

Sustainability on Supply Chains

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ESG Shocks in Global Supply Chains

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Indonesia: Nestlé and Pepsi cut ties with Indofood due to labour and environment concerns

Read more

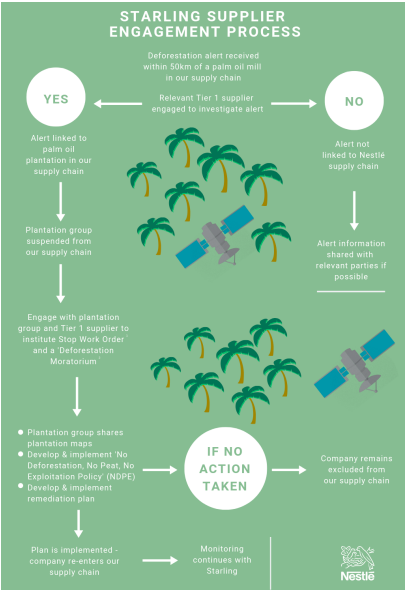


"Major brands break ties with Indonesia palm oil giant," 05 October 2018

Nestlé and PepsiCo, both long time business partners of Indofood, have ended direct and indirect sourcing of palm oil from IndoAgri...due to concerns over ongoing deforestation and human rights abuses within its operations.

In an [updated statement](#) on its palm oil policy in Indonesia, PepsiCo said that it has decided to suspend sourcing palm oil from IndoAgri to its joint venture with Indofood, "pending further progress and visibility" around allegations of labour violations on its plantations. PepsiCo remains in business with the company under Indofood Fritolay Makamur (IFL)...

Nestlé: Discipline by Engagement

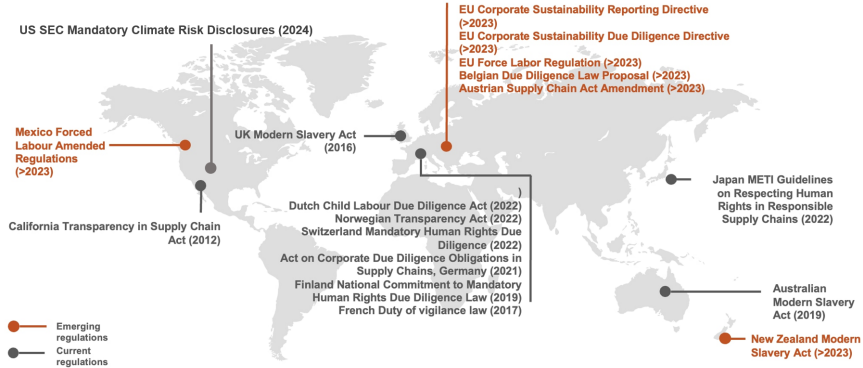


An Isolated Anecdote?



One in five large UK retailers have cut ties with suppliers over the last year due to failure in meeting ethical standards, despite supply chain challenges

What Motivates Importers' Trade Cuts?



Source: PwC Analysis - selected regulations affecting supply chains

- Schiller (2018) highlights regulatory risks
 - ▷ Importers cut trade to avoid penalties in their own countries

Global Supply Chain Laws

Country / Region	European Union	Germany	Australia	Canada
Related Supply Chain Law	Corporate Sustainability Due Diligence (CSDD)	Supply Chain Duty Act	Modern Slavery Act	Fighting Against Forced Labor and Child Labor in Supply Chains Act
Effective Date	Early 2024 (Member States will then have 2 years' time to apply CSDD to national laws)	1 Jan 2023	1 Jan 2022	Under Third Reading
Affected Companies	EU and non-EU companies: Group 1: >500 employees and >€150m turnover Group 2 (High impact sectors): >250 employees and >€40 turnover	German companies with a) >3000 employees (2023) b) >1000 employees (starting from 2024)	Australian companies with AUS\$100m turnover	Either: 1) Listed companies; 2) Companies that meet two of the conditions below: a) >250 employees; b) >CA\$40m revenue in Canada; c) >CA\$20m assets in Canada
What Does It Cover?	Adverse impacts on human rights and environment	Adverse impacts on human rights and environment	Forced labor, child labor	Forced labor, child labor
Liabilities of the Companies' Directors	Yes	No	No	No

What Motivates Importers' Trade Cuts?

Thu 24 Apr 2014



The international accord is designed to improve safety in Bangladeshi factories. (Reuters)

- Koenig and Poncet (2022) highlight importers' quality and reputational concerns following the Rana Plaza collapse

This Project: What About Investors?

“Yann Wyss, global head of social impact and human rights at Nestlé, knows how this [investors’ pressure on supply chain ESG] works in practice. He has seen a sharp rise in interest from investors since joining the company 12 years ago. “Back then I would attend maybe a call a month with investors,” he says. “These days it’s more like a call every two days.”

