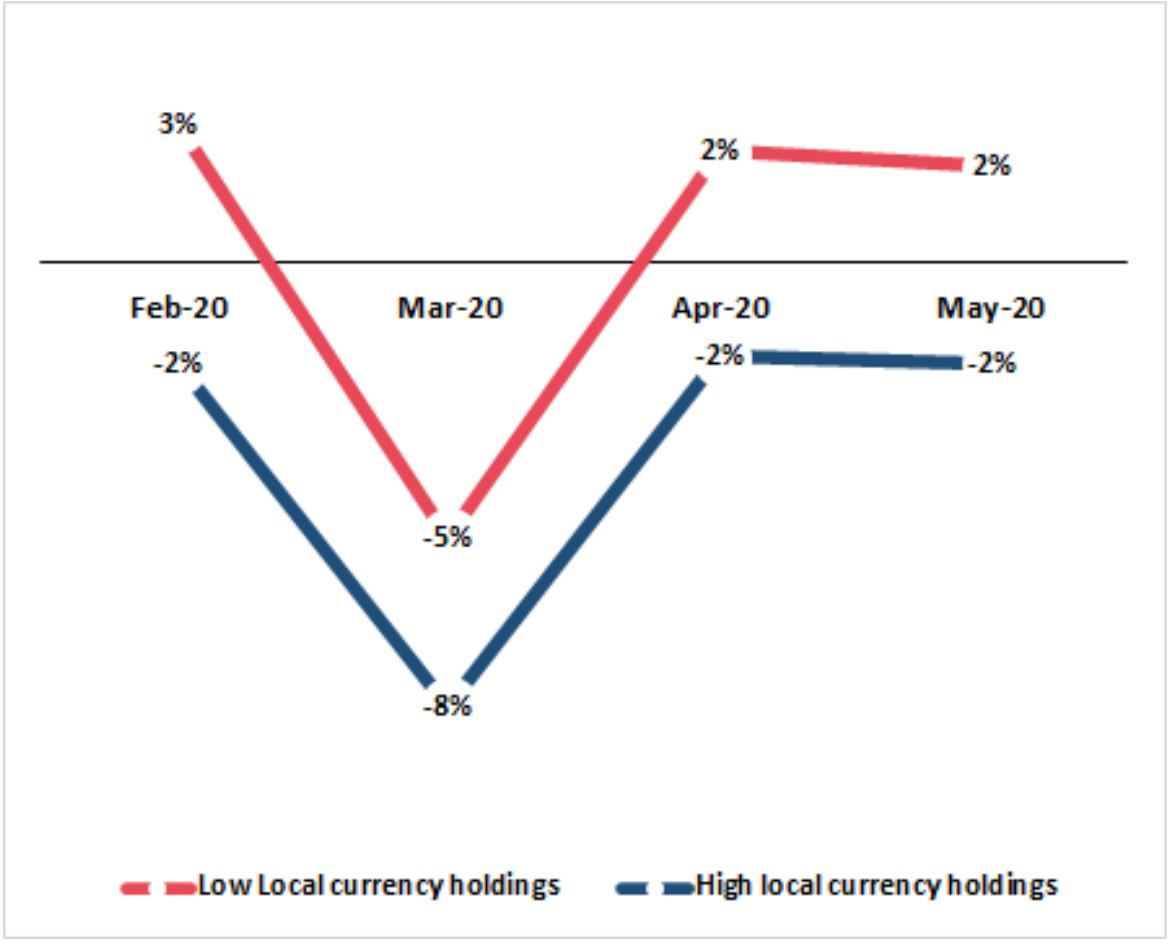
Original Sin Redux

Carol Bertaut Valentina Bruno Hyun Song Shin

3rd Workshop on Capital Flows and Financial Policies

Net Purchases of EM sovereign bonds by US investors



(as percent of holdings)

- March 2020 event. Larger portfolio outflows from countries with large US holdings of local currency government bonds

Motivation

- **Eichengreen and Hausmann (1999) "Original Sin"**
  EME dependence on foreign currency (USD) borrowing

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  EME dependence on foreign currency (USD) borrowing
- **Overcoming the "Original Sin"**
  Share of local currency denominated debt has increased
- **"Original Sin Redux"**
  Risk has shifted from borrowers to investors

Original Sin Redux

- During periods of financial stress, portfolio outflows go hand-in-hand with rising yields and risk premia, and with currency depreciation
- Global investors' returns are measured in US dollars. They "lose twice":
  - Local currency returns
  - Effect of currency movements
- Which investors?
  - Mutual Funds

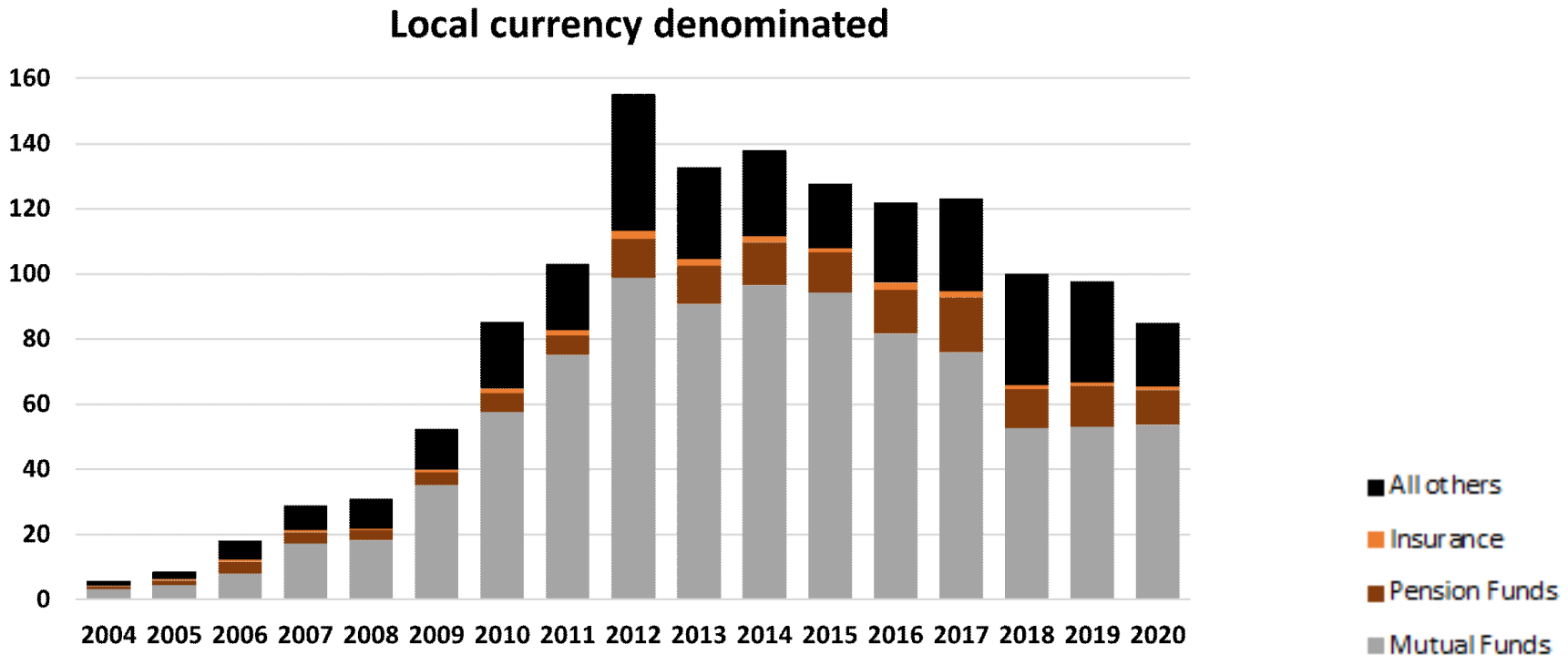
Data

- We explore the relationship between portfolio flows and exchange rates using a unique and comprehensive dataset of portfolio flows of *all* US investors (from Treasury TIC)
- Period: 2004-2021
- Comparative portfolio choice across seven investor sectors
- Direct measurement of the portfolio holdings:
  - Notional holdings, adjusted for valuation changes
  - Liquidity management operations

