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Friends or Foes?
Foreign Flows in the Thai Government Bond Market

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PIER Research Workshop: 6 กรกฎาคม 2560

Background

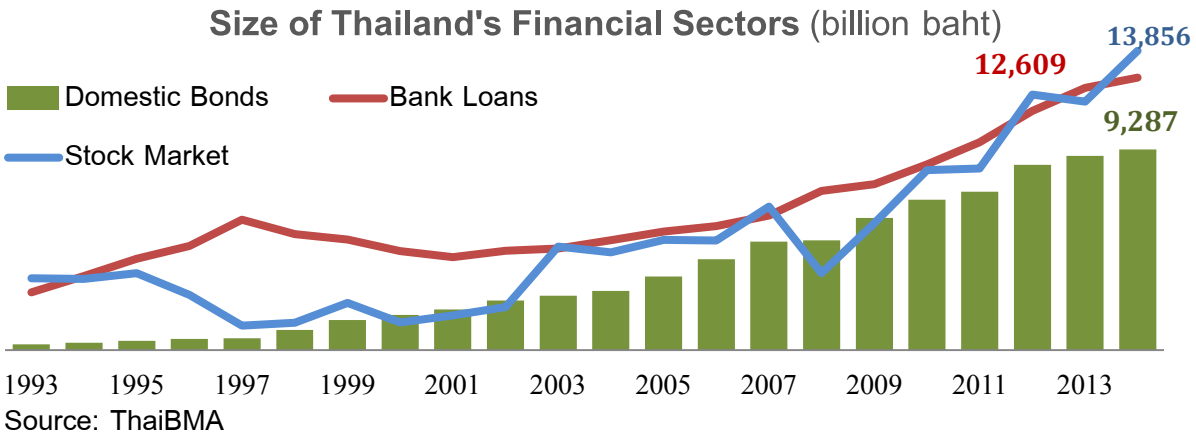
- **Foreign participation in EMEs' local currency government bond markets has increased markedly over the past decade.**
- **Previous studies have found that while foreign participation definitely brings benefits to the recipient economy, they may also facilitate the transmission of global shocks into EMEs.**

What this paper does…

This project utilises high-frequency, granular data to better understand the implications of international portfolio flows for the Thai government bond market.

Background - Overview of the Thai Bond Market

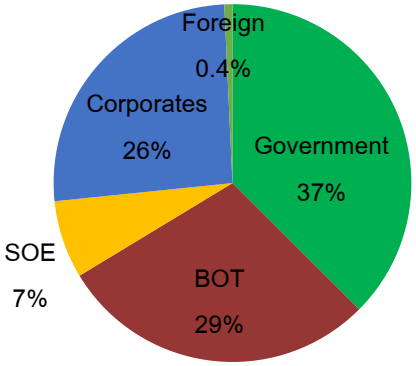
The Thai bond market has grown significantly since the Asian financial crisis.



Source: ThaiBMA

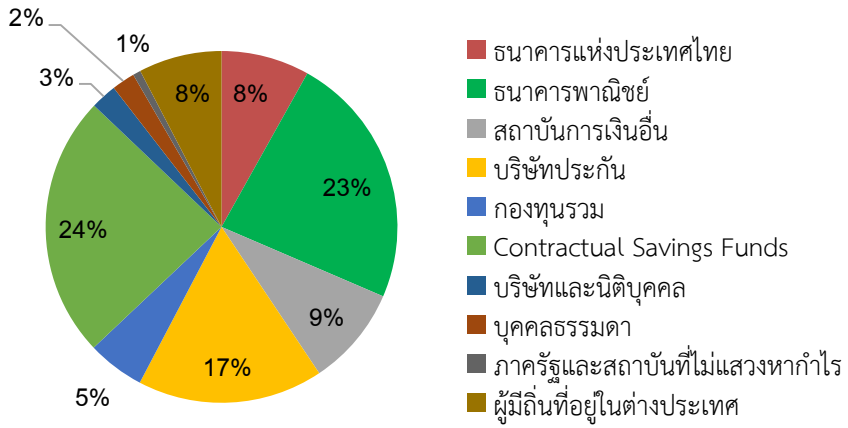
Now an important financing channel and investment destination for many agents in the economy.

Composition of Bond Issuers



Source: ThaiBMA (2016 data)

Composition of Bond Holders



Source: Bank of Thailand (2016 data)

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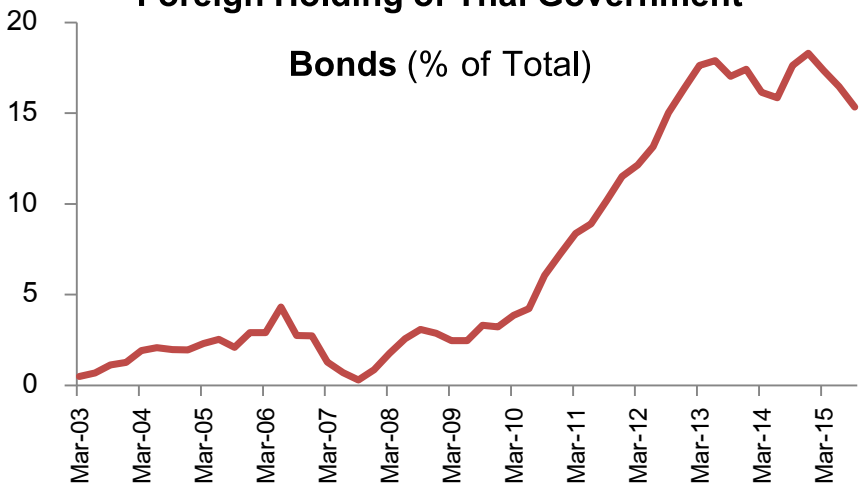
Background - Overview of the Thai Bond Market