(Source: Financial Times)

- Seem to care about portfolio firms’ supply chain ESG performance
- Can affect managerial decisions through voting and stock sales

What We Do

- Match data on
 - ▷ International suppliers' environmental and social (E&S) incidents
 - ▶ Mostly opaque incidents not covered by international media
 - ▷ Universe of maritime imports by U.S. firms
 - ▶ Including relationships not disclosed to the public
- Study trade and investor reactions around supplier E&S incidents
 - ▷ Container imports
 - ▶ For all firms and for firms with E&S-sensitive investors
 - ▷ Investor proposals, stock holdings
 - ▷ Costs and benefits of trade cuts to importers

What We Find

- Systematic evidence of trade cuts after supplier E&S incidents:
 - ▷ Imports decrease by 31.8%
 - ▷ Relationships 60% more likely to be terminated
- Shareholder proposals related to supply chain E&S and stock sales increase after an incident
- Larger trade cuts for US customers with ESG-minded investors *even for the same incident*
 - ▷ Less evidence of regulation- and quality-related motives
- Costs and benefits of trade cuts:
 - ▷ Costly reallocation to suppliers in other countries
 - ▷ Trade cuts seem to improve supplier E&S behavior

Data: Supplier-Customer Relationships

- Universe of ocean freight shipments between foreign suppliers and U.S. customers from S&P Panjiva
 - ▷ Title 19 of the U.S. Code of Federal Regulation requires consignees to report shipment details to the Customs and Border Protection
 - ▷ Data includes information about shippers, consignees, product codes/descriptions, and container specifications
 - ▷ Sample period: 2007-2020
- Matched to public firms' financials at the U.S. customer-level

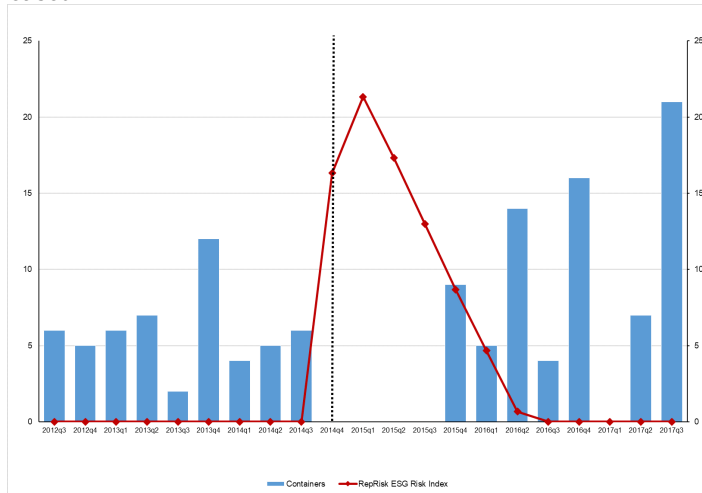
Data: Environmental and Social (E&S) Incidents

- RepRisk collects ESG-related incidents by screening media, regulatory, and commercial documents
 - ▷ Environmental incidents: pollution, ecosystems and landscapes, overuse and wasting of resources, and animal mistreatment
 - ▷ Social incidents: community relations (e.g., human rights abuses) and employee relations (e.g., forced or child labor)
 - ▷ Governance incidents: corruption, bribery, fraud, tax evasion and optimization, and anti-competitive practices (...)
- We focus on E&S incidents during 2010-2018
 - ▷ E&S incidents more likely subject to negative externalities and downstream reputational effects
- We link Panjiva suppliers to RepRisk incidents using fuzzy name matching

- On Nov 11, 2014, the Indonesian company Bintulu Edible Oils Sdn. Bdn. (Bintulu) faced public scrutiny from the NGO Rainforest Action Network for the harmful environmental effects caused by its palm oil production process
- Archer-Daniels-Midland Company (ADM, a U.S.-based nutrition company) is one of Bintulu's customers

Effects on Trade

- ADM suspended its sourcing from Bintulu immediately following the news, and this suspension continued until the end of 2015 when Bintulu's RepRisk ESG risk index decreased:



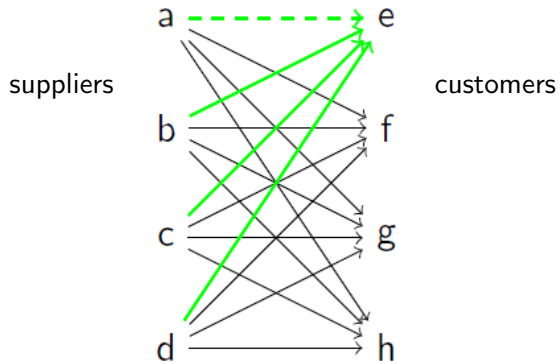
Negative Customer Market Reaction to Supplier Incidents

- Supplier incidents trigger negative market reactions on customers' stock price:

	2010-2014			2015-2018		
	Mean	Median	t-stat	Mean	Median	t-stat
CAR [-1, +1]	0.294%	0.121%	1.158	-0.375%	-0.157%	-2.006
CAR [-3, +3]	0.304%	0.196%	1.052	-0.405%	-0.074%	-1.655
CAR [-5, +5]	0.263%	-0.051%	0.735	-0.531%	-0.377%	-1.765

- But only true in the later period (after Paris Agreement)
- Coincides with the period of the growth of impact investors in our manually collected data

