Housing, Stability and the Macroeconomy: International Perspectives

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Capital Flows, House Prices, and the Macroeconomy

Evidence from Advanced and Emerging Market Economies

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Capital Flows, House Prices, and the Macroeconomy
Evidence from Advanced and Emerging Market Economies[1]

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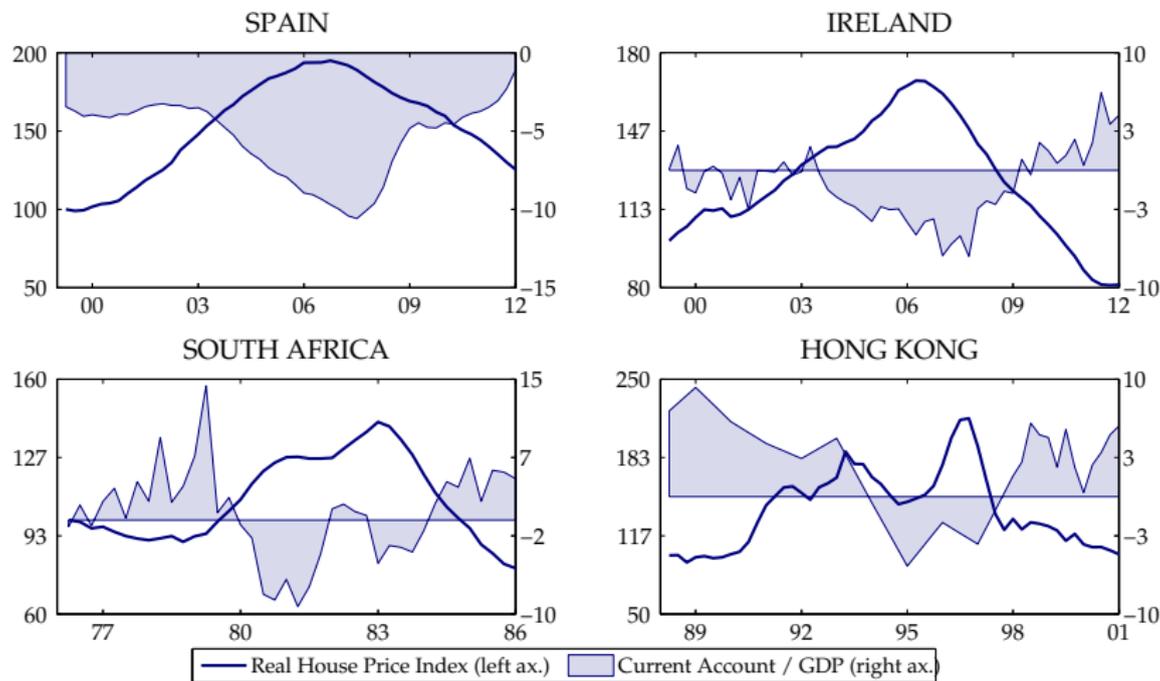[1]Bank of England   [2]U. Adolfo Ibanez   [3]JHU Carey Business School
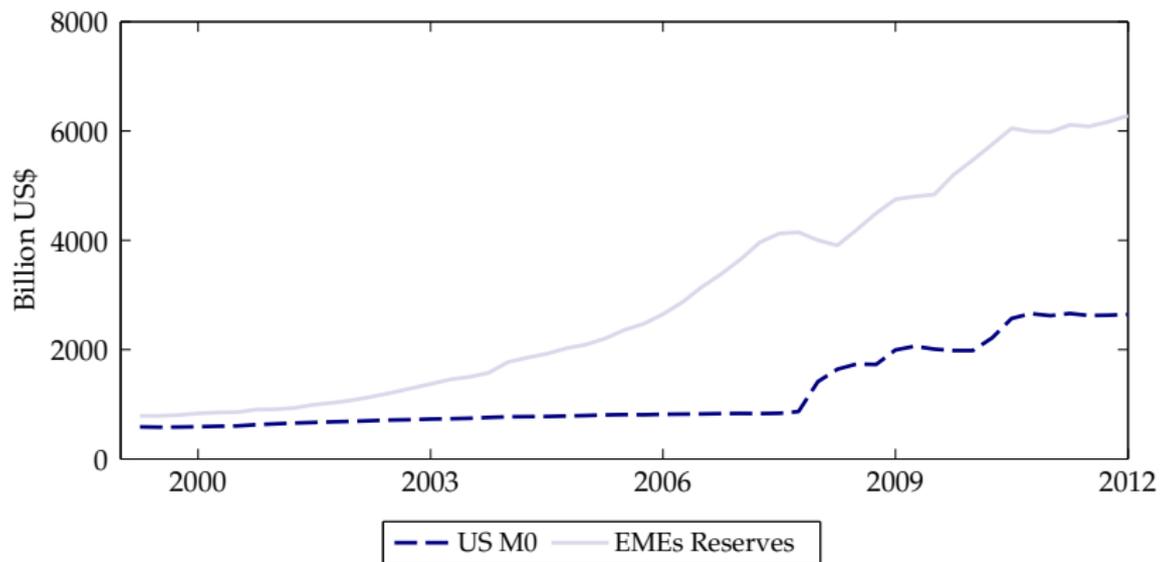
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Dallas FED

