Why do firms issue abroad?

Evidence for capital structure theories from onshore and offshore corporate bond finance in Asian emerging markets

PAUL MIZEN[A], FRANK PACKER[B], ELI REMOLONA[B] AND SERAFEIM TSOUKAS[C]

[A]UNIVERSITY OF NOTTINGHAM, UK
[B]BANK FOR INTERNATIONAL SETTLEMENTS
[C]UNIVERSITY OF GLASGOW, UK

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Introduction

Firms in different countries seem to choose their capital structures in remarkably similar ways.

Rajan and Zingales (1995) show this to be the case for firms across the G-7 sample of developed countries, and Booth et al. (2001) show this to be the case for firms across a sample of 10 developing countries.

We provide a further independent test of theories of capital structure by investigating how firms' financing decisions change over time as markets and institutions change.

The behavior of firms in emerging Asia since the 1997 crisis offers us a similar natural experiment.

Introduction

In varying degrees, many firms in Asia have had access to two corporate bond markets:

- a relatively small onshore local currency bond market; and an already large offshore foreign currency bond market.
- The offshore market has been deep and liquid from the outset, while the onshore markets in the region has tended to grow in size and has provided more liquidity over time.
- In this paper, we analyze how 4,661 firms in 8 emerging Asian economies were affected by the development of the onshore v. offshore markets over time.

Introduction

The choice between onshore and offshore markets is effectively a choice of currency denomination as well as a choice of investor base; see Habib and Joy (2010) ECB wp and Siegfried et al. (2003) ECB wp.

An important paper that focuses on currency choice among firms in East Asia is Allayannis et al. (2003) JF.

They find, in their analysis of the Asian financial crisis,

- risk management and large external capital needs influence FCY debt, while size and market-to-book factors influence the levels of both types of LCY and FCY debt.
- They also find that the availability of currency derivatives make local currency and foreign currency debt closer substitutes.

Introduction

We extend Allayannis et al (2003) by looking more closely at the choice between onshore and offshore bond markets concerning:

- The pecking order in this choice of markets and to what extent firms with certain characteristics have access to one market but not the other.
- We also look closely at indicators of market depth in response to policy initiatives taken since the Asian crisis
- The ability to hedge based on the Bank for International Settlements (BIS) statistics on derivatives.
- Static trade off in costs of issuance due to interest rates and tax treatment of investors.

Introduction

Our paper also provides guidance on an important policy goal of governments in emerging Asia. This goal is the development of LCY corporate bond markets.

- Promotion of local currency bond markets, including the Asian Bond Fund (ABF2) of 12 major central banks in the Asia-Pacific region, administered by the BIS.
- These initiatives have been catalysts to reform of market practice and regulation.
- We explore the impact of mechanisms that mitigate the costs of information asymmetries, provide liquid secondary markets for bonds, and establish active FX hedging markets.

Sources of Data

1. Bloomberg: firms that issued domestic currency denominated bonds in regional markets;

2. Thomson Financial Primark: data from balance sheets and profit and loss statements (annual).

3. Bank for International Settlements (BIS) International banking and securities statistics.

4. Bank for International Settlements (BIS) Triennial Survey and semi-annual survey of currency swaps, FX swaps, options, outright forwards and other derivatives.

Data

- The panel has an unbalanced structure which helps mitigate potential selection and survivor bias.
- Our combined sample contains data for 546 firms in China, 442 in Hong Kong, 385 in Indonesia, 910 in Korea, 961 in Malaysia, 240 in the Philippines, 582 in Singapore and 595 in Thailand that operated between 1995 and 2007.
- It covers a variety of sectors including utilities, manufacturing, resources, services and financials.
- The sample spans the 1997 crisis.

Firm Specific Characteristics

Previous study by Mizen and Tsoukas (2010) finds firm information is important.

