

# Export Failure and Its Consequences: Evidence from Colombian Exporters

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# Introduction: What We Know

- I. The majority of new exporters do not export beyond one year (Eaton, Eslava, Kugler, and Tybout, 2007)
  
- II. Firms rely on external financing for exporting
  - ⇒ Upfront costs to exporting are substantial
    - Estimates for fixed export costs are around US \$.5 million for a single firm in Latin America (Das, Roberts, and Tybout, 2007; Morales, Sheu, and Zahler, 2011)
  - ⇒ Financial frictions affect exports more than domestic production (Amiti and Weinstein, 2011; Manova, 2013)
  
- III. Exporting likely results in profit losses for a few years
  - ⇒ First time exporters tend to start small (Rauch and Watson, 2003)
  - ⇒ So fixed export costs may exceed export revenue

- I. **Question:** What happens to the firm in the domestic market after it has failed abroad?
  
- II. For unsuccessful exporters:
  - ⇒ Additional debt, but no additional revenue from exporting
  - ⇒ Repayment likely comes out of domestic operations
  - ⇒ For financially constrained firms, this can have other repercussions, including firm death
  
- III. Yet, trade literature treats exporting as a harmless exercise and largely ignores export failure

## Example: InterSoftware/Air-Go Tech. (Mexico)

- I. Established in 1996
- II. Exported to the U.S. in 2001
- III. Went bankrupt in 2002
- IV. Hector Obregon, Chief Executive Officer, in *Software Guru* (2008)
  - ⇒ “The most serious issue was that the expansions distracted us from paying attention to issues with our principal business”
  - ⇒ “Short-term cash flow became an issue and our credit lines were quickly saturated”

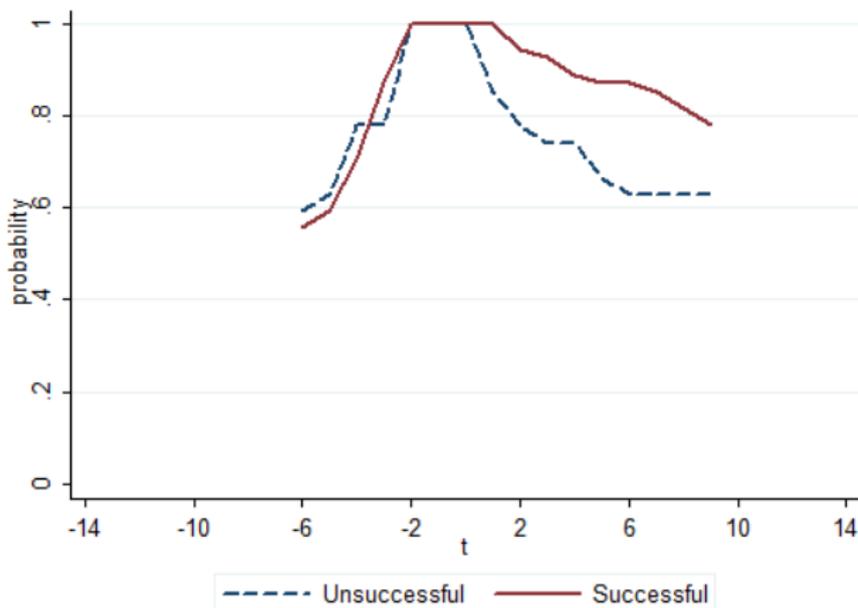
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  - ⇒ For lower productivity firms, export failure tightens the financial constraint, decreases domestic sales, or even results in default

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- II. ***Empirics:*** Colombian Firm-Level Data
  - ⇒ Export failure is associated with reduced domestic-market performance for financially constrained firms
    - 1) Higher probability of going out of business
    - 2) For surviving firms, decrease in domestic revenue and
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    - 1) Higher probability of going out of business
    - 2) For surviving firms, decrease in domestic revenue and
    - 3) lower domestic revenue growth
  
  - ⇒ To eliminate alternative explanations:
    - 1) Difference-in-difference with two control groups
    - 2) Instrumental Variable approach

# Does Export Failure Result in Domestic-Market Exit?

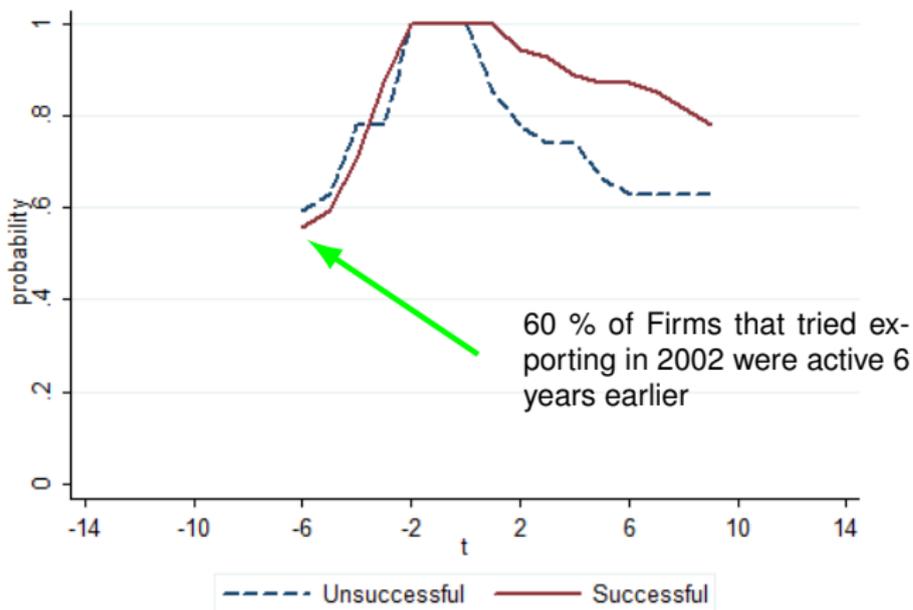
Figure 1: Firm Entry and Exit: The 2002 Exporting Cohort



*Note:* The Figure shows the share of firms in the data for cohort the 2002 exporting cohort by firm type at time  $t$ . By design, the number of firms in the data do not change at  $t = -2, -1, 0$ .

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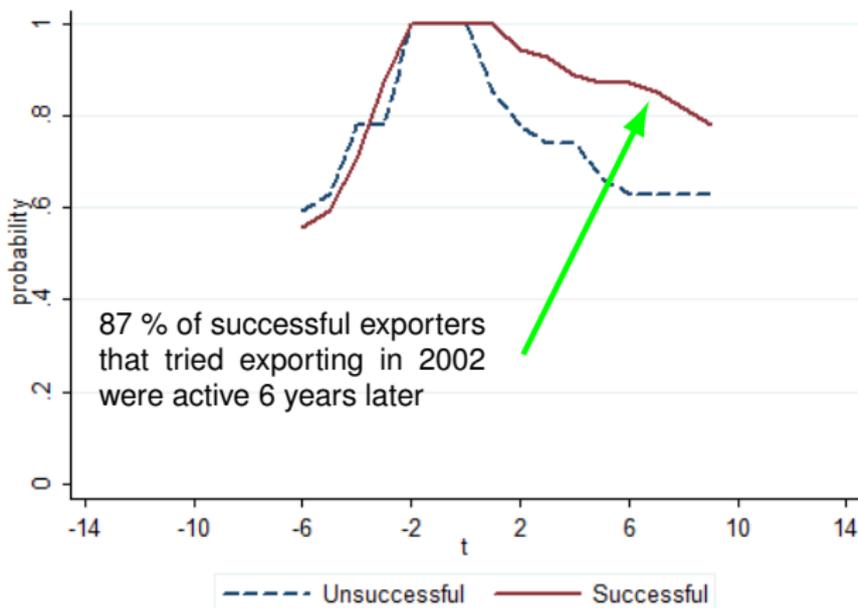
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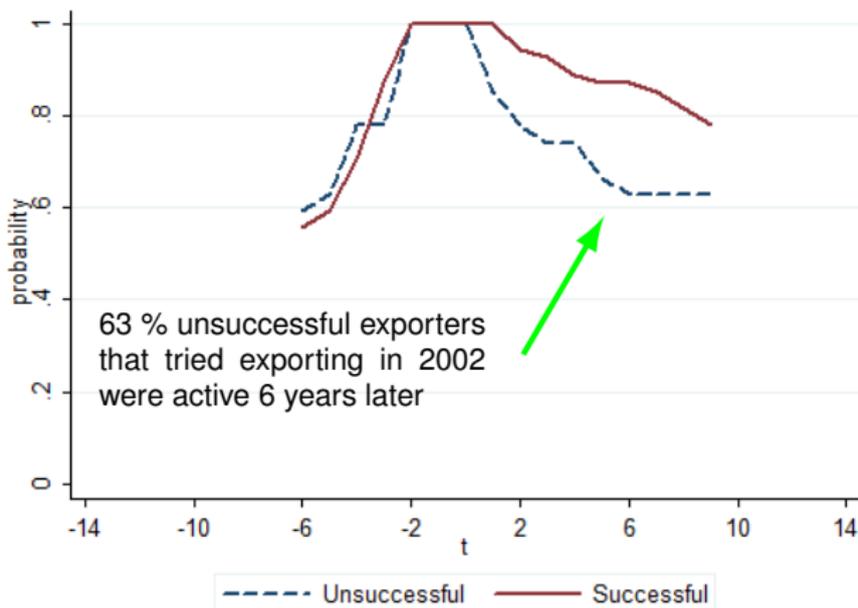
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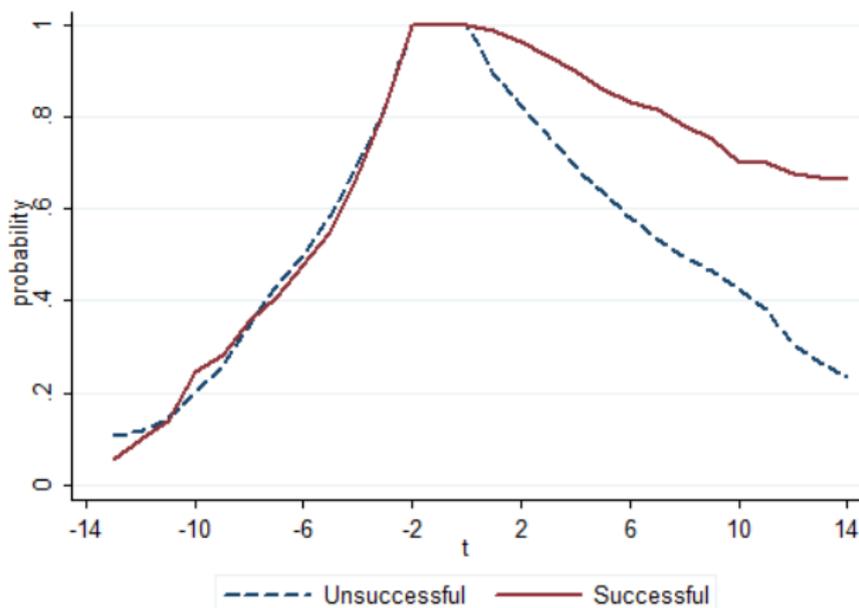
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# Does Export Failure Result in Domestic-Market Exit?

