

EXIM's Exit: The Real Effects of Trade Financing by Export Credit Agencies

Poorya Kabir

(NUS)

Adrien Matray

(Stanford GSB, NBER, CEPR)

Karsten Mueller

(NUS)

Chenzi Xu

(Stanford GSB, NBER, CEPR)

ABFER

Motivation & Question

ECAs (Export Credit Agencies) aim to increase **exports** by supplying **trade financing**

The most common tool of **industrial policy** (Juhasz, Lane, Oehlsen and Perez 2022)

- Ubiquitous in both emerging and advanced economies

Motivation & Question

ECAs (Export Credit Agencies) aim to increase **exports** by supplying **trade financing**

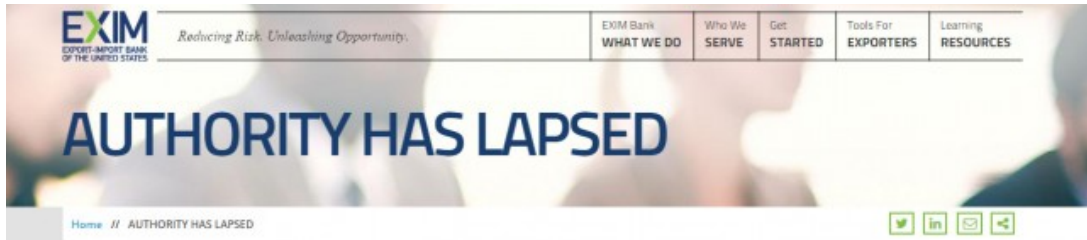
The most common tool of **industrial policy** (Juhasz, Lane, Oehlsen and Perez 2022)

- Ubiquitous in both emerging and advanced economies

Question: What is their impact?

Context

2015–2019 Shutdown of the Export-Import Bank of the United States (EXIM)



The image is a screenshot of the EXIM Bank website. At the top left is the EXIM logo with the tagline "Reducing Risk. Unleashing Opportunity." To the right of the logo is a navigation menu with five items: "EXIM Bank WHAT WE DO", "Who We SERVE", "Get STARTED", "Tools For EXPORTERS", and "Learning RESOURCES". The main content area features a large blue banner with the text "AUTHORITY HAS LAPSED" in bold, dark blue capital letters. Below the banner, on the left, is a breadcrumb trail: "Home // AUTHORITY HAS LAPSED". On the right side of the banner area, there are four social media icons: Twitter, LinkedIn, Email, and Facebook. The background of the banner shows a blurred image of people in business attire.

Due to a lapse in EXIM Bank's authority, as of July 1, 2015, the Bank is unable to process applications or engage in new business or other prohibited activities. For more information, please [click here](#).

This Paper

1. Does EXIM matter **on the margin**?

This Paper

1. Does EXIM matter **on the margin**?

- Firm level: No, firms are unconstrained → EXIM is a **windfall**
- Industry level: No, EXIM **reallocates** export across US firms → **does not create** trade

This Paper

1. Does EXIM matter **on the margin**? **Yes**

- Firm level: ↓ exports, sales, K, L
- Industry level: \$1 financing ⇒ \$4 exports

This Paper

1. Does EXIM matter **on the margin**? **Yes**

- Firm level: ↓ exports, sales, K, L
- Industry level: \$1 financing ⇒ \$4 exports

2. It raises output for the **average** firm...but does EXIM raise **misallocation**?

This Paper

1. Does EXIM matter **on the margin**? **Yes**

- Firm level: ↓ exports, sales, K, L
- Industry level: \$1 financing ⇒ \$4 exports

2. It raises output for the **average** firm...but does EXIM raise **misallocation**? **Not in our context**

- Higher MRPK firms ↓ more during shutdown

This Paper

1. Does EXIM matter **on the margin**? **Yes**

- Firm level: ↓ exports, sales, K, L
- Industry level: \$1 financing ⇒ \$4 exports

2. It raises output for the **average** firm...but does EXIM raise **misallocation**? **Not in our context**

- Higher MRPK firms ↓ more during shutdown

3. **What framework rationalizes these results?**

This Paper

1. Does EXIM matter **on the margin**? **Yes**

- Firm level: ↓ exports, sales, K, L
- Industry level: \$1 financing ⇒ \$4 exports

2. It raises output for the **average** firm...but does EXIM raise **misallocation**? **Not in our context**

- Higher MRPK firms ↓ more during shutdown

3. **What framework rationalizes these results?**

- Distortionary wedges in market for trade financing → intervention will ↑ output and ↓ misallocation

Contribution to the Literature

1. Export Credit Agencies

Germany (Felbermayr Yalcin, 2013; Heiland Yalcin, 2021); Austria (Badinger Url, 2013); Pakistan (Zia, 2008; Defever Riano Varela, 2020); Korea (Hur Yoon, 2022); US (Desai Hines, 2008; Benmelech Monteiro, 2023)

Causal estimates of the impact of ECAs on firms and exports, and impact on misallocation

2. Finance and Trade

Bank credit and export volumes: Amiti Weinstein, 2011; Chor Manova, 2012; Manova, 2013; Paravisini Rappoport Schnabl Wolfenzon, 2014; Demir Michalski Ors, 2017; Hombert Matray, 2018; Xu, 2022; Beaumont Lenoir, 2023; Bruno Shin, 2023; Monteiro Moreira, 2023

Bank networks and export patterns: Michalski Ors, 2012; Niepmann Schmidt-Eisenlohr, 2017; Paravisini Rappoport Schnabl, 2023; Xu Yang, 2024

Demonstrates specificity of trade financing \neq omnibus firm credit shock

3. Design and Effects of industrial policies

Harrison Rodriguez-Clare, 2010; Juhasz, 2018; Criscuolo Martin Overman Van Reenen, 2019; Itskhoki Moll, 2019; Choi Levchenko, 2021; Garin Rothbaum, 2022; Lane, 2023; Juhasz Lane Oehlsen Perez, 2022; Juhasz Steinwender, 2023; Juhasz Lane Rodrik, 2023; Ottonello Perez Witheridge 2024

Provides framework for discussing ECAs as a tool of industrial policy

Outline

EXIM Institutional Setting

1. EXIM Increases Real Activity

Aggregate product level results

Firm level results

2. EXIM Reduces Capital Misallocation

3. Framework for EXIM Intervention

The Export-Import Bank of the United States (EXIM)

Mandate:

“To support **jobs** in the United States by facilitating the **export** of U.S. goods and services [...] when private sector lenders are unable or unwilling to **provide financing**.”

- Each transaction must be justified to satisfy this mission
- And must provide evidence of attempt to attain private sector financing

Operational constraints:

- Institution must remain **self-financing** (WTO)
- Each EXIM transaction must be “**subsidy neutral**” or generate “**negative subsidy**” (Federal Credit Reform Act)
 - Fees & interest collected to offset defaults, cost of borrowing from US Treasury, and operational expenses
 - Since 1992, EXIM returned **net profit of \$9 billion** to the U.S. Treasury

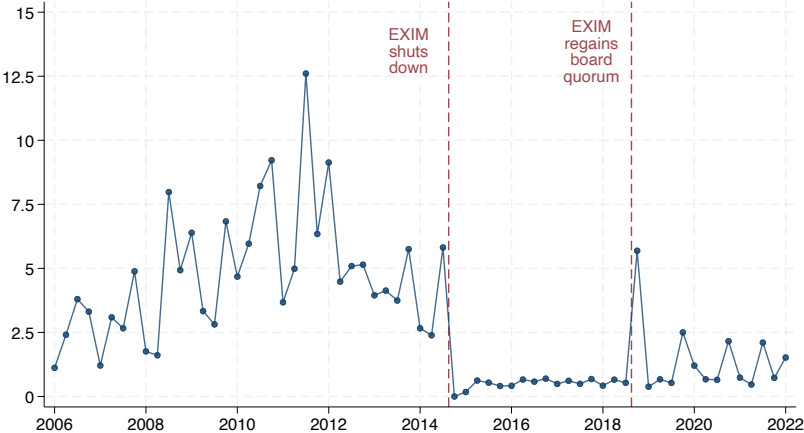
EXIM Shutdown

- **2015: Full shutdown** of EXIM for five months
 - Driven by Tea Party (Paul Ryan) criticizing the bank for “providing corporate welfare”

- **2015 - 2019: Limited capacity** for four years
 - No board quorum (full board = five people)
 - Republicans blocked the nomination of three vacant seats
 - ⇒ EXIM **cannot approve** long-term transactions larger than \$10M

