# Emerging Market Liberalization and Monetary Control

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# Central Question(s)

- To what extent are monetary policy authorities in emerging markets able to influence their economies following financial market liberalization?
  - Does openness to foreign investment reduce the impact of monetary policy shocks?

# Benefits of Liberalization

By opening to foreign investment emerging markets can benefit from:

- Greater access to capital [Henry (2000), Mitton (2006)]
- At a lower cost [Chari and Henry (2004), Bekaert and Harvey (2000), de Jong and de Run (2005)]
- Spurs economic growth [Bekaert, at al (2001, 2009), Quinn and Toyoda (2008)]

trilema

# Costs of Liberalization

But with access to foreign capital, firms may become

- less sensitive to local monetary policy
  - Reducing the ability of monetary policy authorities to influence macroeconomic targets
- and more sensitive to foreign policy
  - Foreign policy may not be the best policy for the local economy

# The Impossible Trinity

- Reasons to think retaining control might be a challenge
  - The "Impossible Trinity" (Obstfeld, Shambaugh, Taylor, 2005)
    - Integration
    - ~~Exchange rate stability~~ Calvo et al. (2002, 2003)
    - Monetary control

# Related Literature: Effect of Monetary Policy

- Monetary policy shocks affect stock returns within the U.S. [Rozeff (1974), Geske and Roll (1983), Kaul (1987)]

- Developed market stock prices are affected by U.S. monetary policy
  - Conover, Jensen and Johnson (1999),
  - But it depends on financial linkages [Wongswan (2005)]

- Emerging stock markets react significantly to U.S. monetary policy shocks [Hausman and Wongswan (2006), Ehrmann and Fratzscher (2006)]

# Questions not addressed by prior literature:

1. Are local emerging markets influenced by local monetary policy above and beyond the influence of foreign monetary policy post liberalization?
   - Yes, in 18 of 25 markets one standard deviation increase in local policy rates an average 2.07% decline in the local market.
   - Confirming prior literature, U.S. monetary policy influences 11 of 25.

2. Are firms open to foreign investment investment in emerging markets influenced by local (and foreign) monetary policy?
   - Yes, in 16 of 23 markets local policy affects investable stock compared to 10 of 21 for non-investable.
   - consistent with an "efficiency" effect
     - Cross country results consistent: more developed and more internationally integrated markets are more sensitive to local policy.

# Findings (continued)

3. Are firms closed to foreign investment in emerging markets influenced by foreign (and local) monetary policy?
   - 7/21 sensitive to U.S. policy
   - 10/21 sensitive to local policy

# Data and Methodology

# The Data

- S&P's Emerging Markets Database (EMDB)
  - Global Index – returns to all stocks in a given market
  - Investible Index – returns to stocks open to foreign ownership
    - Bae, Chan and Ng (2004) find that 25% to 35% of the smallest size quintile is in the non-investable category.
  - Non-Investible index following Boyer, Kumagai, and Yuan (2006)

$$r_{Nt} = \frac{MV_{Gt-1} \times R_{Gt} - MV_{It-1} \times R_{It}}{MV_{Gt-1} - MV_{It-1}}$$

- Liberalization Dates
  - Bekaert, Harvey, and Lumsdaine (2002)

# Data: Monetary Policy Proxies

- Interest rates chosen based on Calvo and Reinthart (2002) survey of policy targets
  - Loayza and Shmidt-Hebble (2002) and Kamin, Turner and Van't dack (1998) note that with liberalization short term interest rates become the primary tool of monetary policy
    - Even if not the only tool, market-based interest rates will reflect these changes [Obstfeld et al. (2005)]

1. the interbank interest rates,
2. discount rate

3. Treasury bill rate
4. money market rate
5. 10-year government bond rate

- All from Datastream
  - (changes Winsorized at 5$^{th}$ and 95the percentile)

# Methodology: Measuring Monetary Policy Shocks

## Best Practices

- Structural Vector Auto Regression (SVAR) [Christiano Eichenbaum, and Evans (1999), Kim and Roubini (2000)]
  - Model expectation of monetary policy changes as function of:
    - Log Oil prices (oil) x 100
    - Log first difference Fed Funds Rate (FF)
    - Log first difference Industrial Production (IP) x 100
      - Where IP unavailable we use manufacturing. In Argentina and Venezuela crude petroleum production.
    - Inflation (inf) (Log first difference in CPI)
    - Log first difference of annualize Local Monetary Policy rate (LMP)
    - Log first difference of Exchange rate (FX) in US/local x 100
    - Real market return (Ret): Log first difference of index deflated by local inflation
      - Oil, output and CPI are seasonally adjusted

# Question 1

1. Are local markets influenced by local monetary policy above and beyond the influence of foreign monetary policy post liberalization?