Figure 2: Firm Entry and Exit: All Cohorts Average



*Note:* The Figure shows the average share of firms in the data by cohort and firm type at time  $t$ . By design, the number of firms in the data do not change at  $t = -2, -1, 0$ . [Figure for Matched Data](#)

## I. Financial frictions matter

- ⇒ Can affect which firms export and how much they export (Manova, 2013)
- ⇒ Exporters are more likely to face liquidity constraints (Chaney, 2013)
- ⇒ Exporters are more risky because they have higher rates of default rates, conditional on exit (Antunes, Opromolla, and Russ, 2014)

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## II. Developing countries are different

- ⇒ Export survival is lower in developing countries (Besedes and Prusa, 2011, 2006a & 2006b)
- ⇒ “Underdeveloped countries often have underdeveloped financial markets” (Moll, 2014)

## I. Investment under uncertainty literature

- ⇒ There is an option value of waiting for better information (Dixit and Pindyck, 1994).
- ⇒ Reluctance to invest, investment requires high returns, and high sensitivity of investment to risk (IT–Dewan, Shi, and Gurbaxani 2007; human capital–Jacobs 2007)

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## II. There are trade offs between the home and foreign market

- ⇒ There is an immediate opportunity costs to exporting
  - See Ahn and McQuoid (2013); McQuoid and Rubini (2014); Rho and Rodrigue (2010)
- ⇒ Other trade offs result from various firm decisions:
  - investment (Spearot, 2013)
  - pricing (Soderbery, 2014)
  - entry and exit (Blum et al., 2013)

# I. A Model with Export Failure, Marketing Costs, and Financial Frictions

# A Melitz-Type Model with Export Failure

- I. Financing need and financial frictions (Manova, 2013)
- II. Firm must spend on marketing in each market (Arkolakis, 2010)
- III. I add an element of uncertainty in export success:
  - ⇒ Firms are randomly matched with foreign partners
  - ⇒ Unsuccessful matches result in export failure
  - ⇒ So similar productivity firms may differ in export success

# Consumers Maximize Utility

I. Individual demand of variety  $i$ :  $c_i = A \cdot p_i^{-\sigma}$

⇒ Assumes CES preferences

⇒  $p_i$  is the price of variety  $i$

⇒  $A$  is a demand parameter

⇒  $\sigma > 1$  is the elasticity of substitution between two goods

II. Total demand:  $q_i = L_i \cdot c_i = L_i \cdot A \cdot p_i^{-\sigma}$

⇒  $L_i$  is the number of consumers

⇒  $L_i$  is endogenously determined by a firm's marketing expenditure

# Sequence of Events

1. Pay entry fee ( $f_e$ ), get productivity draw ( $\phi_i$ ), and decide whether or not to enter the domestic market
2. Borrow, if exporting is desirable, to pay for the export entry fee ( $f_x$ )  
 $\Rightarrow f_x$  is a matching fee
3. Realization of matching draw determines export success
4. Borrow for marketing costs ( $F(L_i)$ ) and overhead labor costs ( $f_d$ )
5. Produce, sell, and pay off loans

# All Firms: *Ex Ante* Maximization Problem

The maximization problem for potential exporter  $i$ :

$$E\pi_x(\phi_i) = \gamma E\pi_x^{succ}(\phi_i) + (1 - \gamma)E\pi_x^{fail}(\phi_i)$$

- ⇒  $\gamma$  = the probability that a firm is successfully matched with a foreign partner
- ⇒ Export if  $E\pi_x(\phi_i) > 0$

Figure: The Ex Ante Export Entry Decision

## **The Profit Function:**

$$E\pi(\phi_i) = \max_{p_i, q_i, L_i} \left\{ p_i q_i - \frac{q_i}{\phi_i} - \lambda B_i - (1 - \lambda) f_e \right\}$$

## **Subject to:**

Total Demand:

$$q_i = L_i A p_i^{-\sigma}$$

Marketing Expenditure:

$$F(L_i) = L_i^\beta$$

The Firm's Liquidity Constraint:

$$p_i q_i - \frac{q_i}{\phi_i} \geq B_i$$

Creditors' Constraint:

$$\lambda B_i + (1 - \lambda) f_e \geq f_x + f_d + F(L_i)$$

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## **Where:**

Loan Repayment:	$B_i$
Probability of Repayment:	$\lambda$
Collateral/Entry Fee:	$f_e$
Export Fixed Costs/Matching Fee:	$f_x$
Overhead Labor Costs:	$f_d$

## **Key Assumptions:**

*Assumption 1*) It is more expensive to export:  $f_x > f_d$

*Assumption 2*) Default is not desirable:  $\max \left\{ \frac{f_e - f_d}{f_e}, \frac{1}{\beta} \right\} < \lambda$

## **The Profit Function:**

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## **Subject to:**

Total Demand:

$$q_i = L_i A p_i^{-\sigma}$$

Marketing Expenditure:

$$F(L_i) = L_i^\beta, \quad \beta > 1$$

The Firm's Liquidity Constraint:

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# Summary of Theoretical Propositions

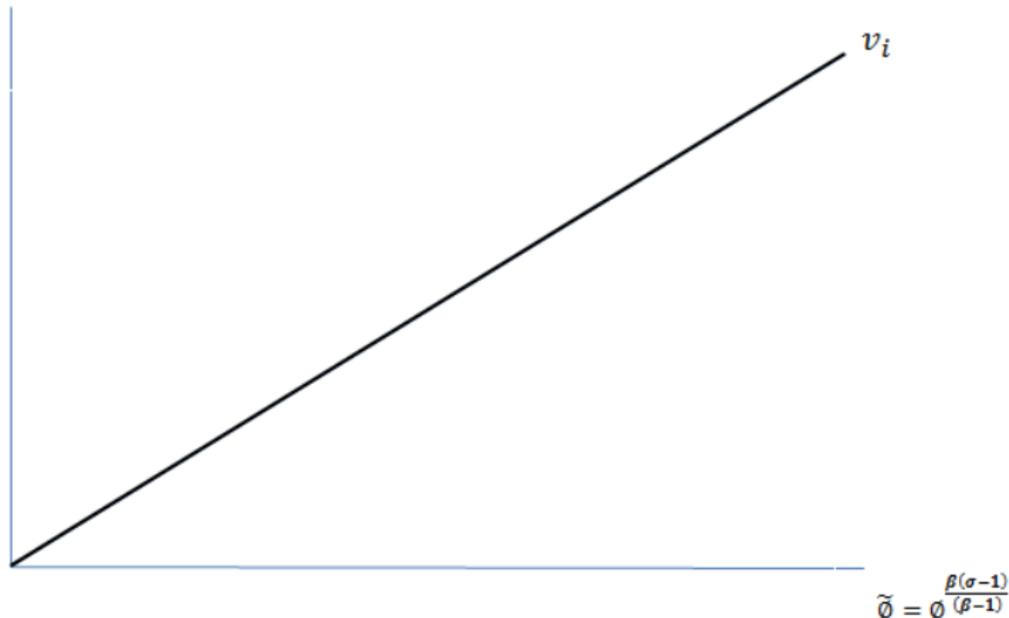
For some failed exporters—relative to similar non-exporters and successful exporters—entering a foreign market results in

- I. the firms becoming *financially constrained*,
- II. financially constrained firms *decreasing domestic sales*,
  - ⇒ Results from a decrease in borrowing for marketing
- III. firms *exiting* the domestic market

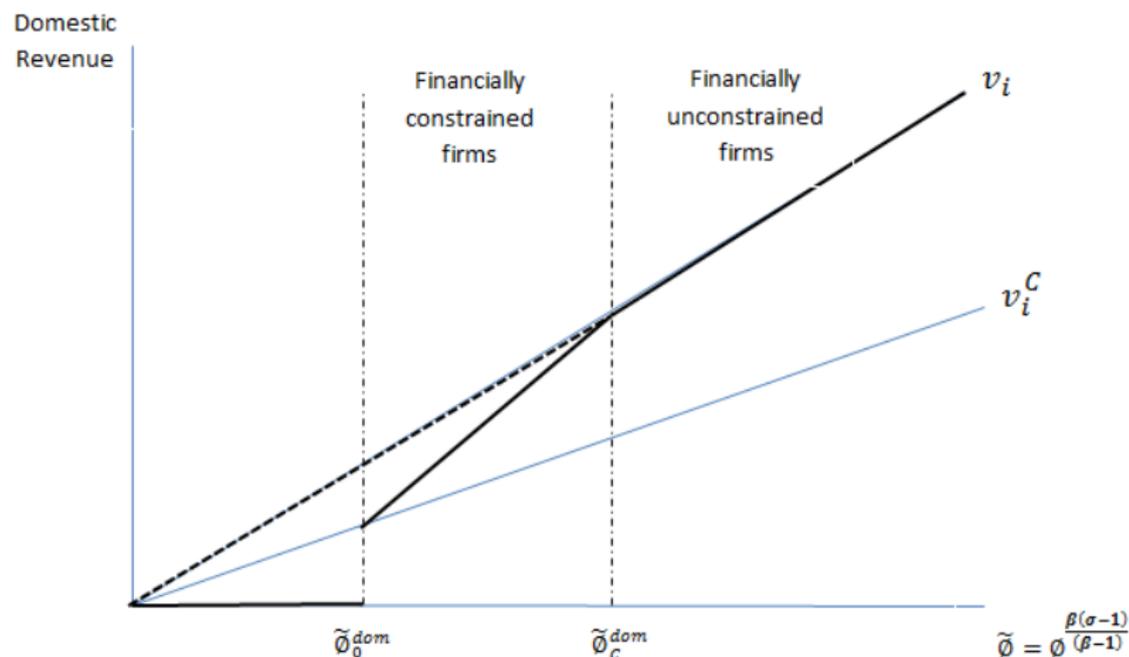
Details

# With No Financial Frictions And No Export Failure

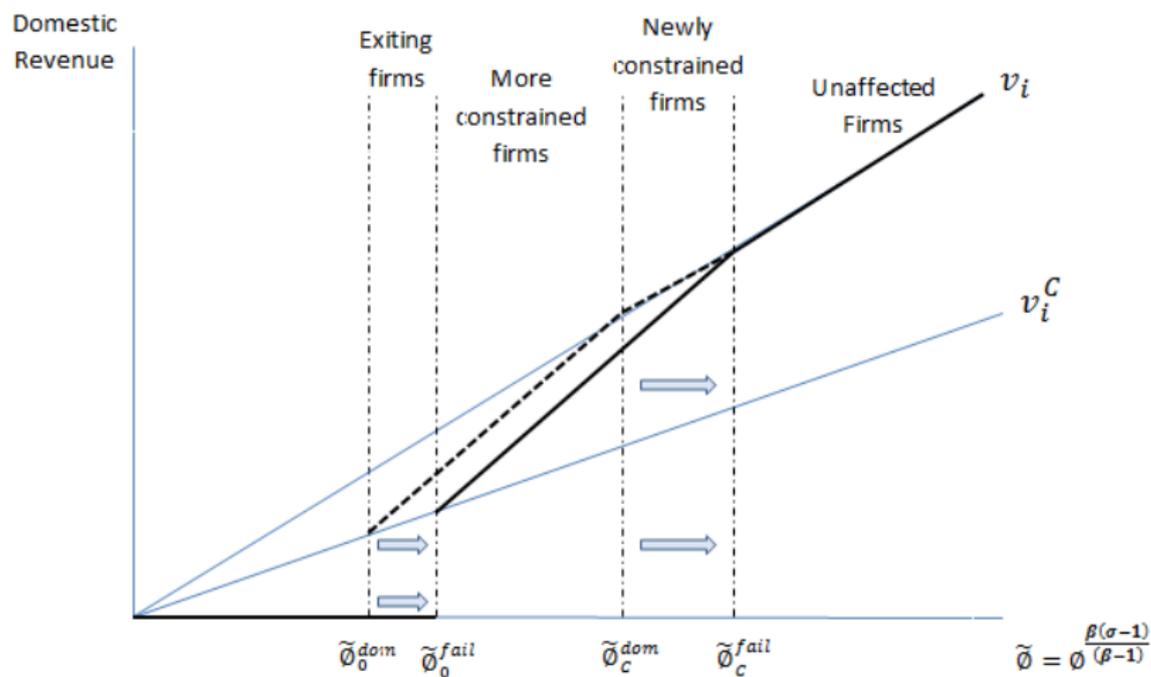
Domestic  
Revenue



# With Financial Frictions But No Export Failure



# With Financial Frictions and Export Failure



II. Export failure is associated with reduced domestic-market performance.

I. **Exports Data (1994–2011):** Disaggregated data for all exporters

⇒ *Source:* Colombian Customs Agency (DIAN)

II. **Domestic Data (1995–2011):** Financial data for firms under the jurisdiction of the “Superintendencia de Sociedades”

⇒ *Source:* El sistema de Información y Reporte Empresarial (SIREM), reported by Superintendencia de Sociedades

Firm-type availability

# Definitions: Outcome Variables

- I. ***Firm Exits***<sub>*i*</sub> — Equals one if the firm exits the domestic market, and zero otherwise

## II. ***Domestic Revenue***

- ⇒ *Calculated*: Subtract export value from total revenue
- ⇒ *Domestic Revenue*<sub>*it*</sub> — Domestic revenue for firm *i* at time *t*
- ⇒ *Ln(Domestic Revenue*<sub>*it*</sub>*)* — Log domestic revenue for firm *i* at time *t*
- ⇒ *Domestic Revenue Growth*<sub>*i*</sub> — Difference in log domestic revenue between time *t* and time *t* - 1

## Definitions: Covariates

- I. **Successful Exporter**<sub>*t*</sub> — Equals one if the firm exports beyond one year, and zero otherwise
  - ⇒ Classification does not vary within the firm
  - ⇒ Includes firms going in and out of the export market

# Definitions: Covariates

- I. **Successful Exporter** $_t$  — Equals one if the firm exports beyond one year, and zero otherwise
  - ⇒ Classification does not vary within the firm
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- II. **Not Financially Vulnerable** $_i$  (NFV $_i$ ) — Equals one if the ratio of cash flow from operations to total assets is greater than the median at time of first exporting ( $t = 0$ ), and zero otherwise
  - ⇒ Classification does not vary within the firm
  - ⇒ Lower ratio implies firms have less cash available for future periods
  - ⇒ The ratio is widely use in the literature (Ahn and McQuoid, 2013; Whited and Wu, 2006; Kaplan and Zingales, 1997).