- **Foreign presence in EME bond markets originally not a usual phenomenon**

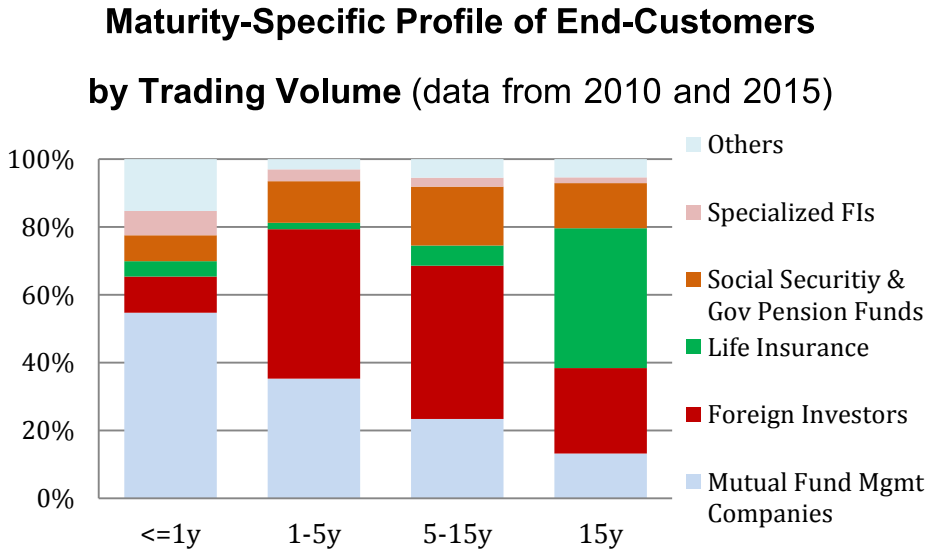
  "Original sin" hypothesis: EMEs lacked the capacity to borrow long term in local currency

  (Eichengreen, Hausnmann and Panizza, 1999 and 2002)

- **A combination of structural and cyclical factors have meant that this is no longer the case…**



Source: Bank of Thailand



Source: Author's calculation based on ThaiBMA's data

Background – Implications of Foreign Presence

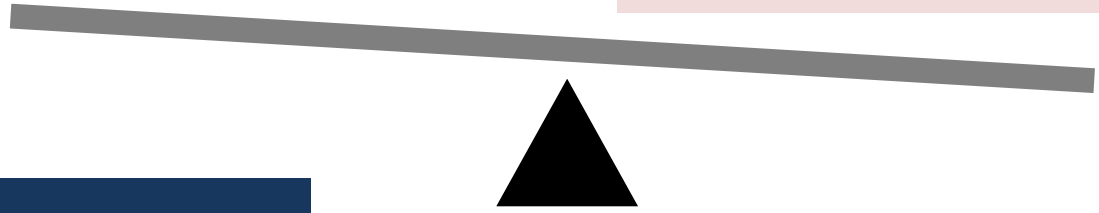
Costs and benefits of foreign participation

Opportunities

- **Ability to borrow externally** in local currency, at reasonably domestically determined rates
- **Market liquidity** as local investors tend to be buy-and-hold
- **Heterogenity of views / Price discovery**

Challenges

- **Transmission of global shocks** into domestic markets, with **implications for monetary and financial stability**.



Key Questions

1. Do foreign flows into the Thai government bond market exert significant influence over Thai bond yields?
2. What is the underlying market friction behind the observed foreign influence?

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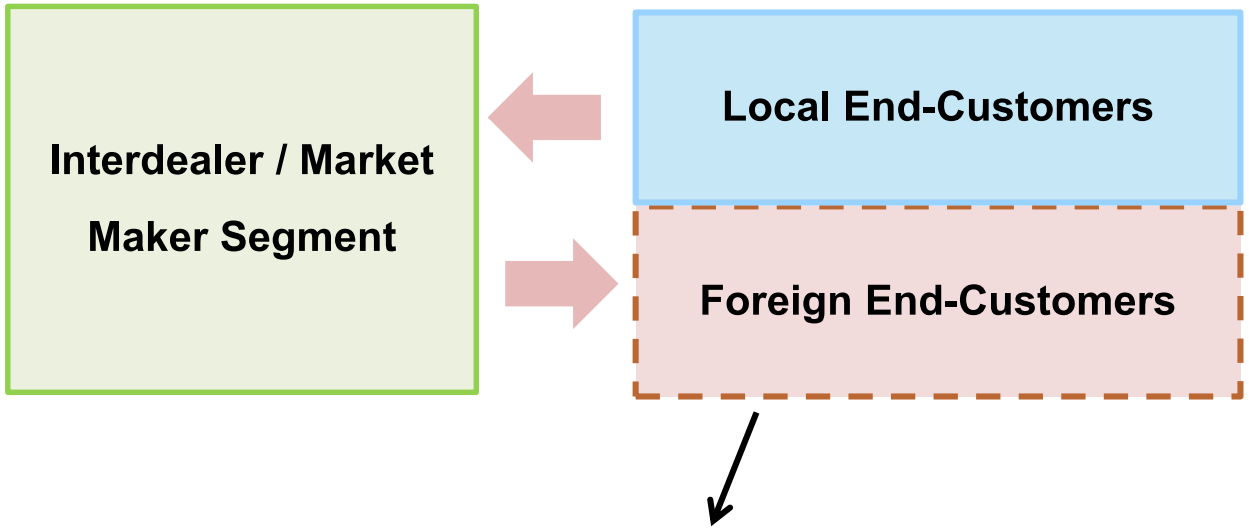
Defining Foreign "Order Flows"

