Spillover Effects of Uncertainty Shocks on Asia-Pacific Region

Maria Teresa Punzi
and
Pornpinun Chantapacdepong

Revisiting macro-financial linkages:
Looking back and looking ahead
20-21 September 2016 - Manila, Philippines

Focus:

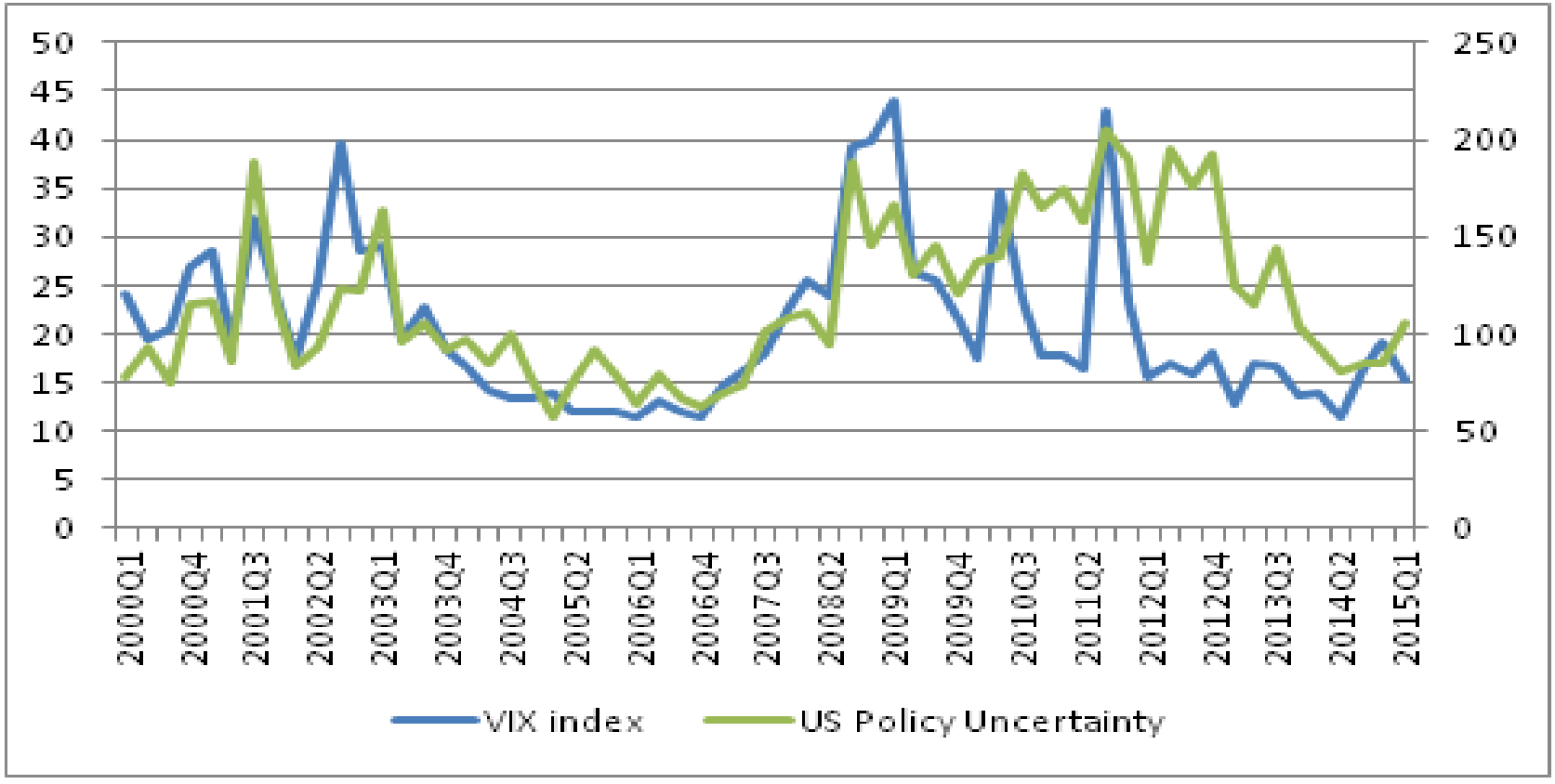
- Do uncertainty shocks have impact on Asia-Pacific Region?
- Through which channels do they affect those regions?
- Focus on Capital Flows

Methodology:

- Panel VAR
  1. Time Period: 2000q1-2015q1
  2. Particular attention to the post-crisis period (2009q1-2015q1)
  3. Cross-Country: Australia, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand.

- We consider two measure to identify uncertainty shocks: US uncertainty policy index and VIX index.

Figure: Uncertainty Measures. VIX Index (left axes) versus US Policy Uncertainty Index (right axes).



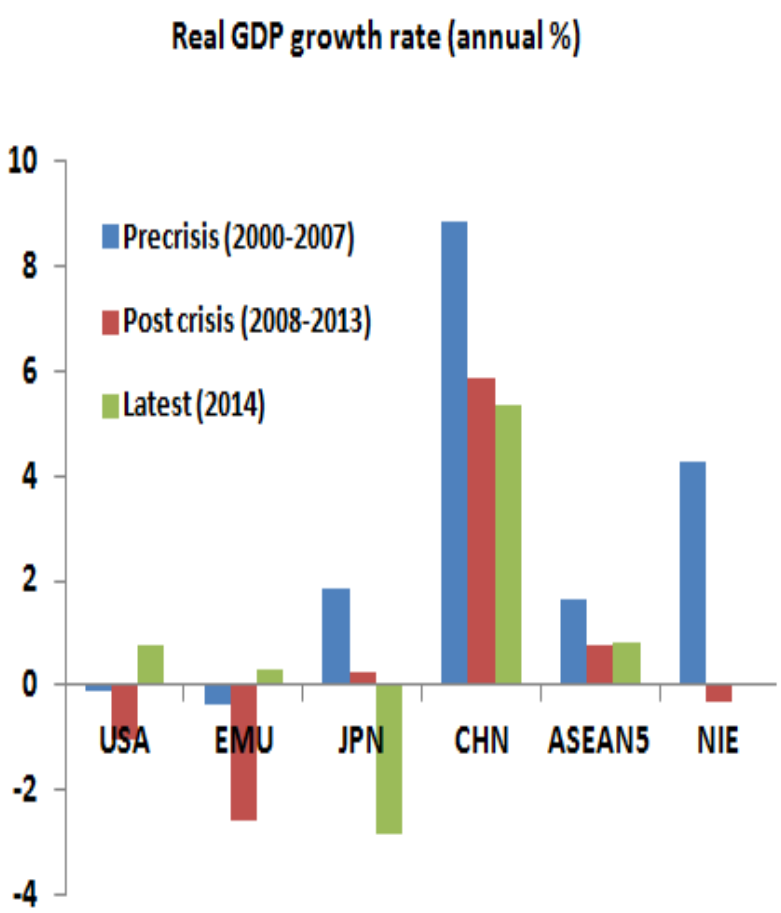
Transmission Channels

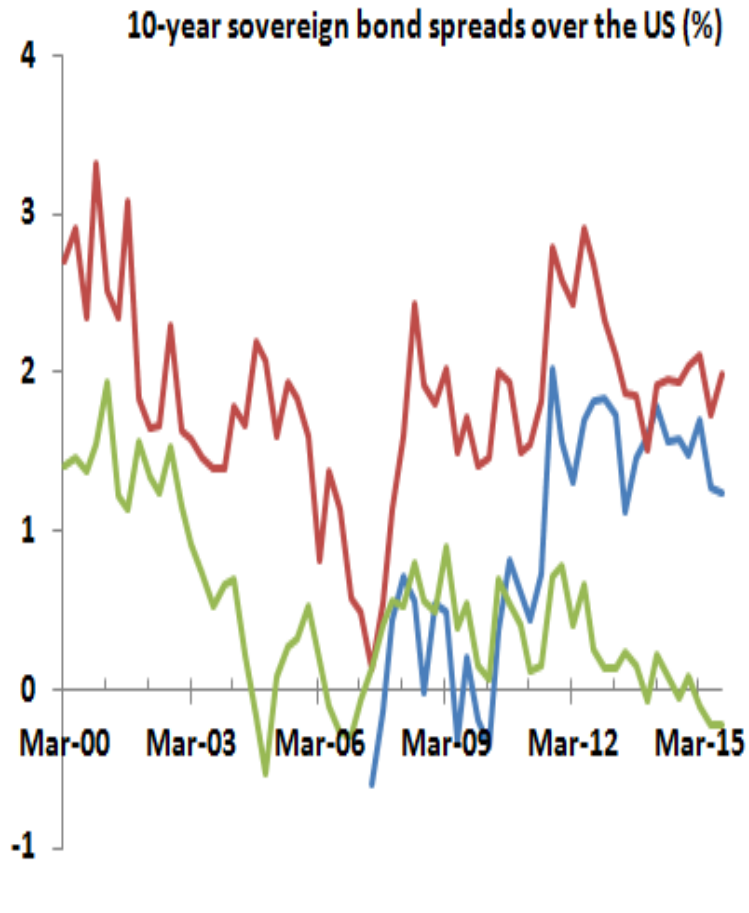
- Portfolio balance channel: change in the demand for other risky investments $\Rightarrow$ investors rebalance their portfolios.
- Liquidity channel: change in the liquidity premium $\Rightarrow$ change in borrowing costs and the overall bank lending, including lending to developing countries.
- Exchange rate channel: The portfolio flows rebalance results in a depreciation of the U.S. dollar $\Rightarrow$ appreciation of domestic currency in Asia-Pacific region $\Rightarrow$ negative impact on emerging-market exports.
- Asset price channel: Capital inflows are associated with booming housing and equity prices $\Rightarrow$ Households and corporate sectors accumulate debt denominated in foreign currency $\Rightarrow$ gain from currency appreciation $\Rightarrow$ increase in demand for credit, dwelling or equities.

Transmission Channels: Possible Candidates

- Portfolio balance channel: Yield curve, Risk Premium, GDP, Expectations on Future Short-Term Rate, Exchange Rate.
- Liquidity channel: Short-Term Interest Rate, Money Supply (M2), US LIBOR-OIS spread.
- Exchange rate channel: Nominal Exchange Rate, REER, Imports, Exports, Trade Openness.
- Asset price channel: Equity Prices, Housing Prices, Private Credit.