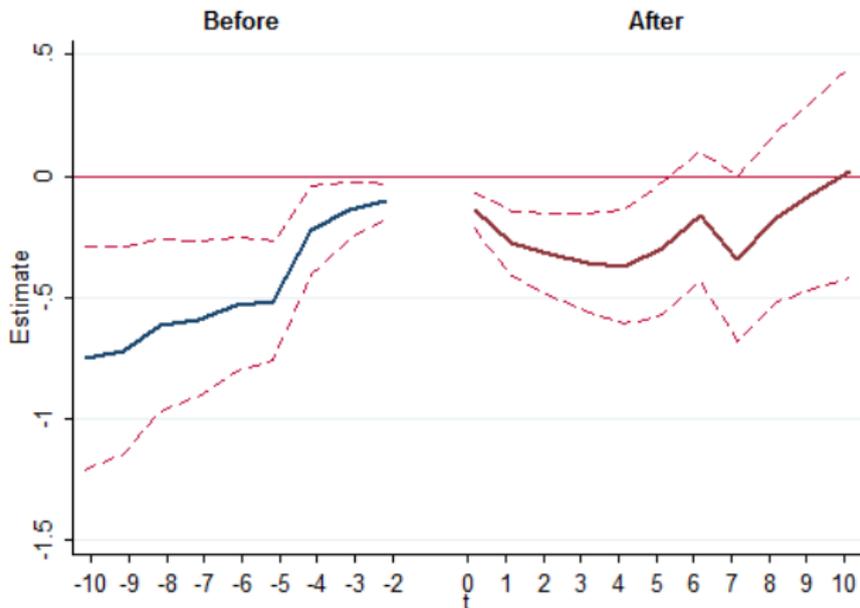
# Regression Equation: Event Study

$$\begin{aligned} Y_{i,t} = & \sum_{s=-14}^{-2} \beta_{1s} \text{Before}_{is} + \sum_{s=0}^{14} \beta_{1s} \text{After}_{is} + \\ & \sum_{s=-14}^{-2} \beta_{2s} \text{Before}_{is} \cdot \text{Succ}_i + \sum_{s=0}^{14} \beta_{2s} \text{After}_{is} \cdot \text{Succ}_i + \\ & \sum_{s=-14}^{-2} \beta_{3s} \text{Before}_{is} \cdot \text{NFV}_i + \sum_{s=0}^{14} \beta_{3s} \text{After}_{is} \cdot \text{NFV}_i + \\ & \sum_{s=-14}^{-2} \beta_{4s} \text{Before}_{is} \cdot \text{Succ}_i \cdot \text{NFV}_i + \sum_{t=0}^{14} \beta_{4s} \text{After}_{is} \cdot \text{Succ}_i \cdot \text{NFV}_i + \\ & \alpha_j + \delta_t + u_{i,t} \end{aligned}$$

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Figure 3: Ln(Domestic Revenue): Unsuccessful Exporters  
(Financially-Constrained Firms)

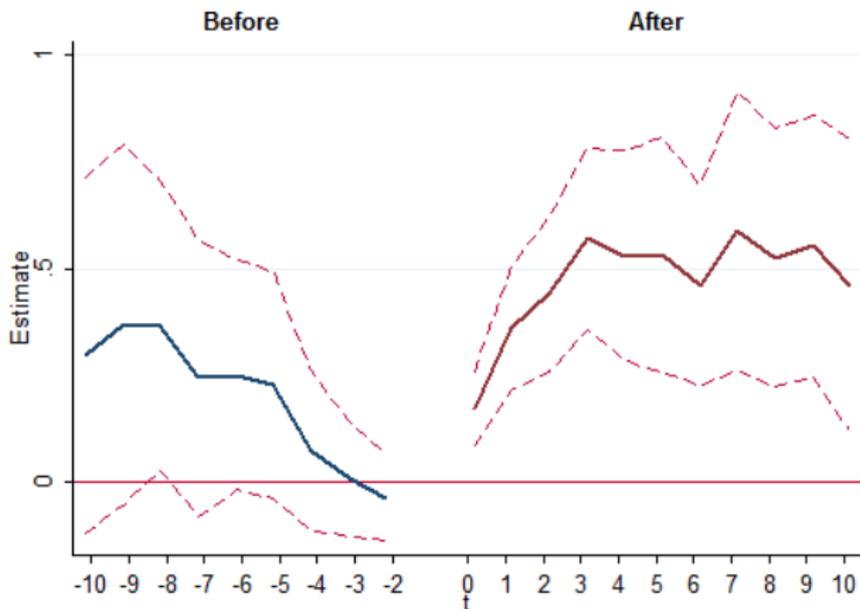


Note: Regression includes firm fixed effects and year fixed effects. The omitted group is financially constrained, unsuccessful exporters at time  $t = -1$ .

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Figure 4: Ln(Domestic Revenue): Successful vs. Unsuccessful Exporters  
(Financially-Constrained Firms)



Note: Regression includes firm fixed effects and year fixed effects. The omitted group is financially constrained, unsuccessful exporters at time  $t = -1$ .

### III. The Consequences of Export Failure

# Empirics: Difference-in-Difference

- I. **Baseline estimates:** Difference-in-difference with firm fixed effects
  - ⇒ *Outcome variables:* log domestic revenue,  $\Delta$ log domestic revenue, domestic revenue, and firm exits
  
- II. **PSM estimates:** Match unsuccessful exporters to successful exporter and non-exporting firms
  - ⇒ *Matched based on pre-exporting variables:*
    - Revenue
    - Revenue growth
    - Cash flow/total Assets
    - Short-term and long-term debt
    - Short-term and long-term labor
    - Short-term and long-term Investment
    - Inventory
    - Property
    - Intangibles

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  - ⇒ **Matched based on pre-exporting variables:** revenue, revenue growth, cash flow/total assets, short-term and long-term debt, short-term and long-term labor, short-term and long-term investment, inventory, property, and intangibles
  
- III. **IV estimates:** Attempt to bring in external variation to address endogeneity concerns

# Estimation Model

$$Y_{it} = \alpha_j + \delta_t + \beta_1 \text{After}_{it} + \beta_2 \text{After}_{it} \cdot \text{Successful}_i + u_{it}$$

Where:

- ⇒  $Y_{it}$  is a measurement of success in the domestic market
- ⇒  $\alpha_j$  are firm fixed effects
- ⇒  $\delta_t$  are calendar year fixed effects
- ⇒  $\text{After}_{it} = 1$  for all periods after first exporting and zero otherwise
  - In estimates:  $\beta_1 \text{After}_{it} \rightarrow \beta_{11} \text{After}(t = 0)_{it} + \beta_{12} \text{After}(t = 1 \text{ to } 5)_{it} + \beta_{13} \text{After}(\text{rest})_{it}$
- ⇒  $\text{Successful}_i = 1$  for firms exporting more than one year and zero otherwise
  - Since I use within firm variation, *successful* is not included in the model
  - In estimates:

$$\beta_2 \text{After}_{it} \cdot \text{Successful}_i \rightarrow \beta_{21} \text{After}(t = 0)_{it} \cdot \text{Successful}_i + \beta_{22} \text{After}(t = 1 \text{ to } 5)_{it} \cdot \text{Successful}_i + \beta_{23} \text{After}(\text{rest})_{it} \cdot \text{Successful}_i$$

**Table 1: Dependent Variable = Log (Domestic Revenue)**

	(1)
<b>After</b>	-0.18*** (0.04)
Year of exp	
After (t=1 to 5)	
After (rest)	
<b>Successful*After</b>	0.31*** (0.05)
Successful*(Year of exp)	
Successful*After(t=1 to 5)	
Successful*After(rest)	
<b>Firm and year fixed effects</b>	Yes
<b>Number of observations</b>	16,161
<b>Number of clusters/Groups</b>	1,412
<b>Adjusted <math>R^2</math></b>	0.247

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio for all firms). **Growth Regressions. Exit Regressions.**

**Table 1: Dependent Variable = Log (Domestic Revenue)**

	(1)	(2) Base
<b>After</b>	-0.18*** (0.04)	
<b>Year of exp</b>		-0.07** (0.03)
<b>After (t=1 to 5)</b>		-0.32*** (0.05)
<b>After (rest)</b>		-0.56*** (0.09)
<b>Successful*After</b>	0.31*** (0.05)	
<b>Successful*(Year of exp)</b>		0.17*** (0.04)
<b>Successful*After(t=1 to 5)</b>		0.35*** (0.06)
<b>Successful*After(rest)</b>		0.45*** (0.09)
<b>Firm and year fixed effects</b>	Yes	Yes
<b>Number of observations</b>	16,161	16,161
<b>Number of clusters/Groups</b>	1,412	1,412
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<b>Year of exp</b>		-0.07** (0.03)	-0.17*** (0.04)	0.21*** (0.06)
<b>After (t=1 to 5)</b>		-0.32*** (0.05)	-0.52*** (0.07)	0.43*** (0.09)
<b>After (rest)</b>		-0.56*** (0.09)	-0.72*** (0.11)	0.38** (0.16)
<b>Successful*After</b>	0.31*** (0.05)			
<b>Successful*(Year of exp)</b>		0.17*** (0.04)	0.12* (0.06)	0.08 (0.08)
<b>Successful*After(t=1 to 5)</b>		0.35*** (0.06)	0.39*** (0.09)	-0.12 (0.11)
<b>Successful*After(rest)</b>		0.45*** (0.09)	0.44*** (0.13)	-0.03 (0.19)
<b>Firm and year fixed effects</b>	Yes	Yes		Yes
<b>Number of observations</b>	16,161	16,161		16,161
<b>Number of clusters/Groups</b>	1,412	1,412		1,412
<b>Adjusted R<sup>2</sup></b>	0.247	0.252		0.262

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Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio for all firms). **Growth Regressions. Exit Regressions.**

**Table 1: Dependent Variable = Log (Domestic Revenue)**

	(1)	(2) Base	Base	(3) Base*NFV
<b>After</b>	-0.18*** (0.04)			
<b>Year of exp</b>		-0.07** (0.03)	-0.17*** (0.04)	0.21*** (0.06)
<b>After (t=1 to 5)</b>		-0.32*** (0.05)	-0.52*** (0.07)	0.43*** (0.09)
<b>After (rest)</b>		-0.56*** (0.09)	-0.72*** (0.11)	0.38** (0.16)
<b>Successful*After</b>	0.31*** (0.05)			
<b>Successful*(Year of exp)</b>		0.17*** (0.04)	0.12* (0.06)	0.08 (0.08)
<b>Successful*After(t=1 to 5)</b>		0.35*** (0.06)	0.39*** (0.09)	-0.12 (0.11)
<b>Successful*After(rest)</b>		0.45*** (0.09)	0.44*** (0.13)	-0.03 (0.19)
<b>Firm and year fixed effects</b>	Yes	Yes	Yes	
<b>Number of observations</b>	16,161	16,161	16,161	
<b>Number of clusters/Groups</b>	1,412	1,412	1,412	
<b>Adjusted R<sup>2</sup></b>	0.247	0.252	0.262	

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio for all firms). **Growth Regressions. Exit Regressions.**