Housing quintessential non-tradable asset & non-tradable sector at the core of financial crises...

...capital abundant and highly mobile with limited investment opportunities

Contribution

- ▶ New comprehensive, quarterly house price data set comprising 57 advanced and developing economies

- ▶ A new set of house price stylized facts

- ▶ Characteristics of house price booms

- ▶ Transmission of a "global liquidity shock"

Preview of the results

- ▶ Relative to AEs, house prices in EMEs are
  - Slower and more associated with fundametals, more volatile and less persistent
  - More associated with external variables

- ▶ Relative to AEs, house price booms in EMEs are
  - Larger, more closely associated with loose global liquidity conditions

- ▶ A global liquidity shock has
  - A stronger impact on consumption in EMEs
  - Qualitatively different impact on external variables

Outline

- ► House Price Data & Descriptive statistics

- ► Event Study

- ► Global Liquidity

- ► VAR Analysis

- ► Conclusion

Data

- ▶ Unbalanced panel of 57 time series with varying coverage from 1970.I–2012.IV

- ▶ Source: OECD house price database, the BIS new property price data set, national central banks, national statistical offices, and academic publications on housing markets

- ▶ Value added relative to readily available datasets
    - Additional countries: Argentina, Brazil, Chile, Colombia, Croatia, India, Peru, Taiwan, Ukraine and Uruguay
    - Additional historical data: Austria, Czech Republic, Estonia, Hong Kong, Hungary, Indonesia, Malaysia, Philippines, Poland, Serbia, Singapore, Slovakia, Slovenia and Thailand.
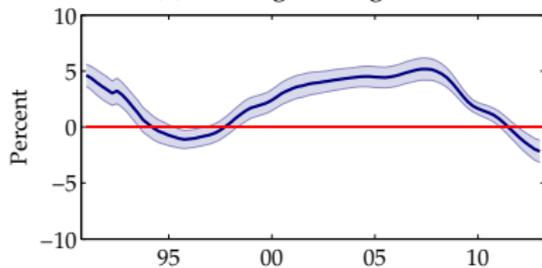
Real house price annual returns – Summary statistics

|	Real House Price		Real GDP		Real Consumption	
Group	AEs	EMEs	AEs	EMEs	AEs	EMEs
Mean	2.0%	1.2%	2.2%	3.8%	2.3%	4.0%
Median	2.1%	1.5%	2.5%	5.0%	2.4%	4.7%
Max	18.3%	27.5%	7.0%	13.3%	7.5%	16.7%
Min	-12.5%	-34.5%	-5.8%	-13.3%	-3.9%	-16.4%
St. Dev.	6.4%	12.5%	2.3%	5.1%	2.2%	5.9%
Auto Corr.	0.92	0.86	0.83	0.87	0.81	0.79
Skew.	0.10	-0.44	-1.00	-1.12	-0.31	-0.67
Kurt.	3.20	4.34	4.91	6.15	3.88	6.12

Note. The country-specific summary statistics are averaged across each group, namely advanced economies (AEs) and emerging economies (EMEs) and are computed across the common sample 1985.I–2012.IV.

