

Foreign investors and risk shocks: seeking a safe haven or running for the exit?

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(joint work with L. STRACCA)

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The key questions of this paper

- What foreign investors do with their foreign securities when risk rises ?
 - Do they retrench (home bias)?
 - Do they accumulate foreign assets (safe haven)?
- Looking at differences across instruments (say, debt vs. equity) and key economies. Which assets are safe haven for foreigners?
- Does it matter if the risk shock is *global* or *idiosyncratic*?
- Do foreigners react because there is greater uncertainty or because their risk aversion rises?

A preview of the key answers

- What foreign investors do with their foreign securities when risk rises?
 - Do they retrench (home bias)? **In general, yes**
 - Do they accumulate foreign assets (safe haven)? **Rarely**
- Which specific asset classes and economies are safe haven for foreigners in a consistent way? **Partly short-term debt, but no one is really robust**
- Does it matter if the risk shock is *global* or *idiosyncratic*? **Yes, patterns are different**
- Do foreigners react because there is greater uncertainty or because their risk aversion rises? **Both, but uncertainty is more important**

What we do in a nutshell

- Identify crisis episodes with i) a narrative approach (such as Lehman or euro debt crisis) and ii) using several measures of risk shocks and idiosyncratic factors
- Evaluate response of foreign portfolio liabilities for several types of assets (equities, all debt instruments, money market, bonds, government bonds and other bonds)
- Control for issuance

Most related literature

- Recent literature stressing the need to distinguish between gross and net capital flows (Forbes & Warnock, 2011 and Rothermberg & Warnock, 2011)
- Most closely related paper is Broner et al. (2013): behaviour of gross capital flows in crisis times, based on annual data: capital flows pro-cyclical
- On determinants of capital flows; large literature on the role of distance in finance from a *static* perspective (e.g. Portes & Rey, 2005, Grinblatt & Keloharju, 2001), Okawa & van Wincoop, 2010)
- Higher cost of information acquisition for foreign investors (Van Nieuwenburg & Veldkamp, 2010 and Mondria & Wu, 2010), which increases during crises (Brenan & Cao, 1997 and Tille and van Wincoop, 2008)
- Sovereign risk: in case of sovereign distress domestic agents are less likely to be defaulted on than foreign agents (Broner et al. 2010)

Key contribution of this paper

Contribution to the analysis of gross capital flows:

- Focus on capital inflows under market turmoil
- Zoom in on safe haven countries and portfolio flows
- Distinguish different types of shock and idiosyncratic factors
- Control for issuance

Contribution to the theoretical debate:

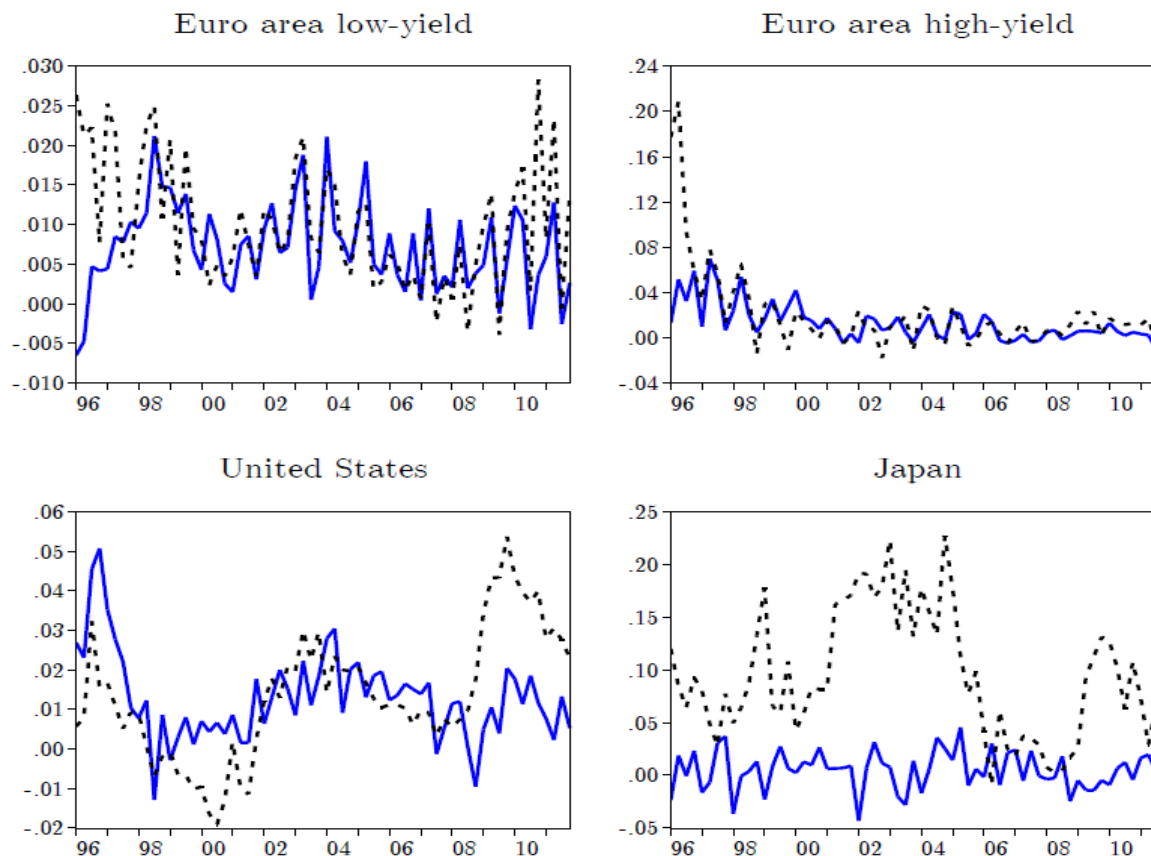
- Study rebalancing of “foreign” portfolios across asset classes and countries, highlighting the role of maturity and credit risk
- Look at capital flows from a *dynamic* perspective and *conditional* on the realisation of different risk shocks
- Isolate the role of “risk aversion”