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<b>Successful*After(rest)</b>		0.45*** (0.09)	0.44*** (0.13)	-0.03 (0.19)
<b>Firm and year fixed effects</b>	Yes	Yes		Yes
<b>Number of observations</b>	16,161	16,161		16,161
<b>Number of clusters/Groups</b>	1,412	1,412		1,412
<b>Adjusted R<sup>2</sup></b>	0.247	0.252		0.262

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<b>Successful*After(rest)</b>		0.45*** (0.09)	0.44*** (0.13)	-0.03 (0.19)
<b>Firm and year fixed effects</b>	Yes	Yes	Yes	
<b>Number of observations</b>	16,161	16,161	16,161	
<b>Number of clusters/Groups</b>	1,412	1,412	1,412	
<b>Adjusted R<sup>2</sup></b>	0.247	0.252	0.262	

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio for all firms). **Growth Regressions. Exit Regressions.**

**Table 2: Full Sample Vs. Matched Data**

<i>Dependent</i> → <b>log (Dom. Rev.)</b>	Full Sample	Matched
<b>After</b>	-0.18*** (0.04)	-0.23*** (0.04)
<b>Successful*After</b>	0.31*** (0.05)	0.43*** (0.06)
<b>Domestic*After</b>		0.16** (0.06)
<b>Firm and year fixed effects</b>	Yes	Yes
<b>Number of observations</b>	16,161	16,830
<b>Number of clusters/groups</b>	1,412	1,473
<b>Adjusted <math>R^2</math></b>	0.247	0.247

### Table 3: Matched Estimates: All Data

<i>Dependent</i> → <b>log (Dom. Rev.)</b>	(1) Base
<b>Year of Exp.</b>	-0.09*** (0.03)
<b>After (t=1 to 5)</b>	-0.36*** (0.05)
<b>After (t=rest)</b>	-0.57*** (0.10)
<b>Successful*Year of Exp.</b>	0.23*** (0.05)
<b>Successful*After(t=1 to 5)</b>	0.47*** (0.07)
<b>Successful*After(t=rest)</b>	0.55*** (0.11)
<b>Domestic*Year of Exp.</b>	0.02 (0.05)
<b>Domestic*After(t=1 to 5)</b>	0.19*** (0.07)
<b>Domestic*After(t=rest)</b>	0.22* (0.11)
<b>Firm and year fixed effects</b>	Yes
<b>Number of observations</b>	16,830
<b>Number of clusters/groups</b>	1,473
<b>Adjusted <math>R^2</math></b>	0.252

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio).  
[Levels and Poisson Regressions here.](#) [Growth Regressions.](#) [Exit Regressions.](#)

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<i>Dependent</i> → <b>log (Dom. Rev.)</b>	(1) Base
<b>Year of Exp.</b>	-0.09*** (0.03)
<b>After (t=1 to 5)</b>	-0.36*** (0.05)
<b>After (t=rest)</b>	-0.57*** (0.10)
<b>Successful*Year of Exp.</b>	0.23*** (0.05)
<b>Successful*After(t=1 to 5)</b>	0.47*** (0.07)
<b>Successful*After(t=rest)</b>	0.55*** (0.11)
<b>Domestic*Year of Exp.</b>	0.02 (0.05)
<b>Domestic*After(t=1 to 5)</b>	0.19*** (0.07)
<b>Domestic*After(t=rest)</b>	0.22* (0.11)
<b>Firm and year fixed effects</b>	Yes
<b>Number of observations</b>	16,830
<b>Number of clusters/groups</b>	1,473
<b>Adjusted <math>R^2</math></b>	0.252

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio).  
[Levels and Poisson Regressions here.](#) [Growth Regressions.](#) [Exit Regressions.](#)

**Table 3: Matched Estimates: All Data**

<i>Dependent</i> → <b>log (Dom. Rev.)</b>	(1)		(2)
	Base	Base	Base*NFV
<b>Year of Exp.</b>	-0.09*** (0.03)	-0.20*** (0.04)	0.24*** (0.06)
<b>After (t=1 to 5)</b>	-0.36*** (0.05)	-0.58*** (0.08)	0.47*** (0.10)
<b>After (t=rest)</b>	-0.57*** (0.10)	-0.75*** (0.11)	0.42** (0.18)
<b>Successful*Year of Exp.</b>	0.23*** (0.05)	0.21*** (0.07)	-0.01 (0.09)
<b>Successful*After(t=1 to 5)</b>	0.47*** (0.07)	0.57*** (0.11)	-0.25* (0.13)
<b>Successful*After(t=rest)</b>	0.55*** (0.11)	0.61*** (0.15)	-0.18 (0.22)
<b>Domestic*Year of Exp.</b>	0.02 (0.05)	-0.00 (0.07)	0.09 (0.10)
<b>Domestic*After(t=1 to 5)</b>	0.19*** (0.07)	0.31*** (0.11)	-0.22 (0.14)
<b>Domestic*After(t=rest)</b>	0.22* (0.11)	0.36** (0.14)	-0.29 (0.24)
<b>Firm and year fixed effects</b>	Yes		Yes
<b>Number of observations</b>	16,830		16,830
<b>Number of clusters/groups</b>	1,473		1,473
<b>Adjusted <math>R^2</math></b>	0.252		0.260

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained (NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio).  
[Levels and Poisson Regressions here.](#) [Growth Regressions.](#) [Exit Regressions.](#)

## I. Data for Instrumental Variables

- ⇒ Disaggregated non-Colombian imports (HS 1996, 6 digit) for all of Colombia's trading partners (Source: UN COMTRADE)
- ⇒ I only have this data starting in 2000. So all firms in export cohorts earlier than 2000 are excluded from the IV estimates

## II. Instrument

- ⇒ Market change in a firms' export market between the year a firm first exports and the following year
  - Similar to that used in Hummels, Jørgensen, Munch, and Xiang (2014)
- ⇒ A market is defined as the value of *non-Colombian* imports at the product (HS 1996, 6-digit) level in a firm's destination

Table 4: First-Stage Regressions

<i>Dependent</i> →	A(t=0)*Suc.	A(t=1-5)*Suc.	A(rest)*Suc.	A(t=0)*Suc.	A(t=1-5)*Suc.	A(rest)*Suc.
<b>After(t = 0)</b>	0.58*** (0.02)	-0.01*** (0.00)	-0.00 (0.00)	0.58*** (0.02)	-0.01*** (0.00)	-0.00* (0.00)
<b>After(t = 1 to 5)</b>	0.01** (0.00)	0.62*** (0.02)	-0.00 (0.00)	0.01** (0.00)	0.61*** (0.02)	-0.00 (0.00)
<b>After(rest)</b>	0.01 (0.00)	-0.02 (0.02)	0.76*** (0.02)	0.00 (0.01)	-0.04** (0.02)	0.76*** (0.02)
<b>After(t = 0)*IV</b>	-0.002*** (0.00)	0.0002** (0.00)	-0.00002 (0.00)	-0.002*** (0.00)	0.0002 (0.00)	-0.00002 (0.00)
<b>After(t = 1 to 5)*IV</b>	0.0002 (0.00)	-0.00*** (0.00)	-0.00002 (0.00)	0.0001 (0.00)	-0.002*** (0.00)	-0.00003 (0.00)
<b>After(rest)*IV</b>	-0.002 (0.00)	-0.01 (0.01)	0.015 (0.01)	-0.002 (0.00)	-0.01 (0.01)	0.02 (0.01)
<b>Observations</b>	10,207	10,207	10,207	9,581	9,581	9,581
<b>Adjusted R2</b>	0.542	0.613	0.735	0.542	0.613	0.734
<b>Second-stage</b>	ln(Domestic Revenue)			Domestic Revenue Growth		

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; All regression include firm fixed effects and year fixed effects. Robust standard errors, clustered at the firm level, in parenthesis. **Angrist-Pischke multivariate F test** of excluded instruments for Log(dom. Rev.)/  $\Delta$ log(dom. Rev.): Successful\*(Year of exp) = 48.44/45.27, Successful\*After(t=1 to 5) = 12.54/12.04, Successful\*After(rest) = 1.1/1.34.

Table 5: IV Estimates: All Data

<i>Dependent</i> →	Ln(Dom. Rev.)	$\Delta$ Ln(Dom. Rev.)
<b>Year of exp</b>	-0.13* (0.08)	-0.31*** (0.11)
<b>After(<i>t</i> = 1 to 5)</b>	-0.66*** (0.25)	-0.60*** (0.17)
<b>After(<i>rest</i>)</b>	0.23 (1.88)	-0.03 (0.72)
<b>Successful*Year of exp</b>	0.26* (0.14)	0.32 (0.20)
<b>Successful*After(<i>t</i> = 1 to 5)</b>	0.90** (0.40)	0.74*** (0.28)
<b>Successful*After(<i>rest</i>)</b>	-0.60 (2.48)	-0.16 (0.96)
<b>Firm and year fixed effects</b>	Yes	Yes
<b>Number of observations</b>	10,207	9,581
<b>Number of clusters/groups</b>	904	904

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; All regression include firm fixed effects and year fixed effects. Robust standard errors, clustered at the firm level, in parenthesis.

## IV. Conclusion and Future Work

# Conclusion

- I. Showed, theoretically and empirically, that export failure can lead to negative domestic-market outcomes
  
- II. For failed exporters, exporting is associated with the following:
  - ⇒ lower domestic revenue
  - ⇒ slower domestic growth
  - ⇒ higher probability of going out of business

# Conclusion

- I. Showed, theoretically and empirically, that export failure can lead to negative domestic-market outcomes
  
- II. For failed exporters, exporting is associated with the following:
  - ⇒ lower domestic revenue
  - ⇒ slower domestic growth
  - ⇒ higher probability of going out of business
  
- III. **Implications:** The uncertainty in export costs, not just export failure, might lead to fewer firms exporting.
  
- IV. **Policy implications:** focus beyond market entry and lowering foreign trade barrier
  - ⇒ subsidize the cost of finding a good match (e.g. USITA)
  - ⇒ lowering the cost of financing exports (e.g. EX-IM Bank)

## I. **Short Term:** Modify question

- ⇒ Are there negative consequences to exporters that try to enter a new foreign market and fail?

# Conclusion: Future Work

## I. **Short Term:** Modify question

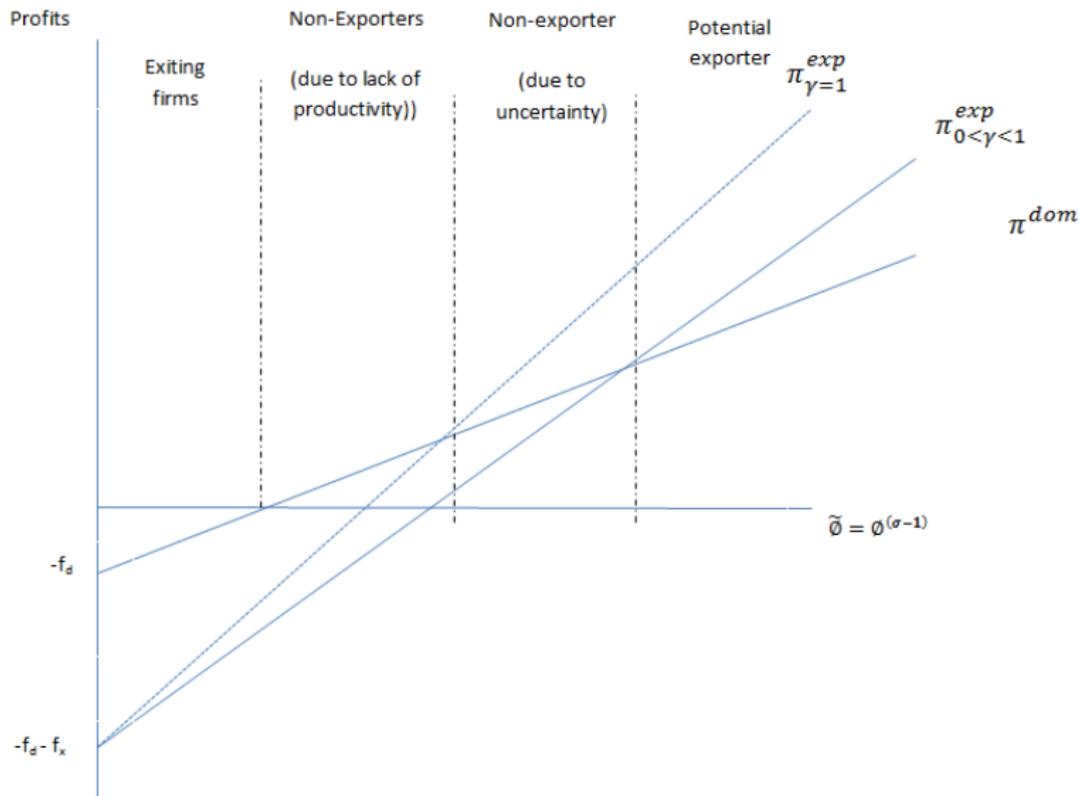
- ⇒ Are there negative consequences to exporters that try to enter a new foreign market and fail?