Three notable findings

- Mutual funds's behavior is procyclical, **however**
  - Mutual funds are more than half but a lot less than full story
  - We cannot generalize from mutual funds' behavior
  - EMEs are less volatile than mutual funds data show
- Issuing longer maturity bonds mitigate rollover risk for borrowers, **however**
  - Risk has not disappeared. Longer maturities come with greater duration risk for the lender, which may turn into market disruptions
- EMEs have overcome "Original Sin", **however**
  - Investors are moving away from local currency bonds

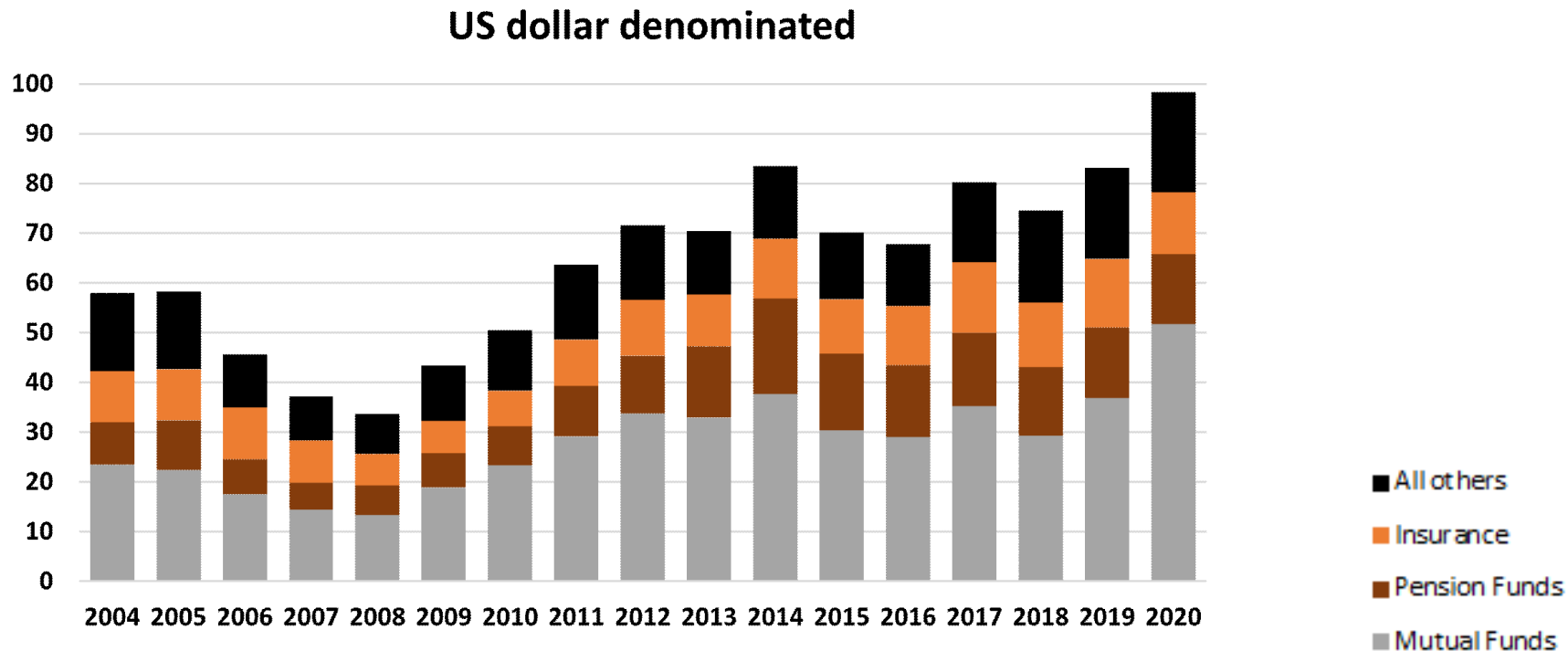
Local currency holdings by investor type



(USD billion)

- Mutual Funds stand out as the largest holder of EME bonds

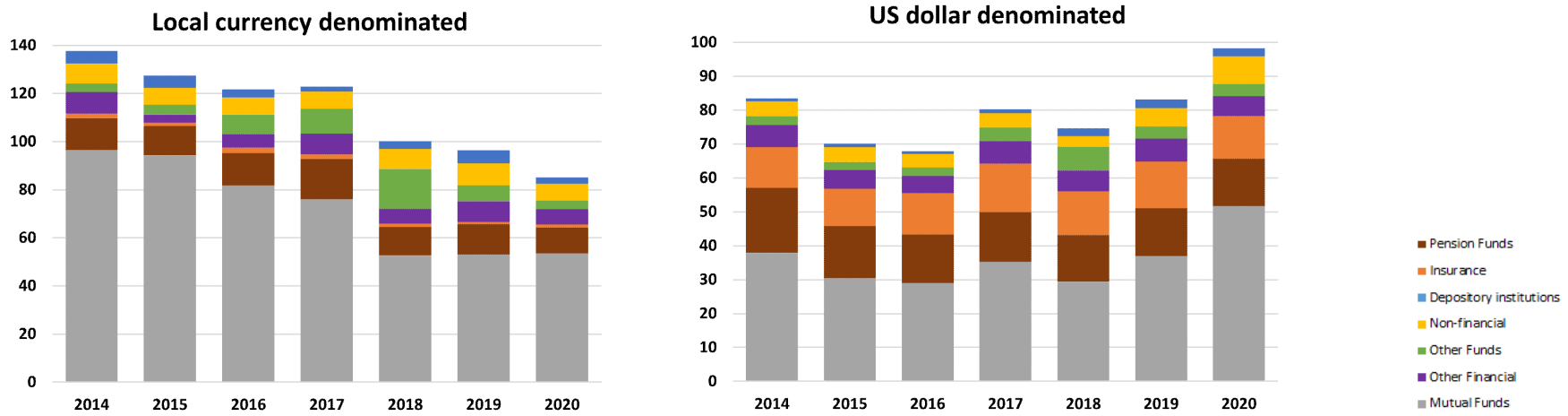
US dollar currency holdings by investor type



(USD billion)

- Mutual Funds + "sticky" Pension funds & Insurance sector

All others



(USD billion)

- Other Financials (e.g., broker dealers); Other Funds (e.g., hedge funds); Non-Financials (e.g., trusts); Depository Institutions.