Effect of Shutdown on Operations

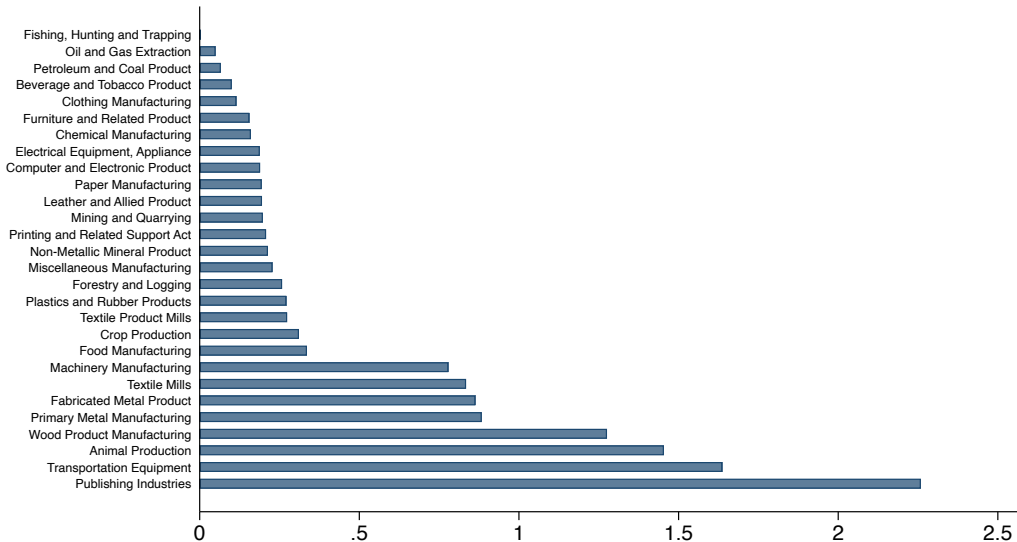
- Total value of new financial support (\$B): **-84%**



[Average]

Distribution of EXIM Financing (% of Exports)

Aggregate financing: $\approx 0.8\%$ of total exports



Outline

EXIM Institutional Setting

1. EXIM Increases Real Activity

Aggregate product level results

Firm level results

2. EXIM Reduces Capital Misallocation

3. Framework for EXIM Intervention

Outline

EXIM Institutional Setting

1. EXIM Increases Real Activity

Aggregate product level results

Firm level results

2. EXIM Reduces Capital Misallocation

3. Framework for EXIM Intervention

Data

- **EXIM dependence:** EXIM loan registry
 - Loan level data: 2007–2022 (FOIA)
 - Matched on export product and firm name

- **Aggregate trade flows:** BACI
 - Bilateral: country \times product \times year (2010–2019)
 - Exporters: focus on USA + developed countries

- **Firm outcomes:** Compustat
 - Panel: 2010–2019
 - Segment: includes foreign sales

- **Firm exports:** Datamyne
 - Universe of maritime exports at the firm \times product \times destination level

Estimating Effect of Exposure to EXIM

Export growth at time t relative to 2014:

$$\Delta_{2014}^t[X_{o,p,d,t}] = \beta \text{EXIM}_{o,p} \times \text{Post}_{t \geq 2015} + \gamma_{p,d,t} + \delta_{o,t} + \varepsilon_{o,p,d,t}$$

- $X_{o,p,d,t}$: Origin \times Products (HS-6) \times Destinations

Estimating Effect of Exposure to EXIM

Export growth at time t relative to 2014:

$$\Delta_{2014}^t[X_{o,p,d,t}] = \beta \text{EXIM}_{o,p} \times \text{Post}_{t \geq 2015} + \gamma_{p,d,t} + \delta_{o,t} + \varepsilon_{o,p,d,t}$$

- $X_{o,p,d,t}$: Origin \times Products (HS-6) \times Destinations
- $\text{EXIM}_{o,p}$: EXIM intensity₀₇₋₁₀ = \$EXIM / \$exports

Estimating Effect of Exposure to EXIM

Export growth at time t relative to 2014:

$$\Delta_{2014}^t[X_{o,p,d,t}] = \beta \text{EXIM}_{o,p} \times \text{Post}_{t \geq 2015} + \gamma_{p,d,t} + \delta_{o,t} + \varepsilon_{o,p,d,t}$$

- $X_{o,p,d,t}$: Origin \times Products (HS-6) \times Destinations
- $\text{EXIM}_{o,p}$: EXIM intensity₀₇₋₁₀ = \$EXIM / \$exports
- $\text{Post}_{t \geq 2015}$: Year \geq 2015

Estimating Effect of Exposure to EXIM

Export growth at time t relative to 2014:

$$\Delta_{2014}^t[X_{o,p,d,t}] = \beta \text{EXIM}_{o,p} \times \text{Post}_{t \geq 2015} + \gamma_{p,d,t} + \delta_{o,t} + \varepsilon_{o,p,d,t}$$

- $X_{o,p,d,t}$: Origin \times Products (HS-6) \times Destinations
- $\text{EXIM}_{o,p}$: EXIM intensity₀₇₋₁₀ = \$EXIM / \$exports
- $\text{Post}_{t \geq 2015}$: Year \geq 2015
- **Origin \times Product \times Destination** : Remove level differences

Estimating Effect of Exposure to EXIM

Export growth at time t relative to 2014:

$$\Delta_{2014}^t[X_{o,p,d,t}] = \beta \text{EXIM}_{o,p} \times \text{Post}_{t \geq 2015} + \gamma_{p,d,t} + \delta_{o,t} + \varepsilon_{o,p,d,t}$$

- $X_{o,p,d,t}$: Origin \times Products (HS-6) \times Destinations
- $\text{EXIM}_{o,p}$: EXIM intensity₀₇₋₁₀ = \$EXIM / \$exports
- $\text{Post}_{t \geq 2015}$: Year \geq 2015
- Origin \times Product \times Destination : Remove level differences
- **Product \times Destination \times Year** : Export market specific shocks

Estimating Effect of Exposure to EXIM

Export growth at time t relative to 2014:

$$\Delta_{2014}^t[X_{o,p,d,t}] = \beta \text{EXIM}_{o,p} \times \text{Post}_{t \geq 2015} + \gamma_{p,d,t} + \delta_{o,t} + \varepsilon_{o,p,d,t}$$

- $X_{o,p,d,t}$: Origin \times Products (HS-6) \times Destinations
- $\text{EXIM}_{o,p}$: EXIM intensity₀₇₋₁₀ = \$EXIM / \$exports
- $\text{Post}_{t \geq 2015}$: Year \geq 2015
- Origin \times Product \times Destination : Remove level differences
- Product \times Destination \times Year : Export market specific shocks
- Origin \times Year : Origin market specific shocks

Identifying Assumption

Parallel trends: outcomes between treated ($EXIM_{o,p} = 1$) and control ($EXIM_{o,p} = 0$) groups would have evolved similarly absent the reform, after controls

Does not require...

- Random selection of treated vs control
- Random timing of shutdown

Identifying Assumption

Parallel trends: outcomes between treated ($EXIM_{o,p} = 1$) and control ($EXIM_{o,p} = 0$) groups would have evolved similarly absent the reform, after controls

Does not require...

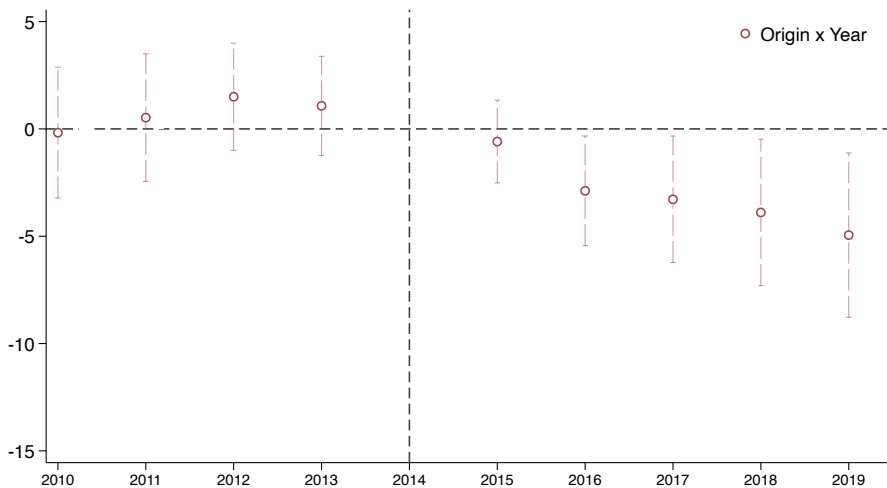
- Random selection of treated vs control
- Random timing of shutdown

Threats to identification: other unobserved reform/event coinciding with EXIM support

- Demand shock (e.g., $tariffs_{p,d,t}$) correlated with treatment \rightarrow absorbed by $\gamma_{p,d,t}$
- US \times products ($EXIM_{o,p} = 1$) shocks that happens exactly in 2015 \rightarrow firm level evidence shows unlikely