## II. **Long Term:** Export failure in a general equilibrium framework

- ⇒ Does export failure limit the number of exporters and aggregate exports?
- ⇒ Likewise, does it hamper aggregate productivity gains through an inefficient allocation of resources? learning by exporting?

Thank You!

Figure 5: Unsuccessful exporters: before and after export failure



# Unconstrained Firms

The maximization problem for unconstrained, unsuccessful exporters:

$$\max_{p_i, L_i} E\pi_i(\phi_i) = L_i A p_i^{1-\sigma} - \frac{L_i A p_i^{-\sigma}}{\phi_i} - f_x - f_d - L_i^\beta$$

The profit-maximizing price:

$$p_i^* = \frac{\sigma}{\sigma - 1} \frac{1}{\phi_i} = \frac{\mu}{\phi_i} \quad (1)$$

The profit-maximizing marketing expenditure:

$$L_i^* = \left( \frac{A}{\sigma\beta} \right)^{\frac{1}{\beta-1}} \left( \frac{\mu}{\phi_i} \right)^{\frac{1-\sigma}{\beta-1}} \quad (2)$$

# Financially-constrained Firms

- I. The liquidity constraint binds with the choice of  $L_i^*$  and  $p_i^*$  for financially-constrained firms

⇒ That is,  $p_i q_i - \frac{q_i}{\phi_i} = B_i$

- II. To find the firm at the unconstrained/constrained threshold:

⇒ substitute  $L_i^*$  and  $p_i^*$  into the firm's liquidity constraint

⇒ bind the constraint and substitute in the creditor's constraint

⇒ solve for  $\phi_i$

# Exporting Makes Some Firms Financially Constrained

The financially-constrained cutoff for non-exporters:

$$\phi_C^{dom} = \mu \left( \frac{A}{\sigma\beta} \right)^{\frac{1}{1-\sigma}} \left( \frac{f_d - (1-\lambda)f_e}{\lambda\beta - 1} \right)^{\frac{1-\beta}{\beta(1-\sigma)}} \quad (3)$$

For successful exporters in  $N$  markets:

$$\phi_C^{succ} = \mu \left( \frac{A}{\sigma\beta} \right)^{\frac{1}{1-\sigma}} \left( \frac{Nf_x + f_d - (1-\lambda)f_e}{(N+1)(\lambda\beta - 1)} \right)^{\frac{1-\beta}{\beta(1-\sigma)}} \quad (4)$$

For unsuccessful exporters:

$$\phi_C^{fail} = \mu \left( \frac{A}{\sigma\beta} \right)^{\frac{1}{1-\sigma}} \left( \frac{f_x + f_d - (1-\lambda)f_e}{\lambda\beta - 1} \right)^{\frac{1-\beta}{\beta(1-\sigma)}} \quad (5)$$

**Proposition 1:** *As a result of exporting, both successful and failed exporters are more likely to become financially constrained:*

$$\phi_C^{fail} > \phi_C^{succ} > \phi_C^{dom}$$

# Credit-constrained Firms

I. Firms reduce financing need by choosing a lower  $L_i$  (i.e.  $L_i < L_i^*$ )

II. How does a lower  $L_i$  loosen the constraint?

⇒ The Firm's Liquidity Constraint:  $p_i q_i - \frac{q_i}{\phi_i} \geq B_i$

– Substituting and simplifying:  $\frac{L_i A}{\sigma} \left(\frac{\mu}{\phi_i}\right)^{1-\sigma} \geq \frac{L_i^{\beta} + f_x + f_d - (1-\lambda)f_e}{\lambda}$

⇒ A decrease of  $L_i$ ,

– lowers **net revenue** by  $\frac{\partial LHS}{\partial L_i} = -\frac{A}{\sigma} \left(\frac{\mu}{\phi_i}\right)^{1-\sigma}$

– lowers the **loan repayment** by  $\frac{\partial RHS}{\partial L_i} = -\frac{\beta L_i^{\beta-1}}{\lambda}$

– credit constraint loosens when  $\frac{\partial RHS}{\partial L_i} < \frac{\partial LHS}{\partial L_i}$ .

⇒ Credit constraint loosens as  $L_i$  decreases away from  $L_i^*$

III. Since deviation from  $L_i^*$  lowers profits, firms deviate as little as possible from  $L_i^*$

# Credit-constrained Firm Marketing Decision

Profit-maximizing  $L_i$  for non-exporters:

$$\frac{L_i A}{\sigma} \left( \frac{\mu}{\phi_i} \right)^{1-\sigma} - \frac{L_i^\beta}{\lambda} = \frac{f_d - (1 - \lambda)f_e}{\lambda} \quad (6)$$

For successful exporters in  $N$  markets:

$$\frac{L_i A}{\sigma} \left( \frac{\mu}{\phi_i} \right)^{1-\sigma} - \frac{L_i^\beta}{\lambda} = \frac{Nf_x + f_d - (1 - \lambda)f_e}{(N + 1)\lambda} \quad (7)$$

For unsuccessful exporters:

$$\frac{L_i A}{\sigma} \left( \frac{\mu}{\phi_i} \right)^{1-\sigma} - \frac{L_i^\beta}{\lambda} = \frac{f_x + f_d - (1 - \lambda)f_e}{\lambda} \quad (8)$$

**Takeaway:** For credit constrained firms, exporting lowers the number of consumers a firm can reach in the domestic market

# Lower Bound for $L_i$ in the Domestic Market

I. For financially-constrained firms, can't solve for  $L_i$

⇒  $L_i$  is between  $L_i^*$  and the  $L_i$  that maximizes the left-hand side of equations (6) to (8)

II. The lower bound  $L_i$  in the domestic market is

$$L_C = \lambda^{\frac{1}{\beta-1}} \left( \frac{A}{\sigma\beta} \right)^{\frac{1}{\beta-1}} \left( \frac{\mu}{\phi_i} \right)^{\frac{1-\sigma}{\beta-1}} \quad (9)$$

III. There is no incentive to lower  $L_i$  below this level

# Exporting May Lower Domestic Revenue

- I. Domestic revenue for all firms is  $v_i = p_i q_i = L_i A \left( \frac{\mu}{\phi_i} \right)^{1-\sigma}$
- II. Domestic revenues for *unconstrained* firms ( $L_i = L_i^*$ ):

$$v_i^* = A \frac{\beta}{\beta-1} \left( \frac{1}{\sigma\beta} \right)^{\frac{1}{\beta-1}} \left( \frac{\mu}{\phi_i} \right)^{\frac{\beta(1-\sigma)}{\beta-1}} \quad (10)$$

- III. Domestic revenues for *constrained* firms will be between  $L_i^*$  and a lower bound,  $L_C$ :

$$v_C = A \frac{\beta}{\beta-1} \left( \frac{\lambda}{\sigma\beta} \right)^{\frac{1}{\beta-1}} \left( \frac{\mu}{\phi_i} \right)^{\frac{\beta(1-\sigma)}{\beta-1}} \quad (11)$$

**Proposition 2:** As a result of exporting, financially-constrained firms—irrespective of their success abroad—have lower domestic revenues:  $v_i^{fail}, v_i^{succ} < v_i^{dom}$

# Firm Production/Exit Cutoff

- I. Some *ex ante* profitable firms are unable to produce at home
  - ⇒ Even if all profits went to the creditor, the creditor still does not break even.
  
- II. The cutoff is defined by the constrained firm,  $\phi_0$ , whose  $L_j$  choice equals  $L_C$  (Eg. 9).

# Export Failure May Cause Firms to Default

The production cutoff for non-exporters:

$$\phi_0^{dom} = \mu \left( \frac{A\lambda}{\sigma\beta} \right)^{\frac{1}{1-\sigma}} \left( \frac{f_d - (1-\lambda)f_e}{\beta-1} \right)^{\frac{1-\beta}{\beta(1-\sigma)}} \quad (12)$$

For unsuccessful exporters:

$$\phi_0^{fail} = \mu \left( \frac{A\lambda}{\sigma} \right)^{\frac{1}{1-\sigma}} \left( \frac{f_x + f_d - (1-\lambda)f_e}{\beta-1} \right)^{\frac{1-\beta}{\beta(1-\sigma)}} \quad (13)$$

**Proposition 3:** *As a result of exporting, some failed exporters are unable to borrow and default:  $\phi_0^{fail} > \phi_0^{dom}$*

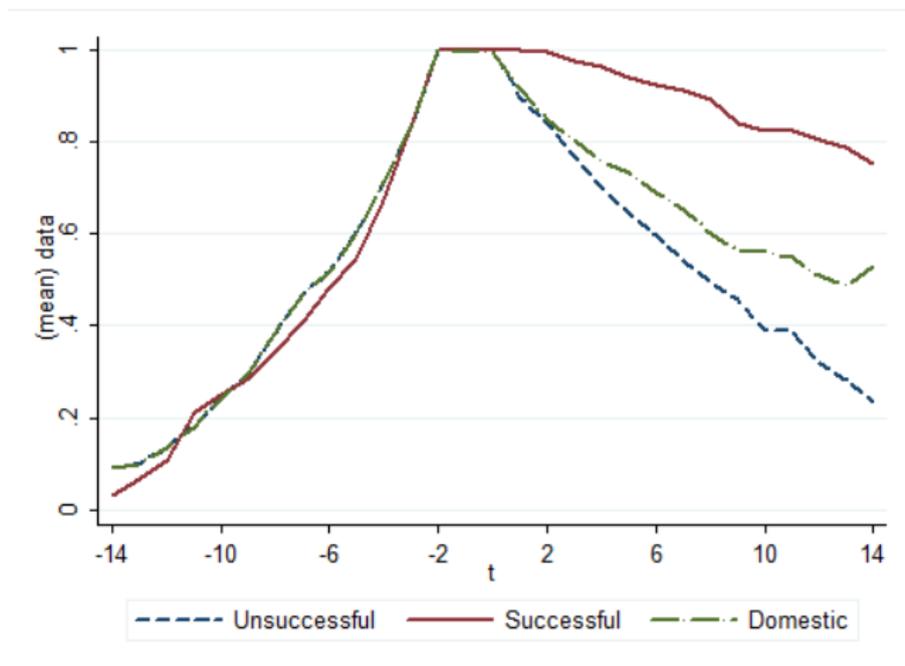
## Summary Statistics: Average Firm Per Year

Firm Type	Colombian Pesos (2 Mn)		
	Revenue	Domestic Revenue	Profits
Continuous Exporter	16,883	15,020	510
Successful exporter	15,204	14,385	596
Onetime exporter	5,901	5,884	104
Non-exporter	2,219	2,219	86

Firm Type	Col. Pesos (2 Mn)		USD (Thns)	
	1 <sup>st</sup> Exp.	Avg. Exp.	1 <sup>st</sup> Exp.	Avg. Exp.
Continuous Exporter	–	2,411	–	2,431
Successful exporter	310	1,149	294	1,125
Onetime exporter	66	65	69	68

