

The Effects of Corporate Subsidies Along Supply Chains

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- Industrial policy is on the rise: “New Economics of Industrial Policy” (Juhász et al., [2023](#)).
- Production is increasingly fragmented in global value chains.
- Political and electoral motives shape subsidies (e.g., US swing states politics).

Subsidies, when selectively provided, generate concerns about their **trade effects**:

→ The [Subsidies and Countervailing Measures Agreement](#) regulates subsidies multilaterally.

The effects of corporate subsidies can propagate along domestic supply chains:

- \uparrow Scale of production \rightarrow Higher demand for inputs and supply of goods/services.
- \downarrow Marginal costs of production \rightarrow Input prices' suppression.
- \downarrow Fixed costs of investment \rightarrow Increased quality of inputs, outputs, and exports.
- $\downarrow \uparrow$ Productivity .

I study the **trade effects** of US federal subsidies driven by **electoral motives**.

- ① I combine rich subsidy data from the Freedom of Information Act and WTO notifications.
- ② I estimate the causal effects of subsidies on exports through an **instrumental variable (IV)** approach that exploits exogenous variation in **swing states**, based on Bown et al. (2023).
 - Direct effects of subsidies on exports.
 - Effects of subsidies on upstream and downstream industries' exports, via Input-Output tables.
- ③ I shed light on **how** the effects of subsidies propagate along domestic supply chains.

Preview of Findings

- ① US federal subsidies are under-reported to the WTO.
- ② Politically motivated federal subsidies **increase exports** directly and indirectly:
 - **Direct effects:**
A 1% increase in subsidies results in a 0.32% rise in exports.
 - **Indirect effects:**
A 1% increase in subsidies to suppliers results in a 0.29% rise in exports downstream, while a 1% increase in subsidies to customers leads to a 0.09% increase in exports upstream.
- ③ **Mechanisms:**
 - No inputs' price suppression.
 - ↑ Producer prices and export prices.
 - ↑ Investment, VA, and TFP.

- **Local effects of subsidies:** E.g., Lee (1996), Becker et al. (2010), Bernini and Pellegrini (2011), Aghion et al. (2015), Bloom et al. (2019), Criscuolo et al. (2019), Liu (2019), Rotemberg (2019), Lane (2020), Slattery and Zidar (2020), Juhász et al. (2021), Myers and Lanahan (2022), and Slattery (2023).
- **Trade effects of subsidies:** E.g., Bernard and Jensen (2004), Görg et al. (2008), Becker et al. (2010), Harrison and Rodríguez-Clare (2010), Broocks and Van Biesebroeck (2017), Munch and Schaur (2018), Defever et al. (2020), and Girma et al. (2020).
- **Supply chain spillovers:** E.g., Barrot and Sauvagnat (2016), Blonigen (2016), Erbahar and Zi (2017), Liu (2019), Carvalho et al. (2020), Moerenhout (2020), and Barattieri et al. (2023).

Data on US Federal Subsidies

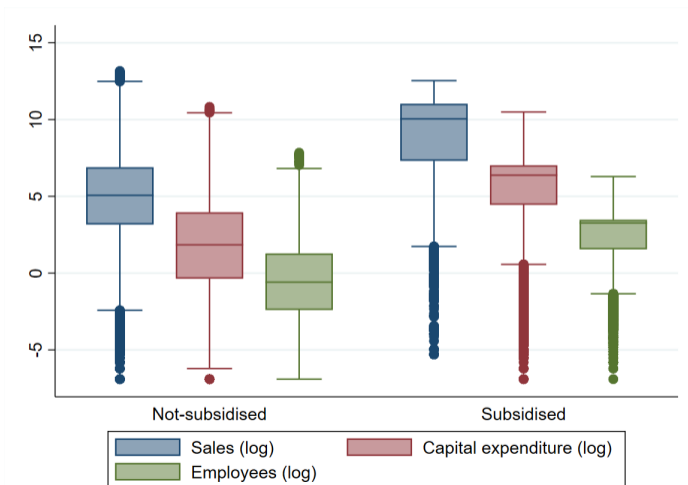
I use unique data from Subsidy Tracker:

- Complete coverage of US federal grants (and loans) through the Freedom of Information Act + good coverage of federal tax credits.
- Detailed information on: program, value, recipient firm, granting authority, etc.
- Coverage: 2000-19.
- I aggregate firm-level subsidies to 6-digit NAICS industries.

Direct subsidy exposure $_{j,t}$: total federal subsidies in industry j .

