

# Financial Market Openness and Monetary Control

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# John Williamson, Chief Economist, World Bank, South Asia region, 1998

We need to **re-examine the merits of financial liberalization in** the light of [the concern that it] lead[s] to **a loss of monetary control**, and it might nurture financial crises. ... [I]n recent months the global economic crisis has led to a widespread questioning of the benefits of a liberalized financial system. ...

Critics... contended that **financial liberalization** would have two negative effects. It **might lead to a loss of monetary control**, and it might nurture financial crises.

# Ben S. Bernanke on March 2, 2007

at the Fourth Economic Summit, Stanford Institute for Economic Policy Research

“[Has] the increased openness of the U.S. economy ... in some way affected the ability of the Federal Reserve to ... foster price stability and maximum sustainable employment?”

“[S]ome analysts have argued that **globalization hinders monetary policy**--for example, **by reducing the ability of the Federal Reserve to affect U.S. interest rates and asset prices ....**”

# Costs and Benefits of Liberalization

- Through liberalization emerging markets can benefit
  - 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, et al (2001, 2009), Quinn and Toyoda (2008)]
- But with access to foreign capital, firms may become less sensitive to local monetary policy and more sensitive to foreign monetary policy
  - Foreign policy may not be the best policy for the local economy

# Reducing the costs of liberalization

- Impossible Trinity [Obstfeld, Shambaugh, and Taylor (2005)]
  - ~~Exchange rate stability~~ Calvo & Reinhart (2002)  
Calvo & Mishkin (2003)
  - Market integration
  - Monetary policy control
- Monetary policy authorities can mitigate the loss of control by
  - Forsaking liberalization
  - Allowing the local currency to float freely

# Research Objective

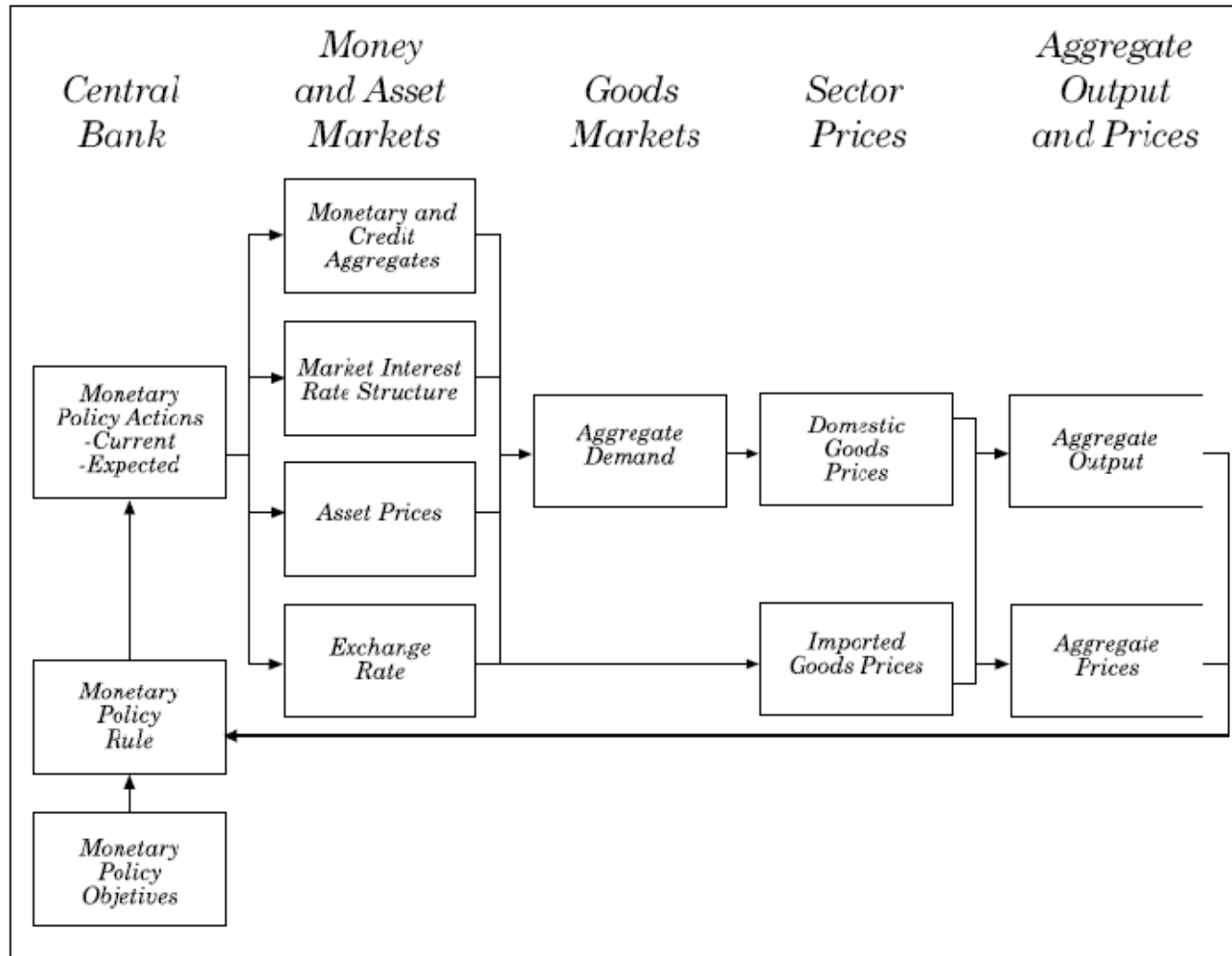
**Has emerging market liberalization lead to a loss of local monetary control?**

