FOREIGN CURRENCY BORROWING OF CORPORATIONS AS CARRY TRADES: EVIDENCE FROM INDIA

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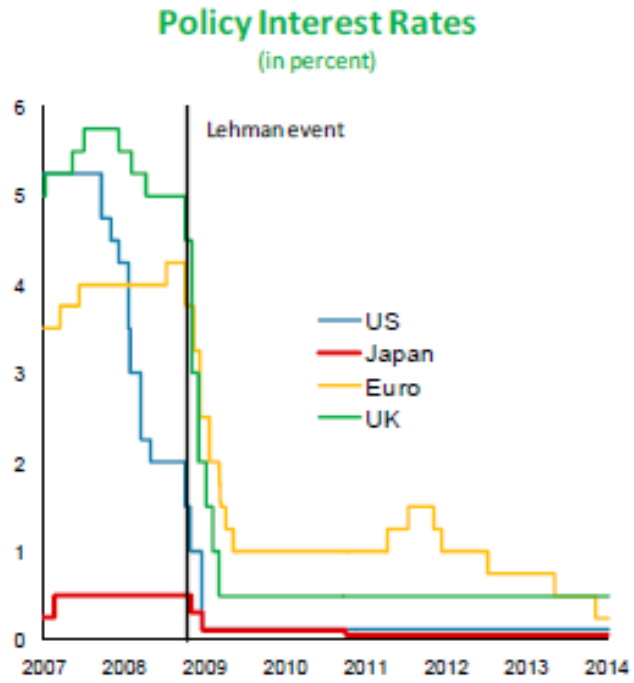
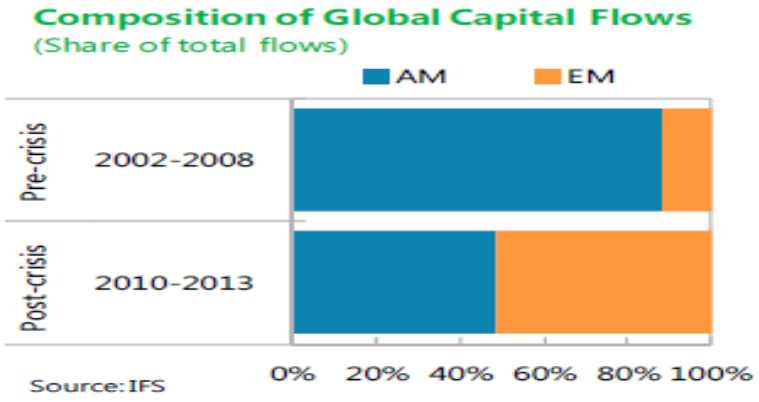
Monetary easing->EM capital flows

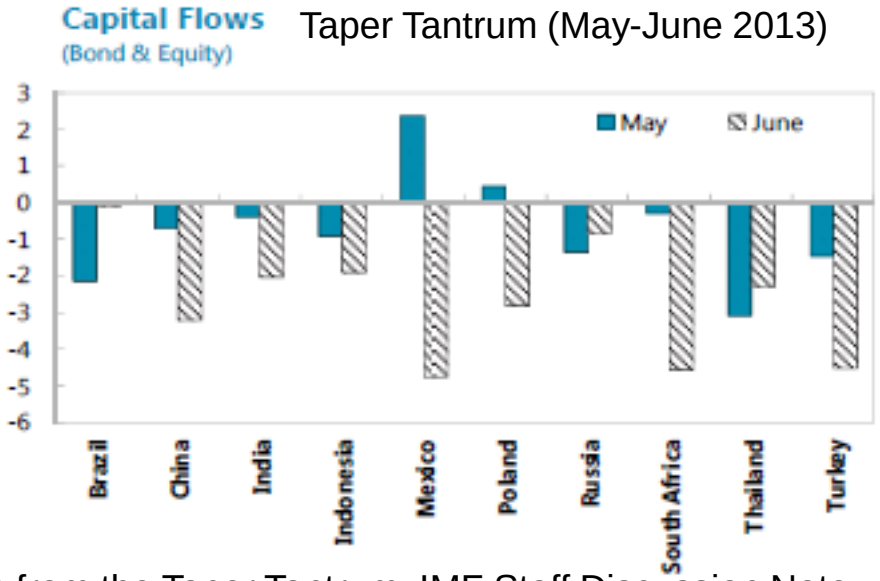
Rock-bottom interest rates...