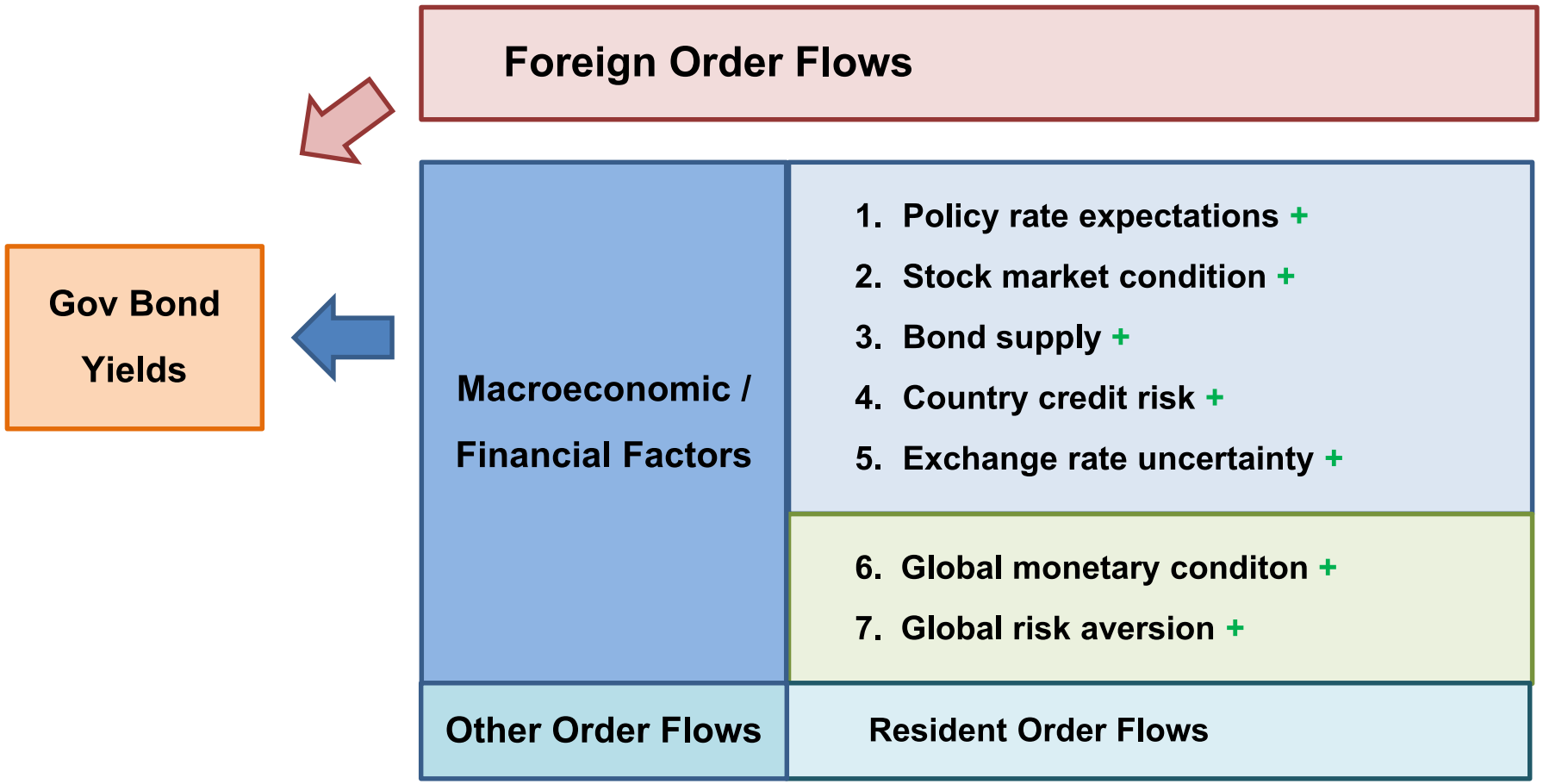


Foreign "Order Flows" = Buy Volume – Sell Volume of Foreign Investors from/to Market Makers

(i.e. net buying pressure from foreign investors)

1. Impact of Foreign Flows on Bond Yields

Empirical methodology: regression framework, estimated for four separate tenors of Thai gov bond yield: short-term (6M), medium-term (3Y), long-term (10Y), and very long-term (15Y)



Stationarity ✓ Multicollinearity ✓ Timing Differences ✓ HAC ✓

1. Impact of Foreign Flows on Bond Yields

Daily data during post-crisis period (Jan 2010 – July 2015 / 1344 observations)

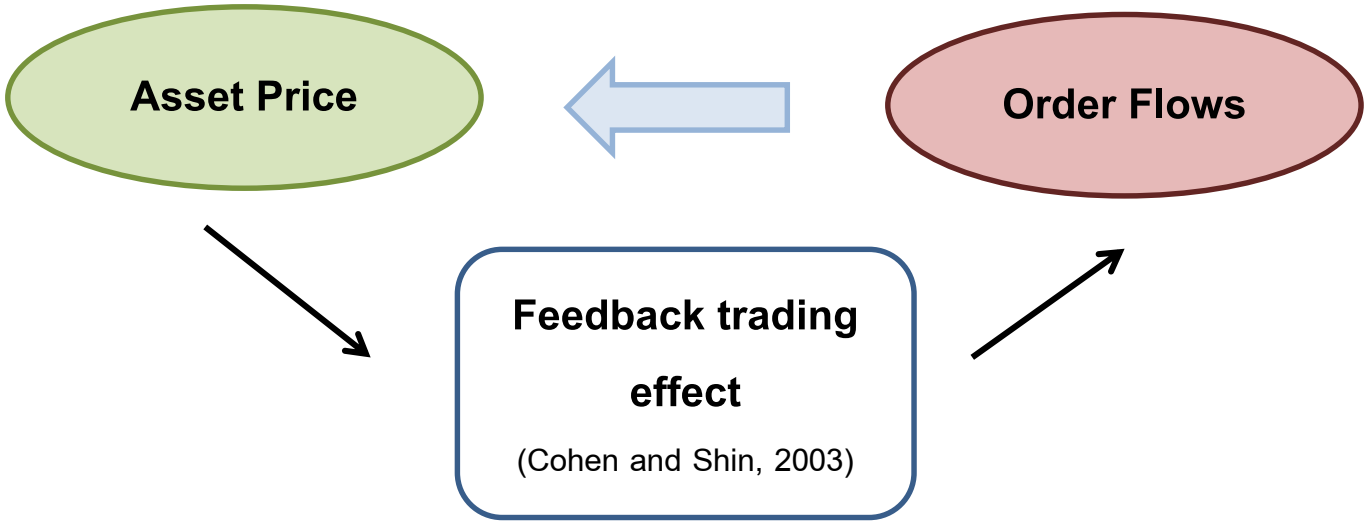
Macroeconomic / Financial Factors	1. Policy rate expectations +	1. imp forward rate
	2. Stock market condition +	2. SET index
	3. Bond supply +	3. amount outstanding*
	4. Country credit risk +	4. 5-year CDS spread
	5. Exchange rate uncertainty +	5. implied FX vol
	6. Global monetary conditon +	6. UST yield
	7. Global risk aversion +	7. VIX
Customer Order Flows	1. Resident players -	Net purchase data from ThaiBMA*
	2. Foreign players -	

* Given that 4 separate segment-specific regressions are estimated, the bond supply, UST yield, and net-purchase variables are also made segment-specific, corresponding to the tenor of yield in each specification.