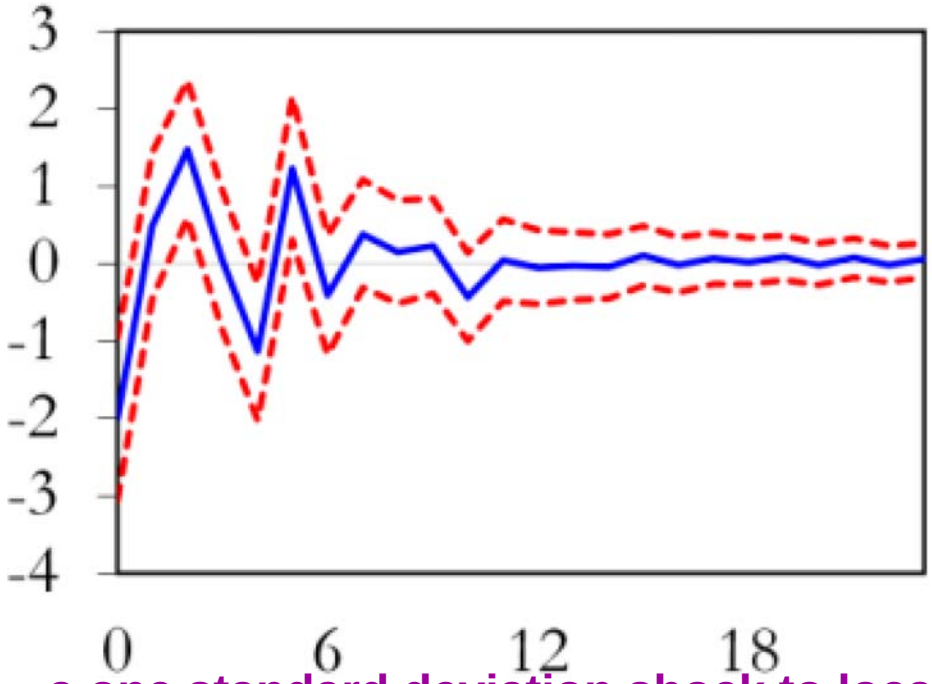
Here I report only the first period

- Impulse response of returns to local and foreign monetary policy

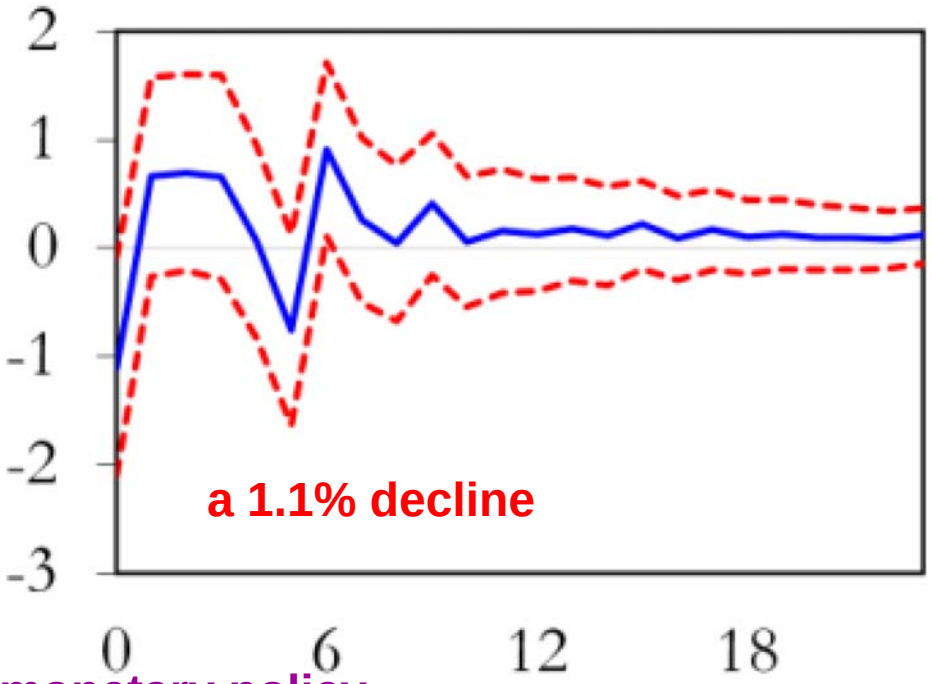
# Example Impluse Reponse

- Brazil

Response of Returns to
*Local Monetary policy*




Response of Returns to
*U.S. Monetary policy*




**a one standard deviation shock to local monetary policy results in a 2% decline in stock prices**

Tech details

# Local authorities influence (whole) local markets

| Country | Local Monetary Policy Proxy | Response of Returns to Local Monetary Policy | Response of Returns to U.S. Monetary Policy |
|---|---|---|---|
| *Central and South America* | | | |
| Argentina | IB | -3.079♠ | 0.189 |
| Brazil | IB | -2.000♠ | -1.107♠ |
| Chile | IB | -1.628♠ | -1.076♠ |
| Colombia | DR | -0.6 | -3.510♠ |
| Mexico | IB | -0.713♠ | -0.945 |
| Peru | DR | 0.118 | -0.285 |
| Venezuela | MM | -2.308♠ | -1.949♠ |
| *Asia* | | | |
| India | DR | -0.458 | -1.011♠ |
| Korea | MM | -1.142♠ | 0.493 |
| Malaysia | TB | -1.944♠ | -0.355 |
| Pakistan | MM | -1.753♠ | 1.118 |
| Philippines | IB | -1.214♠ | -0.673 |
| Taiwan | IB | -0.676 | 0.324 |
| Thailand | IB | -1.290♠ | -1.908♠ |

| Country | Local Monetary Policy Proxy | Response of Returns to Local Monetary Policy | Response of Returns to U.S. Monetary Policy |
|---|---|---|---|
| *Middle East and Africa* | | | |
| Israel | TB | -2.296♠ | 0.793 |
| Jordan | DR | -0.068 | -0.351 |
| South Africa | GB | -2.324♠ | -1.262♠ |
| *Europe* | | | |
| Czech | IB | 0.712 | -0.685 |
| Greece | TB | -2.641♠ | -0.246 |
| Hungary | TB | -1.165♠ | -1.674♠ |
| Poland | MM | -2.708♠ | -1.342♠ |
| Portugal | DR | -0.505 | 2.442♠ |
| Russia | IB | -2.999♠ | 0.549 |
| Slovakia | IB | -1.193♠ | -2.056♠ |