# Research Question

1. Does local monetary policy influence local asset prices in the post liberalization period?
  - Measure the sensitivity of global (i.e. whole market) **stock returns** and **exchange rates** to monetary policy shocks
    - Real economy evolves too slowly for precise tests
    - If emerging stock and currency markets are forward looking and informationally efficient, they will reflect changes in the economic outlook immediately [Bernanke and Kuttner (2005)]
  - **Yes?**
  - Is monetary control limited to firms reliant on the local capital market?

# Monetary Policy Rule and Transition Mechanisms

Figure 1. Monetary Policy Rule and Transition Mechanisms





# Research Question

## 2. No?

- Does liberalization lead to a loss of local monetary control?

### Ideal Test

- Examine replications of the same market
  - One open
  - One closed
- Alter monetary policy
- Observe the impact on the economy
  
- Problems:
  - No two markets/economies are the same
  - Policy tools change over time
  - The economic environment in which the policy tools are used change with time

# Our Experiment

Focus on post-liberalization stock prices in emerging markets and compare:

- Sensitivity of stock returns of
  - **Investable stocks**
  - **Non-Investable stocks**to monetary policy shocks
- **Advantages:**
  - Measures of monetary policy are available post-liberalization
    - Pre-liberalization monetary policy measures often not available
  - Monetary policy is the same (because measured at the same time)
  - Country specific factors are the same

- S&P's Emerging Markets Database (EMDB)
  - Global Index – returns to all stocks in a given market
  - Investable Index – returns to stocks open to foreign ownership
  - Non-Investable index following Boyer, Kumagai, and Yuan (2006)
  - Exchange rates
- Liberalization dates
  - Bekaert, Harvey, and Lumsdaine (2002)

# Data: Proxies for Monetary Policy Instrument

- Choice of Proxy:
  - Fed funds/futures rates for U.S. [Bernanke & Kuttner (2005)]
  - Short-term rates in emerging market [Loayza & Schmidt-Hebble (2002)]
- Datastream for
  - Interest rates (in order of preference)
    1. the interbank interest rates SELIC - Brazil???
    2. discount rate
    3. Treasury bill rate
    4. money market rate
    5. 10-year government bond rate
- Other data
  - World market returns in local currency

# Methodology: Measuring Monetary Policy Shocks

## To obtain monetary policy shock

- rely on standard open economy theory of monetary policy to model monetary authority's reaction function
- assume monetary authority sets interest rate after observing a external variables and local economic indicators
- use a structural vector autoregression (SVAR) model to obtain monetary policy shocks (Christiano, Eichenbaum, and Evans (1999))

# Methodology: Measuring Monetary Policy Shocks

To obtain monetary policy shock

$$\begin{bmatrix} \varepsilon_{oil} \\ \varepsilon_{FedF} \\ \varepsilon_{IndPro} \\ \varepsilon_{Infl} \\ \varepsilon_{LMP} \\ \varepsilon_{FX} \\ \varepsilon_{Ret} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \phi_{21} & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ \phi_{31} & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ \phi_{41} & 0 & \phi_{43} & 1 & 0 & 0 & 0 & 0 \\ \phi_{51} & 0 & 0 & 0 & 1 & \phi_{56} & 0 & 0 \\ \phi_{61} & \phi_{62} & \phi_{63} & \phi_{64} & \phi_{65} & 1 & 0 & 0 \\ \phi_{71} & \phi_{72} & \phi_{73} & \phi_{74} & \phi_{75} & \phi_{76} & 1 & 0 \end{bmatrix} \begin{bmatrix} v_{oil} \\ v_{FedF} \\ v_{IndP} \\ v_{Infl} \\ v_{LMP} \\ v_{FX} \\ v_{Ret} \end{bmatrix}$$