Source: IMF staff estimates.

Emerging markets received close to half of global inflows after the crisis compared with less than 20 percent before...



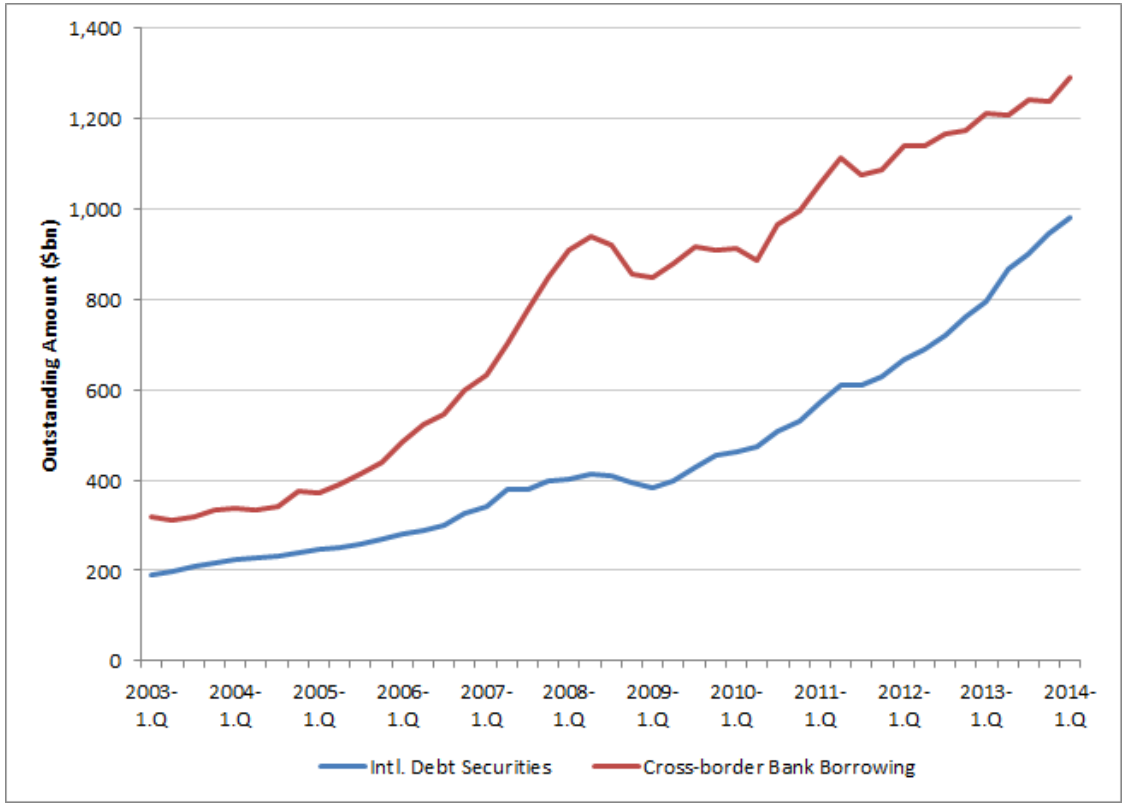


Taper Tantrum (May-June 2013)

Source: Emerging Market Volatility – Lessons from the Taper Tantrum, IMF Staff Discussion Note, Sahay et al, September 2014

EM Corporate Debt as Conduit

- EM non-financial corporate debt quadrupled between 2004 and 2014 (IMF GFSR, 2015)
- Increased reliance on foreign currency (mainly USD) debt



EME private foreign currency debt (Source: BIS)

Risks to the local economy

- Corporate currency mismatches
  - Balance sheet impairment due to large FX depreciations
  - Most relevant for firms with domestic revenues
  - Owing to volatile commodity prices, increasingly important for export-oriented firms as well

- Domestic financial sector
  - Spillover of credit risk from foreign to domestic borrowing
  - Dependence on corporate deposits funded by foreign borrowing (‘carry trade’)