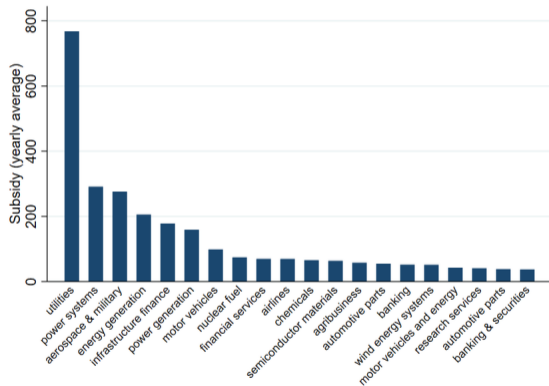
Subsidised Firms

Figure: Comparison of Subsidised and Non-Subsidised Firms in Compustat, 2000-2020

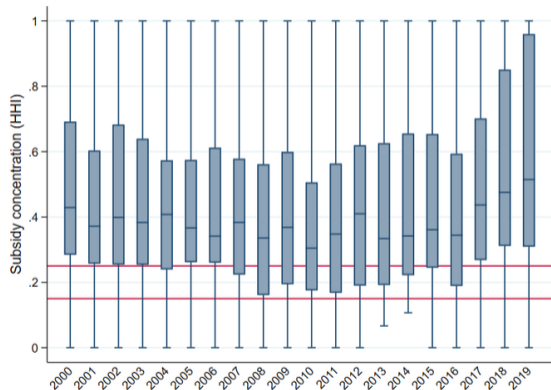


Subsidies by Industry

(a) Top 20 Subsidised Industries.

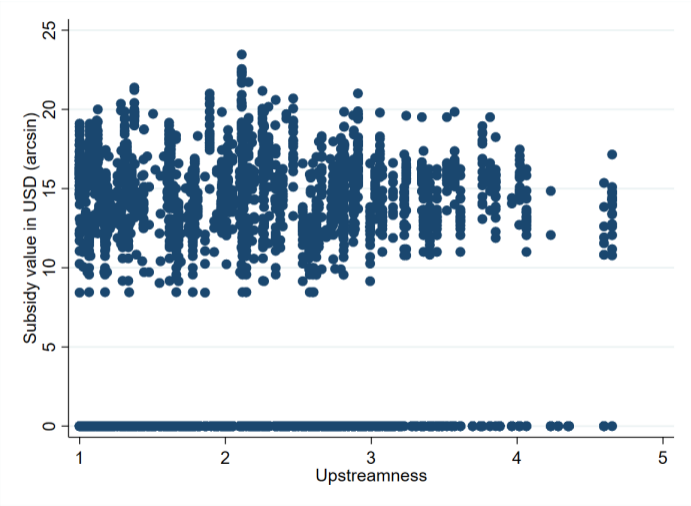


(b) Subsidy Concentration, HHI.



On average, 21 firms per year in a 6-digit NAICS industry receive federal subsidies.

Subsidies Along Supply Chains



Definition of Indirect Subsidy Exposure

I measure supply linkages using the BEA 2002 [Input-Output](#) tables.

- **Downstream subsidy exposure** $_{j,t}$: subsidies in industries i that supply industry j :

$$\text{Downstream subsidy exposure}_{j,t} = \sum_{i, i \neq j} w_{i,j} * \text{subsidy}_{i,t}.$$

- **Upstream subsidy exposure** $_{j,t}$: subsidies in industries k that buy from industry j :

$$\text{Upstream subsidy exposure}_{j,t} = \sum_{k \neq j} \theta_{j,k} * \text{subsidy}_{k,t}.$$

Outcome variables:

- Exports and Imports: WITS (concorded from HS to NAICS).
- Employment and Gross Output: US County Business Patterns and Eckert et al. (2021).
- Prices: PPI from US Bureau of Labour Statistics; Export prices (Unit Values, Comtrade).
- Investment, TFP, and Value-added: NBER-CES Manufacturing Industry Database.

IV:

- Votes outcomes and projections in presidential elections: Atlas Elections.
- Electoral votes: National Archives (US Government).

Controls:

- Trade protection: Temporary Trade Barriers (Bown et al., 2020).
- Lobbying: LobbyView.

Subsidies and Exports

Table: Subsidies and Exports, OLS estimates, Yearly Level, 2000-20

	Exports _{<i>j,t</i>}			
	(1)	(2)	(3)	(4)
Direct subsidy exposure _{<i>j,t</i>}	0.095*** (0.02)	0.046*** (0.01)	0.080*** (0.01)	0.040*** (0.01)
Upstream subsidy exposure _{<i>j,t</i>}	0.0497 (0.03)	0.041* (0.02)	0.059 (0.03)	0.034* (0.02)
Downstream subsidy exposure _{<i>j,t</i>}	0.487*** (0.09)	0.393*** (0.11)	0.432*** (0.11)	0.356*** (0.10)
Controls	NO	NO	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	NAICS-2	NAICS-4	NAICS-2	NAICS-4
Obs.	9,140	9,140	9,140	9,140
R ²	0.163	0.353	0.186	0.361

