

What Slice of the Pie? The Corporate Bond Market Boom in Emerging Economies

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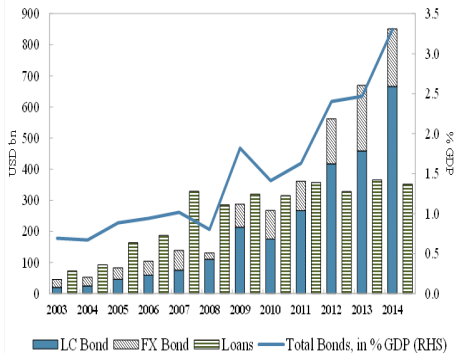
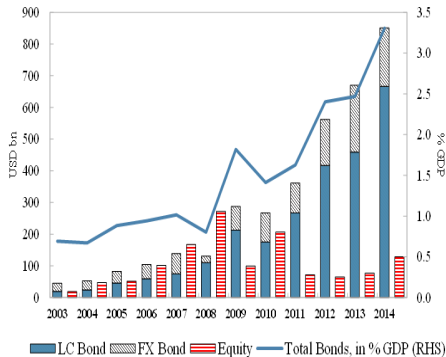
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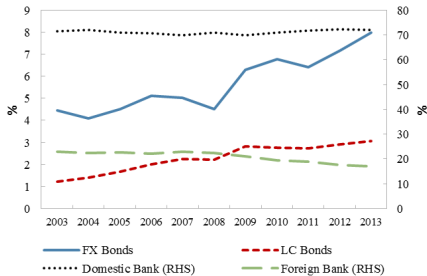
- Corporate bond market development in EM has long been in policymaker's focus.
 - Asian Bond Fund 1 and 2
 - the G8 joint action plan in 2007-08
- The bond market development did not pick up substantially until recently.
- The annual value of EM non-financial corporate (NFC) bond issuance increased more than threefold between 2009 and 2014, grossly outpacing equity and syndicated loan issuance.

The EM bond market issuance outpaced equity and syndicated loan issuance since 2008...

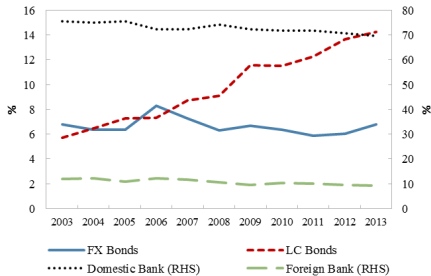


... changing also the corporate debt structure

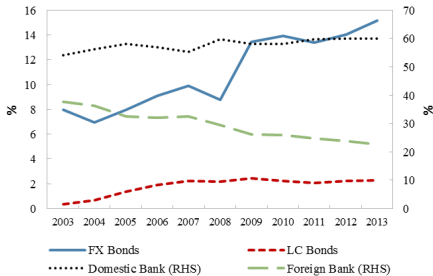
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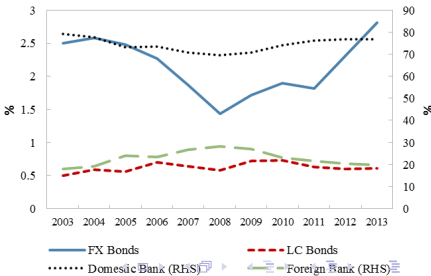
Asia & Pacific



Latin America & Caribbean



Eastern Europe



In this paper

- The post-crisis shift of NFC debt into bonds allowed borrowers to diversify funding sources, but is it structural or cyclical? Why it was stronger in some countries than in others?
- In particular:
 - What is the role played by domestic fundamentals vs. global cyclical factors?
 - Are there significant differences in the behavior of bonds issued in LC vs. FC?
 - What is the role for local bank balance sheets and global bank risk taking?
- Based on a new measure of NFC debt, we run censored regressions with fixed effects (both standard panel and quantile) of the share of LC (FC) bond finance in NFC debt on underlying determinants.