Methodology in One Figure



“Stacked” Panel Structure

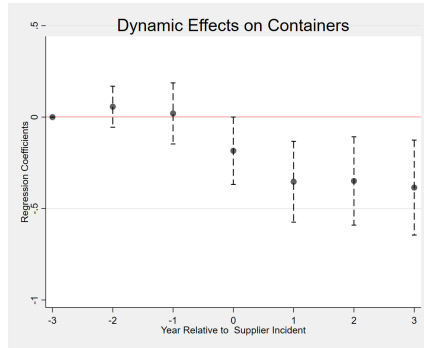
- Denote by t the supplier incident year
- We construct cases of treated and control trade relationships in a $[t - 3, t + 3]$ year window around the incident
 - ▷ Treated Relationships: Supplier-customer relationships in which suppliers experience E&S incidents at t
 - ▷ Control Relationships: Supplier-customer relationships in which suppliers do not experience any E&S incident in $[t - 3, t + 3]$
 - ▶ Includes *other suppliers of the same customer*
- We drop incidents that follow/are followed by other incidents in $[t - 3, t + 3]$
- Resulting panel contains 1,049 unique events, 1,010 unique suppliers, and 838 unique customers

Estimating Equation

$$Y_{i,j,t} = \beta_1 \textit{Treat Supp}_{j,c} \times \textit{Post}_{c,t} + \textit{Controls} + \varepsilon_{i,j,t},$$

- i , j , and t index customers, suppliers, and time, respectively
 - $\textit{Treat Supp}_{j,c}$ indicates the supplier hit by an E&S incident
 - $\textit{Post}_{c,t}$ indicates years following the E&S incident
 - We measure $Y_{i,j,t}$ with annual containers
- ⇒ We estimate β_1 : the effects of suppliers' E&S incidents on trade
- ▷ Treatment group: relationships with incident-affected suppliers
 - ▷ Control group: never affected relationships

Baseline Findings



- After a supplier experiences an E&S incident:
 - ▷ Container imports from U.S. customers drop by 31.8%
 - ▷ Relationships 60% more likely to be terminated

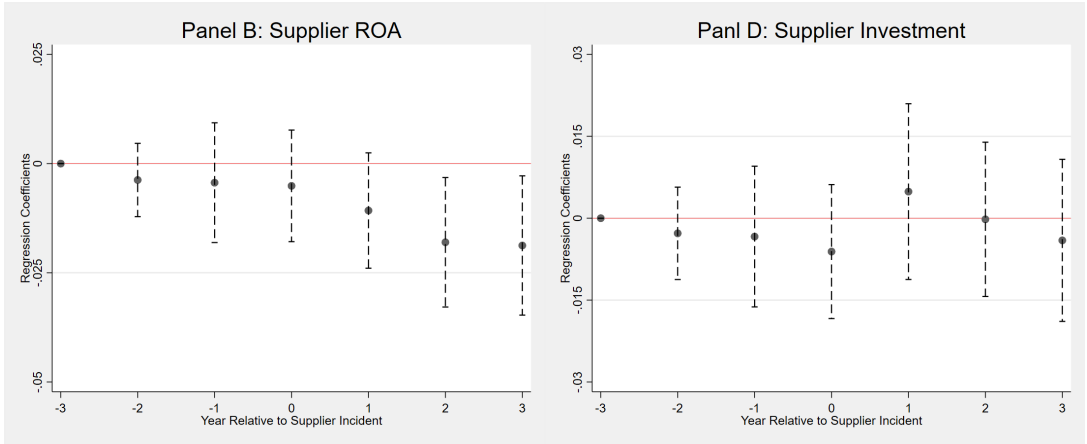
Baseline Findings

<i>Dep. Var. =</i>	Containers	Containers	1(Trade>0)	Containers
	(1)	(2)	(3)	(4)
Treat Supp $\times$ Post	-0.318*** (0.091)	-0.313*** (0.090)	-0.071*** (0.017)	-0.174** (0.068)
Post		0.021 (0.015)	-0.054*** (0.004)	0.053*** (0.010)
Size		0.071*** (0.018)	0.027*** (0.004)	-0.017 (0.014)
MTB		0.027*** (0.003)	0.004*** (0.001)	0.015*** (0.003)
Leverage		-0.546*** (0.082)	-0.121*** (0.020)	-0.029 (0.060)
R&D		-0.990*** (0.137)	-0.248*** (0.026)	-0.334*** (0.099)
Capx		1.416*** (0.304)	0.059 (0.069)	0.014 (0.253)
Cash		-0.875*** (0.086)	-0.186*** (0.019)	-0.416*** (0.072)
Case FE	Yes	Yes	Yes	Yes
Relationship FE	Yes	Yes	Yes	Yes
Industry $\times$ Year FE	Yes	Yes	Yes	Yes
Obs.	249,492	249,492	249,492	122,088
Pseudo R^2	0.642	0.644		0.724
Adjusted R^2			0.276	