- Size (SIZE): log of real total assets.
- Growth (GROWTH): growth in sales
- Age (YEARS): years since listed on stock exchange
- Leverage (LEVER): total debt over total assets.
- Profitability (PROF): earnings before interest and taxes relative to total assets
- Liquidity (LIQUID): current assets over total liabilities
- Collateral (COLL): tangible assets over total assets
- Reputation (PREVDOM/PREVFOR): whether or not the firm previously issued bonds, and whether or not the firm had recently experienced a downgrade

Market Development Statistics

We draw on detailed BIS statistics to provide

- (DEBTSEC): ratio of the total debt securities to GDP using total debt securities outstanding in US$bn in domestic and international markets.
- (ONSRATIO): the ratio of debt securities issued onshore over the debt securities issued both onshore and offshore.
- (SID): the short interest differential between the annual averages of local and the US nominal rates (LCY - US) on bonds of 3-12 month maturity.
- (CPIS-IIP): investor demand to GDP, based on the IMF Coordinated Portfolio Investment Survey and International Investment Position (IIP).
- (WITHTAX) : a dummy for withholding tax on foreign investors for each country and year, drawn from EMEAP (2011).
- (DERIV): the sum of currency swaps, FX swaps, options, outright forwards and other derivatives based on the daily average turnover in April.

Capital structure theories

- Static Trade Off Theory. In this theory firms increase total debt, as well as local and foreign debt in response to cost advantages.
- Agency Cost Theory. The need for monitoring raises the cost of borrowing externally, but this may be mitigated by collateral assets and signaling.
- Pecking Order Theory. Firms will generally exhaust the opportunities in the preferred source before extending to finance further down the pecking order.
- Market Depth Hypothesis. Where depth and liquidity of bond markets is limited, firms may issue in foreign markets because they have exhausted the possibilities in local markets.
- Risk Management Theory. Firms may have incentives to adjust capital structure to reflect the source of their earnings or to hedge against foreign currency exposure.

Table 1: Summary statistics for the firm-specific variables

	All firms	Domestic	Foreign	Diff.	Seasoned	Starters	Diff.
SIZE	17.707	17.629	18.136	0.000	17.708	14.955	0.000
	(3.41)	(3.45)	(3.17)		(3.41)	(3.11)	
GROWTH	0.108	0.104	0.124	0.000	0.107	0.068	0.000
	(0.35)	(0.35)	(0.39)		(0.35)	(0.44)	
YEARS	13.719	13.867	12.930	0.344	13.716	13.824	0.155
	(4.81)	(4.87)	(4.34)		(4.81)	(4.88)	
LEVER	0.342	0.342	0.344	0.000	0.342	0.258	0.000
	(0.24)	(0.23)	(0.25)		(0.24)	(0.25)	
PROF	0.032	0.034	0.025	0.000	0.032	0.033	0.596
	(0.12)	(0.11)	(0.12)		(0.11)	(0.15)	
LIQUID	0.403	0.405	0.389	0.544	0.402	0.471	0.000
	(0.21)	(0.21)	(0.20)		(0.21)	(0.23)	
COLL	0.026	0.025	0.030	0.271	0.025	0.026	0.648
	(0.06)	(0.05)	(0.07)		(0.05)	(0.06)	
RATDUM	0.138	0.119	0.245	0.000	0.138	0.028	0.000
	(0.35)	(0.32)	(0.43)		(0.34)	(0.16)	

Characteristics of issuers v. non-issuers

Table 1

- Domestic issuers are smaller, less levered, more profitable, grow more slowly than foreign issuers, they are rated more highly.
- Domestic bond markets require less of domestic issuers in terms of firm size and growth characteristics (info asymmetry);
- Domestic markets favor firms that have lower debt and greater profitability (opposite of pecking order theory);
- But domestic issues also have better ratings than foreign issuers (market depth);
- Since larger firms issue in foreign currency could be indicative of lack of market depth.