Data – foreign demand for domestic assets

- Quarterly data from 1990 to 2012 for different portfolio liabilities of the IMF BPS divided by the stock of external portfolio liabilities at time $t-4$
- Asset classes: equity and debt securities, breakdown between bonds & notes (general govt. vs. other) and money market instruments (up to one year)
- Euro area (consolidated), EA *high yield* (sum of ES, IE, IT, PT), EA *low yield* (sum of AT, BE, DE, FI, FR, NL), United States, Japan and Switzerland
- Key control variable: domestic and international debt issuance from the BIS from 1994 to 2011 (restricting sample in some regressions)
- Other financial variables as instruments and controls: VIX, MSCI World, MSCI EM, EMBIG, govt. bond spreads for EA, policy uncertainty (Baker et al.), uncertainty versus risk aversion (Bekaert et al.)

Issuance often positively correlated with foreign purchases

Government bonds and notes. External liabilities versus issuance (flows as % of the outstanding stock of total portfolio liabilities in the previous year)



Blue solid lines: (net) external liabilities from b.o.p, i.e. foreign demand for domestic securities
Black dashed lines: net (domestic and international) issuance of securities

Identification of financial crises (narrative)

- The ten largest drops in the MSCI World stock market index coinciding with an increase in the VIX (9 out of 10 episodes)
- In addition, EM crises of the 1990s (sharp rises in VIX, even though ranking lower in terms of MSCI decline)
- Broad classification of crises according to origin of the shock:
 - Euro area debt crisis in 2011:3
 - Lehman crisis in 2008:3 and 2008:4
 - Geopolitical events: (Gulf War in 1990:3 and 1990:4 and) the 9/11 terrorist attack to the Twin Towers in 2001:3
 - US-based crises: dot-com bubble in 2000:4, trough of Dow Jones in 2002:3, Bear Stearns in 2008:1
 - Emerging market crises: Tequila crisis in 1995:1, Asia 1997:4 and Russia 1998:3

Identification of financial crises

VIX, stock returns, change in government bond spreads of Euro Area (EA) high-yield countries vs. Germany and EM bond index

