

The Fiscal Foundations of Safe Assets

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PIER Seminar, Bank of Thailand

19 October 2026

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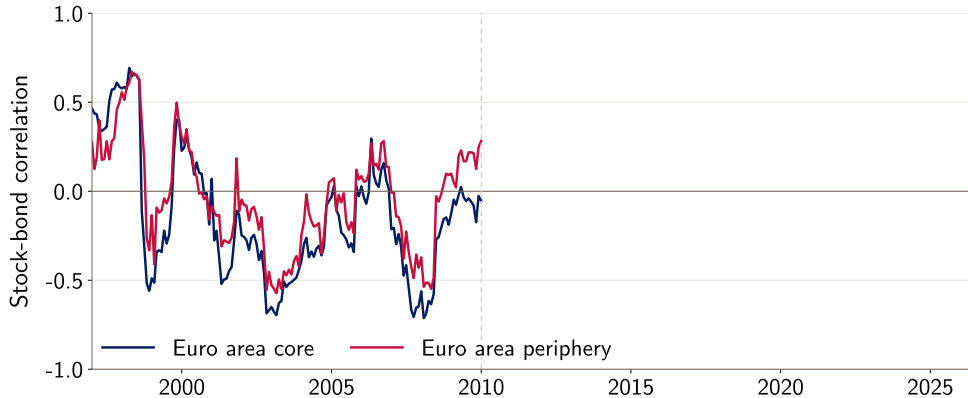
Government bonds as a hedge

- A government bond is safe when it appreciates in bad states of the world
(Brunnermeier, Merkel, and Sannikov 2024; Gómez-Cram, Kung, and Lustig 2024)
- Investors price the hedge: forecasters expect higher returns on bonds that move with stocks
(Leombroni, Pflueger, and Sunderam 2026)
- The hedge is commonly measured by the stock-bond correlation:

$$\rho_{i,t}^{sb} = \text{corr}(r_{i,t}^{\text{equity}}, r_{i,t}^{\text{bond}}) \quad \begin{cases} \rho^{sb} < 0 & \text{bonds hedge equity risk} \\ \rho^{sb} > 0 & \text{stocks and bonds fall together} \end{cases}$$

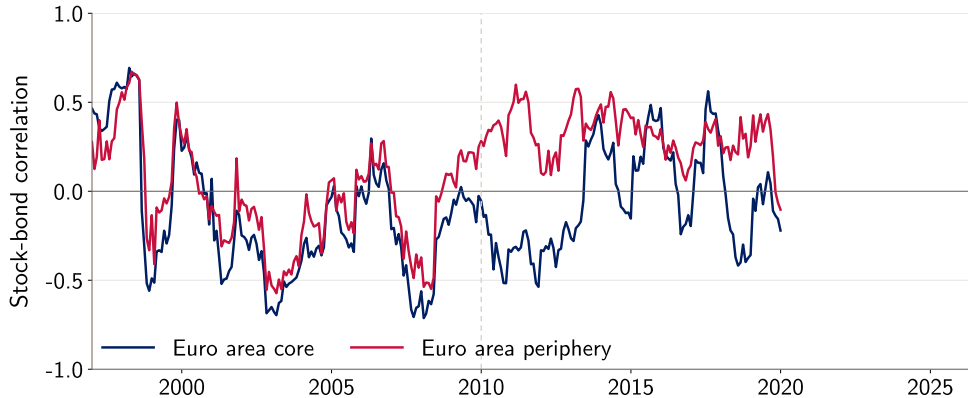
- **Literature so far:** in the US, monetary policy and procyclical inflation explain the hedge
(Campbell, Sunderam, and Viceira 2017; Song 2017; Campbell, Pflueger, and Viceira 2020)
- **This paper:** is a government's fiscal capacity a determinant of the hedge?

The euro area before 2010



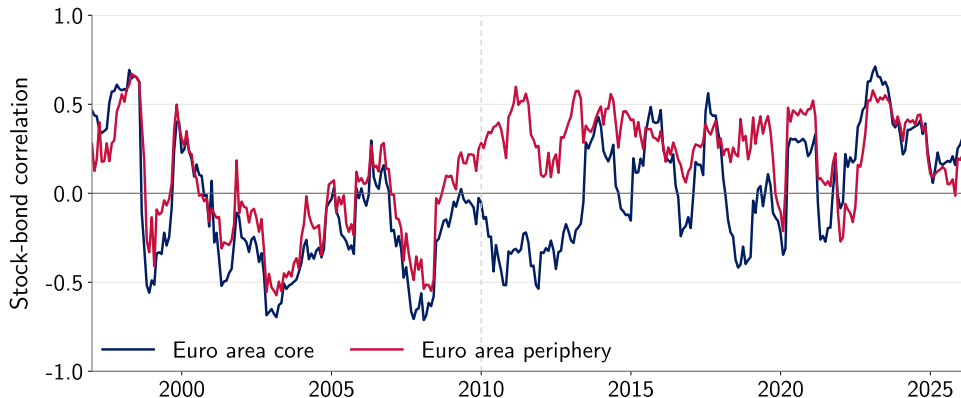
One central bank, one currency, one inflation target: core and periphery move together.

The euro area from 2010



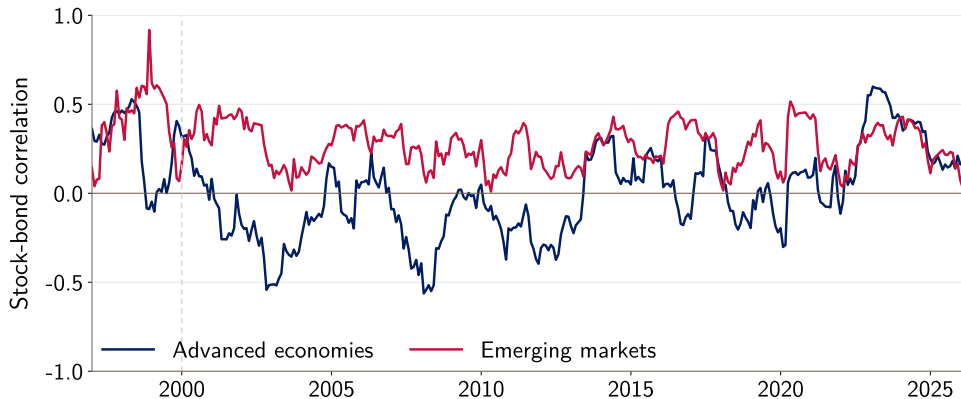
During the sovereign debt crisis the periphery loses the hedge; the core keeps it.

Convergence above zero



Since 2022 the core has joined the periphery above zero: neither keeps the hedge.

Advanced and emerging markets



After 2000 advanced economies gained the hedge; emerging markets did not.

What we find

Question: does weaker fiscal capacity erode the hedge that government bonds provide?

- **Across countries:** countries with a higher interest bill have bonds that hedge less
- **Within countries:** as a country's interest bill rises, its bonds hedge less
- **Euro area:** after the Greek deficit revision the periphery-core gap rises by 0.44
- **Fiscal news:** the hedge weakens after the press writes more about fiscal sustainability
- **Rating actions:** the hedge weakens in the month of a fiscal downgrade
- **Channel:** within countries, default risk carries it; real rates and breakeven inflation do not

Contribution

- **Stock-bond correlations:** inflation and the monetary-fiscal regime, mostly in the US
(Perego and Vermeulen 2016; Campbell, Sunderam, and Viceira 2017; Dufour, Stancu, and Varotto 2017; Song 2017; Baele et al. 2020; Campbell, Pflueger, and Viceira 2020; Du, Pflueger, and Schreger 2020; Li et al. 2022; Gómez-Cram, Kung, and Lustig 2024; Antolín-Díaz 2025; Pflueger 2025)
This paper: fiscal capacity, across countries, within countries and across eras
- **Safe assets:** what safety is worth and which governments supply it
(Krishnamurthy and Vissing-Jorgensen 2012; He, Krishnamurthy, and Milbradt 2019; Brunnermeier, Merkel, and Sannikov 2024; Cieslak, Li, and Pflueger 2024; Acharya and Laarits 2025; Chen et al. 2025; Jiang et al. 2026; Payne and Szöke 2026)
This paper: the hedge that makes a bond safe erodes as fiscal capacity weakens
- **Fiscal risk:** priced in the level of yields, spreads and inflation
(Arellano 2008; Longstaff et al. 2011; Bocola 2016; Cochrane 2023; Gómez-Cram, Kung, and Lustig 2025)
This paper: priced in the stock-bond comovement; within countries, through credit risk



Whether a country's bonds hedge depends systematically on its fiscal position
in 44 countries since 1960, beyond the US, tested against yields and monetary policy