Incident Characteristics

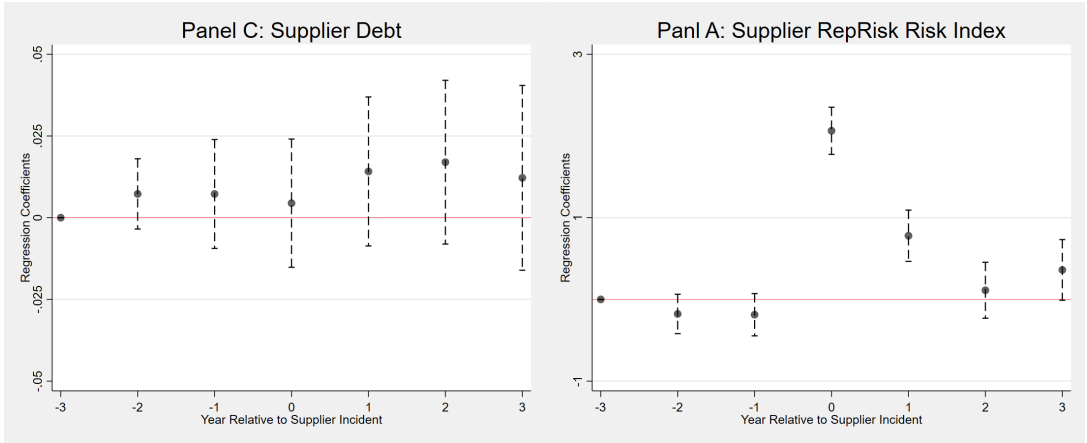
Dep. Var. =	Containers		
	(1)	(2)	(3)
Treat Supp, E×Post ($\hat{\beta}_1$)	-0.310*** (0.105)		
Treat Supp, S×Post ($\hat{\beta}_2$)	-0.320** (0.157)		
Treat Supp, High Severity×Post ($\hat{\beta}_1$)		-0.459*** (0.131)	
Treat Supp, Low Severity×Post ($\hat{\beta}_2$)		-0.156 (0.106)	
Treat Supp, High Reaction×Post ($\hat{\beta}_1$)			-0.781*** (0.249)
Treat Supp, Low Reaction×Post ($\hat{\beta}_2$)			-0.231** (0.095)
$\hat{\beta}_1 - \hat{\beta}_2$ (χ^2)	0.010 (0.00)	-0.303* (3.50)	-0.550** (4.36)
Case FE	Yes	Yes	Yes
Relationship FE	Yes	Yes	Yes
Industry×Year FE	Yes	Yes	Yes
Obs.	249,492	249,492	205,141
Pseudo R^2	0.644	0.644	0.644

No-Pre Trends in Fundamentals



- Profitability only gets affected after the incident
- No discernible trends in investment

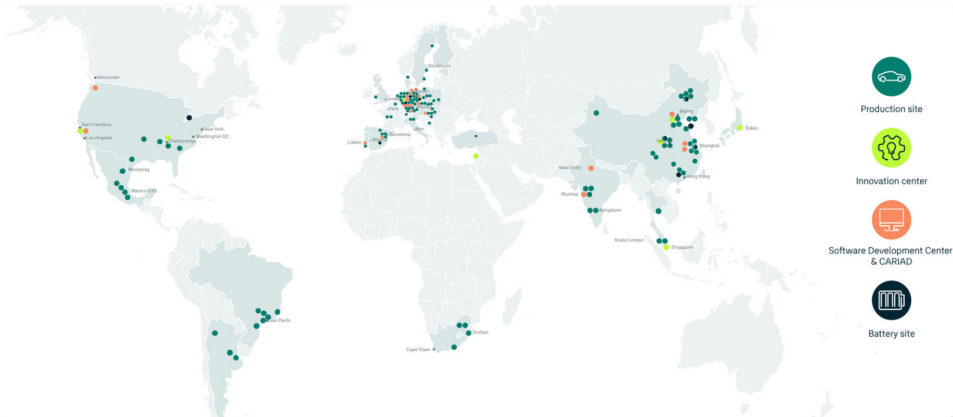
No-Pre Trends in Fundamentals



- No discernible trends in debt
- Clear changes in the RepRisk Risk Index

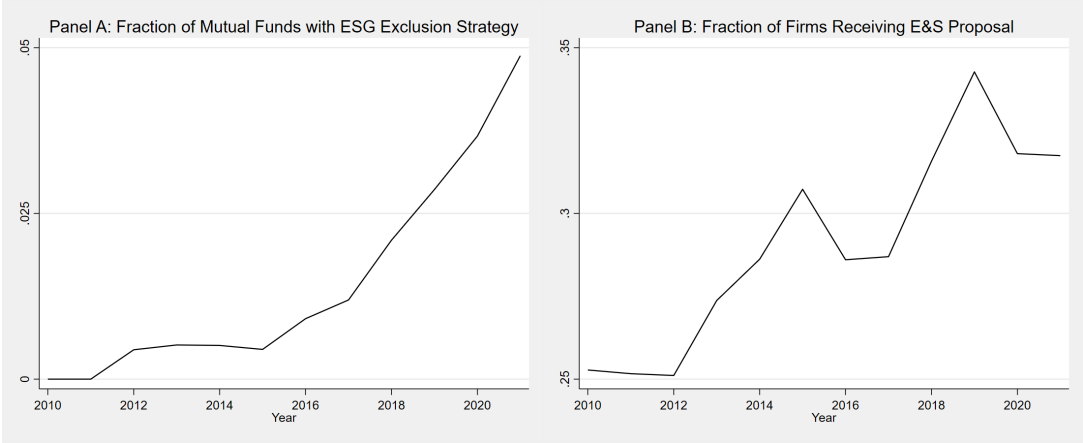
- Institutional investors could impose preferences on their portfolio firms' **direct ESG-related performance**
- BUT
 - ▷ Information asymmetries about suppliers' ESG performance, e.g. smaller or privately-held suppliers, may limit investors' ability to monitor and respond to supply chain ESG risks
 - ▷ Supply chain relationships involve complex operational considerations (e.g., product quality, product specificity, and delivery timeliness), and the costs of switching suppliers may well dominate investors' ESG concerns
 - ▷ Just as limiting capital to brown firms may increase their emissions, starving suppliers from revenue by derisking may deteriorate rather than improve their ESG performance