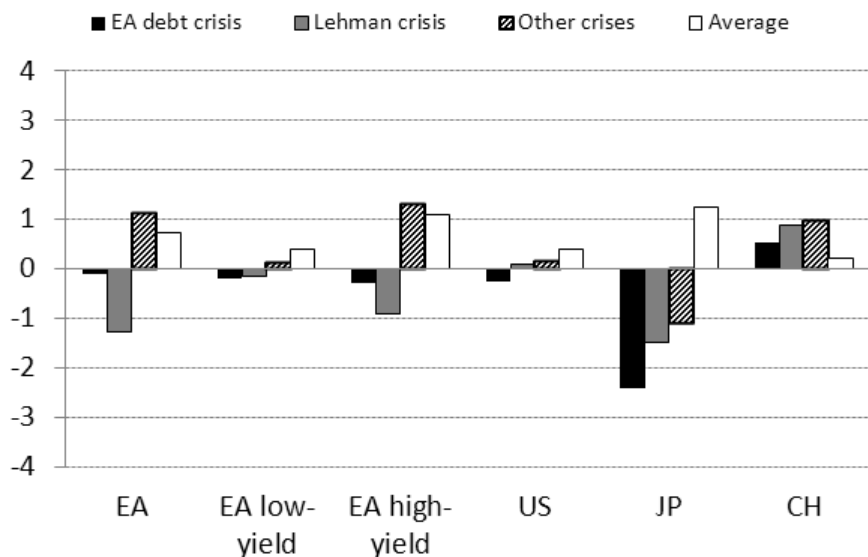
Quarterly averages: 1990:1 - 2012:4

Crises	VIX (index)		Stock market return (%)			Δ govt. bond spread (bp)	EM bond return (%)
	Change	Level	MSCI World	US	EA High-Yield	EA high-yield vs. DE	EMBIG
EA sovereign debt	13.0	30.4	-8.8	-7.0	-17.3	91.2	3.4
Lehman	18.8	41.7	-18.4	-18.0	-26.3	24.3	-8.8
Other crises	4.8	25.9	-7.5	-5.0	-9.5	1.5	-5.9
- US-based	8.1	29.0	-11.7	-11.1	-12.9	3.7	-1.4
- Geopolitical	3.0	25.6	-8.6	-5.5	-12.6	-9.7	...
- Emerging markets	3.3	23.0	-2.2	1.5	-2.9	10.6	-11.4
Average	-0.1	20.4	1.0	1.8	0.6	0.0	2.8
<i>St. Dev.</i>	(5.5)	(7.5)	(6.4)	(6.3)	(9.1)	(40.5)	(6.0)

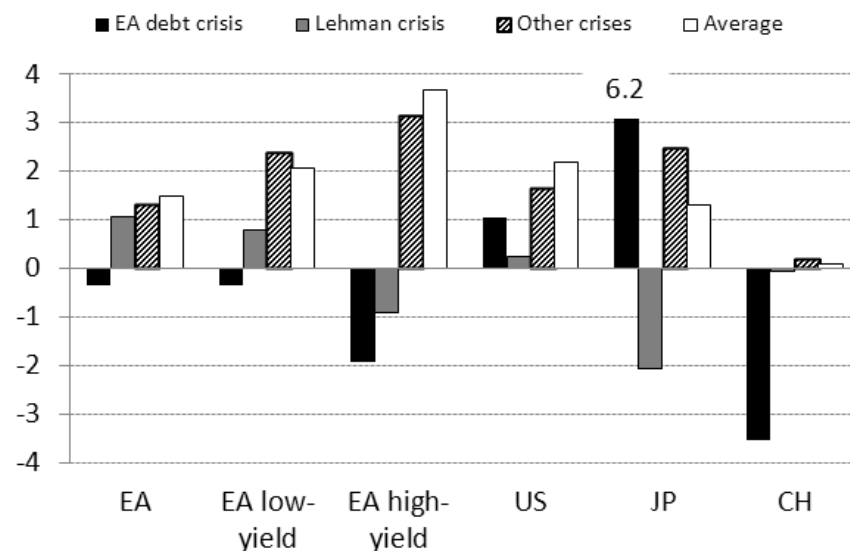
Descriptive evidence: equity vs. debt

External liabilities. Flows by asset class 1990:1 – 2012:4
 (as % of the outstanding stock of total portfolio liabilities in the previous year)

Equity



Debt

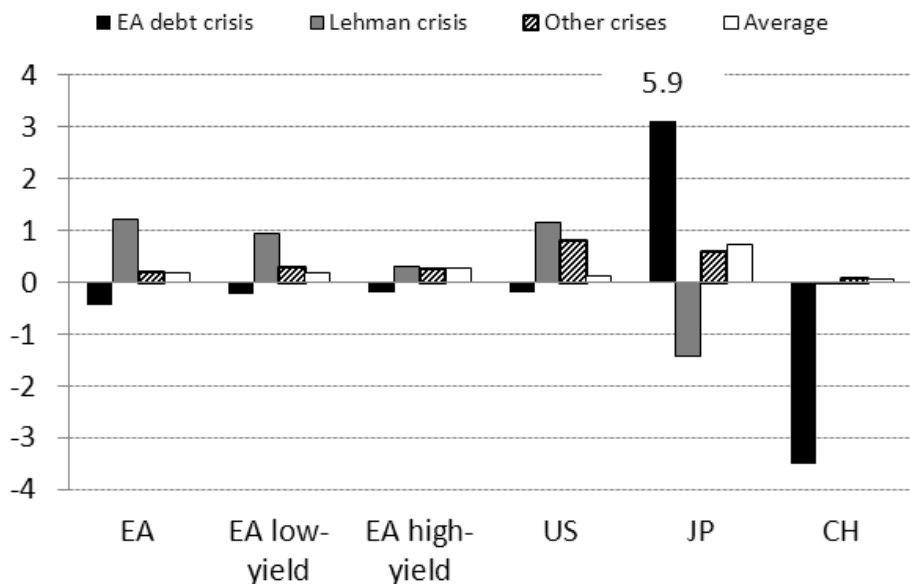


- Foreigners generally retrenching from equity during crises (CH exception, special case)
- Debt flows: more diversified response (see next)