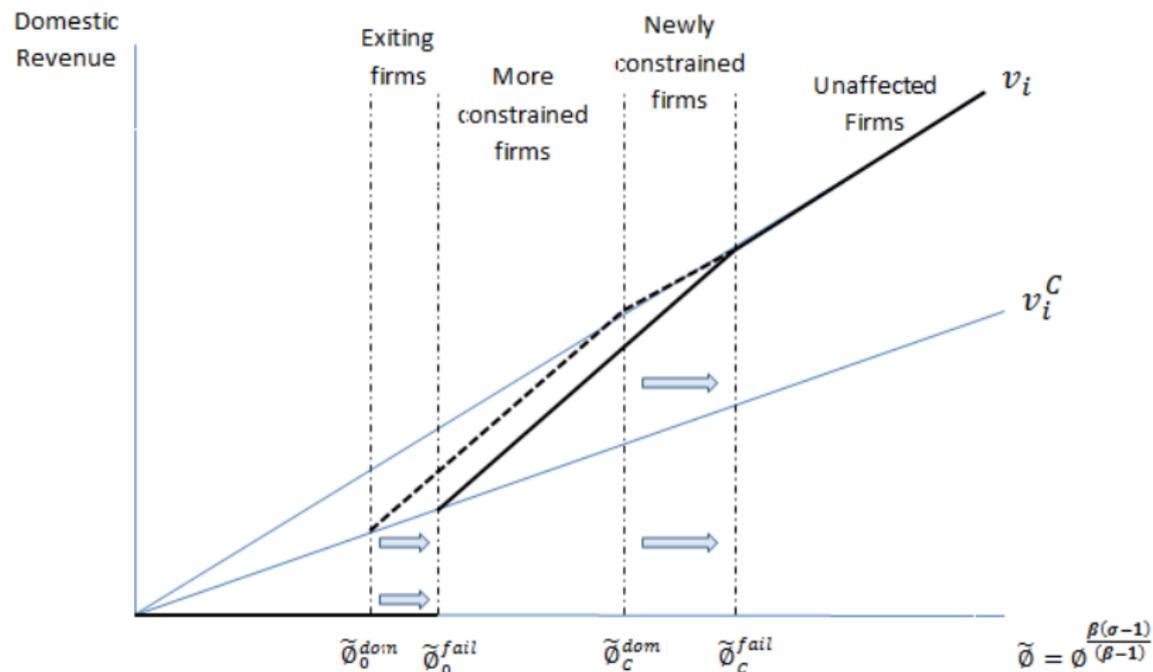
# Does Export Failure Result in Domestic-Market Exit?

Figure 6: Firm Entry and Exit



*Note:* The Figure shows the average share of firms in the data by cohort and firm type at time  $t$ . By design, the number of firms in the data do not change at  $t = -2, -1, 0$ . [Back.](#)

# Export Failure and Its Consequences



**Table 6: Business Classifications and availability**

Tipo	Descripcion Sociedad	Classification	In Data
1	Personas Naturales	Natural Persons	
2	Establecimientos de Comercio	Establishments of Commerce	
3	Soc. Limitada	Private Limited Company	x
4	Soc. S. A.	Public Limited Company	x
5	Soc. Colectivas	Joint Ventures	x
6	Soc. Comandita Simple	Simple Limited Partnership	x
7	Soc. Comandita por Acciones	Limited joint-stock partnership	x
8	Soc. Extranjeras	Foreign Companies	x
9	Soc. de Hecho	Business Association	
10	Soc. Civiles	Civil Society Organisations.	
11	Reseña Ppal, Suc, Agencia	??	
12	Sucursal	Branch	
13	Agencia	Agency	
14	Emp. Asociativas de Trabajo E.A.T	Associative Work Organizations	
15	Entidades Sin Animo de Lucro E.S.A.L.	Non-Profit Entities	
16	Empresas Unipersonales E.U.	Self-Employed Businesses	x

[Back to Data](#)

## Summary Statistics: Median Firm

### Colombian Pesos (2 Mn)

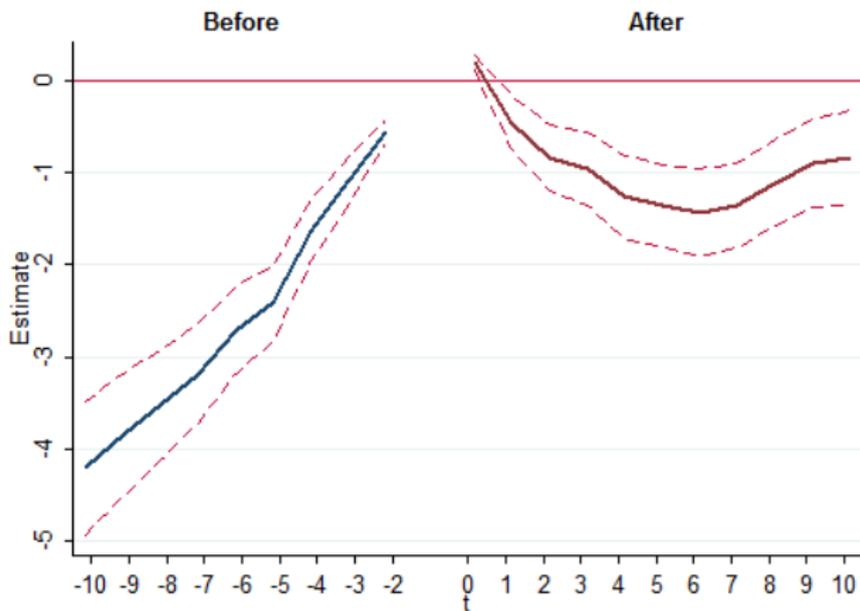
Firm Type	Revenue	Domestic Revenue	Profits
Continuous Exporter	3,264	2,901	30
Successful exporter	4,270	4,051	92
Onetime exporter	1,679	1,668	27
Non-exporter	497	497	10

### Col. Pesos (2 Mn)

### USD (Thns)

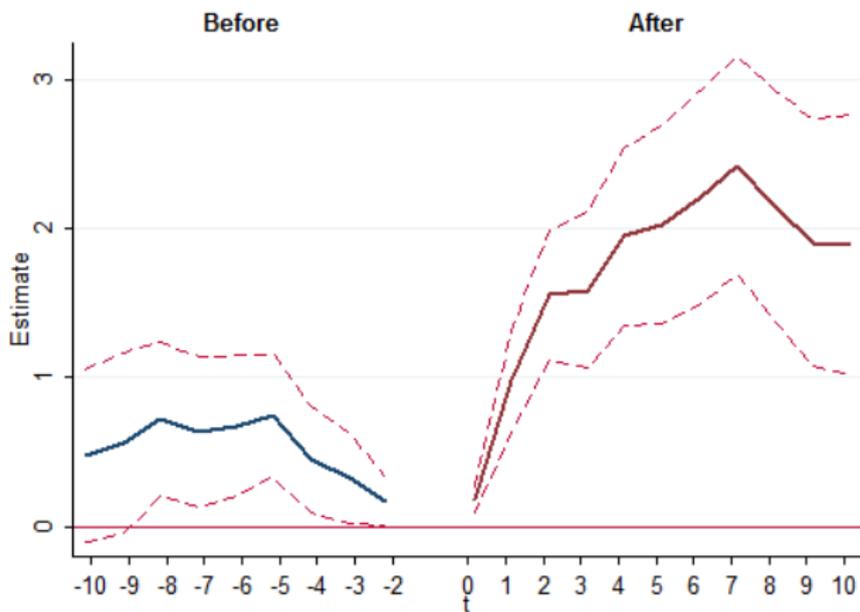
Firm Type	1 <sup>st</sup> Exp.	Avg. Exp.	1 <sup>st</sup> Exp.	Avg. Exp.
Continuous Exporter	–	222	–	261
Successful exporter	17	54	19	56
Onetime exporter	9	9	9	10

Figure 7:  $\ln(\text{Domestic Revenue}+1)$  for Constrained Unsuccessful Exporters



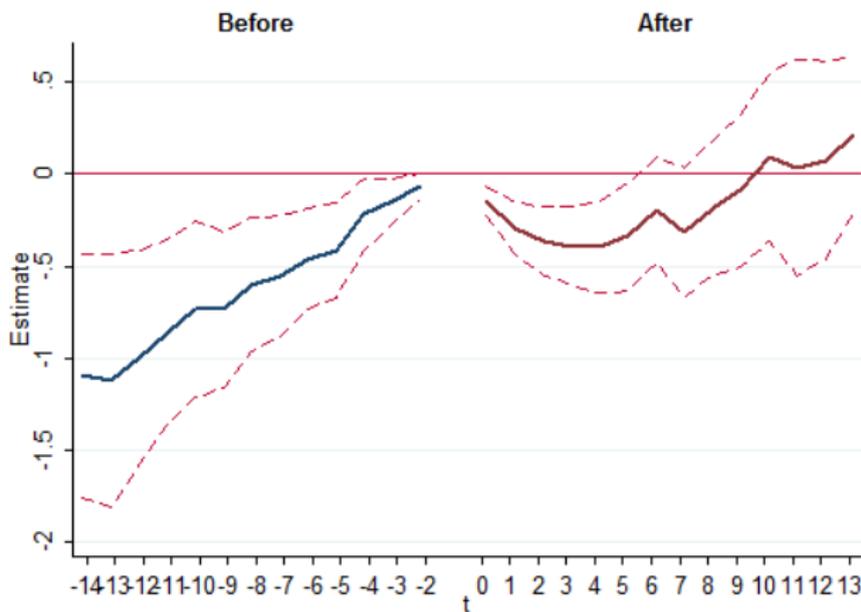
*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

Figure 8:  $\ln(\text{Domestic Revenue}+1)$ , Unsuccessful vs. Successful Exporters



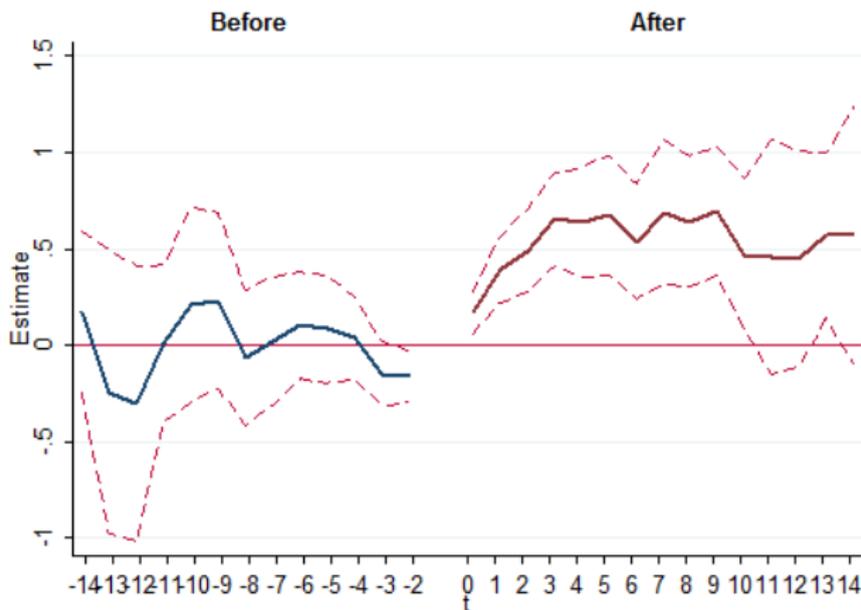
*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

Figure 9: In(Domestic Revenue) for Constrained Unsuccessful Exporters



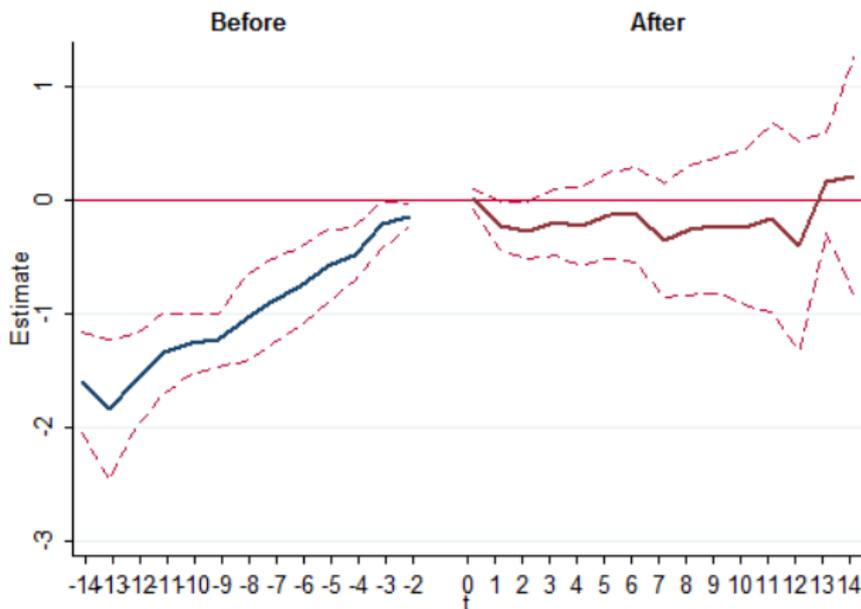
*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