- We find that the determinants of bond market access vary with cyclical conditions and with the bond's currency of denomination.
- Global cyclical factors account for most of the variation of bond shares in total debt.
- The relative importance of local fundamentals and sensitivity to global factors differs substantially between LC and FC bond markets and over time.

- Macro fundamentals, institutions and market development initiatives create an enabling environment for LC bond market development.
 - Their role increased further over the post crisis period for LC bonds.
- The importance of macro fundamentals decreased over the post crisis period for FC bonds.
 - The search for yield and falling relative cost of bond finance became the key determinants of the FC bond finance growth.
 - Global investors appear to have targeted the markets in which the share of FC bond finance was already large.
- The global bank risk taking behavior matters more for LC bond markets.

- Determinants of corporate bond issuance and bond vs bank choice:
 - Firm level: Houston and James (1996), Johnson (1997); Datta et al (2000); Dennis and Mihov (2003), Hale (2007), Hale et al (2014), Mizen and Tsoukas (2012, 2014).
 - Macro level: Eichengreen (2007), Allen et al (2012).
 - Bonds vs banks over the cycle: Ramey (1992), Kashyap et al (1993), Adrian et al (2012), Becker and Ivashina (2014).
- Capital flow surges during the post-crisis period: Forbes and Warnock (2012), Rey (2013), Ghosh et al (2014), Bruno and Shin (2015a,b), Cerutti et al (2015), Caballero et al (2015), Lo Duca et al (2015), Mc Cauley et al (2015)....

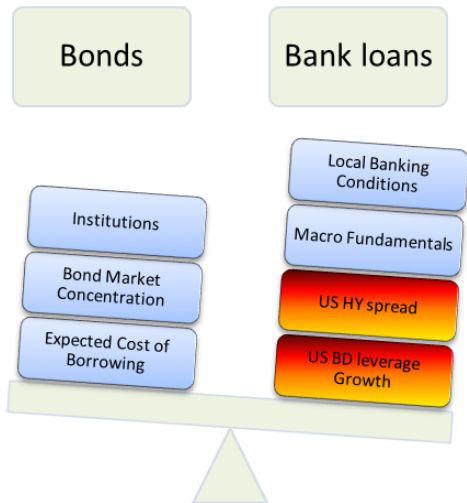
Our contribution

- Propose a measure of aggregate NFC debt stocks in EMs that allows for a breakdown both by currency and by instrument, hence allows studying the time and cross-country variation in the relative importance of bond versus bank financing for a large set of EMs.
- Analyze the drivers of bond finance share in NFC debt at the macro level, allowing their impact to vary across different levels of bond finance size, while controlling for the overall demand for borrowing factors and time-invariant drivers of financial development.
- We show that the determinants of bond market access in EM vary importantly with global cyclical conditions and with the bond's currency of denomination.

$$y_{it} = \alpha_i + EE'_{it}\delta + MF'_{it}\eta + BC_{it}\gamma + G'_t\beta + Z'_{it}\phi + \epsilon_{it}$$

- y_{it} : the share of bond finance (local or foreign currency) in total outstanding corporate debt
- Z'_{it} : interaction terms for 2010-13 (and later year effects and regional time trends)

What boosts bond market access relative to bank loans?



Results: LC bonds baseline:

Enforcement procedures	-1.02** (.51)
Interaction with 2010-13 dummy	.07 (.12)
Bond market concentration (lagged)	-2.46** (1.15)
Interaction with 2010-13 dummy	1.2 (1.51)
Current account ratio, 3-year average (lagged)	.1 (.11)
Interaction with 2010-13 dummy	.22*** (.11)
US high yield spread	.22 (.3)
Interaction with 2010-13 dummy	-1.14* (.71)
US BD leverage growth	-.73** (.31)
Interaction with 2010-13 dummy	1.01* (.66)
Dummy for 2010-13	-.52 (6.28)
Local bank capital to assets (lagged)	.21 (.17)
Interaction with 2010-13 dummy	.03 (.2)