Investor Type Analysis

	(1)	(2)	(3)	(4)	(7)
Dep. Var.	Local	Local	Local	Local	USD
Sector	All	Mutual	Non-Mutual	All	All
ΔUSD Broad	-1.4550	-2.5729***	-1.0742	-2.5729***	-1.8720**
	[0.8477]	[0.8743]	[0.9069]	[0.0000]	[0.0000]
Pension*ΔUSD				1.2682	2.3653***
				[0.8935]	[0.5619]
Insur*ΔUSD				1.0853	1.2574*
				[0.9904]	[0.5965]
All Others*ΔUSD				2.1300**	0.4286
				[0.9661]	[0.4492]
Constant	0.2169**	0.2569**	0.2032**	0.2169**	0.0538
	[0.0884]	[0.1068]	[0.0861]	[0.0884]	[0.0420]
Obs.	1,010	257	753	1,010	948

- Country- Investor Type fixed effects

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- Procyclical behavior by mutual funds

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- USD bonds: Smaller effect for mutual funds, buffering role by insurance and pension funds

Country characteristics and amplification effects

	(2)	(3)	(4)	(5)
Dep. Var.	Local, All Sectors			
Country	High foreign inv base	Low foreign inv base	High fin openness	Low fin openness
Mutual*ΔUSD Broad	-2.2677**	-1.2360	-2.4351*	-0.5798
	[0.9238]	[0.9981]	[1.2049]	[1.0896]
Constant	0.7156***	0.7061***	0.8925***	0.2158***
	[0.0624]	[0.0409]	[0.0533]	[0.0214]
Observations	437	409	533	477
Year FE	✓	✓	✓	✓
Country-Inv Type FE	✓	✓	✓	✓

- Mutual =1 for the mutual funds sector, 0 otherwise.

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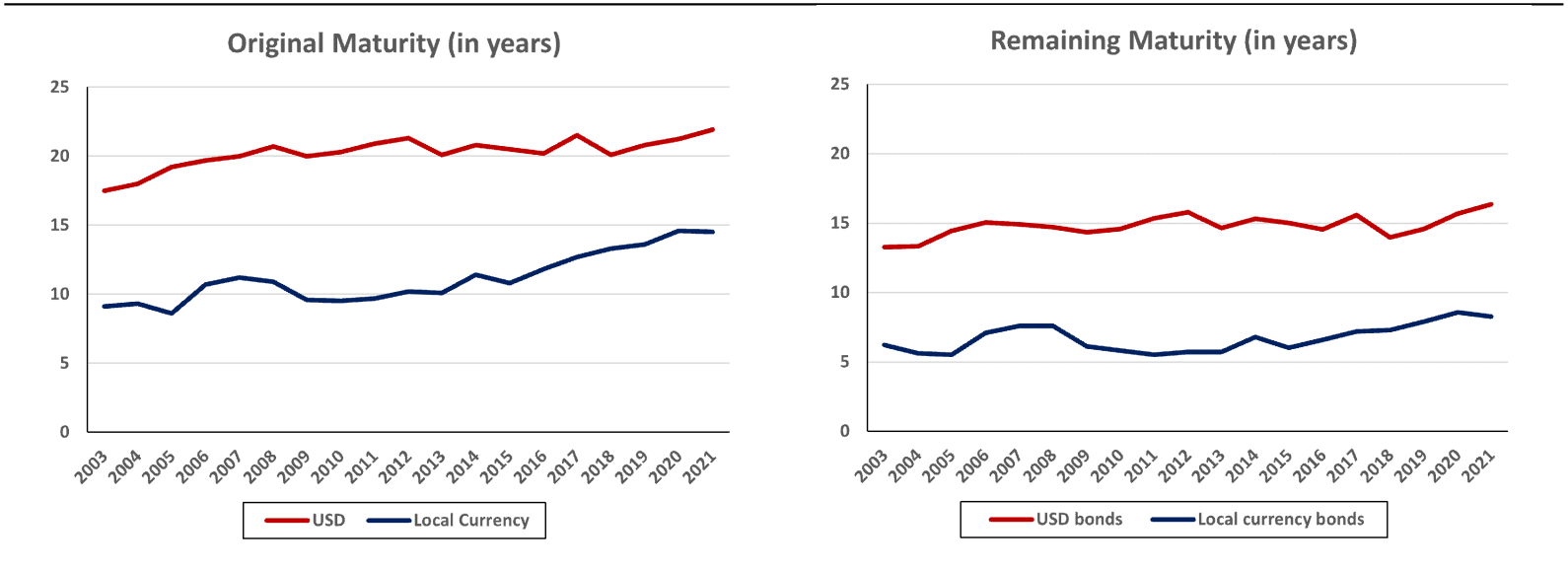
- Procyclical response of mutual funds to dollar appreciation where foreign investors are major holders of sovereign debt and in countries with greater financial openness.

Maturity and amplification effects



- Do investors differentiate according to the maturity they hold when responding to USD fluctuations?

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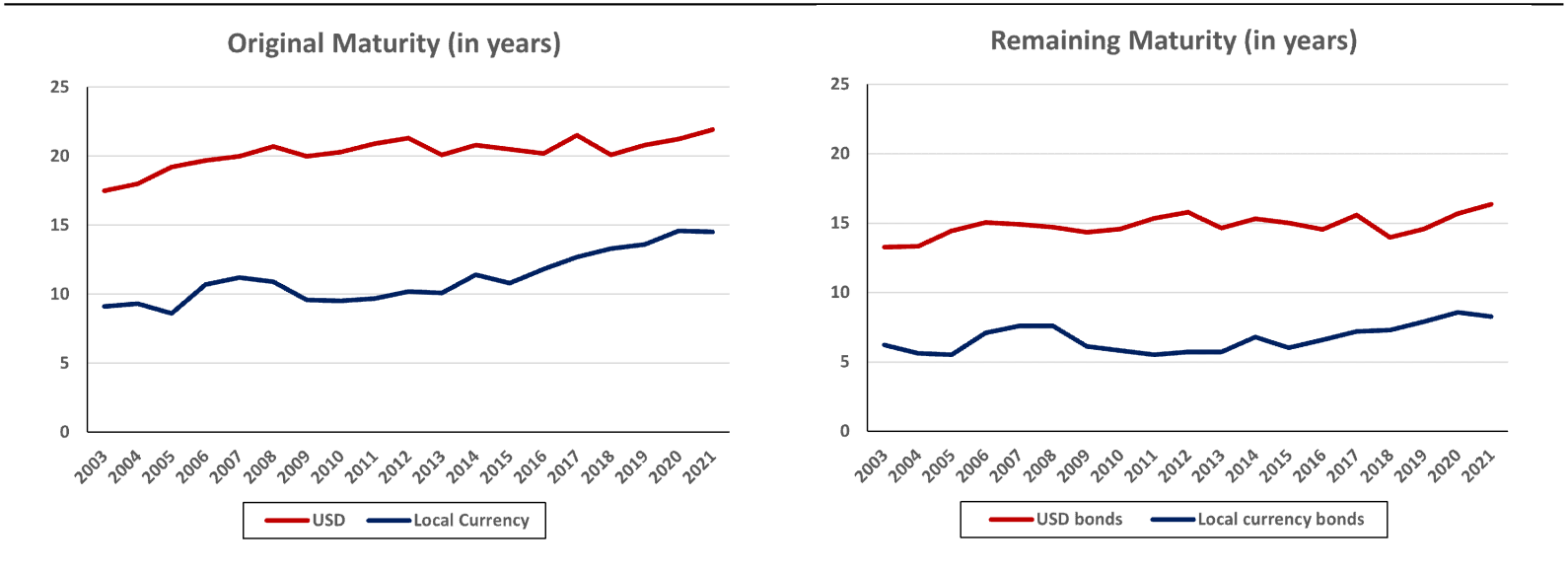

- Do investors differentiate according to the maturity they hold when responding to USD fluctuations?
- Behavior of the same investor type within the same country depending on bond maturity.