	China	Hong Kong	Indonesia	Korea	Malaysia	Philippines	Singapore	Thailand
FCY	143.166	33.137	6.737	19.109	49.153	30.388	29.606	23.992
	(267.67)	(117.87)	(38.57)	(58.62)	(137.87)	(83.604)	(121.05)	(66.72)
LCY	67.966	30.107	6.737	14.561	4.498	6.679	15.341	11.746
	(184.82)	(115.49)	(16.07)	(50.15)	(37.13)	(27.35)	(94.318)	(41.87)
$LNTL$	15.03	14.443	20.001	19.678	12.923	15.161	12.245	15.032
	(1.56)	(2.09)	(2.22)	(1.85)	(1.58)	(2.03)	(1.76)	(1.61)
FCY/TL	0.026	0.002	0.006	0.00005	0.02	0.01	0.10	0.004
	(0.09)	(0.01)	(0.06)	(0.00)	(0.14)	(0.09)	(0.36)	(0.01)
$SIZE$	15.056	14.304	19.891	19.471	12.795	15.304	12.066	15.037
	(1.51)	(2.04)	(2.17)	(1.71)	(1.52)	(1.95)	(1.68)	(1.61)
$GROWTH$	0.084	0.052	0.126	0.102	0.052	0.038	0.077	0.048
	(0.60)	(0.49)	(0.43)	(0.35)	(0.41)	(0.47)	(0.39)	(0.35)
$YEARS$	10.317	15.099	11.350	10.991	15.499	13.517	14.769	15.677
	(3.30)	(5.08)	(4.63)	(4.55)	(4.40)	(2.63)	(5.21)	(4.09)
$LEVER$	0.258	0.192	0.374	0.281	0.256	0.222	0.209	0.343
	(0.18)	(0.19)	(0.34)	(0.22)	(0.25)	(0.22)	(0.18)	(0.31)
$PROF$	0.067	0.023	0.016	0.031	0.032	0.012	0.045	0.024
	(0.17)	(0.18)	(0.16)	(0.14)	0.13)	(0.14)	(0.13)	(0.15)
$LIQUID$	0.487	0.442	0.455	0.491	0.469	0.333	0.518	0.412
	(0.22)	(0.25)	(0.24)	(0.19)	(0.21)	(0.21)	(0.24)	(0.23)
$COLL$	0.033	0.028	0.017	0.023	0.033	0.031	0.019	0.017
	(0.05)	(0.07)	(0.05)	(0.05)	(0.07)	(0.08)	(0.05)	(0.05)
$RATDUM$	0.004	0.073	0.091	0.048	0.017	0.082	0.030	0.052
	(0.07)	(0.26)	(0.28)	(0.214)	(0.13)	(0.27)	(0.17)	(0.22)
$ONSRATIO$	0.942	0.554	0.757	0.898	0.823	0.603	0.766	0.771
	(0.05)	(0.05)	(0.24)	(0.04)	(0.03)	(0.07)	(0.11)	(0.13)
SID	-1.387	0.022	11.945	2.750	-0.301	4.636	-2.489	0.789
	(1.61)	(1.11)	(7.79)	(3.00)	(1.40)	(2.79)	(1.35)	(2.98)
$DEBTSEC$	0.0005	0.045	0.004	0.005	0.105	0.074	0.062	0.019
	(0.00)	(0.01)	(0.01)	(0.002)	(0.035)	(0.02)	(0.03)	(0.10)
$CPIS - IIP$	6.044	86.035	26.060	58.124	132.261	166.952	185.661	25.797
	(1.75)	(48.53)	(14.28)	(43.08)	(63.34)	(33.46)	(51.20)	(8.013)
$DERIV$	1.14	4.061	1.710	10.288	18.531	12.138	7.446	2.754
	(1.03)	(0.12)	(1.03)	(0.07)	(1.72)	(1.72)	(2.06)	(2.43)
$STOCKTVR$	1.196	0.567	0.443	2.343	0.389	0.257	0.588	0.742
	(0.53)	(0.20)	(0.11)	(0.81)	(0.16)	(0.11)	(0.21)	(0.27)

