

Discussion of
FX Hedging and Creditor Rights
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What is This Paper About?

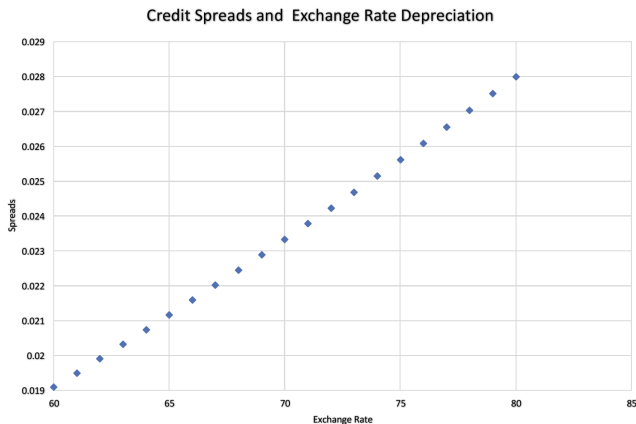
- Why do firms leave their foreign currency debt unhedged?
 - Specifically, how important are the legal rights of creditors in a firm's decision to hedge?
 - Do firms in countries with less developed FX derivative markets hedge less? Do firms with higher export to sales ratio hedge less?
- Theory suggests that not hedging FX debt:
 - avoids a wealth transfer from shareholders to creditors,
 - but also increases default risk.
- When creditor rights (CR) are strong, agency conflicts are smaller and the benefits of hedging exceed the costs.
- **Key hypothesis:** Borrowers are more likely to hedge when creditor rights are strong.

The Paper

- Addresses important questions. These are questions of significant policy implications.
 - An understanding of why firms hedge or do not hedge foreign currency risks is important for both academics and regulators.
- Identifies another channel through which creditors' rights affect debt contracting. By affecting incentives to hedge, legal rights of creditors affect the pricing and structure of debt contracts.
- Contributes to the literature on why firms hedge. Provides new results on the importance of FX derivative markets, natural hedges and growth opportunities on incentives to hedge FX risks.
- Provides a link between bankruptcy law, incentive conflicts between different claimants and hedging decisions of firms.

Model Predictions: Exchange Rate Risk and Credit Spreads

- *Proposition 1:* Exchange rate depreciation of local currency increases the probability of default and results in higher credit spreads.



Estimated FX Exposures: Country-Level Evidence

$$cs_t^i = \alpha_0 + \alpha_1 ss_t^i + \alpha_2 \Delta e_t^i + \epsilon_t^i$$

	USD α_2 coeff.	R^2	Current account balance % of GDP
Australia	-0.64***	0.78	-3.37
China	40.13***	0.77	2.08
Hong Kong	33.71***	0.85	2.71
Indonesia	43.49***	0.63	-2.52
India	-4.14***	0.48	-1.41
Japan	2.74***	0.34	2.12
Korea	-2.01***	0.86	6.72
Malaysia	2.36***	0.72	3.31
Philippines	-10.27***	0.59	2.65
Singapore	-5.53***	0.44	18.45
Thailand	4.48***	0.43	5.55
Argentina	-10.83***	0.63	-2.28
Brazil	-4.79***	0.91	-2.93
Chile	-2.43***	0.75	-2.31
Colombia	-5.09***	0.47	-4.80
Mexico	1.01***	0.72	-2.18
Peru	-2.06***	0.77	-4.16
Czech Republic	1.38***	0.16	0.25
Hungary	-1.11***	0.91	3.55
Poland	-1.50***	0.78	-1.13
Russia	-0.16	0.86	2.77
Turkey	0.73***	0.61	-4.72
South Africa	2.90***	0.09	-4.73
Croatia	1.58***	0.09	2.60
Israel	0.17	0.59	3.89
Saudi Arabia	-39.13**	0.35	3.64
Dominican Republic	-26.78***	0.05	-2.72
Egypt	17.97***	0.13	-3.71
Ghana	41.62***	0.65	-8.91
Guatemala	-17.61***	0.68	-1.02
Jamaica	-7.14***	0.21	-5.59
Kazakhstan	-3.11***	0.75	-1.47
Ukraine	-35.98***	0.57	-4.25