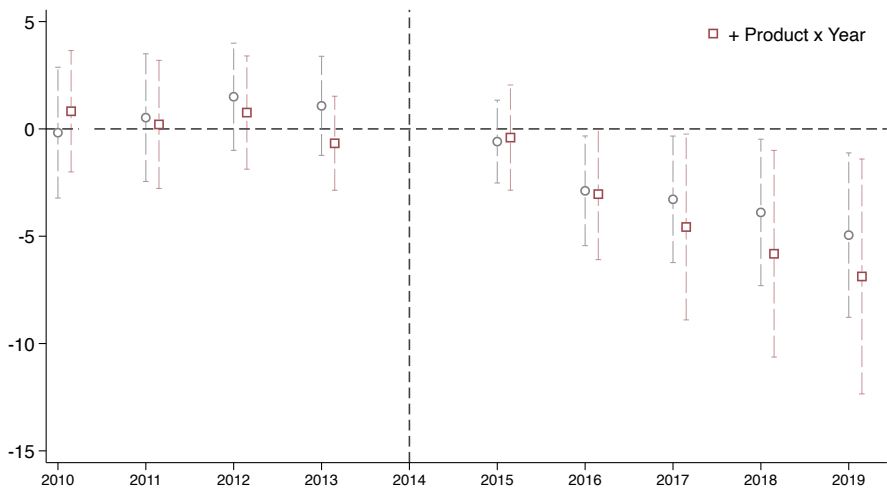
Aggregate Exports from US Drops

$$\Delta_{2014}^t [X_{o,p,d,t}] = \beta_t \text{EXIM}_{o,p} + \delta_{o,t} + \varepsilon_{o,p,d,t}$$



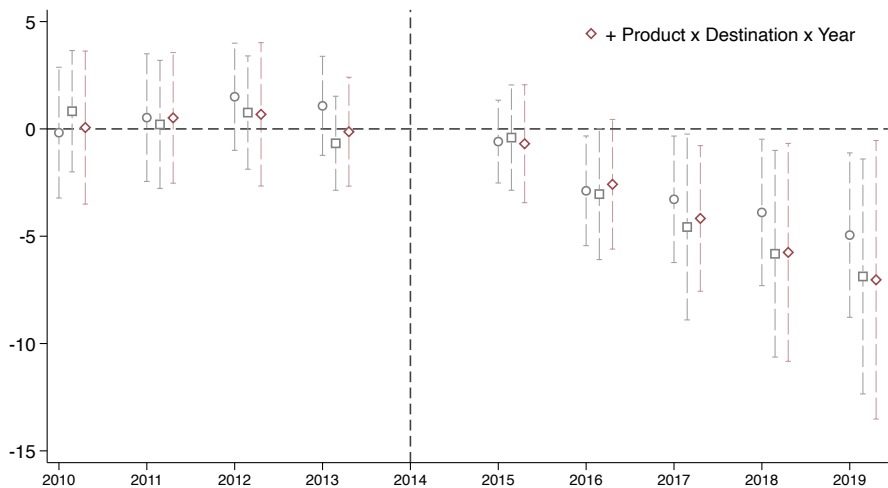
Aggregate Exports from US Drops

$$\Delta_{2014}^t[X_{o,p,d,t}] = \beta_t \text{EXIM}_{o,p} + \delta_{o,t} + \gamma_{p,t} + \varepsilon_{o,p,d,t}$$



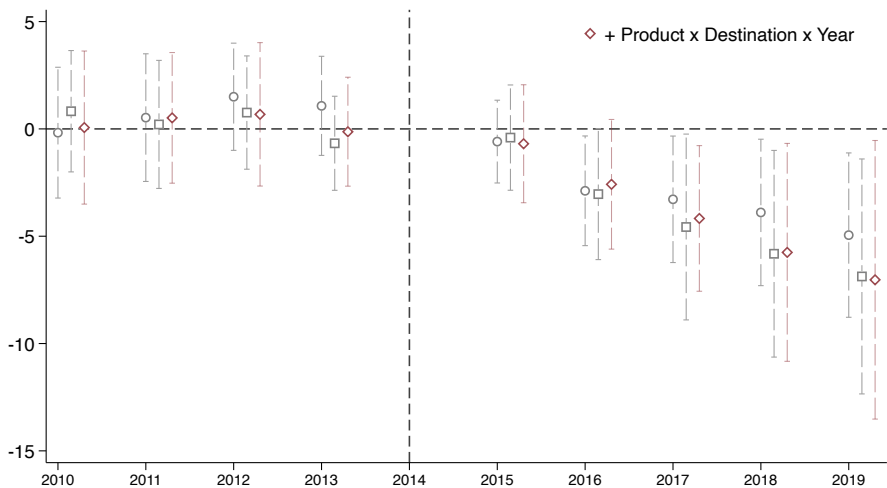
Aggregate Exports from US Drops

$$\Delta_{2014}^t[X_{o,p,d,t}] = \beta_t \text{EXIM}_{o,p} + \delta_{o,t} + \gamma_{p,d,t} + \varepsilon_{o,p,d,t}$$



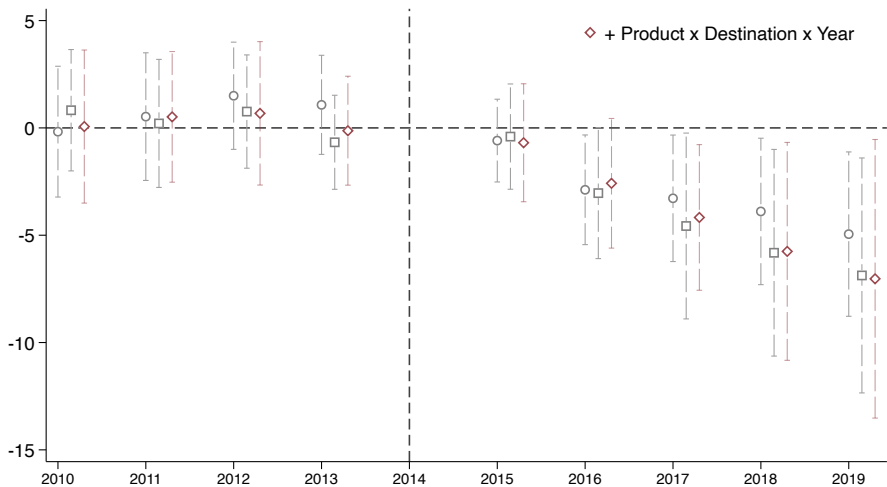
Aggregate Exports from US Drops

Baseline effect \approx control for $\gamma_{p,d,t} \Rightarrow$ EXIM exposure \perp demand shocks



Aggregate Exports from US Drops

Average effect: Elasticity ≈ -4



Benchmarking the Magnitudes

Elasticity of response: $\beta_{post} \approx (-3, -4)$

- \$1 less of EXIM lowers exports by \$3-\$4 to the average destination relative to exports in 2014

Benchmarking the Magnitudes

Elasticity of response: $\beta_{post} \approx (-3, -4)$

- \$1 less of EXIM lowers exports by \$3-\$4 to the average destination relative to exports in 2014

Estimates of the trade elasticity $\theta \approx (-2, -8)$

Benchmarking the Magnitudes

Elasticity of response: $\beta_{post} \approx (-3, -4)$

- \$1 less of EXIM lowers exports by \$3-\$4 to the average destination relative to exports in 2014

Estimates of the trade elasticity $\theta \approx (-2, -8)$

- EXIM is a tool where 1% financing \rightarrow 3-4% impact on exports \implies 1% financing \rightarrow prices 0.5-2%

Taking Stock: EXIM Support is Not Inframarginal

- Aggregate customs level

Taking Stock: EXIM Support is Not Inframarginal

- Aggregate customs level
 - EXIM **creates** trade for the US

Taking Stock: EXIM Support is Not Inframarginal

- Aggregate customs level
 - EXIM creates trade for the US
 - Elasticity comparable to a tariff shock

Taking Stock: EXIM Support is Not Inframarginal

- Aggregate customs level
 - EXIM creates trade for the US
 - Elasticity comparable to a tariff shock
- **But**
 - Firms might absorb the export loss with higher domestic activities

Outline

EXIM Institutional Setting

1. EXIM Increases Real Activity

Aggregate product level results

Firm level results

2. EXIM Reduces Capital Misallocation

3. Framework for EXIM Intervention

Estimating Effect of Exposure to EXIM

Firm i , in industry j , at time t :

$$Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + X_{i,t} + \varepsilon_{i,j,t}$$

- EXIM_i : Firm received EXIM support over 2010–2014
- $\text{Post}_{\geq 2015}$: Year ≥ 2015 ; no staggered treatment

Estimating Effect of Exposure to EXIM

Firm i , in industry j , at time t :

$$Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + X_{i,t} + \varepsilon_{i,j,t}$$

- EXIM_i : Firm received EXIM support over 2010–2014
- $\text{Post}_{\geq 2015}$: Year ≥ 2015 ; no staggered treatment

Estimating Effect of Exposure to EXIM

Firm i , in industry j , at time t :

$$Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + X_{i,t} + \varepsilon_{i,j,t}$$

- EXIM_i : Firm received EXIM support over 2010–2014
- $\text{Post}_{\geq 2015}$: Year ≥ 2015 ; no staggered treatment
- **Firm** : Remove level differences

Estimating Effect of Exposure to EXIM

Firm i , in industry j , at time t :

$$Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + X_{i,t} + \varepsilon_{i,j,t}$$

- EXIM_i : Firm received EXIM support over 2010–2014
- $\text{Post}_{\geq 2015}$: Year ≥ 2015 ; no staggered treatment
- Firm : Remove level differences
- $\text{Industry} \times \text{year}$: Industry specific shocks

Estimating Effect of Exposure to EXIM

Firm i , in industry j , at time t :

$$Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + X_{i,t} + \varepsilon_{i,j,t}$$