This paper

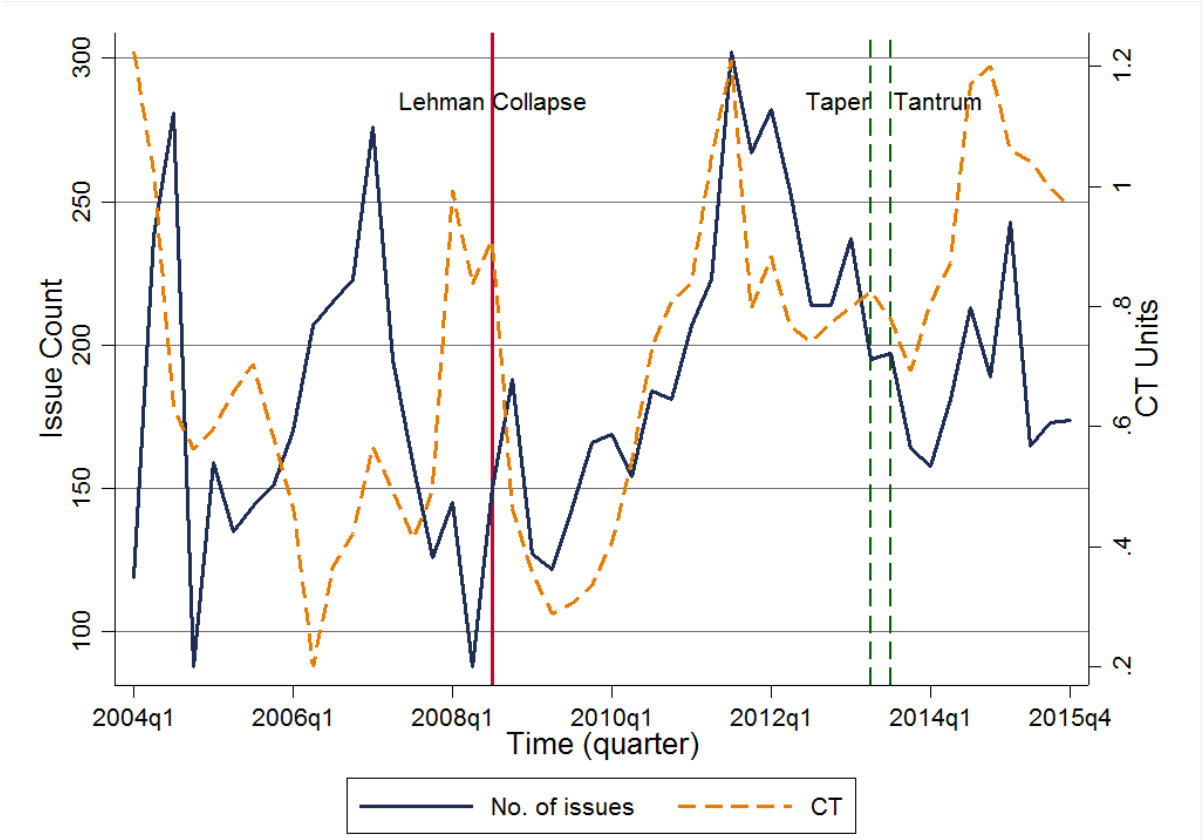
Questions:

- What has caused this surge in foreign currency borrowing by EME corporates?
- How do firms use these funds?
- What risks does this phenomenon pose?

We use detailed borrowing, accounting and market data from India to answer these questions

Preview of Findings

- Firm issuance propensity is higher when difference in short-term rates between India and the US are higher i.e. when the dollar `carry trade' is more profitable.
  - Driven by post-crisis period of unconventional monetary policy



Preview of Findings

- External Commercial Borrowing (ECB) is substitute for other funding sources though the substitutability is lower after the crisis
- ECB funds used more for investment but also held as cash, compared to other sources

- FX exposure rises post issuance suggesting borrowing risks not completely hedged
- During the `taper tantrum' episode of 2013, firms that issue when the carry trade is more profitable do worse
- Suggestive evidence of transmission to local banks with which borrowers have relationships

Relation to Literature

- `Carry trade' incentives for non-financial EME corporates
  - Bruno and Shin (2016), Caballero, Panizza and Powell (2016), Frank and Shen (2016)
- External Debt of EM Corporates: risks for local growth and financial stability from balance sheet impairment
  - Acharya et al (2015), Du and Schreger (2015), Chui, Fender and Sushko (2014)
- Centrality of dollar funding and US monetary policy
  - Bruno and Shin (2016), Rey(2013), Miranda-Agrippino and Rey (2014), McCauley et al (2015)
- Taper tantrum and emerging markets
  - Eichengreen and Gupta (2014), Sahay et al (2014), Feroli, Kashyap, Schoenholtz and Shin (2014)