# Methodology: Measuring Monetary Policy Shocks

A system of equations: world oil prices, U.S. Fed funds rate, industrial production, inflation, change in local policy rate, exchange rate changes, stock returns

$$\begin{aligned} LMP_t &= \phi_{50} \\ &+ \phi_{51} * Oil_t + \phi_{56} * FX_t \\ &+ \sum_{p=1}^P \theta_{oil,p} * Oil_{t-p} + \sum_{p=1}^P \theta_{FedF,p} * FedF_{t-p} + \sum_{p=1}^P \theta_{IndP,p} * IndP_{t-p} + \sum_{p=1}^P \theta_{Inf,p} * Inf_{t-p} \\ &+ \sum_{p=1}^P \theta_{LMP,p} * LMP_{t-p} + \sum_{p=1}^P \theta_{FX,p} * FX_{t-p} + \sum_{p=1}^P \theta_{Ret,p} * Ret_{t-p} \\ &+ \underline{\underline{\varepsilon_{LMP,t}}} \end{aligned}$$

# Results

Local monetary policy significantly impacts

- 14 of 20 emerging markets
  - On average, a 1 standard deviation positive interest rate shock causes an immediate 1.10% decline in the stock prices
- exchange rate in 10 countries, mainly after 1 month
  - On average, a 1 standard deviation positive interest rate shock causes an immediate 0.51% appreciation
  - Four currencies (Mexico, Korea, Czech, Greece) experience depreciation



# Results

U.S. monetary policy also significantly impacts

- 12 of 20 emerging markets
  - But foreign does not dominate local monetary policy
  - On average, a 1 standard deviation positive U.S. interest rate shock causes an immediate 1.34% decline in the stock prices
  - might be more important in Colombia, Venezuela, Philippines,

# How Robust are the Results?

## Alternative (Simpler) Proxy for Monetary Policy Shocks

- Residuals from autoregressive-moving average (ARMA(p, q)) model of changes in policy interest rates
  - Assumes past interest rate changes contain all relevant information in monetary authority's reaction function
  - Increases sample to 28 countries
  - Allows for robustness tests
  - Applicable to investable and non-investable stocks

$$R_{it} = b_0 + b_1 * LMP_{it} + b_2 * (LMP_{it} * FXregime) + b_3 * USPolicy_t + b_4 * (LMP_{it} * Crash) + b_5 * Crash + b_6 * FXregime + b_7 * WorldMkt_{it} + e_{it}$$

# Robustness

- ✓ 20 of 28 markets significantly affected by local monetary policy
- ✓ Impact economically large - a one standard deviation positive shock to policy interest rates leads to a 1.74% immediate decline in stock prices
- ✓ In nearly three-quarters of markets local monetary policy has no effect during crises
- ✓ U.S. monetary policy does not dominate local policy
- ✓ Influence of world stock market does not diminish policy impact
- ✓ Monetary policy effect stronger in fixed, not flexible regimes
- ✓ The reaction to a given monetary policy shock is the same whether the stocks are **open** to foreign investors or **closed**.

# Our Contribution

Contributions to the debate on

1. emerging stock and currency markets as monetary policy transmission channels
2. effect of local and U.S. monetary policy on firms open to foreign investment and closed
3. level of international integration of emerging stock markets

# Conclusion:

- **Has emerging market liberalization lead to a loss of local monetary control?**
  - Local authorities are able to impact local economy through changes in monetary policy
  - But, the economy is influenced by foreign monetary policy so there is some loss of control
  - Local monetary policy authorities are able to influence segments of their stock markets even if they are open to foreign investment

# Implications for Brazil:

## Monetary policy implications

- Influential role of monetary policy on the timing of household consumption & business investment
- Attracting FPI need not compromise monetary independence and, hence, control but...
- Potential impact of capital inflows on monetary policy should be considered