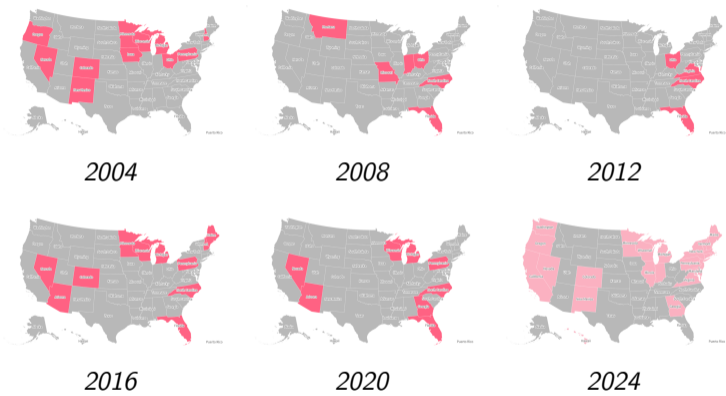
Building on Bown et al. (2023), I identify political subsidies through:

- **Political shocks** driven by changes in swing states' identity across electoral terms.
- **Employment shares** capturing the industry's importance for voters within states.

Intuition: Federal subsidies are skewed towards industries with high employment in swing states.

- **Political shocks are driven by changes in the identity of swing states across terms.**
- The shocks' intensities depend on the state's importance in the Electoral College.

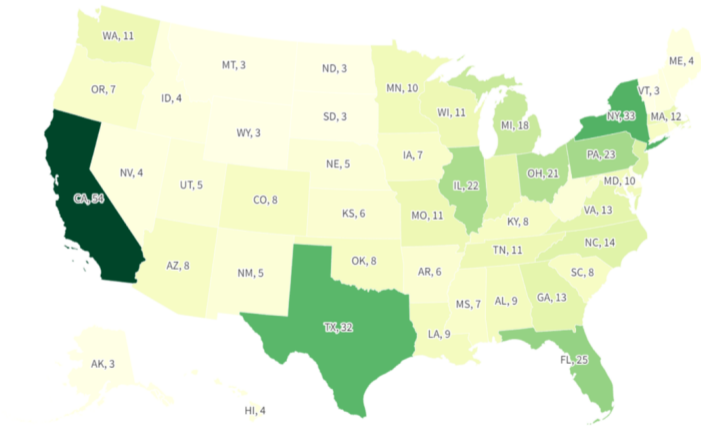
Swing States



Note: Swing state: difference in the candidates' vote shares in the is < 5%.

- Political shocks are driven by changes in the identity of swing states across terms.
- **The shocks' intensities depend on the state's importance in the Electoral College.**

Electoral Votes



- Federal subsidy programs target industries or firms, not states.
 - Exposure to shocks varies by industry, depending on the relative importance in the state.
- Downstream and upstream exposure to shocks depend on:
 - **Cost shares** $w_{i,j}$ of i in j .
 - **Sale shares** $\theta_{j,k}$ of j in k .

$$IV_{j,T} = \sum_s \frac{L_{s,j}^{2000}}{\sum_j L_{s,j}^{2000}} * \text{Swing state}_{s,T} * EV_s,$$

$$\text{Downstream } IV_{j,T} = \sum_{i \neq j}^I w_{i,j} * IV_{i,T},$$

$$\text{Upstream } IV_{j,T} = \sum_{k \neq j} \theta_{k,j} * IV_{k,T}.$$

Effects of Politically Motivated Subsidies on Exports, 2000-20

	Exports _{<i>j</i>,<i>T</i>}			
	(1)	(2)	(3)	(4)
Direct subsidy exposure _{<i>j</i>,<i>T</i>}	0.317*** (0.03)	0.401*** (0.06)	0.283*** (0.05)	0.369*** (0.07)
Upstream subsidy exposure _{<i>j</i>,<i>T</i>}	0.086* (0.05)	0.015 (0.02)	0.082* (0.04)	0.033 (0.02)
Downstream subsidy exposure _{<i>j</i>,<i>T</i>}	0.288*** (0.05)	0.108 (0.13)	0.300*** (0.06)	0.068 (0.12)
Controls	NO	NO	YES	YES
Term FE	YES	YES	YES	YES
Industry FE	NAICS-2	NAICS-4	NAICS-2	NAICS-4
Obs.	2,280	2,280	2,280	2,280
KP F-statistic	27.56	23.32	26.14	28.60