- EXIM_i : Firm received EXIM support over 2010–2014
- $\text{Post}_{\geq 2015}$: Year ≥ 2015 ; no staggered treatment
- Firm : Remove level differences
- Industry \times year : Industry specific shocks
- $\text{Destinations} \times \text{year}$: Export markets specific shocks
Top 10 destinations from 10-K (Hoberg-Moon, 2017)

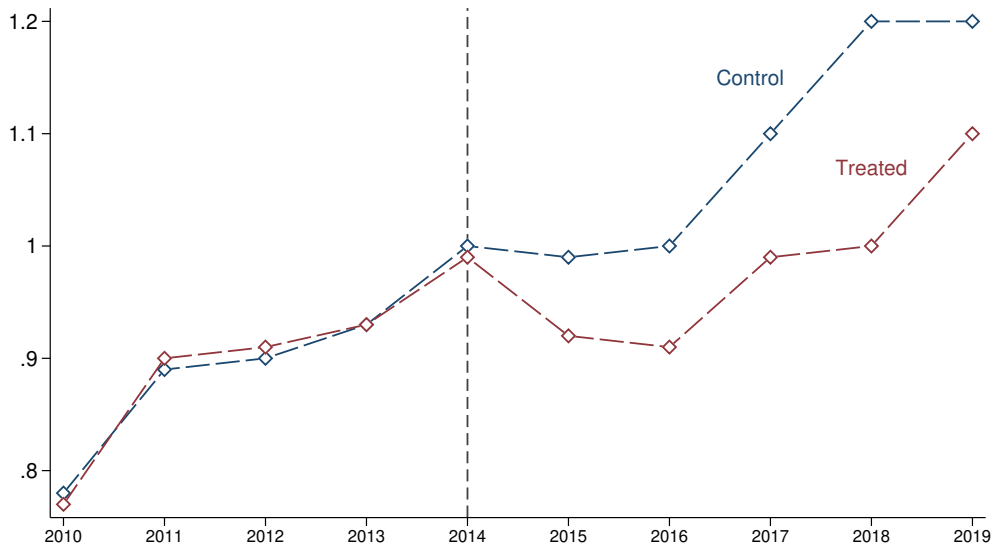
Estimating Effect of Exposure to EXIM

Firm i , in industry j , at time t :

$$Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + X_{i,t} + \varepsilon_{i,j,t}$$

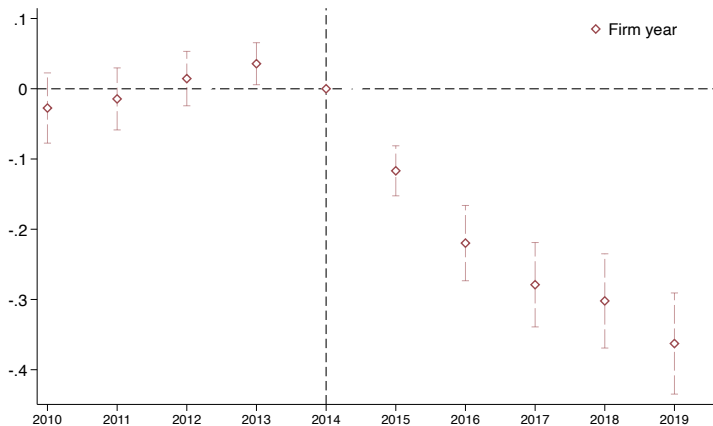
- EXIM_i : Firm received EXIM support over 2010–2014
- $\text{Post}_{\geq 2015}$: Year ≥ 2015 ; no staggered treatment
- Firm : Remove level differences
- Industry \times year : Industry specific shocks
- Destinations \times year : Export markets specific shocks
Top 10 destinations from 10-K (Hoberg-Moon, 2017)
- Firm ex-ante characteristics \times year : Additional firm controls

Impact on Firms' Global Sales: Raw Data



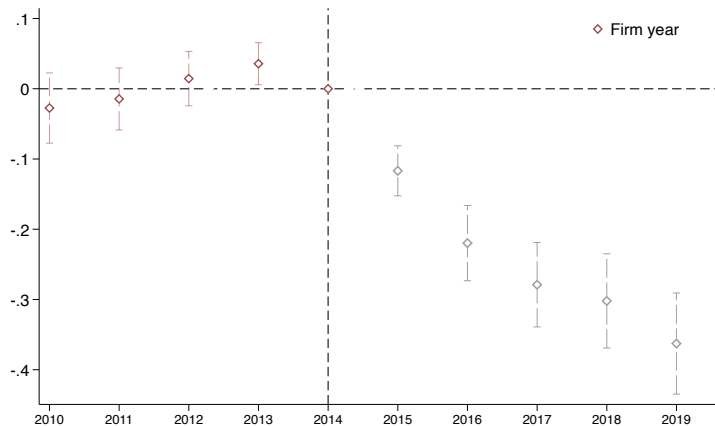
Impact on Firms' Global Sales: DiD Estimation

$$- Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \delta_t + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + \varepsilon_{i,j,t}$$



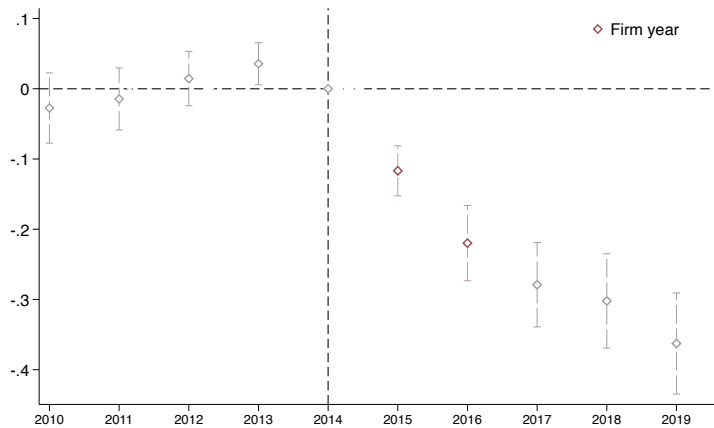
Impact on Firms' Global Sales: DiD Estimation

- No differential pre-trend



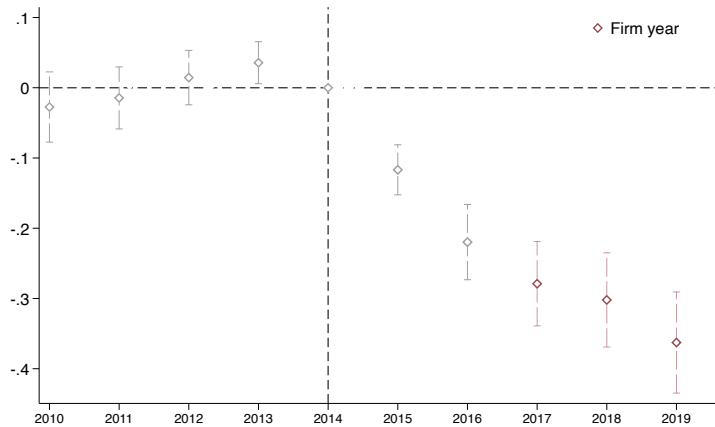
Impact on Firms' Global Sales: DiD Estimation

- Sharp drop



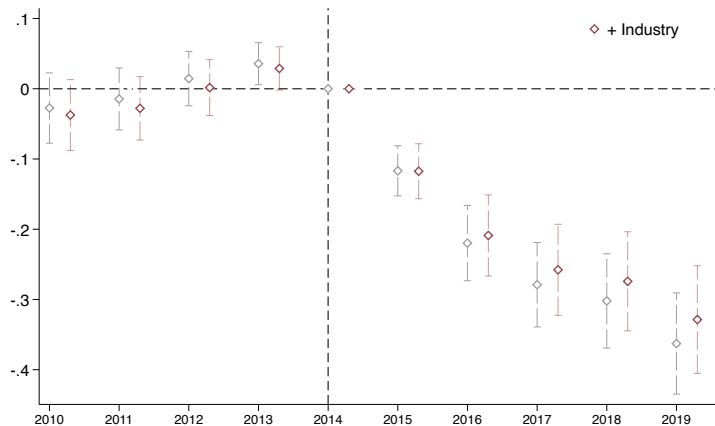
Impact on Firms' Global Sales: DiD Estimation