Number of observations/units	450/11
Fraction uncensored	0.51

* p<0.1, ** p<0.05, *** p<0.01

Results: LC bonds other EE and BC

	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6	Reg 7
Enforcement procedures	-0.89* (.49)			-1.11* (.61)	-0.92* (.52)	-1.02** (.51)	-1.09* (.54)
Interaction with 2010-13 dummy	.07 (.09)			.08 (.1)	.06 (.1)	.07 (.12)	.11 (.1)
Bond market concentration (lagged)	-2.48** (1.12)	-2.7** (1.19)	-1.73** (1.02)	-2.13* (1.02)	-2.56** (1.15)	-2.46** (1.15)	-2.67** (1.21)
Interaction with 2010-13 dummy	1.32 (1.57)	.89 (1.35)	.98 (1.15)	1.26 (1.47)	1.63 (1.66)	1.2 (1.51)	2.2** (1.39)
Current account ratio, 3-year average (lagged)	.1 (1)	.14 (.12)	.19 (.13)	.11 (.11)	.09 (.1)	.1 (.11)	.11 (.12)
Interaction with 2010-13 dummy	.21*** (.08)	.16*** (.08)	.15*** (.07)	.1* (.11)	.22*** (.09)	.22*** (.11)	.21*** (.09)
US high yield spread	.25 (.25)	.24 (.28)	-.01 (.17)	.2 (.22)	.24 (.25)	.22 (.3)	.07 (.23)
Interaction with 2010-13 dummy	-1.22* (.63)	-1.34** (.7)	-.88** (.47)	-.97* (.57)	-1.22* (.63)	-1.14* (.71)	-1.01* (.6)
US BD leverage growth	-.64** (.27)	-.59** (.26)	-1.41*** (.41)	-1.2*** (.44)	-.61* (.28)	-.73** (.31)	-.78 (.4)
Interaction with 2010-13 dummy	1.02* (.59)	.62 (.52)	1.88*** (.71)	1.5* (.72)	1.04* (.6)	1.01* (.66)	1.42** (.64)
Dummy for 2010-13	-.28 (3.92)	2.29 (1.59)	10.04* (7.29)	-1.32 (4.21)	.42 (4.63)	-.52 (6.28)	-2.24 (4.18)
Creditor rights		.02 (.22)					
Interaction with 2010-13 dummy		.1 (.26)					
PPP GDP per capita, (logged and lagged)			3.73 (2.59)				
Interaction with 2010-13 dummy			-.89 (.79)				
Asian Bond Fund dummy				4.64*** (1.56)			
Interaction with 2010-13 dummy				1.22 (1.36)			
Membership in EMBI index					-.28 (.98)		
Interaction with 2010-13 dummy					-.61 (1.07)		
Local bank capital to assets (lagged)						.21 (.17)	
Interaction with 2010-13 dummy						.03 (.2)	
Local bank NPL ratio (lagged)							-.09 (.12)
Interaction with 2010-13 dummy							-.05 (.15)
Number of observations/units	476/11	476/11	445/11	476/11	476/11	450/11	465/11
Fraction uncensored	0.48	0.48	0.49	0.48	0.48	0.51	0.49