| Turkey | MM | -4.803♠ | -1.489♠ |

Whole market sensitive to local policy: 18/25 markets (average -2.07%)
U.S. Policy: 11/25 markets (average -1.32%)

robustness

# Decomposing Whole Market Returns

- Are firms open to foreign investment investment influenced by local (and foreign) monetary policy?
- Are firms closed to foreign investment influenced by foreign (and local) monetary policy?
- Is the sensitivity of the market return to local policy a driven by non-investable stock?
- Same SVARs only with investable and non-investable indices
  - Too few observations to jointly estimate

# Investable Response to Monetary Policy Shocks

| Country | Response of Returns to Local Monetary Policy Coefficient | Response of Returns to U.S. Monetary Policy Coefficient |
|---|---|---|
| *Central and South America* | | |
| Argentina | -3.090♠ | 0.163 |
| Brazil | -2.326♠ | -1.613♠ |
| Chile | -1.645♠ | -1.074♠ |
| Colombia | -0.368 | -3.340♠ |
| Mexico | -1.730♠ | -0.21 |
| Peru | -0.012 | -0.236 |
| Venezuela | -0.591 | -1.571 |
| *Asia* | | |
| India | -0.471 | -0.136 |
| Korea | -1.070♠ | 0.466 |
| Malaysia | -1.957♠ | -0.311 |
| Philippines | -1.584♠ | -0.566 |
| Taiwan | -0.654 | 0.353 |
| Thailand | -1.229♠ | -1.772♠ |

| Country | Response of Returns to Local Monetary Policy Coefficient | Response of Returns to U.S. Monetary Policy Coefficient |
|---|---|---|
| *Middle East and Africa* | | |
| Israel | -2.293♠ | 0.766 |
| Jordan | -0.388 | -0.620♠ |
| South Africa | -2.296♠ | -1.261♠ |
| *Europe* | | |
| Czech | 0.738 | -0.644 |
| Greece | -2.779♠ | -0.127 |
| Hungary | -1.224♠ | -1.630♠ |
| Poland | -2.695♠ | -1.335♠ |
| Portugal | -0.869♠ | -0.571 |
| Russia | -3.354♠ | 0.743 |
| Turkey | -4.729♠ | -1.397 |