The Challenges of Supply Chains



- Large firms like Volkswagen have more than 66,000 (!) suppliers
 - ▷ Difficult to monitor and ensure ESG compliance in such vast networks

Growth in E&S sensitive investors



Costco Shareholder Vote Signals Focus on Supply-Chain Emissions

Shareholders voted for a resolution calling for a tougher climate plan, against the wishes of the retailer's board



A Costco Wholesale store in Austin, Texas. The company said it takes climate change seriously and has a climate plan.

PHOTO: JOE RAEDLE/GETTY IMAGES

The Benchmark Index also excludes issuers with a 'red' MSCI ESG controversy flag (based on an MSCI ESG controversy score of 0). An MSCI ESG controversy score measures an issuer's involvement (or alleged involvement) in serious controversies based on an assessment of an issuer's operations, products and/or services which are deemed to have a negative ESG impact.

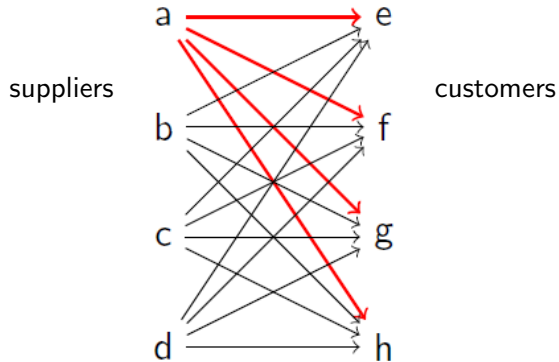
An MSCI ESG controversy score may consider involvement in adverse impact activities in relation to environmental issues such as biodiversity and land use, energy and climate change, water stress, toxic emissions and waste issues. An MSCI ESG controversy score may also consider involvement in adverse impact activities in relation to social issues such as human rights, labour management relations, discrimination and workforce diversity.

- Several ETFs now include E&S controversies as exclusion criteria
- Example above: iShares MSCI EMU Paris-Aligned Climate UCITS ETF

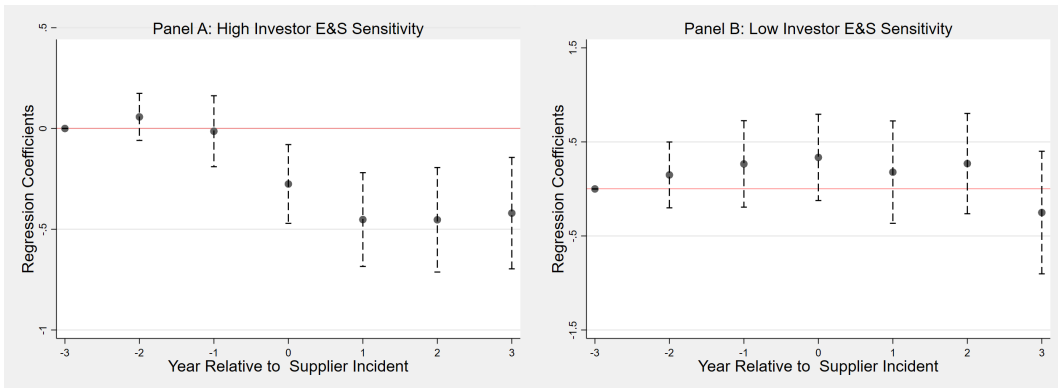
- Here we estimate the reaction across different customer characteristics for the same supplier incident
- Within-supplier analysis allows to control for such trade changes from U.S. customers that come from reevaluating the general business risks of dealing with that supplier, irrespective of their E&S concerns
 - ▷ Due to default after paying the fines
 - ▷ Labor shortages
 - ▷ Other restrictions that make the relationships with this supplier less competitive

- ESG-conscious investors of U.S. customers
 - ▷ Those institutional investors with large portfolio shares in firms that have suppliers that are well-rated in Refinitiv E&S performance
- E&S exclusion funds
 - ▷ Those institutional investors whose prospectuses mention portfolio exclusions following E&S incidents, but that do not directly engage with portfolio firms
- E&S shareholder proposals
 - ▷ Whether U.S. customer received at least one E&S shareholder proposal (with the resolution type “SRI”) from year -3 to the event year, based on data from ISS

Within-Supplier Methodology Figure



Importers' Investor Composition



- Importers with an E&S-sensitive investor base cut trade
- Other importers seem less affected