Portfolio rebalancing channel

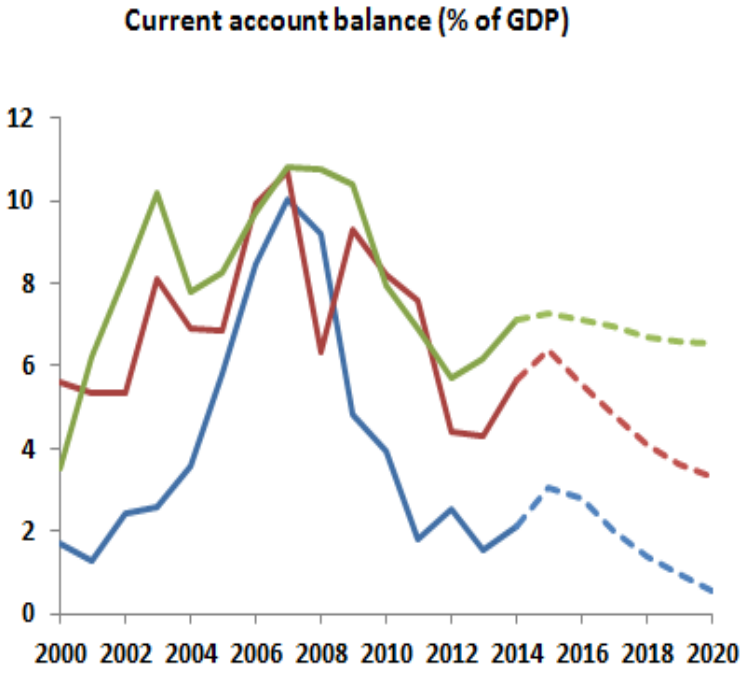


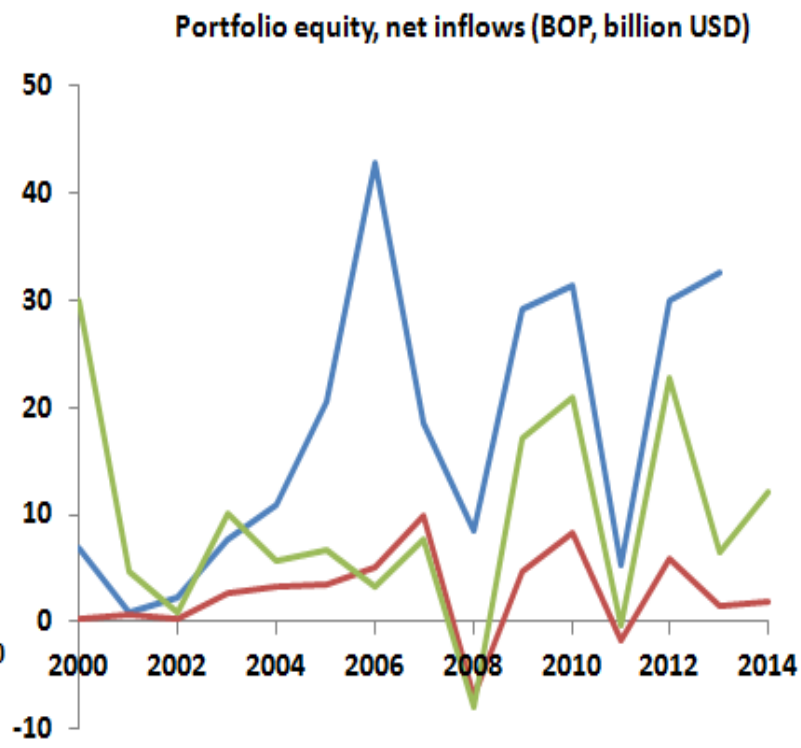


- A cyclical widening of differentials between advanced economies and Asia Pacific economies, both in terms of nominal yields and real growth rates leads to capital inflows during 2008-2013
- Nevertheless, the relative return becomes narrower after the US recovery

ASEAN-5 countries: Indonesia, Malaysia, the Philippines, Singapore and Thailand.
Newly industrialized economies (NIEs) of Asia: Hong Kong SAR and Korea

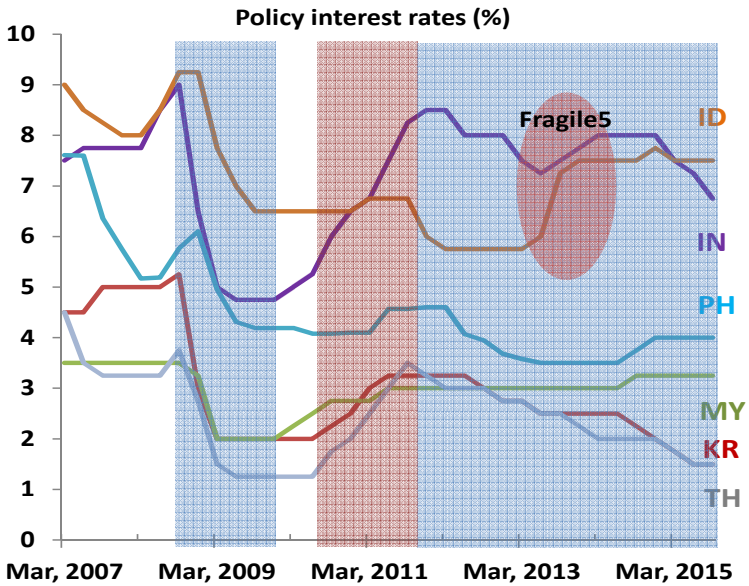
Portfolio rebalancing channel





- The inflows has also been due to a fundamentals-based rebalancing of institutional portfolios toward EM assets, EMs had better external and fiscal fundamentals than many advanced economies.
- Nevertheless, the global economic slowdown resulted in the weakening external position for the EM, as a result the equity flows become more sensitive to EMs economic condition as well as the sign of the US economic recovery.

Portfolio rebalancing channel (cont.)

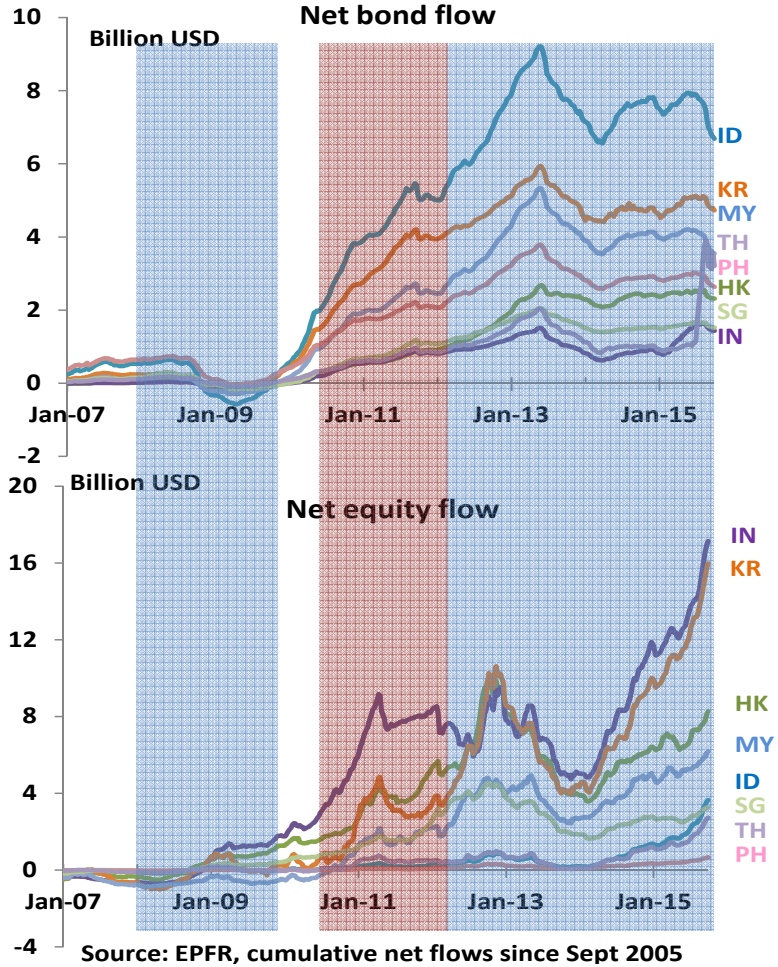


Source: CEIC and National central bank

1. With the eruption of GFC, investors dramatically *reduced* their exposure to the region, resulting in sharp declines in the Asian equity markets and depreciation of regional exchange *rates*. Central banks reduce policy rates to ease the monetary condition.

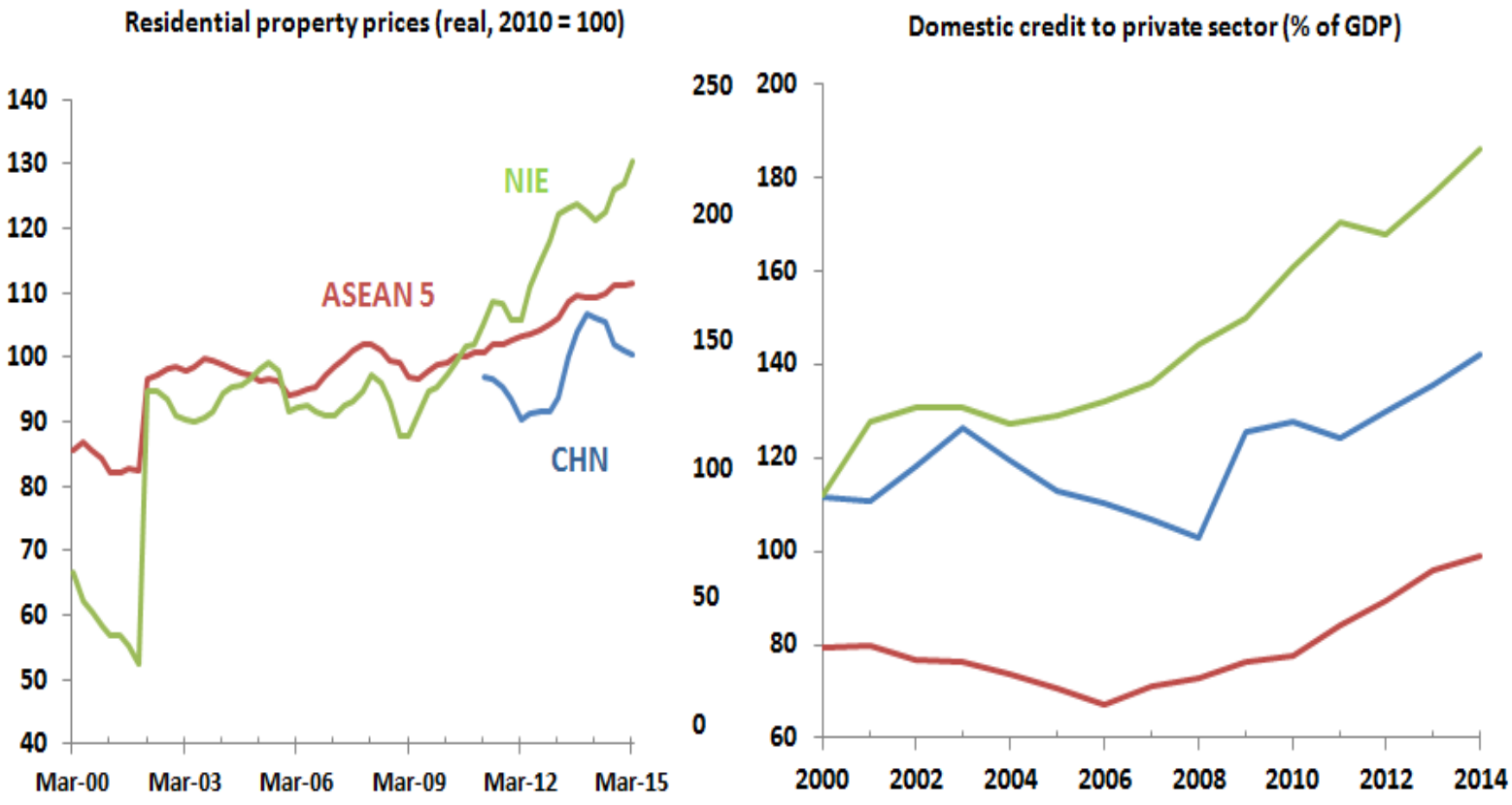
2. With the unconventional MP, cheap liquidity arrives when Asia have good economic growth, the policy rate was raised to maintain financial stability.