Cross-country comparisons

Table 2

- The variables LCY and FCY show that there are substantial variations in firm-level. These features do not reflect the scale of the bond markets in these countries, but rather the average issue size for firms in those countries.
- Countries with large debt levels have small ratios of foreign currency bonds outstanding compared to total liabilities (FCY/TL).
- Firm characteristics such as size, growth, profitability etc vary across countries.
- Market characteristics also vary across countries, most notably the scale of the LCY bond market and the onshore ratio.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SIZE	0.154***	0.095***	0.088***	0.167***	0.183***	0.164***	0.196***	0.196***
	(36.65)	(15.97)	(14.53)	(17.65)	(17.47)	(16.40)	(18.44)	(18.46)
GROWTH	0.065**	0.077*	0.071	0.082*	0.090**	0.082*	0.093**	0.094**
	(2.17)	(1.73)	(1.58)	(1.79)	(1.96)	(1.79)	(2.03)	(2.04)
YEARS	0.019***	0.002	-0.001	-0.010**	-0.011***	-0.010**	-0.012***	-0.012***
	(7.24)	(0.43)	(-0.17)	(-2.41)	(-2.78)	(-2.48)	(-3.05)	(-3.06)
LEVER	0.732***	0.580***	0.604***	0.628***	0.643***	0.617***	0.673***	0.672***
	(13.15)	(6.96)	(7.26)	(7.41)	(7.59)	(7.21)	(7.83)	(7.82)
LDEBT	0.424***	0.390***	0.364***	0.323***	0.311***	0.324***	0.278***	0.280***
	(10.00)	(6.23)	(5.76)	(4.98)	(4.78)	(4.99)	(4.21)	(4.24)
PROF	0.486***	0.549***	0.505***	0.476***	0.462***	0.478***	0.480***	0.482***
	(4.61)	(3.72)	(3.42)	(3.06)	(2.97)	(3.08)	(3.06)	(3.07)
LIQUID	-0.011	-0.220**	-0.162*	-0.042	-0.016	-0.049	-0.021	-0.020
	(-0.18)	(-2.32)	(-1.70)	(-0.43)	(-0.16)	(-0.50)	(-0.22)	(-0.20)
COLL	0.650***	1.016***	0.977***	0.880***	0.882***	0.881***	0.899***	0.892***
	(3.45)	(4.04)	(3.86)	(3.47)	(3.46)	(3.48)	(3.54)	(3.50)
PREVDOM		2.442***	2.451***	2.455***	2.455***	2.455***	2.448***	2.449***
		(64.30)	(64.85)	(63.08)	(62.99)	(62.97)	(62.83)	(62.52)
PREVFOR		1.736***	1.711***	1.747***	1.744***	1.749***	1.738***	1.739***
		(23.42)	(23.02)	(23.08)	(23.02)	(23.07)	(22.93)	(22.90)
RATDUM			0.503***	0.370***	0.340***	0.378***	0.319***	0.320***
			(6.26)	(4.58)	(4.20)	(4.65)	(3.96)	(3.98)
DEBTSEC				3.826***	3.887***	3.646***	3.114***	3.059***
				(8.04)	(8.19)	(7.01)	(6.12)	(5.83)
ONSRATIO				0.323*	0.159	0.288	0.383*	0.362*
				(1.82)	(0.85)	(1.63)	(1.92)	(1.76)
STOCKTVR				-0.209***	-0.213***	-0.210***	-0.232***	-0.229***
				(-6.25)	(-6.38)	(-6.26)	(-6.91)	(-6.77)
SID					-0.028***		-0.035***	-0.036***
					(-3.44)		(-4.26)	(-3.99)
WITHTAX						0.041		
						(0.87)		
CPIS-IIP							0.002***	0.002***
							(4.66)	(4.27)
DERIV								-0.004
								(-0.41)
Observations	20,610	20,610	20,610	20,610	20,610	20,610	20,610	20,610
$R-squared$	0.144	0.592	0.594	0.603	0.604	0.603	0.605	0.605

The decision to issue

Table 3

Firm that are issuers tend to have the following characteristics:

- They have higher growth in firm sales (GROWTH) (an indicator that the firm may face additional financing needs, or have exceeded the available funds from internal or other external sources e.g. banks (Habib and Joy (2010)).
- They are larger (SIZE). Larger firms, are more likely to be constrained in the domestic market and may seek to widen their investor base by issuing bonds in domestic or foreign currency (Allayannis and Ofek (2001); Kedia and Mozumdar (2003), Siegfried et al. (2003)).
- They have been listed for longer (YEARS).
- They are more creditworthy, having higher profits (PROF), liquid assets (LIQUID) and collateral (COLL) to pledge against loans.