Effects of Politically Motivated Subsidies on Exports over Output, 2000-20

	Exports _{<i>j</i>,<i>T</i>}			
	(1)	(2)	(3)	(4)
Direct subsidy exposure _{<i>j</i>,<i>T</i>}	0.017*** (0.00)	0.059*** (0.00)	0.011*** (0.00)	0.052*** (0.00)
Upstream subsidy exposure _{<i>j</i>,<i>T</i>}	-0.018*** (0.00)	-0.0004 (0.00)	-0.017*** (0.00)	0.003** (0.00)
Downstream subsidy exposure _{<i>j</i>,<i>T</i>}	0.050*** (0.00)	0.021*** (0.00)	0.050*** (0.00)	0.015*** (0.00)
Controls	NO	NO	YES	NO
Term FE	YES	YES	YES	YES
Industry FE	NAICS-2	NAICS-4	NAICS-2	NAICS-4
Obs.	2,215	2,215	2,215	2,215
KP F-statistic	73.82	27.49	72.95	37.38

- **Identification:**
 - Including the current term (up to 2024).
 - Only executive first terms.
 - Test for the exogeneity of the shifters.
 - Subsidies to swing states.
 - Control for trade protection.
 - Including the diagonal of the I-O matrix.
- Additional results:
 - Effects on Imports
 - Effects on Employment

Mechanisms of Supply Chain Effects

- \uparrow **Scale of production** \rightarrow Employment.

Higher demand for inputs and supply of goods/services (upstream and downstream).

- \downarrow **Marginal costs of production** $\overset{?}{\rightarrow}$ Producer and input prices.

Input prices' suppression (downstream) \rightarrow WTO cases focus on price suppression to prove indirect harm from subsidies.

- \downarrow **Investment costs** $\overset{?}{\rightarrow}$ Investment $\overset{?}{\rightarrow}$ Value added, TFP, quality, prices.

Investment promotion: higher variety/quality of inputs and outputs. Could also affect MC.

Example of a WTO Dispute: US-Canada Subsidy Dispute

- Countries can apply CVD on goods using subsidised inputs if they can prove **pass-through**.
- In 2002, the United States filed a WTO complaint about Canada's stumpage programs:
“By conferring a right to harvest timber through stumpage programs, certain provincial governments provided goods to lumber producers at less than adequate remuneration.”
- The failure of the US to substantiate pass-through and **price suppression** resulted in the decision to impose no duty (WT/DS257/AB).

Effects of Politically Motivated Subsidies on Prices

	Producer Prices $_{j,T}$		Customer Prices $_{j,T}$		Input Prices $_{j,T}$		Export Prices $_{j,T}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Direct subsidy exposure $_{j,T}$	0.257*** (0.01)	0.172*** (0.07)	-0.048*** (0.01)	-0.028 (0.04)	0.021** (0.01)	-0.006 (0.01)	0.186*** (0.02)
Upstream subsidy exposure $_{j,T}$	0.094*** (0.01)	0.090*** (0.02)	0.818*** (0.00)	0.900*** (0.02)	-0.040*** (0.00)	-0.014 (0.01)	0.240*** (0.01)
Downstream subsidy exposure $_{j,T}$	0.067*** (0.01)	0.139** (0.06)	0.284*** (0.01)	0.059 (0.06)	0.983*** (0.06)	0.924*** (0.05)	-0.229*** (0.08)
Controls	NO	NO	NO	NO	NO	NO	NO
Term FE	YES	YES	YES	YES	YES	YES	YES
Industry FE	NAICS-4	NAICS-4	NAICS-4	NAICS-4	NAICS-4	NAICS-4	NAICS-4
Sample	Tradable	All	Tradable	All	Tradable	All	Tradable
Obs.	2,141	3,383	2,280	5,340	2,280	5,460	2,280
KP F-statistic	16.44	1.621	23.32	1.077	23.32	1.117	23.32

Effects of Politically Motivated Subsidies on Investment, TFP, and VA

	Investment _{<i>j,T</i>}		Value-Added _{<i>j,T</i>}		TFP _{<i>j,T</i>}	
	(1)	(2)	(3)	(4)	(5)	(6)
Direct subsidy exposure _{<i>j,T</i>}	0.684*** (0.07)	0.743*** (0.06)	0.657*** (0.06)	0.720*** (0.06)	0.069*** (0.02)	0.075*** (0.02)
Upstream subsidy exposure _{<i>j,T</i>}	0.039 (0.04)	0.145*** (0.04)	0.079* (0.04)	0.183*** (0.04)	0.009** (0.00)	0.026*** (0.01)
Downstream subsidy exposure _{<i>j,T</i>}	-0.109 (0.15)	-0.227 (0.15)	-0.164 (0.14)	-0.267* (0.15)	0.0414** (0.02)	0.021* (0.01)
Controls	NO	NO	NO	NO	NO	NO
Term FE	YES	YES	YES	YES	YES	YES
Industry FE	NAICS-4	NAICS-4	NAICS-4	NAICS-4	NAICS-4	NAICS-4
Sample	Tradable	All	Tradable	All	Tradable	All
Obs.	2,085	2,360	2,085	2,360	2,085	2,360
KP F-statistic	9.04	13.35	9.04	13.35	9.04	13.35

I study the trade effects of US corporate subsidies driven by electoral motives.