Foreign Currency Borrowing - India

- Two modes of foreign currency borrowing: External Commercial Borrowings (ECB) and Trade Credit
- ECB issuance regulated by RBI; all issuances above $750mn require approval
- Restrictions on maturity, cost and use of funds
  - Maturity > 3 years
  - All-in-cost ceiling of 6m LIBOR+350 bps for maturity of 3-5 years and 6m LIBOR+500 bps for maturity>5 years
- Generally, use of funds for repaying rupee loans, investment in capital markets, real estate etc. are not permitted
- Guarantees from local lenders discouraged

Data

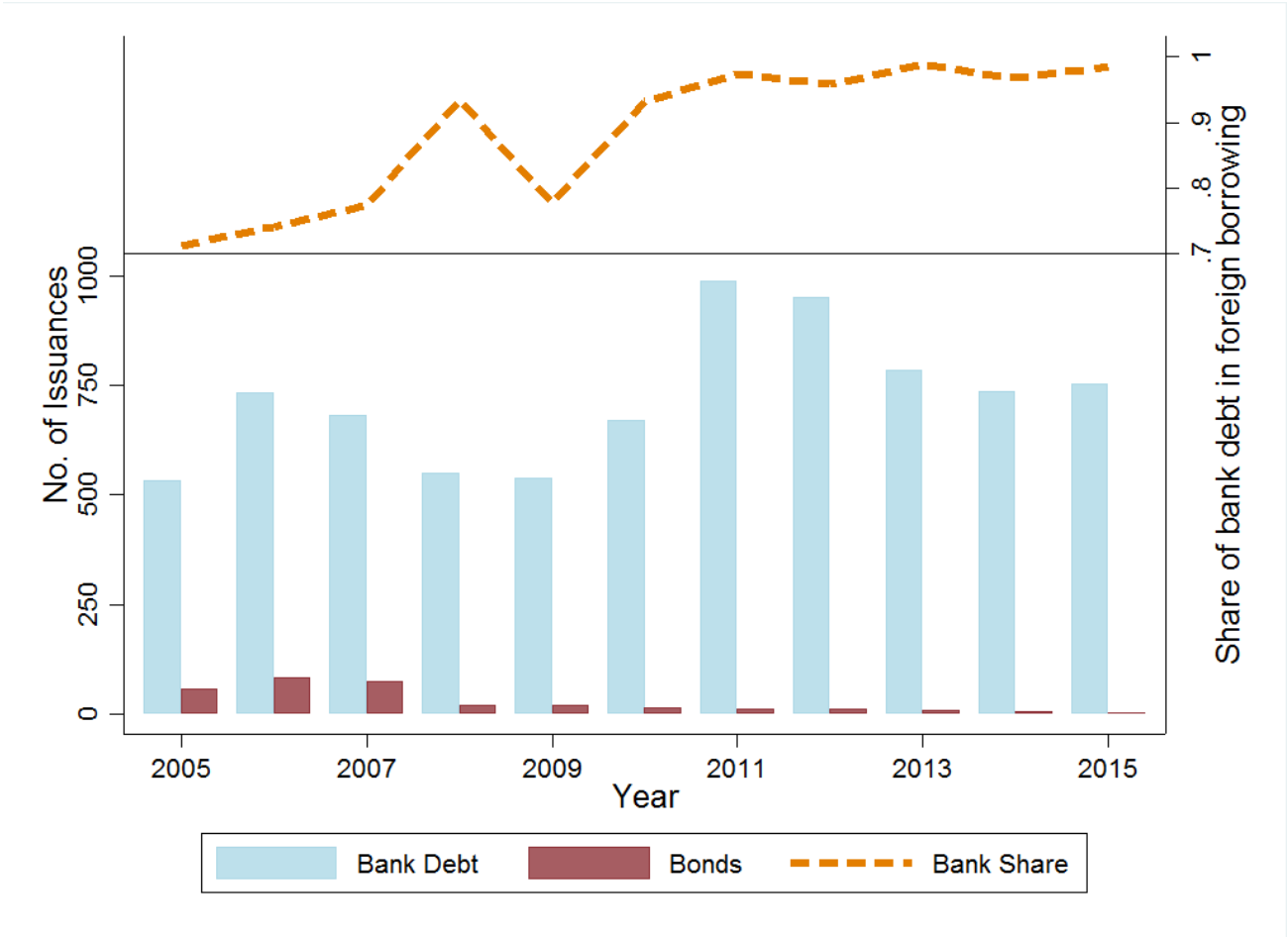
- **ECB Data:** Publicly available on RBI website; name of issuer, month of issue, amount, maturity, purpose etc.

