The Pricing of Profit Shifting

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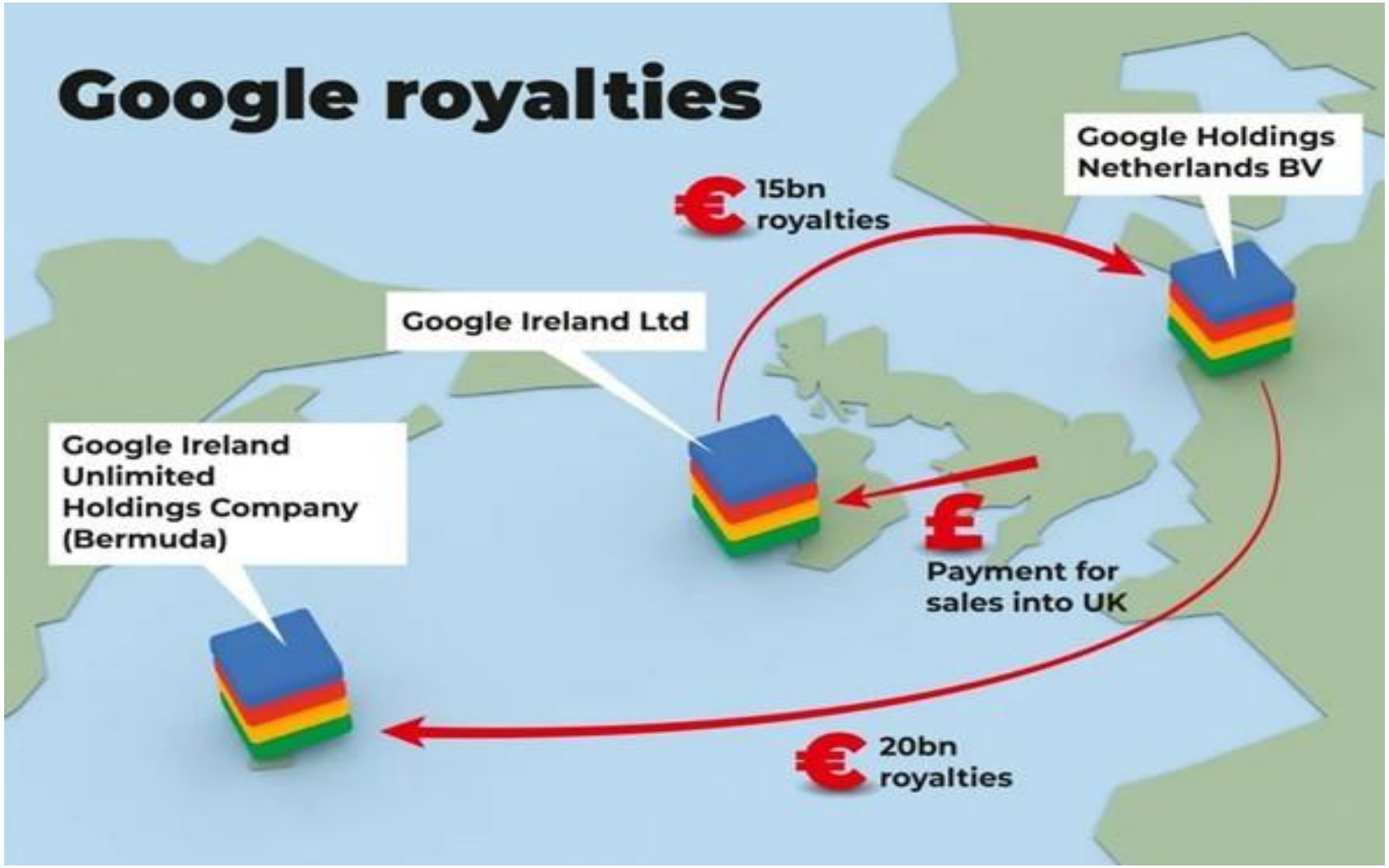
"Double Irish with a Dutch Sandwich"



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Motivation: Global Regulation and Markets reactions

~$1 trillion in profits shifted annually, ~$250 Bn in lost tax revenue (OECD, Tørsløv et al., 2023)

- Multinational firms relocate profits to low-tax jurisdictions: profit shifting → lower tax liability → higher after-tax earnings → higher firm value → **Reward**
- The OECD's BEPS initiative (2015), the U.S. Tax Cuts and Jobs Act (2017), GMT (2021) marked a structural tightening of enforcement → correlated exposure to enforcement risk → **Risk compensation**
- Yet, little is known about whether and how capital markets price these risks

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To distinguish reward from risk-compensation, we ask four questions, exploiting BEPS, the UK DPT, and the TCJA

Q1. Is profit-shifting intensity priced in global equity markets?

Q2. Does the premium emerge only with credible enforcement (BEPS, TCJA)?

Q3. Through what mechanism, enforcement risk or fundamentals?

Q4. Can we isolate the enforcement channel using clean, well-identified events?

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PS intensity predicts higher returns; the premium emerges only with credible enforcement and is enforcement-driven

Pricing

Profit-shifting intensity predicts higher stock returns. The premium emerges post-BEPS and persists post-TCJA.

Magnitude

A 1 s.d. ↑ in PS intensity ≈ 12 bp/month (≈ 1.5% annualised). Growth premium adds ≈ 32 bp/month (≈ 3.8% annualised).

Identification

Triple-difference around the UK DPT; event studies around LuxLeaks and TCJA passage; factor-spanning.

Mechanism

Premium absent without enforcement, present where enforcement exists. Not explained by cash flow, profitability, or institutional divestment.

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471K MNE-months across 88 countries, 2010–2020

471,295	39,437	7,929	88
MNE-month obs	MNE-year obs	unique MNEs	countries (2010–2020)

Sources: Orbis (firm financials, monthly stock returns); Orbis historical ownership links 2009–2019 for affiliate structure and tax-haven identification.

Earnings announcements: I/B/E/S linked to CRSP (US) and Compustat Global (non-US).

Event-study returns: CRSP and Compustat Global daily returns.