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Environment

One productivity shock, with volatility σ and persistence $\rho > 0$:

$$Y_{t+1} = Y_t \exp(g + \rho\sigma\varepsilon_t + \sigma\varepsilon_{t+1}), \quad \varepsilon_t \sim \mathcal{N}(0, 1) \text{ i.i.d.}$$

- A positive realization raises current output and expected next-period growth
- Log utility with discount factor δ ; the household consumes the endowment, $C_t = Y_t$

The government collects taxes τY_t at a fixed rate and rolls over one-period nominal debt

- Fiscal capacity is limited: it repays at most a share $\lambda < 1$ of the present value of its taxes
- Monetary dominance: beyond that limit it defaults; inflation stays at the target $\bar{\pi}$
- Fiscal dominance: no default; a price-level jump erodes the nominal debt to the limit
- Superscript n marks nominal values: the rate i_t^n , debt B_t^n , output Y_t^n

The safe-haven channel

Bonds, through the real rate

$$\log(1 + r_t) = -\log \delta + g + \rho\sigma\varepsilon_t - \frac{1}{2}\sigma^2$$

- Bad news lowers expected growth and the real rate, so the bond price rises

Stocks, through output

$$\frac{\partial \log p_t}{\partial \varepsilon_t} = \sigma > 0$$

- Bad news lowers output, and with it the equity price

⇒ Bonds rise while stocks fall, so bonds hedge → safe-haven channel

The fiscal-capacity channel

Default when liabilities exceed what the government can repay:

$$\xi_t = \mathbf{1}\{\lambda A_t < L_t\}$$

- L_t : real liabilities entering t ; A_t : the present value of all future taxes
- In default the government repays λA_t , a share $\lambda < 1$ of that value

Default at $t + 1$ when $\varepsilon_{t+1} < z_t$, with threshold

$$z_t = \frac{1}{\sigma} \left[\log \underbrace{\frac{(1 + i_t^n) B_t^n}{Y_t^n}}_{\text{forward interest expense}} - \log \underbrace{\frac{(1 + \bar{\pi}) \lambda \tau}{1 - \delta}}_{\text{fiscal capacity per unit of output}} - g - \rho \sigma \varepsilon_t \right]$$

- Bad news raises the debt rolled over relative to output: default becomes more likely

$\Rightarrow$ Bonds fall with stocks, so the hedge weakens $\rightarrow$ fiscal-capacity channel

Two channels

The bond's equity beta

$$\beta_t \equiv \frac{\text{Cov}_t(\log q_{t+1}, \log p_{t+1})}{\text{Var}_t(\log p_{t+1})}$$

has the sign of the stock-bond correlation ρ_t^{sb} .

Proposition 1

$$\beta_t = \underbrace{\mathbb{E}_t[(1 - \xi_{t+1}) \Theta_{t+1} (1 + \tau Y_{t+1}/B_{t+1})]}_{\text{fiscal capacity}} - \underbrace{\rho}_{\text{safe haven}}$$

- The first term works through outright default risk or through inflation risk
- Fiscal capacity positive, safe haven negative: β_t has the sign of their difference

The prediction

Proposition 3: β_t rises with the forward interest expense

$$\beta_t \approx a_0 + a_1 \frac{(1 + i_t^n) B_t^n}{Y_t^n}, \quad a_1 > 0$$

- **In words:** comovement rises with the interest bill relative to fiscal capacity ($\propto$ GDP)
- **Both regimes:** default under monetary dominance, inflation under fiscal dominance
- **Hence:** the correlation changes sign at most once, from negative to positive

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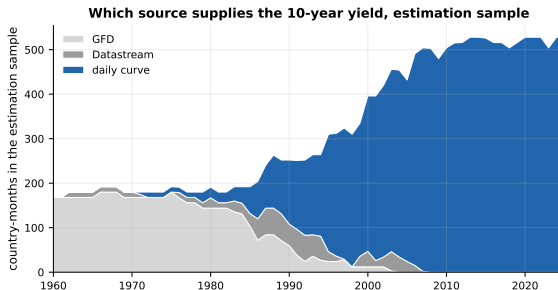
Measuring the hedge

$$\rho_{i,t}^{sb} = \text{corr}\left(r_{i,s}^{\text{equity}}, r_{i,s}^{\text{bond}}\right), \quad s \text{ within period } t$$

- **Monthly, the baseline:** daily returns in each month; 14,282 country-months
- **Annual, the horse race:** monthly returns in each year since 1960; 1,757 country-years
- **44 countries:** national equity index and 10-year zero-coupon government bond

Bond yields: the data work

- Published curves: GSW (US), Bank of England (UK), BIS or Bloomberg
- Fourteen countries: Nelson-Siegel fits to vendor par yields
- Sparse grids: the vendor's converted benchmark quote
- 29 of the 44 bond series spliced, always on returns



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From model to data

Model		Data
$\frac{(1 + i_t^n) B_t^n}{Y_t^n}$	$\Rightarrow$	$ie_{i,t}^{fw} = \frac{D_{i,t}}{Y_{i,t}} \cdot \frac{y_{10,i,t}}{100}$

What it measures

- The interest bill if the whole debt stock were refinanced at today's yield
 - Realized payments carry old rates and respond to news only as debt rolls over
- "[F]iscal sustainability cannot be assessed by traditional debt-to-GDP ratios but should instead be understood with measures like nominal or real interest as a share of GDP."*

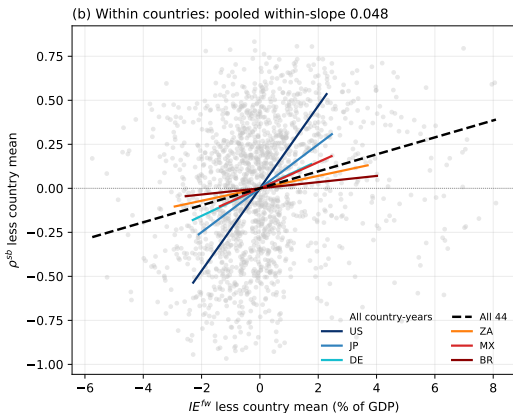
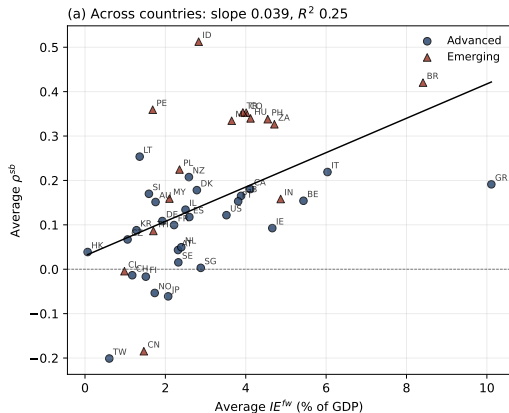
Furman and Summers (2020, p. 9)

How we build it

- Debt: the last published annual ratio (IMF); the yield: the 10-year zero-coupon yield
- Every regressor is lagged one period, so each regressor is predetermined

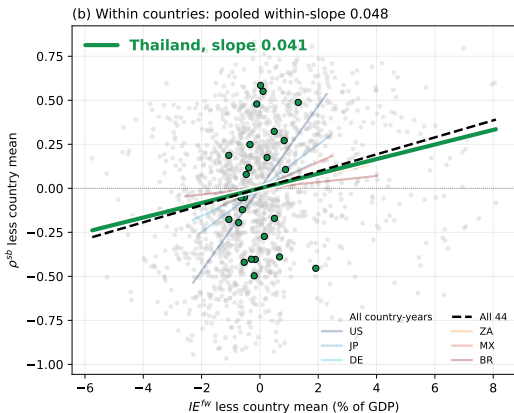
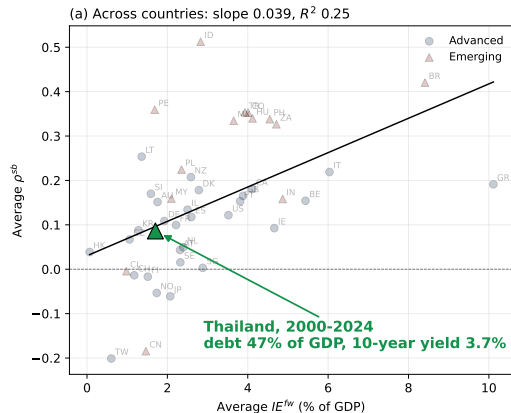
Just yields?

Across and within countries



Cross-country slope 0.039 with R^2 0.25; pooled within-country slope 0.048.

Across and within countries



Cross-country slope 0.039 with R^2 0.25; pooled within-country slope 0.048.