Maturity and amplification effects

Local	(1)	(2)	(4)	(6)	(8)
Dep Var	Long	Long	Long	Short	Short
Sector	All	Mutual	All	Mutual	All
Mutual*ΔUSD Broad			-1.8537*		-0.5145
			[1.0510]		[0.8985]
ΔUSD Broad	-0.8359	-2.3455*		-1.6089***	
	[0.9981]	[1.2681]		[0.5268]	
Constant	0.1635**	0.2288**	0.1672***	0.2294**	0.8223***
	[0.0746]	[0.0923]	[0.0270]	[0.1041]	[0.0255]
Obs.	960	255	960	253	994
Ctry-Inv FE	✓	✓	✓	✓	✓
Year FE			✓		✓

- Remaining maturity by currency/country/year/investor type, long vs. short

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Year FE			✓		✓

- Remaining maturity by currency/country/year/investor type, long vs. short
- Mutual funds are the most sensitive to yield changes and show the greatest redemption activity in local currency long-term bonds

Quantification of Maturity Risk

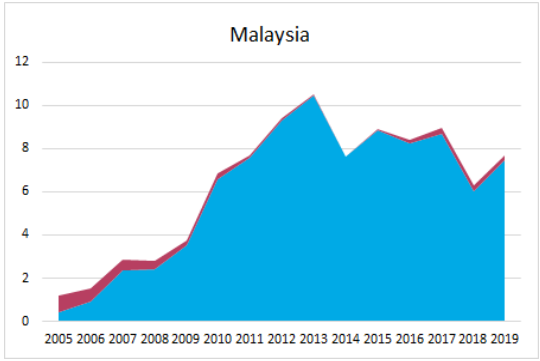
	(1)	(2)
Dependent Variable	Maturity $>$ 5 years	Maturity $<$ 5 years
Sector	Mutual Funds	Mutual Funds
ΔUSD Broad	-2.8101***	-1.0766
	[0.9531]	[1.0211]
Constant	0.2832***	0.2202*
	[0.0905]	[0.1236]
Observations	256	249
Ctry-Inv Type FE	✓	✓

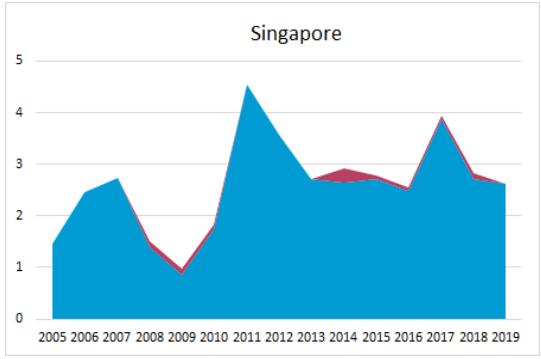
- Mutual funds with maturities greater than 5 years have outflows by 2.8% following 1% dollar appreciation. No effect on shorter maturities

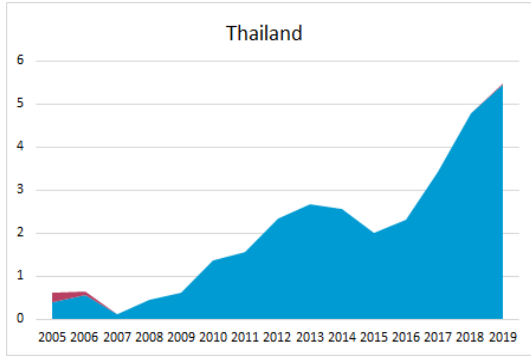
Investor Type Analysis

- The US broad dollar index
  - associated with adjustments in EME government bonds holdings denominated in local currency
  - larger effect than bilateral exchange rate, VIX, US monetary policy
- The mutual fund sector displays a strong sensitivity to USD changes
  - decrease their local currency holdings when the dollar appreciates
  - larger effect in countries with large foreign investor base and financial openness
  - larger effect on longer maturity bonds
- Pension funds & insurance plays a buffering role in the case of USD denominated bonds

Dynamics of portfolio flows

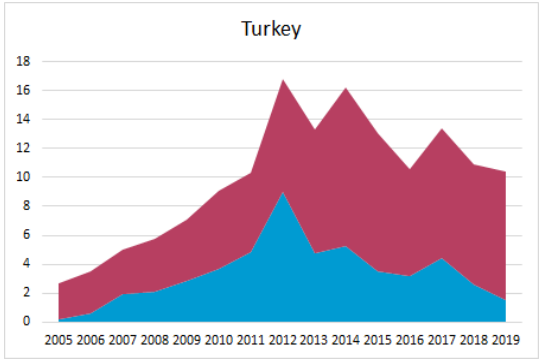


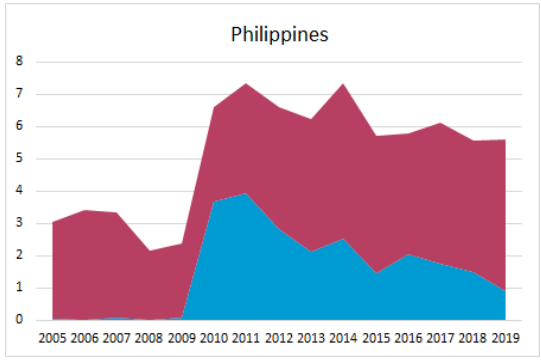


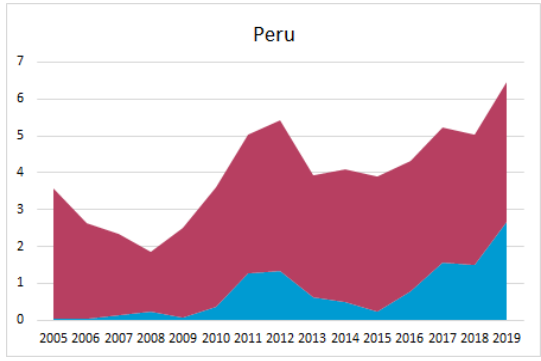


Portfolio holdings of sovereign local currency bonds by US investors (blue)
Portfolio holdings of sovereign bonds in USD by US investors (red)
(USD billion)