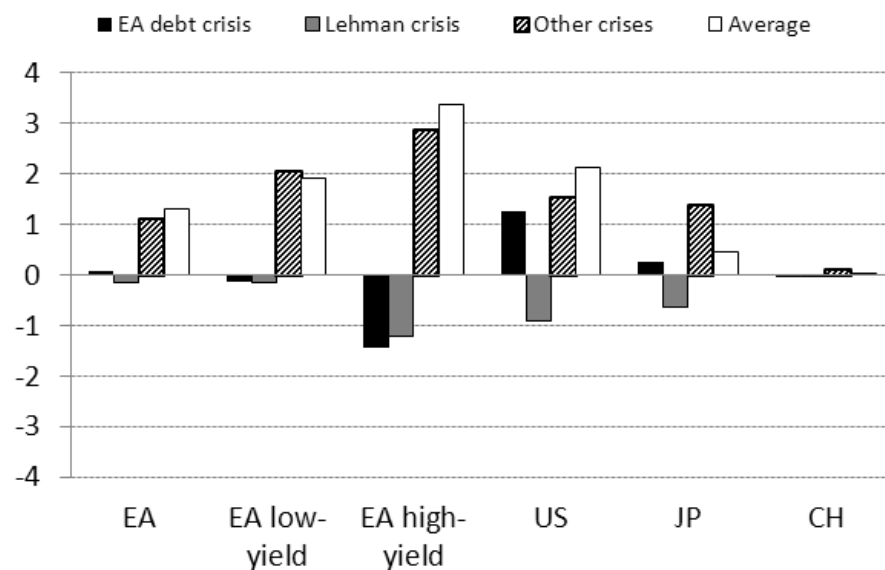
Descriptive evidence: maturity of debt

External liabilities. Flows by asset class 1990:1 – 2012:4 (as % of the outstanding stock of total portfolio liabilities in the previous year)