- ① US federal subsidies are underreported to the WTO.
- ② Politically motivated federal subsidies **increase** exports directly and indirectly.
- ③ Mechanisms:
 - No Inputs' price suppression.
 - ↑ Investment, value-added, export prices.
 - ↑ TFP in vertically connected firms.

Policy Implications:

- Politically motivated subsidies have large trade effects, directly and along supply-chains.
- Reform debate at the WTO: Enhance transparency in member states' subsidy notifications and revise legal procedures to prove pass-through effects in the SCMA.

Thank you for your attention!

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US Notifications to the WTO

- Using NLP techniques, I combine subsidy data from the FOIA with MS WTO notifications.
- I shed light on a gap in US subsidy notifications to the WTO:

Only $\approx 30\%$ of federal subsidies and 60% of state programs are notified, the largest ones.

Figure: Example of Subsidy Notifications to the WTO

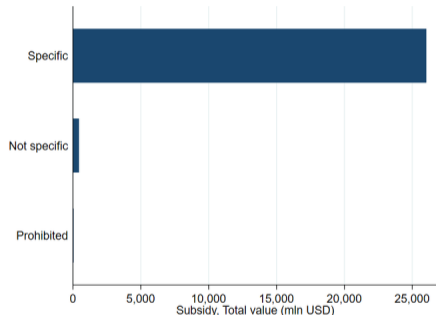
Attachment III (revised)
Notification of State-Level Measures

State	Programme Title	Programme Authority	Form of Subsidy	Policy Objective	To Whom	Amount
Alabama	Property Tax Abatement		Tax Exemption (state/county/municipal property tax)	To encourage economic growth.	Manufactures of aluminum, aluminum products, or calcium cyanamide.	The maximum period of an abatement of non-educational property taxes is ten years.
Alabama	Poultry Environmental Enhancement Project	Agricultural Development Authority	Loans	To support environmental projects.	Poultry Industry	\$750,000 environmental enhancement programme. Project provides low-interest loans for construction of poultry compost structures and installation of freezer units to be used for the disposal of dead birds.

The WTO SCMA's taxonomy:

- *Specific*: to an industry/area/firm: actionable.
- *Non-specific*: not covered by the SCMA.
- *Prohibited*: export/local content subsidies.

Figure: US Federal Subsidies, 2000-19.



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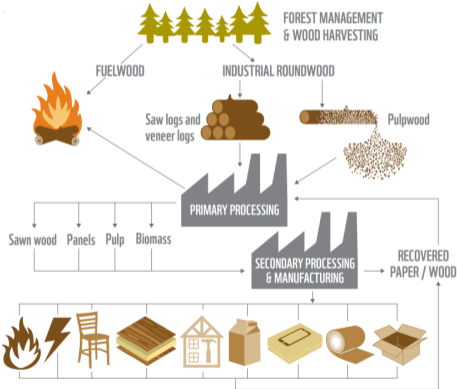
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Alabama	Poultry Environmental Enhancement Project	Agricultural Development Authority	Loans	To support environmental projects.	Poultry Industry	\$750,000 environmental enhancement programme. Project provides low-interest loans for construction of poultry compost structures and installation of freezer units to be used for the disposal of dead birds.

In 2002, the United States filed a WTO complaint about Canada's stumpage programs:

“By conferring a right to harvest timber through stumpage programs, certain provincial governments provided goods to lumber producers at less than adequate remuneration,” WT/DS257/AB.



Canada to seek judicial review of latest U.S. decision on softwood lumber duties

'Unfair, unjust and illegal'



The Canadian Press
James McCarten

Published Aug 23, 2023 • Last updated Aug 23, 2023 • 5 minute read

- Under WTO law, indirect harm from subsidies can lead to CVD on imports as long as **pass-through** can be demonstrated.
- The failure of countries to substantiate pass-through, with case law traditionally focusing on **price suppression**, has led to the failure of numerous cases.

[Back to Intro](#)

[Back to Mechanisms](#)

“Some states that may be competitive in November’s election, including **Florida**, raked in **millions in infrastructure grants** awarded Wednesday by the Department of Transportation, while blue states like New York got comparatively little.[...]

Arizona, Minnesota and North Carolina, all-important swing states, led the pack too, with more than 10 per cent of the \$1 billion haul among them.”

Politico, September 2020.

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2002 NAICS 6-digit Industry Classification: 1179 industries.

Figure: 315233: Women's and Girls' Cut and Sew Dress Manufacturing.



Figure: 315234: Women's and Girls' Cut and Sew Suit, Coat, Tailored Jacket, and Skirt Manufacturing.