Tax strictness: De Vito, Hillmann, Jacob & Vossebürger (2025); available for European countries.

Lag structure: all profit-shifting measures are lagged one year to address reverse causality.

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Firm-year PS estimates come from a nonparametric H–L semi-elasticity, aggregated to MNE-year

$$\log \pi_{it} = g\, CT_{it} + \beta \log A_{it} + \gamma\, X_{it} + \mu_i + \delta_t + \varepsilon_{it}$$

Nonparametric kernel regression: Stata npregress kernel → firm-year semi-elasticities g(it).

33 local regressions: 3 specifications × 11 years; averaged across specifications.

Validation: extensive in Delis, Delis, Laeven & Ongena (JAE, 2025).

Aggregation: affiliate ratios |S|/T (outbound) and |S|/π (inbound) → profit-, unweighted-, and asset-weighted MNE-year averages.

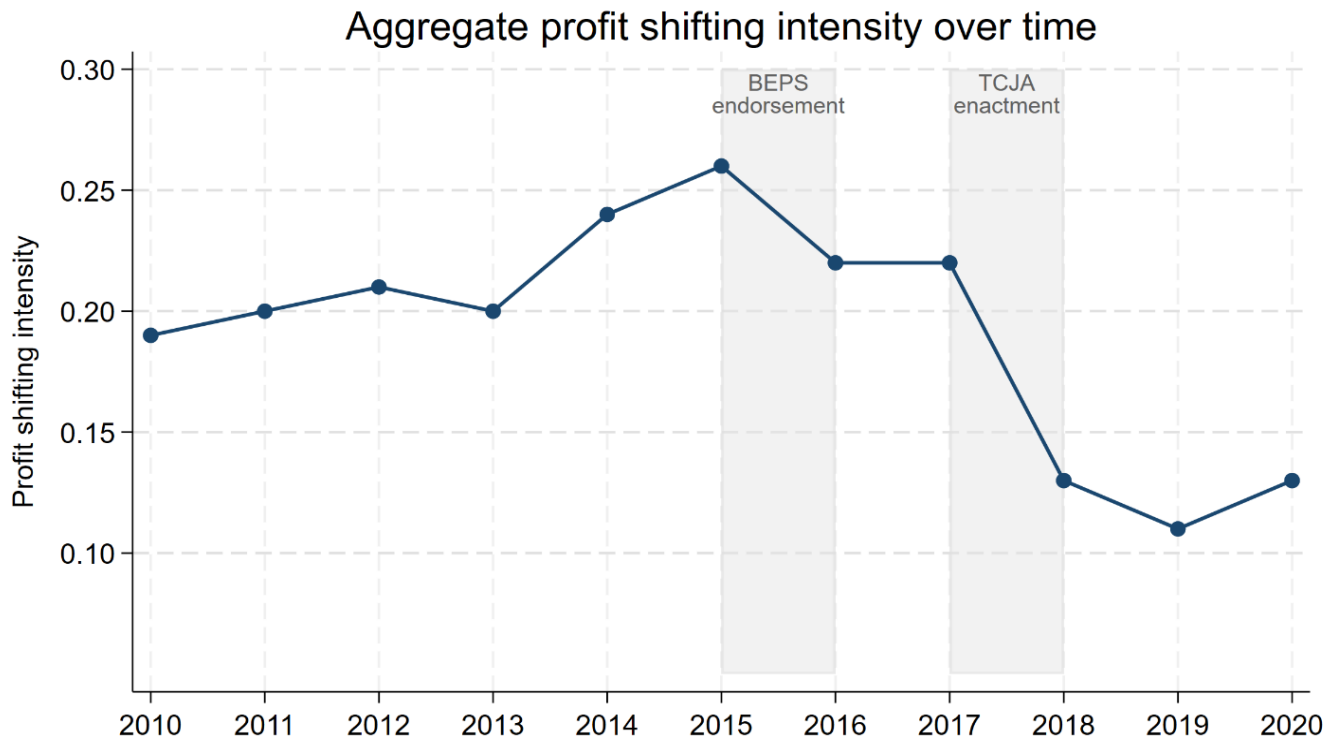

Fig A1. Aggregate PS intensity peaked at 0.26 in 2015; by 2018–20 ≈ 0.12 (≈ half of peak).

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Returns regression on lagged PS intensity, with FEs and double-clustered SEs — four identification layers

$$\text{Return}_{mt} = \alpha' + \alpha_1 \text{ Profit shifting}_{m,y(t)-1} + \alpha_2 \text{ Controls}_{m,y(t)-1} + \varepsilon_{mt}$$

Profit shifting measure — Lagged profit-weighted PS intensity (baseline); unweighted, asset-weighted, semi-elasticity, growth as alternatives.

Identification layers — (i) cross-sectional FE; (ii) triple-difference around UK DPT; (iii) LuxLeaks and TCJA event studies; (iv) Fama–MacBeth factor spanning.

Controls — Market cap, leverage, ROE, B/M, tangible BV/share, EPS, HHI, turnover growth, **GAAP ETR**, 12-mo rolling return, volatility (Bolton and Kacperczyk, 2021).

Inference — Standard errors double-clustered at firm and year; robust to four alternative clustering schemes (Table B4).

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Baseline: 1 s.d. ↑ PS intensity ≈ 12 bp/month (≈ 1.5% annualised), robust to FEs, ETR control, and DGTW adjustment

	(1)	(2)	(3)	(4)	(5) DGTW
PS intensity t-1	1.036**	1.021**	0.492**	**1.038****	0.731***
	[0.448]	[0.453]	[0.187]	[0.452]	[0.136]
GAAP ETR t-1	—	—	—	0.362*	0.291***
				[0.170]	[0.081]
Year/month	Y	Y	Y	Y	Y
Industry	N	Y	Y	Y	Y
Country	N	N	Y	N	N
Observations	472,595	472,415	472,415	471,295	426,146

Headline: 1.038** × 0.12 ≈ 12 bp/month
≈ 1.5% annualised.

PS intensity here is the profit-weighted measure (baseline).

Stable across FE choices and after DGTW characteristic adjustment.