3. The global trade slowdown affected Asia, the monetary policy become accommodative. The capital inflow becomes slow, with the expectation of the Fed policy normalization.



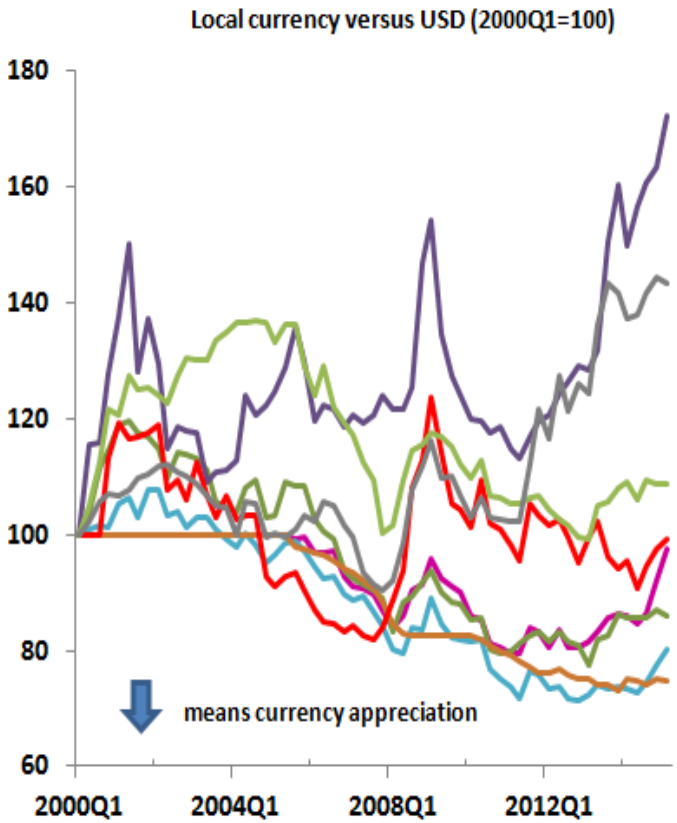
Source: EPFR, cumulative net flows since Sept 2005

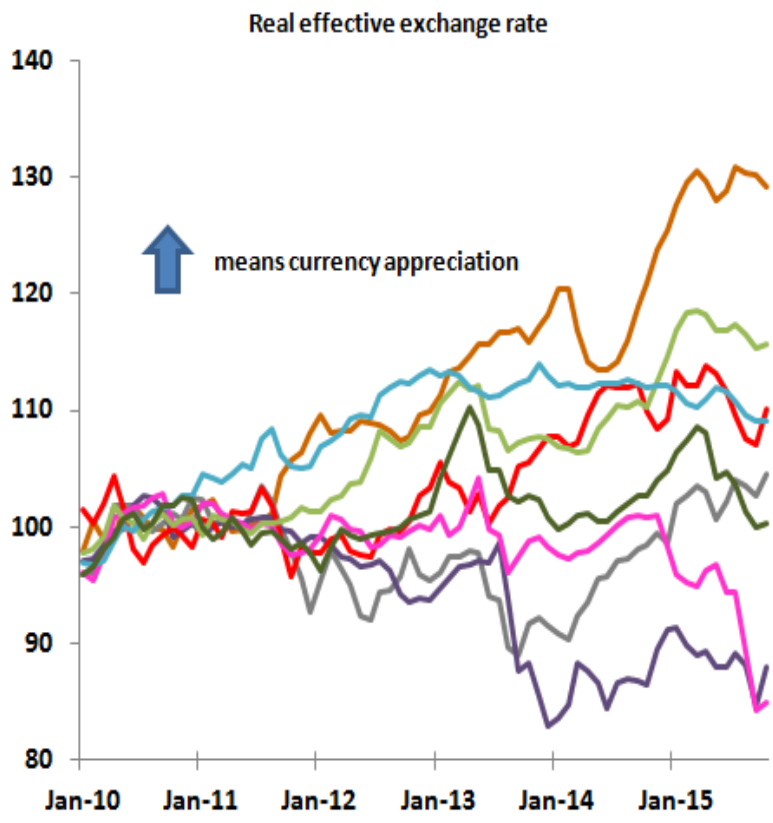
Asset price channel



- The capital flow can be a challenge to the financial stability. It normally leads to higher asset prices and credit expansion.

Exchange rate channel





- The capital inflow bring in the currency appreciation pressure, which affects the export price competitiveness

Panel VAR

$$Y_{it} = A_1 Y_{it-1} + A_2 Y_{it-2} + ... + A_{p-1} Y_{it-p+1} + A_p Y_{it-p} + BX_{it} + u_i + e_{it}$$

$i \in \{1, 2, , N\},\ t \in \{1, 2, ..., T_i\}$

where

Y_{it}: $(1xk)$ vector of dependent variables;

X_{it}: $(1x1)$ vector of exogenous covariates;

u_i and e_{it}: $(1xk)$ vectors of dependent variable-specific panel fixed-effects and idiosyncratic errors, respectively.

For all $t > s$:

- $E[e_{it}] = 0$
- $E[e_{it}^{'} e_{it}] = \Sigma$
- $E[e_{it}^{'} e_{is}] = 0$

Panel VAR

- Panel Vector AutoRegression Model uses GMM (General Method of Moments)
- Regresses each endogenous variable on its own lag(s) as well as the lags of all other variables in the system
- We use forward mean differencing or orthogonal deviations (the Helmert procedure), following Love and Zicchino (2006).
- In this procedure, to remove the fixed effects, all variables in the model are transformed in deviations from forward means.
- We use *Cholesky* ordering to identify shocks: the first variable in the VAR is only affected contemporaneously by the shock to itself, the second variable in the VAR is affected contemporaneously by the shocks to the first variable and the shock to itself, and so on.

Estimation

- We compare the two uncertainty measures in the following simple VAR:
- Y_{it}= {US Policy Uncertainty, VIX Index, CA(%GDP), Nom. Exch. Rate, ST Rate }
- We compare Pre-Crisis (2000q1-2006q4) and Post-Crisis (2009q1-2015q1) samples.

Figure: IRFs to a Positive US Policy Uncertainty Shock (Before Crisis).

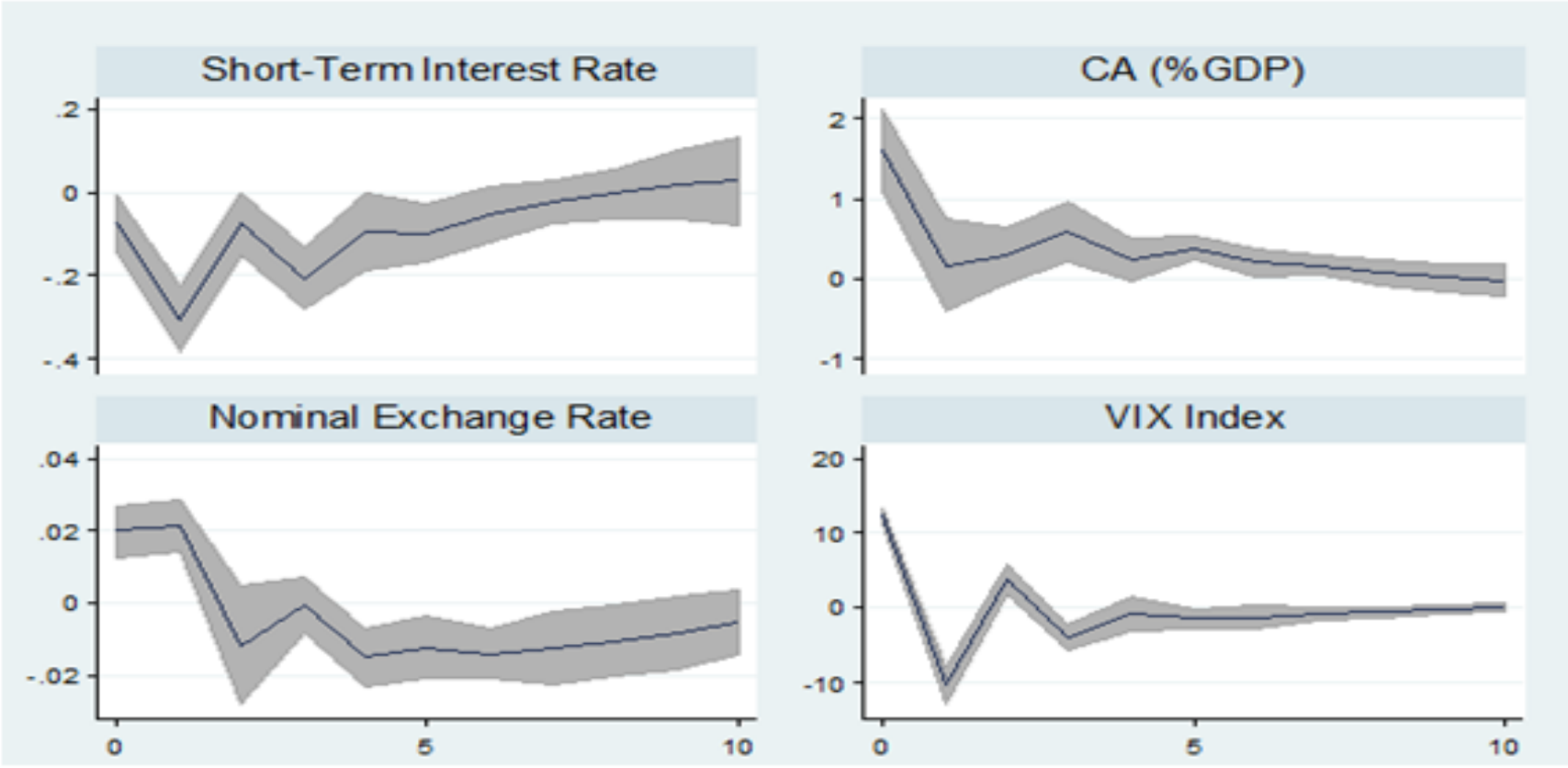


Figure: IRFs to a Positive US Policy Uncertainty Shock (After Crisis).