- **Prowess:** Accounting and stock market data
  - Hand match issuers in RBI data to Prowess
  - 1403 firms matched; covers 81.2% of issued volume
  - This is our final sample (for tests involving stock market data, number of firms drops to 523)

- **Time period:** 2004-2015

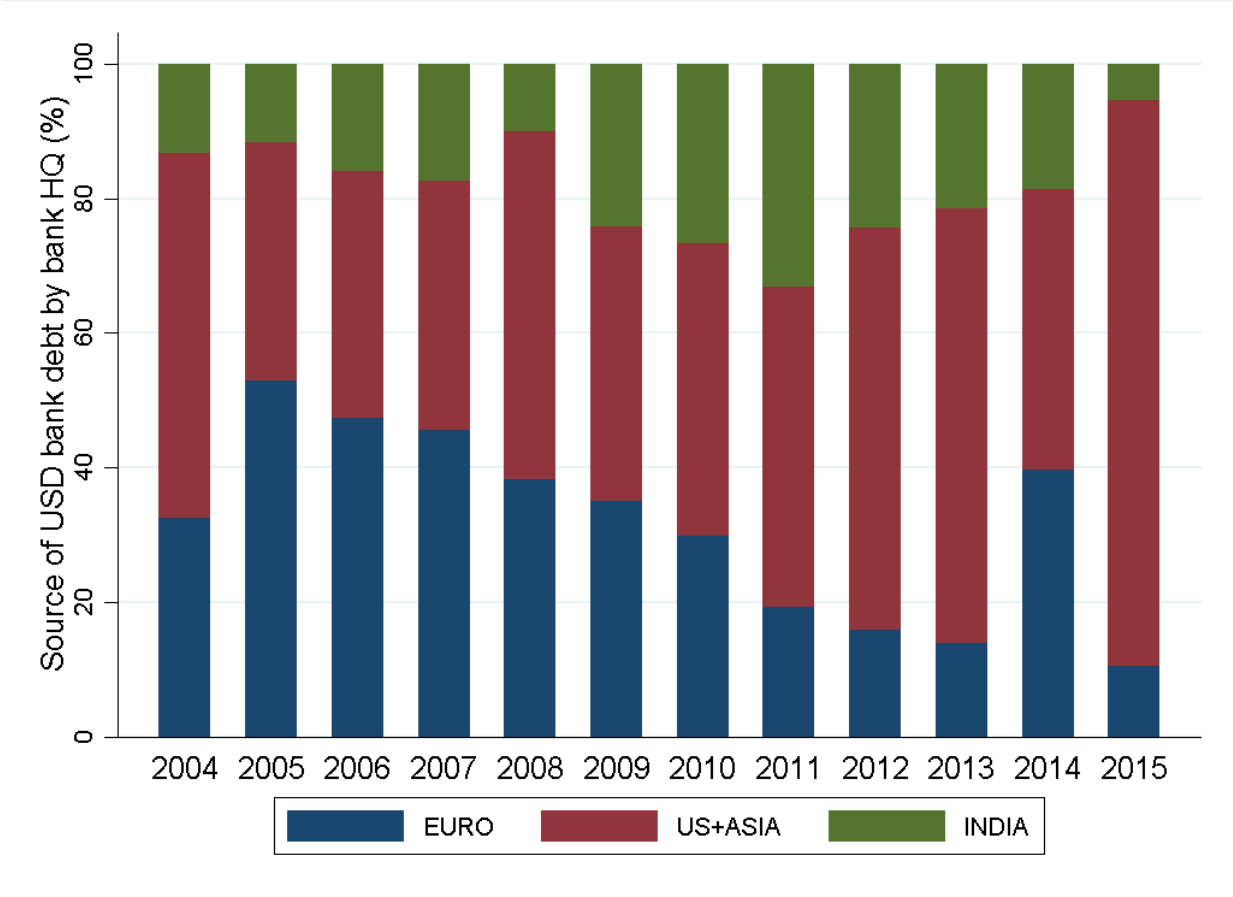
Lenders: Bank Debt dominates

- At least for Indian firms, cross-border bank debt remains the preferred vehicle; bond issuance relatively minor