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NAICS UP	Supplier	NAICS DOWN	User	coeff
334413	Semiconductor and Related Device Manufacturing	334413	Storage Battery Manufacturing	0.028
334413	Semiconductor and Related Device Manufacturing	336411	Aircraft Manufacturing	0.029
331112	Silicon and Electrometallurgical Ferroalloy	334413	Semiconductor and Related Device Manufacturing	0.005
331111	Iron and Steel Mill	334413	Semiconductor and Related Device Manufacturing	0.005

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Figure: Subsidy to a Real Estate Company, Subsidy Tracker, NAICS Code: 531110.

Subsidy Tracker Individual Entry

Company: Steele Denver Gardens LLC

Parent Company:

Subsidy Source: federal

State in Which Facility Is Located: Colorado

Project Description: Solar Electricity

Year: 2011

Subsidy Value: \$138,024

Program Name: Payments for Specified Energy Property in Lieu of Tax Credits (ARRA Section 1603)

Awarding Agency: Treasury Department

Type of Subsidy: federal grant

Source of Data: Treasury Department: ([click here](#))

Source Notes: If an online information source is not working, check the Tracker [inventory page](#) for an updated link.

Figure: Subsidy to Sequoia (Tesla) Solar Panel Company, Subsidy Tracker, NAICS Code: 221114.

Company: Sequoia Pacific Solar I, LLC

Parent Company: [Tesla Inc.](#)

Subsidy Source: federal

State in Which Facility Is Located: Arizona

Project Description: Solar Electricity

Year: 2013

Major Industry of Parent: motor vehicles

Specific Industry of Parent: motor vehicles and energy

Subsidy Value: \$11,474,729

Program Name: Payments for Specified Energy Property in Lieu of Tax Credits (ARRA Section 1603)

Awarding Agency: Treasury Department

Type of Subsidy: federal grant

Source of Data: Treasury Department: ([click here](#))

Source Notes: If an online information source is not working, check the Tracker [inventory page](#) for an updated link.

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Variable	Obs.	Mean (USD)	Std. Dev.	# 0s	% 0s
<i>All industries (1179)</i>					
Direct subsidy exposure $_{j,t}$	21,360	2,584,655	32,800,000	17,931	83.95
Downstream subsidy exposure $_{j,t}$	21,360	1,328,865	6,569,044	80	0.37
Upstream subsidy exposure $_{j,t}$	21,360	3,721,750	30,400,000	563	2.64
<i>Tradable industries (456)</i>					
Direct subsidy exposure $_{j,t}$	9,120	1,747,313	19,900,000	7,823	85.78
Downstream subsidy exposure $_{j,t}$	9,120	5,273,686	38,800,000	20	0.22
Upstream subsidy exposure $_{j,t}$	9,120	1,203,317	6,110,789	268	2.94
<i>Non-tradable industries (612)</i>					
Direct subsidy exposure $_{j,t}$	12,240	3,208,557	39,700,000	10,108	82.58
Downstream subsidy exposure $_{j,t}$	12,240	1,422,410	6,889,463	60	0.49
Upstream subsidy exposure $_{j,t}$	12,240	2,565,405	22,100,000	295	2.41

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Figure: Federal Subsidies by Type, Annual Average.