Results: LC bonds other MF and G

	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6	Reg 7
Enforcement procedures	-0.89* (.49)	-1.12* (.64)	-1.09 (.76)	-0.98 (.59)	-0.76 (.47)	-0.85* (.49)	-0.69 (.47)
Interaction with 2010-13 dummy	.07 (.09)	-.05 (.11)	-.03 (.12)	0 (.12)	.07 (.09)	.07 (.09)	.06 (.09)
Bond market concentration (lagged)	-2.48** (1.12)	-2.11* (1.07)	-1.54 (1.02)	-1.86* (.91)	-2.47** (1.02)	-2.6** (1.16)	-2.3** (1)
Interaction with 2010-13 dummy	1.32 (1.57)	.73 (1.42)	1.19 (1.85)	1.84 (1.9)	1.22 (1.55)	1.43 (1.52)	1.23 (1.44)
Current account ratio, 3-year average (lagged)	.1 (.1)				.1 (.09)	.1 (.1)	.12 (.1)
Interaction with 2010-13 dummy	.21*** (.08)				.2*** (.08)	.21*** (.08)	.2*** (.08)
US high yield spread	.25 (.25)	.25 (.28)	.09 (.22)	.77* (.37)			.35 (.28)
Interaction with 2010-13 dummy	-1.22* (.63)	-0.89** (.42)	-1.05* (.57)	-1.96*** (.82)			-1.7* (.92)
US BD leverage growth	-0.64** (.27)	-0.56* (.34)	-.52 (.33)	-.64** (.33)	-1.72*** (.42)	-.61 (.49)	-1.71*** (.43)
Interaction with 2010-13 dummy	1.02* (.59)	.23 (.46)	1.88** (.92)	1.71** (.97)	1.44** (.77)	1.3*** (.57)	3.49** (1.55)
Dummy for 2010-13	-2.8 (3.92)	-1.96 (5.58)	9.53 (6.5)	-7.89** (6.53)	-1.91 (3.78)	2.54 (5.51)	-.02 (4)
Reserves in % of ST external debt (lagged and logged)		.02 (.69)					
Interaction with 2010-13 dummy		1.14** (.55)					
External debt in % of exports of G&S (lagged and logged)			-2.46** (.98)				
Interaction with 2010-13 dummy			-1.36** (.72)				
ICRG financial risk indicator				.26** (.09)			
Interaction with 2010-13 dummy				.26*** (.12)			
US 10Y term premium					.48 (.32)		-.66*** (.26)
Interaction with 2010-13 dummy					-.6*** (.22)		.33 (.41)
VIX (logged)						.13 (.44)	
Interaction with 2010-13 dummy						-1.4 (1.11)	
Number of observations/units	476/11	451/11	476/11	447/11	476/11	476/11	476/11
Fraction uncensored	0.48	0.49	0.48	0.5	0.48	0.48	0.48

Global variables and local fundamentals?

	Reg 1	Reg 2	Reg 3
Enforcement procedures	-0.89* (.49)	-0.93* (0.5)	-0.93* (0.49)
Interaction with 2010-13 dummy	.07 (.09)	-.12 (.13)	.07 (.09)
Interaction with HY spread interaction		.19* (.1)	
Bond market concentration (lagged)	-2.48** (1.12)	-2.53** (1.12)	-2.5** (1.13)
Interaction with 2010-13 dummy	1.32 (1.57)	1.37 (1.58)	1.33 (1.56)
Current account ratio, 3-year average (lagged)	.1 (.1)	.1 (.1)	.1 (.1)
Interaction with 2010-13 dummy	.21*** (.08)	.21*** (.08)	.45*** (.18)
Interaction with HY spread interaction			-.23** (.12)
US high yield spread	.25 (.25)	.25 (.25)	.25 (.25)
Interaction with 2010-13 dummy	-1.22* (.63)	-8.45** (3.96)	-1.15** (.56)
US BD leverage growth	-.64** (.27)	-.64** (.27)	-.64** (.27)
Interaction with 2010-13 dummy	1.02* (.59)	1.06* (.59)	1.11* (.6)
Dummy for 2010-13	-.28 (3.92)	6.84 (5.32)	-.57 (3.89)
HY marginal effect 2010-13 at 80th quantile of local		-1.93	-1.11
HY marginal effect 2010-13 at 20th quantile of local		-0.6	0.85

Results: FC bonds baseline:

Current account ratio, 3-year average (lagged)	.14* (.07)
Interaction with 2010-13 dummy	-.18** (.09)
Local bank capital to assets (lagged)	-.32* (.2)
Interaction with 2010-13 dummy	.39** (.19)
MM-BAA spread (FX adjusted)	-.01 (.02)
Interaction with 2010-13 dummy	.1** (.04)
US high yield spread	-.12 (.36)
Interaction with 2010-13 dummy	-4.11*** (1.22)
Dummy for 2010-13	1.31 (2.13)

Number of observations/units	445/11
Fraction uncensored	0.64

* p<0.1, ** p<0.05, *** p<0.01

Results: FC bonds other EE and BC

	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6	Reg 7
Current account ratio, 3-year average (lagged)	.14* (.07)	.13 (.07)	.12* (.08)	.13 (.07)	.16** (.08)	.17*** (.08)	.03 (.08)
Interaction with 2010-13 dummy	-1.18** (.09)	-1.15* (.11)	-3.32*** (.11)	-1.16** (.08)	-1.17** (.09)	-1.18*** (.08)	-1.19* (.12)
Local bank capital to assets (lagged)	-.32* (.2)	-.32* (.2)	-.25 (.2)	-.29** (.18)	-.36** (.22)	-.31* (.19)	
Interaction with 2010-13 dummy	.39** (.19)	.39** (.2)	.35** (.21)	.31** (.17)	.4*** (.2)	.47** (.22)	
MM-BAA spread (FX adjusted)	-.01 (.02)	-.01 (.02)	-.02 (.02)	-.01 (.02)			-.02 (.02)
Interaction with 2010-13 dummy	.1** (.04)	.1** (.04)	.11*** (.04)	.09** (.04)			.12** (.05)
US high yield spread	-.12 (.36)	-.22 (.33)	-.2 (.3)	-.24 (.33)	-.17 (.39)	-.18 (.41)	-.02 (.31)
Interaction with 2010-13 dummy	-4.11*** (1.22)	-4.4*** (1.18)	-4.1** (1.18)	-3.63*** (1.18)	-3.89*** (1.19)	-3.41*** (.88)	-4.57*** (1.38)
Dummy for 2010-13	1.31 (2.13)	.7 (2.34)	-.12 (2.27)	.89 (2.11)	.74 (2.21)	-2.25 (2.38)	5** (1.77)
Bond market concentration (lagged)		-1.08 (.87)					
Interaction with 2010-13 dummy		.79 (1.31)					
Share of commodities export in GDP (lagged)			.16 (.23)				
Interaction with 2010-13 dummy			.17** (.07)				
Membership in EMBI index				3.76** (3.15)			
Interaction with 2010-13 dummy				.59 (1.07)			
Lending rate-BAA spread (FX adjusted)					0 (.02)		
Interaction with 2010-13 dummy					.06 (.04)		
MM spread (FX adjusted)						0 (.01)	
Interaction with 2010-13 dummy						.03** (.01)	
Local bank NPL ratio (lagged)							.11* (.06)
Interaction with 2010-13 dummy							.11* (.09)
Number of observations/units	445/11	445/11	417/10	445/11	426/10	439/11	459/11
Fraction uncensored	0.64	0.64	0.64	0.64	0.68	0.67	0.63

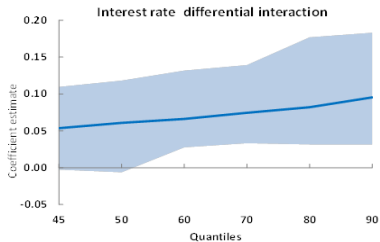
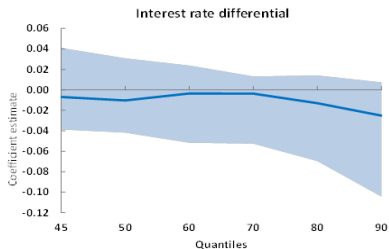
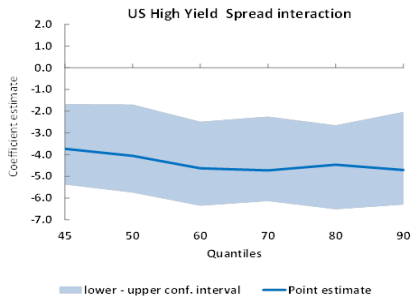
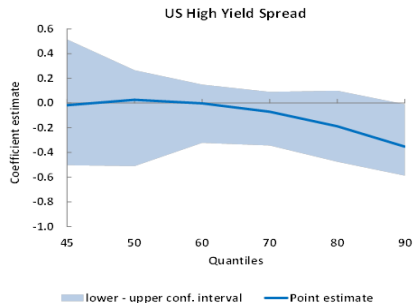
Results: FC bonds other MF and G