Understanding FX Exposures

- How do we understand positive α_2 coefficients?
 - They imply that local currency depreciation improves credit quality and consequently lowers spread.
- The FX exposures don't seem to be systematically correlated with current account balance as % of GDP.
- Specification issues:
 - Missing covariates(?): Perhaps we need to augment the specification to include foreign debt-to-GDP ratio and export-to-sales ratio.
 - Identification: Reverse causality or omitted factors could bias the estimated coefficients.
 - Unclear if gold prices and lagged exchange rates are very good instruments for current exchange rates.

Effect of Taper Tantrum

Table 5: Estimated FX exposure during Taper Tantrum (USD 365-day)

	(1)	(2)	(3)
	TT	FX exposure	FX exposure
	dummy	with TT	without TT
	coeff.	coeff.	coeff.
Australia	-30.10***	-0.69***	-0.64***
China	-285.91***	41.33***	40.13***
Dominican Republic	-207.86***	-44.10***	-26.78***
Egypt	-311.26***	17.66***	17.97***
India	-125.99***	-4.10***	-4.14***
Indonesia	-634.38***	42.63***	43.49***
Israel	-54.46***	0.35***	0.17
Korea	-27.69***	-2.00***	-2.01***
Mexico	-99.46***	1.30***	1.01***
Thailand	-114.54***	4.52***	4.48***

Note: */**/** indicate the significance at 10%, 5% and 1% level. The Taper Tantrum dummy has a value of 1 during the period of 22 May 2013 to 17 September 2013 in the underlying specification in the 2SLS equation: $cs_t^i = \alpha_0 + \alpha_1 * ss_t^i + \alpha_2 * \Delta e_t^i + \alpha_3 * dummy_t + \varepsilon_t^i$. The other explanatory variables are the same as in Table 2. The coefficients from this estimation are reported in column (1) and (2). Column (3) reports the FX exposure coefficient from Table 2 (ie. the same specification without including the dummy variable).

FX Exposures During Taper Tantrum

- Taper tantrum resulted in outflows of capital from emerging markets. Local currencies weakened. Spreads should increase.
- However, spreads declined since the coefficient on taper tantrum dummy is negative.
 - Did the policy response kick in?
- Do countries with the biggest current account deficit show the largest increase in corporate spreads around taper tantrum? Interaction between taper tantrum dummy and currency account to GDP ratio.
- What was the corporate spread response to exchange rate changes during the taper tantrum period relative to other periods? Interaction between taper tantrum dummy and exchange rate changes.

Model Prediction: Creditor Rights and FX Exposures

- *Proposition 2:* Strong CR should result in more hedging (and less FX exposure). Thin FX hedging markets should result in less hedging (and greater FX exposures).

Table 6: Determinants of FX exposure

	USD 365-day	USD 180-day
	$\hat{\alpha}_2$	$\hat{\alpha}_2$
	coeff.	coeff.
Degree of openness	0.07*	0.09
Bid-ask in FX market ('000 units)	2.55***	1.51
Current account balance	-0.50	-0.46
Creditors' rights	-1.66**	-1.97**
Constant	11.79*	16.41*
Adjusted R2	0.17	-0.02

Note: */**/** indicate the significance at 10%, 5% and 1% level. The dependant variables are the absolute values of the α_2 coefficients obtained from the first stage regression using 365-day rolling exchange rate returns. The specification is: $\alpha_{2,i} = \beta_0 + \beta_1 cr_i + \beta_2 z_i + \gamma_i$, where cr_i is creditors' rights measured by the strength of creditors' legal right taken from the World Bank's "Doing Business" reports. The index measures the extent to which the creditors' and lenders' rights are protected by national collateral and bankruptcy laws; a higher score indicating a greater degree of protection of creditors.