Standard errors are double-clustered at the firm and year levels

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The premium survives every robustness test: alternative measures, mediation, horizons, clustering, and measurement error

Paper table	What we test	What we find
Table 4	Alternative PS estimators: semi-elasticity, intensity, growth (profit-/un-/asset-weighted)	Positive; significant across all nine measure–weighting combinations
Table B1	Strip earnings-announcement-day returns	Premium unchanged: 1.001** / 0.987* / 0.482**
Table B2	Mediation via cash-flow & after-tax profit ratios	Mediators absorb ≈4%; PS stays significant
Table B3	Alternative return horizons (contemporaneous, half-year, annual)	Positive and significant at every horizon
Table B4	Five standard-error clustering schemes	Significance preserved: 1.038** to ***
Table B5	Measurement error: Lewbel IV / SIMEX / reliability ratio	All corrected estimates exceed OLS (1.25–1.87×)

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Cross-sectionally, the PS-intensity premium is insignificant pre-BEPS and significant post-BEPS / post-TCJA

	(1) Pre-BEPS 2010–Oct 2015	(2) Post-BEPS Nov 2015–2020	(3) Post-TCJA 2018–2020
PS intensity t-1	0.605	**1.341****	**1.403****
	[0.747]	[0.406]	[0.280]
Year/month	Y	Y	Y
Industry	Y	Y	Y
Observations	201,372	269,923	163,598

If PS intensity was a stable firm characteristic, the premium would not emerge precisely when enforcement became credible.

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Enforcement is the channel: no premium without enforcement, significant wherever enforcement applies (robust to within-country FE)

Specification	PS intensity	Notes
(6) Strictness = 0	**0.340 [0.505]**	No premium without enforcement.
(7) Partial enforcement	1.554*** [0.444]	Premium highly significant.
(8) Partial + country FE	**1.427** [0.497]**	Survives within-country FE.
(9) Full enforcement	1.085** [0.485]	Premium significant.
(10) Any enforcement + country FE	1.225** [0.457]	Pooled within-country result.

Enforcement strictness is scaled to [0,1]. Rows sort MNE-years by enforcement intensity: the premium is absent where strictness = 0, becomes significant once any enforcement applies, and survives within-country (GUO) fixed effects. Coefficients are on lagged profit-shifting intensity; standard errors in brackets.

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UK Diverted Profits Tax (Dec 2014): a sharp 25% tax — triple interaction PS×UK×Post

The DPT

- **Announced** Dec 3, 2014; implemented Apr 1, 2015.
- **25% tax** on diverted profits via aggressive transfer pricing.
- **Sharp timing, narrow scope** — plausibly exogenous shock.
- **Predetermined exposure:** PS intensity fixed prior to the post period.
- **Seven-year window 2012–2018** (3 pre + announce + 3 post).
- **Time placebos** on pre-DPT samples (2013–14 and 2012–13).

	(1) DPT	(2) DPT+ctrl	(3) Placebo 13–14	(4) Placebo 12–13
PS × UK × Post-DPT	4.883** [1.535]	**4.102** [1.425]**		
PS × UK	−3.821** [1.187]	−2.374* [1.007]		
PS × UK × Placebo (13–14)			−2.452* [0.922]	
PS × UK × Placebo (12–13)				−0.256 [1.607]
Observations	234,688	234,688	138,855	111,947
Period	2012–18	2012–18	2010–14	2010–13

Fixed effects: year-month, industry, and GUO-country in all columns; controls in columns 2–4. Standard errors clustered by firm and year.

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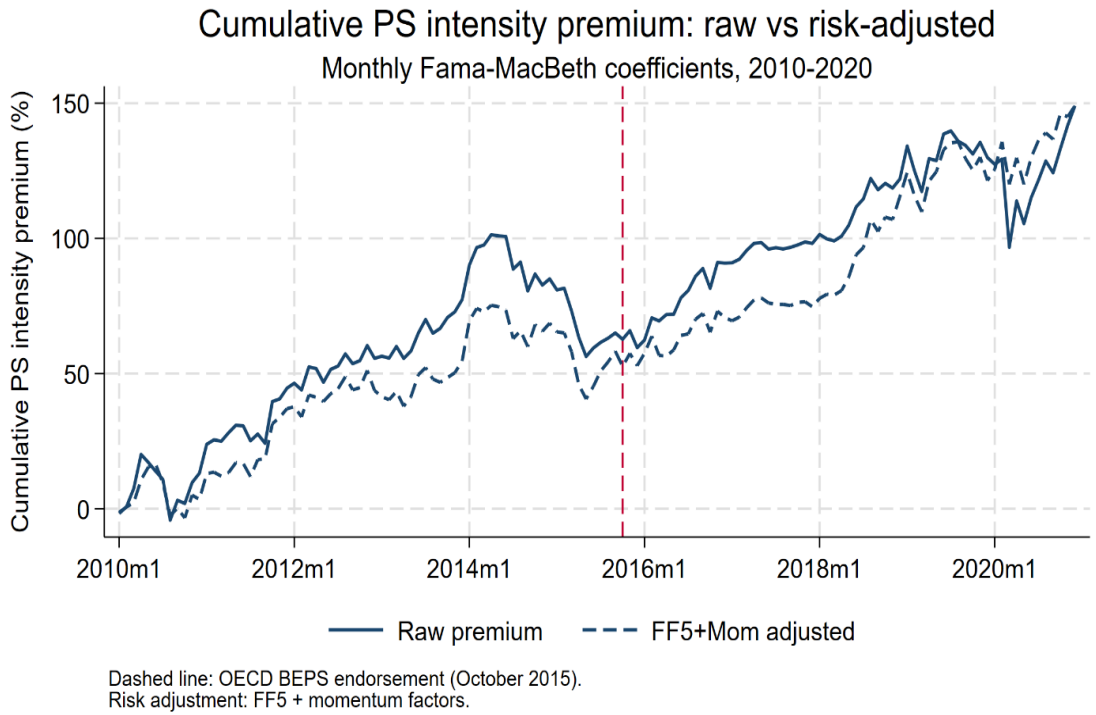
Premium is not spanned by FF5+Mom or by ten standard factors; cumulative premium ≈ 150 pp by end-2020

$$R_t^{ps} = \delta_0 + \delta F_t + \varepsilon_t$$

	Uncond.	FF5+Mom	+ 4 add'l
PS intensity Full	1.129** [0.476]	0.703 [0.497]	0.525 [0.537]
PS intensity Pre-BEPS	0.895 [0.722]	−0.030 [0.928]	−0.167 [1.083]
PS intensity Post-BEPS	1.394** [0.605]	**1.105** [0.443]**	0.934** [0.393]
PS growth Full	0.166*** [0.025]	0.162*** [0.022]	0.152*** [0.025]



Dashed line: OECD BEPS endorsement (October 2015).
Risk adjustment: FF5 + momentum factors.