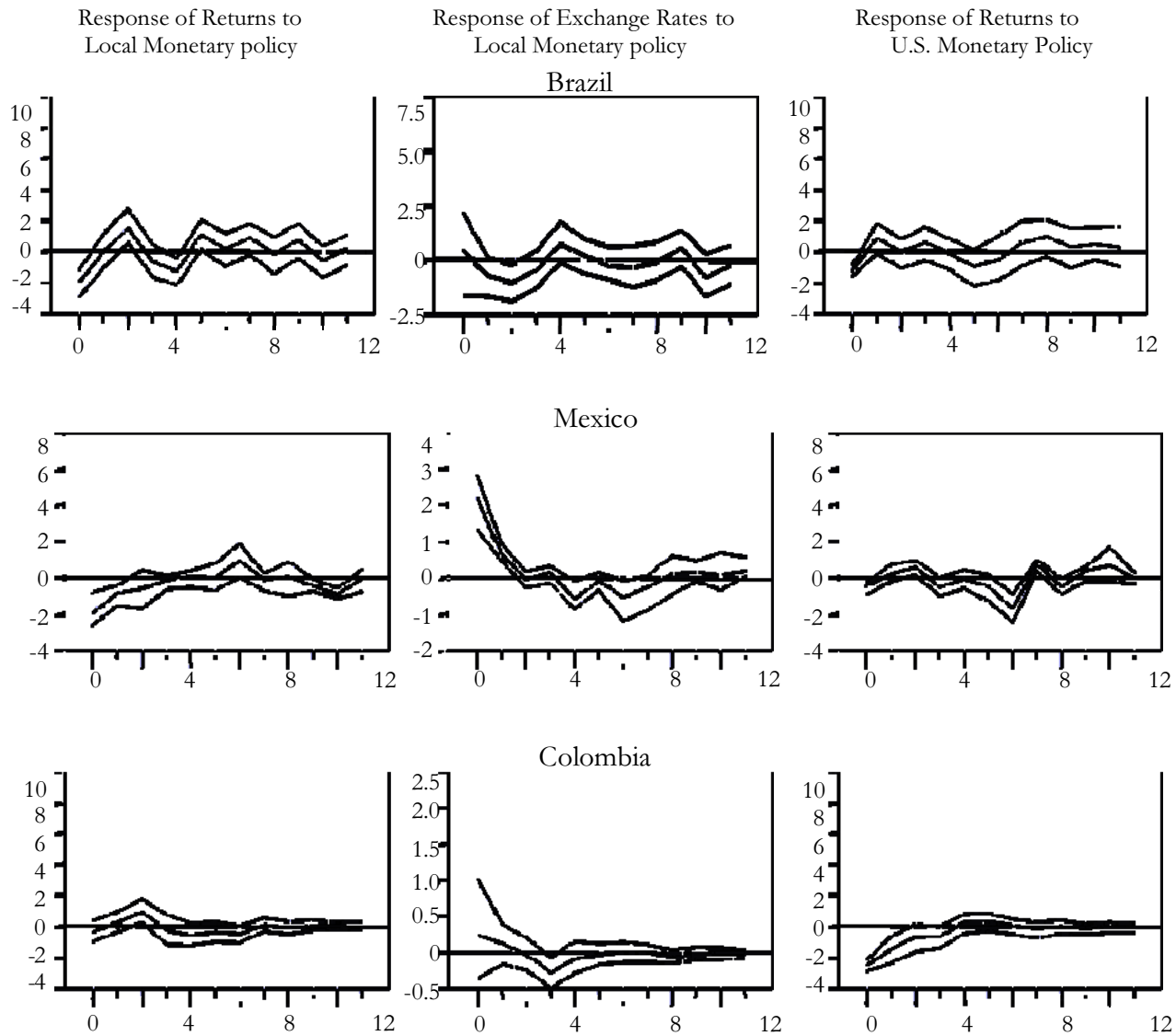
## Exchange rate implications

- Flexible regimes might enhance policy control, but...