Dynamics of portfolio flows







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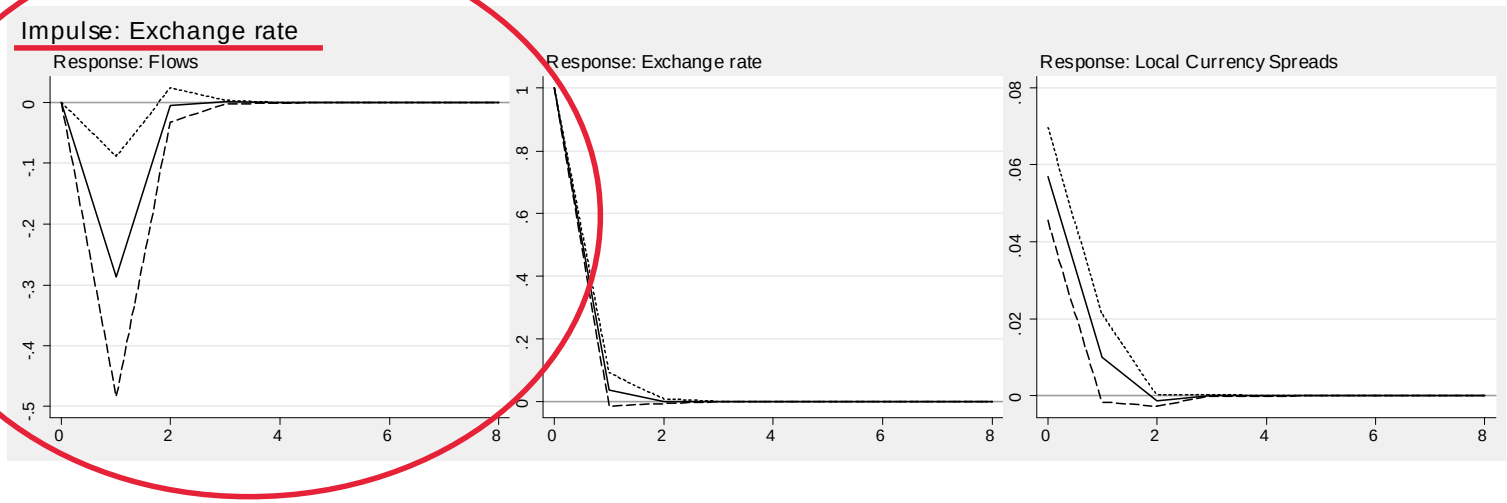
Dynamics of portfolio flows

- Structural panel VAR with monthly notional portfolios flows, adjusted for valuation effects
- January 2012 to December 2021
- Sample of countries
  - 1. US investments mostly in local currency (Thailand, Malaysia, Singapore, Brazil, Korea, Mexico, Poland, S. Africa)
    2. US investments mostly in USD currency (Chile, Colombia, Hungary, Indonesia, Peru, Philippines, Russia, Turkey)
- Benchmark 3-variables SVAR
  - Investment Flows $\Rightarrow$ Exchange Rate $\Rightarrow$ Local Currency Spreads
- Cholesky ordering

Impulse Response Functions (Local currency investments)



- A one percent appreciation of the dollar leads to a drop in local currency flows by 0.3% after one month (left chart)

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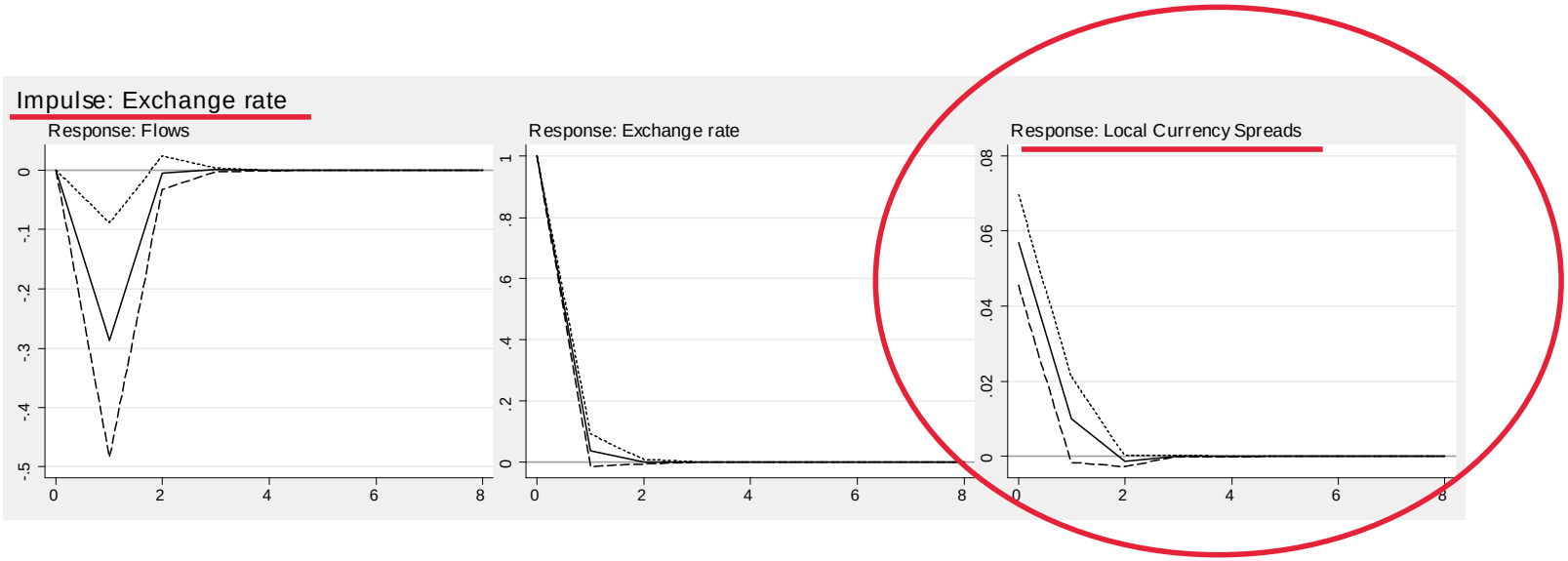

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- Dollar appreciation is associated with a simultaneous increase in local spreads by 6 b.p. (right chart)

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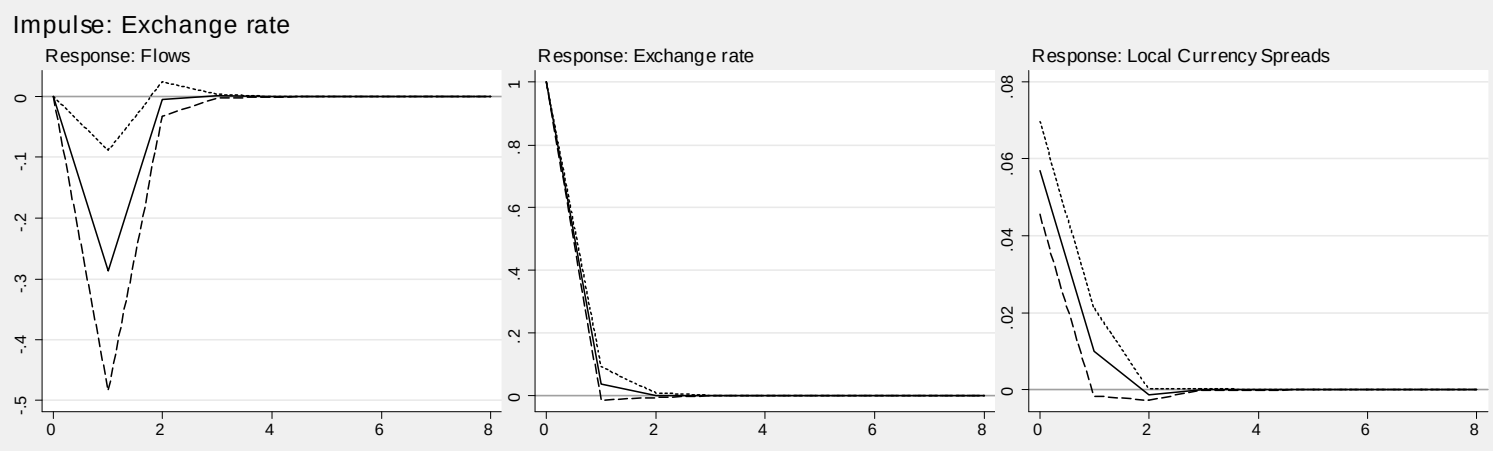