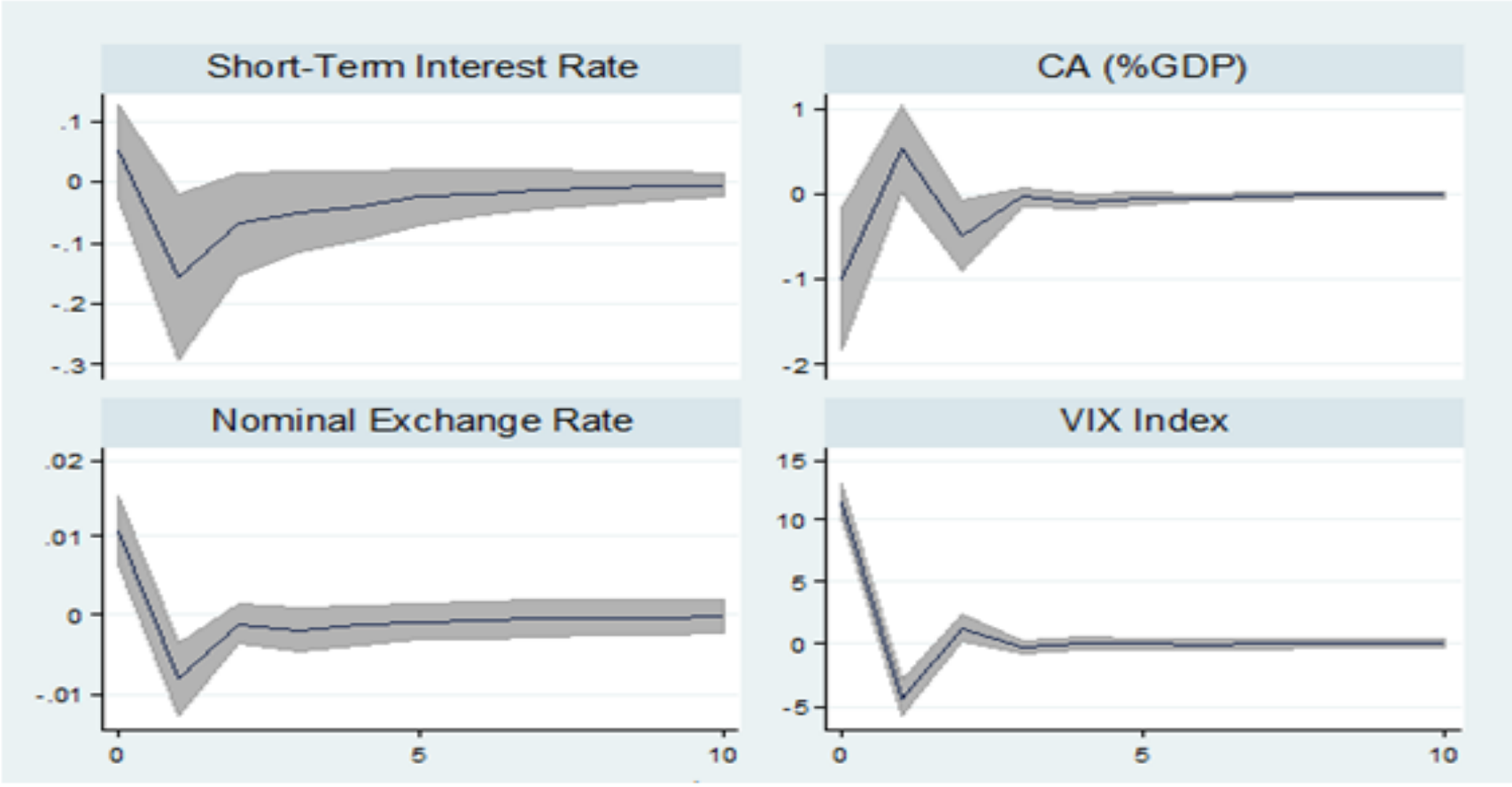
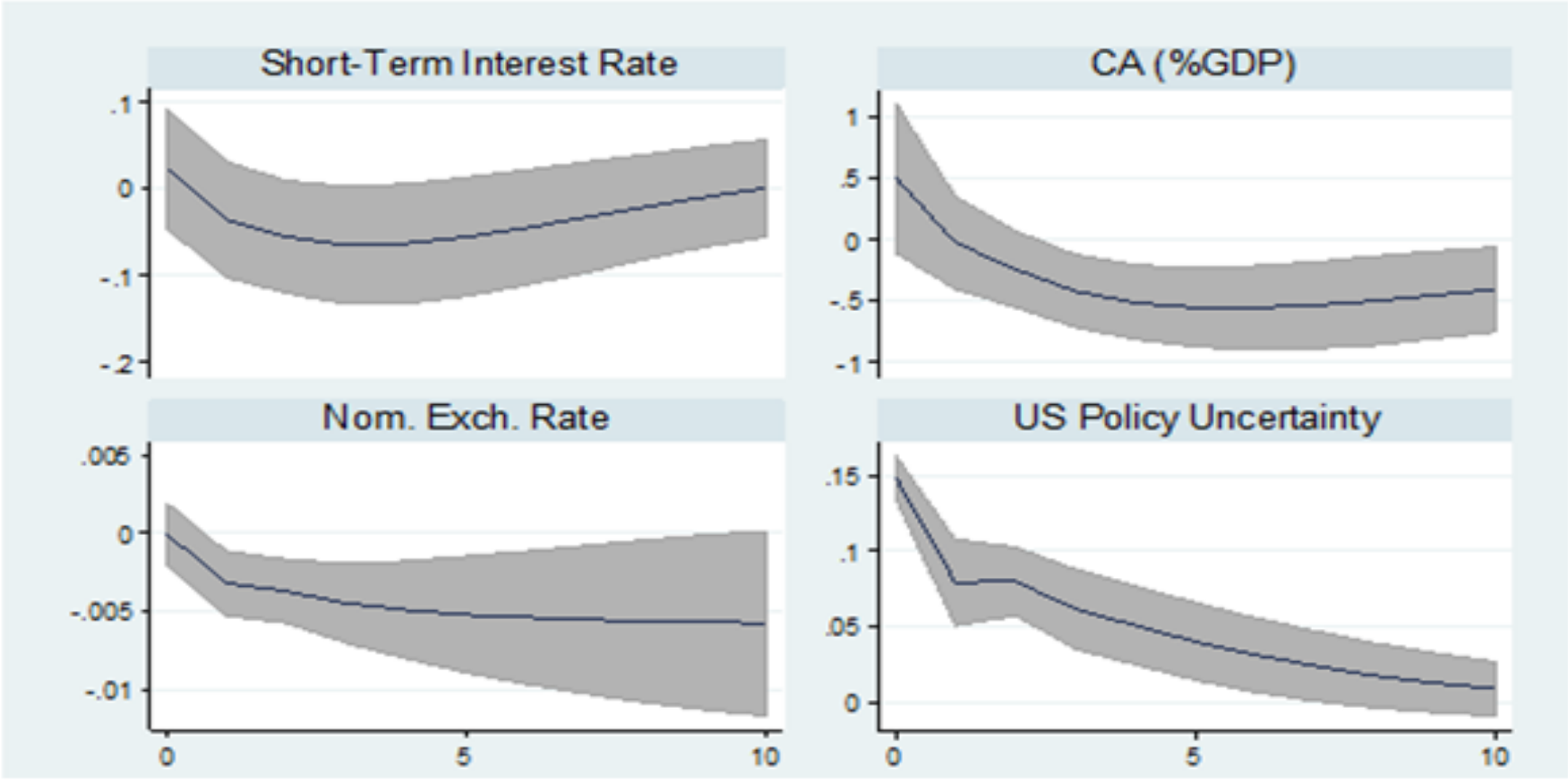


Figure: IRFs to a Positive VIX Index Shock (Before Crisis).



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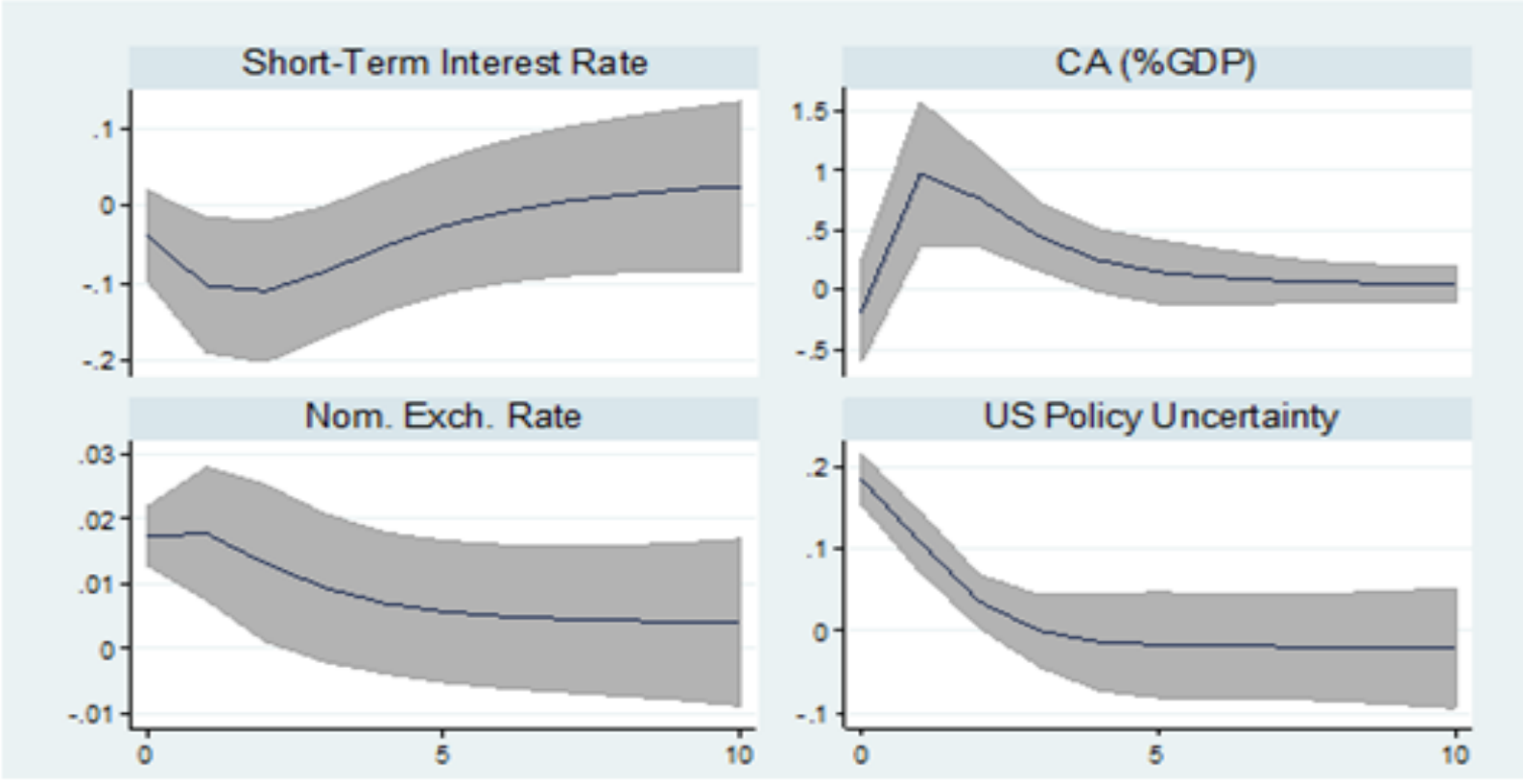

Variance Decomposition - Asia-Pacific Variables

	US Policy Uncertainty	VIX Index	CA (%GDP)	Nominal Exch. Rate	Short-Term Interest Rate
US Policy Uncert.					
4	.6669305	.0114699	.0605308	.2588161	.0022527
12	.5266409	.0098006	.056466	.3841202	.0229723
24	.4967662	.0094048	.0546681	.4083089	.030852
VIX Index					
4	.4218604	.3360519	.0215348	.1731096	.0474433
12	.3578867	.2857813	.022132	.2668381	.0673619
24	.3440655	.2748612	.022181	.2875415	.0713507

Extended Model 1

- We include more interesting keys variables
- Y_{it}= {US Policy Uncertainty, VIX Index, Federal Funds Futures, Net Portfolio Investment (%GDP), Nom. Exch. Rate, ST Rate, Real GDP }
- We present only Post-Crisis (2009q1-2015q1) samples.