Investor Characteristics

<i>Dep. Var. =</i>	Containers		
	(1)	(2)	(3)
Treat Supp $\times$ Post	-0.133 (0.119)	-0.035 (0.136)	-0.056 (0.129)
Treat Supp $\times$ Post $\times$ High SC E&S Institutions	-0.347** (0.162)		
Treat Supp $\times$ Post $\times$ E&S Proposal		-0.452** (0.209)	
Treat Supp $\times$ Post $\times$ High ESG Exclusion Fund			- 0.452*** (0.168)
Lower Order Interactions	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Case FE	Yes	Yes	Yes
Relationship FE	Yes	Yes	Yes
Industry $\times$ Year FE	Yes	Yes	Yes
Obs.	249,492	62,163	249,492
Pseudo R^2	0.644	0.690	0.644

- Alternative trade measures:
 - ▷ Number of shipments, weight, number of items
- Control relationships matched on:
 - ▷ Customer industry and size
 - ▷ Customer industry and supplier country
- Alternative samples and specifications:
 - ▷ Include G-related incidents with potential externalities (corruption, bribery, fraud)
 - ▷ Exclude related party
 - ▷ Imputation estimator (OLS), weighted regressions
 - ▷ Drop t
 - ▷ Remove products affected by trade war
- Less-stringent sets of fixed effects
- Alternative restrictions on confounding events:
 - ▷ Exclude confounding events in $[t - 2, t + 2]$ and $[t - 1, t + 1]$

Major Alternative Explanations

- Firms react to potential operational issues with the supplier
- Firms react to potential regulatory penalties
- Approaches:
 - ▷ Remove cases with likely operational/regulatory effects
 - ▷ Only look at the cases with likely operational effects and no reputational issues (antitrust cases)
 - ▷ Focus on the cross-section of E&S-sensitive investors

- We reconstruct RepRisk data from searching the news ourselves (45% cases identified)
- We asked students to read the news and rate:
 - ▷ Does the incident have a negative impact on local workers, residents, or the surrounding environment (e.g., an oil spill affects water quality in a village in Africa)?
 - ▷ Does the incident likely to result in regulatory penalties (e.g., the firm needs to pay a fine or shut down a plant)?
 - ▷ Did the incident have material implications for the supplier's operating activities (e.g., labor strike or interruption in productive process)?
 - ▷ Did the incident have material implications for the supplier's product quality (e.g., dangerous chemicals used in production)?

Excluding Operational Issues

<i>Dep. Var. =</i>	Containers			
	(1)	(2)	(3)	(4)
Treat Supp × Post	-0.190** (0.094)	-0.340** (0.139)	0.228 (0.263)	-0.264** (0.133)
Treat Supp × Post × High SC E&S Institutions		0.336* (0.172)		
Treat Supp × Post × E&S Proposal			-0.476 (0.297)	
Treat Supp × Post × High ESG Exclusion Fund				0.121 (0.175)
Lower Order Interactions	No	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Case FE	Yes	Yes	Yes	Yes
Relationship FE	Yes	Yes	Yes	Yes
Industry×Year FE	Yes	Yes	Yes	Yes
Obs.	116,082	116,082	40,342	116,082
Pseudo R^2	0.634	0.635	0.661	0.634

Better Firms?

Dep. Var. =	Containers		
	(1)	(2)	(3)
Treat Supp $\times$ Post	-0.254 (0.252)	-1.189* (0.624)	-0.286 (0.249)
Treat Supp $\times$ Post $\times$ High SC E&S Institutions	-0.373** (0.163)		
Treat Supp $\times$ Post $\times$ E&S Proposal		-0.471** (0.206)	
Treat Supp $\times$ Post $\times$ High ESG Exclusion Fund			-0.530*** (0.186)
Treat Supp $\times$ Post $\times$ High Size	0.246 (0.260)	1.337** (0.589)	0.361 (0.271)
Treat Supp $\times$ Post $\times$ High MTB	-0.076 (0.192)	-0.327 (0.269)	-0.025 (0.189)
Treat Supp $\times$ Post $\times$ High Gross Margin	-0.137 (0.192)	0.087 (0.213)	-0.092 (0.190)
Lower Order Interactions	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Case FE	Yes	Yes	Yes
Relationship FE	Yes	Yes	Yes
Industry $\times$ Year FE	Yes	Yes	Yes
Obs.	208,385	61,404	208,385
Pseudo R^2	0.635	0.690	0.635

Financial Constraints and Hedging?

<i>Dep. Var. =</i>	Containers		
	(1)	(2)	(3)
Treat Supp $\times$ Post	-0.001 (0.166)	-0.076 (0.194)	-0.029 (0.175)
Treat Supp $\times$ Post $\times$ High SC E&S Institutions	-0.379** (0.168)		
Treat Supp $\times$ Post $\times$ E&S Proposal		-0.458** (0.208)	
Treat Supp $\times$ Post $\times$ High ESG Exclusion Fund			-0.429** (0.168)
Treat Supp $\times$ Post $\times$ High KZIndex	0.073 (0.162)	0.125 (0.204)	0.056 (0.162)
Treat Supp $\times$ Post $\times$ Low Supplier HHI	-0.180 (0.175)	-0.019 (0.203)	-0.162 (0.171)
Lower Order Interactions	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Case FE	Yes	Yes	Yes
Relationship FE	Yes	Yes	Yes
Industry $\times$ Year FE	Yes	Yes	Yes
Obs.	249,492	62,163	249,492
Pseudo R^2	0.644	0.690	0.644