1. Impact of Foreign Flows on Bond Yields

Empirical methodology (cont.):

Potential Endogeneity: IV framework is employed, with lagged value of order flow used as the IV.



1. Impact of Foreign Flows on Bond Yields

Key Results

- **Foreign flows are significant drivers of the medium and long-segments of the Thai yield curve.**
- **Domestic factors, especially pol rate expectation, play a key role in determining the short-term segment of the yield curve, while global and risk factors become more prominent at longer-end.**

Variable \ Tenor	6M	3Y	10Y	15Y
Δ Policy Rate Expectation (bps.)	**0.8121*** **	**0.6846*** **	**0.5746*** **	**0.4201*** **
Δ SET Index (%)	0.0281	0.0790	-0.0519	-0.0486
Δ Bond Supply (%)	**0.0292***	-0.0022	-0.1245	0.0410
Δ CDS (bps.)	0.0035	-0.0057	0.0253	**0.0397** **
Δ Implied FX Volatility (%)	0.0035	**0.0242***	**0.0263***	**0.0266** **
Δ UST Yield (bps.)	-0.0520	**0.1189*** **	**0.1443*** **	**0.1335*** **
Δ VIX (%)	-0.0023	-0.0003	**0.0308***	**0.0250** **
Foreign Flows (mil baht)	6.87E-06	**-0.0010***	**-0.0014*** **	-0.0002
Resident Flows (mil baht)	-2.71E-07	-0.0004	0.0005	0.0002*
Weak instrument rejected at % level.	15%	15%	25%	N/A

***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

2. What is the underlying market friction behind the observed foreign influence?

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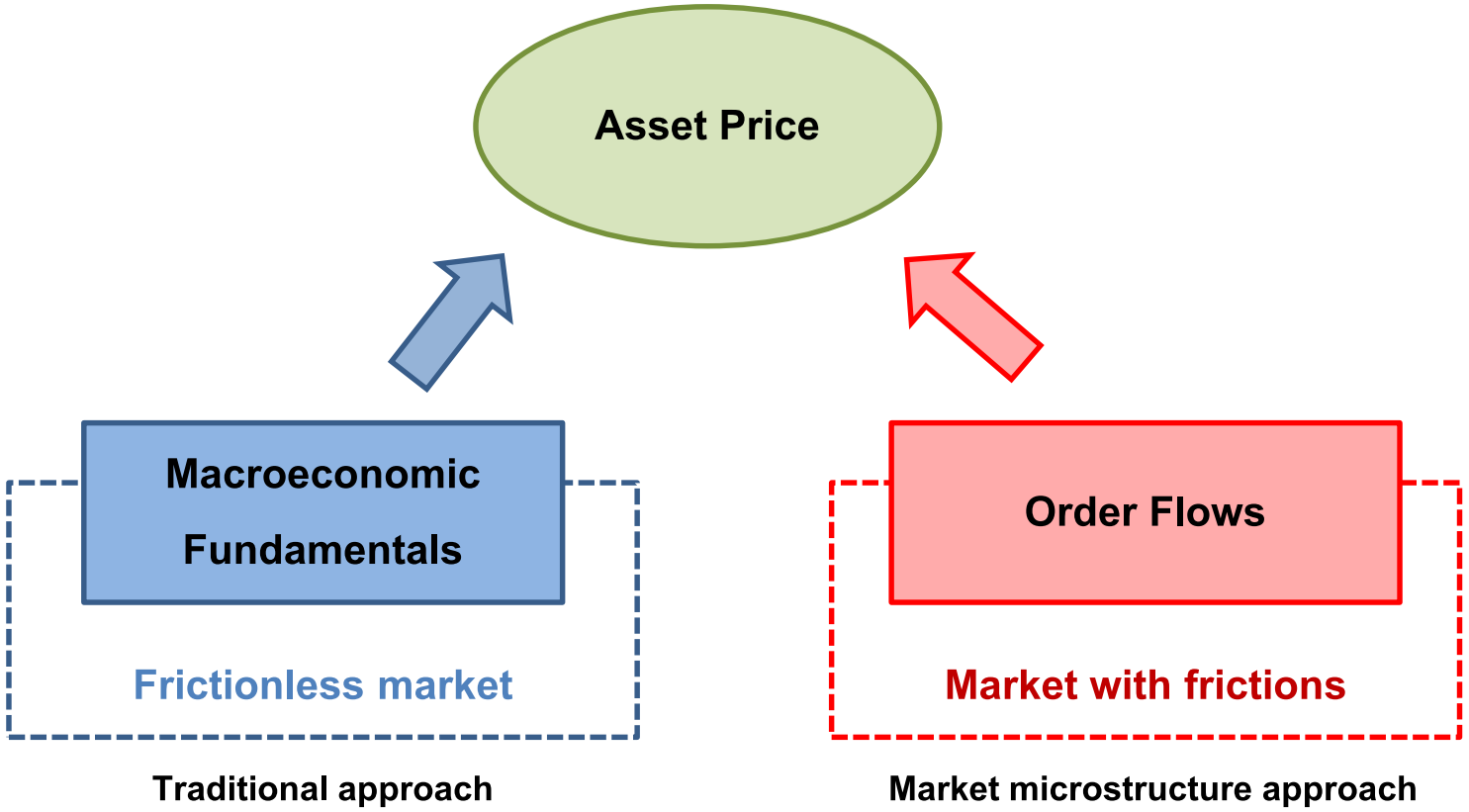
Fundamental and non-fundamental approaches towards asset price determination