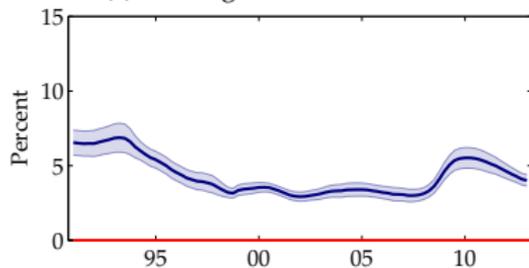## Average and the standard deviation of real house price annual returns
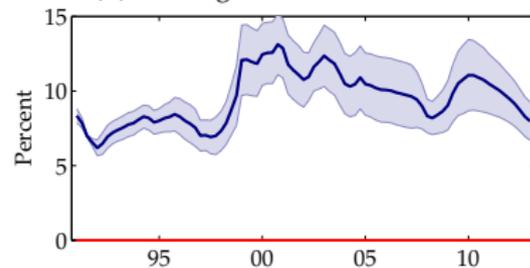

(a) Moving Average – AEs

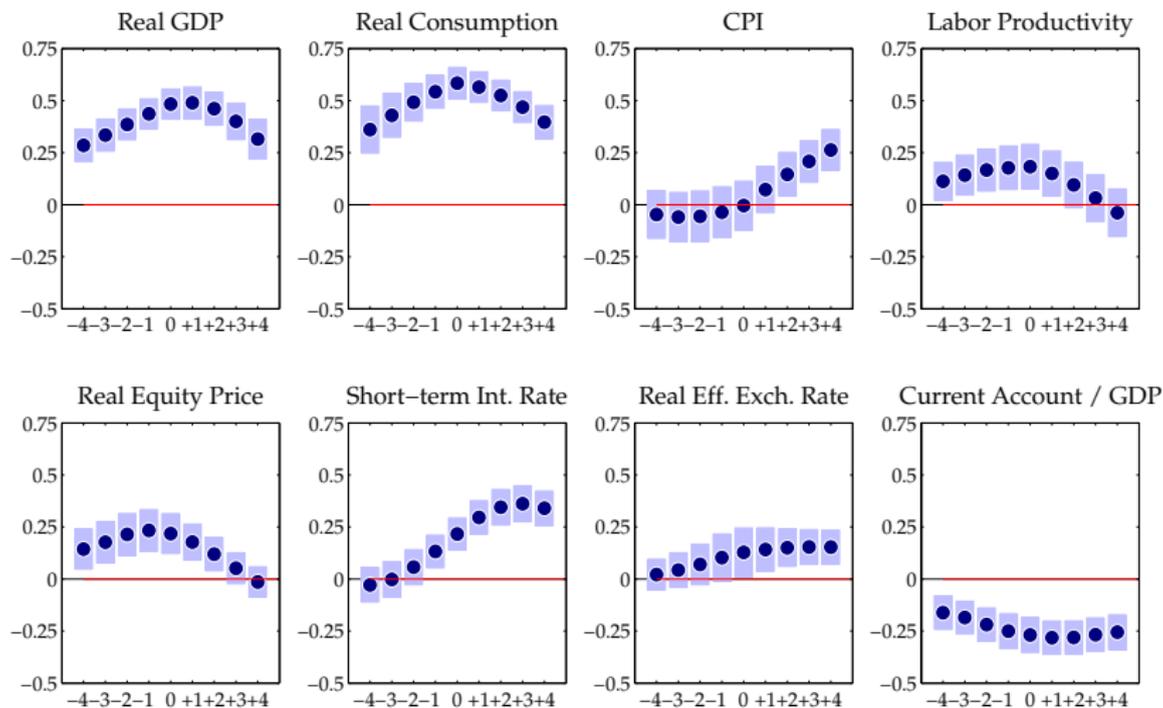(b) Moving Average – EMEs
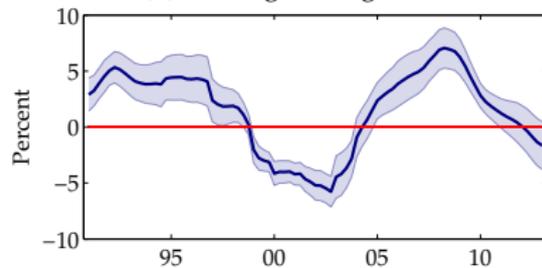
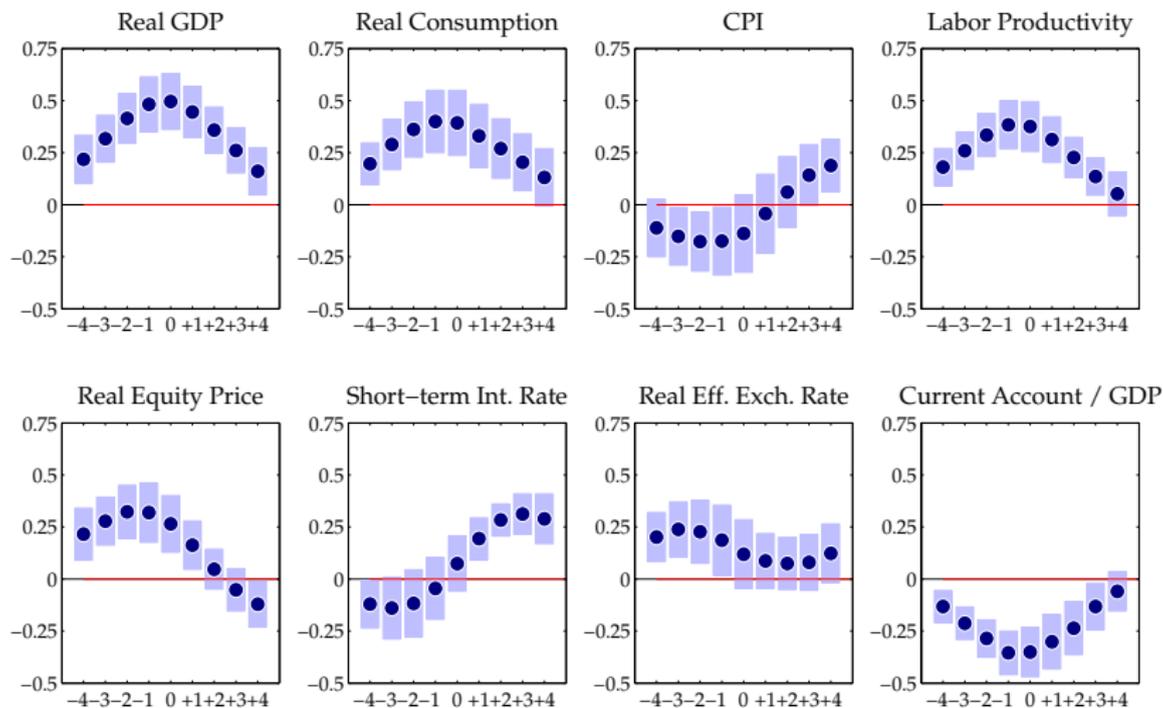(c) Moving Std. Deviation – AEs