The exercise

$$\rho_{i,t}^{sb} = \alpha_i + \mu_t + \beta ie_{i,t-1}^{fw} + X'_{i,t-1}\gamma + \varepsilon_{i,t}$$

- **Country fixed effects** α_i : each country is compared with its own history
- **Month fixed effects** μ_t : absorb global rates, risk appetite and the US cycle
- **Controls** $X_{i,t-1}$: inflation and activity growth; the policy rate enters in the last column
- **Inference**: standard errors two-way clustered by country and by month
- **Throughout**: could yields and monetary policy alone produce the result?

Monthly estimates

	(1) Pooled	(4) Two-way FE	(5) Baseline	(6) + Policy
$ie_{i,t-1}^{fw}$	0.0398*** (0.0097)	0.0130*** (0.0030)	0.0137*** (0.0029)	0.0137*** (0.0028)
Controls	No	No	Yes	Yes
Policy rate	No	No	No	Yes
Country FE	No	Yes	Yes	Yes
Month FE	No	Yes	Yes	Yes
Obs.	14,282	14,282	14,282	14,282

Monthly 10-year correlation on lagged ie^{fw} . Two-way clustered SE (country, month) in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Columns as numbered in the paper.

Lagged ie^{fw} , in percent of GDP; selected columns on one common sample.

- **Pooled, 0.040:** levels across countries and common swings.
- **Both fixed effects, 0.013:** a third of the pooled loading remains.
- **Baseline:** the median country's p10 to p90 range moves the correlation by 0.04.
- **Policy rate:** the estimate is unchanged.

[Just yields?](#)[Inflation](#)[One country?](#)[Later samples](#)[Full table](#)

Debt or yields?

	(1)	(2)	(3)	(4)
$ie_{i,t-1}^{fw}$	0.0145*** (0.0049)			0.0131* (0.0073)
$(D/Y)_{i,t-1}$		0.0003 (0.0006)		-0.0002 (0.0006)
$y_{i,t-1}^{10}$			0.0133** (0.0061)	0.0038 (0.0068)
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Obs.	1,757	1,757	1,757	1,757

Annual correlation, 10-year bond; one common sample. Two-way clustered SE (country, year) in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Annual panel from 1960, where debt and yields both move.

- **Product alone:** 0.0145, significant at one percent.
- **Debt alone:** indistinguishable from zero.
- **Yield alone:** 0.0133, significant at five percent.
- **All three:** the product keeps 0.0131 (ten percent); debt and yield are insignificant.

[Just yields?](#)[Full table](#)

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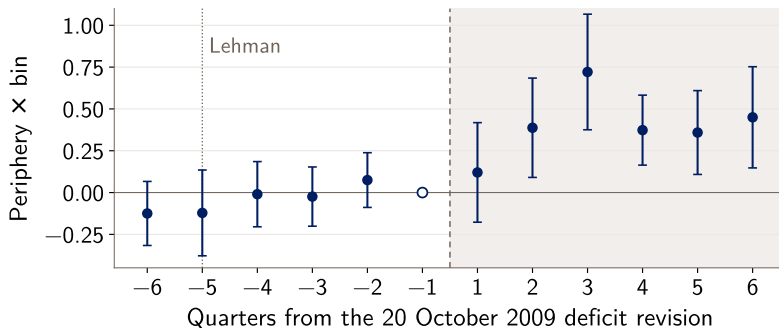
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A euro-area experiment

- **Event:** on 20 October 2009 Greece announces a deficit twice the reported figure
- **Periphery:** Greece, Ireland, Italy, Portugal and Spain
- **Core:** Austria, Belgium, Finland, France, Germany and the Netherlands
- **Chosen before the crisis:** first-half 2008 CDS spreads select the same five countries
- **Window:** six three-month bins on each side; it closes in April 2011, before OMT

$$\rho_{i,k}^{sb} = \alpha_i + \mu_k + \sum_{k \neq -1} \beta_k \cdot (\text{Periphery}_i \times \mathbf{1}[\text{bin} = k]) + \varepsilon_{i,k}$$

The euro-area divergence



- The gap rises by 0.44 on average after the revision (randomization p 0.002)
- Opens a quarter later; peaks at 0.72 in the quarter of the first Greek assistance package
- Before the revision: broadly flat, joint pre-event test p 0.22
- Flight to quality? The core's average correlation barely moves, -0.37 to -0.35

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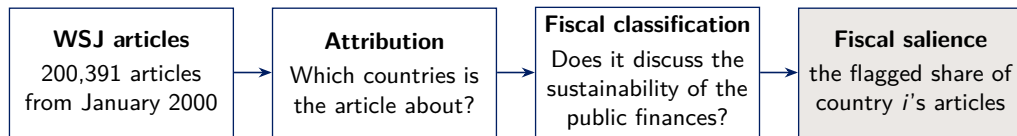
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Fiscal news in text

Why text: ie^{fw} contains a yield, so both sides of the regression are market prices.



$$FSI_{i,t} = \frac{\text{articles attributed to } i \text{ in month } t \text{ that discuss the sustainability of public finances}}{\text{all articles attributed to } i \text{ in month } t}$$

- Kimi K2.5 / K2.6 (Moonshot, open weights), temperature 0, one fixed prompt
- Flag only if at least one full sentence addresses a national government's finances
- The index is lagged one month; $\log(1 + \text{article count})$ enters every regression

Salience predicts the correlation

Sample	(1) Full	(3) Full	(4) Excl. 2008–2009	(5) 2010+
$FSI_{i,t-1}$	0.1210* (0.0660)	0.1014*** (0.0341)	0.0945*** (0.0331)	0.0560* (0.0313)
Controls	No	Yes	Yes	Yes
Article count	Yes	Yes	Yes	Yes
Country FE	No	Yes	Yes	Yes
Month FE	No	Yes	Yes	Yes
Obs.	11,802	11,802	10,815	7,662

Monthly 10-year correlation; index and article count lagged one month.
Two-way clustered SE (country, month) in parentheses. *** $p < 0.01$,
** $p < 0.05$, * $p < 0.1$. Columns as numbered in the paper.

The baseline exercise; salience and article count lagged, controls in the same month.

- **Baseline, 0.101:** a within SD of salience raises the correlation by 0.016, six percent of its within SD.
- **Without 2008 and 2009:** 0.094; the crisis alone does not drive it.
- **From 2010:** 0.056, about half.

[Validation](#)[Full table](#)

Where fiscal capacity is weak

	(1) Lowest	(2) Second	(3) Third	(4) Highest	(5) Joint
<i>Sorted on lagged ie^{fw}</i>					
Mean $ie^{fw}_{i,t-1}$	0.78	1.95	2.81	5.90	
$FSI_{i,t-1}$	-0.0286 (0.0310)	0.0513 (0.0449)	0.0780* (0.0458)	0.1886*** (0.0596)	
Wild cluster p				[0.011]	
Equal slopes, p					0.0004
<i>Sorted on lagged debt/GDP</i>					
$FSI_{i,t-1}$	0.0078 (0.0367)	-0.0376 (0.0327)	0.0675 (0.0426)	0.1999*** (0.0469)	
Equal slopes, p					0.0007
Controls	Yes	Yes	Yes	Yes	Yes
Article count	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
Obs.	4,433	2,536	2,250	2,541	11,760
Countries	36	39	36	26	44

(5): all bins jointly, test of equal slopes. Obs. and countries: the ie^{fw} sort. Two-way clustered SE (country, month); [] wild cluster bootstrap p , bins below 30 countries. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The baseline in four bins of lagged ie^{fw} , cut on past data only.

- **Lowest bin:** -0.029 .
- **Top bin: 0.189;** with only 26 countries, a wild cluster bootstrap still gives $p = 0.011$.
- **Equal slopes rejected:** $p = 0.0004$.
- **Sorted on debt/GDP:** top bin 0.200; equal slopes, $p = 0.0007$.
- **As in the model:** fiscal news matters most where the burden is already high.