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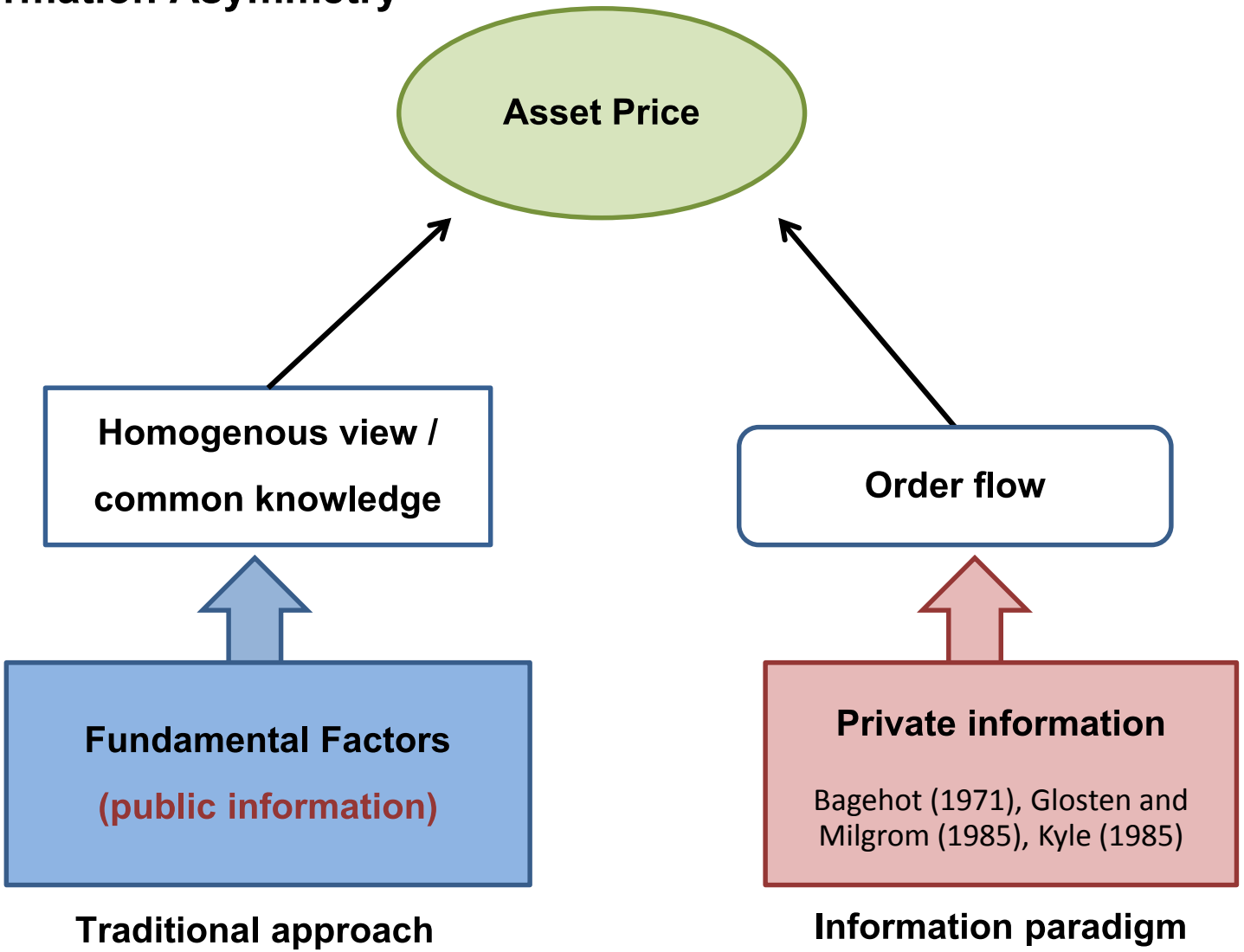
1. Information Asymmetry



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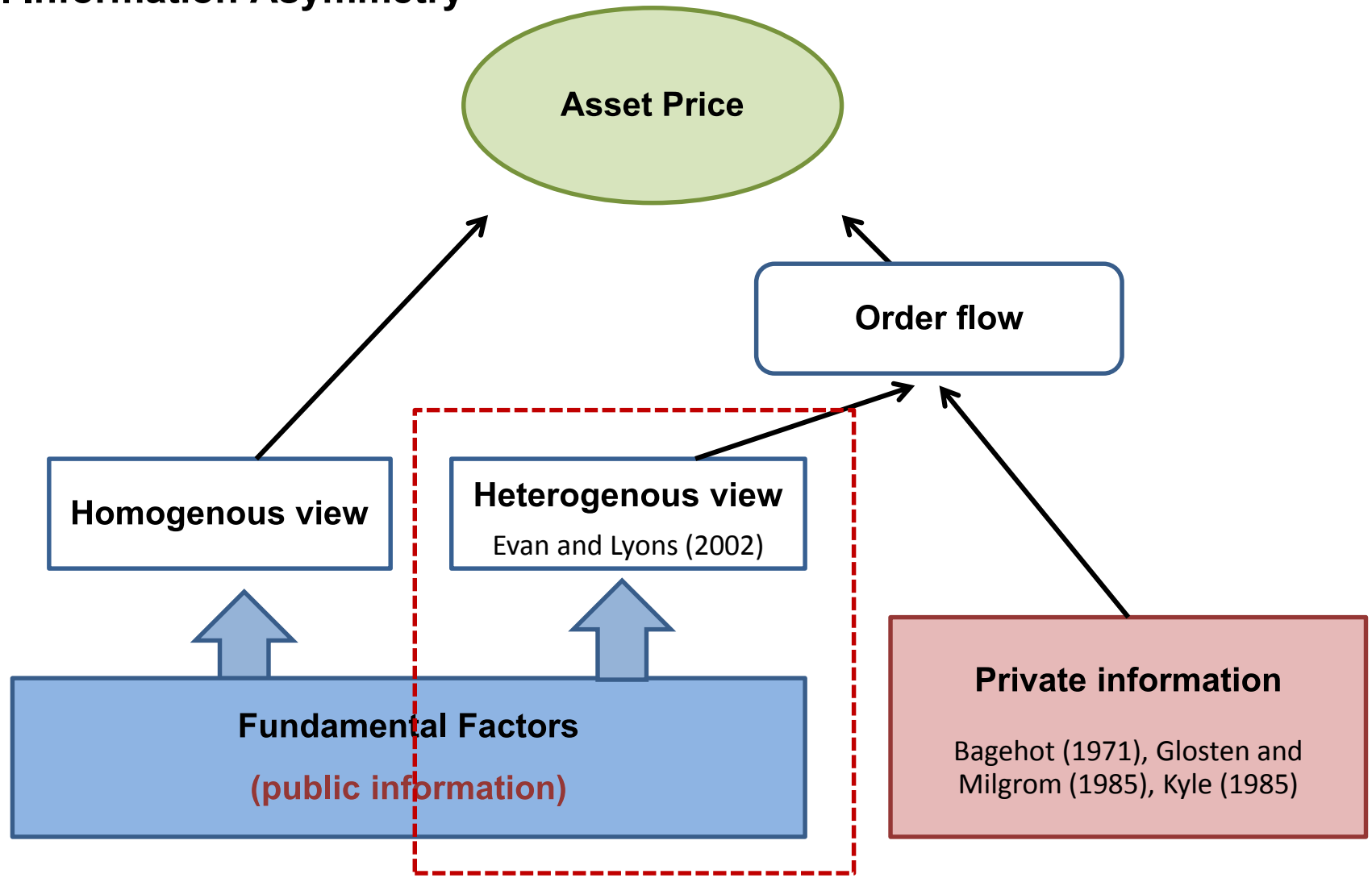

