EUROPEAN CENTRAL BANK

EUROSYSTEM

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European Central Bank*

The making of global safe assets: does the shock matter?

Conference on Global Safe Assets, International Reserves, and Capital Flows

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* The views expressed are those of the authors and do not necessarily reflect those of the European Central Bank.

Outline

- Motivation
- Our contribution and main findings
- Structural drivers of global risk
- An empirical model of asset safety
- Data
- Results
- Conclusions

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Motivation

- Growing interest in **safe assets**:
  - *certain nominal repayment* even in the worst state of the world
  - *information insensitive* especially in bad times
  - *negative beta*: appreciating in market downturns
- Why important? Macroeconomic consequences of safe asset scarcity (Caballero et al. 2016 and 2017)
- Secular increase in excess demand for safe assets accelerated by the global financial crisis → global safe interest rate drops to zero →

Safety trap: safe r > equilibrium r

- If adjustment via prices not possible (also through reserve currency appreciation) → adjustment via quantities

Motivation

Limited understanding of what makes a safe asset

- Coordination of investors and large debt size (*nowhere else to go*) important drivers of safe assets beyond credit risk (He et al., 2016)

Generally focusing on US liabilities

- US Treasuries have a specific *safety* attribute beyond *liquidity* (Krishnamurthy and Vissing-Jorgensen, 2012)

Sparse empirical evidence across different countries

- Secular decline in the "convenience yield" of long-term US Treasuries vis-à-vis G10 economies outside the global financial crisis (Du et al., 2018)
- US Treasury convenience yield at short maturities still positive

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Our contribution

- **Safe government bonds** appreciate (yields decline) when global risk aversion rises (VIX increases)
- Focus on **long-term government bond yields** on a cross-section of advanced and emerging markets
- Deepen our understanding of the **role of fundamentals** in driving those yields **during periods of financial turbulence**
- Disentangle different **drivers of the VIX**: US monetary policy, financial and geopolitical risk shocks
- Test the hypothesis that the role of fundamentals is **conditional to different types of shocks**
- Control whether the sensitivity to fundamentals is particularly low for issuers of safe assets (notably the US)

Preview of our main findings

- **Only a handful of variables explain** why some government bonds behave like **safe assets** in periods of higher risk aversion
  - inertia (bonds seen as safe asset in the past)
  - political risk
  - the size of the economy
- There is no *catch-all* measure of vulnerability to all possible global shocks: **fundamentals are** to a significant extent **shock-dependent**
- **US Treasuries** are **not** necessarily **special** (apart from the size of their market)

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Structural drivers of global risk

VIX as a measure of global risk and appetite for safe assets

Disentangling structural shocks that drive the VIX with a Vector Auto Regression including US and global variables:

1. 1-Year Treasury Constant Maturity Rate
2. S&P 500 Index (log)
3. US Consumer Price Index (log)
4. High-Yield USD Corporate Bond Index (yield)
5. Trade Weighted US Dollar index (log)
6. Oil Price (Brent Quality, log)
7. VIX

Monthly data, estimated via Bayesian Methods (Minnesota Priors and conventional prior setting)

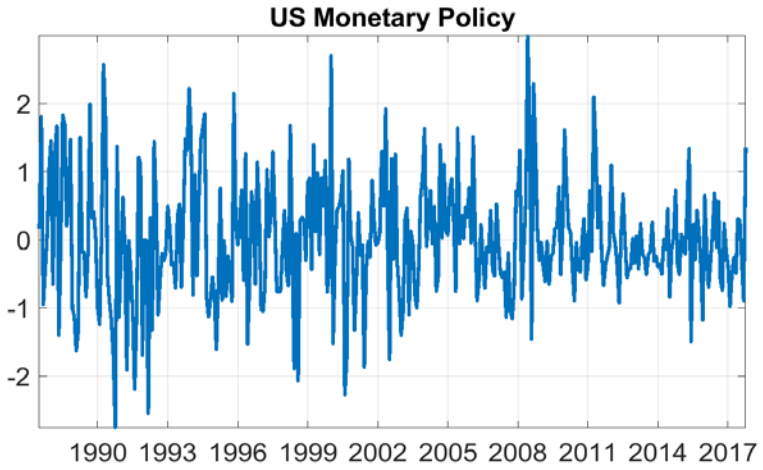
Structural drivers of global risk: identification