Figure 10: In(Domestic Revenue), Matched Unsuccessful vs. Successful Exporters



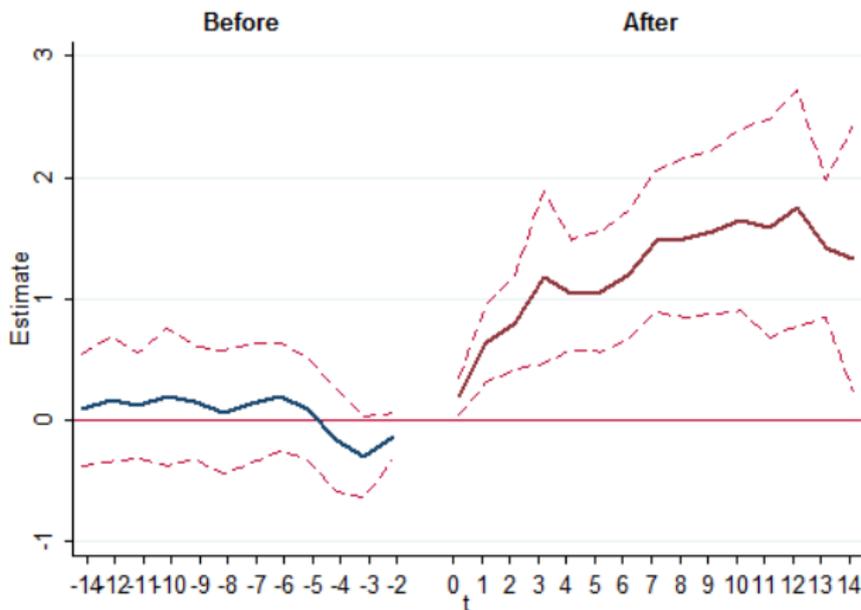
*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

Figure 11: PPML(Domestic Revenue) for Constrained Unsuccessful Exporters



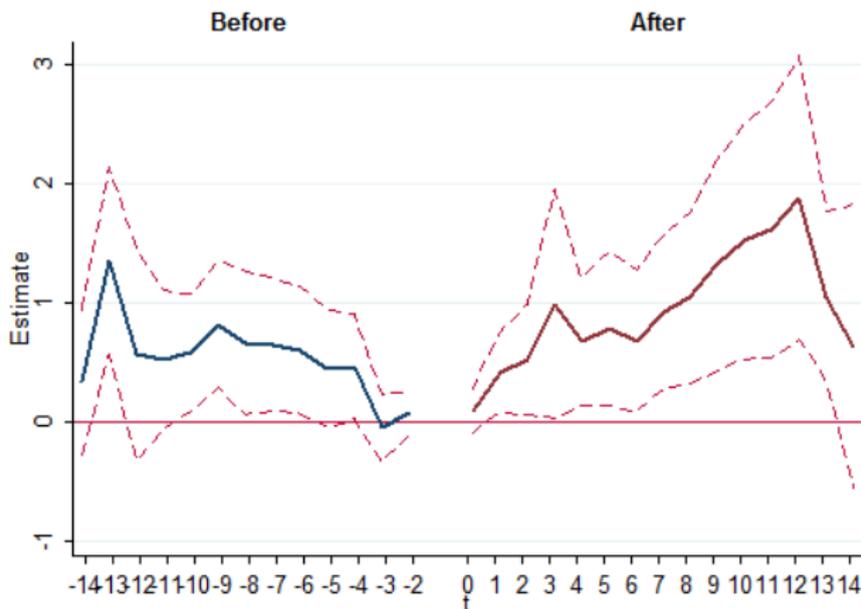
*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

Figure 12: PPML(Domestic Revenue), Unsuccessful vs. Successful Exporters



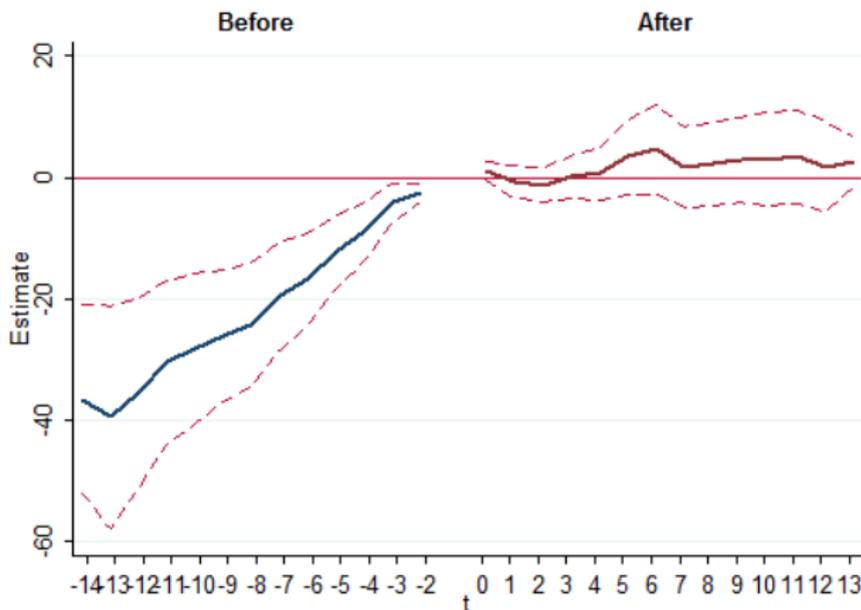
*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

Figure 13: PPML(Domestic Revenue), Unsuccessful Exporters vs. Non-Exporters



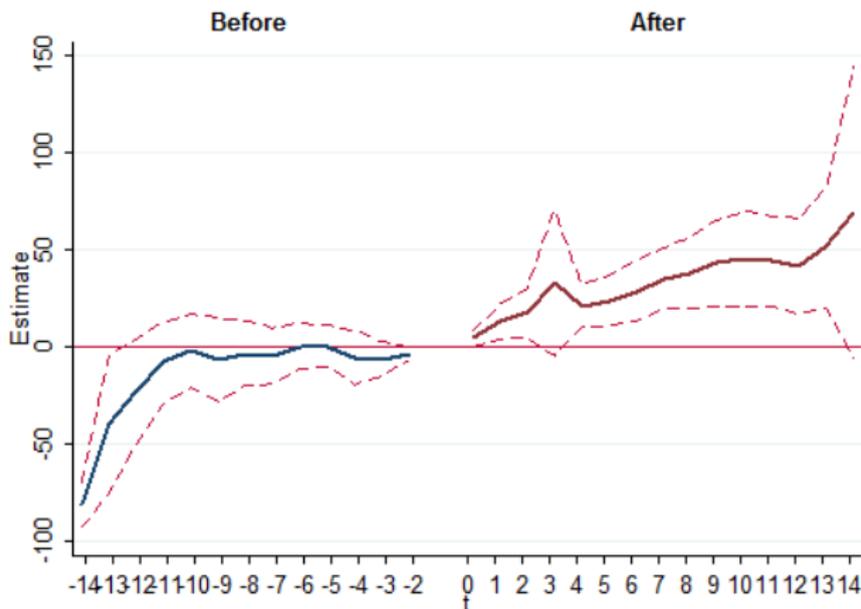
*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

**Figure 14: Domestic Revenue for Constrained Unsuccessful Exporters**  
(billions, Col. Pesos)



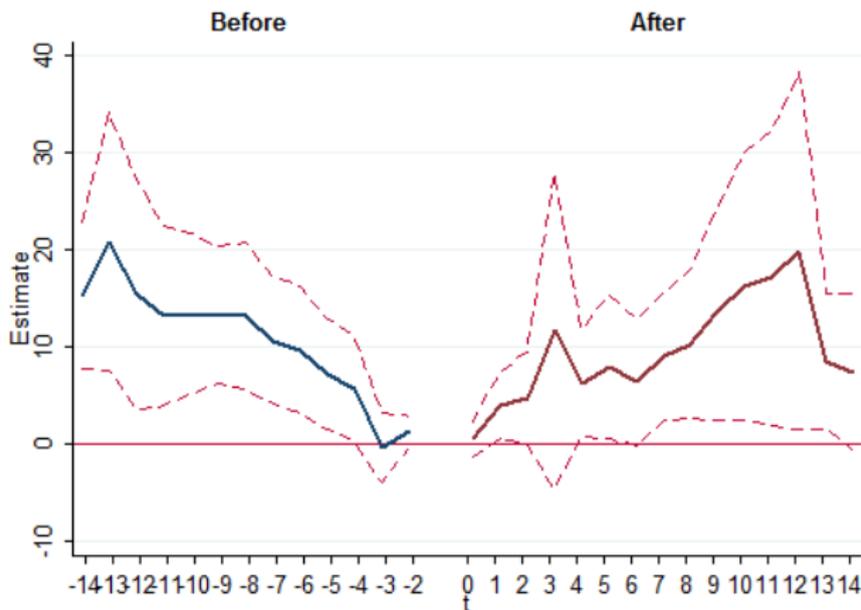
*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

**Figure 15: Domestic Revenue, Unsuccessful vs. Successful Exporters**  
(billions, Col. Pesos)



*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

**Figure 16:** Domestic Revenue, Unsuccessful Exporters vs. Non-Exporters (billions, Col. Pesos)



*Note:* Regression includes firm fixed effects and year fixed effects. The periods are interacted with not financially constrained, non-exporters, and successful exporters. The omitted group is constrained, unsuccessful exporters at time  $t = -1$ .

**Table 7:** Dependent Variable =  $\Delta \text{Log (Domestic Revenue)}$

	(1)	(2) Base	Base	(3) Base*NFV
<b>After</b>	-0.15*** (0.02)			
<b>Year of exp</b>		-0.16*** (0.03)	-0.24*** (0.04)	0.18*** (0.05)
<b>After (t=1 to 5)</b>		-0.19*** (0.03)	-0.22*** (0.03)	0.06 (0.05)
<b>After (rest)</b>		-0.15*** (0.04)	-0.20*** (0.05)	0.13** (0.06)
<b>Successful*After</b>	0.02 (0.03)			
<b>Successful*(Year of exp)</b>		0.05 (0.03)	0.12** (0.05)	-0.15** (0.07)
<b>Successful*After(t=1 to 5)</b>		0.04 (0.03)	0.09** (0.04)	-0.11** (0.06)
<b>Successful*After(rest)</b>		-0.05 (0.03)	0.01 (0.05)	-0.13** (0.07)
<b>Firm and year fixed effects</b>	Yes	Yes	Yes	
<b>Number of observations</b>	15,381	15,381	15,381	
<b>Number of clusters/Groups</b>	1,412	1,412	1,412	
<b>Adjusted R2</b>	0.042	0.042	0.043	

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio for all firms). [Levels and Poisson Regressions here.](#) [Back.](#)

**Table 8: Baseline Estimates: All Data**

<i>Dependent</i> →	$\Delta \text{Ln}(\text{Dom. Rev.})$			$\text{Ln}(\text{Dom. Rev.})$		
	(1)	Base	(2) Base*NFV	(3)	Base	(4) Base*NFV
<b>Year of exp</b>	-0.16*** (0.03)	-0.24*** (0.04)	0.18*** (0.05)	-0.07** (0.03)	-0.17*** (0.04)	0.21*** (0.06)
<b>After (t=1 to 5)</b>	-0.19*** (0.03)	-0.22*** (0.03)	0.06 (0.05)	-0.32*** (0.05)	-0.52*** (0.07)	0.43*** (0.09)
<b>After (rest)</b>	-0.15*** (0.04)	-0.20*** (0.05)	0.13** (0.06)	-0.56*** (0.09)	-0.72*** (0.11)	0.38** (0.16)
<b>Successful*(Year of exp)</b>	0.05 (0.03)	0.12** (0.05)	-0.15** (0.07)	0.17*** (0.04)	0.12* (0.06)	0.08 (0.08)
<b>Successful*After(t=1 to 5)</b>	0.04 (0.03)	0.09** (0.04)	-0.11** (0.06)	0.35*** (0.06)	0.39*** (0.09)	-0.12 (0.11)
<b>Successful*After(rest)</b>	-0.05 (0.03)	0.01 (0.05)	-0.13** (0.07)	0.45*** (0.09)	0.44*** (0.13)	-0.03 (0.19)
<b>Firm and year fixed effects</b>	Yes		Yes	Yes		Yes
<b>Number of observations</b>	15,381		15,381	16,161		16,161
<b>Number of clusters/groups</b>	1,412		1,412	1,412		1,412
<b>Adjusted <math>R^2</math></b>	0.042		0.043	0.252		0.262