- No recovery



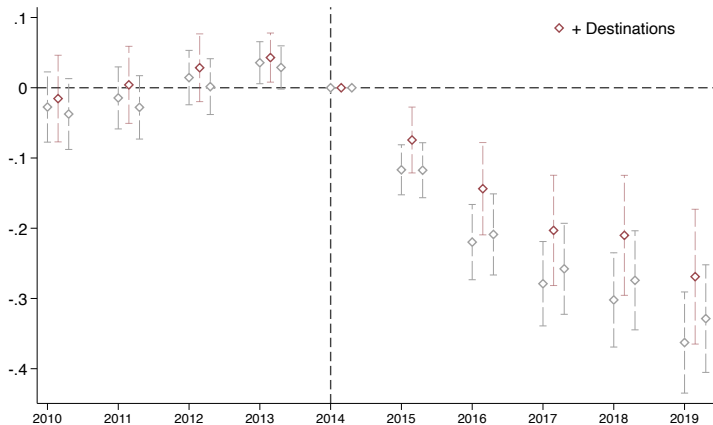
Impact on Firms' Global Sales: DiD Estimation

$$- Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + \varepsilon_{i,j,t}$$



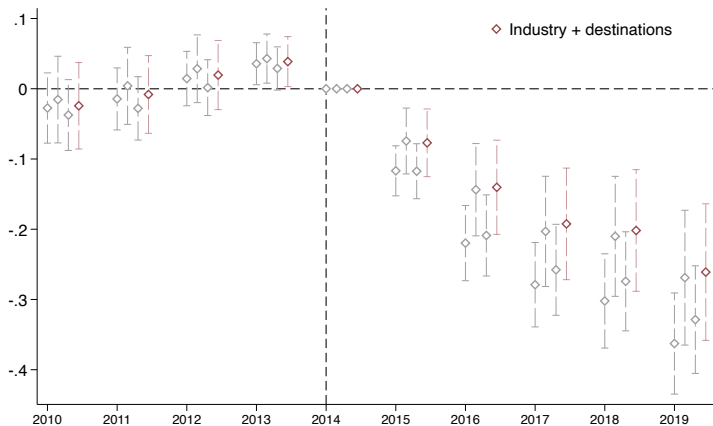
Impact on Firms' Global Sales: DiD Estimation

$$- Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + \varepsilon_{i,j,t}$$



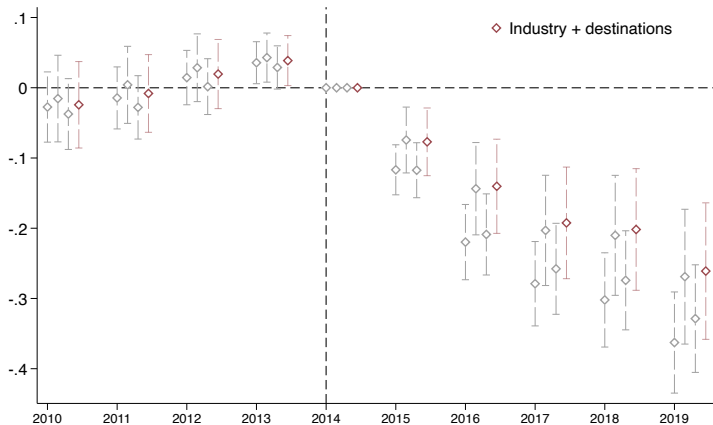
Impact on Firms' Global Sales: DiD Estimation

$$- Y_{i,j,t} = \beta_t \text{EXIM}_i \times \text{Post}_{\geq 2015} + \alpha_i + \gamma_{j,t} + \text{Destinations}_{i,t_0} \times \delta_t + \varepsilon_{i,j,t}$$



Impact on Firms' Global Sales: DiD Estimation

- Average effect: **-18%**



Additional Effects: Treated Firms Scale Down

- Decrease in **capital**, tangible and intangible (Peters and Taylor 2017)

	<u>Tangible capital</u>	<u>Intangible capital</u>	<u>Employment</u>	<u>ROA</u>
	(1)	(2)	(3)	(4)
Treated×Post	-0.16*** (0.040)	-0.18*** (0.044)	-0.093*** (0.034)	0.0062 (0.0074)
<i>Fixed Effects</i>				
Firm	✓	✓	✓	✓
Industry×Year	✓	✓	✓	✓
Destinations×Year	✓	✓	✓	✓
Observations	27,972	28,245	28,386	28,386

Additional Effects: Treated Firms Scale Down

- Decrease in **employment**

	<u>Tangible capital</u>	<u>Intangible capital</u>	<u>Employment</u>	<u>ROA</u>
	(1)	(2)	(3)	(4)
Treated×Post	-0.16*** (0.040)	-0.18*** (0.044)	-0.093*** (0.034)	0.0062 (0.0074)
<i>Fixed Effects</i>				
Firm	✓	✓	✓	✓
Industry×Year	✓	✓	✓	✓
Destinations×Year	✓	✓	✓	✓
Observations	27,972	28,245	28,386	28,386

Additional Effects: Treated Firms Scale Down

- **No change in ROA** → EXIM support **not** infra-marginal & just boosting firms' profits

(Event study)

	<u>Tangible capital</u>	<u>Intangible capital</u>	<u>Employment</u>	<u>ROA</u>
	(1)	(2)	(3)	(4)
Treated×Post	-0.16*** (0.040)	-0.18*** (0.044)	-0.093*** (0.034)	0.0062 (0.0074)
<i>Fixed Effects</i>				
Firm	✓	✓	✓	✓
Industry×Year	✓	✓	✓	✓
Destinations×Year	✓	✓	✓	✓
Observations	27,972	28,245	28,386	28,386

Additional Results and Robustness

Additional results

- Similar results for **exports** using Datamyne, Compustat Segment, Hoberg-Moon (2017) 10-Ks (Result)

Robustness

- Quarterly sales: decline starts exactly after shutdown in June (Result)
- Selection on EXIM treatment: within-EXIM exposure variation (Result)
- Additional firm controls: lobbying, state, fiscal month, size, profitability, leverage (Result)
- Removing the 10 largest beneficiaries (Result)
- Different level of industry (Result) and HS products (Result)
- Different winsorizing (Result)

Outline

EXIM Institutional Setting

1. EXIM Increases Real Activity

Aggregate product level results

Firm level results

2. EXIM Reduces Capital Misallocation

3. Framework for EXIM Intervention

EXIM Shutdown and Allocative Efficiency

The effect of EXIM shutdown is negative on average.

EXIM Shutdown and Allocative Efficiency

The effect of EXIM shutdown is negative on average.

The average results are not enough to claim that the EXIM shutdown is detrimental to the US economy.

EXIM Shutdown and Allocative Efficiency

The effect of EXIM shutdown is negative on average.

The average results are not enough to claim that the EXIM shutdown is detrimental to the US economy.

The “allocative efficiency” could improve because of the EXIM shutdown, if

EXIM Shutdown and Allocative Efficiency

The effect of EXIM shutdown is negative on average.

The average results are not enough to claim that the EXIM shutdown is detrimental to the US economy.

The “allocative efficiency” could improve because of the EXIM shutdown, if

“good” firms **expand**, and “bad” firms **shrink substantially**

EXIM Shutdown and Allocative Efficiency

The effect of EXIM shutdown is negative on average.

The average results are not enough to claim that the EXIM shutdown is detrimental to the US economy.

The “allocative efficiency” could improve because of the EXIM shutdown, if

“good” firms **expand**, and “bad” firms **shrink substantially**

Changes in “allocative efficiency” can be signed by studying the interaction of EXIM shutdown with MRPK (Baqae-Farhi 2020)

Removing EXIM Increases Misallocation Within Listed Firms

- Estimate change in capital misallocation (Bau-Matray, 2022)
- With Cobb-Douglas, $MRPK = \frac{\partial Revenue_{it}}{\partial K_{it}} = \alpha_j^k \frac{Revenue_{it}}{K_{it}} \rightarrow$ within industries α_j^k is the same \Rightarrow $APK = MRPK$
- High MRPK = above industry median [2010-2014]

Removing EXIM Increases Misallocation Within Listed Firms

- Estimate change in capital misallocation (Bau-Matray, 2022)
- High MRPK = above industry median [2010–2014]
- Capital shrinks more for high MRPK firms \Rightarrow **misallocation increases**

<i>Dependent variable</i>	Capital		
	Low	High	All
<i>Sample</i>	(1)	(2)	(3)
EXIM \times Post	-0.044 (0.055)	-0.25*** (0.061)	
Treated \times Post \times MRPK			-0.21*** (0.087)
<i>Fixed Effects (interacted)</i>			
Firm	✓	✓	✓
Industry \times Year	✓	✓	✓
Destinations \times Year	✓	✓	✓
Treated \times Year	—	—	✓
Observations	13,782	13,691	27,473

Outline

EXIM Institutional Setting

1. EXIM Increases Real Activity

Aggregate product level results

Firm level results

2. EXIM Reduces Capital Misallocation

3. Framework for EXIM Intervention

Framework for EXIM Intervention

In the presence of **distortionary wedges** (e.g., Hsieh-Klenow, 2009; Baqaee-Farhi 2020)

$$\pi_{i,m} = p_{i,m} \times f_{i,m}(K_{i,m}) - r_{i,m}^{adj} \times (1 + \tau_{i,m} - EXIM_{i,m}) \times K_{i,m}$$

- FOC wrt $K_{i,m}$

$$\underbrace{MRPK_{i,m}}_{\text{Marginal revenue product of capital}} = r_{i,m}^{adj} \times (1 + \underbrace{\tau_{i,m}}_{\text{distortionary wedges}} - EXIM_{i,m})$$

Framework for EXIM Intervention

In the presence of **distortionary wedges** (e.g., Hsieh-Klenow, 2009; Baqaee-Farhi 2020)

$$\pi_{i,m} = p_{i,m} \times f_{i,m}(K_{i,m}) - r_{i,m}^{adj} \times (1 + \tau_{i,m} - EXIM_{i,m}) \times K_{i,m}$$