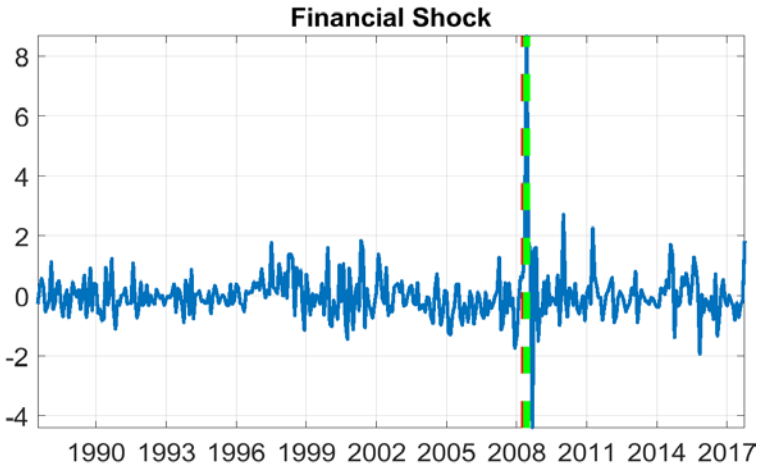
Rich configuration of (four) shocks

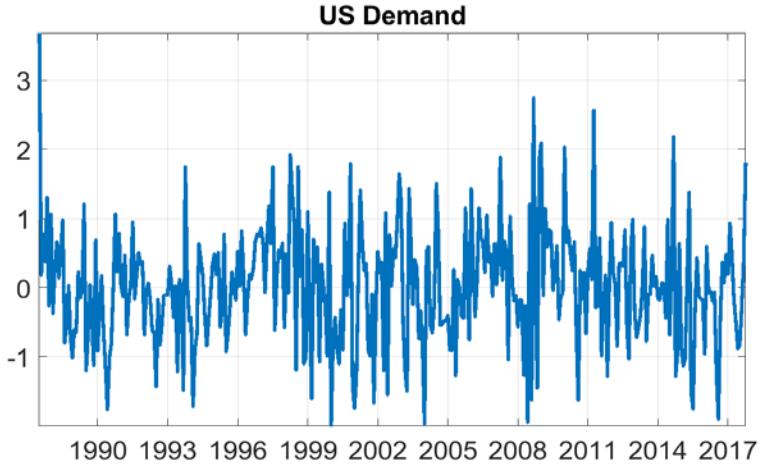
- (1) US Monetary Policy shock identified via **external instrument**: Jarocinski and Karadi, 2018,monetary policy surprises
- (2) US Demand, (3) Financial and (4) Geopolitical Uncertainty shocks through **sign** and **narrative restrictions**

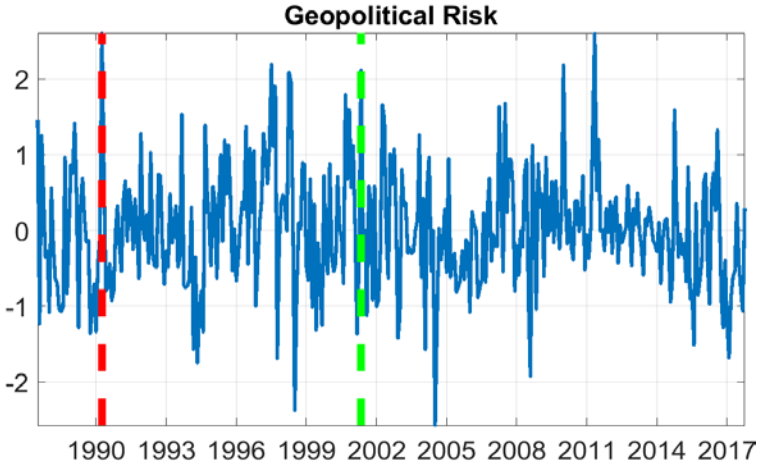
Shock	*Monetary Policy (as implied by external instrument)*	US Demand	Financial	Geopolitical Uncertainty
US Treasury Rate (one-year)	+	-	-	-
SP500 (log)	-	-	-	-
US Consumer Price Index (log)	-	-	-	+
High Yield USD Corp. Bonds (yield)	+	-	+	
Trade Weighted US Dollar index (log)	+	-	+	+
Oil Price (Brent Quality, log)		-	-	+
VIX	+	+	+	+