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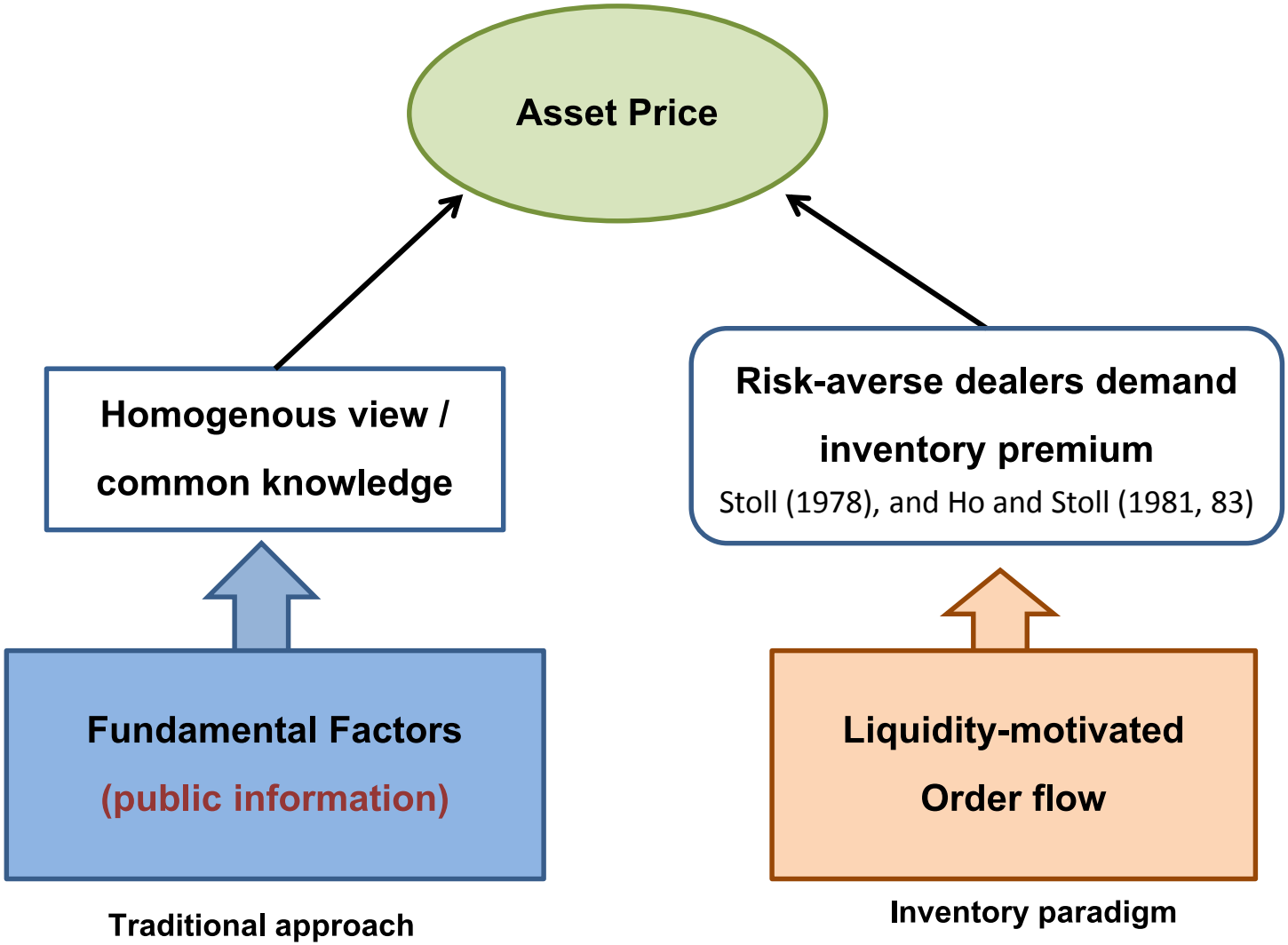
2. Aversion to Liquidity Risk



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Both paradigms appear to enjoy empirical support

Information channel:

- **FX market:** Evan and Lyons (2002)
- **Bond market:**
  - Brandz and Kavajecz (2004) and Green (2004) - aggregate order flow contains information relevant to explaining bond price movements.
  - Valseth (2010) - information content of order flow varies among different investor types

Liquidity channel

- Madhavan and Smidt (1993)
- Huang and Stoll (1997) – inventory effect particularly relevant for medium- and large-sized trades

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Information Superiority or Sheer Size?

Information friction

- Foreign players may be perceived as more informed.
- Source of "superior" information stems from **better analytical/technical ability** to analyse econ fundamentals.

Liquidity friction

- Unlikely at first glance; dealers should demand inventory premium ***regardless*** **of customer type**.
- But dealers' inventory risk concern could be **a function of customer order *size*.**

Policy Implications

- Foreign flows not as worrisome. Their influence perhaps a reflection of their **role in price discovery process**.

- Foreign flows worrisome as they could drag bond yields substantially **away from their fundamental levels**.
- Liquidity deepening policies could be beneficial.

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Distingishing between information superiority and sheer size….