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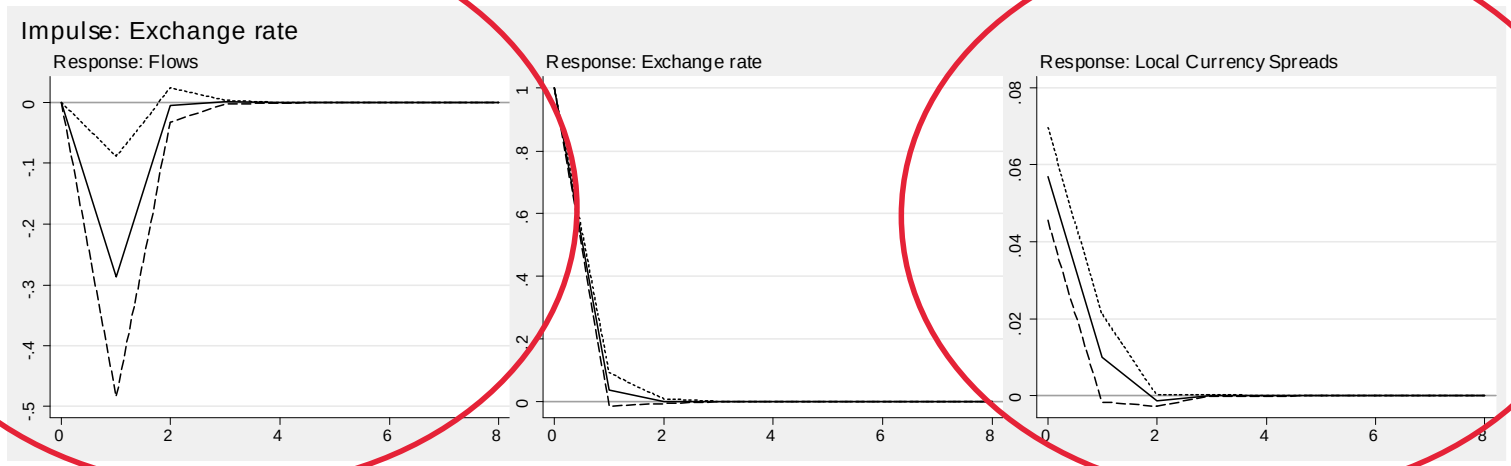

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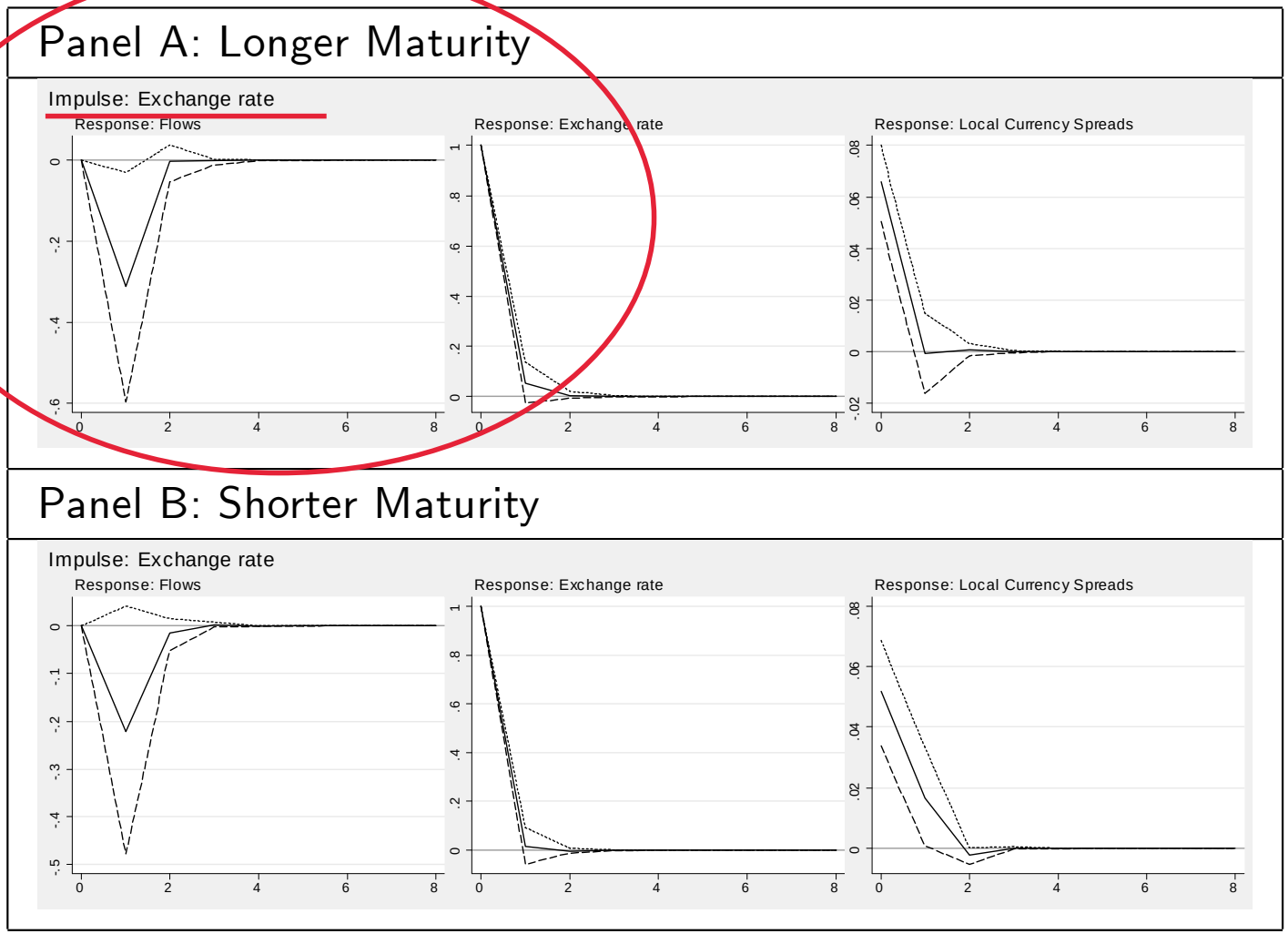
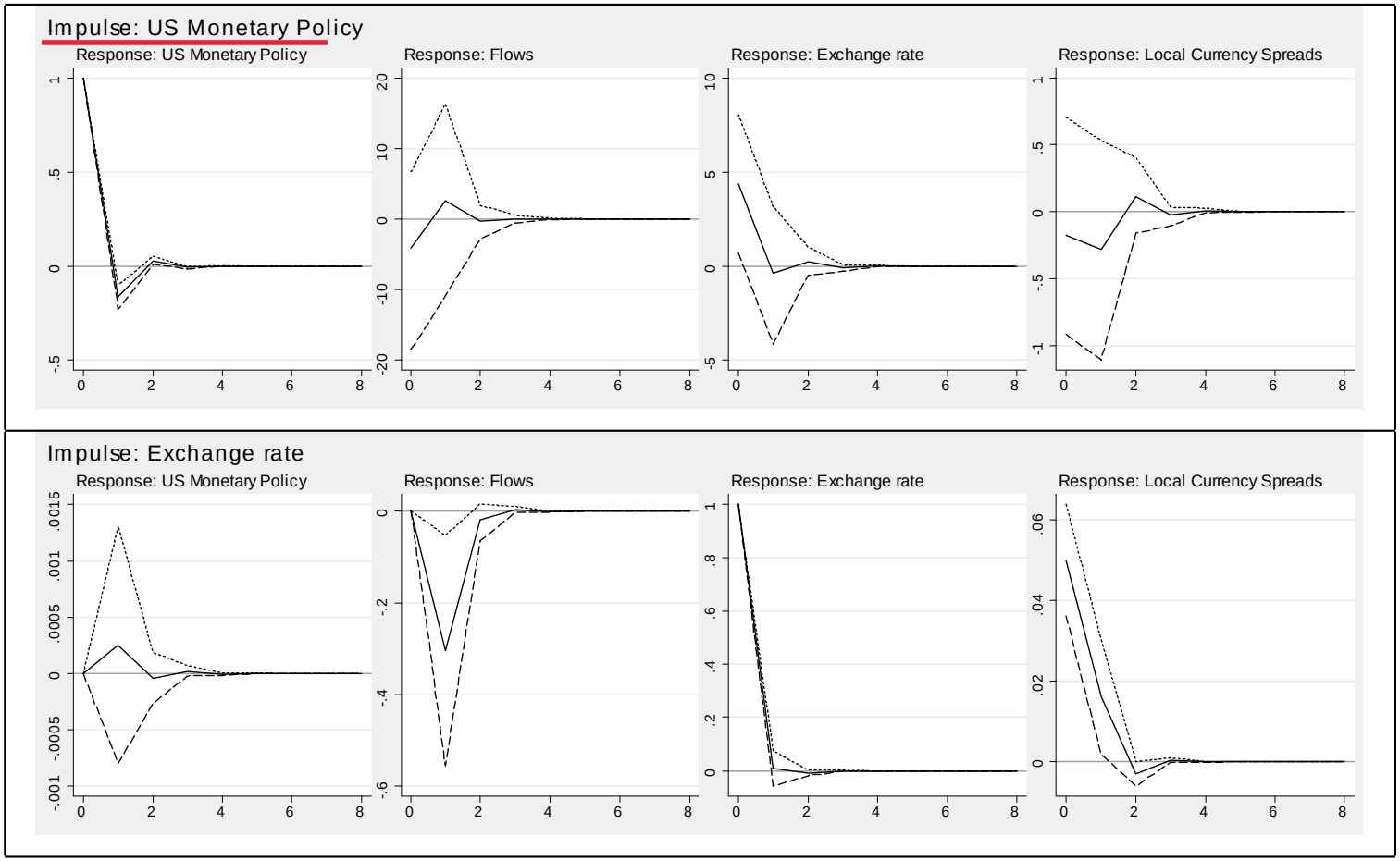
- Dollar-based investors "suffer twice":
- Wind-chill (currency movements) on top of underlying temperature (local currency spreads)