Structural drivers of global risk: shocks





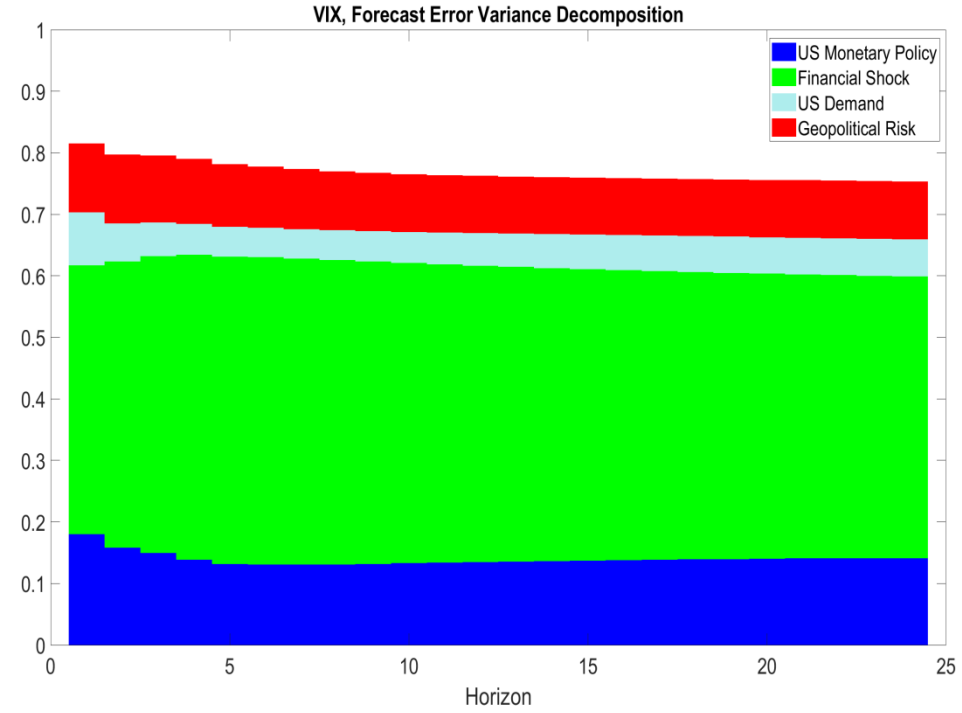




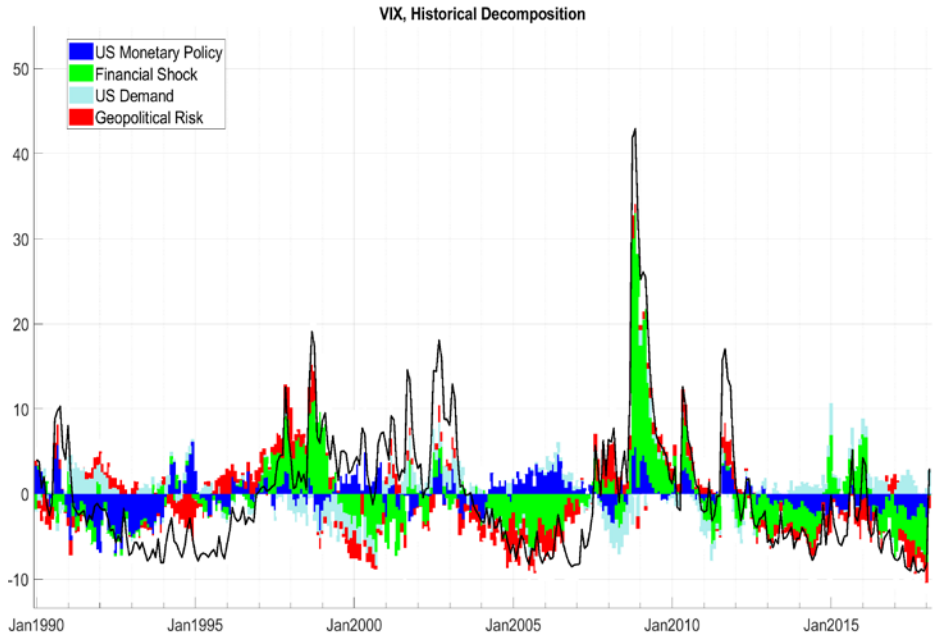
Notes: the **red** and **green** dashed lines in the "Financial Shock" panel mark the September and October 2008 observations, the dates on which we impose "narrative restrictions" to identify this shock. The **red** and **green** dashed lines in the "Geopolitical Risk" panel mark the August 1990 and September 2001 observations, the dates on which we impose "narrative restrictions" to identify this shock. Median shocks across posterior draws.

Structural drivers of global risk: decomposition of the VIX

VIX: Forecast Error Variance Decomposition



VIX: Historical Decomposition



- Significant impact of US monetary policy on global risk appetite
- Yet, overall relevance of “financial shocks” much larger
- Role of US demand shocks negligible

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An empirical model of asset safety

Panel regression for 40 advanced and emerging economies between 1990 and 2018 (monthly, unbalanced), as in Habib and Stracca (2012)

$$\Delta\bar{y}_{it} = \alpha_i + \lambda_t + \beta X_{i,t-1} + \gamma X_{i,t-1}\Delta v_t + \epsilon_{it}$$

$\Delta\bar{y}_{it}$ Standardised change in long-term government bond yields

$X_{i,t-1}$ Vector of “controls” and “country fundamentals”

Δv_t Change in the VIX or one of the shocks

γ Coeff. for the interaction term, our main parameter of interest

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Data: control variables

Carry trade type of behaviour:

- level of government bond yields from Global Financial Data, Bloomberg and Thomson Reuters

Trilemma, countries that are open and adopting a less flexible exchange rate regime may experience stronger transmission of risk shocks:

- updated de jure Chinn Ito (2006) index of capital account liberalisation
- two dummies for strict pegs and soft pegs, using exchange rate arrangement classification by Obstfeld et al (2010), updated

Self-fulfilling prophecy or **inertia** in the relationship of yields with global risk:

- recursive correlation between change in yields and changes in the VIX

$$z_{it} = Correl_{t_0,t-1}(\Delta y_{it}, \Delta v_t)$$

Data: country fundamentals

Macroeconomic developments:

- Real GDP growth (IMF)
- Inflation (IMF)

Fiscal fundamentals:

- General government deficit as % of GDP (IMF)
- Public debt as % of GDP (IMF) and its squared term

External sustainability:

- Current account as % of GDP (IMF)
- Net foreign assets as % of GDP (IMF)

Political risk and the quality of institutions:

- Political risk *rating* index (International Country Risk Group)

Size of the market:

- Share of domestic GDP on global GDP at Purchasing Power Parity (IMF)

All fundamentals at annual frequency:

- Interpolated with a cubic spline and lagged by 12 months

Data: summary statistics

	Mean	SD	Min	Max	p1	p99	Skewness	Kurtosis	Obs.
Long-term government bond yield, %	5.88	3.86	-0.57	48.62	0.21	16.63	1.79	11.98	11,802
Yield change, basis points	-2.37	53.93	-1,563	3,211	-112.0	107.0	16.73	1,205	11,339
Yield change/St.Dev, % (DYIELD)	-8.01	100.5	-1,056	1,419	-281.3	267.7	0.16	11.88	11,339
VIX, index	19.31	7.43	9.51	59.89	10.41	44.84	1.72	7.61	13,920
VIX change, index (DVIX)	0.00	4.15	-15.28	20.50	-11.04	16.31	0.84	7.90	13,880
Recursive correl. (DYIELD, DVIX), %	5.72	16.24	-73.9	74.9	-28.43	51.53	0.61	4.45	11,198
Capital account liberalisation, index	0.74	0.34	0.00	1.00	0.00	1.00	-0.83	2.08	13,671
Strict peg, dummy	0.35	0.48	0.00	1.00	0.00	1.00	0.63	1.40	13,848
Soft peg, dummy	0.28	0.45	0.00	1.00	0.00	1.00	0.96	1.92	13,848
Domestic GDP growth, %	3.09	2.98	-14.07	22.32	-5.01	10.37	-0.06	5.59	13,334
Inflation, %	6.04	19.18	-4.58	308.0	-0.99	61.88	10.80	141.6	13,370
General govt. deficit, % of GDP	1.90	4.37	-20.24	32.00	-13.58	11.10	-0.64	7.03	12,976
Public debt, % of GDP	59.95	36.62	0.05	237.1	0.89	183.3	1.47	6.74	12,143
Current account, % of GDP	0.80	5.35	-14.48	26.06	-9.96	17.36	1.05	4.93	13,719
Net foreign assets, % of GDP	-6.49	63.74	-199.3	415.9	-129.7	271.8	2.33	11.53	13,430
Political Risk Rating, index	74.73	12.08	27.00	97.00	43.00	93.50	-0.72	2.95	13,408
Share of world GDP at PPP, %	2.07	3.44	0.15	22.21	0.16	19.93	3.63	17.43	13,814

Outliers in the change in yields → standardise and winsorise data (1% cut)

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Results: change in yields, change in VIX and fundamentals