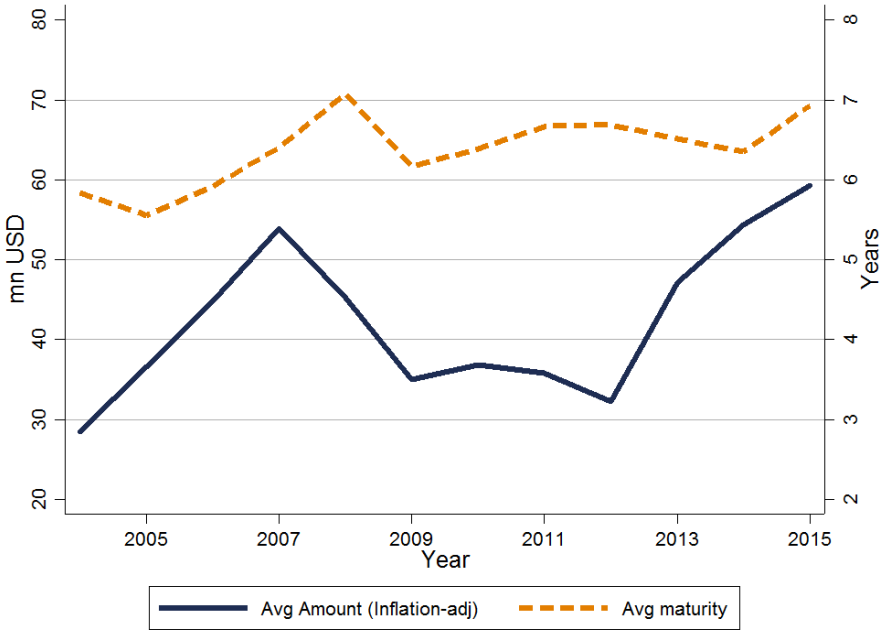


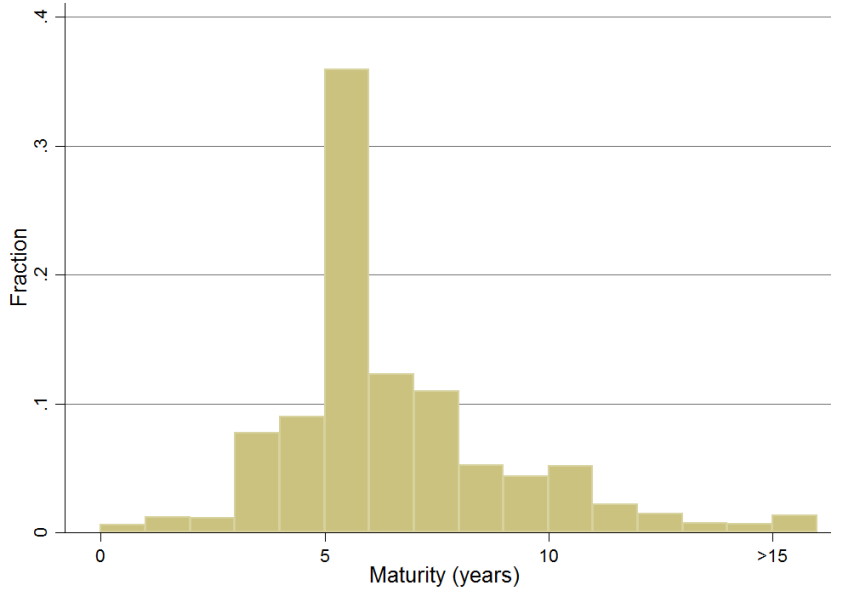
Which banks are lending?