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LuxLeaks (Nov 2014): named high-PS firms repriced down (CAR ≈ −5.4 pp)

	Nov 5–Dec 9	Nov 5–11	Dec 5–12
LuxLeaks named	1.6 / 2.7 / 2.5	2.2** / 2.6*** / 2.5***	1.4 / 1.4 / 1.4
PS intensity Q4	0.8* / 0.6 / 0.4	0.6*** / 0.5** / 0.4**	0.2 / 0.0 / −0.0
Named × PS Q4	**−4.1 / −5.4** / −5.2****	**−1.7* / −2.2** / −2.1****	**−2.5** / −2.4* / −2.5***

Windows around the LuxLeaks disclosures (Nov 5 – Dec 9, 2014); ~2,500 global MNEs. "Named" = firms named in the leaked rulings; PS-Q4 = top profit-shifting-intensity quartile. Each cell reports three control sets: minimal (market cap, ROE, leverage); lean (+ GAAP ETR, volatility, turnover growth); full (+ B/M, log number of foreign-affiliate countries). CARs are market-model abnormal returns (estimation window [−220, −30]) with industry fixed effects.

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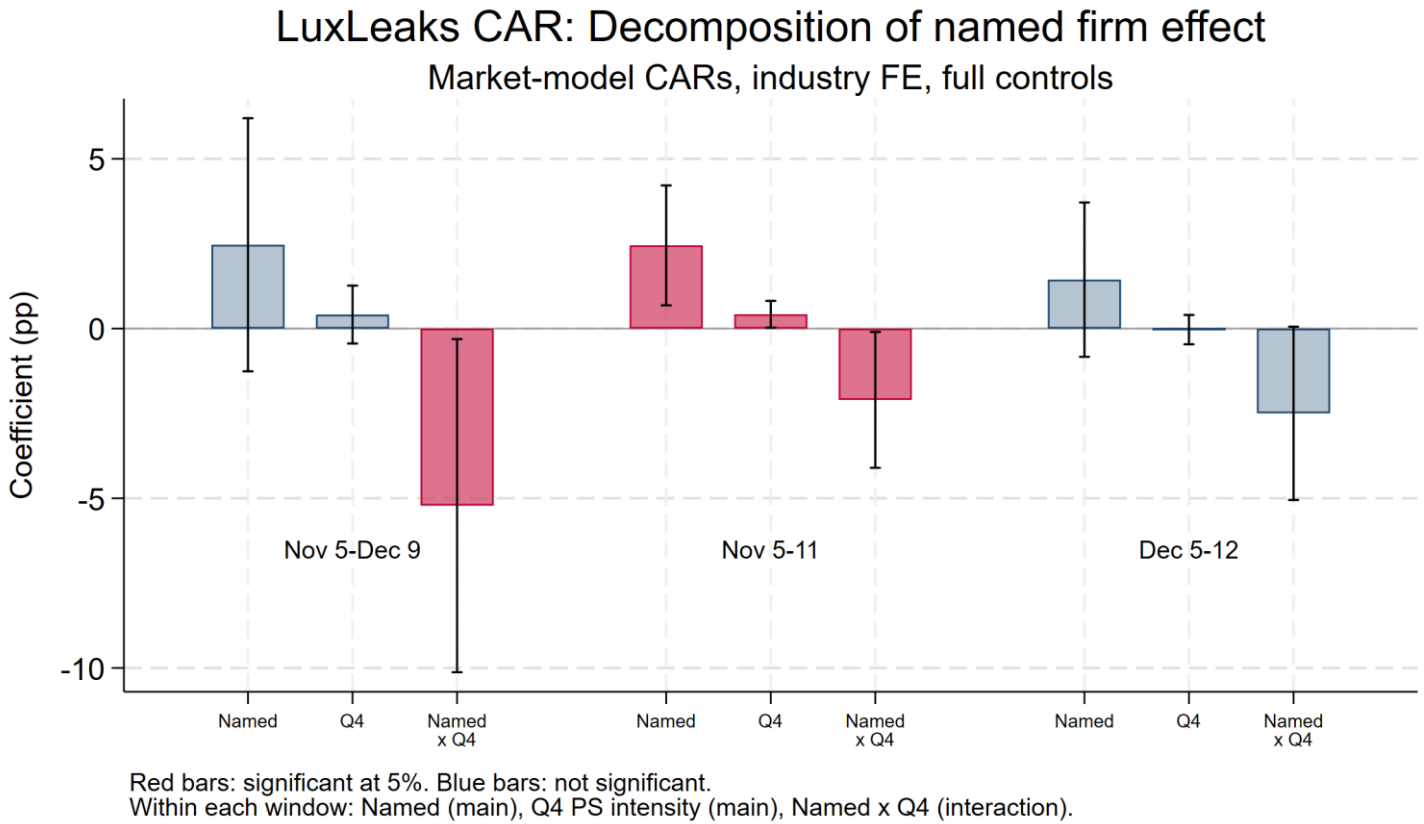
Event-study CARs: the LuxLeaks effect loads on named high-PS firms (Named × PS-Q4 < 0)



Market-model CARs by role within each window. The negative, significant bar is the Named × PS-Q4 interaction — repricing concentrates in named high-PS firms. Red bars: significant at 5%.