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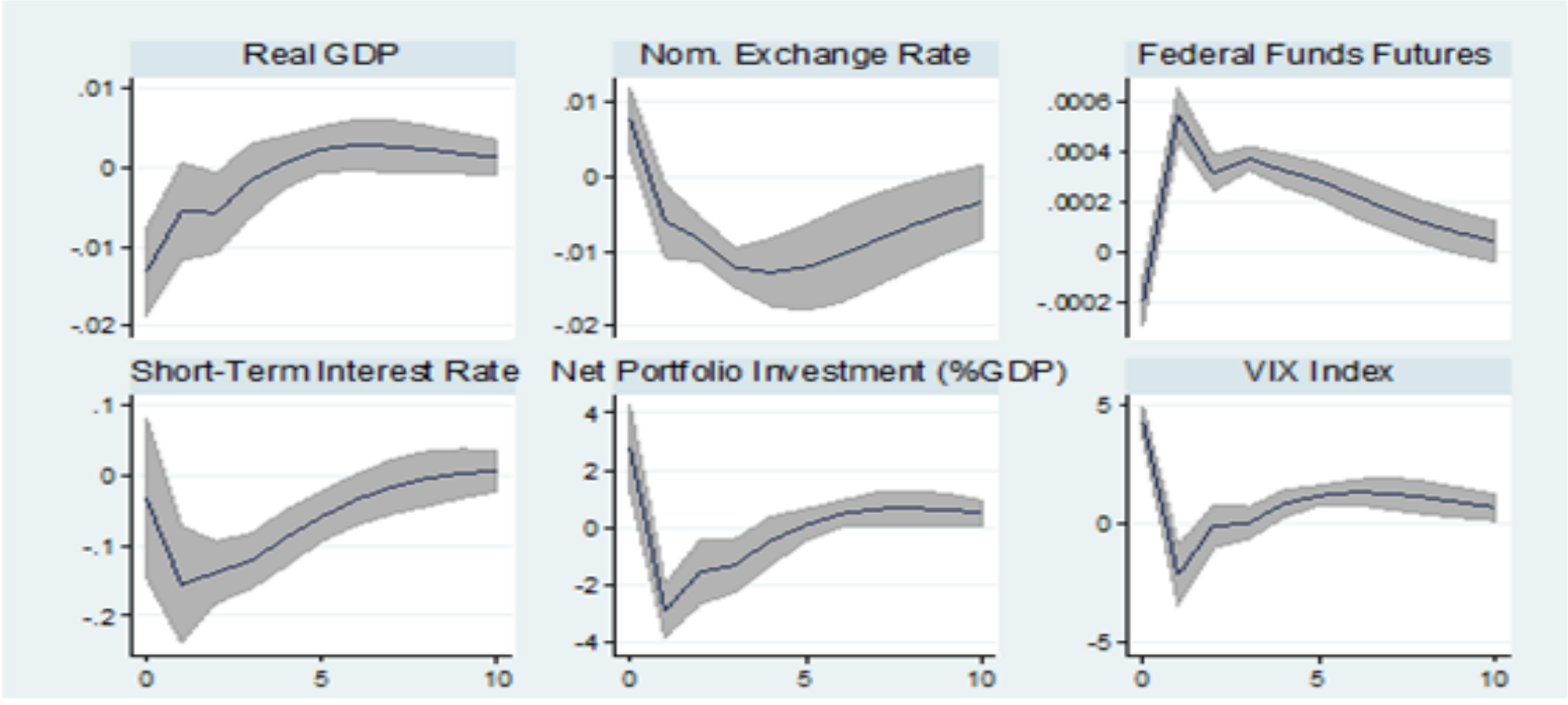

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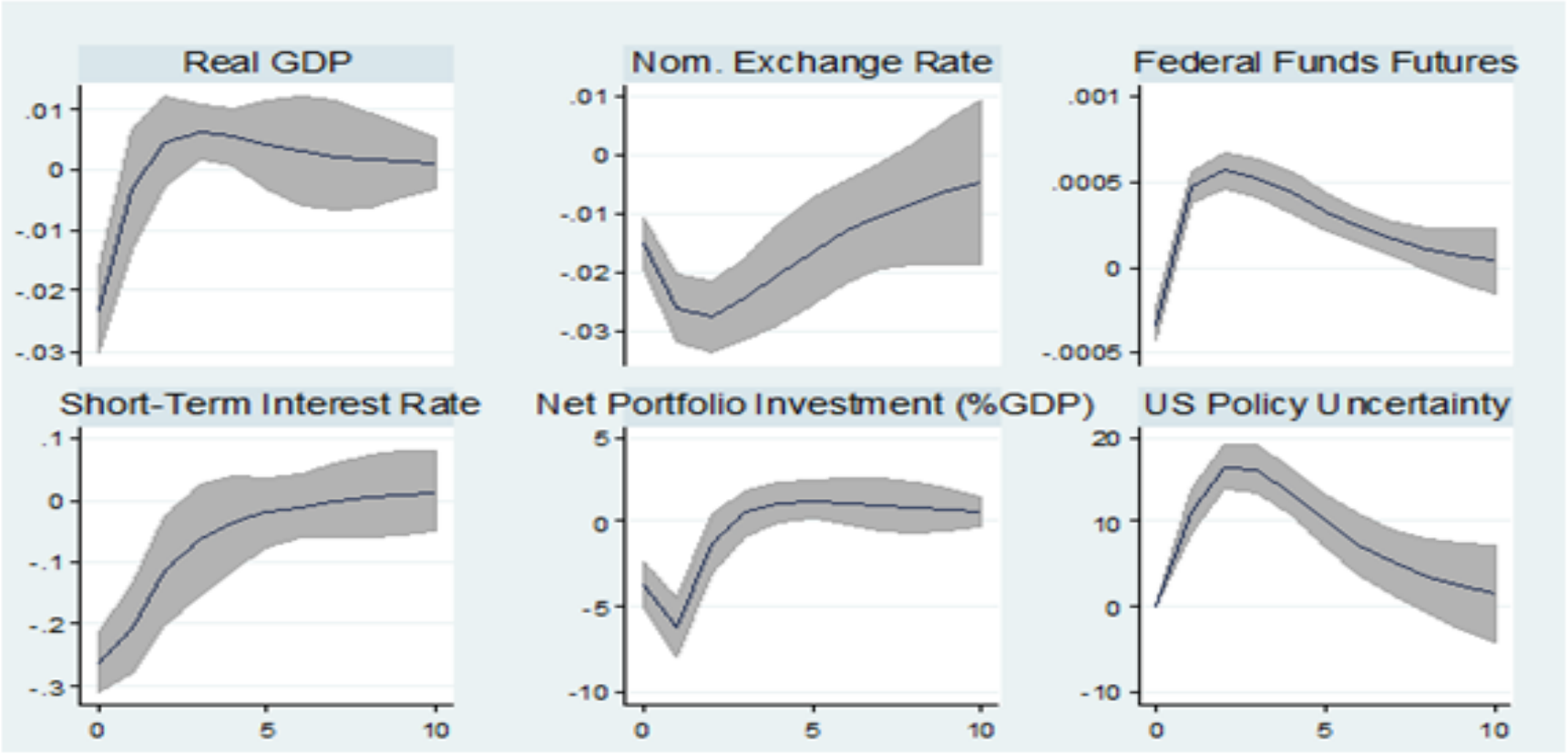
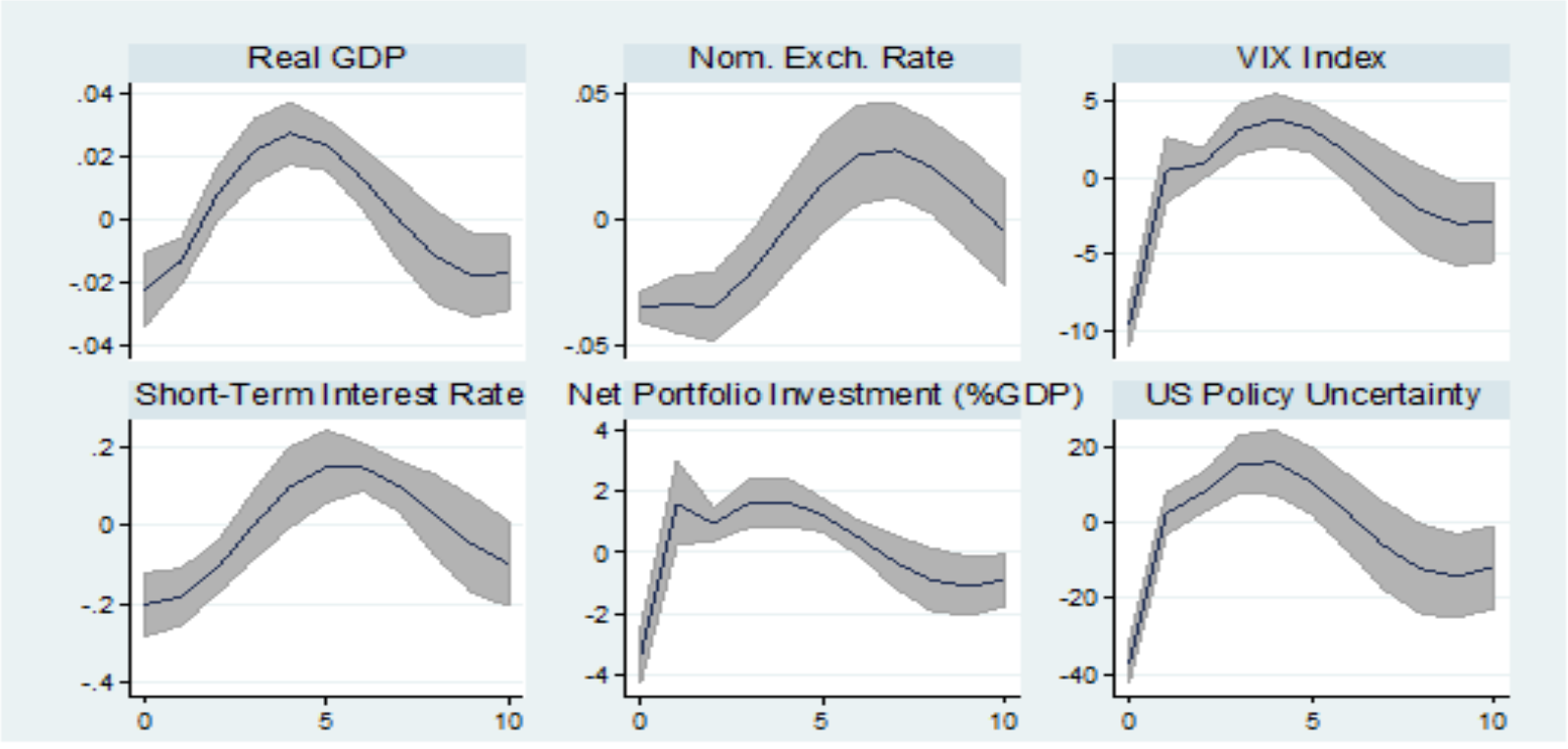