- Credit from European banks has dropped off post crisis
- US and Asian banks now do bulk of dollar lending
- Foreign branches of Indian banks also active post crisis



Issue characteristics





(L) Average amount and maturity of ECB issuance (2004-2015) ; (R) Distribution of maturity of ECB Issuances

Carry Trade as Motivation to borrow

- Emerging market firms issue more dollar debt when the carry trade is favorable (Bruno and Shin, 2015)

- *Hypothesis: Indian firms issue more foreign currency debt when the carry trade is more profitable.*

- Estimate logit model at firm-month level to predict issuance

$$Issue_{it} = \alpha_i + \beta_{CT} CT_t + \beta_i r_{it} + \beta_M r_{M,t} + \beta_{FX} r_{FX,t} + \varepsilon_{it}$$

- Carry trade proxied by $CT = \frac{3M\ rate\ (IND) - 3M\ rate\ (US)}{IV\ of\ 3M\ FX\ options}$

Carry Trade Results

	Issue (0/1)			
CT	0.439***	0.172	0.448***	0.168
	(0.155)	(0.192)	(0.160)	(0.198)
CT*post-crisis		0.432**		0.454**
		(0.185)		(0.191)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes
Observations	92705	92705	85701	85701
PseudoR^2	0.037	0.037	0.097	0.097

- A one SD increase in the *CT* index would increase a firm's probability of issuing ECBs by 12.6%
- Effect driven by post-crisis period
- Low leverage, high liquidity and more profitable firms more likely to issue in high CT environment post crisis
- Firm proxies of investment opportunities don't explain issuance

Use of ECB funds

- Both cash and investment are more sensitive to a dollar of foreign currency debt compared to other (domestic) sources.

- Substitutability between ECB funding and other sources is not large (5% reduction in ECB amount raised for 20% positive shock to other sources).
  - Magnitude is halved post crisis. Firms seem to be taking advantage of favourable funding conditions in global markets

Taper Tantrum: Event Study Analysis

- Taper tantrum episode of Summer 2013 was a shock to expectations about duration of QE in US
- Led to surge of foreign capital outflows from EMEs, and sharp decline in asset prices (Sahay et al, 2014)
- Use episode to test if monetary policy spillovers are manifesting through foreign currency borrowing channel
- We look at abnormal returns for foreign currency borrowers around 3 key dates related to the taper
  1. May 22, 2013: Bernanke statement to Congress (Tapering ⇧)
  2. June 19, 2013: Bernanke press conference (Tapering ⇧)
  3. September 18, 2013: Post-FOMC meeting, announcement of delay to tapering (Tapering ⇩)

