Discussion of "Effects of US Quantitative Easing on Emerging Market Economies" by Bhattarai, Chatterjee, and Park

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Questions and approaches of the paper

1 **Can we identify U.S. QE shocks? Are the identified shocks significantly transmitted to U.S. financial and macroeconomic variables?** *SVAR model with non-recursive identification.*

2 **Are the QE shocks in the US propagated into Emerging Market (EM) economies?** *Panel VAR for EMs.*

3 **Are there any differences across EMs in the transmission of U.S. monetary policy shocks?** *Heterogeneous Panel VAR. Fragile five vs. other EMs.*

1. Identifies a strong domestic impact of QE shocks in the U.S.
- Increase in output and consumer prices.
- Reduction in 10-year Treasury yields and other market interest rates.
- Increase in equity prices and house prices.
- Depreciation in USD.

2. Expansionary U.S. QE shock is significantly associated with
- Appreciation in EM currencies.
- Decrease in local long-term bond yields.
- Increase in local equity prices.
- Increase in capital inflows to EMs.
- ✓ Stronger and more significant impact on "*fragile five*" EMs.
- ✓ No significant impact on EM output and consumer prices.

Contribution of the paper

- **Differentiated empirical approach based on (i) new identification scheme in SVAR, (ii) heterogeneous Panel VAR, and (iii) rich set of sensitivity analyses.**

(i) Identifies the impact of QE shocks on both macroeconomic and multiple financial variables, highlights potential problems in conventional identification schemes.

(ii) Disentangles heterogenous international consequences of U.S. monetary policy shocks on EMs.

(iii) Confirms empirical results through a variety of robustness tests.

Questions and comments

1. Identification scheme.

2. Model specification.

3. Interpretation of the results.

4. Future extensions.

1. Non-recursive short-term restrictions.

- What are theoretical and empirical motivation for the liquidity priors? (*Cushman and Zha* 2006)
- What are main advantages of these restrictions over other alternatives?

	Output	Price	Monetary policy instrument	10-year GB yields	Equity price
Prod1	*	0	0	0	0
Prod2	*	*	0	0	0
Monetary policy	0	0	* (a3)	* (a4)	0
Long-term interest determination	*	*	* (a1)	* (a2)	0
Information sector	*	*	*	*	*

Liquidity restriction: *Corr* (a1, a2) = 0.8 and *Corr* (a3, a4) = -0.8

2. Potential endogeneity bias.

- *Gertler and Karadi (2015); Nakamura and Steinsson (2017); Rogers, Scotti, and Wright (2016); Gilchrist et al. (2014).*

 - Simultaneity between policy indicators and other financial variables.

 - Central banks' internal information on future economic activity and price levels.

 - Measure of policy shocks not incorporating forward guidance shocks.

 - Identification of unanticipated monetary policy shocks using high-frequency data.

Model specification

1. Channels in the transmission of the U.S. monetary shocks.

- Can we obtain some evidence from the Panel VAR results on the channels of international transmission of U.S. monetary policy shocks?

✓ Risk-taking channel: *Bruno and Shin (2015); Turner (2014).*

✓ Global financial cycle: *Passary and Rey (2015).*

✓ Capital and trade flow, interest-rate and(or) exchange-rate pass-through.

✓ Other channels: Portfolio-rebalancing, signaling, policy coordination.

2. Country characteristics of focal EMs.

- Which characteristics matter for international monetary policy transmission? Why the fragile five?
- 2nd step regressions between country characteristics and the degree of response to U.S. monetary shocks.

	Economic system			Openness		Central Bank credibility	
	Commodity	**ER regime**	**MP regime**	**Trade to GDP ratio**	**Capital openness**	**CB Transparency**	**CB Turnover**
Brazil	EXP	Floating	IT	25.1	0.41	9.0	0.27
Chile	EXP	Floating	IT	58.6	0.69	8.5	0.25
Colombia	EXP	Floating	IT	37.4	0.41	6.5	-0.01
India	IMP	Floating	IT	42.0	0.16	4.5	0.62
Indonesia	EXP	Floating	IT	36.1	0.41	9.0	0.23
Malaysia	EXP	Floating	Money	125.7	0.41	6.0	0
Mexico	IMP	Floating	IT	75.7	0.70	6.0	0.27
Peru	EXP	Floating	IT	47.8	1.00	8.5	-0.02
South Africa	EXP	Floating	IT	69.8	0.16	9.0	-0.01
South Korea	IMP	Floating	IT	81.3	0.71	9.5	0.24
Thailand	IMP	Floating	IT	125.9	0.16	10.0	0.25
Turkey	IMP	Floating	IT	56.2	0.45	10.0	0.26

Source: World Bank, IMF (AREAR), Garriga (2016), Chinn and Ito (2017)

3. Variable selection:

- Would the current endogenous and control variables in the Panel VAR be sufficient to investigate channels of international transmission of U.S. monetary shocks?