Creditor Rights, Thin FX Hedging Markets, and FX Exposure

- Control for GDP growth.
- Countries that are more developed will have strong creditor rights, more active FX hedging markets, and smaller FX exposure (because of greater amount of hedging).

New Bankruptcy Law and Hedging Incentives: RBI Data

- This is a neat experiment. And the data is unique.
 - In May 2016, Insolvency and Bankruptcy Code came into effect. The new law strengthened creditors' rights.
 - Examines the incentives to hedge foreign currency borrowings before and after the enactment of the new bankruptcy law?

Table 9: Summary statistics

	With hedging intention				Without hedging intention			
	Mean	SD	Median	Obs	Mean	SD	Median	Obs
	In billions of Indian Rupee							
Total debt	83.8	184.5	6.2	769	80.2	171.0	6.6	1725
Total fx debt	20.6	38.9	3.0	235	24.0	38.2	4.9	677
Total assets	127.8	249.0	14.6	772	123.0	229.0	13.7	1731
Sales	64.1	142.0	10.2	680	65.6	136.8	10.6	1515
Export earnings	10.0	22.6	0.9	548	10.9	21.4	1.5	1179
Total income	65.8	137.6	11.8	748	64.7	133.2	10.6	1670
Total imports	17.6	45.9	1.3	606	18.0	45.2	1.7	1306
R and D expenses	0.6	1.2	0.1	323	0.4	0.9	0.1	571
Profit after tax	4.9	10.9	0.5	763	3.9	9.3	0.3	1711
Market Capitalisation	205.8	384.3	28.1	413	160.2	270.9	33.0	787
Yield (%)	1.62	1.33	1.15	413	1.45	1.33	1.04	787
Enterprise value	330.3	587.3	40.9	413	249.2	415.8	53.2	787

What Else Would be Useful?

- What are the different currencies in which Indian corporations issue foreign currency loans?
- Who are the lenders? What is the maturity of these loans? What are the spreads?
- How do spreads on loans with the intention to hedge differ from those with no intention to hedge. This would be a direct test of Proposition 3 of the model.
 - We need a counterfactual. What would the yield spreads be if the firm had done the opposite? Firms with intention to hedge are also riskier compared to firms without the intention to hedge.
 - How do firms compare on other measures of risk? Tangibility ratio? Volatility of cash flows? Volatility of stock returns? Leverage ratios? Distance-to-default? Z-scores?

Comments on the Identification Strategy

- Treatment versus Control Groups: Bankruptcy code strengthened rights of creditors and improved creditor recoveries. Are high FX debt ratio firms more affected by the provisions of the code?
- Theory suggests that high FX debt tercile firms should have a greater propensity to hedge. Hedging intention suggests otherwise.
- Present t-tests?

Table 10: Treated vs control group

	High FX debt First tercile	Middle Second tercile	Low FX debt Third tercile
FX/ total debt ¹	77.77	16.75	5.32
Leverage ¹	35.13	27.29	24.32
Number of loans with hedging intention	215	304	358
Number of loans without hedging intention	778	678	630
Export/sales ¹	15.07	19.23	16.02
Return on assets	-35.02	3.39	4.21
Market to book ratio ¹	78.58	69.35	69.53
Size of the firms ²	8.07	9.92	10.45

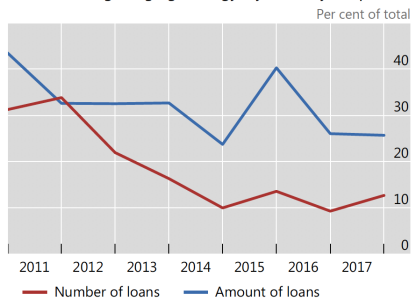
¹ in per cent. ² Total assets, in logarithm.