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
DVIX * YIELD	0.44***	0.48***	0.44***	0.44***	0.45***	0.46***	0.48***	0.36***	0.48***	0.17	
	(0.12)	(0.11)	(0.12)	(0.12)	(0.12)	(0.13)	(0.12)	(0.11)	(0.12)	(0.13)	
DVIX * KAOPEN	-1.17	0.08	0.29	-0.27	-0.21	0.03	0.22	3.41**	0.01	2.02	
	(1.16)	(1.10)	(1.01)	(1.02)	(1.04)	(1.02)	(1.02)	(1.65)	(0.90)	(1.54)	
DVIX * STRICT PEG	0.33	0.33	0.05	0.11	0.21	0.23	0.20	-0.00	0.03	-0.46	
	(0.58)	(0.61)	(0.63)	(0.58)	(0.57)	(0.62)	(0.63)	(0.54)	(0.60)	(0.42)	
DVIX * SOFT PEG	0.59	0.31	0.41	0.32	0.40	0.47	0.34	0.13	0.13	0.25	
	(0.60)	(0.60)	(0.64)	(0.60)	(0.59)	(0.64)	(0.63)	(0.60)	(0.57)	(0.52)	
DVIX * INERTIA	0.06***	0.06***	0.06***	0.06***	0.06***	0.06***	0.06***	0.04**	0.05***	0.05**	0.06***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
DVIX * GROWTH	-0.24**									-0.12	-0.23**
	(0.11)									(0.10)	(0.09)
DVIX * INFLATION		0.03								-0.13	
		(0.07)								(0.13)	
DVIX * DEFICIT			0.12**							0.02	
			(0.05)							(0.06)	
DVIX * DEBT				0.01**						0.01	0.01**
				(0.00)						(0.01)	(0.00)
DVIX * DEBT SQ					0.00***					0.00	
					(0.00)					(0.00)	
DVIX * CA						-0.05				-0.04	
						(0.04)				(0.04)	
DVIX * NFA							-0.00			-0.00	
							(0.00)			(0.00)	
DVIX * RATING								-0.16***		-0.19***	-0.18***
								(0.05)		(0.05)	(0.04)
DVIX * SIZE									-0.10***	-0.20***	-0.19***
									(0.04)	(0.05)	(0.04)
Observations	10,666	10,666	10,791	10,458	10,458	10,928	10,928	10,919	10,928	10,292	10,351
Countries	40	40	40	40	40	40	40	40	40	40	40
R-squared	0.37	0.37	0.37	0.38	0.38	0.37	0.37	0.37	0.37	0.38	0.38

Notes: the dependent variable is the standardised change in government bond yields. The model includes country-specific fixed effects and time fixed effects. For reasons of space the table reports only the interaction terms between controls, fundamentals and global risk (or one its drivers). Robust standard errors are reported in parentheses. The asterisks ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Results: change in yields, change in VIX and fundamentals

	(1)	(2)	(3)	(4)	(5)	(6)
	Benchmark	Advanced	Emerging	Excl. US	Excl. 2008-09	Including outliers
DVIX * INERTIA	0.06***	0.02	0.07***	0.06***	0.05***	0.07***
	(0.02)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)
DVIX * GROWTH	-0.23**	-0.09	-0.37*	-0.21**	-0.06	-0.31**
	(0.09)	(0.10)	(0.19)	(0.10)	(0.11)	(0.13)
DVIX * DEBT	0.01**	0.01**	0.03	0.01**	0.01***	0.01**
	(0.00)	(0.00)	(0.02)	(0.00)	(0.01)	(0.01)
DVIX * RATING	-0.18***	-0.26***	-0.06	-0.18***	-0.20***	-0.20***
	(0.04)	(0.05)	(0.07)	(0.04)	(0.03)	(0.05)
DVIX * SIZE	-0.19***	-0.22***	-0.06	-0.25**	-0.24***	-0.19***
	(0.04)	(0.05)	(0.12)	(0.12)	(0.05)	(0.05)
Observations	10,351	7,052	3,299	10,027	9,468	10,351
Countries	40	23	17	39	40	40
R-squared	0.38	0.54	0.30	0.38	0.38	0.35

Notes: the dependent variable is the standardised change in government bond yields. The model includes country-specific fixed effects and time fixed effects. The table reports only the interaction terms between controls, fundamentals and global risk (or one its drivers). Robust standard errors are reported in parentheses. The asterisks ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Large DVIX shock: economic significance of selected fundamentals

	Conditional to a large DVIX shock	Fundamentals in 2018		
	Actual change in yield (bp)	Inertia (%)	Political risk rating (index)	Size (% of world GDP at PPP)
US	-10	-11.0	85.0	15.2
Other safe (JP, DE, CH, UK)	-9	-6.8	83.9	2.5
Other advanced	-3	-1.8	81.9	0.7
Emerging	8	10.9	63.9	2.6

Differential yield change with respect to the US (basis points), conditional to a large DVIX shock by 2 standard deviations

	Actual difference	Predicted difference by fundamentals		
		Inertia	Political risk	Size
Other safe (JP, DE, CH, UK)	1	0.4	0.4	4
Other advanced	7	2	2	10
Emerging	18	8	24	15

Notes: a large shock is measured as a 2 standard deviation change in global risk aversion, which corresponds to an increase by around 8 pp in the VIX and identifies 10 episodes in the historical VIX series since 1990.