Money market instruments



Bonds and notes

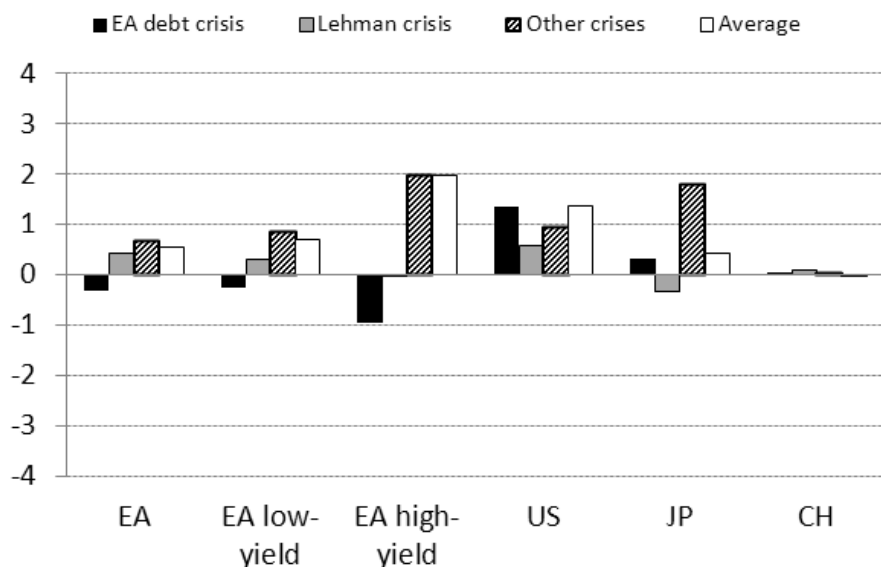


- In crises, foreign investors shorten the maturity of their debt portfolio

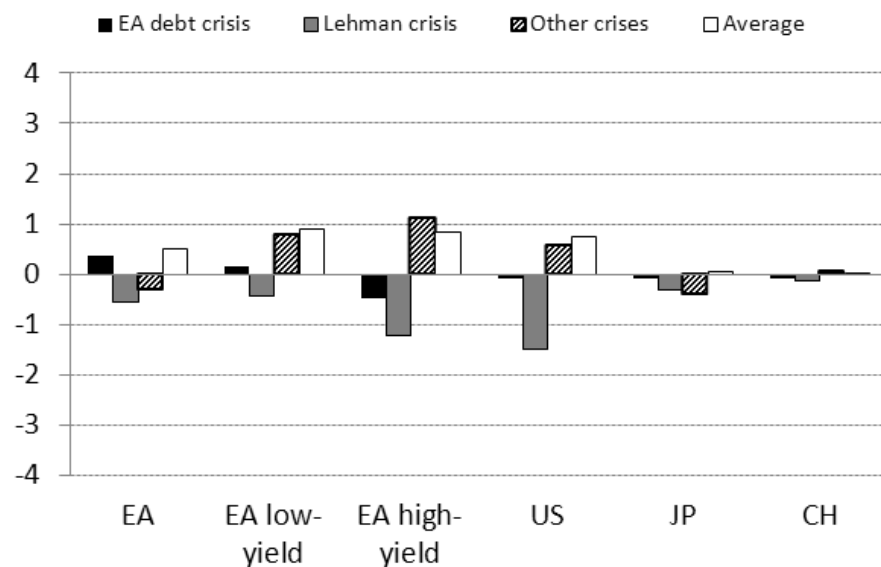
Descriptive evidence: credit risk

External liabilities. Flows by asset class 1990:1 – 2012:4 (as % of the outstanding stock of total portfolio liabilities in the previous year)

Government bonds and notes



Other bonds and notes



- In general, govt. bonds preferred to other (private) issuers, however...
- In Lehman, surprisingly, foreigners sold JP govt. bonds (EA/US lower)
- In 2011:3, evident fall in the demand for EA (high-yield) govt. bonds, stronger than for other bonds

OLS regression with issuance and crisis dummies

$$fd_{ijt} = \alpha + \beta fd_{ij,t-1} + \gamma iss_{ijt} + \sum_{x=1}^5 \delta_x DUM_x + v_{ijt}$$

- fd_{ij} is the foreign demand for securities issued in country i (as a share of country i 's overall foreign portfolio liabilities), j is the asset class,
- iss_{ij} is the time series for the domestic and international issuance in that asset class (also as a share of country i overall foreign portfolio liabilities) – restricted sample
- DUM_x are five different dummy variables identifying the periods of financial turbulence according to our classification
- These are not panel regressions

Euro area portfolio liabilities and crisis dummies

		Equity	Debt	Money market	Bonds and notes	Government bonds	Other bonds
Euro area	Euro area debt	-0.54 ***	-0.33	-0.73 ***	0.16	-0.62 **	0.07
	Lehman	-1.49 ***	-0.53	0.86 ***	-1.37 *	-0.01	-1.60 ***
	Geopolitical (9/11)	0.56 **	0.20	-0.44 ***	0.66 **	na	na
	US-based	-0.16	0.42	0.11	0.32	0.35	-0.73
	Emerging markets	na	na	na	na	na	na
Euro area high yield	Euro area debt	-1.18 ***	-2.95 ***	-0.37 ***	-2.06 ***	-1.22 ***	-0.07
	Lehman	-1.49 **	-2.84 ***	-0.06	-2.83 ***	-0.65 ***	-1.70 ***
	Geopolitical (9/11)	0.35 **	-2.58 ***	-1.02 ***	-1.34 ***	-0.93 ***	-0.23 **
	US-based	0.03	-0.54	-0.05	-0.23	0.14	-0.17
	Emerging markets	-0.26	1.26	-0.00	1.10	-1.45 **	-0.71 *
Euro area low yield	Euro area debt	-0.34 **	-1.66 ***	-0.58 ***	-1.53 ***	-0.80 ***	0.08
	Lehman	-0.46 *	-0.98 ***	0.48 ***	-1.52 ***	-0.10	-1.20 ***
	Geopolitical (9/11)	0.54	0.40 ***	-0.03	0.29 **	0.20 ***	0.24 ***
	US-based	-0.15	-0.11	0.22	-0.45	-0.17 *	-0.07
	Emerging markets	-0.66 **	-0.02	0.12	-0.12	0.60 ***	-0.41

- Retrenchment of foreign investors dominates during crises, in particular for EA high-yield countries
- A few instances of safe haven flows into EA low-yield economies