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio for all firms). [Levels and Poisson Regressions here.](#) [Back.](#)

**Table 9: Baseline Estimates: All Data**

<i>Dependent</i> →	Poisson			Levels (2 billion Pesos)		
	(1)	(2)	(3)	(4)	(5)	(6)
		Base	Base*NFV		Base	Base*NFV
<b>Year of exp</b>	0.21** (0.10)	0.25* (0.15)	-0.12 (0.16)	1.23 (1.73)	2.57 (3.54)	-2.88 (3.94)
<b>After (t=1 to 5)</b>	0.14 (0.21)	0.05 (0.32)	0.22 (0.41)	0.23 (3.26)	0.97 (6.18)	-1.63 (7.42)
<b>After (rest)</b>	-0.31 (0.26)	-0.49 (0.45)	0.48 (0.51)	-7.66*** (2.66)	-7.71 (4.95)	0.44 (6.64)
<b>Successful*(Year of exp)</b>	0.03 (0.11)	-0.08 (0.17)	0.23 (0.19)	0.94 (2.00)	-1.15 (3.80)	4.23 (4.11)
<b>Successful*After(t=1 to 5)</b>	0.19 (0.23)	0.21 (0.38)	-0.10 (0.45)	3.96 (4.38)	1.07 (7.08)	5.67 (8.31)
<b>Successful*After(rest)</b>	0.57* (0.31)	0.58 (0.50)	-0.20 (0.56)	11.10** (4.57)	7.25 (6.59)	7.32 (8.53)
<b>Number of observations</b>	18,741	18,741	18,741	18,741	18,741	18,741
<b>Groups</b>	1,412	1,412	1,412	1,412	1,412	1,412
<b>Cluster by Group</b>	No	No	No	Yes	Yes	Yes
<b>Adjusted R<sup>2</sup></b>				0.019	0.019	0.019

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio for all firms).

**Table 10: Baseline Estimates: Dropping Firms with 1 trillion or More Pesos**

<i>Dependent</i> →	Poisson		Levels (2 billion Pesos)			
	(1) Base	(2) Base*NFV	(3) Base	(4) Base*NFV		
		Base	Base*NFV	Base	Base*NFV	
<b>Year of exp</b>	0.07 (0.05)	0.01 (0.07)	0.11 (0.08)	-0.69 (0.62)	-1.28* (0.66)	1.08 (0.84)
<b>After (t=1 to 5)</b>	-0.07 (0.19)	-0.50*** (0.18)	0.80*** (0.29)	-2.87* (1.62)	-5.51*** (1.25)	5.53* (2.96)
<b>After (rest)</b>	-0.57*** (0.22)	-1.12*** (0.27)	1.17*** (0.33)	-9.84*** (1.98)	-12.80*** (2.07)	6.91*** (2.54)
<b>Successful*(Year of exp)</b>	0.15** (0.06)	0.15 (0.10)	-0.03 (0.12)	2.56*** (0.86)	2.36* (1.24)	0.31 (1.65)
<b>Successful*After(t=1 to 5)</b>	0.36* (0.20)	0.75*** (0.25)	-0.76** (0.34)	5.51*** (2.06)	7.20*** (2.79)	-3.88 (4.04)
<b>Successful*After(rest)</b>	0.78*** (0.23)	1.23*** (0.31)	-1.02*** (0.38)	12.16*** (2.28)	12.97*** (2.83)	-2.74 (4.50)
<b>Number of observations</b>	18,718	18,718	18,718	18,718	18,718	18,718
<b>Groups</b>	1,410	1,410	1,410	1,410	1,410	1,410
<b>Cluster by Group</b>	No	No	Yes	Yes	Yes	Yes
<b>Adjusted R<sup>2</sup></b>				0.040	0.042	

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio for all firms).

Table 11: Matched:  $\Delta \ln(\text{Dom. Rev.})$

<i>Dependent</i> →	$\Delta \ln(\text{Dom. Rev.})$		
	Base	Base*NFV	
<b>Year of Exp.</b>	-0.14*** (0.03)	-0.23*** (0.04)	0.20*** (0.05)
<b>After (t=1 to 5)</b>	-0.18*** (0.03)	-0.21*** (0.04)	0.06 (0.05)
<b>After (t=rest)</b>	-0.14*** (0.04)	-0.19*** (0.05)	0.10* (0.06)
<b>Successful*Year of Exp.</b>	-0.00 (0.04)	0.07 (0.07)	-0.05 (0.09)
<b>Successful*After(t=1 to 5)</b>	0.04 (0.03)	0.12*** (0.05)	-0.11 (0.07)
<b>Successful*After(t=rest)</b>	-0.07* (0.04)	0.11** (0.06)	-0.19** (0.08)
<b>Domestic*Year of Exp.</b>	0.04 (0.05)	0.09 (0.06)	-0.19** (0.08)
<b>Domestic*After(t=1 to 5)</b>	0.07** (0.03)	0.10** (0.05)	-0.12* (0.06)
<b>Domestic*After(t=rest)</b>	0.03 (0.04)	-0.01 (0.06)	-0.13* (0.07)
<b>Firm and year fixed effects</b>	Yes	Yes	
<b>Number of observations</b>	15,332	15,332	
<b>Number of clusters/groups</b>	1,473	1,473	
<b>Adjusted <math>R^2</math></b>	0.033	0.034	

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio). [Levels and Poisson Regressions here.](#)  
[Back.](#)

## Table 12: Matched Estimates: All Data

<i>Dependent=Domestic Revenue</i>	Poisson			Levels (2 billion Pesos)		
		Base	Base*NFV		Base	Base*NFV
<b>Year of Exp.</b>	0.05 (0.05)	0.01 (0.07)	0.07 (0.08)	-0.18 (0.60)	-0.31 (0.72)	0.20 (0.80)
<b>After (t=1 to 5)</b>	-0.30** (0.12)	-0.55*** (0.18)	0.50** (0.20)	-3.15*** (0.95)	-4.32*** (1.25)	2.43* (1.46)
<b>After (t=rest)</b>	-0.74*** (0.19)	-1.19*** (0.27)	0.97*** (0.31)	-8.52*** (1.61)	-10.60*** (1.83)	5.13** (2.21)
<b>Successful*Year of Exp.</b>	0.18*** (0.07)	0.22** (0.10)	-0.08 (0.13)	2.76*** (1.03)	3.53** (1.69)	-1.42 (2.05)
<b>Successful*After(t=1 to 5)</b>	0.71*** (0.16)	0.99*** (0.27)	-0.58* (0.31)	10.61*** (3.39)	11.89*** (4.44)	-2.71 (6.23)
<b>Successful*After(t=rest)</b>	1.13*** (0.23)	1.48*** (0.32)	-0.81** (0.41)	19.53*** (4.53)	20.92*** (4.78)	-3.83 (8.93)
<b>Domestic*Year of Exp.</b>	0.00 (0.07)	-0.13 (0.09)	0.24* (0.12)	-0.42 (0.61)	-1.58** (0.64)	2.87** (1.33)
<b>Domestic*After(t=1 to 5)</b>	0.36** (0.17)	0.48* (0.29)	-0.28 (0.34)	1.62 (1.30)	1.54 (1.67)	0.56 (2.64)
<b>Domestic*After(t=rest)</b>	0.59** (0.25)	0.93** (0.36)	-0.78* (0.42)	3.11* (1.71)	4.03* (2.19)	-2.16 (3.39)
<b>Number of observations</b>	19,259	19,259		19,259	19,259	
<b>Groups</b>	1,473	1,473		1,473	1,473	
<b>Cluster by Group</b>	No	No		Yes	Yes	
<b>Adjusted R<sup>2</sup></b>				0.023	0.023	

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors, clustered at the firm level, shown in parenthesis; and *Not Financially Constrained(NFV)* equals 1 if the firm has a cash flow to total assets ratio greater than .07 (the median ratio for all firms).

**Table 13:** Exporting Increases the Probability of Going Out of Business

Dependent= <i>Exit</i>	All	Survived SR	Surv. SR & MR
<b>Successful</b>	-0.32*** (0.03)	-0.26*** (0.04)	-0.02 (0.02)
<b>SuccessfulxNFV</b>	0.09** (0.05)	0.09* (0.05)	-0.03 (0.03)
<b>Not Fin. Vulnerable (NFV)</b>	-0.10*** (0.04)	-0.09** (0.04)	0.02 (0.02)
<b>First Export Value<sub>t=0</sub></b>	-0.00*** (0.00)	-0.00*** (0.00)	-0.00 (0.00)
<b>Avg. Short-Term Debt<sub>t&lt;0</sub></b>	0.02** (0.01)	0.02* (0.01)	0.01 (0.01)
<b>Avg. Long-Term Debt<sub>t&lt;0</sub></b>	0.02** (0.01)	0.03** (0.01)	0.01 (0.01)
<b>Avg. Long-Term Investment<sub>t&lt;0</sub></b>	-0.02* (0.02)	-0.02** (0.02)	-0.00 (0.01)
<b>Number of observations</b>	1,240	1,192	1,013
<b>Adjusted <math>R^2</math></b>	0.179	0.142	0.070

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors in parenthesis. The regressions also control for industry, export cohort, short-term labor, long-term labor, inventory, property, short-term debt, domestic revenue, and intangibles. [Back](#).

**Table 14: Matched Estimates: Probability of Going Out of Business**

<b>Dependent= <i>Exit</i></b>	<b>All</b>	<b>Survived SR</b>	<b>Surv. SR &amp; MR</b>
<b>Successful</b>	-0.31*** (0.04)	-0.26*** (0.04)	-0.03 (0.02)
<b>SuccessfulxNFV</b>	0.08 (0.05)	0.07 (0.05)	-0.02 (0.03)
<b>Domestic</b>	-0.06* (0.04)	-0.07* (0.04)	-0.00 (0.03)
<b>DomesticxNFV</b>	0.00 (0.05)	0.02 (0.05)	-0.02 (0.03)
<b>Not Fin. Vulnerable (NFV)</b>	-0.10*** (0.04)	-0.09** (0.04)	0.01 (0.02)
<b>Avg. Domestic Revenue<sub>t&lt;0</sub></b>	-0.03*** (0.01)	-0.02** (0.01)	-0.01 (0.01)
<b>Avg. Short-Term Debt<sub>t&lt;0</sub></b>	0.02* (0.01)	0.02 (0.01)	0.01 (0.01)
<b>Avg. Short-Term Investment<sub>t&lt;0</sub></b>	0.11*** (0.03)	0.12*** (0.03)	0.03 (0.03)
<b>Number of observations</b>	1,468	1,391	1,165
<b>Adjusted R<sup>2</sup></b>	0.197	0.175	0.105

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors in parenthesis. The regressions also control for industry, export cohort match, short-term labor, long-term labor, inventory, property, Long-Term Investment, Long-Term Debt, and intangible. [Back](#).

Table 15: First Stage: Probability of Going Out of Business

Dependent = <i>Successful</i>	All	Survived SR	Survived SR & MR
<b>Market Change</b>	-0.0011** (0.0005)	-0.0011** (0.0005)	-0.0056 (0.0102)
<b>Num. of observations</b>	904	870	720

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors in parenthesis. The regressions control for industry, export cohort, and initial domestic revenue. **Angrist-Pischke multivariate F test** of excluded instruments is 5.13/4.93/0.30.

**Table 16:** IV Estimates: Probability of Going Out of Business

Dependent = <i>Exit</i>	All	Survived SR	Survived SR & MR
<b>Successful</b>	-2.64** (1.20)	-2.73** (1.26)	0.07 (0.55)
<b>Num. of observations</b>	904	870	720

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors in parenthesis. The regressions control for industry, export cohort, and initial domestic revenue.