Background

- **Many previous studies examinine the *duration* of effect of order flows** (e.g. Hasbrouck and Sofianos, 1993)
  - effect of order flows likely to be permanent only under information channel.
- **Not likely to hold in the context of EMs, where:**
  - price discovery mechanism is not likely to be as potent.
  - new class of models on "preferred habitat" (e.g Vayanos and Vila, 2009) also suggest order flows could have a long-lasting effect even under the liquidity paradigm.

What this paper does…

- **This paper comes up with two additional strategies**

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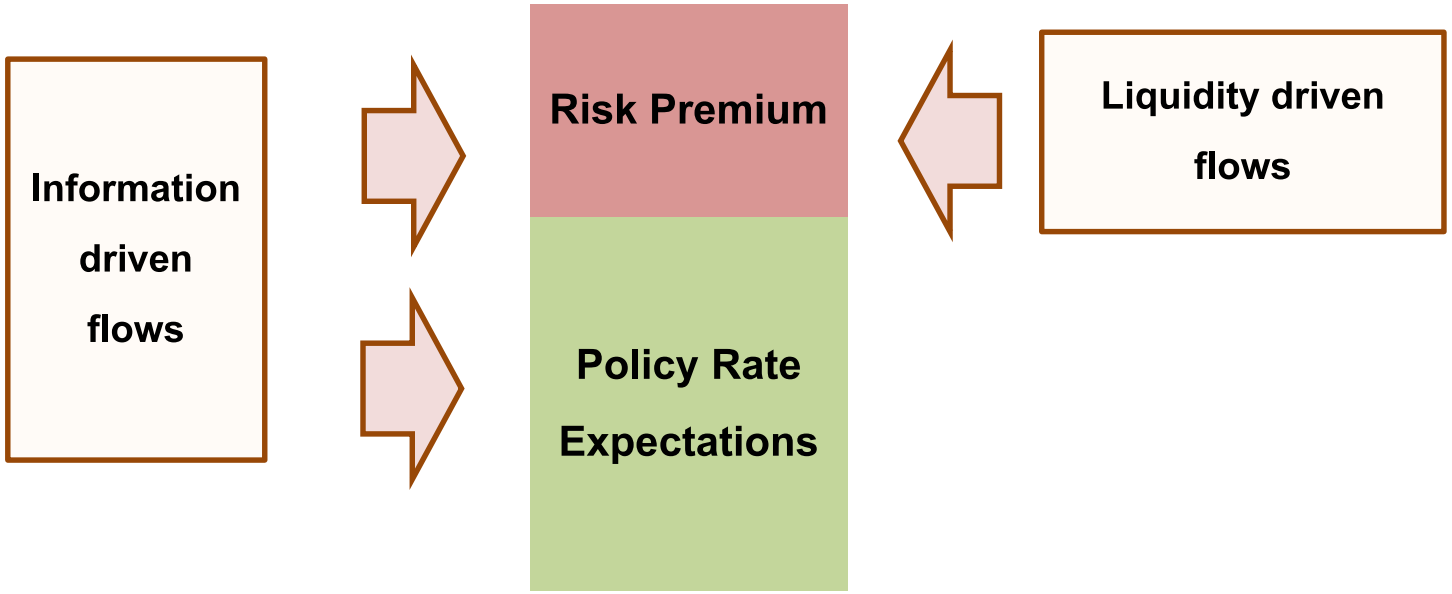
Identification strategy 1: yield decomposition

- under information paradigm, order flow can affect both the interest rate expectation component and the term premium component
- under inventory paradigm, order flow should only affect term premium



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Identification strategy 1: yield decomposition

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- under inventory paradigm, order flow should only affect term premium

Variable	Dependent Variable*	
	Medium-term (3-2 spread)	Long-term (10-2 spread)
NR Order Flow	-0.0003	-0.0010***

***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Control variables that are statistically significant in the baseline regressions are included but not reported to conserve space.

*As a rough measure of the risk premium component of the Thai 3-year and 10-year yields, a spread between these yields and 2-year yield is used.^

^ This measure would provide a reasonable approximation if one is to assume that the 3- and 10-year ahead expected policy rates do not differ too significantly from the 2-year one, such that the spread captures mainly the term-premium component of the 3- and 10-year yields.

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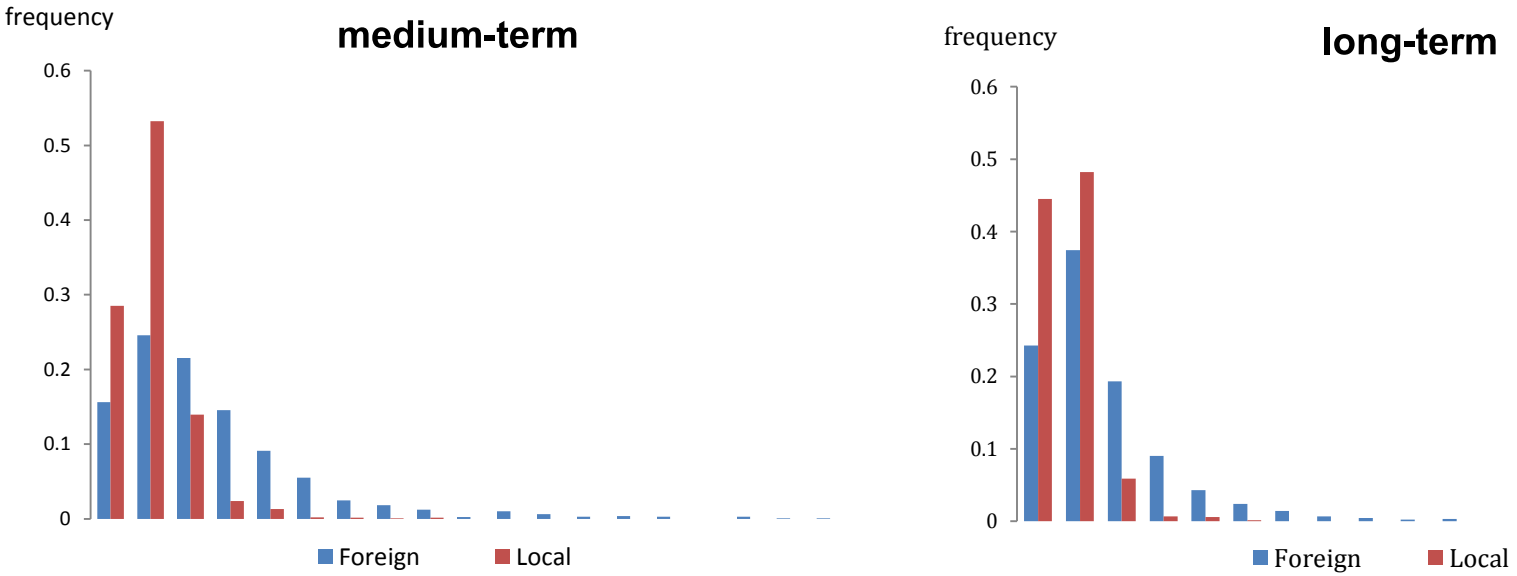
Identification strategy 2: homogeneity of trading size