Results: change in yields, US monetary policy shocks and fundamentals

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
US mon. policy shock * YIELD	1.80**	2.32***	1.59**	1.70**	1.72**	1.58**	1.65**	1.29*	1.71**	1.51	1.64**
	(0.69)	(0.80)	(0.75)	(0.80)	(0.80)	(0.78)	(0.76)	(0.74)	(0.74)	(0.90)	(0.80)
US mon. policy shock * KAOPEN	7.81	12.54*	12.87*	9.91	9.97	11.86*	12.82*	21.39***	12.86*	15.97**	16.88***
	(6.40)	(6.51)	(6.44)	(6.91)	(6.86)	(6.85)	(6.75)	(7.55)	(6.70)	(6.15)	(6.15)
US mon. policy shock * STRICT PEG	-0.39	-0.83	0.00	0.13	0.30	-0.21	-0.24	0.06	-0.48	0.21	
	(2.13)	(2.37)	(2.19)	(2.36)	(2.37)	(2.34)	(2.34)	(2.35)	(2.72)	(2.68)	
US mon. policy shock * SOFT PEG	-0.28	-1.30	-1.71	-2.10	-1.95	-2.97	-3.09	-2.85	-3.45	0.98	
	(2.27)	(2.47)	(2.37)	(2.50)	(2.49)	(2.54)	(2.57)	(2.61)	(2.78)	(2.53)	
US mon. policy shock * INERTIA	0.24**	0.25***	0.31***	0.32***	0.32***	0.26***	0.25***	0.24**	0.25***	0.30***	0.29***
	(0.09)	(0.09)	(0.09)	(0.10)	(0.10)	(0.08)	(0.09)	(0.10)	(0.08)	(0.10)	(0.08)
US mon. policy shock * GROWTH	-1.32***									-1.40**	-1.49***
	(0.41)									(0.52)	(0.47)
US mon. policy shock * INFLATION		-0.40								-1.15**	-1.16***
		(0.25)								(0.44)	(0.40)
US mon. policy shock * DEFICIT			0.59**							0.21	
			(0.24)							(0.33)	
US mon. policy shock * DEBT				0.02						-0.14*	-0.12*
				(0.03)						(0.07)	(0.07)
US mon. policy shock * DEBT SQ					0.00					0.00*	0.00*
					(0.00)					(0.00)	(0.00)
US mon. policy shock * CA						-0.17				-0.06	
						(0.15)				(0.20)	
US mon. policy shock * NFA							-0.01			-0.00	
							(0.01)			(0.01)	
US mon. policy shock * RATING								-0.44***		-0.64***	-0.68***
								(0.16)		(0.21)	(0.19)
US mon. policy shock * SIZE									-0.08	-0.13	
									(0.19)	(0.25)	
Observations	10,266	10,266	10,391	10,058	10,058	10,528	10,528	10,519	10,528	9,892	9,892
Countries	40	40	40	40	40	40	40	40	40	40	40
R-squared	0.37	0.37	0.37	0.38	0.38	0.37	0.36	0.36	0.36	0.38	0.38

Notes: the dependent variable is the standardised change in government bond yields. The model includes country-specific fixed effects and time fixed effects. For reasons of space the table reports only the interaction terms between controls, fundamentals and global risk (or one its drivers). Robust standard errors are reported in parentheses. The asterisks ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Results: change in yields, US monetary policy shocks and fundamentals

	(1)	(2)	(3)	(4)	(5)	(6)
	Benchmark	Advanced	Emerging	Excl. US	Excl. 2008-09	Including outliers
US mon. policy shock * YIELD	1.64**	3.47***	0.46	1.76**	1.69**	2.41**
	(0.80)	(1.14)	(0.95)	(0.78)	(0.78)	(1.18)
US mon. policy shock * KAOPEN	16.88***	62.56***	16.10*	16.43**	15.84**	20.46***
	(6.15)	(9.31)	(9.14)	(6.16)	(6.10)	(7.02)
US mon. policy shock * INERTIA	0.29***	0.07	0.30***	0.28***	0.30***	0.35***
	(0.08)	(0.12)	(0.08)	(0.08)	(0.10)	(0.12)
US mon. policy shock * GROWTH	-1.49***	-0.89	-2.53**	-1.47***	-0.99**	-1.53**
	(0.47)	(0.65)	(0.93)	(0.47)	(0.45)	(0.58)
US mon. policy shock * INFLATION	-1.16***	-1.18*	-0.77	-1.16***	-1.18***	-1.38***
	(0.40)	(0.62)	(0.47)	(0.40)	(0.38)	(0.50)
US mon. policy shock * DEBT	-0.12*	-0.09	-0.18	-0.13*	-0.15**	-0.15*
	(0.07)	(0.07)	(0.42)	(0.07)	(0.06)	(0.08)
US mon. policy shock * DEBT SQ	0.00*	0.00**	0.00	0.00*	0.00***	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
US mon. policy shock * RATING	-0.68***	-0.41*	-0.47	-0.64***	-0.68***	-0.68***
	(0.19)	(0.23)	(0.31)	(0.19)	(0.18)	(0.21)
Observations	9,892	6,763	3,129	9,578	9,009	9,892
Countries	40	23	17	39	40	40
R-squared	0.38	0.54	0.30	0.38	0.38	0.35

