# The Effect of Credit on the Export Performance of Colombian Exporters

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# What we do ?

- Firm level data from Colombia:
  - Estimate Credit Elasticity of Exports for t: 1998-2006:

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- Firm level data from Colombia:
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    - Total Export Volume
    - Market Reach

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    - Market Reach
    - Market Penetration
    - Product Mix
  - This Credit Elasticity varies by firm size.
    - **Small**
      - Market Penetration
      - Product Mix

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  - Significant effect of current Credit financing on a firm's Export Performance.
    - Total Export Volume
    - Market Reach
    - Market Penetration
    - Product Mix
  - This Credit Elasticity varies by firm size.
    - **Small**
      - Market Penetration
      - Product Mix
    - **Medium**
      - Market Reach
      - Market Penetration
      - Product Mix

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  - Significant effect of current Credit financing on a firm's Export Performance.
    - Total Export Volume
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    - Market Penetration
    - Product Mix
  - This Credit Elasticity varies by firm size.
    - **Small**
      - Market Penetration
      - Product Mix
    - **Medium**
      - Market Reach
      - Market Penetration
      - Product Mix
    - **Large**
      - Market Reach

# Related Literature

- **Growth and Development of Financial Institutions:**
  - Rajan and Zingales (1998)
  - Fisman and Love (2001)
  - Beck (2002,2003)
- **External Financing and Banking Crisis:**
  - Braun and Larrain (2003,2005)
  - Iacovone and Zavacka (2009)
  - Chor and Manova (2010)

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- **International Trade and Financing Constraints:**
  - Chaney (2005) and Mûuls (2008): Only affects the EX
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  - Feenstra, Zhiyuan and Miaojie (2010)
  - **Amiti and Weinstein(2011):**
    - **Rather than using supply side variations of bank lending in times economic distress.**
    - **We construct a manufacturer specific supply side instrument for credit demand.**

# How ?

**We use 3 sources to construct an unbalanced panel dataset for 2,930 (11,191) exporters:**

1. **DIAN'S Transactional Export Data (TED):**

2. **Super Sociedades (SS)**

3. **Bank-Firm Matched Dataset – SuperFinanciera format 341**

# How ?

**We use 3 sources to construct an unbalanced panel dataset for 2,930 (11,191) exporters:**

1. **DIAN'S Transactional Export Data (TED):**

   - Total volume of exports:
     - Market Reach: # of Destination Ctys
     - Market Penetration: Avg. Export by Destination
     - Product Mix: # Products, 6, 8 and 10 HS.

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2.  **Super Sociedades (SS)**
    - Extract Balance Sheet information
        – A firm's Total Assets and Total Liabilities
        – We decompose a firm's Total Liabilities:

            Firm's Total Liabilities Bank and Supplier Trade Debt.
            » Total Liabilities – Short Term        and Long Term.
            » Short Term – Bank        and Long Term.
            » Short Term – Supplier Trade Debt

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3. **Bank-Firm Matched Dataset – SuperFinanciera format 341**

   - To Identify Banking Relationships

# How ?

**We use 3 sources to construct an unbalanced panel dataset for 2,930 (**11,191**) exporters:**

1. **DIAN'S Transactional Export Data (TED):**

   38% Exporters - 72.1% Total Exports

   - Total volume of exports: (USD 312,000)
     - Market Reach: # of Destination Ctys (6 Countries)
     - Market Penetration: Avg. Export by Destination (USD 82,500)
     - Product Mix: # Products, 6, 8 and 10 HS. (8 Products)

2. **Super Sociedades (SS)**

   - Extract Balance Sheet information
     - A firm's Total Assets and Total Liabilities
     - We decompose a firm's Total Liabilities:
       » 61% of Firm's Total Liabilities Bank and Supplier Trade Debt.
       » Total Liabilities – Short Term (52%) and Long Term.
       » Short Term – Bank (50%) and Long Term.
       » Short Term – Supplier Trade Debt (32%)