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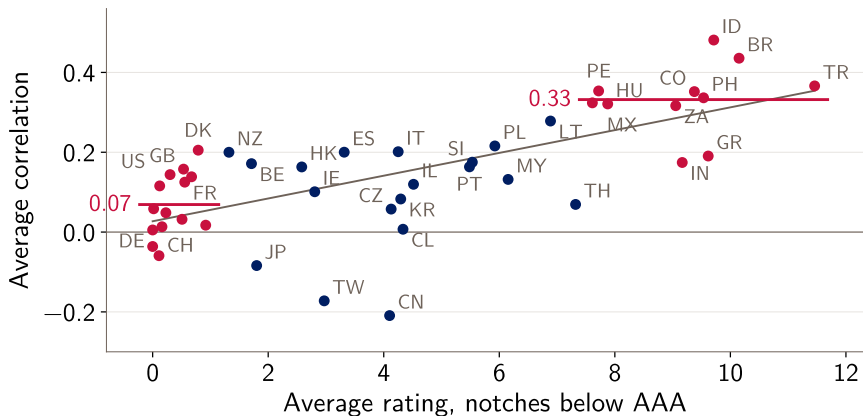
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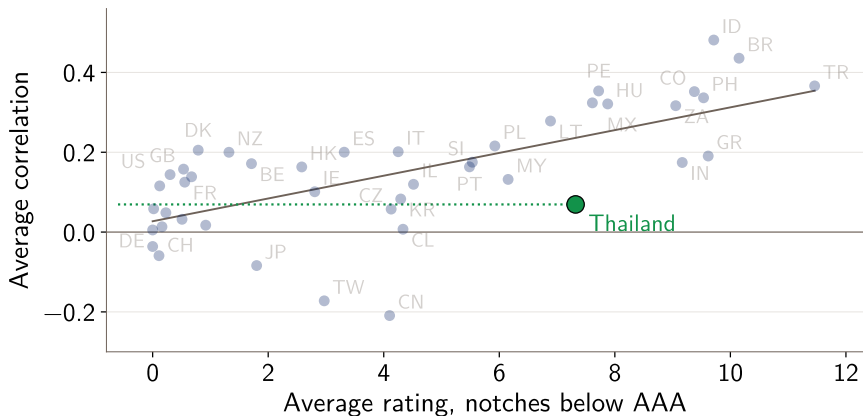
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Ratings and the hedge



- The 14 countries within one notch of AAA average 0.07; the 11 lowest-rated average 0.33
- Country fixed effects absorb these levels; we look within countries, at rating actions

Ratings and the hedge



- The 14 countries within one notch of AAA average 0.07; the 11 lowest-rated average 0.33
- Country fixed effects absorb these levels; we look within countries, at rating actions

Rating actions: the exercise

A second fiscal shifter: the agencies' reassessments of the government's ability to pay

$$\rho_{i,t}^{sb} = \alpha_i + \mu_t + \beta \text{Action}_{i,t}^{F_C} + X'_{i,t-1}\gamma + \varepsilon_{i,t}$$

- **Action:** signed notches in month t , downgrades positive, per covering agency
- **Fiscal only (F_C):** a fiscal rationale, and no cyclical, banking, external or political cause
- **Read by a language model:** Reuters stories; 1,415 actions, 776 fiscal, 273 fiscal only
- **Fixed effects:** country for rating levels, month for global news; controls lagged one month
- **Sample:** 44 countries, 1974 to 2026, 14,385 country-months; the action moves in 195

Fiscal rating actions

	(1) Pooled	(4) Two-way FE	(5) Baseline
Net action	0.1260 (0.0757)	0.1584** (0.0622)	0.1580** (0.0628)
Downgrades	0.2338*** (0.0531)	0.1861*** (0.0579)	0.1878*** (0.0585)
Upgrades	0.0384 (0.1498)	-0.1162 (0.1025)	-0.1127 (0.1019)
Controls	No	No	Yes
Country FE	No	Yes	Yes
Month FE	No	Yes	Yes
Obs.	14,385	14,385	14,385

Monthly 10-year correlation. Net action and its two arms (downgrades, upgrades) are separate regressions. Two-way clustered SE (country, month) in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Columns as numbered in the paper.

The exercise above; F_C actions, month of the action.

- **Pooled, 0.126:** just short of significance at ten percent.
- **Baseline, 0.158:** both sets of fixed effects and controls; significant at five percent.
- **Downgrades carry it:** one notch by every agency, 0.19, seven tenths of the within SD.
- Beside ie^{fw} , the net-action estimate falls to 0.064, indistinguishable from zero.

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Splitting the interest bill

$$ie^{fw} = \underbrace{\frac{D}{Y} \frac{CDS}{100}}_{\text{credit}} + \underbrace{\frac{D}{Y} \frac{y^5 - CDS}{100}}_{\text{non-default}}$$

- **Model:** under monetary dominance fiscal stress is priced as default risk
- **Data:** Markit five-year sovereign CDS, 44 countries from January 2001
- **Tenor:** five-year yield and five-year correlation, to match the contract

Credit carries it within

	(2) Controls	(4) Month FE	(5) Country FE	(6) Both
Credit	0.0683*** (0.0175)	0.0668*** (0.0184)	0.0511*** (0.0111)	0.0549*** (0.0152) [0.0365]
Non-default	0.0325*** (0.0102)	0.0434*** (0.0091)	-0.0013 (0.0119)	-0.0100 (0.0110) [0.3713]
Controls	Yes	Yes	Yes	Yes
Country FE	No	No	Yes	Yes
Month FE	No	Yes	No	Yes
Obs.	10,848	10,848	10,848	10,848

Monthly five-year correlation. Two-way clustered SE (country, month) in parentheses; [] wild cluster restricted bootstrap- t p by country.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Columns as numbered in the paper.

Five-year correlation per point of GDP of each lagged share, 2001 to 2026.

- **Across countries:** in a given month, a heavier bill goes with a higher correlation, from either share.
- **Within a country,** net of the month: more default compensation weakens the hedge, 0.055.
- **Non-default share** (policy rate, term premium): a precise zero; differs from credit, p 0.007.
- **Takeaway:** fiscal stress weakens the hedge through default risk, as under monetary dominance.

Full table

Real rates and inflation

	(2) Controls	(5) Country FE	(6) Both
Credit	0.1401*** (0.0349)	0.1046* (0.0538)	0.1391*** (0.0288) [0.0305]
Real yield	0.0419*** (0.0100)	0.0285 (0.0224)	-0.0150 (0.0133) [0.2731]
Breakeven	0.0368** (0.0135)	0.0480 (0.0382)	-0.0308 (0.0200) [0.2612]
Controls	Yes	Yes	Yes
Country FE	No	Yes	Yes
Month FE	No	No	Yes
Obs.	2,291	2,291	2,291

Five-year correlation, 14 linker countries. Two-way clustered SE (country, month); [] exact wild cluster bootstrap p . *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Columns as numbered in the paper.

Fourteen countries with inflation-linked curves.

- **Pooled:** all three components load.
- **Within: credit 0.139;** with only 14 countries, an exact wild bootstrap still gives $p = 0.0305$.
- **Real yield, breakeven:** indistinguishable from zero.

Full table

Is it just yields?

The worry: the yield in ie^{fw} also moves with monetary policy, inflation and term premia.

▪ Yield level or monetary stance?

[Details](#)

- The policy rate leaves the estimate unchanged
- Within countries, only the default-risk part of the yield matters
- Fiscal news read from text predicts the correlation, most where debt is high

▪ A common monetary regime? (Campbell, Pflueger, and Viceira 2020)

[Details](#)

- Countries are compared within the same period, so what they share drops out
- Euro area: one monetary regime, yet the periphery diverges after a fiscal shock

▪ Each country's own credibility? (Du, Pflueger, and Schreger 2020)

[Details](#)

- Country fixed effects absorb permanent differences
- Euro area: credibility is shared, and the periphery still diverges
- Outside the euro area, we do not separate fiscal dominance from weak credibility

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Robustness

Is it inflation or the monetary regime?

Inflation

Is it one country?

Leave one out

Is it the early, thin panel?

Later samples

Does the association run the other way?

Timing

Is it the data cleaning?

Screens off

Why a correlation and not a beta?

Outcomes

Other measures of fiscal stress, other maturities?

Sweeps

Does the language model know the outcome?

Text checks

Does the yield already price the fiscal news?

Horse race

Conclusion

The hedge of government bonds depends on fiscal capacity: it is uneven and fragile.

- Bonds hedge where the interest bill is low and move with equities where it is high
- This holds across and within countries, in the euro area, in fiscal news and in rating actions
- Within countries, it runs through the compensation for sovereign default risk
- The hedge is fragile: losing it can raise the yield, and a higher yield raises the interest bill

Appendix

Why persistent shocks

$$Y_{t+1} = Y_t \exp(g + \rho\sigma\varepsilon_t + \sigma\varepsilon_{t+1}), \quad \varepsilon_t \sim \mathcal{N}(0, 1) \text{ i.i.d.}$$

$$\log(1 + r_t) = -\log \delta + g + \rho\sigma\varepsilon_t - \frac{1}{2}\sigma^2$$

- ρ : persistence of the productivity shock in expected growth
- The real rate responds to the shock only through $\rho\sigma$
- In Proposition 1 the safe-haven term is $-\rho$: with $\rho = 0$ there is no safe-haven term
- Appendix A: the same propositions with Epstein-Zin, levered equity, a convenience flow

Model notation

Default threshold, as in the paper

$$z_t \equiv \frac{1}{\sigma} \left[\log \left(\frac{1 + i_t^n}{1 + \bar{\pi}} \frac{B_t (1 - \delta)}{\lambda \tau Y_t} \right) - g - \rho \sigma \varepsilon_t \right]$$

Default-state value

$$\Theta_t = \frac{\Phi(z_t)}{\exp(\sigma z_t + \sigma^2/2) (1 - \Phi(z_t + \sigma))}$$

- Θ_t : value of the bond's payoff in default states relative to its value without default
- Φ : standard normal CDF; default has probability $\Phi(z_t)$, risk-neutral $\Phi(z_t + \sigma)$
- λ : share of fiscal capacity repaid in default, $1 - \delta < \lambda < 1$; i_t^n : nominal rate
- β_t covers every state at $t + 1$; the factor $1 - \xi_{t+1}$ drops those with a default at $t + 1$
- Default risk enters through q_{t+1} , the price of the new bond, which prices default at $t + 2$

Fiscal dominance

Lemma 1 (common trigger): the debt coming due exceeds what the government can repay, $L_t > \lambda A_t$

Monetary dominance

- The government defaults and repays λA_t
- Inflation stays at its target

Fiscal dominance

- No default: full nominal repayment
- The price level rises until it is worth λA_t

Bondholders get the same real payoff in both regimes: same nominal price, debt and threshold z_t .