Notes: the dependent variable is the standardised change in government bond yields. The model includes country-specific fixed effects and time fixed effects. The table reports only the interaction terms between controls, fundamentals and global risk (or one its drivers). Robust standard errors are reported in parentheses. The asterisks ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Results: change in yields, financial shocks and fundamentals

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial shock * YIELD	2.27***	2.23***	2.26***	2.17***	2.20***	2.12***	2.20***	1.85***	2.33***	1.05	
	(0.58)	(0.56)	(0.62)	(0.57)	(0.56)	(0.63)	(0.59)	(0.66)	(0.57)	(0.82)	
Financial shock * KAOPEN	8.81	5.71	5.56	5.51	5.44	4.34	5.29	15.00*	4.71	22.50**	
	(5.54)	(5.43)	(5.37)	(5.62)	(5.48)	(5.25)	(5.17)	(8.02)	(5.20)	(8.43)	
Financial shock * STRICT PEG	-0.78	-0.67	-1.30	-0.37	-0.19	-1.04	-1.08	-1.54	-1.34	-1.96	
	(3.34)	(3.33)	(3.51)	(3.30)	(3.21)	(3.29)	(3.32)	(3.20)	(3.39)	(3.34)	
Financial shock * SOFT PEG	-2.45	-1.49	-1.46	-0.33	-0.09	-0.58	-0.79	-1.85	-1.82	-1.50	
	(3.04)	(2.78)	(2.76)	(2.90)	(2.86)	(2.89)	(2.97)	(2.81)	(2.73)	(2.96)	
Financial shock * INERTIA	0.27**	0.27**	0.22*	0.26**	0.25**	0.22**	0.21*	0.18*	0.20*	0.21**	0.21***
	(0.10)	(0.11)	(0.11)	(0.11)	(0.11)	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)	(0.07)
Financial shock * GROWTH	0.59									1.14	
	(0.63)									(0.69)	
Financial shock * INFLATION		-0.10								0.05	
		(0.26)								(0.39)	
Financial shock * DEFICIT			0.21							-0.15	
			(0.26)							(0.27)	
Financial shock * DEBT				0.03						-0.03	
				(0.03)						(0.08)	
Financial shock * DEBT SQ					0.00					0.00	
					(0.00)					(0.00)	
Financial shock * CA						-0.25				-0.13	
						(0.17)				(0.20)	
Financial shock * NFA							-0.03**			-0.03**	-0.03***
							(0.01)			(0.01)	(0.01)
Financial shock * RATING								-0.47*		-0.60**	-0.36***
								(0.24)		(0.27)	(0.11)
Financial shock * SIZE									-0.28	-0.48*	-0.43***
									(0.27)	(0.26)	(0.15)
Observations	10,266	10,266	10,391	10,058	10,058	10,528	10,528	10,519	10,528	9,892	10,590
Countries	40	40	40	40	40	40	40	40	40	40	40
R-squared	0.37	0.37	0.37	0.38	0.38	0.37	0.37	0.37	0.37	0.38	0.36

Notes: the dependent variable is the standardised change in government bond yields. The model includes country-specific fixed effects and time fixed effects. For reasons of space the table reports only the interaction terms between controls, fundamentals and global risk (or one its drivers). Robust standard errors are reported in parentheses. The asterisks ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Results: change in yields, financial shocks and fundamentals

	(1)	(2)	(3)	(4)	(5)	(6)
	Benchmark	Advanced	Emerging	Excl. US	Excl. 2008-09	Including outliers
Financial shock * INERTIA	0.21***	-0.05	0.33***	0.21***	0.16**	0.26***
	(0.07)	(0.13)	(0.09)	(0.07)	(0.06)	(0.08)
Financial shock * NFA	-0.03***	-0.03***	-0.07	-0.03***	-0.02	-0.03***
	(0.01)	(0.01)	(0.09)	(0.01)	(0.01)	(0.01)
Financial shock * RATING	-0.36***	-0.75***	0.11	-0.36***	-0.43***	-0.42***
	(0.11)	(0.19)	(0.19)	(0.13)	(0.10)	(0.14)
Financial shock * SIZE	-0.43***	-0.56***	-0.01	-0.46	-0.38**	-0.39**
	(0.15)	(0.14)	(0.42)	(0.44)	(0.14)	(0.18)
Observations	10,590	7,245	3,345	10,264	9,707	10,590
Countries	40	23	17	39	40	40
R-squared	0.36	0.52	0.28	0.36	0.36	0.33

Notes: the dependent variable is the standardised change in government bond yields. The model includes country-specific fixed effects and time fixed effects. The table reports only the interaction terms between controls, fundamentals and global risk (or one its drivers). Robust standard errors are reported in parentheses. The asterisks ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Results: change in yields, geopolitical risk shocks and fundamentals