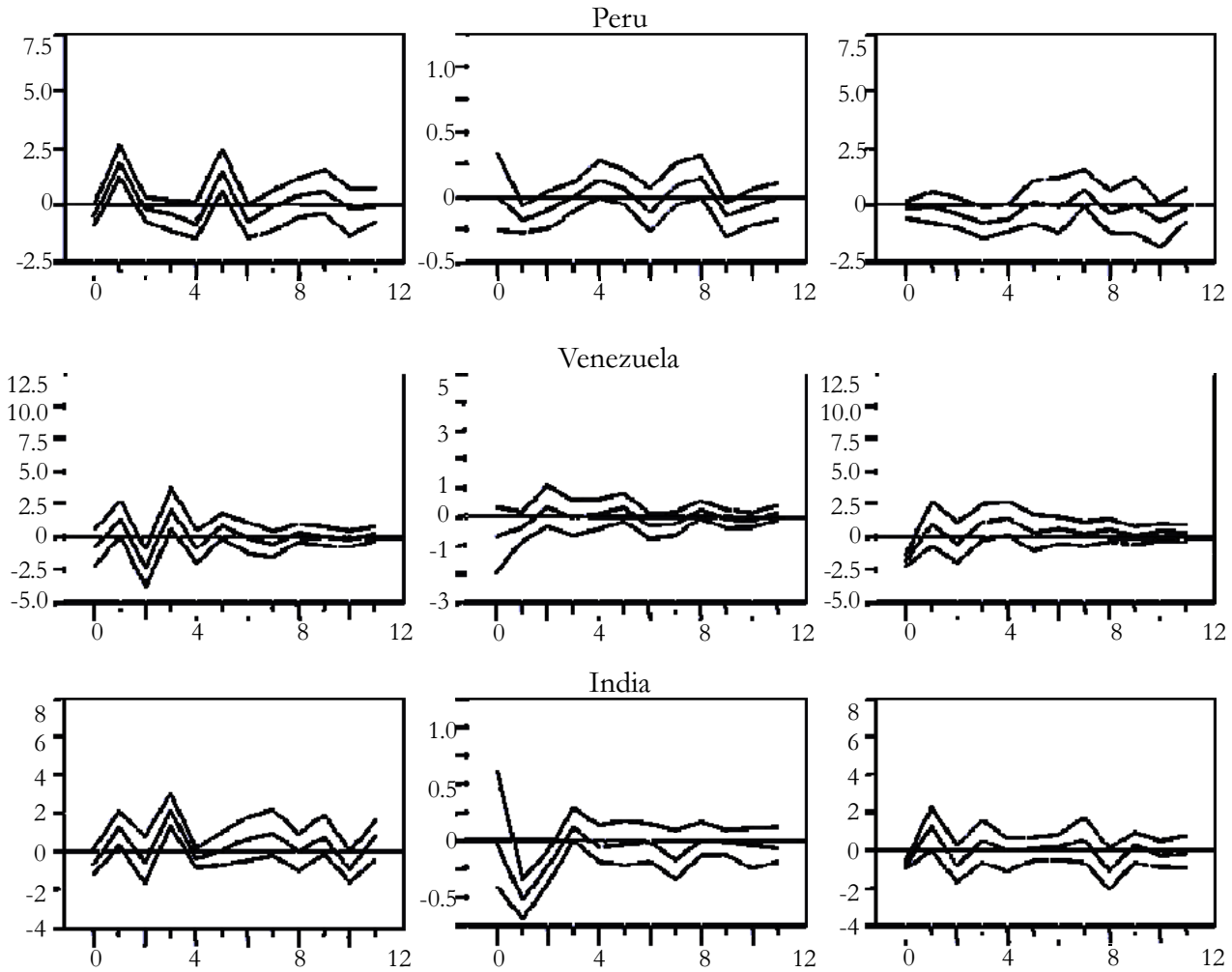
## Asset pricing implications

- Absence of transparent/consistent monetary policy framework could impede market development