(d) Moving Std. Deviation – EMEs

Cross-correlations of real house price annual returns (AEs)

(a) Advanced Economies

Cross-correlations of real house price annual returns (EMEs)

(b) Emerging Economies

Event study

▶ We identify 66 real house prices booms (Bordo and Jeanne, 2002)

$$\frac{g_{i,t} + g_{i,t-1} + g_{i,t-2}}{3} \lessgtr g \pm x\sigma$$

▶ During the identified boom episodes

- Investigate the behavior of relevant macroeconomic variables (output gap, exch. rates, current acconut, capital inflows, VIX,...)
- Investigate the role played by country characteristics (fin. market depth, exch. rate flexibility,...)
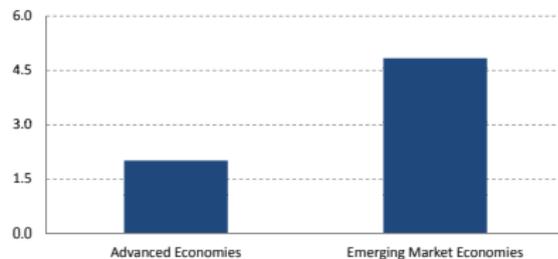
Event study – Results

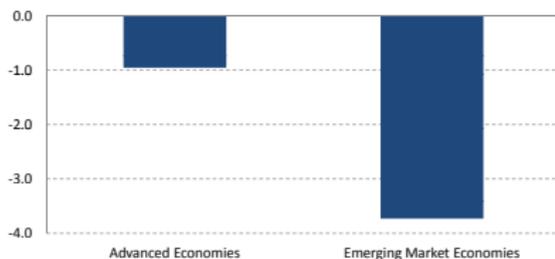(a) Real House Prices
(Average increase during episodes, percentage)
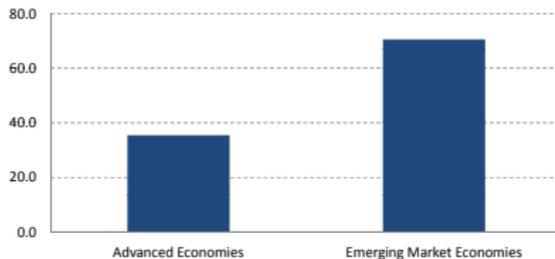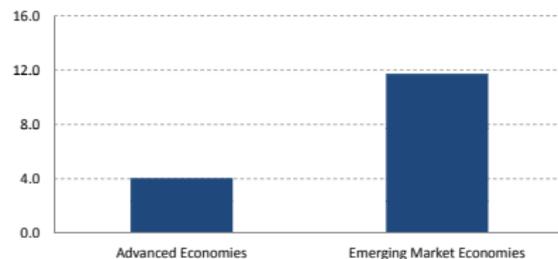
(b) Output Gap
(Average increase during episodes, percentage)