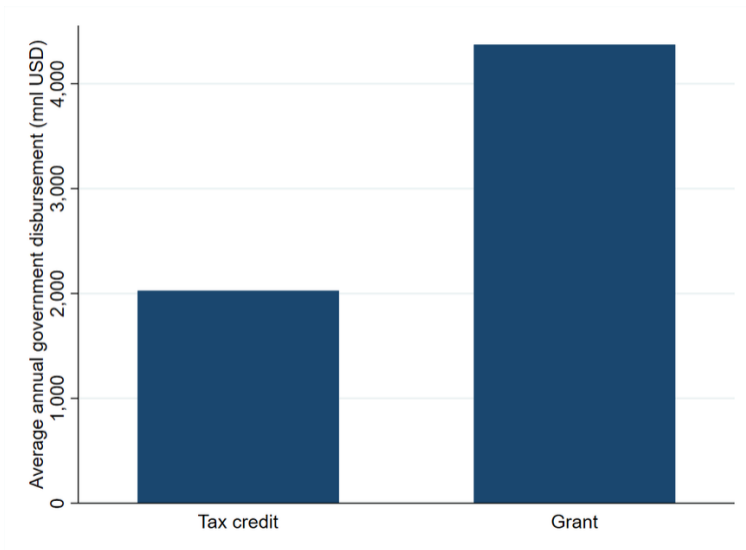


Table: The Effects of Subsidies on Exports, 2000-20, First Stage

	Direct subsidy exposure $_{j,T}$			
	(1)	(2)	(3)	(4)
Direct subsidy exposure$_{j,T}$	17.72*** (1.77)	16.53*** (1.80)	15.56*** (1.77)	15.60*** (1.51)
Upstream subsidy exposure $_{j,T}$	-1.448*** (0.05)	0.0834* (0.04)	-1.151*** (0.10)	0.107 (0.06)
Downstream subsidy exposure $_{j,T}$	4.989*** (0.11)	1.427*** (0.18)	4.376*** (0.06)	1.510*** (0.13)
R ²	0.091	0.354	0.115	0.359
	Upstream subsidy exposure $_{j,T}$			
	(1)	(2)	(3)	(4)
Direct subsidy exposure $_{j,T}$	3.869*** (0.26)	0.317* (0.15)	3.707*** (0.24)	-0.358* (0.16)

Table: Effects of Subsidies on Exports, Direct and Indirect Exposure.

	Exports _{j,T}		
	<i>Untransformed</i>	<i>Log</i>	<i>IHS</i>
	(1)	(2)	(3)
Direct subsidy exposure _{j,T}	344.2*** (7.56)	1.010*** (0.13)	0.324*** (0.03)
Downstream subsidy exposure _{j,T}	63.65*** (8.06)	0.375*** (0.02)	0.345*** (0.05)
Upstream subsidy exposure _{j,T}	-69.94*** (12.42)	-0.060 (0.05)	0.082* (0.05)
Industry FE	YES	YES	YES
Term FE	YES	YES	YES
Obs.	2,275	428	2,275
KP F-statistic	16.75	169.3	26.09

Effects of Subsidies on Exports, Controlling for Trade Protection

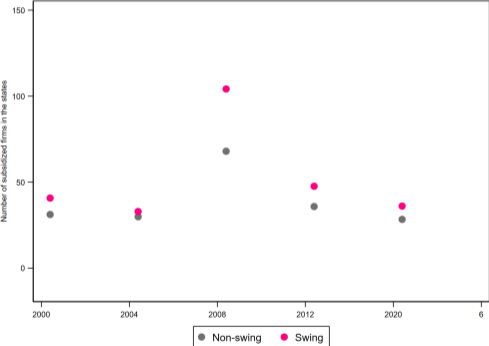
	Exports _{<i>j,T</i>}			
	(1)	(2)	(3)	(4)
Direct subsidy exposure _{<i>j,T</i>}	0.332*** (0.03)	0.399*** (0.06)	0.298*** (0.04)	0.365*** (0.08)
Upstream subsidy exposure _{<i>j,T</i>}	0.067* (0.04)	0.010 (0.02)	0.066* (0.04)	0.029 (0.02)
Downstream subsidy exposure _{<i>j,T</i>}	0.377*** (0.06)	0.082 (0.13)	0.379*** (0.07)	0.050 (0.14)
Direct AD exposure _{<i>j,T</i>}	0.196*** (0.07)	0.316*** (0.10)	0.246** (0.11)	0.357*** (0.12)
Upstream AD exposure _{<i>j,T</i>}	0.190* (0.11)	0.657** (0.28)	0.151 (0.13)	0.579** (0.27)
Downstream AD exposure _{<i>j,T</i>}	-0.956** (0.39)	-0.623*** (0.19)	-0.789** (0.33)	-0.578*** (0.19)
Industry FE	YES	YES	YES	YES
Term FE	YES	YES	YES	YES
Obs.	2,280	2,280	2,280	2,280
KP F-statistic	25.36	20.27	24.05	24.42

The Effects of Subsidies on Exports, First Terms, 2004-20

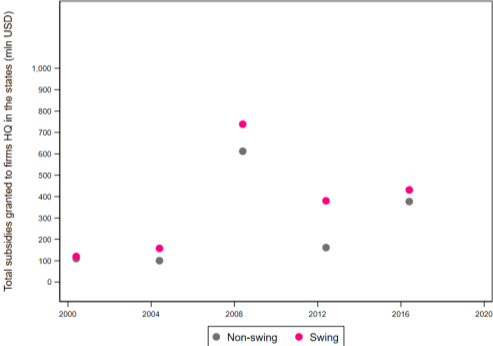
	Exports _{<i>j, T</i>}			
	(1)	(2)	(3)	(4)
Direct subsidy exposure _{<i>j, T</i>}	0.313*** (0.03)	0.426*** (0.08)	0.272*** (0.05)	0.393*** (0.09)
Upstream subsidy exposure _{<i>j, T</i>}	0.092*** (0.03)	0.067*** (0.01)	0.079** (0.03)	0.075*** (0.01)
Downstream subsidy exposure _{<i>j, T</i>}	0.322*** (0.05)	-0.009 (0.17)	0.348*** (0.05)	-0.046 (0.18)
Industry FE	YES	YES	YES	YES
Term FE	YES	YES	YES	YES
Obs.	1,368	1,368	1,368	1,368
KP F-statistic	22.35	28.39	20.08	34.29