# Results

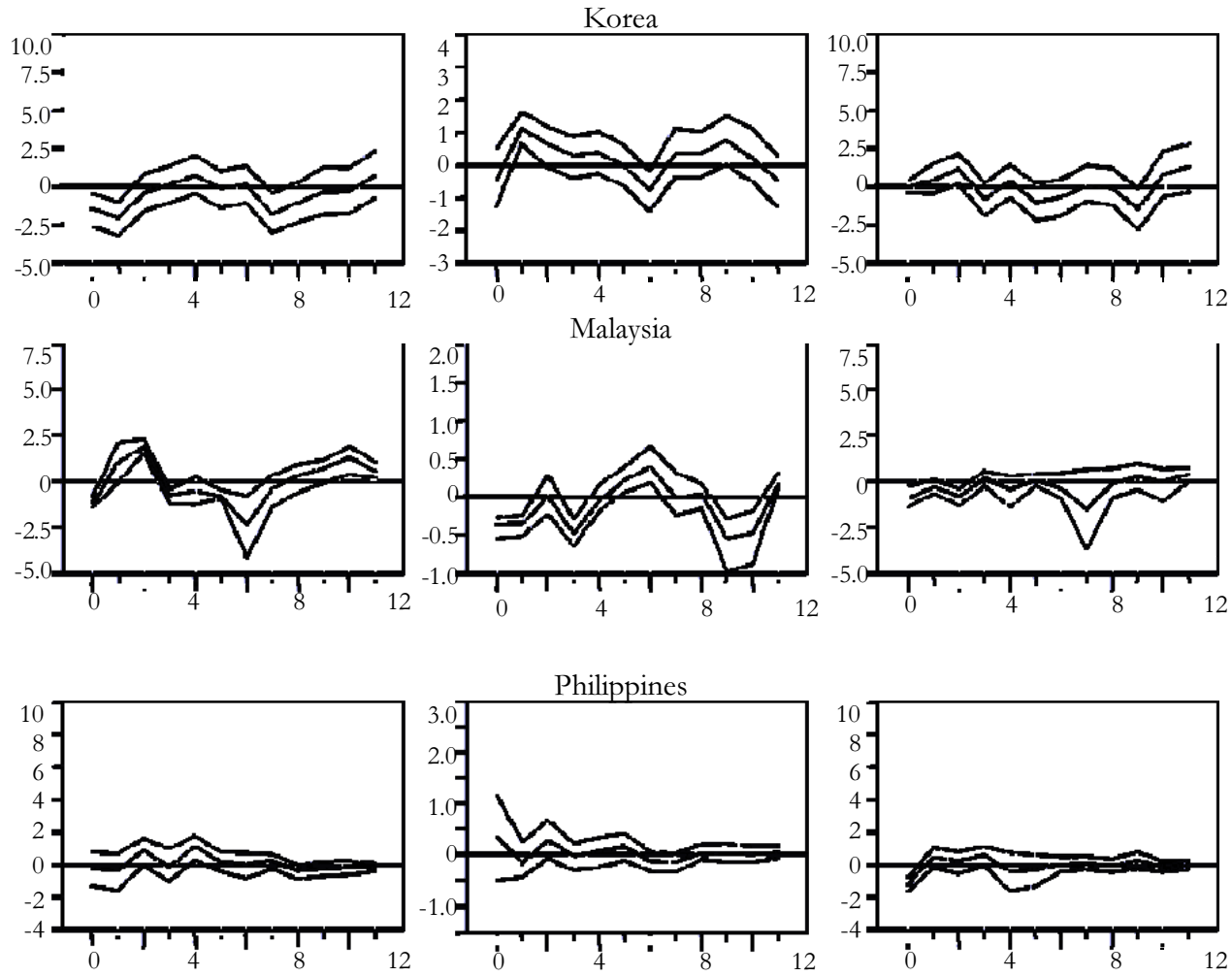


# Results