– FOC wrt $K_{i,m}$

$$\underbrace{MRPK_{i,m}}_{\text{Marginal revenue product of capital}} = r_{i,m}^{adj} \times (1 + \underbrace{\tau_{i,m}}_{\text{distortionary wedges}} - EXIM_{i,m})$$

1. What are these wedges?
2. How is EXIM able to **reduce** them?

Sources of $\tau_{i,m}$ in Trade Financing

Model

$$MRPK_{i,m} = r_{i,m}^{adj} \times (1 + \tau_{i,m})$$

as:

$$MRPK_{i,m} = r_{i,m}^{adj} \times (1 + \lambda_j + \tau_m)$$

1. λ_j : Firm collateral constraint

- Theoretically: Incomplete contracts / info asymmetry

2. τ_m : Trade financing constraint

- Theoretically: Imperfect competition or balance sheet limits + fixed costs
- Empirically: **Specialized** (Paravisini Rappoport Schnabl 2023) and **Concentrated** (Niepmann Schmidt-Eisenlohr 2017)

Implications for ECA Design

$$MRPK_{i,m} = r_{i,m}^{adj} \times (1 + \lambda_i + \tau_m - EXIM_{i,m})$$

1. Empirical evidence on correlation with λ_i and τ_m ?
2. Can EXIM be self-financing?

Implications for ECA Design

$$MRPK_{i,m} = r_{i,m}^{adj} \times (1 + \lambda_i + \tau_m - EXIM_{i,m})$$

1. Empirical evidence on correlation with λ_i and τ_m ?
2. Can EXIM be self-financing?

Firm Financing Friction Heterogeneity

- Proxies for financing frictions:
 - High **leverage** (e.g., Giroud and Mueller, 2016; Giroud and Mueller, 2019)

<i>Dependent variable</i>	Global sales			
	<i>Financing frictions proxy:</i>		Dividends	Hoberg and Maskimovic (2015)
	(1)	(2)	(3)	(4)
EXIM×Post	-0.18*** (0.037)			
EXIM×Post×Constrained		-0.16** (0.077)	-0.21** (0.087)	-0.25*** (0.081)
<i>Fixed Effects (interacted)</i>				
Firm	✓	✓	✓	✓
Destinations×Year	✓	✓	✓	✓
Industry×Year	✓	✓	✓	✓
Treated×Year	—	✓	✓	✓
Observations	26,732	25,592	25,297	25,438

Firm Financing Friction Heterogeneity

- Proxies for financing frictions:
 - Low **dividends** (e.g., Fazzari, Hubbard, and Petersen, 1988)

<i>Dependent variable</i>	Global sales			
	<i>Financing frictions proxy:</i>		Dividends	Hoberg and Maskimovic (2015)
	(1)	(2)	(3)	(4)
EXIM×Post	-0.18*** (0.037)			
EXIM×Post×Constrained		-0.16** (0.077)	-0.21** (0.087)	-0.25*** (0.081)
<i>Fixed Effects (interacted)</i>				
Firm	✓	✓	✓	✓
Destinations×Year	✓	✓	✓	✓
Industry×Year	✓	✓	✓	✓
Treated×Year	—	✓	✓	✓
Observations	26,732	25,592	25,297	25,438

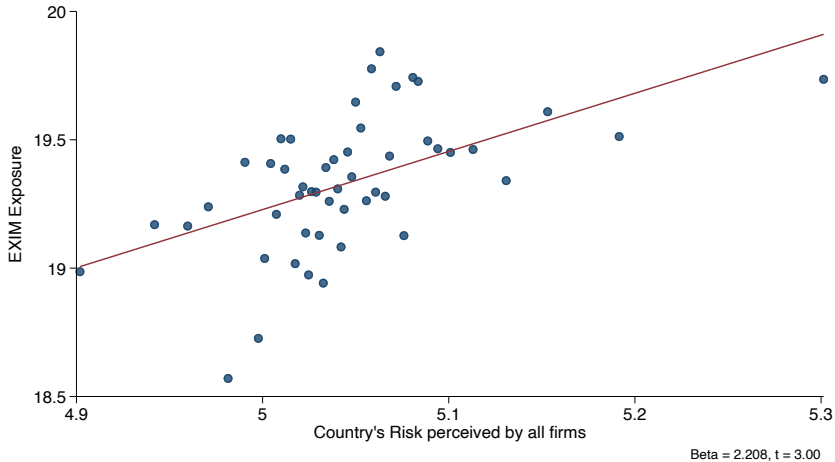
Firm Financing Friction Heterogeneity

- Proxies for financing frictions:
 - High mention of financing frictions in 10K (Hoberg and Maksimovic, 2015)

<i>Dependent variable</i>	Global sales			
		Leverage	Dividends	Hoberg and Maskimovic (2015)
<i>Financing frictions proxy:</i>	(1)	(2)	(3)	(4)
EXIM×Post	-0.18*** (0.037)			
EXIM×Post×Constrained		-0.16** (0.077)	-0.21** (0.087)	-0.25*** (0.081)
<i>Fixed Effects (interacted)</i>				
Firm	✓	✓	✓	✓
Destinations×Year	✓	✓	✓	✓
Industry×Year	✓	✓	✓	✓
Treated×Year	—	✓	✓	✓
Observations	26,732	25,592	25,297	25,438

Destination Country (τ_m) Heterogeneity in EXIM Financing

EXIM financing strongly correlated with the riskiness of a destination country



Destination Country (τ_m) Heterogeneity in EXIM Financing

	EXIM Exposure							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Risk (by all)	2.265*** (0.743)	2.208*** (0.739)						
Risk (by financial)			1.702** (0.642)	2.027*** (0.607)				
Risk (by foreign)					1.570* (0.888)	1.433* (0.810)		
Risk (by domestic)							-0.005 (0.083)	0.041 (0.077)
Controls	–	✓	–	✓	–	✓	–	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	822	795	822	795	822	795	668	651

Hassan et al (2023) annual measures of country risk perceived by any firm; SEs clustered by country

Destination Country (τ_m) Heterogeneity in EXIM Financing

	EXIM Exposure							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Risk (by all)	2.265*** (0.743)	2.208*** (0.739)						
Risk (by financial)			1.702** (0.642)	2.027*** (0.607)				
Risk (by foreign)					1.570* (0.888)	1.433* (0.810)		
Risk (by domestic)							-0.005 (0.083)	0.041 (0.077)
Controls	–	✓	–	✓	–	✓	–	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	822	795	822	795	822	795	668	651

Hassan et al (2023) annual measures of country risk perceived by any firm; SEs clustered by country

Destination Country (τ_m) Heterogeneity in EXIM Financing

	EXIM Exposure							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Risk (by all)	2.265*** (0.743)	2.208*** (0.739)						
Risk (by financial)			1.702** (0.642)	2.027*** (0.607)				
Risk (by foreign)					1.570* (0.888)	1.433* (0.810)		
Risk (by domestic)							-0.005 (0.083)	0.041 (0.077)
Controls	–	✓	–	✓	–	✓	–	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	822	795	822	795	822	795	668	651

Hassan et al (2023) annual measures of country risk perceived by any firm; SEs clustered by country

Destination Country (τ_m) Heterogeneity in EXIM Financing

	EXIM Exposure							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Risk (by all)	2.265*** (0.743)	2.208*** (0.739)						
Risk (by financial)			1.702** (0.642)	2.027*** (0.607)				
Risk (by foreign)					1.570* (0.888)	1.433* (0.810)		
Risk (by domestic)							-0.005 (0.083)	0.041 (0.077)
Controls	–	✓	–	✓	–	✓	–	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	822	795	822	795	822	795	668	651

Hassan et al (2023) annual measures of country risk perceived by any firm; SEs clustered by country

Implications for ECA Design

$$MRPK_{i,m} = r_{i,m}^{adj} \times (1 + \lambda_j + \tau_m - EXIM_{i,m})$$

✓ Empirical evidence on correlation with λ_j and τ_m ?