Subsidies to Firms Located in Swing States, 2000-2019

(a) Number of Subsidised Firms



(b) Average Subsidies in Swing States



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$$\text{Swing state}_{s,T} = \alpha + \beta \text{ Direct subsidy exposure}_{s,T} + \delta_s + \delta_T + \epsilon_{s,T}$$

$$\text{Votes difference}_{s,T} = \alpha + \beta \text{ Direct subsidy exposure}_{s,T} + \delta_s + \delta_T + \epsilon_{s,T}$$

Table: Identity of Swing States and Direct Subsidy Exposure.

	<i>Swing state dummy</i> _{s,T}	<i>Difference in vote shares</i> _{s,T}
	(1)	(2)
Direct subsidy exposure _{s,T}	4.53e-09 (1.03e-08)	-3.63e-09 (2.60e-09)
State FE	YES	YES
Term FE	YES	YES
Obs.	255	255
R ²	0.441	0.843

Notes: OLS estimates. Direct subsidy exposure_{s,T} is the weighted average of subsidies to industry *j* in term *T*, using employment shares as weights, and aggregated to the state *s* level.

Bown et al. (2023) show that the identity of swing states does not depend on previous exposure to import competition, trade protection, or employment growth.

	Exports _{<i>j</i>,<i>T</i>}			
	<i>Including the I-O Diagonal</i>		<i>Leontief Inverse Matrix</i>	
	(1)	(2)	(3)	(4)
Downstream subsidy exposure _{<i>j</i>,<i>T</i>}	0.475*** (0.08)		0.617*** (0.09)	
Upstream subsidy exposure _{<i>j</i>,<i>T</i>}		0.120** (0.04)		0.357*** (0.06)
Industry FE	YES	YES	YES	YES
Term FE	YES	YES	YES	YES
Obs.	2,280	2,280	2,280	2,280
KP F-statistic	1,129	13,613	1,907	16.30

Effects of Subsidies on Employment, 2000-20

	Employment $_{j,T}$			
	(1)	(2)	(3)	(4)
Direct subsidy exposure $_{j,T}$	0.601*** (0.07)	0.767*** (0.08)	0.655*** (0.07)	0.748*** (0.06)
Upstream subsidy exposure $_{j,T}$	0.587*** (0.06)	0.082*** (0.01)	0.555*** (0.06)	0.103*** (0.02)
Downstream subsidy exposure $_{j,T}$	-1.269*** (0.05)	-0.141*** (0.03)	-1.239*** (0.06)	-0.221*** (0.02)
Controls	NO	NO	YES	YES
Industry FE	NAICS-2	NAICS-4	NAICS-2	NAICS-4
Term FE	YES	YES	YES	YES
Obs.	2,280	2,280	2,280	2,280
KP F-statistic	28.79	23.17	25.94	28.26

The Effects of Politically Motivated Subsidies on Imports

	Imports _{<i>j, T</i>}			
	(1)	(2)	(3)	(4)
Direct subsidy exposure _{<i>j, T</i>}	0.219*** (0.02)	0.373*** (0.04)	0.172*** (0.04)	0.340*** (0.05)
Upstream subsidy exposure _{<i>j, T</i>}	0.057 (0.04)	0.131*** (0.01)	0.055 (0.04)	0.151*** (0.00)
Downstream subsidy exposure _{<i>j, T</i>}	0.109** (0.04)	-0.300*** (0.11)	0.121*** (0.05)	-0.345*** (0.10)
Controls	NO	NO	YES	NO
Term FE	YES	YES	YES	YES
Industry FE	NAICS-2	NAICS-4	NAICS-2	NAICS-4
Obs.	2,280	2,280	2,280	2,280
KP F-statistic	28.79	23.17	25.94	28.26

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Effects of Politically Motivated Subsidies on Exports, 2000-24

	Exports _{<i>j, T</i>}			
Direct subsidy exposure _{<i>j, T</i>}	0.268*** (0.04)	0.390*** (0.08)	0.268*** (0.04)	0.390*** (0.08)
Upstream subsidy exposure _{<i>j, T</i>}	0.155*** (0.04)	0.152*** (0.03)	0.155*** (0.04)	0.152*** (0.03)
Downstream subsidy exposure _{<i>j, T</i>}	0.240* (0.14)	0.118 (0.22)	0.240* (0.14)	0.118 (0.22)
Controls	NO	NO	YES	YES
Term FE	YES	YES	YES	YES
Industry FE	NAICS-2	NAICS-4	NAICS-2	NAICS-4
Obs.	2,736	2,736	2,736	2,736
KP F-statistic	28.56	12.47	28.56	12.47