Figure: IRFs to a Positive US Unconventional Monetary Policy (After Crisis)



Extended Model

- We distinguish between Net and **Gross Flows** in the Portfolio Investment and its components.
- Y_{it}= {US Policy Uncertainty, VIX Index, Gross Portfolio Investment (%GDP), Nom. Exch. Rate, ST Rate, Real GDP }
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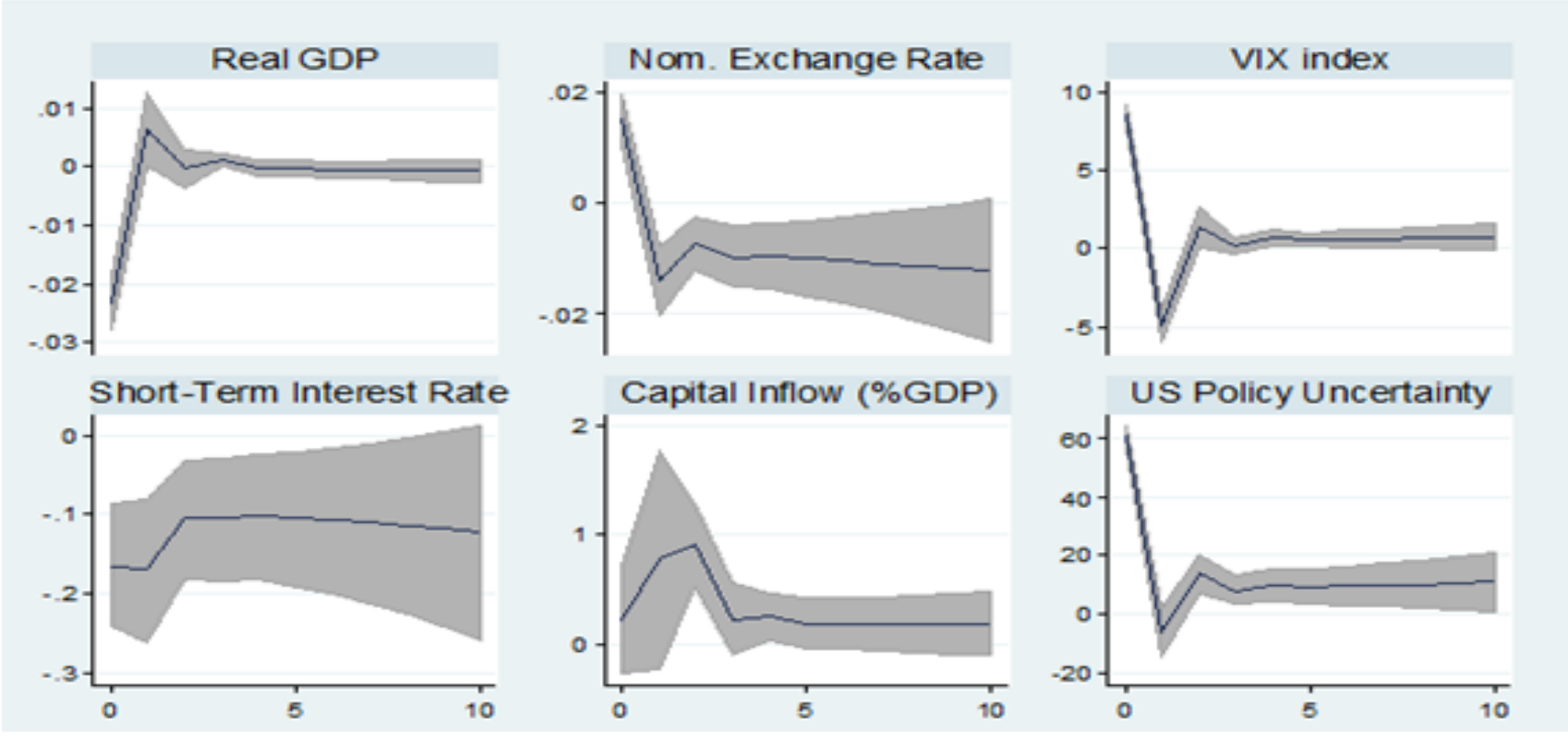

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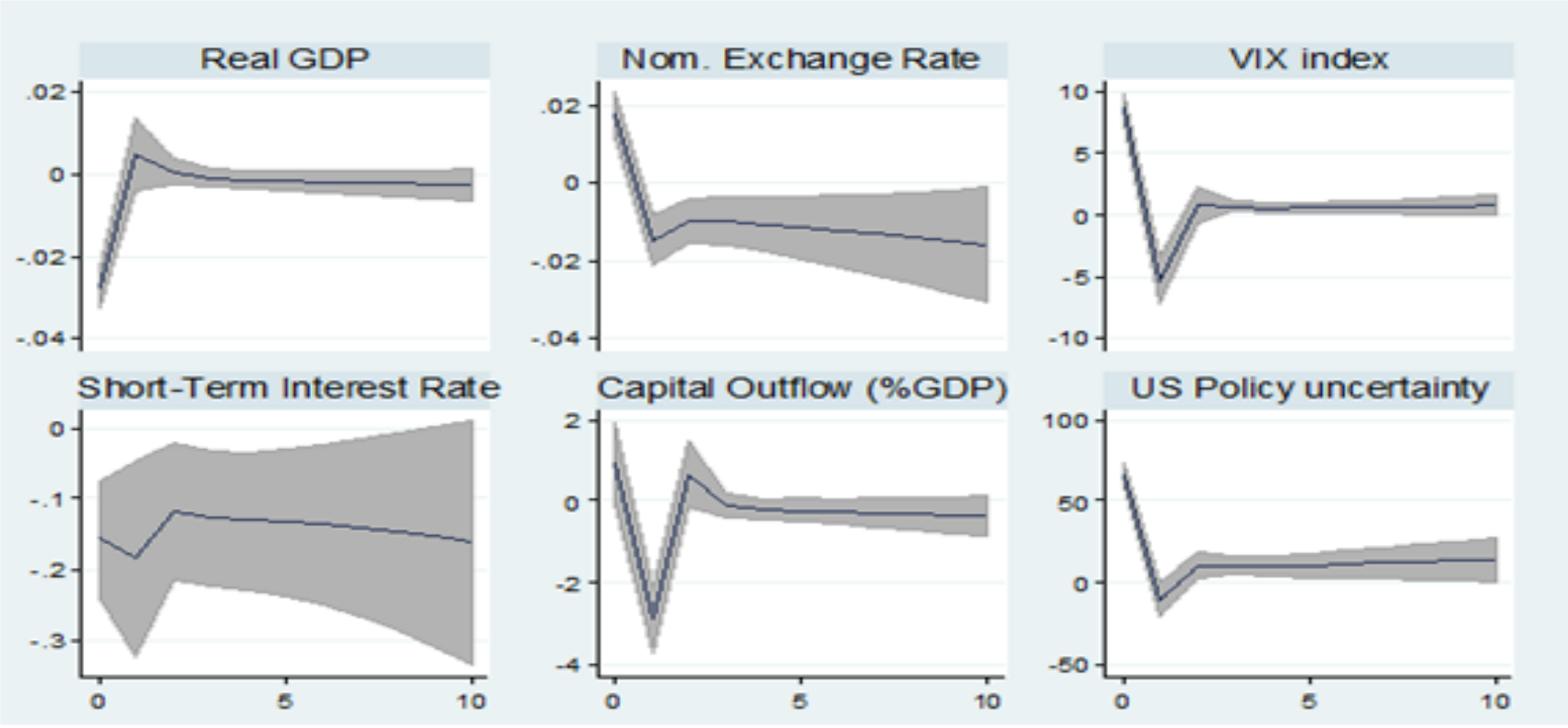

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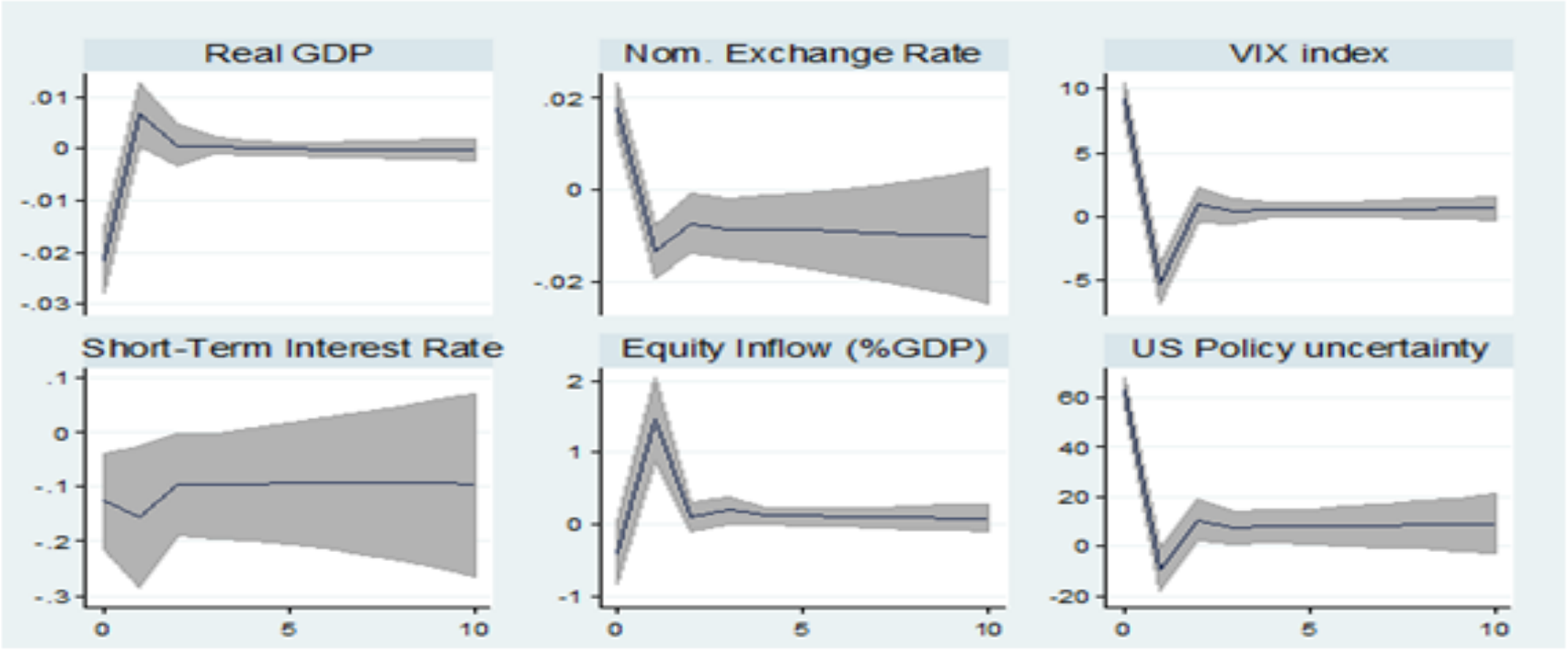