	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6	Reg 7	Reg 8
Current account ratio, 3-year average (lagged)				.17** (.08)	.14* (.07)	.13* (.08)	.14* (.07)
Interaction with 2010-13 dummy				-1.18** (.09)	-1.17** (.09)	-1.17** (.09)	-1.18** (.09)
Local bank capital to assets (lagged)	-.19 (.21)	-.31* (.2)	-.09 (.15)	-.3* (.21)	-.33* (.21)	-.32* (.2)	-.32* (.2)
Interaction with 2010-13 dummy	.31* (.21)	.36** (.19)	.14 (.13)	.4*** (.19)	.4** (.2)	.39** (.2)	.39** (.19)
MM-BAA spread (FX adjusted)	-.04* (.02)	-.01 (.02)	-.02 (.02)	-.01 (.02)	-.02 (.02)	-.02 (.03)	-.02 (.02)
Interaction with 2010-13 dummy	.12*** (.04)	.09** (.04)	.08*** (.03)	.1** (.05)	.05* (.03)	.06* (.04)	.11** (.04)
US high yield spread	-.28 (.34)	-.2 (.37)	-.07 (.39)	-.21 (.34)			-.6 (.54)
Interaction with 2010-13 dummy	-4.17*** (1.1)	-4.21*** (1.18)	-3.59*** (.95)	-4.1*** (1.17)			-3.49** (1.34)
Dummy for 2010-13	6.96* (3.74)	.85 (2.51)	11.04** (3.84)	1.09 (1.89)	-1.77 (2.16)	6.95 (3.76)	1.58 (2.02)
Reserves in % of ST external debt (lagged and logged)	1.73*** (.5)						
Interaction with 2010-13 dummy	-1.07 (.68)						
Net foreign asset in percent of GDP (lagged)		.01 (.03)					
Interaction with 2010-13 dummy		-.03* (.02)					
ICRG financial risk indicator			.1 (.09)				
Interaction with 2010-13 dummy			-.2** (.08)				
US BD leverage growth				-.27 (.54)			
Interaction with 2010-13 dummy				.54 (1.04)			
US 10Y term premium					-.19 (.31)		
Interaction with 2010-13 dummy					-.74* (.44)		
VIX (logged)						-.18 (.52)	
Interaction with 2010-13 dummy						-3.32*** (1.1)	
TED spread							.7 (1.02)
Interaction with 2010-13 dummy							-2.79 (2.35)
Number of observations/units	422/11	445/11	420/11	445/11	445/11	445/11	445/11
Fraction uncensored	0.66	0.64	0.67	0.64	0.64	0.64	0.64