Hedging Intentions

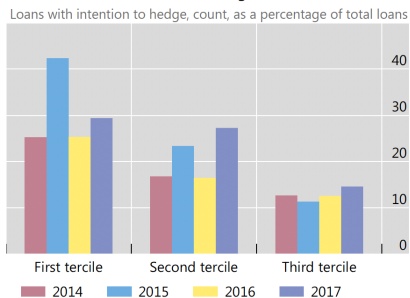
- Decline in intention to hedge over time.
- Time-series patterns around the new bankruptcy law. Intention to hedge in 2016-17 should increase a lot more compared to the period before for "first-tercile" firms relative to the "third-tercile" firms.

ECB borrowings

ECB borrowing hedging strategy, by currency swaps



Distribution across ECB borrowings¹



¹ Sample being divided three terciles according to FX debt to total liabilities of the borrowers in descending order.

Sources: Reserve bank of India; CMIE Prowess; authors' calculations.

Results without SOEs

Table 12: Excluding state-owned firms

	(1)	(2)	(3)	(4)
	Curr swap	Int swap	Both swaps	Any swap
LAW x high FX debt exposure	1.914*** (3.38) [0.137]	0.541 (1.06) [0.182]	1.728*** (3.20) [0.070]	1.007* (1.83) [0.294]
forCurr2Tot	-1.868 (-1.12)	0.846 (0.58)	-2.123 (-1.07)	0.647 (0.42)
ExportSales	-0.923*** (-2.76)	-0.830*** (-2.66)	-1.365*** (-3.88)	-0.733** (-2.45)
size	0.040 (0.84)	0.009 (0.20)	0.018 (0.34)	0.039 (0.85)
mkt2book	0.974** (2.54)	1.315*** (3.59)	1.786*** (3.74)	0.739** (2.04)
Dividend yield	0.096 (1.62)	0.054 (0.95)	0.143** (2.20)	0.032 (0.55)
leverage	-0.148 (-0.19)	0.981 (1.34)	1.267 (1.50)	-0.258 (-0.35)
roa	2.701 (1.35)	3.925** (2.12)	-0.018 (-0.01)	6.097*** (3.19)
cons	4.718*** (7.16)	3.955*** (6.31)	4.594*** (6.82)	3.887*** (6.15)
N	464	464	464	464
pseudo R-sq	0.159	0.130	0.197	0.136

Table 13: Benchmark 2, excluding state-owned firms

	(1)	(2)	(3)	(4)
	Curr swap	Int swap	Both swaps	Any swap
REG x high FX debt exposure	-0.020 (-0.05) [-0.013]	0.266 (0.69) [0.052]	0.632 (1.42) [0.071]	-0.256 (-0.64) [-0.083]
forCurr2Tot	-2.307 (-1.47)	0.378 (0.26)	-2.624 (-1.50)	0.237 (0.16)
ExportSales	-0.857*** (-2.69)	-0.836*** (-2.66)	-1.303*** (-3.81)	-0.715** (-2.39)
size	0.081* (1.74)	0.014 (0.32)	0.041 (0.80)	0.061 (1.36)
mkt2book	0.958** (2.54)	1.325*** (3.58)	1.809*** (3.75)	0.762** (2.11)
Yield	0.103* (1.75)	0.052 (0.92)	0.143** (2.21)	0.039 (0.67)
leverage	-0.237 (-0.32)	1.066 (1.44)	1.383 (1.63)	-0.262 (-0.36)
roa	2.703 (1.41)	4.059** (2.19)	0.266 (0.13)	6.066*** (3.18)
cons	3.894*** (5.89)	3.939*** (6.29)	4.251*** (6.27)	3.659*** (5.78)
N	464	464	464	464
pseudo R-sq	0.136	0.137	0.191	0.132

Conclusions

- The paper is addressing important questions.
- Highlights the importance of creditors' rights and the depth of the hedging markets in hedging decisions of firms.
- Presents both cross-country and quasi-experimental evidence. Unique data and a nice experimental setting.
- Interesting findings.
- My discussion has offered a few suggestions for extensions and refinements to the existing empirical work.