US, JP and CH portfolio liabilities and crisis dummies

		Equity	Debt	Money market	Bonds and notes	Government bonds	Other bonds
United States	Euro area debt	-0.69 ***	0.59 **	0.01	-0.09	-0.08	-0.06
	Lehman	-0.31 ***	-1.35 ***	0.63 **	-2.24 ***	-0.59 *	-1.61 **
	Geopolitical (9/11)	-0.39 ***	-1.21 ***	na	-1.21 ***	-0.32	-0.74 ***
	US-based	-0.11	-0.34 **	0.28	-0.47 **	0.03	-0.47
	Emerging markets	-0.60 ***	-1.87 **	na	-1.52 *	-1.10 *	-0.39 *
Japan	Euro area debt	-3.99 ***	5.81 ***	5.41 ***	-0.11	0.01	-0.02
	Lehman	-3.20 ***	-3.73	-2.10 *	-1.06	-0.85	-0.28 **
	Geopolitical (9/11)	-2.54 ***	-1.46 ***	-1.78 ***	0.37	0.59	-0.13 *
	US-based	-4.33 ***	0.44	-0.81	1.26	1.49	-0.24 *
	Emerging markets	-1.97 ***	2.17	1.19	1.12	1.82 **	-0.54 ***
Switzerland	Euro area debt	0.60 ***	-3.65 ***	-3.67 ***	-0.03	0.06 **	-0.11 ***
	Lehman	1.01 **	-0.31 *	-0.20 ***	-0.10	0.10 ***	-0.19 *
	Geopolitical (9/11)	-0.18	-0.02	-0.06	0.03	0.13 ***	-0.12 ***
	US-based	1.16 ***	0.20	0.07	0.15	0.05	0.10
	Emerging markets	na	na	na	na	na	na

- Excluding latest EA crisis, weaker than expected safe haven attraction of US securities
- Safe haven for foreigners: MMI in JP and US; government bonds in CH

Identification of global shock and idiosyncratic factors

- 1) **Global risk shock**, identified through sign restrictions in a VAR: the shock pushes VIX up, global stock return down and long-term US interest rates down (extension of Habib,-Stracca 2012 following Baele et al. 2013)
 - 2) **Euro area idiosyncratic** factor: changes in bond spreads of EA high-yield
 - 3) **US economic policy uncertainty**: change in the Baker-Bloom-Davis index based on (i) newspaper coverage; (ii) number of federal tax code provisions set to expire; (iii) disagreement among economic forecasters on CPI and expenditure
 - 4) **Emerging market** crises: fall in the return of an EM bond market index, i.e. the opposite of the EMBIG quarterly return
 - 5) A decomposition of global risk shocks in “**uncertainty**” (UC), the estimated realised variance from past values and VIX^2 , and “**risk aversion**” (RA) difference between VIX^2 and UC, following Bekaert-Hoerova-Lo Duca (BHL)
- (!) We take only **positive** values (results robust to different specifications)

Shocks and factors are positively correlated

	Global risk shock	Change in EA spread	Change in US policy uncertainty	Decline in EMBIG	Change in uncertainty (BHL)	Change in risk aversion (BHL)
Global risk shock		0.13	0.75	0.37	0.79	0.56
Change in EA spread	0.13		0.22	0.16	0.21	0.28
Change in US policy uncertainty	0.75	0.22		0.27	0.60	0.63
Decline in EMBIG	0.37	0.16	0.27		0.55	0.42
Change in uncertainty (BHL)	0.79	0.21	0.60	0.55		0.63
Change in risk aversion (BHL)	0.56	0.28	0.63	0.42	0.63	

- In particular, global risk shock is highly correlated with US economic policy uncertainty and the positive change in expected stock market volatility, i.e. uncertainty as measured by BHL
- Lower correlations for EA and EM idiosyncratic factors

OLS regression including global risk shock, idiosyncratic factors and decomposition (UC vs. RA)

- fd_{ij} is the foreign demand for securities issued in country i , j is the asset class
- 1. Replace crises dummies with global risk shock (g) and idiosyncratic factors (ea_sprd ; us_pol ; $embig$), trying several combinations to disentangle their impact

$$fd_{ijt} = \alpha_{ij} fd_{ij,t-1} + \beta_{ij}^g g_t + \beta_{ij}^{ea} ea_sprd_t + \beta_{ij}^{us} us_pol_t + \beta_{ij}^{em} embig_t + v_{ijt}$$

2. Decomposition of the VIX in uncertainty (UC) and risk aversion (RA)

$$fd_{ijt} = \alpha_{ij} fd_{ij,t-1} + \beta_{ij}^{uc} uc_t + \beta_{ij}^{ra} ra_t + v_{ijt}$$

- Not controlling for issuance (full sample)