The decision to issue

Table 3 (cont.)

- We find that DEBTSEC and ONSRATIO have positive coefficients and are highly significant, supporting the market depth hypothesis.
- STOCKTVR tests the pecking order theory and the static trade off theory because firms may have a preference to access the stock market rather than to issue debt especially if stock market turnover increases. We expect and find a negative sign.
- SID measures the short-term interest differential as a proxy for the advantage of opportunity to issue cheaply in local currency, and supports the static trade off theory . The same is true for WITHDUM and CPIS-IIP, the variable measuring foreign investor demand.
- DERIV tests the static trade off and the risk management theories we expect a larger measure to increase issuance.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$SIZE$	0.208***	0.190***	0.214***	0.251***	0.239***	0.258***	0.288***
	(24.42)	(22.10)	(17.08)	(17.66)	(18.09)	(18.61)	(20.84)
$GROWTH$	0.076	0.060	0.057	0.067	0.052	0.064	0.060
	(1.25)	(0.98)	(0.92)	(1.06)	(0.86)	(1.01)	(0.90)
$YEARS$	0.005	-0.001	-0.006	-0.009**	-0.004	-0.009**	-0.007*
	(1.17)	(-0.17)	(-1.28)	(-2.06)	(-1.05)	(-2.11)	(-1.69)
$LEVER$	0.287***	0.366***	0.364***	0.397***	0.456***	0.434***	0.401***
	(2.99)	(3.89)	(3.77)	(4.07)	(4.65)	(4.36)	(3.81)
$LDEBT$	0.453***	0.328***	0.283***	0.258***	0.279***	0.243***	0.235***
	(5.94)	(4.25)	(3.59)	(3.25)	(3.48)	(3.00)	(2.82)
$PROF$	0.190	0.030	0.001	-0.021	0.015	-0.010	-0.062
	(1.00)	(0.16)	(0.01)	(-0.11)	(0.08)	(-0.05)	(-0.29)
$LIQUID$	-0.150	0.034	0.105	0.205*	0.158	0.191	0.158
	(-1.28)	(0.29)	(0.88)	(1.70)	(1.32)	(1.57)	(1.29)
$COLL$	0.946***	0.754**	0.634**	0.641**	0.600**	0.631**	0.646**
	(3.25)	(2.54)	(2.12)	(2.10)	(1.96)	(2.06)	(2.03)
$RATDUM$		0.840***	0.767***	0.701***	0.712***	0.684***	0.639***
		(12.08)	(10.53)	(9.58)	(9.78)	(9.43)	(8.90)
$DEBTSEC$			-0.319	-0.326	0.893	-1.970**	-0.172
			(-0.48)	(-0.51)	(1.14)	(-2.54)	(-0.20)
$ONSRATIO$			-0.735***	-0.998***	-0.551***	-0.830***	-0.801***
			(-3.66)	(-4.98)	(-2.88)	(-3.94)	(-3.73)
$STOCKRVR$			-0.058*	-0.088**	-0.048	-0.108***	-0.146***
			(-1.72)	(-2.57)	(-1.46)	(-3.19)	(-4.60)
SID				-0.054***		-0.060***	-0.040***
				(-5.81)		(-6.46)	(-4.31)
$WITHTAX$					-0.297***		
					(-4.99)		
$CPIS-IIP$						0.002***	-0.001*
						(4.07)	(-1.94)
$DERIV$							0.112***
							(11.28)
$Observations$	20,610	20,610	20,610	20,610	20,610	20,610	20,610
$R-squared$	0.242	0.267	0.271	0.277	0.275	0.280	0.295

The choice of bond market

Table 4

- We find that firms that are larger (SIZE) tend to issue in FCY supporting the market depth hypothesis.
- This is also true for firms that are more leveraged (LEV) and have more long term debt (LTDEBT) also supporting the market depth hypothesis.
- We find strong evidence in support of the agency theory of debt structure due to the positive effect of (COLL); the same is true of the rating dummy (RATDUM).