Proposition 2 (fiscal dominance)

$$\beta_t = \underbrace{\mathbb{E}_t[(1 - \xi_{t+1}) \Theta_{t+1} (1 + \tau Y_{t+1}/B_{t+1})]}_{\text{as in Proposition 1}} - \underbrace{\rho}_{\text{safe haven}} + \underbrace{\Phi(z_t)}_{\text{inflation}}$$

- With probability $\Phi(z_t)$ the trigger hits at $t + 1$, and the price level rises as much as output falls
- The real bond price then falls with output: a third term, rising with forward interest expense
- Hence the slope a_1 of Proposition 3 is steeper than under monetary dominance

Computing the correlation

A plain Pearson correlation of the paired equity and bond returns inside one calendar window. A Fisher transformation appears only in the robustness tables.

- **Monthly (baseline):** daily returns in each calendar month; at least 15 paired trading days
- **Non-overlapping:** one value per country and month; no regression uses a rolling window
- **Calendar:** each country's own trading calendar, so no pair spans a market holiday
- **Missing days:** left empty, never carried forward, which would fake a zero bond return
- **Returns:** daily log equity return; bond $-n \Delta y / 100$ on the 10-year zero-coupon yield, $n = 10$
- **Annual (horse race):** monthly returns in each calendar year; at least 10 of 12 months
- **Annual bond return:** with carry, $y_{s-1} / 12 - n \Delta y_s$
- **Why monthly returns there:** they reach 1960, giving 1,788 country-years against 1,225
- **Event study:** three-month bins from 20 October 2009; at least 40 trading days per bin
- **Countries:** 44, of which 29 advanced economies and 15 emerging markets

Why a correlation

The propositions are stated on the bond's equity beta, which has the sign of the correlation.

- The beta is the correlation times the volatility of bond returns relative to equity returns
- That relative volatility differs severalfold across countries and moves over time
- The correlation measures the comovement alone and is bounded
- A constant rescaling of either return leaves the correlation unchanged and moves the beta
- The correlation is the measure used in much of the literature on stock-bond comovement

Alternative outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	Fisher z Monthly 10Y	Fisher z Monthly 5Y	Fisher z Annual 10Y	Equity beta Monthly 10Y	Equity beta Monthly 5Y	Equity beta Annual 10Y
$ie_{i,t-1}^{fw}$	0.0153*** (0.0034)	0.0150*** (0.0045)	0.0178*** (0.0056)	0.0148*** (0.0038)	0.0109** (0.0043)	0.0232*** (0.0088)
Observations	14,414	13,903	1,757	14,414	13,903	1,757
Baseline	0.0138***	0.0133***	0.0145***	0.0138***	0.0133***	0.0145***

- Columns (4) to (6): the bond's equity beta, the object of the propositions in Section 2
- Positive and significant in every column; at one percent except the five-year beta

Fisher transformation, $z = \text{artanh}(\rho^{sb})$; beta: covariance of bond and equity returns over the variance of equity returns.

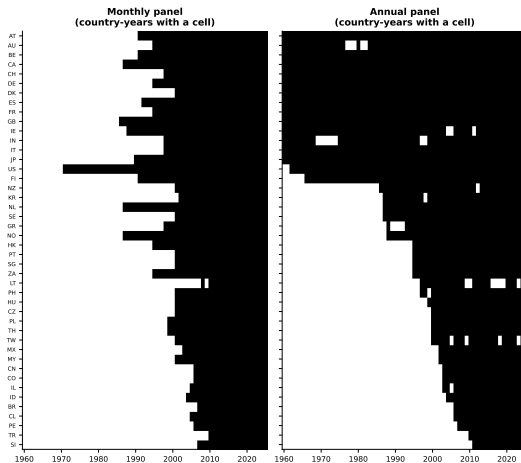
Two-way clustered standard errors.

Discretionary data screens

	(1) Pooled	(4) TWFE	(5) + Macro	(6) + Policy	(7) 5Y DV
A. Baseline					
$ie_{i,t-1}^{fw}$	0.0398***	0.0130***	0.0137***	0.0137***	0.0133***
(SE)	(0.0095)	(0.0030)	(0.0030)	(0.0029)	(0.0041)
Observations	14,282	14,282	14,282	14,282	13,903
B. Screens off					
$ie_{i,t-1}^{fw}$	0.0406***	0.0149***	0.0160***	0.0161***	0.0100***
(SE)	(0.0082)	(0.0037)	(0.0036)	(0.0036)	(0.0024)
Difference, in SE	+0.09	+0.64	+0.79	+0.85	-0.81
Observations	14,529	14,529	14,529	14,529	14,168

- Panel B: rebuilt from the same raw inputs, all but two estimation floors off
- Without screens the ten-year estimate is larger in every column, by up to 1.2 SE

Coverage



Summary statistics

Variable	N	Mean	SD	Between	Within	p10	p90
A. Monthly panel							
Stock-bond correlation	14,632	-0.01	0.34	0.13	0.32	-0.47	0.45
Forward interest expense (% of GDP)	14,490	2.79	2.57	1.86	1.89	0.44	5.77
Debt / GDP (%)	14,490	63.70	38.48	32.96	19.31	28.08	108.22
10-year zero-coupon yield (% p.a.)	14,632	4.75	3.29	2.58	2.36	0.99	8.96
Policy rate (% p.a.)	14,442	3.67	3.83	2.78	2.98	0.05	8.00
CPI inflation (% p.a.)	14,620	3.02	4.19	3.19	3.33	0.20	6.25
Real activity growth (% p.a.)	14,514	2.48	10.86	2.29	10.63	-4.12	8.94
B. Annual panel							
Stock-bond correlation	1,788	0.13	0.39	0.15	0.37	-0.42	0.63
Forward interest expense (% of GDP)	1,734	3.08	2.89	1.95	2.27	0.63	6.43
Debt / GDP (%)	1,737	57.12	36.61	26.01	26.66	17.95	103.92
10-year zero-coupon yield (% p.a.)	1,785	5.92	3.77	2.36	3.26	1.56	11.14
Policy rate (% p.a.)	1,746	4.88	4.33	2.64	3.81	0.18	10.17
CPI inflation (% p.a.)	1,788	3.98	4.41	3.07	3.84	0.57	8.72
Real activity growth (% p.a.)	1,780	3.05	6.61	2.03	6.36	-2.34	8.68

The monthly ladder

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$ie_{i,t-1}^{fw}$	0.0398*** (0.0097)	0.0369*** (0.0120)	0.0334*** (0.0076)	0.0130*** (0.0030)	0.0137*** (0.0029)	0.0137*** (0.0028)	0.0133*** (0.0040)
Macro controls	No	No	No	No	Yes	Yes	Yes
Policy rate control	No	No	No	No	No	Yes	No
Country FE	No	Yes	No	Yes	Yes	Yes	Yes
Month FE	No	No	Yes	Yes	Yes	Yes	Yes
Observations	14,282	14,282	14,282	14,282	14,282	14,282	13,903
R^2	0.089	0.157	0.343	0.439	0.442	0.442	0.432

Columns (1) to (6) share one sample; column (7) is the five-year twin. Two-way clustered by country and month.

Later samples

Sample	(1) Full	(2) 1990+	(3) 2000+	(4) 2010+	(5) 2015+
A. Pooled OLS					
$ie_{i,t-1}^{fw}$	0.0399*** (0.0097)	0.0387*** (0.0093)	0.0330*** (0.0082)	0.0354*** (0.0108)	0.0504*** (0.0061)
B. Two-way fixed effects and controls					
$ie_{i,t-1}^{fw}$	0.0138*** (0.0029)	0.0145*** (0.0029)	0.0171*** (0.0037)	0.0156** (0.0064)	0.0317*** (0.0064)
Observations	14,414	14,036	12,463	8,279	5,666
Months	653	433	313	193	133

Nested cumulative samples, all 44 countries in each. Two-way clustered SE (country, month). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

- The within estimate is positive and significant in every column
- It is larger on the 2015 sample: 0.032 against 0.014 on the full sample
- The slope across country averages is stable, between 0.044 and 0.051

Yield level or monetary stance?