Factors entered separately one by one

		Global risk shock	Change in EA spread	Change in US policy uncertainty	Decline in EMBIG
Equity	Euro area	-0.014 **	-0.010 ***	-0.020 **	-0.108 ***
	Euro area high yield	-0.007	-0.007 **	-0.016 **	-0.044
	Euro area low yield	-0.008 **	-0.006 ***	-0.016 ***	-0.027
	United States	-0.008 ***	-0.003 **	-0.011 ***	-0.041 ***
	Japan	-0.072 ***	-0.017 **	-0.097 ***	-0.061
	Switzerland	0.011 ***	0.003	0.013	0.062 ***
Money market	Euro area	0.007 **	-0.004	0.004	0.061 ***
	Euro area high yield	-0.002	-0.005 ***	-0.006 *	-0.035 ***
	Euro area low yield	0.009 ***	-0.002	0.007	0.020 *
	United States	0.012 ***	-0.001	0.013	0.081 ***
	Japan	0.009	0.012	0.029	0.024
	Switzerland	-0.007	-0.002	-0.023	-0.002
Bond and notes	Euro area	-0.018 ***	-0.009	-0.029 ***	-0.101 ***
	Euro area high yield	-0.043 ***	-0.039 ***	-0.077 ***	-0.285 **
	Euro area low yield	-0.015 ***	0.004	-0.023 **	-0.095 *
	United States	-0.027 ***	-0.005	-0.030 **	-0.095 **
	Japan	0.005	-0.010 *	0.008	-0.027
	Switzerland	0.000	-0.001	-0.001	0.010
Government bonds	Euro area	-0.003	-0.001	-0.014 ***	-0.003
	Euro area high yield	-0.024 **	-0.019 **	-0.054 ***	-0.073 *
	Euro area low yield	-0.004	-0.003	-0.012 **	0.027
	United States	-0.013 **	0.000	-0.012	-0.065 *
	Japan	0.013	-0.006	0.018	0.007
	Switzerland	0.001	-0.002	0.000	0.013 **
Other bonds	Euro area	-0.020 ***	-0.001	-0.021 *	-0.099 ***
	Euro area high yield	-0.015 ***	-0.006	-0.019 *	-0.069 ***
	Euro area low yield	-0.013 ***	-0.008 **	-0.011 **	-0.055 *
	United States	-0.014 ***	-0.003 *	-0.016 **	-0.027 *
	Japan	-0.005 *	-0.003	-0.005	-0.031
	Switzerland	-0.000	0.001	-0.002	-0.004

Minus signs dominate; few exceptions of safe haven for foreigners (e.g. MM or CH)

Jointly excluding global risk shock

	Global risk shock	Change in EA spread	Change in US policy uncertainty	Decline in EMBIG
Equity	Euro area	-0.009 ***	-0.012	-0.088 ***
	Euro area high yield	-0.008 ***	-0.011	-0.026
	Euro area low yield	-0.005 **	-0.013 *	-0.009
	United States	-0.003 ***	-0.006 **	-0.033 ***
	Japan	-0.009	-0.107 ***	0.044
	Switzerland	0.001	0.009	0.046 *
Money market	Euro area	-0.005 *	0.004	0.057 ***
	Euro area high yield	-0.004 ***	-0.001	-0.028 **
	Euro area low yield	-0.004 **	0.009	0.017
	United States	-0.003	0.012	0.069 ***
	Japan	0.018 **	0.023	-0.017
	Switzerland	0.001	-0.026	0.040
Bond and notes	Euro area	-0.005	-0.022 **	-0.062 *
	Euro area high yield	-0.026 **	-0.037 *	-0.189
	Euro area low yield	-0.007	-0.015	-0.074
	United States	-0.002	-0.025 *	-0.072 *
	Japan	-0.011	0.021	-0.031
	Switzerland	-0.001	-0.002	0.014 *
Government bonds	Euro area	0.001	-0.016 **	0.018 *
	Euro area high yield	-0.007 **	-0.028 ***	-0.021
	Euro area low yield	-0.001	-0.016 ***	0.052
	United States	0.002	-0.008	-0.060 *
	Japan	-0.006	0.022	-0.006
	Switzerland	-0.002	0.001	0.013 ***
Other bonds	Euro area	0.001	-0.018 *	-0.075 ***
	Euro area high yield	-0.001	-0.015 **	-0.045 **
	Euro area low yield	-0.007 **	-0.004	-0.046 *
	United States	-0.001	-0.016	-0.012
	Japan	-0.005 **	-0.000	-0.025
	Switzerland	0.001	-0.002 *	-0.000