The choice of bond market

Table 4 (cont.)

- We find that the negative influence of ONSRATIO is perhaps the clearest indication of the preference for domestic issuance if there is sufficient scale, supporting the market depth hypothesis.
- STOCKTVR tests the pecking order theory and the static trade off theory and continues to show a negative sign.
- SID, WITHDUM and CPIS-IIP, support the static trade off and the risk management theories.
- DERIV supports the static trade off and the risk management theories since we expect a larger measure to increase issuance.

	(1) OLS	(2) OLS	(3) Tobit	(4) Tobit
SIZE	-0.001	-0.001	0.028***	0.026***
	(-0.48)	(-0.41)	(3.22)	(3.18)
GROWTH	0.010	0.010	0.025	0.007
	(0.94)	(0.94)	(0.49)	(0.14)
PROF	-0.038	-0.039	-0.499***	-0.447***
	(-1.51)	(-1.56)	(-2.91)	(-2.70)
LIQUID	-0.007	-0.012	0.041	0.023
	(-0.41)	(-0.65)	(0.45)	(0.25)
MTBOOK	0.0004	-0.0004	-0.029	-0.034
	(0.26)	(-0.48)	(-0.98)	(-1.15)
RATDUM	-0.001	-0.002	0.027	0.002
	(-0.08)	(-0.24)	(0.64)	(0.05)
COLL	0.049	0.041	0.191	0.226
	(0.72)	(0.59)	(0.81)	(0.98)
FCDUM	0.008	0.008	0.081**	0.085**
	(1.21)	(1.22)	(2.06)	(2.22)
DEBTSEC	-0.395	-0.298	-0.974	-1.057
	(-1.10)	(-0.86)	(-1.01)	(-1.07)
ONSRATIO	0.048	0.073	0.209	0.400
	(1.02)	(1.41)	(0.78)	(1.40)
STOCKTVR	-0.010***	-0.008**	-0.076***	-0.070***
	(-2.66)	(-2.50)	(-2.72)	(-2.68)
SID	-0.001**		-0.024***	
	(-2.01)		(-2.59)	
WITHTAX		-0.023		-0.149*
		(-1.58)		(-1.66)
CPIS	0.0004**	0.0004**	0.002***	0.002***
	(2.23)	(2.29)	(4.98)	(5.78)
DERIV	0.006	0.004	0.007	-0.002
	(1.35)	(0.89)	(0.65)	(-0.13)
Observations	802	802	802	802
Left censored obs			686	686
$R-squared$	0.090	0.091		

Capital structure

Table 5

- SIZE shows larger firms hold more FCY bonds in total liabilities (market depth hypothesis) but PROF shows that more profitable ones hold less (contrary to the pecking order hypothesis).
- STOCKTVR tests the pecking order theory and the static trade off theory and continues to show a negative sign.
- SID, WITHDUM and CPIS-IIP, support the static trade off and the risk management theories.

Conclusions

We explore the impact of market development in LCY corporate bond markets on issuance for Asian firms.

We consider Firm-specific influences and Bond market development on

1. Issuance of bonds in Asia in LCY and FCY
2. The choice between LCY and FCY.
3. The impact on capital structure.

Conclusions

The implications are that

- Firms that are larger, faster growing, more indebted but also more creditworthy issue more bonds.
- There is strong support for the market depth hypothesis supporting Allayannis et al (2003) finding; we find some support also for agency, static trade off and risk management theories.
- Firms tend to issue in foreign currency because LCY markets are insufficiently deep and liquid. They revert to LCY markets when they increase in size and turnover.
- We register some impact of market development variables on the FCY/TL ratio.

Conclusions

Policy Implications.

- If deeper and more liquid markets support LCY bond issuance, then it suggests policymakers should adopt policies to ensure this (further expansion of ABF)
- Enhancing the post-trade transparency in corporate bond trading would also be helpful in expanding market liquidity.
- Liberalisation of foreign exchange administration rules would facilitate hedging arrangements, and tax reform would attract foreign investors, further improving market size.