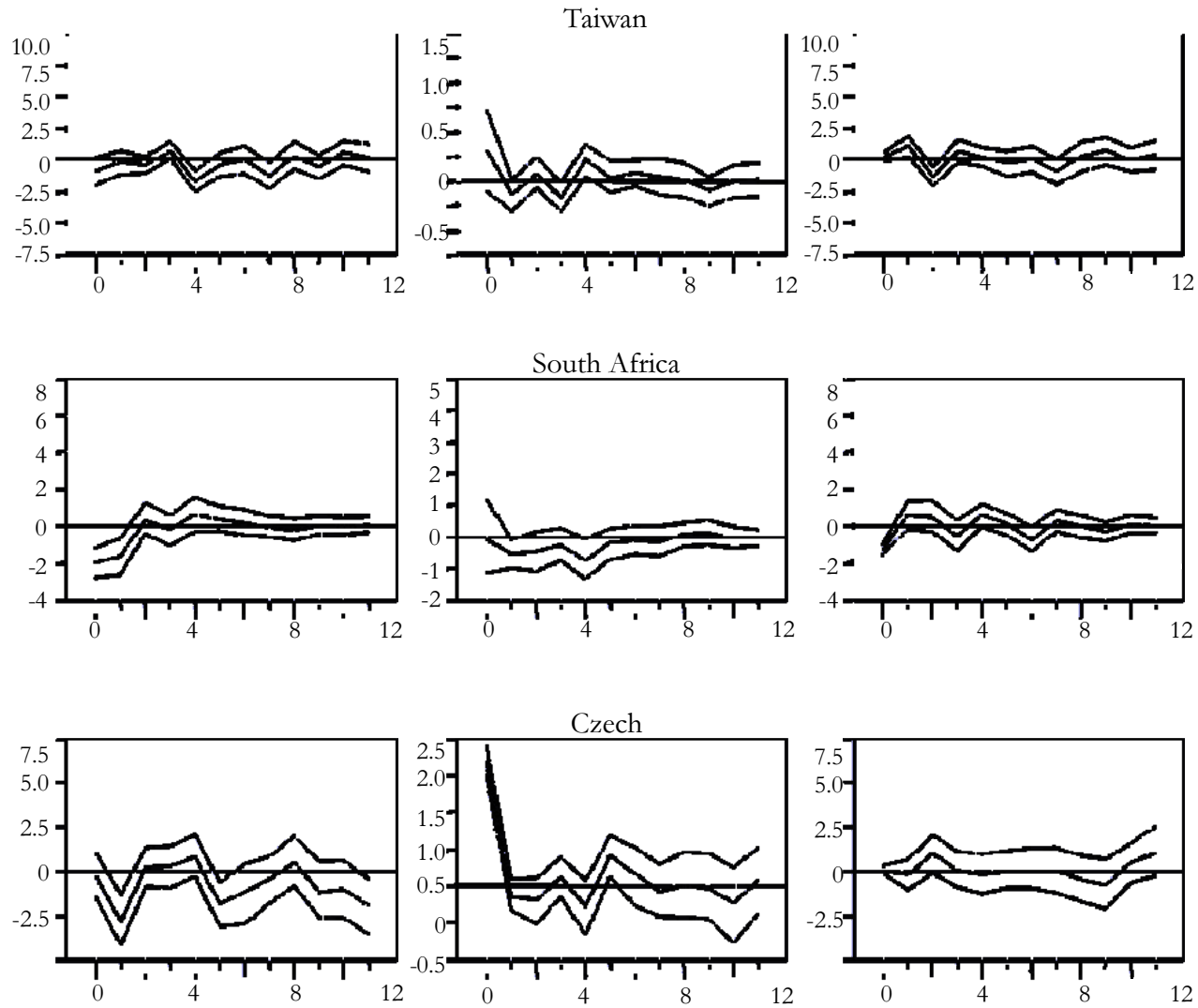




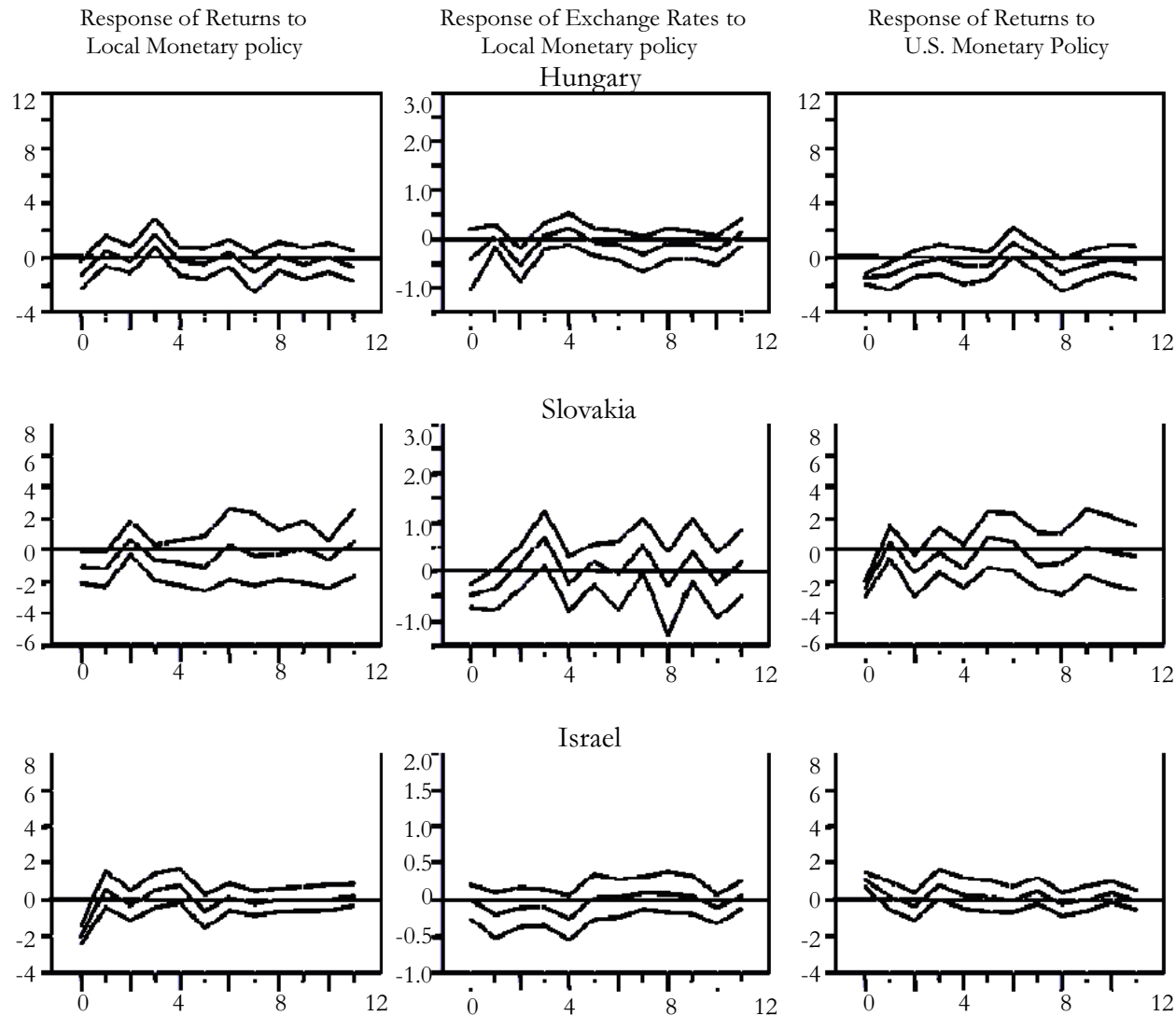
# Results