EA crisis impacts “negatively” EA, not others. Note difference with US policy UC

Global shock and idiosyncratic factors jointly

		Global risk shock	Change in EA spread	Change in US policy uncertainty	Decline in EMBIG
Equity	Euro area	-0.002	-0.009 ***	-0.010	-0.080
	Euro area high yield	0.002	-0.008 ***	-0.013	-0.028
	Euro area low yield	-0.001	-0.005 **	-0.012	-0.008
	United States	-0.003	-0.003 ***	-0.003	-0.030 ***
	Japan	-0.056 ***	-0.012 *	-0.045	0.096
	Switzerland	0.012 **	0.001	-0.002	0.002
Money market	Euro area	0.009 **	-0.004	-0.004	0.024
	Euro area high yield	0.001	-0.004 ***	-0.002	-0.028 **
	Euro area low yield	0.011 ***	-0.004 **	-0.003	0.007
	United States	0.006	-0.003	0.006	0.048 ***
	Japan	-0.010	0.017 **	0.034	-0.008
	Switzerland	0.009	0.001	-0.034 *	0.006
Bond and notes	Euro area	-0.006	-0.005	-0.016	-0.041
	Euro area high yield	0.014	-0.025 **	-0.051 *	-0.208
	Euro area low yield	0.001	-0.007	-0.015	-0.074
	United States	-0.020 **	-0.002	-0.004	-0.053
	Japan	0.004	-0.011	0.016	-0.035
	Switzerland	0.002	-0.001	-0.003	0.008
Government bonds	Euro area	0.007	0.001	-0.023 **	-0.007
	Euro area high yield	0.002	-0.007 **	-0.031 **	-0.026
	Euro area low yield	-0.002	-0.001	-0.014 *	0.057
	United States	-0.007	0.002	-0.001	-0.053
	Japan	0.011	-0.005	0.010	-0.015
	Switzerland	-0.001	-0.002	0.002	0.018 **
Other bonds	Euro area	-0.019 ***	0.001	-0.002	0.000
	Euro area high yield	-0.014 **	-0.001	-0.002	-0.013
	Euro area low yield	-0.017 ***	-0.007 **	0.013 *	-0.008
	United States	-0.013 ***	-0.001	-0.002	0.000
	Japan	-0.007	-0.005 **	0.007	-0.018
	Switzerland	0.003	0.001	-0.005 **	-0.011

Statistical significance declines but main story holds

Uncertainty or risk aversion?

		Jointly		Separately	
		Change in uncertainty (BHL)	Change in risk aversion (BHL)	Change in uncertainty (BHL)	Change in risk aversion (BHL)
Equity	Euro area	-0.012 *	-0.020	-0.016 ***	-0.040 ***
	Euro area high yield	-0.007	0.002	-0.006	-0.008
	Euro area low yield	-0.005	-0.006	-0.007 **	-0.015 **
	United States	-0.001	-0.015 **	-0.005 *	-0.017 ***
	Japan	-0.015	-0.102 ***	-0.042 **	-0.124 ***
	Switzerland	0.009 ***	0.006	0.011 ***	0.022 **
Money market	Euro area	0.009 ***	-0.012	0.006 **	0.003
	Euro area high yield	-0.001	-0.013 **	-0.004 **	-0.014 **
	Euro area low yield	0.005 **	0.004	0.006 ***	0.011 *
	United States	0.010 ***	-0.004	0.009 ***	0.014
	Japan	-0.018	0.059	-0.003	0.031
	Switzerland	-0.002	-0.024	-0.007	-0.027
Bond and notes	Euro area	-0.015 ***	-0.009	-0.017 ***	-0.034 *
	Euro area high yield	-0.019	-0.072 **	-0.039 **	-0.101 ***
	Euro area low yield	-0.020 ***	0.008	-0.018 ***	-0.022
	United States	-0.018 **	-0.018	-0.023 ***	-0.044 **
	Japan	-0.017	0.024	-0.010	-0.002
	Switzerland	-0.000	0.002	0.000	0.002
Government bonds	Euro area	-0.001	0.001	-0.001	-0.001
	Euro area high yield	-0.002	-0.060 *	-0.018 *	-0.063 **
	Euro area low yield	-0.005 *	0.008	-0.003	0.001
	United States	-0.006 *	-0.013	-0.010 **	-0.022
	Japan	-0.010	0.022	-0.004	0.007
	Switzerland	0.002 ***	-0.004 **	0.001 ***	-0.001
Other bonds	Euro area	-0.016 ***	0.014	-0.014 ***	-0.015
	Euro area high yield	-0.016 ***	-0.007	-0.018 ***	-0.030 **
	Euro area low yield	-0.015 ***	0.007	-0.013 ***	-0.015
	United States	-0.010	-0.004	-0.011 *	-0.018 **
	Japan	-0.003 **	-0.003	-0.004 **	-0.008
	Switzerland	-0.002 *	0.006 **	-0.001	0.003

Investors react to greater uncertainty, but risk aversion matters for equity

Main conclusions

- Retrenchment prevails after global and idiosyncratic shocks
- No consistent safe haven asset or country for all crises
- In crises, tendency to shy away from equities and bonds not issued by the government (credit risk matters)
- Propensity to shorten the maturity profile of the portfolio of foreign debt securities, also those issued by the government
- EA crisis regional impact – US policy uncertainty global impact
- Uncertainty matters more than risk aversion
- Risk shocks have an impact on issuance that confounds the correlation between shocks and foreign demand

Many thanks for your attention!