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Geopolitical unc. shock * YIELD	2.06***	1.93***	2.22***	2.13***	2.14***	1.93***	2.11***	2.16***	1.98***	1.07	
	(0.64)	(0.67)	(0.63)	(0.65)	(0.65)	(0.67)	(0.62)	(0.60)	(0.61)	(0.77)	
Geopolitical unc. shock * KAOPEN	-2.26	-0.14	-1.83	-3.07	-3.04	-3.07	-1.67	-1.45	-2.14	-3.68	
	(4.01)	(3.35)	(3.49)	(3.45)	(3.43)	(3.65)	(3.38)	(4.90)	(3.22)	(5.67)	
Geopolitical unc. shock * STRICT PEG	2.14	1.91	2.47	0.84	0.98	2.43	2.39	2.39	0.72	-1.32	
	(2.67)	(2.67)	(2.81)	(2.65)	(2.61)	(2.70)	(2.68)	(2.68)	(2.58)	(2.42)	
Geopolitical unc. shock * SOFT PEG	2.87	2.35	2.27	1.68	1.78	3.32	2.73	2.59	1.12	0.75	
	(3.31)	(3.30)	(3.09)	(3.19)	(3.18)	(3.41)	(3.28)	(3.19)	(3.01)	(3.30)	
Geopolitical unc. shock * INERTIA	-0.03	-0.04	-0.09	-0.09	-0.09	-0.04	-0.05	-0.06	-0.06	-0.12	
	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)	(0.07)	(0.07)	(0.07)	(0.08)	(0.10)	
Geopolitical unc. shock * GROWTH	-0.32									-0.21	
	(0.39)									(0.40)	
Geopolitical unc. shock * INFLATION		0.30								0.59	
		(0.29)								(0.47)	
Geopolitical unc. shock * DEFICIT			-0.20							-0.55	
			(0.23)							(0.37)	
Geopolitical unc. shock * DEBT				0.01						0.09	
				(0.03)						(0.09)	
Geopolitical unc. shock * DEBT SQ					0.00					-0.00	
					(0.00)					(0.00)	
Geopolitical unc. shock * CA						-0.22				-0.57***	-0.46**
						(0.18)				(0.20)	(0.19)
Geopolitical unc. shock * NFA							-0.01			0.01	
							(0.01)			(0.01)	
Geopolitical unc. shock * RATING								-0.01		-0.23	
								(0.13)		(0.15)	
Geopolitical unc. shock * SIZE									-0.58***	-0.80***	-0.83***
									(0.19)	(0.19)	(0.24)
Observations	10,266	10,266	10,391	10,058	10,058	10,528	10,528	10,519	10,528	9,892	10,599
Countries	40	40	40	40	40	40	40	40	40	40	0.36
R-squared	0.37	0.37	0.37	0.38	0.38	0.37	0.36	0.36	0.36	0.38	40

Notes: the dependent variable is the standardised change in government bond yields. The model includes country-specific fixed effects and time fixed effects. For reasons of space the table reports only the interaction terms between controls, fundamentals and global risk (or one its drivers). Robust standard errors are reported in parentheses. The asterisks ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Results: change in yields, geopolitical risk shocks and fundamentals

	(1)	(2)	(3)	(4)	(5)	(6)
	Benchmark	Advanced	Emerging	Excl. US	Excl. 2008-09	Including outliers
Geopolitical uncertainty shock * CA	-0.46**	-0.33	-0.58*	-0.46**	-0.29	-0.48**
	(0.19)	(0.21)	(0.30)	(0.18)	(0.23)	(0.20)
Geopolitical uncertainty shock * SIZE	-0.83***	-0.85***	-0.36	-0.23	-0.85***	-0.77***
	(0.24)	(0.17)	(0.59)	(0.41)	(0.29)	(0.27)
Observations	10,599	7,254	3,345	10,273	9,716	10,599
Countries	0.36	0.52	0.27	0.36	0.36	0.32
R-squared	40	23	17	39	40	40

Notes: the dependent variable is the standardised change in government bond yields. The model includes country-specific fixed effects and time fixed effects. The table reports only the interaction terms between controls, fundamentals and global risk (or one its drivers). Robust standard errors are reported in parentheses. The asterisks ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

- Motivation
- Our contribution and main findings
- Structural drivers of global risk
- An empirical model of asset safety
- Data
- Results
- Conclusions

Conclusions: recap of main findings

- **Only a handful of variables explain** why some government bonds behave like **safe assets** in periods of higher risk aversion
  - inertia (bonds seen as safe asset in the past)
  - political risk
  - the size of the economy
- There is no *catch-all* measure of vulnerability to all possible global shocks: **fundamentals are** to a significant extent **shock-dependent**
- **US Treasuries** are **not** necessarily **special** (apart from the size of their market)

Background slides

IRF narrative