2. Can EXIM be **self-financing**?

Can $EXIM_{i,m}$ Be Self-Financing?

$$p_{i,m}^{EXIM} < p_{i,m}^{banks}$$

EXIM can have lower prices relative to private banks if:

Can EXIM_{i,m} Be Self-Financing?

$$MC_{i,m}^{EXIM} + \mu_{i,m}^{EXIM} = p_{i,m}^{EXIM} < p_{i,m}^{banks} = MC_{i,m}^{banks} + \mu_{i,m}^{banks}$$

EXIM can have lower prices relative to private banks if:

- Private banks have higher markups:
 - **Theoretically:** EXIM has additional term in objective function = α Profits + $(1 - \alpha)$ Exports
 - **Empirically:** Bank mark-up plausibly **high** in trade financing (Niepmann Schmidt-Eisenlohr 2017)
Government bank profitability in **development setting** (Townsend, 2010; Fonseca Matray, 2024)

Can EXIM_{i,m} Be Self-Financing?

$$MC_{i,m}^{EXIM} + \mu_{i,m}^{EXIM} = p_{i,m}^{EXIM} < p_{i,m}^{banks} = MC_{i,m}^{banks} + \mu_{i,m}^{banks}$$

EXIM can have lower prices relative to private banks if:

- Private banks have higher markups:
 - **Theoretically:** EXIM has additional term in objective function = α Profits + $(1 - \alpha)$ Exports
 - **Empirically:** Bank mark-up plausibly **high** in trade financing (Niepmann Schmidt-Eisenlohr 2017)
Government bank profitability in **development setting** (Townsend, 2010; Fonseca Matray, 2024)
- EXIM has lower cost:
 - **Theoretically:** access to better loss recovery technology (e.g., state department)
 - **Empirically:** maintains **low default rate**

Can EXIM_{i,m} Be Self-Financing?

$$MC_{i,m}^{EXIM} + \mu_{i,m}^{EXIM} = p_{i,m}^{EXIM} < p_{i,m}^{banks} = MC_{i,m}^{banks} + \mu_{i,m}^{banks}$$

EXIM can have lower prices relative to private banks if:

- Private banks have higher markups:
 - **Theoretically:** EXIM has additional term in objective function = α Profits + $(1 - \alpha)$ Exports
 - **Empirically:** Bank mark-up plausibly **high** in trade financing (Niepmann Schmidt-Eisenlohr 2017)
Government bank profitability in **development setting** (Townsend, 2010; Fonseca Matray, 2024)
- EXIM has lower cost:
 - **Theoretically:** access to better loss recovery technology (e.g., state department)
 - **Empirically:** maintains **low default rate**

EXIM might have lower markup or cost; hence, being self-financing is *a possibility*.

Conclusion

Export credit agencies are ubiquitous across countries, but difficult to evaluate their causal effects

US **EXIM** had large overall and allocative effects in a context with

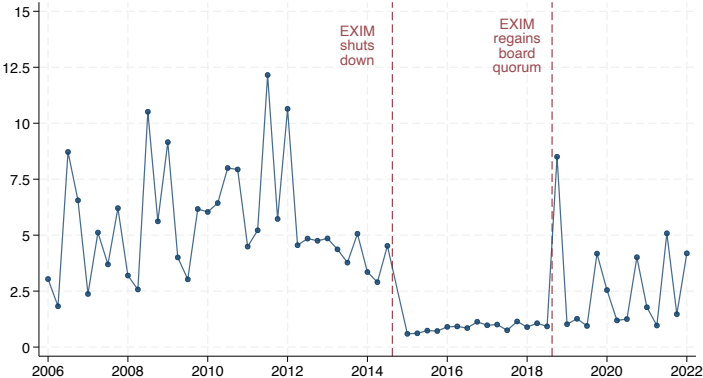
- Developed financial markets
- Large, publicly listed firms

⇒ **Trade-specific frictions** create role for government intervention in trade financing

Thank You!

Effect of Shutdown on Operations

- Average loan size (\$M): **-75%**



A New Solution to Handle Entry and Exit in Trade Data

Entry and exit is prevalent in trade data: \approx **25% of "zeros"** at origin \times destination \times product (HS-6) over 10 years

Beaumont, Matray, Xu (2024): Aggregation property of **midpoint growth rate**

- Methodology:

- Create balanced panel and fill missing with zeros
- Define growth rate $\Delta_{pre}^t[X_{o,p,d,t}]$ as:

$$\Delta_{pre}^t[X_{o,p,d,t}] = \frac{X_{o,p,d,t} - X_{o,p,d,t=pre}}{(X_{o,p,d,t} + X_{o,p,d,t=pre}) \times 0.5}$$

A New Solution to Handle Entry and Exit in Trade Data

Entry and exit is prevalent in trade data: \approx **25% of "zeros"** at origin \times destination \times product (HS-6) over 10 years

Beaumont, Matray, Xu (2024): Aggregation property of **midpoint growth rate**

– Methodology:

- Create balanced panel and fill missing with zeros
- Define growth rate $\Delta_{pre}^t[X_{o,p,d,t}]$ as:

$$\Delta_{pre}^t[X_{o,p,d,t}] = \frac{X_{o,p,d,t} - X_{o,p,d,t=pre}}{(X_{o,p,d,t} + X_{o,p,d,t=pre}) \times 0.5}$$

– Advantages:

1. Recovers full elasticity of intensive + extensive margins (e.g., estimating separate elasticities)
2. Not sensitive to small variations around zero (e.g., log transformations)
3. Is linear and allows perfect (dis)aggregation with appropriate weights (e.g., non-linear count models)

– Estimates:

- **Aggregate effect:** weight by value of cell (denominator) [Details]
- **Decompositions:** weights = share of the denominator at the higher cell level [Details]

A New Solution to Handle Entry and Exit in Trade Data

Entry and exit is prevalent in trade data: \approx **25% of “zeros”** at origin \times destination \times product (HS-6) over 10 years

Beaumont, Matray, Xu (2024): Aggregation property of **midpoint growth rate**

– Methodology:

- Create balanced panel and fill missing with zeros
- Define growth rate $\Delta_{pre}^t[X_{o,p,d,t}]$ as:

$$\Delta_{pre}^t[X_{o,p,d,t}] = \frac{X_{o,p,d,t} - X_{o,p,d,t=pre}}{(X_{o,p,d,t} + X_{o,p,d,t=pre}) \times 0.5}$$

– Advantages:

1. Recovers full elasticity of intensive + extensive margins (e.g., estimating separate elasticities)
2. Not sensitive to small variations around zero (e.g., log transformations)
3. Is linear and allows perfect (dis)aggregation with appropriate weights (e.g., non-linear count models)

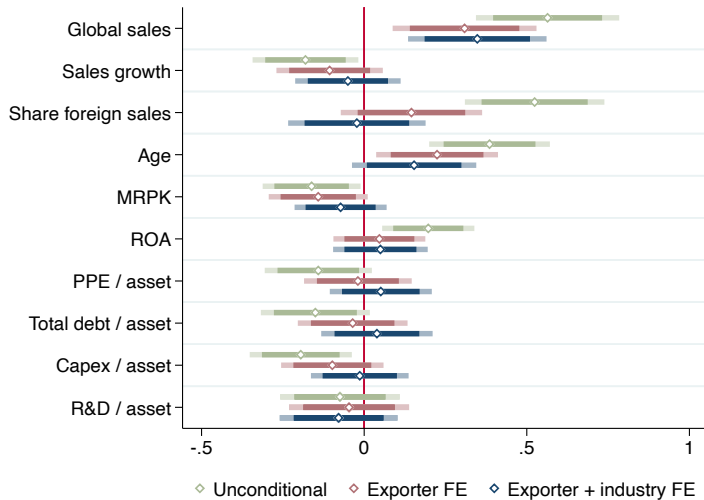
– Estimates:

- **Aggregate effect:** weight by value of cell (denominator) [Details]
- **Decompositions:** weights = share of the denominator at the higher cell level [Details]

Similar to recent Amiti-Weinstein (2018) estimator, but simpler, linear and naturally bounds extreme growth values

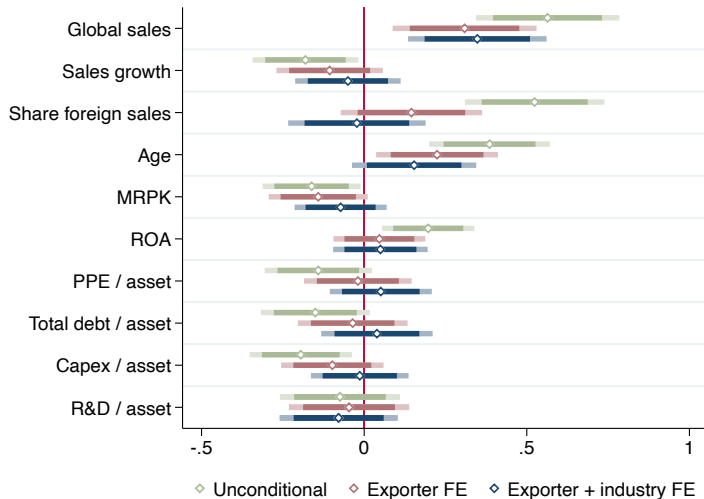
Covariate Balance (2010-2014)

- Unconditionally different

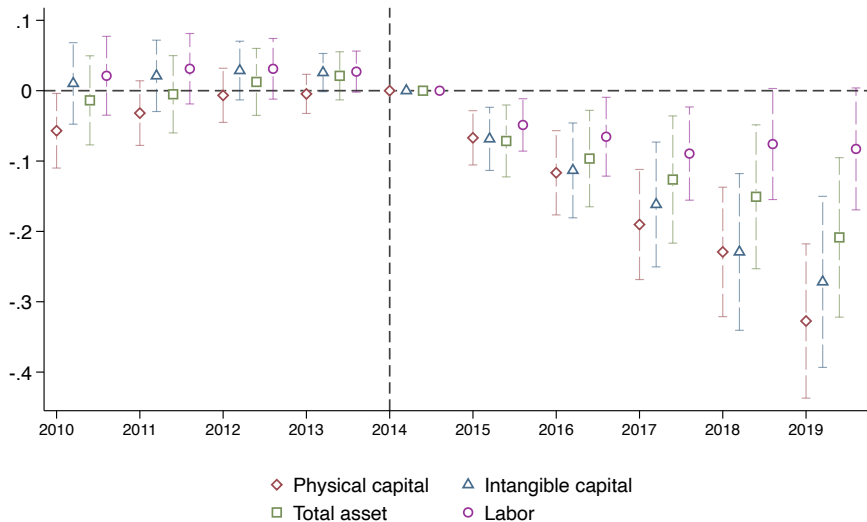


Covariate Balance (2010-2014)