The account: ie^{fw} is the yield with a label: its link to the correlation comes from the monetary policy and term premium in the yield.

How it could produce our result: the debt ratio changes once a year, so month to month ie^{fw} moves with the yield.

What answers it:

- **Annual horse race:** the yield should take over; ie^{fw} keeps 0.0131 and the yield drops to 0.0038
- **Policy rate added:** the estimate should fall; it is unchanged at 0.0137
- **Yield split via CDS, within countries:** the non-default share should load; it is -0.0100 (0.0110), against 0.055 for credit; difference $p = 0.007$
- **Inflation-linked split, within countries:** the real yield or breakeven should load; neither does, while credit gives 0.139
- **News sorted on debt:** fiscal news should add nothing; it predicts the correlation, most in the top debt bin (0.200); equal slopes rejected, $p = 0.0007$
- **Reverse timing:** the lagged correlation should predict ie^{fw} ; on the annual panel it does not

A common monetary regime?

The account: the sign follows the mix of supply and demand shocks, which decides whether inflation rises or falls in bad times, and how the central bank reacts (Campbell, Sunderam, and Viceira 2017; Song 2017; Campbell, Pflueger, and Viceira 2020; Bauer, Pflueger, and Sunderam 2024; Pflueger 2025).

How it could produce our result: debt and yields share its trends. The hedge appeared as yields fell in the 1990s and weakened as debt and yields rose after 2020.

What answers it:

- **Same-period comparison:** every estimate compares countries in the same period, so any common driver drops out
- **Euro area:** one monetary regime, which the periphery-core comparison differences out; the gap still rises by 0.44 ($p = 0.002$)
- **Yield components:** month fixed effects remove the common half of the non-default share's within-country variance, and the real-yield and breakeven estimates left by country fixed effects
- **Complements:** the monetary regime sets what all countries share; the burden says which country moves

What remains: the time-series evidence, and a common shock that hits high-burden countries harder.

Each country's own credibility?

The account: weak monetary credibility makes inflation countercyclical, so local-currency bonds fall with stocks (Du, Pflueger, and Schreger 2020).

How it could produce our result: credibility differs across countries and over time. Without country fixed effects inflation has a positive coefficient (0.0073); across countries every yield component predicts the correlation.

What answers it:

- **Country fixed effects:** they absorb permanent differences in credibility
- **Euro area:** one central bank and one target, yet the periphery-core gap rises by 0.44 ($p = 0.002$)
- **Inflation-linked split, within countries:** breakeven does not load (-0.0308 , 14 countries); credit does (0.139)
- **Source of the credit result:** the euro periphery, 84 percent of the within-country variation, where credibility is common
- **Complementary:** in our model, inflation in bad states is the fiscal-dominance route; their credibility proxy is the press discussing a country's debt and inflation together

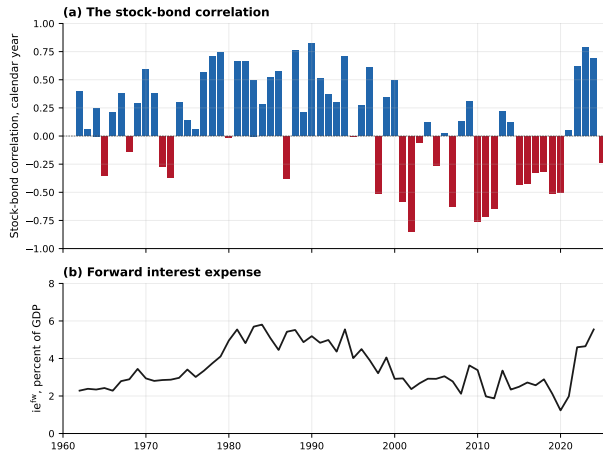
What remains: outside the euro area, we do not separate fiscal dominance from weak credibility.

Inflation

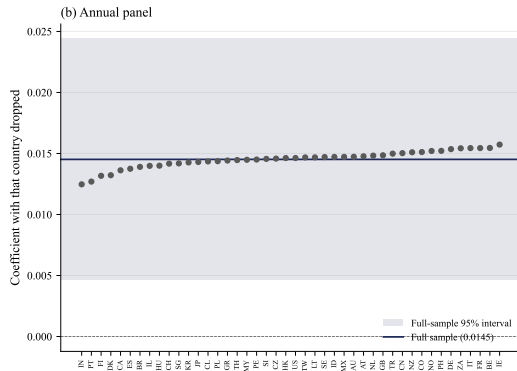
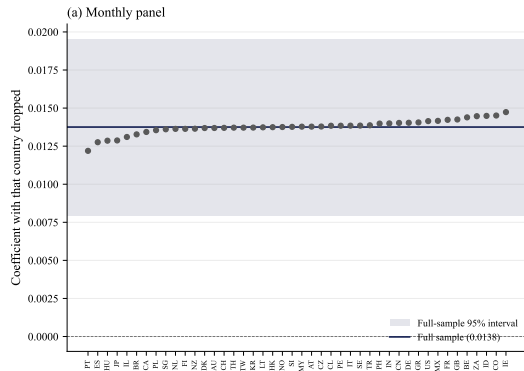
	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Full	Full	$\leq 10\%$	$\leq 10\%$	$\leq 10\%$	$\leq 10\%$
$ie_{i,t-1}^{fw}$	0.0373*** (0.0088)	0.0137*** (0.0030)		0.0147*** (0.0029)	0.0147*** (0.0029)	0.0167*** (0.0044)
CPI inflation $_{i,t-1}$	0.0073** (0.0030)	-0.0062*** (0.0015)	-0.0001 (0.0041)		0.0002 (0.0039)	-0.0072 (0.0070)
Real activity growth $_{i,t-1}$	0.0013 (0.0008)	0.0001 (0.0002)	0.0000 (0.0002)	0.0001 (0.0002)	0.0001 (0.0002)	-0.0013 (0.0010)
Country FE	No	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	Yes	Yes	Yes	Yes
Observations	14,282	14,282	13,878	13,878	13,878	1,634
R^2	0.099	0.442	0.439	0.443	0.443	0.400

- Without country fixed effects, higher inflation goes with a more positive correlation
- With inflation at most 10 percent, its within coefficient is zero and ie^{fw} is unchanged

The United States since 1962



Country exclusions



No exclusion changes the sign on either panel; the largest move is 14 percent of the estimate.

The annual horse race

	(1)	(2)	(3)	(4)
$ie_{i,t-1}^{fw}$	0.0145*** (0.0049)			0.0131* (0.0073)
$(D/Y)_{i,t-1}$		0.0003 (0.0006)		-0.0002 (0.0006)
$y_{i,t-1}^{10}$			0.0133** (0.0061)	0.0038 (0.0068)
Macro controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	1,757	1,757	1,757	1,757
R^2	0.375	0.371	0.374	0.375

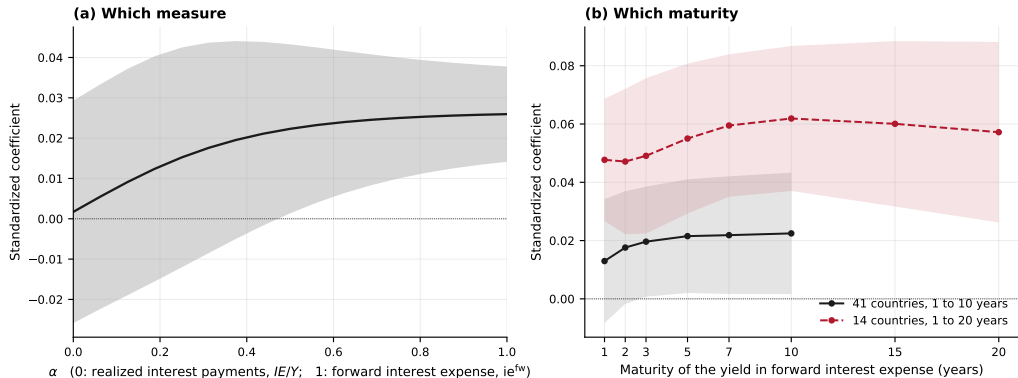
Common sample; every regressor lagged one year; two-way clustered by country and year. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Which way it runs

	(1) Outcome: $\rho_{i,t}^{sb}$	(2) Outcome: $ie_{i,t}^{fw}$
$\rho_{i,t-1}^{sb}$	0.1399*** (0.0361)	0.0383 (0.1786)
$ie_{i,t-1}^{fw}$	0.0118** (0.0048)	0.6818*** (0.1160)
Macro controls	Yes	Yes
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	1,719	1,672
R^2	0.396	0.782

- Lagged interest expense predicts the correlation beside the correlation's own lag
- The lagged correlation does not predict interest expense

Measures and maturities



From realized payments to ie^{fw} the estimate rises and is most precise at ie^{fw} ; similar at every maturity.