(c) Current Account
(Average increase during episodes, percentage)

(d) Real Exchange Rate
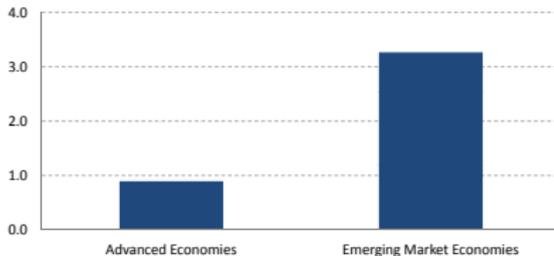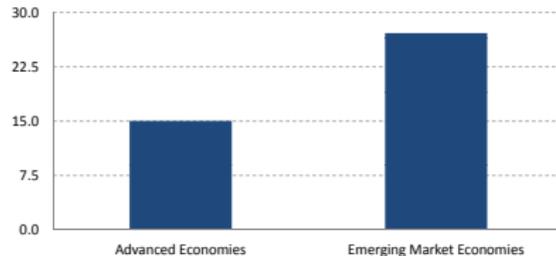(Average increase during episodes, percentage)

Event study – Results (cont'd)
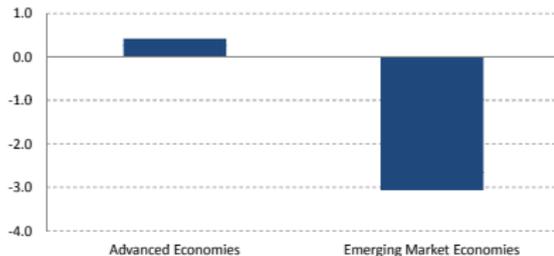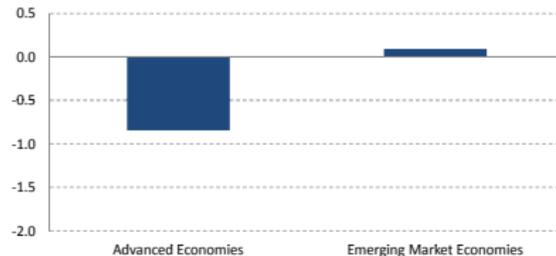
Real house price determinants in boom episodes

|								
	Dependent variable: change in real house price during boom							
Explanatory variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Capital inflows	2.26 $(2.35)^{**}$	4.23 $(2.47)^{**}$	4.05 $(1.91)^{*}$	4.59 $(2.53)^{**}$				
Global liquidity					0.58 $(3.04)^{***}$	0.88 $(2.87)^{***}$	1.21 $(3.77)^{***}$	1.01 $(2.13)^{**}$
Dummy AEs								
Financial market depth			-0.09 (-0.73)				0.02 -0.14	
Exchange rate flexibility				-0.55 (-0.51)				0.66 -0.44
Dummy AEs × Capital inflows		-5.27 $(-2.73)^{***}$						
Financial market depth × Capital inflows			-0.05 $(-1.73)^{*}$					
Exchange rate flexibility × Capital inflows				-0.38 $(-1.90)^{*}$				
Dummy AEs × Global liquidity						-0.70 $(-2.21)^{**}$		
Financial market depth × Global liquidity							-0.01 $(-1.95)^{*}$	
Exchange rate flexibility × Global liquidity								-0.06 (-1.10)
R2	0.06	0.16	0.19	0.11	0.14	0.22	0.28	0.16
Number of observations	60.00	60.00	58.00	60.00	66.00	66.00	62.00	66.00
F test	5.51^{**}	3.73^{**}	1.66	2.30^{*}	9.25^{***}	4.17^{**}	5.89^{***}	3.11^{**}

Note. All regressions are estimated using a constant, t-test in parenthesis. Significance levels at 1%, 5%, and 10% is denoted by $()^{***}, ()^{**}, ()^{*}$, respectively.