3. **Bank-Firm Matched Dataset – SuperFinanciera format 341**
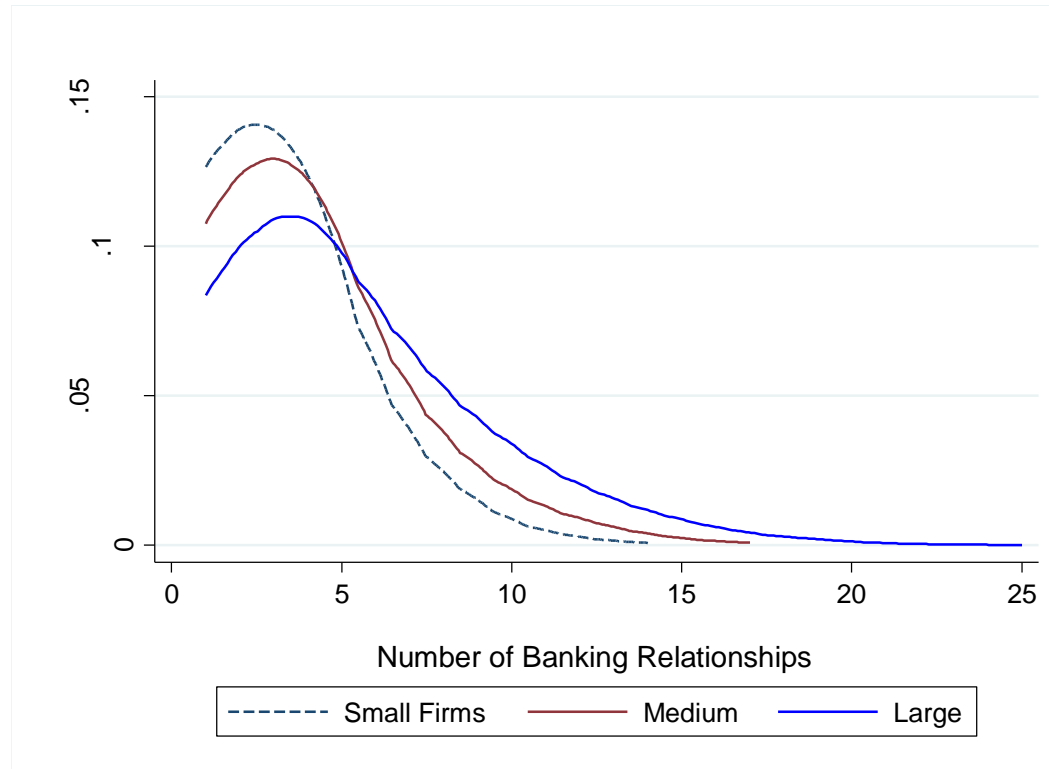
   - To Identify Banking Relationships
     - 3 banking Institutions
     - 25% of the sample is give financing by one Financial Institution.
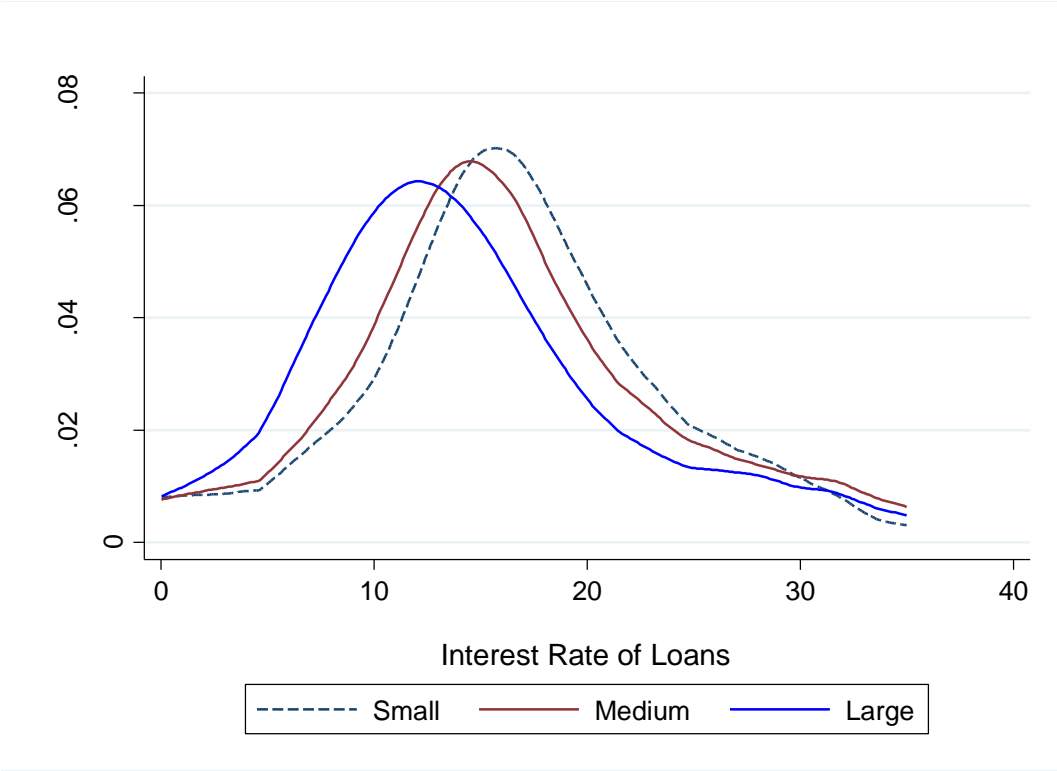
# Across firm size….
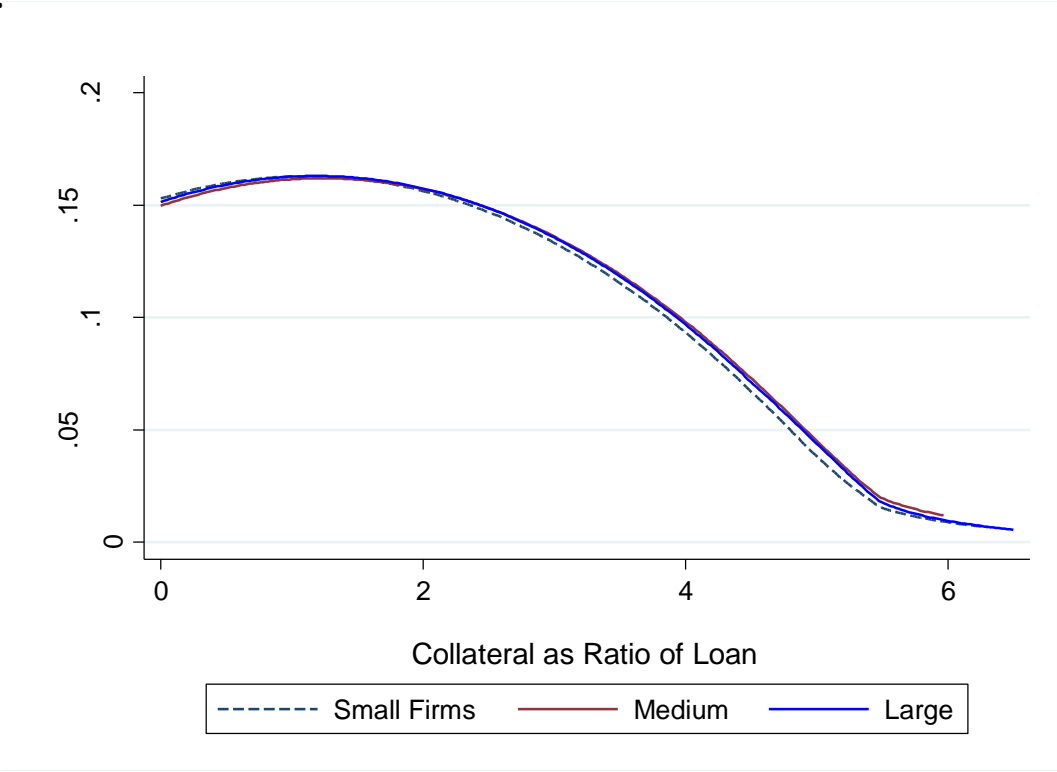
- **A first glance to the data suggests that there are significant differences on credit access by firm size. For example,**