Supplier Incidents and Investor Pressure

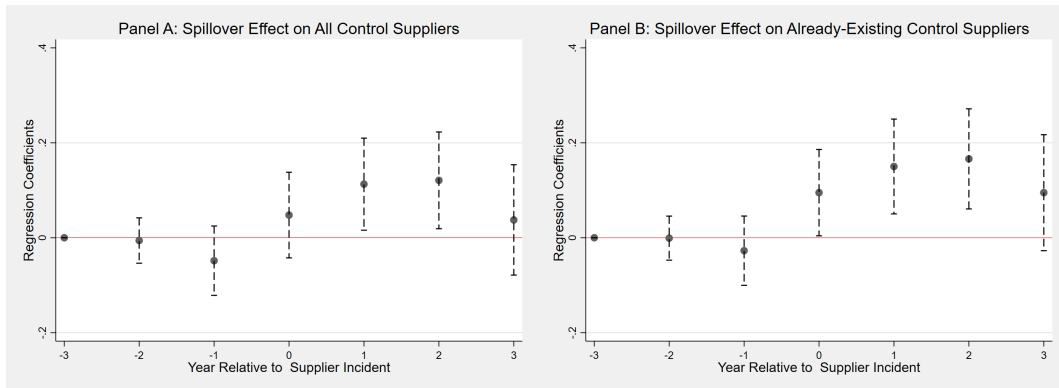
<i>Dep. Var. =</i>	%SC E&S Institutions	SC Proposal	%ESG Exclusion Fund
	(1)	(2)	(3)
Treat Cust $\times$ Post	-0.689*** (0.203)	0.019** (0.010)	-0.066*** (0.022)
Controls	Yes	Yes	Yes
Case FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Obs.	44,307	13,126	44,307
Adjusted R^2	0.342	0.172	0.655

- The number of proposals related to supply chain E&S increases following incidents
 - Ownership by ESG exclusion funds drops
- ⇒ Investor pressure increases following supplier E&S incidents
- ⇒ Trade cuts are more pronounced for firms with high values of these measures

Why do Investors Exert Pressure?

- We find similar effects for incidents unlikely to carry operational consequences
 - ▷ E.g., accusations of poor waste management on local social media
- ⇒ Trade cuts are unlikely to be motivated solely by operational considerations
- We find that most shareholder proposals come from impact investors: NGOs, pension funds, green activists
- ⇒ Consistent with “warm glow” ESG preferences

Are There Costs and Benefits to Importers?



- Importers reallocate trade to existing and new suppliers
 - ▷ Often located in *other countries*: reputational spillovers

Supplier Reallocation

<i>Dep. Var. =</i>	Containers		1(New supplier)
	All Suppliers	Existing Suppliers	Sourcing from New Suppliers
	(1)	(2)	(3)
Treat Cust×Post	0.095*** (0.022)	0.120*** (0.023)	0.006*** (0.001)
Control	Yes	Yes	Yes
Case FE	Yes	Yes	Yes
Relationship FE	Yes	Yes	Yes
Industry×Year FE	Yes	Yes	Yes
Obs.	705,831	637,035	719,435
Pseudo R^2	0.656	0.662	
Adjusted R^2			0.274

- Larger reallocation if:
 - ▷ input markets more competitive
 - ▷ the price stickiness is low

Unit Costs Increase

- Transportation and insurance costs increase
 - ▷ Collapse data to (case-)importer-product-year sample
 - ▷ Merge with data on cost, insurance, freight (CIF) and free on board (FOB) margins for different products from OECD
 - ▷ US customer that cuts trade with incident supplier pays in transportation and insurance to import a product across all countries where suppliers are located
- Higher per unit costs of goods sold
 - ▷ Panjiva's import values are sparsely populated
 - ▷ Calculate average import prices at the country-product-level
 - ▷ Average import prices for the same product increase after a supplier incident but only for US customers that cut trade

Reallocation Costs

<i>Dep. Var. =</i>	Log CIF/FOB Margin	Log Panjiva Price
	(1)	(2)
Treat Cust (CutTrade = 1)×Post	0.006*** (0.002)	0.077* (0.046)
Treat Cust (CutTrade = 0)×Post	0.003 (0.002)	0.021 (0.039)
Case FE	Yes	Yes
Firm×Product FE	Yes	Yes
CutTrade×Year FE	Yes	Yes
Obs.	23,710	15,799
Adjusted R^2	0.965	0.652

- Transportation costs and input prices increase after switching suppliers
- We also document effects on firm-level gross profit margins

The Benefits of Reallocation

- We find that supplier incidents tend to reoccur
 - ⇒ Trade cuts shield importers from future incidents
- After a trade cut, suppliers' E&S performance generally *improves*; in such cases, trade resumes
 - ⇒ Starving suppliers from revenue seems to discipline their E&S performance
 - ⇒ Suggests that the threat of termination may be a complementary tool to direct monitoring

Future Supplier ESG Ratings and Trade Reversal

- Split the dynamics of future supplier's ESG ratings based on whether the supplier experienced a significant decrease in trade with the U.S. customers
- Compare suppliers after the E&S incidents when the U.S. customers cut the trade in the years $[-1,+1]$ vs when U.S. customers did not cut the trade