Global liquidity: a push factor for capital flows

▶ Empirical models of international capital flows typically include "push" (i.e., global) and "pull" (i.e., local) drivers

▶ Global liquidity is a proxy for the monetary policy stance in whole world economy, as opposed to any individual economy pulling in capital flows or the rest of the world economy pushing them to a particular country

▶ We measure global liquidity in three different ways
  1. Official global liquidity
  2. Private global liquidity
  3. VIX Index

Global liquidity measures & VIX index

(a) Official and private global liquidity (level) & VIX Index (level)
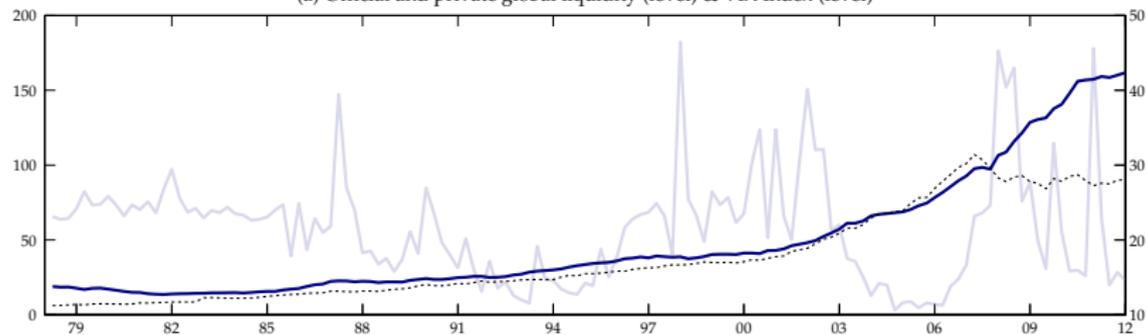
(b) Official and private global liquidity (log change) & VIX Index (level)

Off. liquidity (left ax.)　‧‧‧‧‧‧ Priv. liquidity (left ax.)　— VIX Index (right ax.)
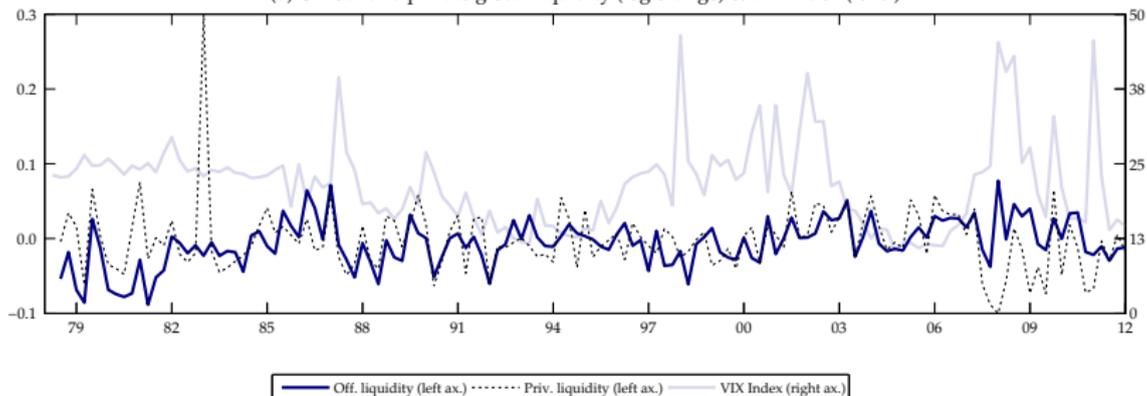
Correlation between global liquidity measures

|	Off. Liquidity (level) Priv. Liquidity (level)	Priv. Liquidity (level) VIX index (level)	Off. Liquidity (level) VIX index (level)
Full Sample	0.92	-0.05	0.01
Pre-Crisis	0.99	-0.30	-0.28
Post-Crisis	-0.12	0.00	-0.41
	Off. Liquidity (log diff.) Priv. Liquidity (log diff.)	Priv. Liquidity (log diff.) VIX index (level)	Off. Liquidity (log diff.) VIX index (level)
Full Sample	0.29	-0.18	-0.06
Pre-Crisis	0.38	-0.13	-0.23
Post-Crisis	0.43	0.12	0.32

Note. Note here.