    - Endogenous variables in the Panel VAR system: domestic output, consumer prices, exchange rates, equity prices, monetary aggregates in EMs.
    - Monetary aggregates as a main monetary policy instrument in EMs.
    - No U.S. variables in the Panel VAR.
    - Demand and price for global commodities, and OECD IP as external control variables.

1. Response of U.S. macroeconomic variables.

- Response of output and price variables following a U.S. QE shock is quite strong and significant!

- How do we explain the quicker response of prices relative to output? Response of Inflation expectations?

IRFs of U.S. output and prices after an expansionary QE shock

(Industrial production)   (PCE deflator)
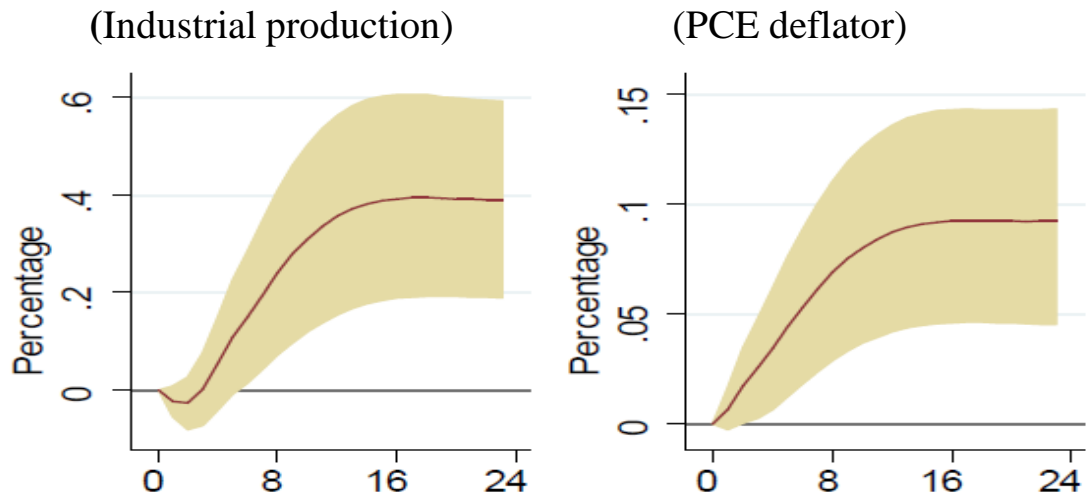
2. Response of U.S. financial variables.

- How do we explain the negative immediate response of U.S. equity prices following expansionary QE shock?
  - *Gali and Gambetti (2015)*

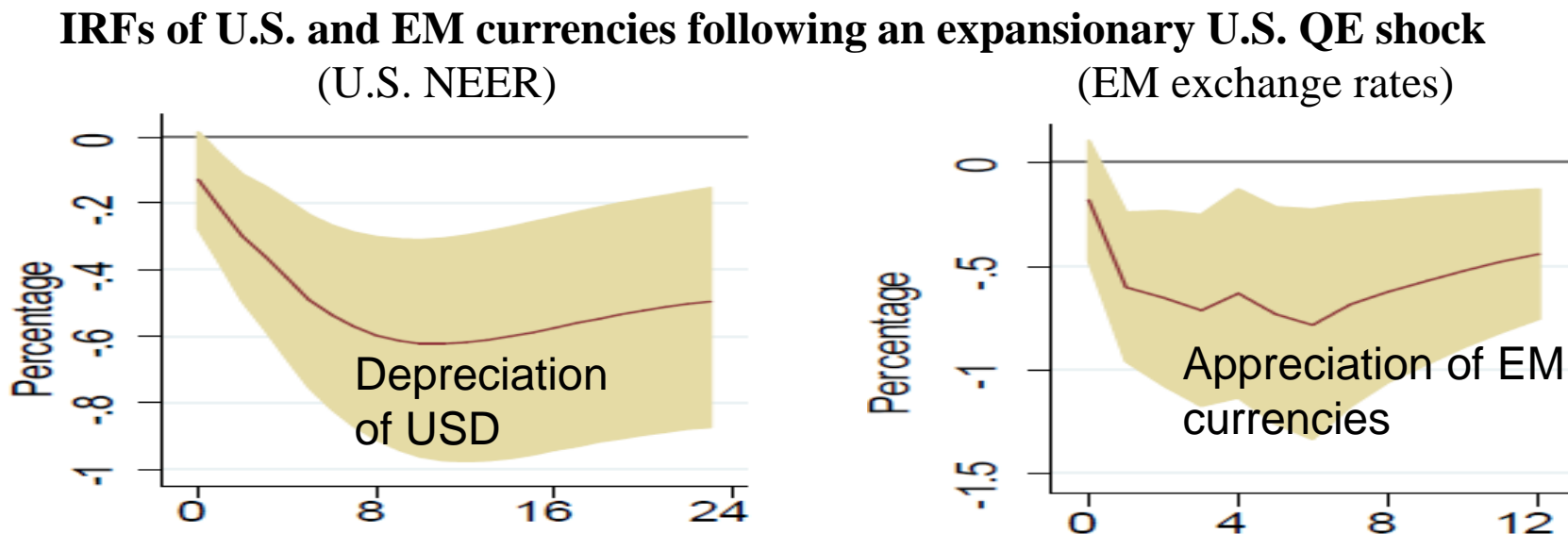- Don't we expect quicker and shorter responses of the financial variables?