- under liquidity paradigm, same-sized order flows of different customer types should not have differential effects on asset price.
- from baseline results, this is *not* the case. But this could be because of difference in trading size between foreign and local customers?

Distribution of Trading Size of Foreign and Local Players



Source: Author's calculation based on ThaiBMA's data (some extreme values are not included to allow for a clearer depiction of the distribution)

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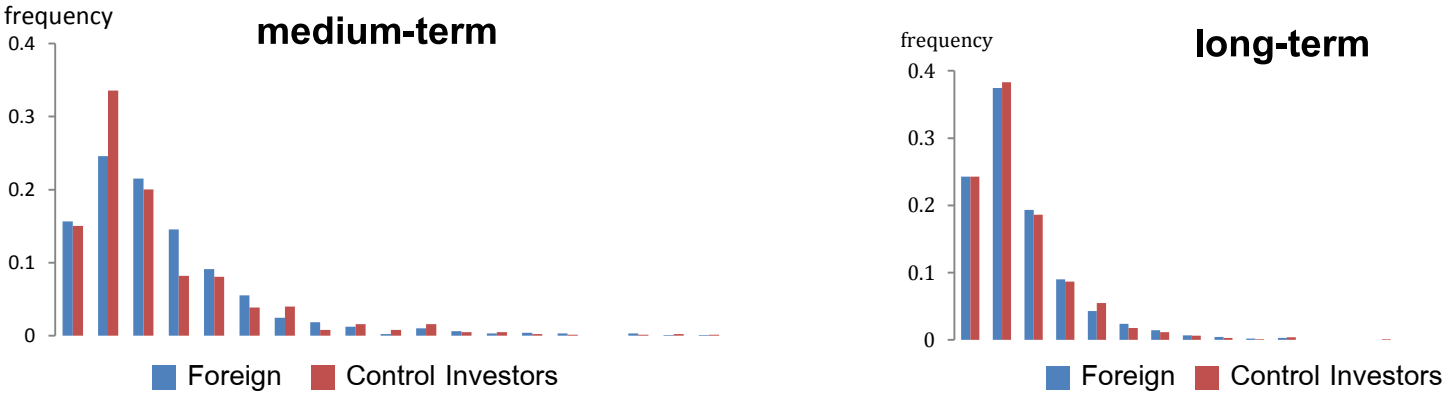
Identification strategy 2: homogeneity of trading size

Distribution of Trading Size of Foreign and *Control* Local Players



Variable	medium-term		long-term	
	With foreign	Without foreign	With foreign	Without foreign
NR Order Flow	-0.0007**		-0.0018***	
Control Investor Order Flow	0.0001	7.54E-05	-0.0009	0.0014

***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

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Identification strategy 2: homogeneity of trading size

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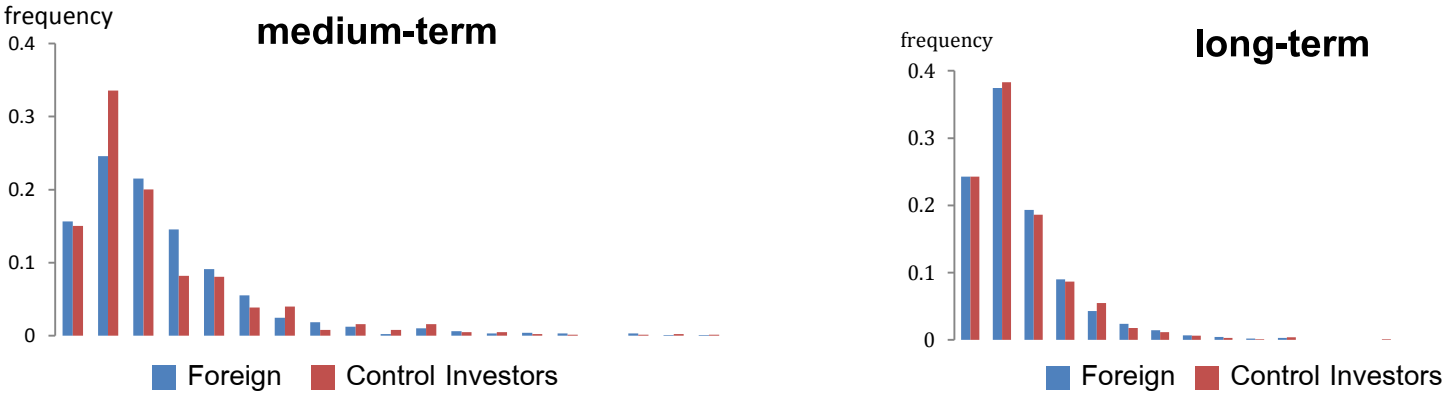

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Conclusions and Policy Implications

Key Questions

1. Do foreign flows into the Thai government bond market exert significant influence over Thai bond yields?
2. What is the underlying market friction behind the observed foreign influence?

Key Findings and Policy Implications

1. Foreign flows are indeed **significant drivers** of the medium- and long-term segments of the Thai yield curve.
2. Whether this should be viewed as a cause for concern, however, would **depend on the underlying market friction(s)**.
   - Foreign influence in our market may go **beyond pure liquidity effects**.
   - Foreign players may have a role to play in the price discovery process. Previously observed volatility could reflect volatility in fundamentals rather than volatility in foreign flows.