A panel VAR with "pull" and "push" factors

- Vector autoregression (VAR) model for country i includes

$$x = \begin{bmatrix} \text{GLOBAL LIQUIDITY} \\ \text{CONSUMPTION} \\ \text{REAL HOUSE PRICE} \\ \text{SHORT-TERM INT. RATE} \\ \text{REAL EFF. EXCH. RATE} \\ \text{CURRENT ACC. / GDP} \end{bmatrix}$$

- We identify only exogenous changes to one particular push factor: global liquidity

  - Identification assumption: no individual country is large enough to affect it significantly within a given quarter

- Mean group estimator (dynamic panel data models with heterogenous slope coefficients)

Checking our identification assumption: FEVD to a global liquidity shock
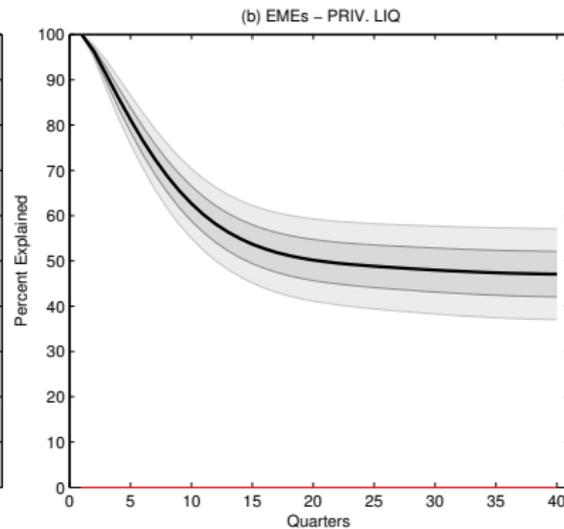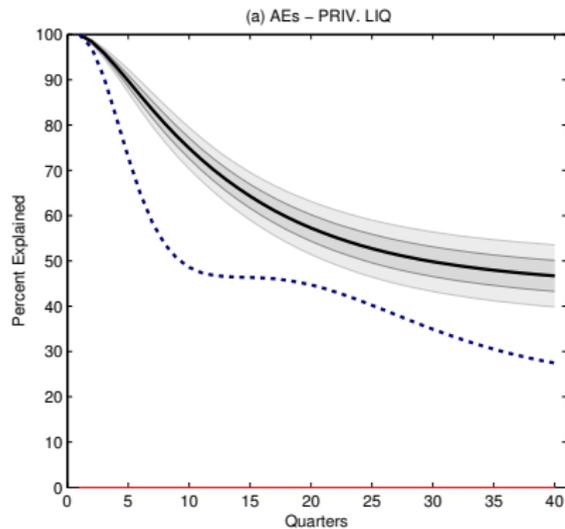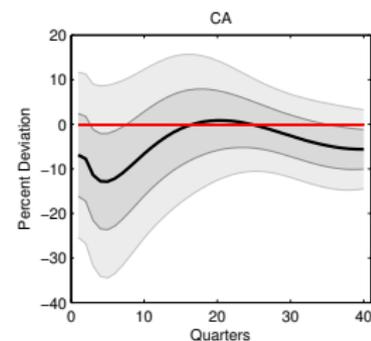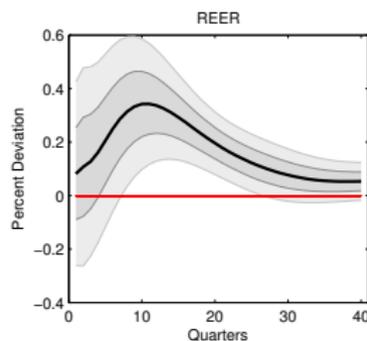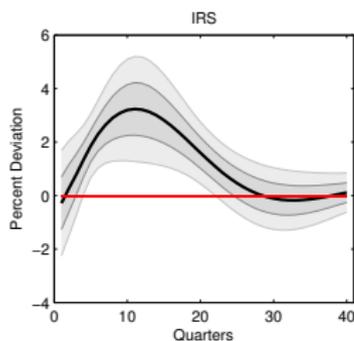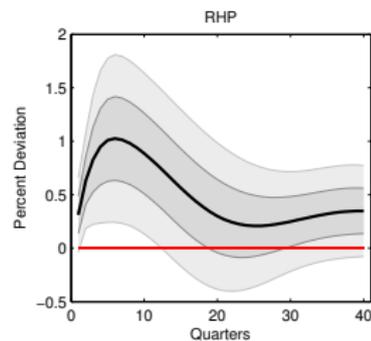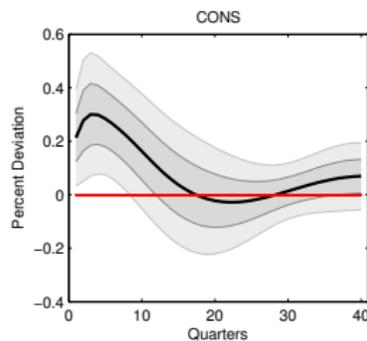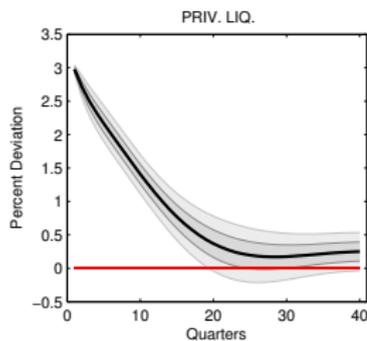
Impulse response function to a global liquidity shock (AEs)