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TCJA passage (Dec 2017): high-PS firms (Q4) repriced down (CAR ≈ −0.6 pp)

Window	PS-intensity Q4 (min / lean / full)
Dec 15–22 (full passage)	**−0.613** / −0.597** / −0.588****
Dec 19–22 (vote → sign)	−0.429** / −0.390* / −0.392*
Dec 15–19 (report → vote)	−0.226 / −0.260 / −0.238

Window around the final TCJA vote and signing (Dec 15–22, 2017); 349 US MNEs. PS-Q4 = top quartile of lagged PS intensity. Each cell reports three control sets: minimal (market cap, ROE, leverage); lean (+ GAAP ETR, volatility, turnover growth); full (+ B/M, log number of foreign-affiliate countries). CARs are market-model abnormal returns (estimation window [−220, −30]) with industry fixed effects.

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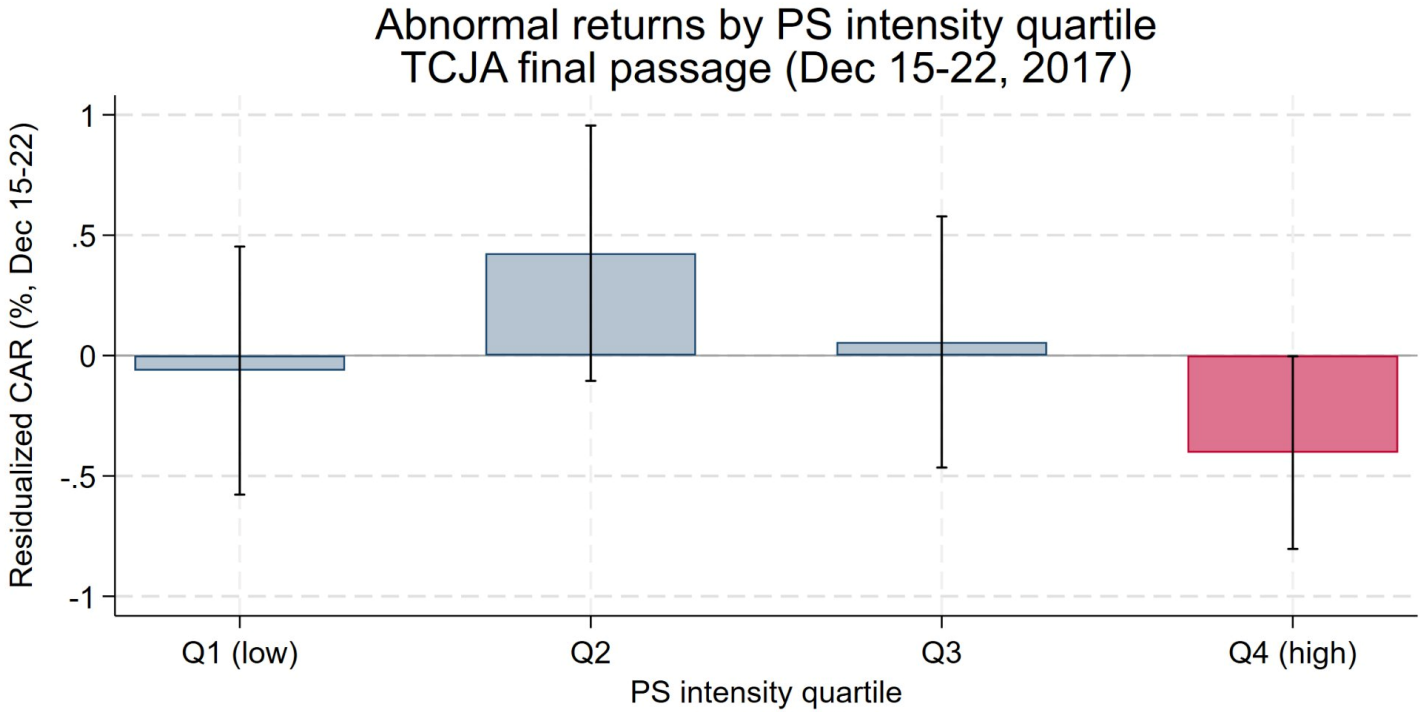
Event-study CARs: only the top PS quartile (Q4) reprices significantly at TCJA passage



Residualised CARs by PS-intensity quartile around TCJA passage. Only Q4 (high PS, red) is significantly negative; whiskers show 95% confidence intervals.

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Conclusions

1. Profit shifting is positively priced in the cross-section of global equity returns. A 1 s.d. increase ≈ 12 bp/month (≈ 1.5% annualised); growth ≈ 32 bp/month.

2. The premium is regime-dependent. Insignificant pre-BEPS; significant post-BEPS and post-TCJA. UK DPT triple-difference gives causal evidence of repricing.

3. Enforcement risk is the channel. Premium absent without enforcement, present where enforcement exists; not spanned by FF5+Mom or 10 standard factors; not explained by cash flow, profitability, or institutional divestment.

Implications. PS is a previously overlooked, economically meaningful dimension of priced risk that affects firms' cost of capital. Tax reforms shape risk premia, not just revenue.

Considerations. By design we do not (yet) construct a tradable PS-intensity factor portfolio: the claim is a risk-premium interpretation, not a formal factor in the covariance sense.

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Thank you

The Pricing of Profit Shifting

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Premium is not driven by institutional divestment alone: only top-10 holders divest; the rest of the universe does not

	(1) All institutional	(2) Top-10 present	(3) Excluding top-10
PS intensity t-1	−1.014	**−13.023*** **	1.753
	[3.376]	[3.260]	[3.647]
Year	Y	Y	Y
Industry	Y	Y	Y
Observations	39,290	11,526	27,764

Dependent variable: aggregate institutional-ownership share (%).

Large institutional investors reduce holdings in high-PS firms, but only where they are present.

Divestment is not systematic, so demand alone cannot explain the premium.

