--|-------------------|-------------|-------------------|-----------------|
| <i>LICDUM</i> | -45.9 (27.1)* | | | |
| <i>GDP</i> ₀₉ ^{PC} | 0.06 (.033)* | | -0.05 (.028)* | |
| <i>NATRES</i> ₀₉ | -0.36 (.18)** | | | 0.14 (.06)** |
| <i>SIZE</i> ₀₉ | 4.02 (1.14)*** | | | |
| <i>GROW</i> ₁₀₁₂ | -1.58 (.56)*** | | 1.2 (.4)*** | |
| <i>FBAL</i> ₁₀₁₂ | | | -0.72 (.4)* | -0.44 (.19)* |
| <i>STK</i> ₀₉ | | | 0.072 (.035)** | |

Extended Sample: Summary

- Differences minor during 2003-2007
- Extensive differences in 2008-2009; 2010-2012
 - Greater differentiation by investors during stressed periods?

- Time-varying external financial environment: capital flow volatility; reversals
- Resilient domestic macro-financial framework (monetary policy, exchange rate regime, fiscal policy, macro-prudential policy, capital flow management tools, structural reforms)
 - (Special features of LIC group)
- International liquidity backstops
 - IFIs; Donors
 - Ex-ante planning required

Conclusions

- Time-varying correlates of capital flows: LIC group exposed to global push factors, in addition to domestic pull factors
- LIC group “different” to EM group: specific analysis warranted
- Policy Issues: macro-financial frameworks resilient to capital flow volatility; role of IMF/donors; financial development