Maturity Risk



- Dollar appreciation leads to a statistically significant decline in local currency flows (by 0.31% after one month) only in the case of longer maturity bonds

US Monetary Policy



- US dollar appreciates following US monetary policy "suprises"

Conclusions (1)

- Unique dataset allows us to explore novel findings
  - liquidity management operations across the entire US investors base
- Local currency bonds display greater sensitivity in reaction to shifting financial conditions as captured by US dollar exchange rate fluctuations
- Mutual funds are procyclical, insurance and pension funds are a "stickier" investor base
  - Paradoxically, EM dollar currency bonds benefit more than EM local currency bonds
- Role and risks by nonbank financial sector for global financial stability

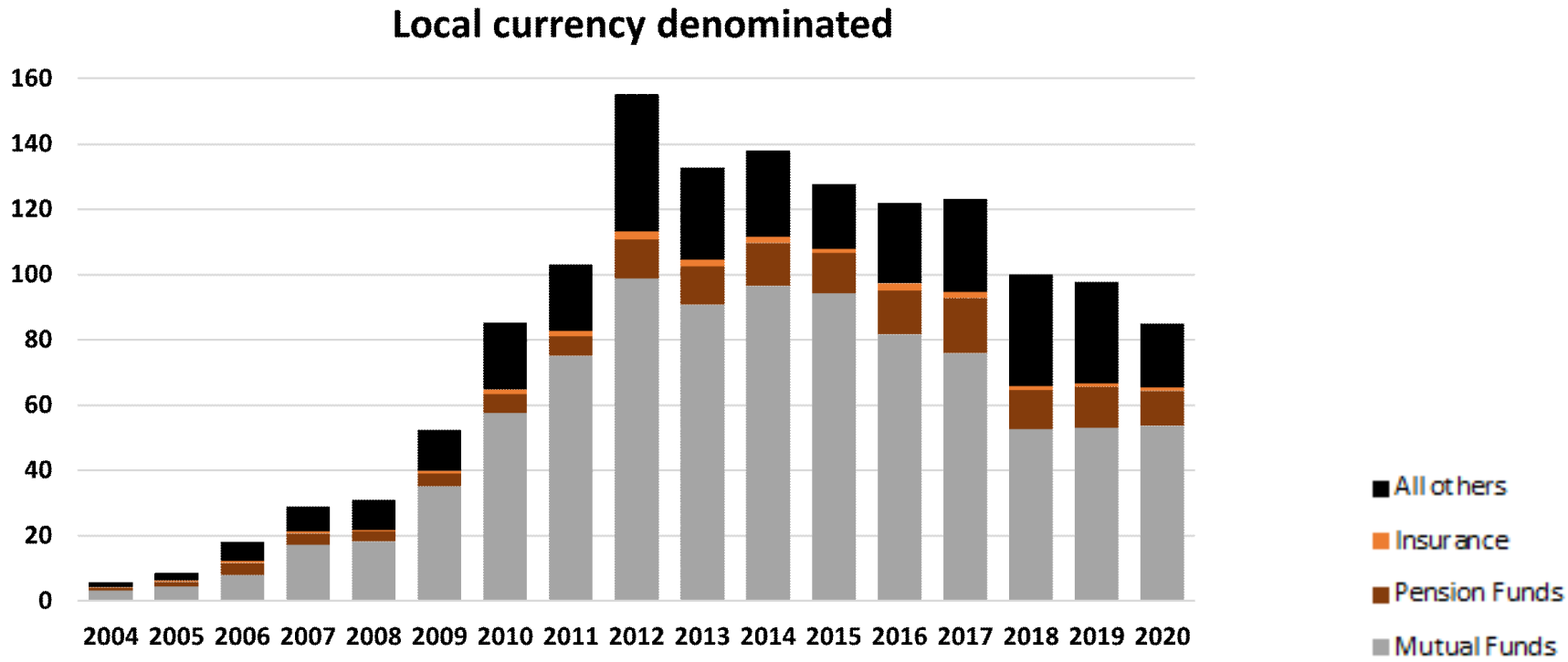
Conclusions (2)

- Longer maturities may mitigate rollover risk for borrowers, but this is achieved at the expense of greater sensitivity of bond prices to yield changes due to the greater duration risk for the lender.