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Baseline returns regression — control coefficients (Col 4)

	(1)	(2)	(3)	(4)	(5) DGTW
PS intensity t-1	1.036**	1.021**	0.492**	1.038**	0.731***
Market cap t-1	−0.117***	−0.110***	−0.109***	−0.108***	−0.101***
Leverage t-1	−0.725***	−0.696***	−0.751***	−0.742***	−0.494**
Rolling avg (12)	−0.038	−0.039	−0.049	−0.040	−0.057***
Volatility	0.026	0.026	0.033	0.026	0.014
EPS t-1	0.019*	0.016	−0.004	0.020*	0.006
HHI t-1	−0.004	0.019	0.022	0.020	0.023
Turnover growth	1.673***	1.678***	1.713***	1.687***	1.092***
ROE t-1	0.010***	0.010***	0.010***	0.010***	0.005***
B/M t-1	−0.088	−0.066	−0.000	−0.072	−0.055**
Tangible BV/share t-1	−0.007**	−0.006**	−0.006**	−0.006**	−0.004***
GAAP ETR t-1				0.362*	0.291***
Observations	472,595	472,415	472,415	471,295	426,146
Adj. R^2	0.156	0.157	0.157	0.157	0.003

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Returns regressions with alternative PS measures (Table 4 full)

	Semi-elast. (profit-wtd)	Semi-elast. (unwtd)	Semi-elast. (asset-wtd)	PS intensity (unwtd)	PS intensity (asset-wtd)	PS growth (profit-wtd)	PS growth (unwtd)	PS growth (asset-wtd)
Profit shifting	0.167**	0.193***	0.171**	1.059**	1.001*	0.173***	0.197***	0.175***
	[0.055]	[0.060]	[0.057]	[0.471]	[0.463]	[0.030]	[0.033]	[0.031]
Observations	471,379	471,895	471,379	471,895	471,295	471,911	471,895	470,791
Adj. R^2	0.157	0.157	0.157	0.157	0.157	0.157	0.158	0.157

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Table B5: classical and non-classical ME corrections all exceed OLS

	(1) OLS	(2) Lewbel IV	(3) SIMEX	(4) Reliability ratio
PS intensity t-1	1.038**	1.301***	1.941***	1.513**
	[0.452]	[0.504]	[0.155]	[0.659]
Ratio to OLS	1.000	1.250	1.870	1.457
Observations	471,295	471,295	471,295	471,295
Year/month + Industry FE + Controls	Y	Y	Y	Y

SIMEX: simulation-extrapolation; adds artificial noise (λ=0.5,1,1.5,2), extrapolates to λ=−1.
Lewbel IV: heteroskedasticity-based internal IV from squared deviations of controls.
Reliability: OLS scaled by year-on-year autocorrelation of PS intensity (λ = 0.686).

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Table 7 full: factor loadings vary, intercept holds in post-BEPS

Panel A: Full period (n=132 months)

	PS int. (1)	PS int. (2)	PS int. (3)	PS growth (4)	PS growth (5)	PS growth (6)
Constant	1.129**	0.703	0.525	0.166***	0.162***	0.152***
	[0.476]	[0.497]	[0.537]	[0.025]	[0.022]	[0.025]
N (months)	132	132	132	132	132	132

Panel B: PS intensity by sub-period

	Pre-BEPS (7)	Pre-BEPS (8)	Pre-BEPS (9)	Post-BEPS (10)	Post-BEPS (11)	Post-BEPS (12)
Constant	0.895	−0.030	−0.167	1.394**	1.105**	0.934**
	[0.722]	[0.928]	[1.083]	[0.605]	[0.443]	[0.393]
N (months)	70	70	70	62	62	62

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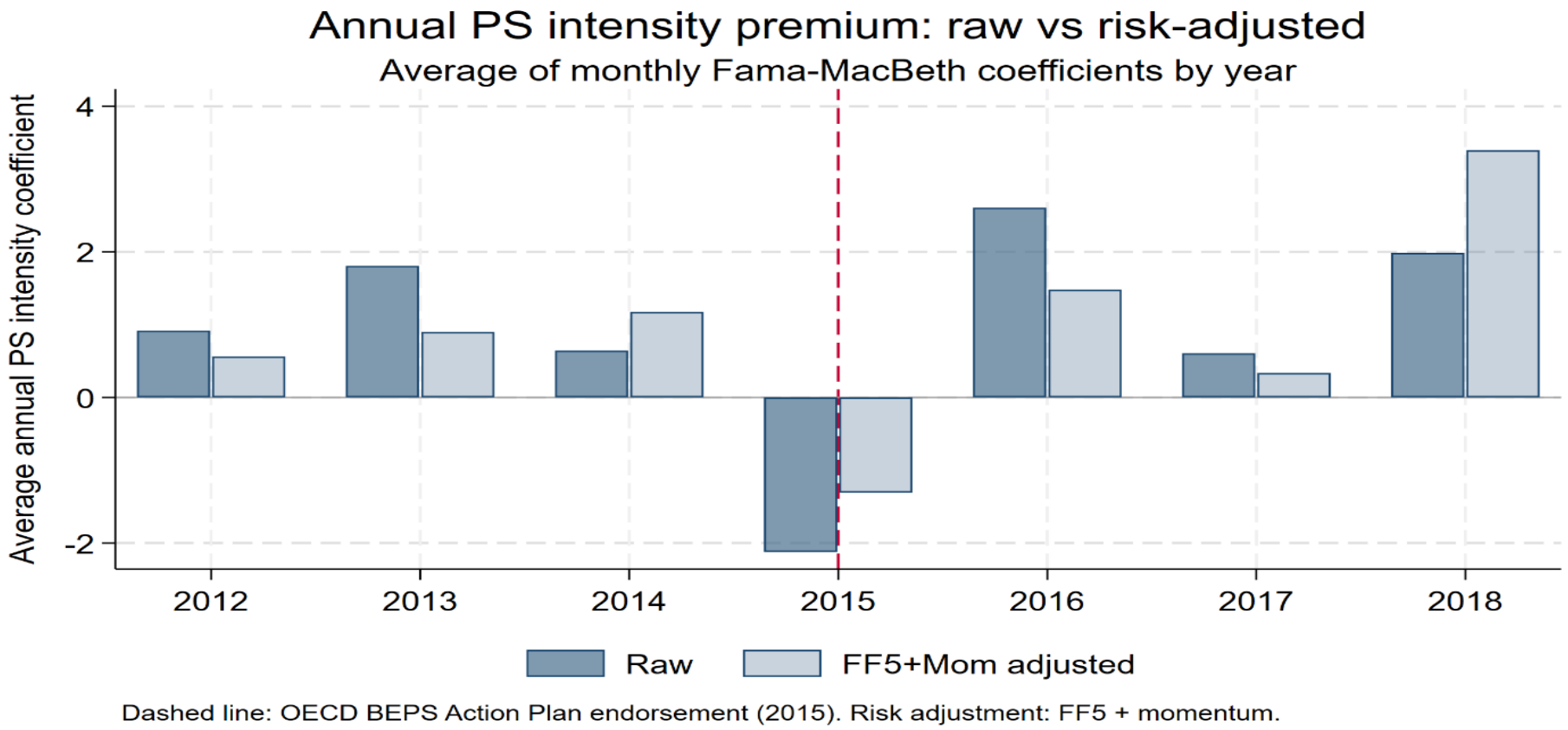
Fig 3 Panel 2: pattern maps onto enforcement milestones (BEPS 2015, TCJA 2018)