16/23 sensitive to local policy
8/23 sensitive to U.S. policy

# Non-Investable Response to Monetary Policy Shocks

| Country | Response of Returns to Local Monetary Policy Coefficient | Response of Returns to U.S. Monetary Policy Coefficient |
|---|---|---|
| *Central and South America* | | |
| Argentina | -2.229♠ | 0.802 |
| Brazil | -1.844♠ | -1.199♠ |
| Chile | -0.378 | 0.374 |
| Colombia | -0.454 | -4.740♠ |
| Mexico | -0.305 | -0.315 |
| Peru | 0.461 | -0.308 |
| *Asia* | | |
| India | -0.648 | -0.135 |
| Korea | -1.530♠ | 0.195 |
| Malaysia | -1.817♠ | -0.649 |
| Philippines | -0.945 | -0.905♠ |
| Taiwan | -0.662 | 0.258 |
| Thailand | -1.370♠ | -2.011♠ |

| Country | Response of Returns to Local Monetary Policy Coefficient | Response of Returns to U.S. Monetary Policy Coefficient |
|---|---|---|
| *Middle East and Africa* | | |
| Israel | -3.635♠ | -0.272 |
| Jordan | 0.146 | -0.147 |
| *Europe* | | |
| Czech | -0.239 | -1.159♠ |
| Greece | -3.238♠ | -1.810♠ |
| Hungary | -1.716♠ | 0.325 |
| Poland | -1.219♠ | -1.609♠ |
| Portugal | -0.76 | -0.069 |
| Russia | -2.095♠ | 0.936 |
| Turkey | -1.557 | -0.933 |

10/21 sensitive to local policy
7/21 sensitive to U.S. policy

# Summing up Investable and Non-investable results

- Local policy affects both
  - Investable
  - Non-investable
- Local policy has a more pronounced effect on investable stock
  - Efficiency effect? Consistent with Reese and Weisbach (2002)
    - firms enter foreign markets to raise more local capital.
- Shows that the sensitivity to U.S. Monetary policy is not solely driven by the investable component.
  - Contribution over Hausman and Wongswan (2006), Ehrmann and Fratzscher (2006)

# Differences between Non- Investables and Investables

- Are investable stock more responsive to local monetary policy shocks?
  - Insufficient power to model both series in an SVAR

- We difference the two series and model:
  - Non-Investable minus investable
  - Positive means Investable as a stronger effect
  - Negative means Non-Investable has a stronger effect

# Non-Investable Minus Investable

| | Response of Returns to Local Monetary Policy | Response of Returns to U.S. Monetary Policy | | | Response of Returns to Local Monetary Policy | Response of Returns to U.S. Monetary Policy |
|---|---|---|---|---|---|---|
| Country | Coefficient | Coefficient | | Country | Coefficient | Coefficient |
| Central and South America | | | | Middle East and Africa | | |
| Argentina | -0.846 | 0.134 | | Israel | -0.846 | 0.134 |
| Brazil | 0.804 | 0.030 | | Jordan | 0.804 | 0.030 |
| Chile | 1.218♠ | 0.401 | | Europe | | |
| Colombia | -0.674 | -0.339 | | Czech | 0.142 | 1.000 |
| Mexico | 1.142♠ | 0.150 | | Greece | -0.029 | -1.940♠ |
| Peru | 0.269 | 0.106 | | Hungary | 1.024♠ | 0.956♠ |
| Asia | | | | Poland | 0.887 | -0.896 |
| India | -0.129 | 0.035 | | Portugal | 0.603♠ | 0.868♠ |
| Korea | -0.433♠ | -0.552♠ | | Russia | 1.755♠ | 0.484 |
| Malaysia | 0.065 | -0.217 | | Turkey | -1.429 | 0.324 |
| Philippines | 0.443 | -0.311 | | | | |
| Taiwan | 0.032 | -0.068 | | | | |
| Thailand | -0.145 | -0.211 | | | | |

In 5 markets Investable stock more sensitive to local monetary policy shocks

# Conclusion

- Local monetary policy is a factor that affects the entire market in 18 of 25 markets: 2.07% decline for a 1 standard deviation shock
  - Not driven by non-investable stock
    - When different – investable are more sensitive
  - US policy does not dominate local policy

- It appears there are externalities to liberalization that
  - Investable stocks are more sensitive to local policy, but
  - non-investable stock to respond to foreign policy as if they too were investable in a few (7) markets