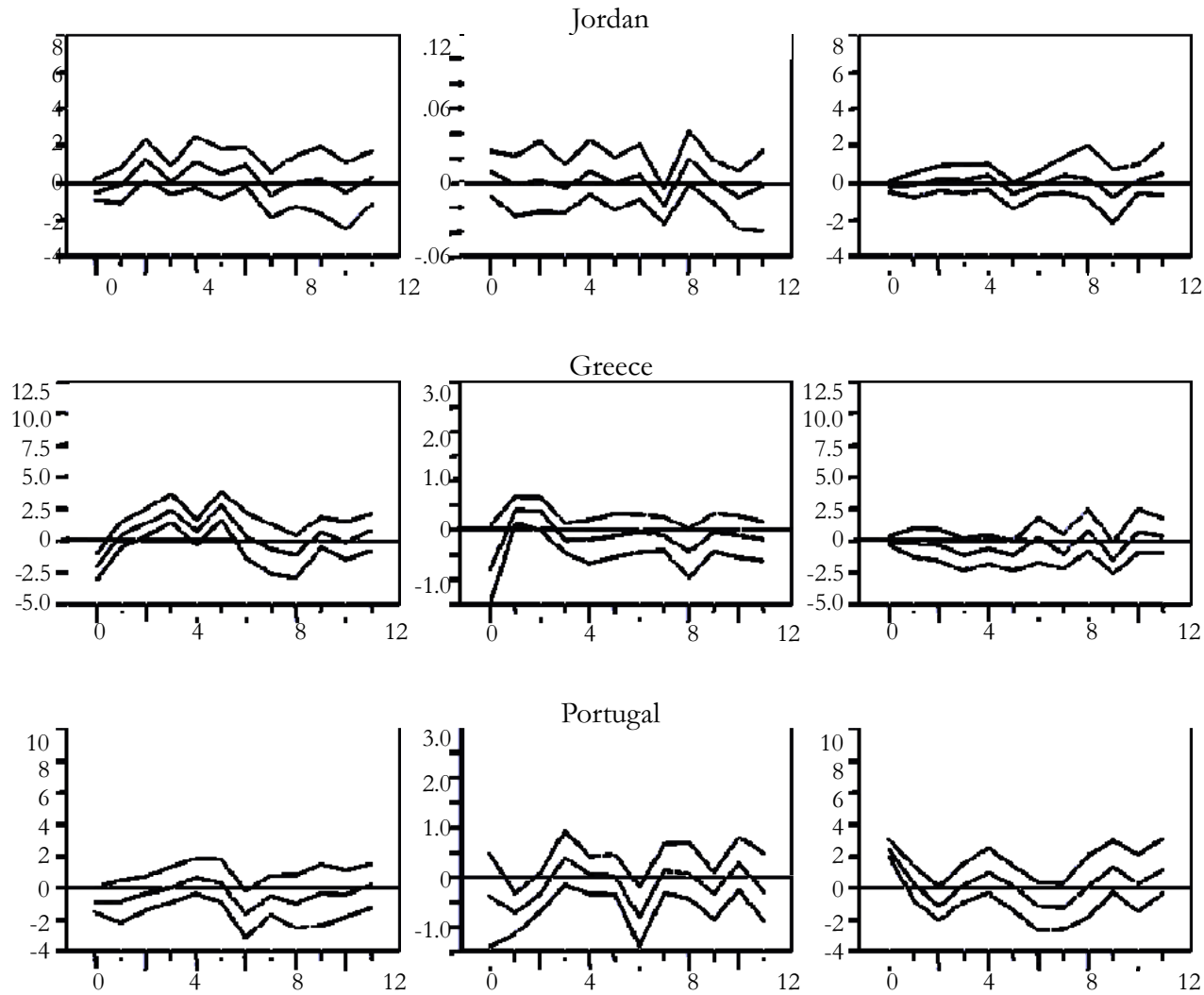
# Results



# Results



# Results



# Results