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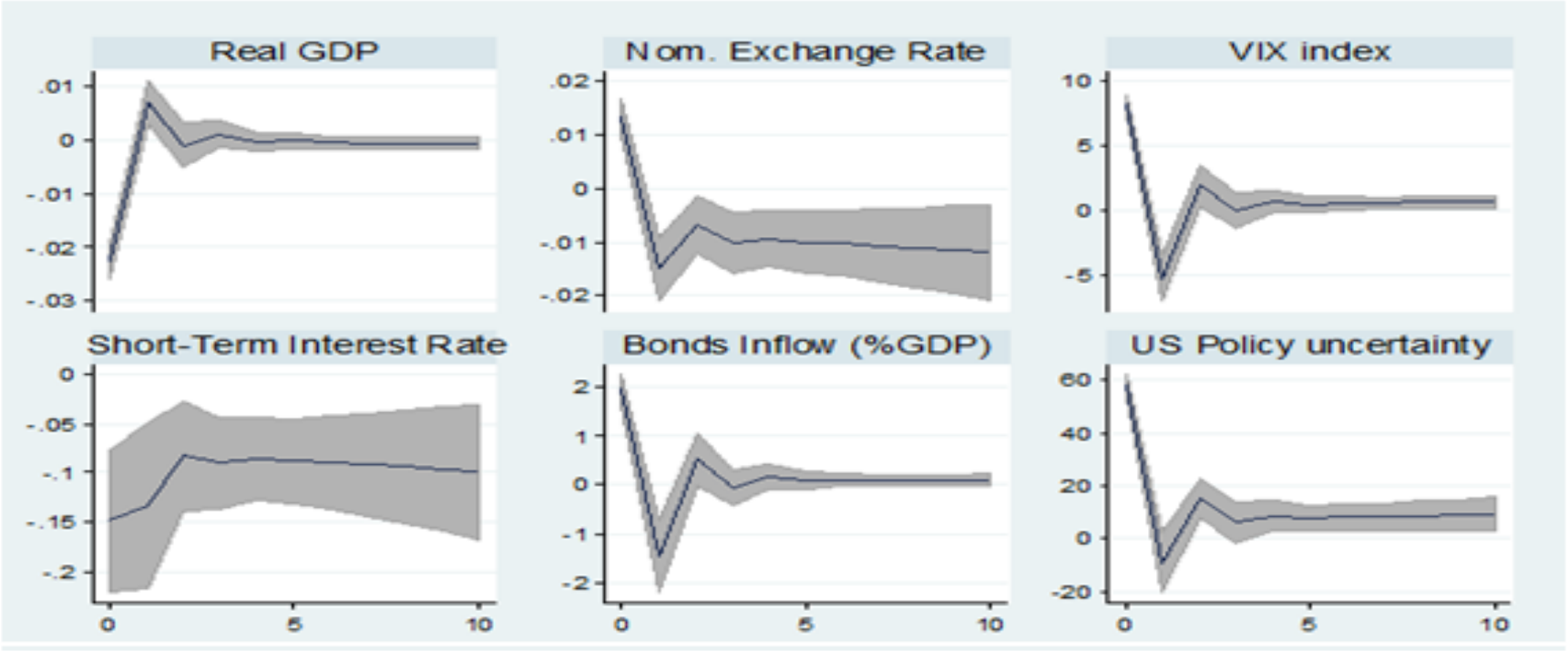

Estimation

- We include Asset Prices (Equity or Housing)
- $Y_{it} = \{$US Policy Uncertainty, VIX Index, Federal Funds Futures, Gross Portfolio Investment (%GDP), Nom. Exch. Rate, ST Rate, Assets Prices $\}$

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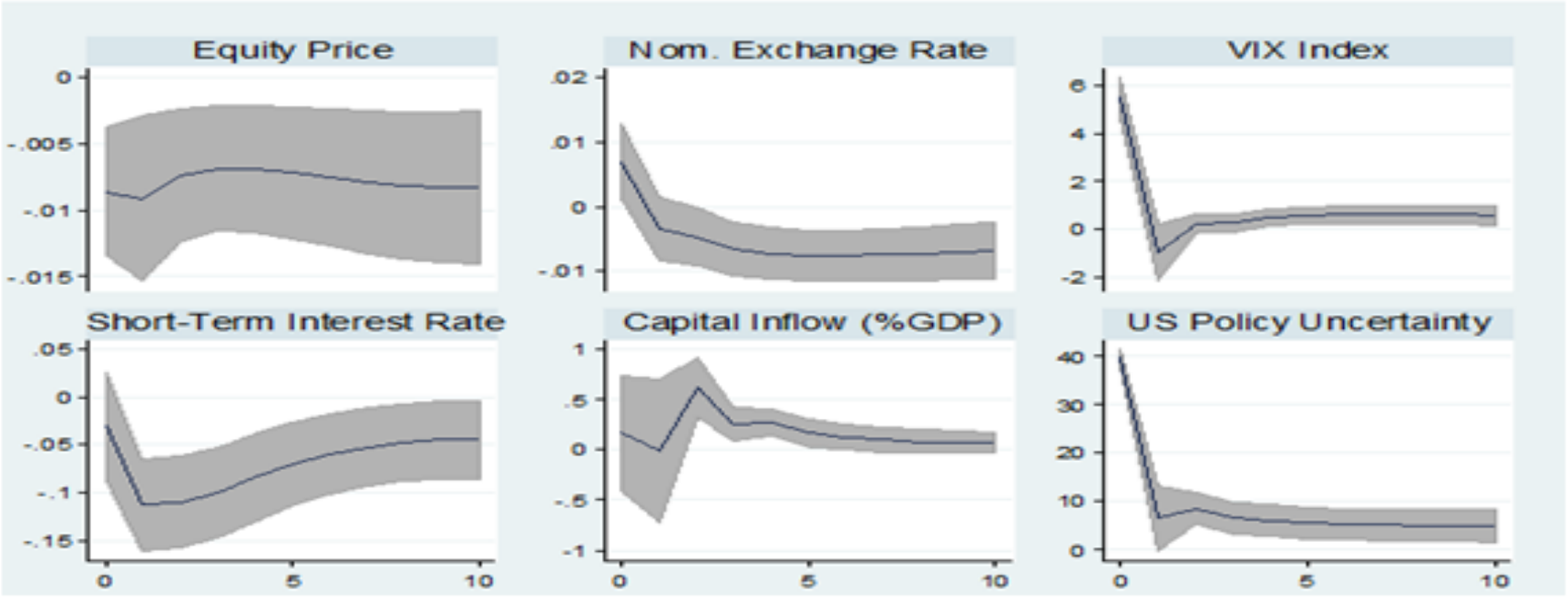

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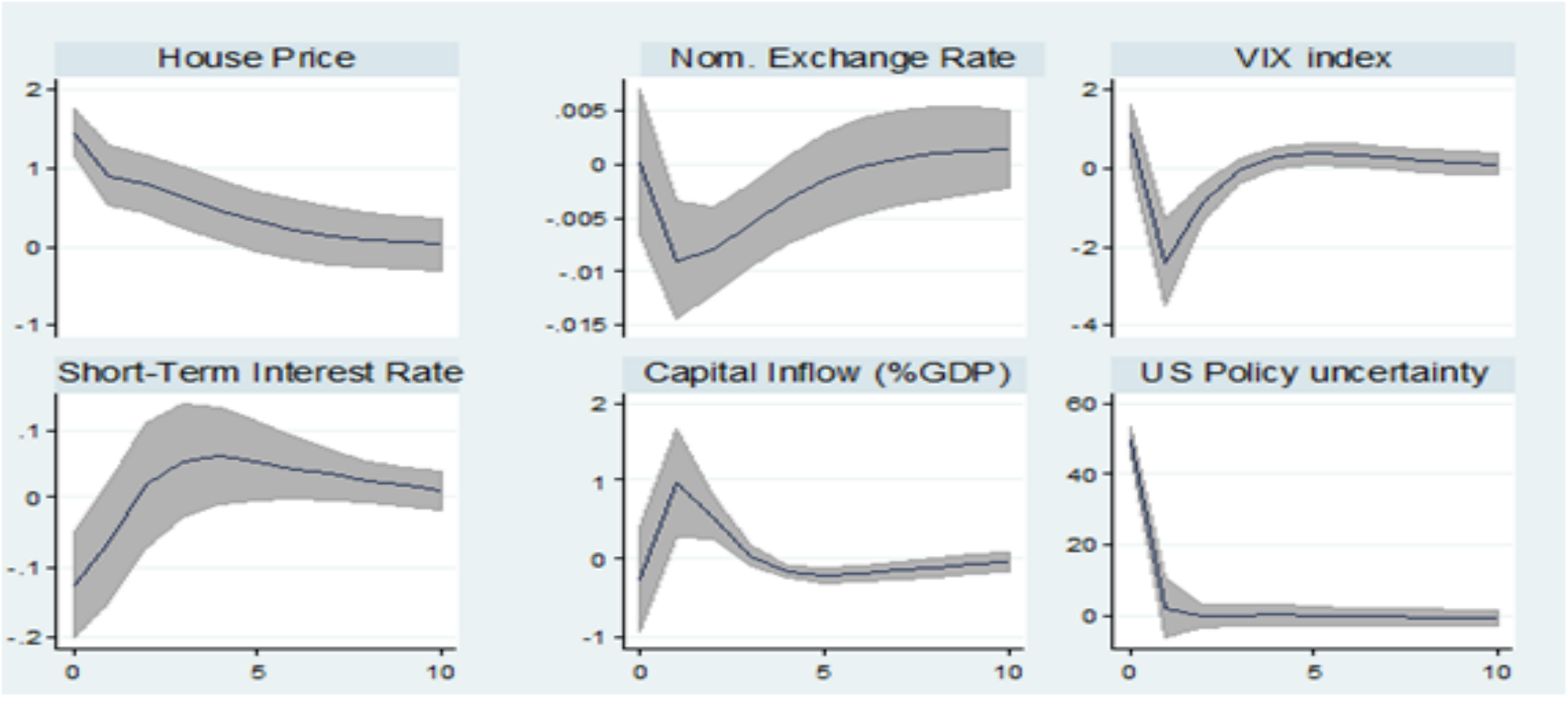