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Enforcement mechanism — full specification table

Specification	PS intensity	What it shows
(2) Haven affiliates only	0.051 [0.055]	Haven count alone: positive but not significant
(3) PS + haven affiliates	1.016** [0.416]	PS retains significance; haven count drops out
(4) Enforcement exposure only	0.365** [0.158]	Shift-share enforcement exposure is priced
(5) PS + enforcement exposure	1.032** [0.453]	PS and exposure are independently significant
(6) Strictness = 0	**0.340 [0.505]**	No premium where enforcement is absent
(7) Partial enforcement (0,1)	1.554*** [0.444]	Premium highly significant under partial enforcement
(8) Partial + country FE	**1.427** [0.497]**	Survives within-country (GUO) fixed effects
(9) Full enforcement (=1)	1.085** [0.485]	Premium significant under full enforcement
(10) Any enforcement + country FE	1.225** [0.457]	Pooled within-country result

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Table 9 reproduced exactly from paper: nine specifications

	(1) min	(2) lean	(3) full	(4) min	(5) lean	(6) full	(7) min	(8) lean	(9) full
LuxLeaks named	1.581	2.744	2.469	2.159**	2.563***	2.450***	1.380	1.378	1.441
	[2.098]	[1.903]	[1.902]	[0.928]	[0.906]	[0.901]	[1.059]	[1.059]	[1.160]
PS intensity Q4	0.799*	0.587	0.411	0.563***	0.457**	0.421**	0.158	0.047	−0.032
Named × PS Q4	−4.116	−5.351**	−5.219**	−1.717*	−2.165**	−2.102**	−2.507**	−2.438*	−2.498*
Observations	2,454	2,434	2,434	2,454	2,434	2,434	2,454	2,434	2,434
Adj. R^2	0.048	0.049	0.049	0.022	0.026	0.026	0.035	0.042	0.043
Window	Nov 5–Dec 9	Nov 5–Dec 9	Nov 5–Dec 9	Nov 5–11	Nov 5–11	Nov 5–11	Dec 5–12	Dec 5–12	Dec 5–12

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Table 10: nine specifications, repricing concentrated in final-vote window

	(1) min	(2) lean	(3) full	(4) min	(5) lean	(6) full	(7) min	(8) lean	(9) full
PS intensity Q4	−0.613**	−0.597**	−0.588**	−0.429**	−0.390*	−0.392*	−0.226	−0.260	−0.238
	[0.275]	[0.281]	[0.278]	[0.211]	[0.215]	[0.214]	[0.216]	[0.217]	[0.216]
Observations	349	349	349	349	349	349	349	349	349
Adj. R^2	0.082	0.092	0.095	0.071	0.070	0.068	0.027	0.041	0.041
Window	Dec 15–22	Dec 15–22	Dec 15–22	Dec 19–22	Dec 19–22	Dec 19–22	Dec 15–19	Dec 15–19	Dec 15–19

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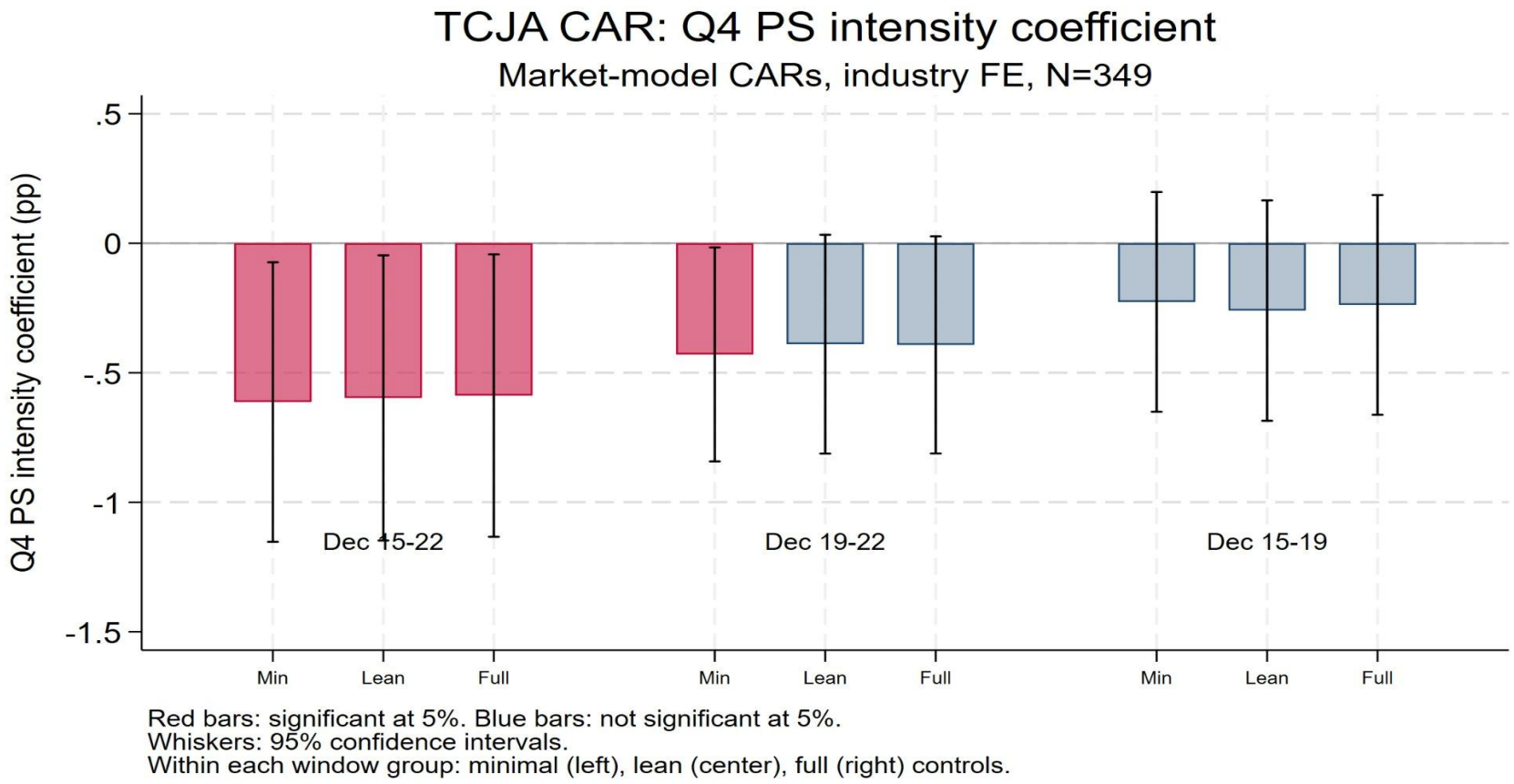
TCJA CARs: Q4 PS-intensity coefficient by event window