Taper Tantrum: Event Study Results

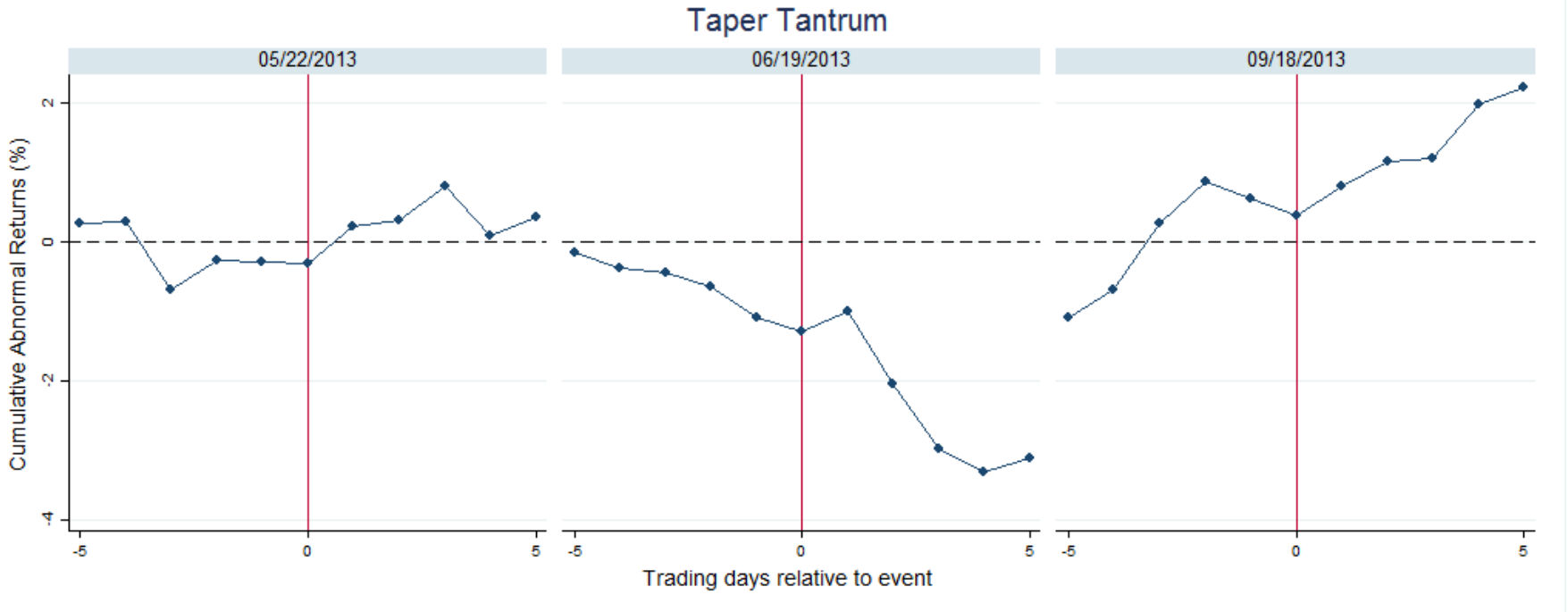


Figure: CAR of high CT issuer (top tercile) relative to low FX CT issuer (bottom tercile)

- Firms that tend to issue when CT is had higher negative returns when taper probability went up (even after controlling for FX exposure)
- Evidence of MP spillovers through FX borrowing channel

Risks to the local economy

- Regulators concerned that firms leave their FX exposure through borrowing unhedged (Indian MoF, 2015)
  - Illiquid onshore derivatives market is a potential reason
  - Another is an imagined implicit guarantee that the RBI will let the currency move in a narrow band only

- We measure firm exposure to FX risk (FX β) through market model. Market prices reflect risk better than accounting measures

$$r_{it} = \alpha + \beta_M r_{Mt} + \beta_{FX} r_{FX,t} + \varepsilon_{it}$$

Risks to the local economy

- Do firms leave their FX exposure arising out of foreign currency borrowing unhedged?
- We estimate the following model:

$$FXbeta_{it} = \alpha + \beta_1 Issue_{i,t-1} + \nu_t + \eta_i + \varepsilon_{it}$$

	β (forward looking)			
	FX		NIFTY	
Issue	0.058**	0.033	0.021	-0.015
	(0.027)	(0.026)	(0.018)	(0.011)
Time FE	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	Yes
R^2	0.137	0.173	0.164	0.384
Obs.	60,685	60,685	60,685	60,685

- FX β rises post issuance implying risk is not fully hedged

Risks to the local economy – Domestic Banks

- The domestic banking system might be susceptible through both asset and liability side exposures to risks from ECB borrowing.
  - Banks might have come to rely on wholesale deposits for funding
  - Firm losses on their foreign liabilities would reduce their creditworthiness, and push the more highly levered firms towards defaulting on their domestic obligations

- Does bank exposure to FX risk increase as FX exposure of related firms increases?
  - We use relationship data in Prowess to relate bank FX β to that of related firms as per following model:

$$BankFXbeta_{jt} = \alpha_j + \gamma_1 WtdFirmFXbeta_{jt} + \nu_t + \varepsilon_{jt}$$

Risks to the local economy – Domestic Banks

- Does bank exposure to FX risk increase as FX exposure of related firms increases? Yes!

	Bank β (forward looking)			
	FX		NIFTY	
Wtd Firm FX Beta	0.049***	0.036***	0.009***	0.008***
	(0.007)	(0.007)	(0.002)	(0.001)
Wtd Firm Nifty Beta	-0.106***	-0.158***	0.116***	0.020***
	(0.012)	(0.014)	(0.005)	(0.004)
Time FE	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes
R^2	0.354	0.380	0.366	0.555
Obs.	71,446	71,446	71,446	71,446

- Suggestive evidence that risks from global banks are transmitted to local banks through the non-financial corporate sector

Policy Implications

- Regulators need to be aware of risks coming through the external borrowing of domestic corporates
- Market-based measures like FX β can serve as a useful metric to identify firms needing oversight
- Take into account risks to the domestic banking sector
  - Increase risk weights on assets associated with firms with high foreign exchange risk?

Conclusion

- Macro factors (`carry trade') explain rise in foreign currency borrowing by Indian firms more than standard firm-level characteristics
- For Indian firms, global banks remain the dominant source of dollar funding
- Firms do not completely hedge their exposure, and are susceptible to adverse movements in foreign exchange rates
- The unwinding of accommodative monetary policy in the developed world could put stress on firm balance sheets
- Risks might spill over to the domestic banking system