Euro-area design details

- Slovenia has no bond quotations in the reference window; a robustness row restores it
- Three-month bins anchored on the announcement; at least 40 trading days per bin
- Balanced panel: 132 country-bin observations; bin -1 is the reference
- Randomization inference over all 462 ways of choosing five of the eleven countries
- Moving Belgium to the periphery: 0.444 against 0.436

Euro-area threats

- **Earliest pre-event bin:** randomization p 0.035, opposite in sign to the divergence
- **Linear pre-trend:** 0.034 per bin, randomization p 0.069; joint pre-event test p 0.22
- **Policy response:** the peak falls in the window of the first assistance package
- **Flight to quality?** Mean correlation: periphery -0.17 to 0.23 ; core -0.37 to -0.35
- **Risk-off ran alongside:** other advanced economies moved more negative in 2010 and 2011

Alternative euro-area designs

Core / periphery, 11 countries

Pre-crisis CDS spread, continuous

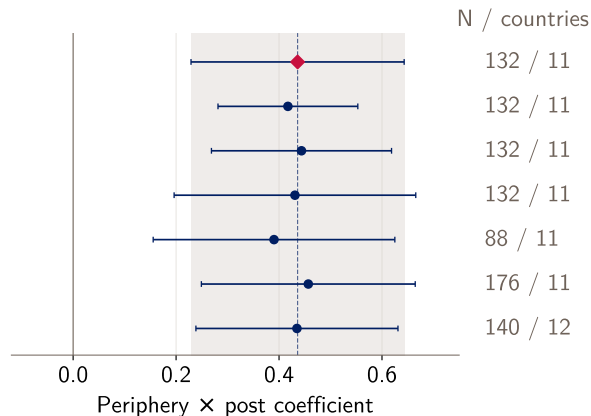
Belgium moved to periphery

Ireland removed from periphery

Four bins either side

Eight bins either side

Slovenia included (12 countries)



Paper Figure C.5, first rows: estimates and 95 percent intervals as stored; counts at right.

Samples and placebo dates

Core / periphery, 11 countries

GR dropped

IT dropped

PT dropped

IE dropped

ES dropped

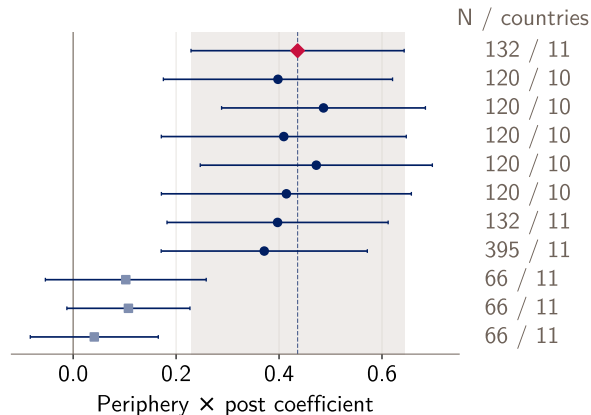
Five-year bond returns

Calendar-month bins

False boundary, 4 bins early

False boundary, 3 bins early

False boundary, 2 bins early



Paper Figure C.5, remaining rows; the reported estimate repeated at the top.

Building the index: classification

- **Corpus:** Factiva dump of the Wall Street Journal, 200,391 articles from January 2000
- **Prefilter:** a country alias, a regional keyword (EU, IMF, ECB) or a fiscal keyword; 174,802 kept
- **Model:** Kimi K2.5 on the Fireworks Batch API, temperature 0, prompt v1.4
- The 11,170 articles added by the repaired alias table: Kimi K2.6, same prompt

The question (prompt v1.4): *“Determine whether the article substantively discusses sovereign fiscal sustainability for one or more countries. ‘Substantively’ means the article dedicates at least one full sentence to the sovereign’s fiscal position.”*

- **Ambiguity rule:** *“When in doubt, err on the side of NOT flagging.”*
- **Output:** the fiscal flag, eight fiscal topics (A to H), verbatim evidence, the countries named
- **Exclusions:** sub-national governments; vague groups (“emerging markets”) do not qualify

Source: replication package, generation code for the index (prompt, configuration, prefilter, attribution specification).

Building the index: attribution

- **Model:** Kimi K2.6, pinned weights revision, self-hosted (vLLM), temperature 0, one call per article
- **The question:** which panel countries the article substantively discusses, *“at least one full sentence about that country’s economy, government, public finances, markets or affairs”*
- Asked of every article, flagged or not: numerator and denominator share one attribution rule
- **Index:** flagged share of the articles attributed to the country, per month; lagged one month
- **Control:** $\log(1 + \text{article count})$ in every specification
- **Variants:** alias-confirmed pairs; a numerator bound to the country the fiscal discussion is about
- **Records:** every run logged in a run index; a seed registry for every stochastic step

Examples. Flagged: *“U.K. Deficit Worries Hit Government Debt”*

Not flagged: *“Toyota, Yen Hit Shares In Japan”*

Source: the package’s attribution specification, configuration and run records; headlines from the anonymization probe sample.

All validation checks

- **Anonymization:** same classifier and prompt on text with names, currencies, officials, institutions and dates replaced; article-level kappa 0.86, country-month shares correlate at 0.88
- The slope falls from 0.075 to 0.049 and keeps its sign; identifiers survive in 24.7 and 35.4 percent
- **Negativity:** beside Loughran-McDonald negativity of the same articles, the index keeps 0.093
- **Policy uncertainty:** on the nineteen EPU countries, adding EPU moves 0.260 to 0.256
- **Attention placebo:** 0.003 on the correlation with US equity, against 0.105 on stock-bond
- **Attribution:** 7.2 percent of pairs carry no alias; alias-confirmed pairs alone give 0.095
- **Thin shares:** at least two, three, five articles: 0.151, 0.188, 0.283

Validation tables

Anonymization probe

	(1) Full panel	(2) Probe, raw	(3) Anonymized	(4) Residuals out
$FSI_{i,t-1}$	0.1014*** (0.0342)	0.0752*** (0.0268)	0.0492* (0.0261)	0.0432* (0.0254)
Obs.	11,802	4,584	4,584	4,424

Negativity beside the index

	(1) Index	(2) Negativity	(3) Both
$FSI_{i,t-1}$	0.1014*** (0.0342)		0.0931*** (0.0328)
$LM_{i,t-1}$		0.7102*** (0.2628)	0.4451** (0.2151)
Obs.	11,802	11,802	11,802

Attention placebo

	Stock-bond	US equity
$FSI_{i,t-1}$	0.1053*** (0.0346)	0.0030 (0.0124)
Obs.	11,802	11,773
Countries	44	43

Newspaper salience

	(1)	(2)	(3)	(4)	(5)
Sample	Full	Full	Full	Excl. 2008–2009	2010+
$FSI_{i,t-1}$	0.1210* (0.0660)	0.1053*** (0.0345)	0.1014*** (0.0341)	0.0945*** (0.0331)	0.0560* (0.0313)
Attention control	Yes	Yes	Yes	Yes	Yes
Country FE	No	Yes	Yes	Yes	Yes
Month FE	No	Yes	Yes	Yes	Yes
Macro controls	No	No	Yes	Yes	Yes
Observations	11,802	11,802	11,802	10,815	7,662
Countries	44	44	44	44	44
R^2	0.040	0.396	0.398	0.399	0.410

Index and log article count lagged one month; macro controls contemporaneous. Two-way clustered by country and month.

Salience by fiscal burden

	(1)	(2)	(3)	(4)	(5)
<i>Interest expense bins</i>					
Observed range	[-0.63,2.47]	[1.01,3.37]	[1.90,5.44]	[3.07,54.59]	
Mean $ie_{i,t-1}^{fw}$	0.78	1.95	2.81	5.90	2.53
$FSI_{i,t-1}$	-0.0286 (0.0310)	0.0513 (0.0449)	0.0780* (0.0458)	0.1886*** (0.0596)	-0.0628 (0.0381)
Wild cluster p				[0.011]	
× Bin 2					0.0875 (0.0596)
× Bin 3					0.2064*** (0.0550)
× Bin 4					0.3088*** (0.0737)
Equal slopes, p					0.0004
Observations	4,433	2,536	2,250	2,541	11,760
Countries	36	39	36	26	44

Bins cut on observations dated before each month; column (5) estimates all bins jointly. Brackets: wild cluster bootstrap.