Affected Suppliers Revert to Their Initial ESG Ratings

Dep. Var. =	RepRisk Risk Index	
	CutTrade = 1	CutTrade = 0
	(1)	(2)
Treat Supp × Post (Year 0)	2.007*** (0.256)	2.558*** (0.261)
Treat Supp × Post (Year +1)	0.769*** (0.256)	1.173*** (0.252)
Treat Supp × Post (Year +2)	0.327 (0.265)	0.340 (0.273)
Treat Supp × Post (Year +3)	0.412 (0.252)	0.693*** (0.240)
Treat Supp × Post (Year +4)	0.339 (0.256)	1.010*** (0.269)
Treat Supp × Post (Year +5)	0.291 (0.264)	0.809*** (0.275)
Treat Supp × Post (Year +6)	0.102 (0.255)	0.950*** (0.266)
Case FE	Yes	Yes
Supplier FE	Yes	Yes
Year FE	Yes	Yes
Obs.	7,472	10,900
Pseudo R^2	0.347	0.265

Future Supplier ESG Ratings and Trade Reversal

- Let's look at whether the trade reverses for those suppliers that improved their ESG ratings
- Double split the sample by whether the U.S. customer trade changed in the post-period ($[+4, +6]$) versus pre-period period ($[+1, +3]$) ($CutTrade = 1$) and also by whether the supplier correspondingly improved its ESG performance ($Derisk = 1$)
- Link the interaction between the U.S. customer cutting the trade and the supplier consequently improving its RepRisk ESG risk to future reversal in the trade relationships

Trade Reversal for Improved Suppliers with Cut Trade

- Trade with U.S. customers improves in those cases when there is a cut in initial trade and subsequent improvement in suppliers ESG ratings:

<i>Dep. Var. =</i>	Containers
	(1)
Treat Supp $\times$ Post4 (CutTrade = 1 & Derisk = 1)	0.734*** (0.223)
Treat Supp $\times$ Post4 (CutTrade = 1 & Derisk = 0)	-0.558* (0.323)
Treat Supp $\times$ Post4 (CutTrade = 0 & Derisk = 1)	-0.177 (0.118)
Treat Supp $\times$ Post4 (CutTrade = 0 & Derisk = 0)	-0.674* (0.355)
Case FE	Yes
Relationship FE	Yes
Year FE	Yes
Obs.	50,802
Pseudo R^2	0.764

- We find *no effects* among U.S. importers that are privately-held
 - Privately-held importers seem to retain more flexibility in managing their supply chains
 - ▷ No pressure from capital markets
- ⇒ Will the global trend of delistings reduce E&S performance around the world?
- ⇒ Will private companies refrain from going public if investor pressure on supply chain E&S is too large?

If SEC imposes regulation on Scope 3 emission disclosure, some companies may forgo going public to avoid the added complexity of reporting their emissions or sell off their dirty assets so that their business looks cleaner: “Companies might not choose to go public because [they think], ‘I’m going to be subject to so much complexity of reporting, so I’m just going to stay in the private markets and be opaque to the world in terms of this kind of transparency.’”

- Jason Jay, Director of the Sustainability Initiative
(Vereckey, 2022, MIT Ideas Made to Matter)

- Benefits of suppliers **outside of the firm's boundaries**:
 - ▷ Option to cut the supplier and pick an alternative one rather than invest in engaging to fix the underlying E&S issue
 - ▷ But such option could be an actionable threat that can be a more effective way to improve the supplier's future performance

Main Implication

- Public U.S. firm with international suppliers might be an attractive **investment conduit for E&S minded shareholders**
 - ▷ Through their stakes in the U.S. firm these investors can monitor externalities created by the private foreign suppliers that would otherwise be outside of their investment universe
 - ▷ In 2019 total GHG (CO₂-equivalent) emissions by privately-held firms constituted to 59% of total global emissions from fossil fuel use by corporations (Atta-Darkua, Glossner, Krueger, and Matos, 2022)
- Carries forward even for non-E&S issues: **foreign investors can influence faraway firms in which they do not have ownership via the supply chain networks of the firms they own**

Contribution and Other Readings on the Topic

- Supply chain relationships are endogenous to E&S:
 - ▷ E&S policies propagate along the supply chain networks: Schiller (2018); Dai, Liang, and Ng (2020)
 - ▷ Outsourcing pollution: Ben-David, Jang, Kleimeier, and Viehs (2021); Dai, Duan, Liang, and Ng (2022)
 - ▷ Adjustments to climate risk: Pankratz and Schiller (2019)
 - ▷ Rana Plaza incident in Bangladesh: Koenig and Poncet (2022)
 - ▷ **This paper: Costly partial trade cuts to customers and reallocation as evidence of discipline by exit**
- Institutional investor monitoring of firms' E&S activities and direct effects of E&S incidents:
 - ▷ Krueger, Sautner, and Starks (2020); Azar, Duro, Kadach, and Ormazabal (2021); Gantchev, Giannetti, and Li (2022)
 - ▷ **This paper: Real effects on trade, suggesting monetary costs of (likely) non-monetary preferences**

Thank You