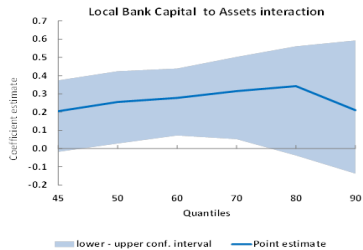
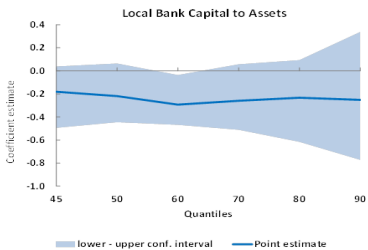
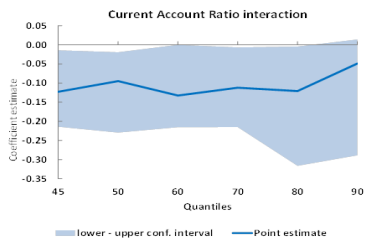
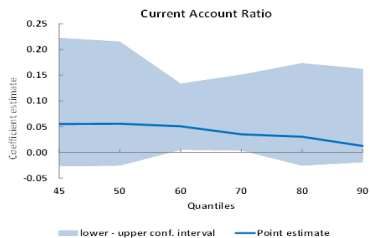
Global variables and local fundamentals?

	Reg 1	Reg 2	Reg 3
Current account ratio, 3-year average (lagged)	.14** (.07)	.14* (.07)	
Interaction with 2010-13 dummy	-.18** (.09)	-.37* (.3)	
Interaction with HY spread interaction		.18 (.23)	
Local bank capital to assets (lagged)	-.32** (.2)	-.31* (.19)	-.19 (.22)
Interaction with 2010-13 dummy	.39** (.19)	.38** (.19)	.31* (.2)
Interaction with HY spread interaction			
MM-BAA spread (FX adjusted)	-.01 (.02)	-.01 (.02)	-0.04* (0.02)
Interaction with 2010-13 dummy	.1** (.04)	.1** (.04)	.12*** (.04)
US high yield spread	-.12 (.35)	-.12 (.36)	1.43 (1.71)
Interaction with 2010-13 dummy	-4.11*** (1.14)	-3.81*** (.96)	-4.11*** (1.21)
Dummy for 2010-13	1.31 (2.15)	1.11 (2.17)	7.34** (3.89)
Reserves in % of ST external debt (lagged and logged)			2.16*** (.68)
Interaction with 2010-13 dummy			-1.16* (.69)
Interaction with HY spread interaction			-.36 (.34)
Number of observations/units	476/11	476/11	476/11
Fraction uncensored	0.48	0.48	0.48

Quantile Regressions Confirm: While Fundamentals do not condition the Search for Yield, Market Size Does



Quantile Regressions: Other



- Global cyclical factors account for most of the variation of bond shares in total EM NFC debt.
- The relative importance of local fundamentals and sensitivity to global factors differs substantially between LC and FC bond markets and over time.
 - Global investors were focused on local fundamentals in deciding how to allocate their funds over LC bond markets.
 - Global investors appear to have targeted the markets in which the share of FC bond finance was already large.
- Results highlight that the risk of capital flow reversal is more stronger in countries with larger share of FC bonds.

Definition	Definition	Source	Availability
Outstanding stock of bonds	NFC bonds outstanding by currency on an ultimate risk	Dealogic IFS – Other Depository Corporations (ODC) survey- Loans Other Non-financial Corporations and Loans Public Non-financial Corporations	Full country sample Algeria, Armenia, Belarus, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Egypt, Georgia, Guatemala, Indonesia, Jamaica, Kazakhstan, Macedonia, Mexico, Morocco, Pakistan, Panama, Philippines, South Africa, Thailand, Turkey and Uruguay
Domestic bank loans	Domestic bank loans to non-financial corporation	Country authorities ECB data Statistical Data Warehouse – MFIs loans deposits and security	Albania*, Argentina, Bosnia and Herzegovina*, Bulgaria*, China, Ecuador, El Salvador, India, Jordan, Latvia*, Lebanon, Lithuania, Malaysia, Peru, Poland*, Romania*, Russia, Serbia*, Tunisia, Ukraine* Croatia* and Hungary*
Foreign bank loans	External loans from BIS reporting banks to domestic non-bank sector	BIS -External loans and deposits of reporting banks vis-à-vis non-banking	Full country sample

* Indicates countries whose data allows for a breakdown of bank loans into EUR and other currencies