- Control for **industry** and **exporter**: reduced differences



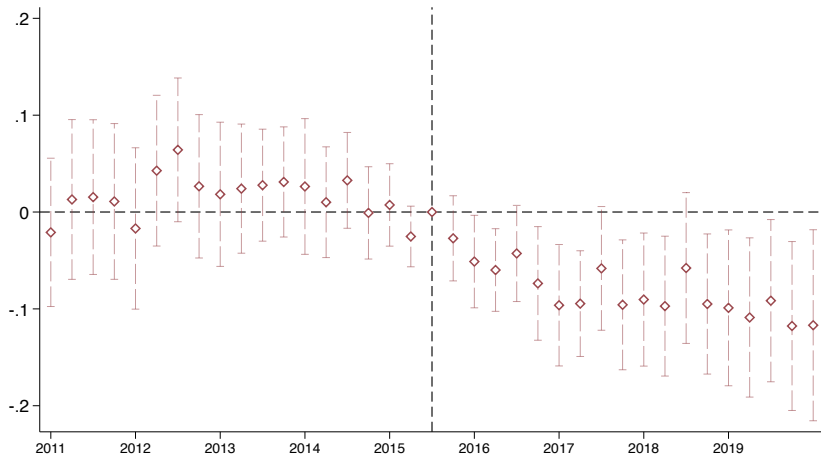
Event Study: Other Firm Outcomes



Overall Reduction in Firm Exports

<i>Sample</i>	Compustat Segment	Hoberg-Moon	Datamyne				
<i>Dependent variable</i>	Δ Foreign sales	Δ # 10K mention	Δ Maritime export				
<i>Unit of analysis</i>	Firm	Firm	Firm	Firm \times destination \times product			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Exim \times Post	-0.16** (0.077)	-0.12* (0.070)	-0.39** (0.18)	-0.39** (0.17)	-0.33* (0.19)	-0.44*** (0.16)	-0.31** (0.15)
<i>Fixed Effects</i>							
Industry \times Post	✓	✓	✓	✓	✓	✓	✓
Product \times Post	—	—	—	—	✓	—	✓
Destination \times Post	—	—	—	—	—	✓	✓
Observations	2,012	3,131	600	126,938	126,938	126,938	126,938

Event Study: Quarterly Sales



Robustness to EXIM Exposure: Within-treatment Variation

- EXIM characteristics: \$10M contract or long-term support

$$Y_{i,j,c,t} = \beta EXIM_i \times Post \times EXIM\ characteristics_j + \alpha_j \\ + EXIM_i \times \delta_t + EXIM_i \otimes [\gamma_{j,t} + Destinations_{i,t_0} \times \delta_t] + \varepsilon_{i,j,t}$$

Robustness to EXIM Exposure: Within-treatment Variation

- EXIM characteristics: \$10M contract or long-term support
- Estimate effects **within** EXIM backed firms \Rightarrow rules out results driven by other differences of EXIM backed vs. non backed

$$Y_{i,j,c,t} = \beta EXIM_i \times Post \times EXIM\ characteristics_j + \alpha_j \\ + EXIM_i \times \delta_t + EXIM_i \otimes [\gamma_{j,t} + Destinations_{i,t_0} \times \delta_t] + \varepsilon_{i,j,t}$$

Robustness to EXIM Exposure: Within-treatment Variation

- EXIM characteristics: \$10M contract or long-term support
- Estimate effects **within** EXIM backed firms \Rightarrow rules out results driven by other differences of EXIM backed vs. non backed

<i>Dependent Variable</i>	Global sales		
	(1)	(2)	(3)
Treated \times Post	-0.18*** (0.030)		
Treated \times Post \times Large EXIM		-0.19*** (0.060)	
Treated \times Post \times Long-term EXIM			-0.20** (0.072)
<i>Fixed Effects</i>			
Firm	✓	✓	✓
Industry \times Year	✓	✓	✓
Destinations \times Year	✓	✓	✓
Treated \times Year	—	✓	✓
Observations	28,386	28,386	28,386

Robustness: Other Firm Controls

<i>Dependent variable</i>	Global sales				
	All				Exc. 10 largest recipients
	(1)	(2)	(3)	(4)	(5)
EXIM×Post	-0.17*** (0.037)	-0.13*** (0.037)	-0.16*** (0.038)	-0.16*** (0.037)	-0.17*** (0.039)
<i>Fixed Effects</i>					
Firm	✓	✓	✓	✓	✓
Industry×Year	✓	✓	✓	✓	✓
Destinations×Year	✓	✓	✓	✓	✓
Fiscal month×Year	✓	—	—	—	—
Balance sheet controls×Year	—	✓	—	—	—
State×Year	—	—	✓	—	—
Lobbying×Year	—	—	—	✓	—
Observations	28,386	28,386	28,386	28,386	28,286

Robustness: Different Industry Levels

<i>Dependent variable</i>	Global sales			
	(1)	(2)	(3)	(4)
EXIM×Post	-0.17*** (0.039)	-0.16*** (0.040)	-0.13*** (0.042)	-0.15*** (0.049)
<i>Fixed Effects</i>				
Firm	✓	✓	✓	✓
Destinations×Year	✓	✓	✓	✓
Industry (1-digit)×Year	✓	—	—	—
Industry (2-digit)×Year	—	✓	—	—
Industry (3-digit)×Year	—	—	✓	—
Industry (4-digit)×Year	—	—	—	✓
Observations	28,286	28,286	28,286	28,286

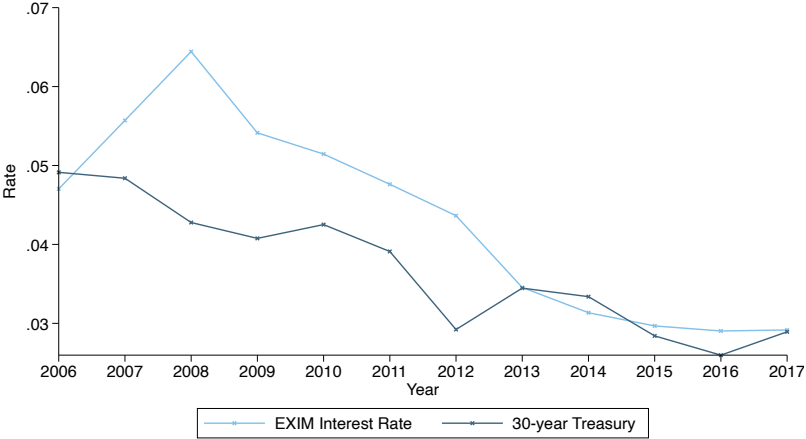
Firm Maritime Exports: Different Product Level

<i>Dataset</i>	<i>Datamyne</i>		
	<i>2 digit</i>	<i>4 digit</i>	<i>6 digit</i>
<i>Product level</i>	(1)	(2)	(3)
EXIM×Post	-0.41*** (0.15)	-0.37** (0.15)	-0.31** (0.15)
<i>Fixed Effects</i>			
Industry×Post	✓	✓	✓
Product×Post	✓	✓	✓
Destination country×Post	✓	✓	✓
Observations	40,137	85,375	126,938

Robustness: Different Winsorizing

<i>Dependent variable</i>	Global sales					
	1%	2%	3%	4%	5%	10%
<i>Winsorization</i>	(1)	(2)	(3)	(4)	(5)	(6)
EXIM×Post	-0.24*** (0.067)	-0.20*** (0.048)	-0.19*** (0.043)	-0.18*** (0.040)	-0.18*** (0.037)	-0.15*** (0.027)
<i>Fixed Effects</i>						
Firm	✓	✓	✓	✓	✓	✓
Industry×Year	✓	✓	✓	✓	✓	✓
Destinations×Year	✓	✓	✓	✓	✓	✓
Observations	28,386	28,386	28,386	28,386	28,386	28,386

Interest Expense



EXIM Interest Rate is defined as a Loan Interest Expense on U.S. Treasury Borrowings (EXIM annual Statement of Net Costs) divided by the Intragovernmental Borrowings from and Amounts Payable to the U.S. Treasury (EXIM annual balance sheets).

EXIM Budget Allocation Process

- *Congressional Budget Justification* submitted at the beginning of each fiscal year:
 - Key Costs: Administration, Programs, Defaults/Losses
 - Additional Costs: Cybersecurity, SMEs, MWOBs Support
- EXIM's Self-Financing:
 - Used directly to offset operating expenses and program budget
 - Sent to Treasury to offset the U.S. budget deficit at the end of each fiscal year