- To the extent that market disruptions are made worse by duration risk, lengthening maturities may be associated with the rising of new market risks and selling pressures related to exchange rate fluctuations.

- Such investors' reactions may affect the domestic yield curve even in the case of local currency issuances.

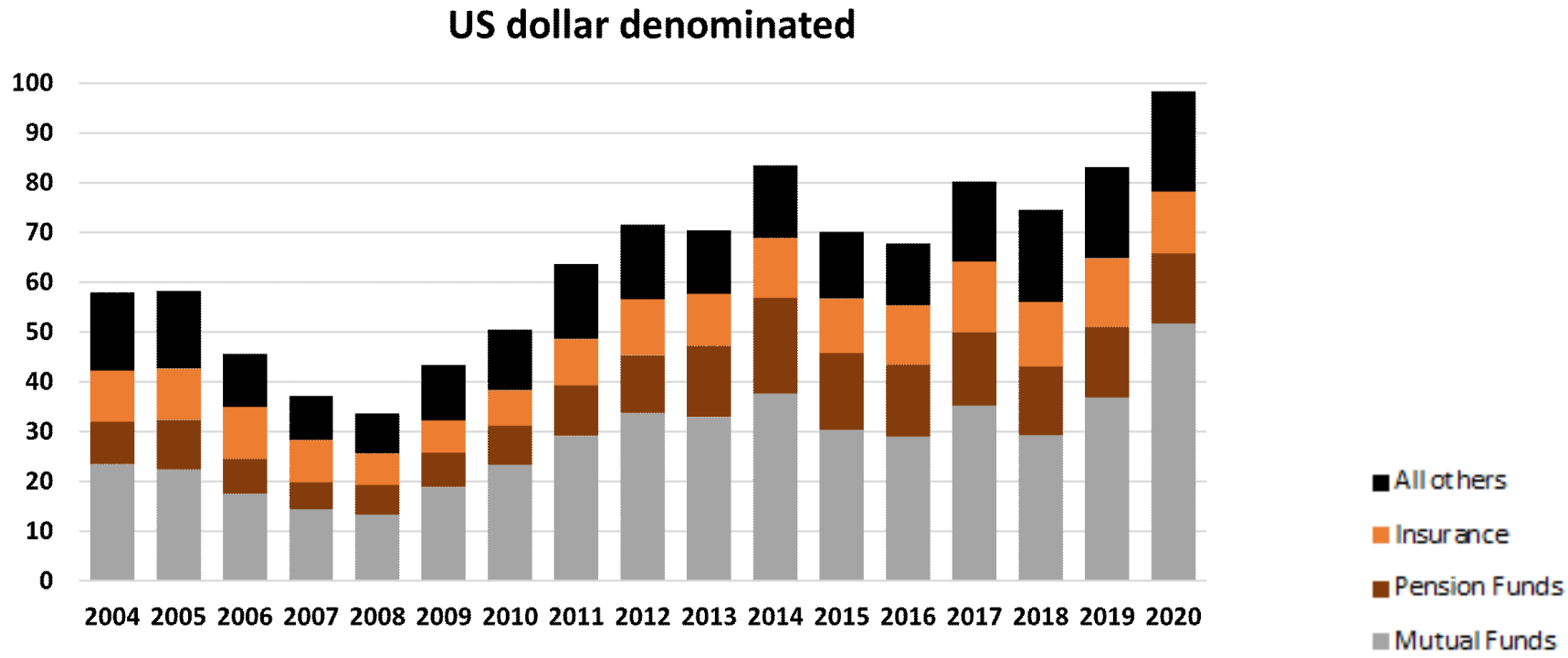
Conclusions (3)



(USD billion)

- US mutual fund investors have progressively decreased their holdings in local currency bonds....

Conclusions (3)



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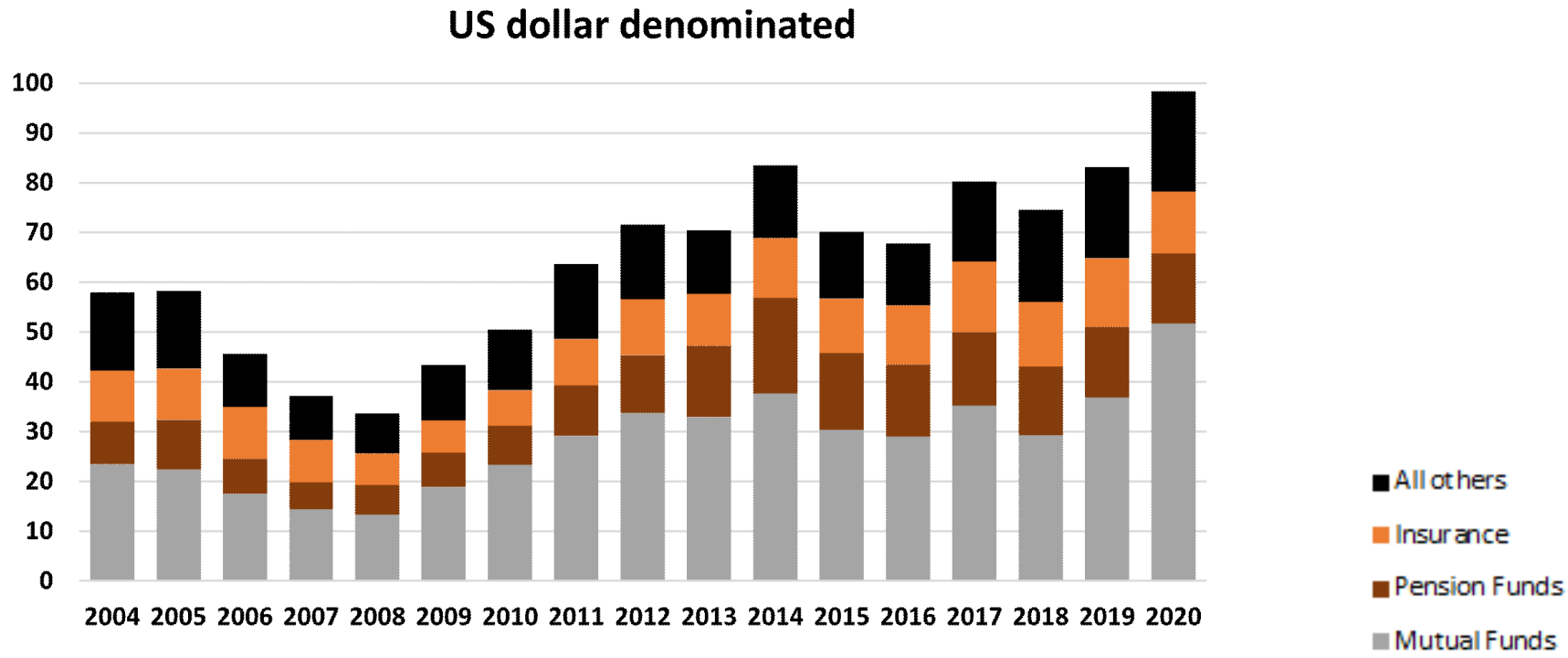

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