IRFs of U.S. financial variables after an expansionary QE shock

(Sec. held outright)   (10-yr Treasury yields)   (S&P 500)
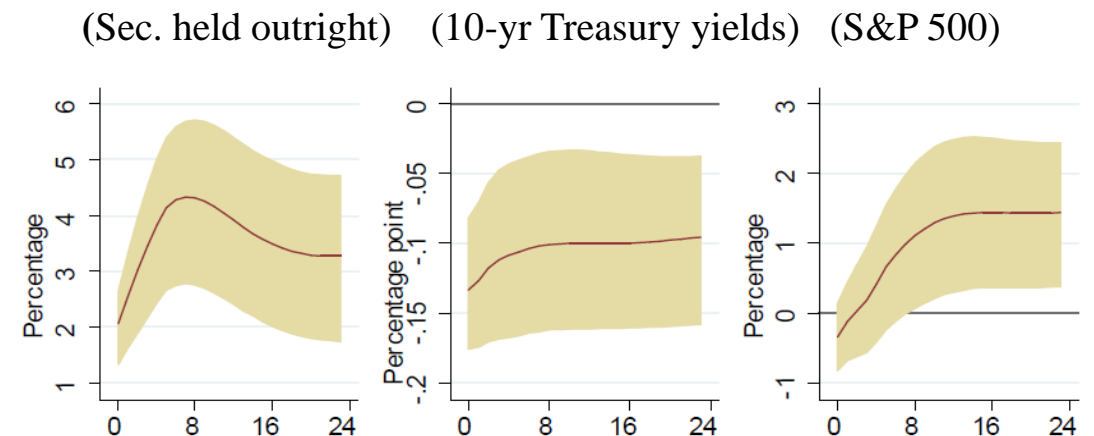
3. Response of exchange rates following U.S. QE shocks.

- The empirical results seem to overcome some puzzles on exchange rates movements. Thanks to the new identification scheme?

✓ Discrepancy in the response of foreign exchange rates following monetary policy shocks.
   - Overshooting theory by *Dornbusch (1976)*.
   - Empirical obserservation: foreign exchange rates, delayed overshooting, forward premium puzzles. *(e.g. Eichenbaum and Evans 1995)*

IRFs of U.S. and EM currencies following an expansionary U.S. QE shock

(U.S. NEER)

(EM exchange rates)

Depreciation of USD

Appreciation of EM currencies

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1. Non-linear transmission of monetary policy shocks using local projection method.

- Local projection by *Jorda (2005); Ramey and Zubairy (2014).*

  - Asymmetry, state- and size-dependency in the transmission of macro-economic shocks.

- *Jensen et al. (1997); Angrist et al. (2013); Hanson and Stein (2015).*

  - Theoretical and empirical investigation of non-linear features of monetary policy shock propagation.

2. What news shocks in the announcements?

- Decomposition of FOMC news announcements (forward guidance) by underlying news components.

- Various components in FED announcements: on future monetary policy, future demand shocks, and future cost-push shocks.

  - *Gurkaynak, Sack, and Swansson (2005)*: Target and path factors in U.S. monetary policy shocks.

  - *Campbell, Evans, Fisher, and Justiano (2012)*: Odyssean or Delphic forward guidance.

- Very nice paper that makes the following contributions to the literature:

  - Complements the literature on the identification of U.S. monetary policy (QE) shocks.

  - Suggests new findings on the international transmission of U.S. QE shocks on EMs.

  - Provides solid empirical results that endure a variety of robustness tests.

- A few questions on the interpretations: IRFs of domestic and international macroeconomic and financial variables.

- A few comments on future extensions: Non-linear features of U.S. monetary policy spillovers, decomposition of the transmission following underlying news shocks.