Red bars: significant at 5%. Blue bars: not significant at 5%.
Whiskers: 95% confidence intervals.
Within each window group: minimal (left), lean (center), full (right) controls.

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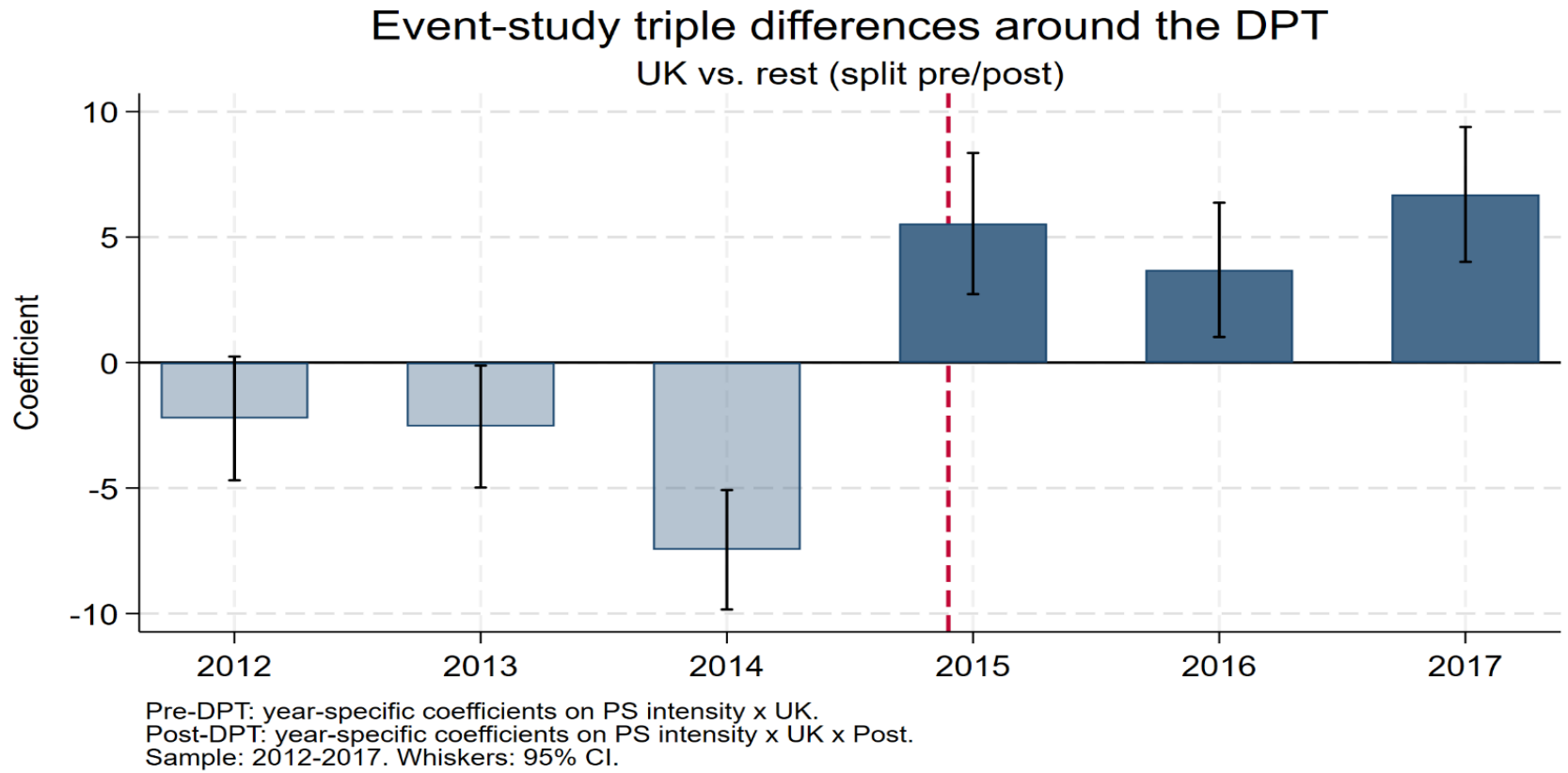
DPT event-study: year-specific triple-diff coefficients flip from negative to positive at the announcement, no pre-trend



Pre-DPT (2012–14): year-specific PS×UK coefficients, negative throughout. Post-DPT (2015–17): year-specific PS×UK×Post coefficients, positive and significant.

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