(a) Advanced Economies
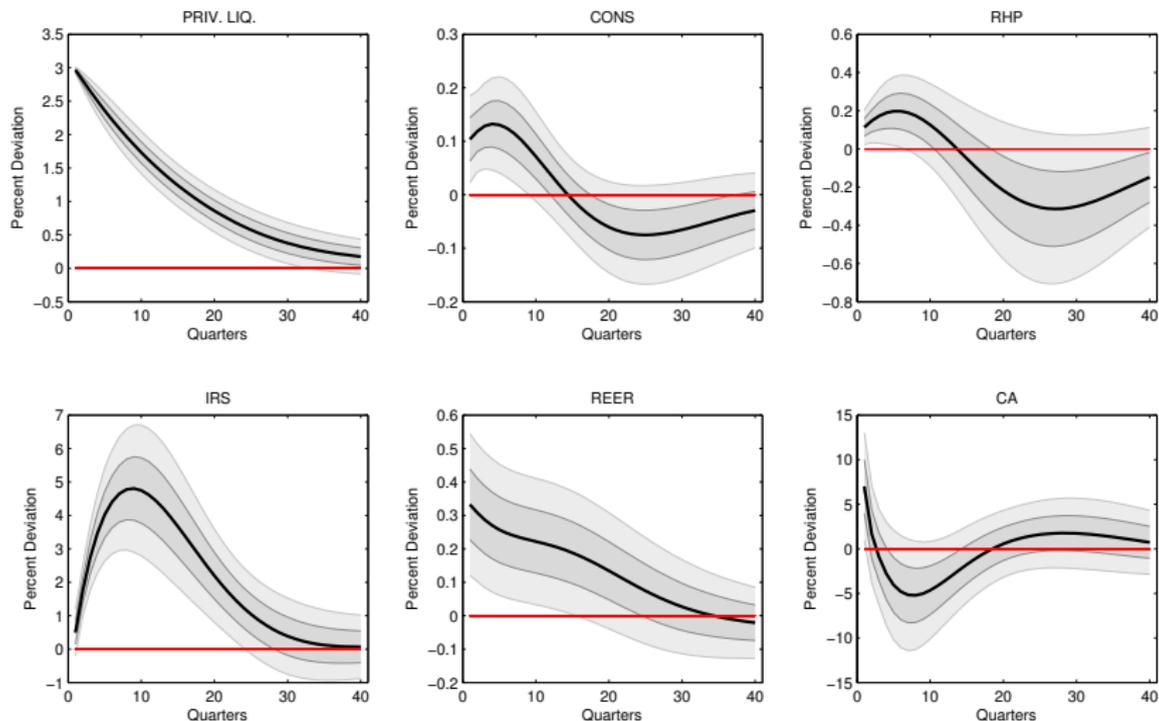
Impulse response function to a global liquidity shock (EMEs)

(b) Emerging Economies

Conclusions

- ▶ In this paper we explore empirically the relation among capital flows, house prices, and the broader macroeconomy

- ▶ We find that:
  - House prices in EMEs are slower, more associated with fundametals and external variables, more volatile and less persistent
  - House price booms in EMEs are larger, more closely associated with loose global liquidity conditions
  - A global liquidity shock has a stronger impact on consumption in EMEs with qualitatively different impact on external variables

Conclusions (cont'd)

- ▶ We interpret this evidence as suggesting that while global imbalances may have played a lesser role in the housing boom in AEs, the increase in global liquidity in response to it may be playing an important role for house price dynamics in EMEs

- ▶ Work to do
  - • Better understanding of the mechanisms
  - • Exploring the distribution around the means

THANK YOU