Policy Recommendation

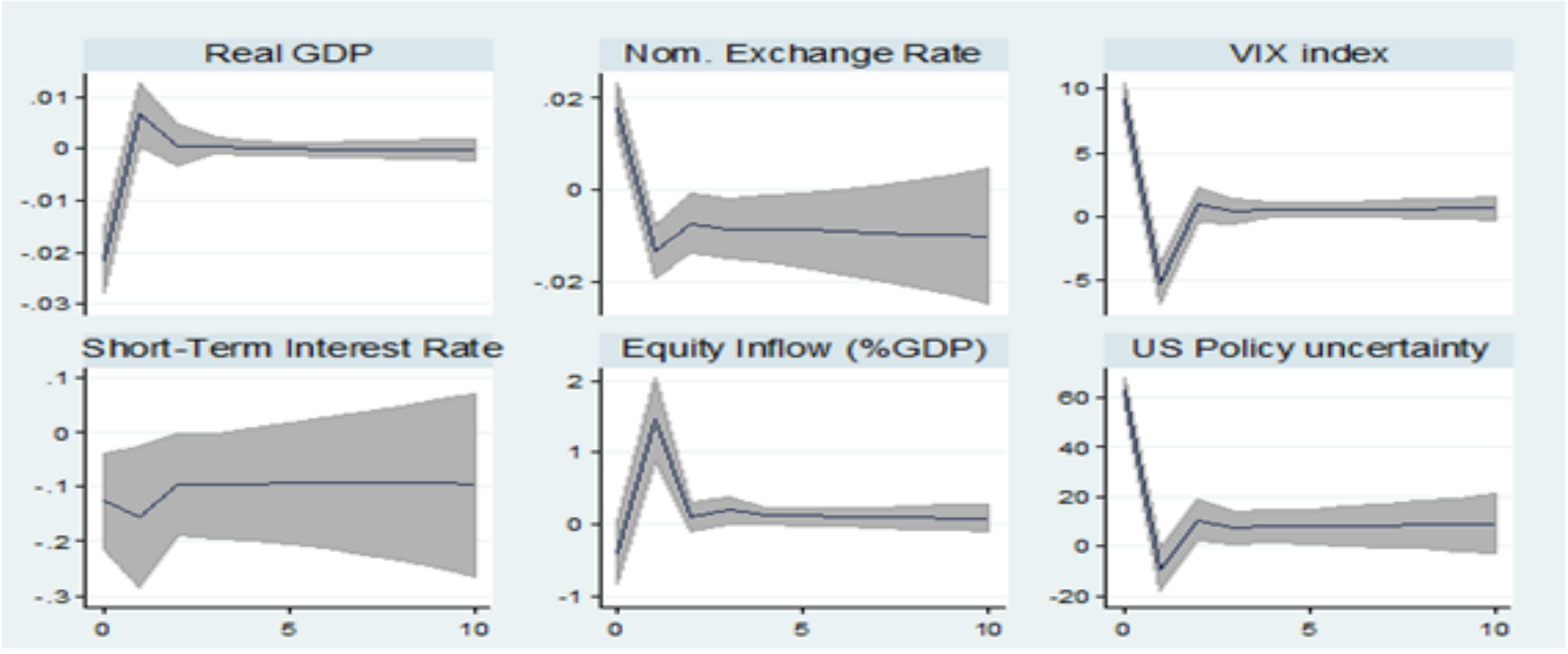
Policy mix, depending on the goal of central banks:

- If central banks cares in avoiding currency appreciation and excess credit growth:
  - Capital Controls
- If central banks care on exchange rate stability, without affecting the asset prices:
  - Capital Control on Bonds
  - Monetary Policy easing
- Caution with capital control, too tight will have negative impact of financial development

Conclusion

- Definitely, uncertainty shocks have spillover effects on Asia-Pacific Region.
- Portfolio Balance Channel is an important channel.
- Differently from UMPU, uncertainty shocks have marginal impact on GDP, but can inflate house prices in the region.

Figure: IRFs to a Positive VIX Index Shock.



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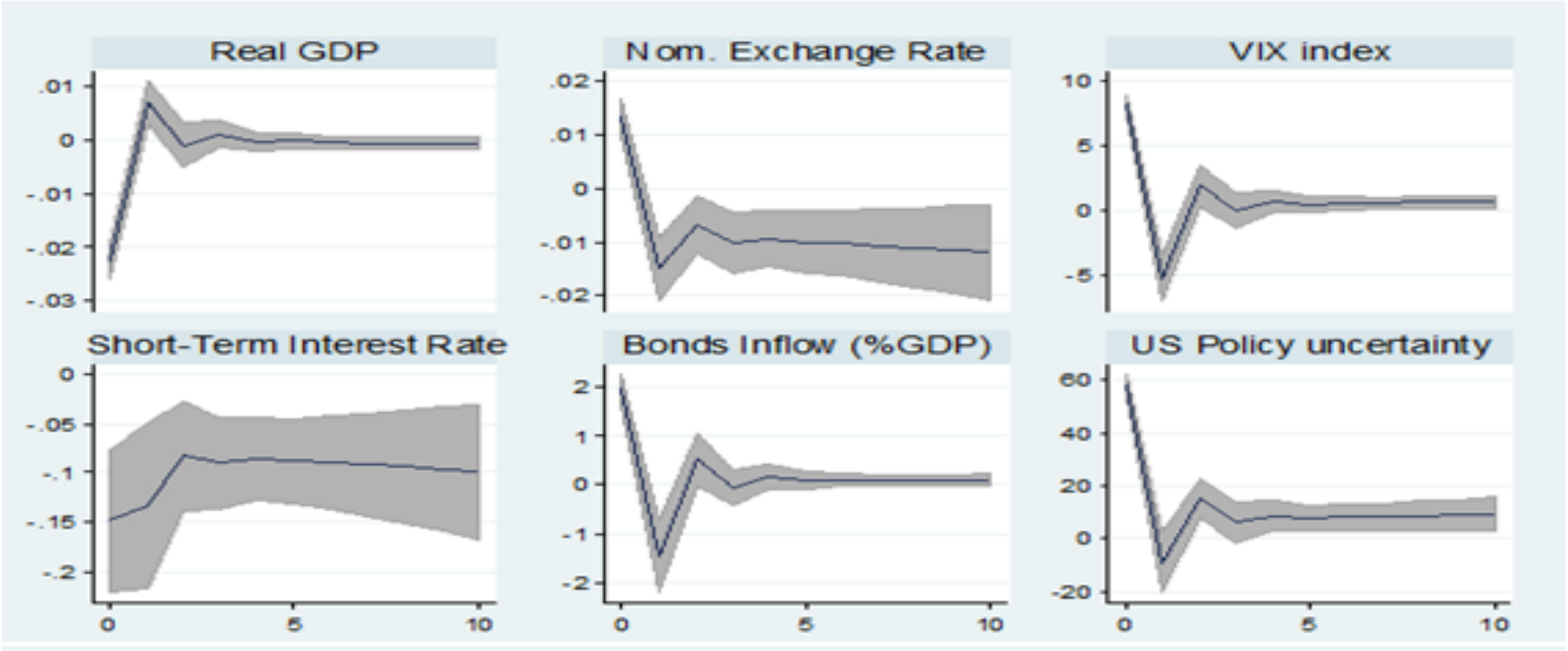

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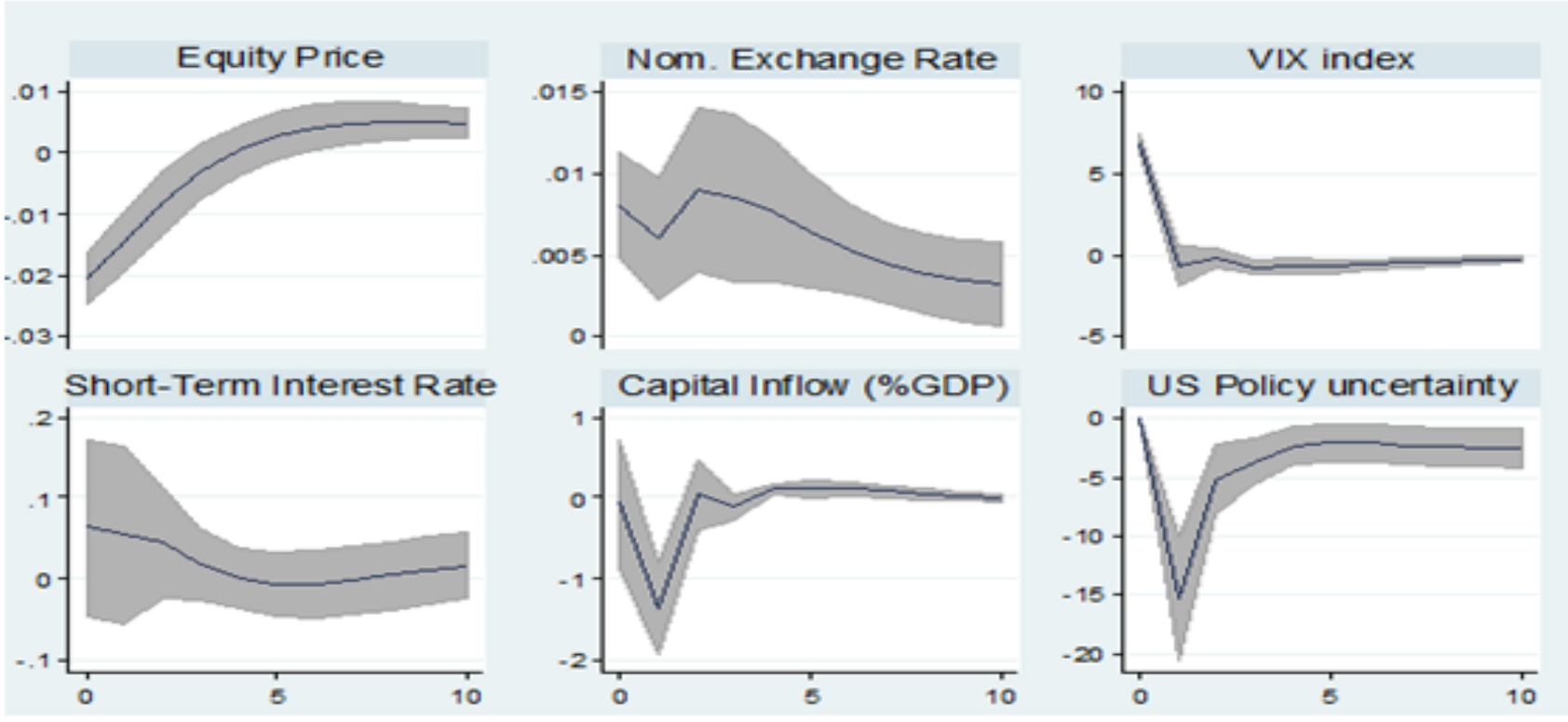

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