Salience by debt

	(1)	(2)	(3)	(4)	(5)
<i>Debt/GDP bins</i>					
Observed range	[0.05,45.93]	[34.94,60.35]	[49.70,81.29]	[66.41,258.37]	
Mean Debt/GDP _{<i>i,t-1</i>}	25.19	43.43	61.99	110.67	64.00
<i>FSI</i> _{<i>i,t-1</i>}	0.0078 (0.0367)	-0.0376 (0.0327)	0.0675 (0.0426)	0.1999*** (0.0469)	0.0140 (0.0280)
Wild cluster <i>p</i>	[0.857]		[0.150]	[0.000]	
× Bin 2					-0.0328 (0.0385)
× Bin 3					0.0702 (0.0808)
× Bin 4					0.2406*** (0.0616)
Equal slopes, <i>p</i>					0.0007
Observations	2,653	2,988	2,489	3,630	11,760
Countries	27	33	28	22	44

Same construction, bins of the lagged debt ratio.

News beside interest expense

	(1) News	(2) + ie^{fw}	(3) Ratings	(4) + ie^{fw}
$FSI_{i,t-1}$	0.1014*** (0.0341)	0.0809** (0.0317)		
$Action_{i,t}^{FC}$			0.1580** (0.0628)	0.0643 (0.0578)
$ie_{i,t-1}^{fw}$		0.0139*** (0.0039)		0.0134*** (0.0030)
Obs.	11,802	11,802	14,385	14,385

- The index keeps a positive association beside ie^{fw}
- The rating estimate falls and is indistinguishable from zero

How rating actions are read

- **Input:** Reuters stories from the five days around each action; archive from January 1996
- **Model:** Kimi K2.6 (pinned weights), temperature 0
- **Output:** a primary origin and four confound flags (cyclical, banking, external, political)
- Each story read three times, majority vote; readings differ for 10.8 percent of stories and 57.3 percent of events; one reading would change 10.5 percent of event labels
- **One row per event:** agency release, then paraphrase, then wire flash; ties unclassified
- **Funnel:** 1,415 actions; 1,044 classified; 776 fiscal in origin; 273 with no confound of which 144 structural and 129 governance

Source: Appendix B; replication package, generation code for the rating classifier.

Rating filters

Filter	F_0	F_B	F_C	F_C structural	F_C governance
Net action	0.1198*** (0.0313)	0.1432*** (0.0356)	0.1580** (0.0628)	0.1893** (0.0862)	0.1007 (0.1043)
Downgrades	0.1963*** (0.0356)	0.2249*** (0.0377)	0.1878*** (0.0585)	0.2268*** (0.0781)	0.1485 (0.1410)
Upgrades	0.0046 (0.0301)	-0.0183 (0.0351)	-0.1127 (0.1019)	-0.1452 (0.1009)	0.0159 (0.1691)
Filter-passing events	1,054	655	215	116	99
Months with an action	926	594	205	113	93
Nonzero country-months	895	576	195	109	87
Obs.	14,385	14,385	14,385	14,385	14,385

F_0 : every action; F_B : fiscal in origin; F_C : fiscal with no cyclical, banking, external or political cause.

Rating actions

	(1)	(2)	(3)	(4)	(5)
<i>Panel A. Net action</i>					
$Action_{i,t}^{FC}$	0.1260 (0.0757)	0.1388 (0.0943)	0.1343** (0.0577)	0.1584** (0.0622)	0.1580** (0.0628)
<i>Panel B. Two arms</i>					
$Down_{i,t}^{FC}$	0.2338*** (0.0531)	0.3044*** (0.0588)	0.1294** (0.0516)	0.1861*** (0.0579)	0.1878*** (0.0585)
$Up_{i,t}^{FC}$	0.0384 (0.1498)	0.1154 (0.1301)	-0.1419 (0.1212)	-0.1162 (0.1025)	-0.1127 (0.1019)
Symmetry p	0.095	0.005	0.924	0.534	0.504
Country FE	No	No	Yes	Yes	Yes
Month FE	No	Yes	No	Yes	Yes
Macro controls	No	No	No	No	Yes
Observations	14,385	14,385	14,385	14,385	14,385
R^2	0.000	0.291	0.114	0.436	0.438

CDS and inference

- Markit composite, senior unsecured, five years; in dollars (euros for the US)
- Dollar spreads also price a quanto component and, in the euro area, redenomination
- Lagged spreads above 1,000 basis points are dropped: 34 rows, 26 of them Greek
- Tighter cuts raise the credit coefficient: 0.10 at 500 and 0.14 at 200 basis points
- Wild cluster restricted bootstrap- t by country, 9,999 draws

500 bp

200 bp

◀ Back

Tighter cut: 500 bp

	(1)	(2)	(3)	(4)	(5)	(6)
Credit	0.1213*** (0.0195)	0.1215*** (0.0200)	0.1267*** (0.0209)	0.1192*** (0.0226)	0.0903*** (0.0156)	0.0973*** (0.0176)
Non-default	0.0344*** (0.0080)	0.0257*** (0.0094)	0.0236** (0.0096)	0.0326*** (0.0091)	-0.0016 (0.0122)	-0.0181 (0.0118)
Credit — Non-default [ρ]	0.0003	0.0001	0.0001	0.0023	0.0000	0.0000
Macro controls	No	Yes	Yes	Yes	Yes	Yes
VIX control	No	No	Yes	No	No	No
Country FE	No	No	No	No	Yes	Yes
Month FE	No	No	No	Yes	No	Yes
Observations	10,716	10,716	10,716	10,716	10,716	10,716
R^2	0.108	0.118	0.135	0.307	0.215	0.408

Tighter cut: 200 bp

	(1)	(2)	(3)	(4)	(5)	(6)
Credit	0.1690*** (0.0328)	0.1688*** (0.0332)	0.1825*** (0.0325)	0.1727*** (0.0334)	0.1273*** (0.0352)	0.1430*** (0.0261)
Non-default	0.0332*** (0.0095)	0.0229** (0.0097)	0.0186* (0.0097)	0.0247** (0.0099)	0.0068 (0.0136)	-0.0084 (0.0133)
Credit — Non-default [ρ]	0.0008	0.0003	0.0001	0.0003	0.0021	0.0000
Macro controls	No	Yes	Yes	Yes	Yes	Yes
VIX control	No	No	Yes	No	No	No
Country FE	No	No	No	No	Yes	Yes
Month FE	No	No	No	Yes	No	Yes
Observations	9,843	9,843	9,843	9,843	9,843	9,843
R^2	0.073	0.086	0.116	0.317	0.176	0.405

Credit and non-default

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Credit	0.0687*** (0.0175)	0.0683*** (0.0175)	0.0700*** (0.0190)	0.0668*** (0.0184)	0.0511*** (0.0111)	0.0549*** (0.0152) [0.0365]	0.0525*** (0.0090)
Non-default	0.0379*** (0.0088)	0.0325*** (0.0102)	0.0312*** (0.0104)	0.0434*** (0.0091)	-0.0013 (0.0119)	-0.0100 (0.0110) [0.3713]	-0.0115 (0.0128)
Macro controls	No	Yes	Yes	Yes	Yes	Yes	Yes
VIX control	No	No	Yes	No	No	No	No
Country FE	No	No	No	No	Yes	Yes	Yes
Time FE	No	No	No	Yes	No	Yes	Yes
Observations	10,848	10,848	10,848	10,848	10,848	10,848	911
R^2	0.092	0.098	0.112	0.286	0.209	0.397	0.587

Brackets: wild cluster restricted bootstrap- t p -values by country. Column (7) is annual.

Inflation-linked decomposition

	(1)	(2)	(3)	(4)	(5)	(6)
Credit	0.1456*** (0.0373)	0.1401*** (0.0349)	0.1414*** (0.0315)	0.1523*** (0.0272)	0.1046* (0.0538)	0.1391*** (0.0288) [0.0305]
Real yield	0.0486*** (0.0118)	0.0419*** (0.0100)	0.0407*** (0.0104)	0.0512*** (0.0127)	0.0285 (0.0224)	-0.0150 (0.0133) [0.2731]
Breakeven	0.0561*** (0.0115)	0.0368** (0.0135)	0.0299** (0.0130)	0.0115 (0.0162)	0.0480 (0.0382)	-0.0308 (0.0200) [0.2612]
Macro controls	No	Yes	Yes	Yes	Yes	Yes
VIX control	No	No	Yes	No	No	No
Country FE	No	No	No	No	Yes	Yes
Month FE	No	No	No	Yes	No	Yes
Observations	2,291	2,291	2,291	2,291	2,291	2,291
R^2	0.217	0.230	0.250	0.558	0.281	0.606

Brackets: wild cluster bootstrap p -values, enumerated over all sign vectors.