Interest Rate of Loans

- - - - Small —— Medium —— Large

Despite….

# Empirical Setup

# Empirical Approach

$$\ln y_{i,s,t} = \beta_0 + \beta_1 \ln bloan_{i,s,t} + \beta_2 levrat_{i,s,t-1} + \Delta_i \gamma' + \Gamma_{s,t} \delta' + \varepsilon_{i,s,t} \quad (1)$$

# Empirical Approach

$$\ln y_{i,s,t} = \beta_0 + \beta_1 \ln bloan_{i,s,t} + \beta_2 levrat_{i,s,t-1} + \Delta_i \gamma' + \Gamma_{s,t} \delta' + \varepsilon_{i,s,t} \quad (1)$$

$exp_{i,s,t}$ : A firm's Total Volume of Exports (ln)

$ncty_{i,s,t}$: A firm's Total Number of Exported Destinations (ln)

$nprod_{i,s,t}$: A firm's Total Number of Exported Products at hs 10, 8 and 6 digits. (ln)

$mpen_{i,s,t}$: A firm's Market Penetration. (ln)

# Empirical Approach

$$\ln y_{i,s,t} = \beta_0 + \beta_1 \ln bloan_{i,s,t} + \beta_2 levrat_{i,s,t-1} + \Delta_i \gamma' + \Gamma_{s,t} \delta' + \varepsilon_{i,s,t} \ (1)$$

A firm's financial debt :

$\text{bloan}_{i,s,t} = \sum_{b \in B} bloan_{b,i,s,t}$
* $banks_{i,s,t}$: $Short\ Term\ Debt\ with\ Banks$
* $bankl_{i,s,t}$: $Long\ Term\ Debt\ with\ Banks$
* $oextfin_{i,s,t}$: Debt with other financial institutions.

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Leverage
(Tot. Liab/Tot. Assets)

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# Empirical Approach

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**Firm F.E.   Sector-Year F.E.**

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# ….Problems

**1.**   **Incidental Truncation Problem:**

**2.**   **Endogenous relationship of Credit and Export performance:**

# ....Problems

1. **Incidental Truncation Problem:**
   – Selection Bias in SS dataset:
     - Sales/total assets are higher than a reporting threshold.
       – Decree 1258 of 1993: 20,000 times m.l.w. Total Assets
       – Decree 3100 of 1997: 20,000 times tot. Sales or Total Assets.
       – Decree 4350 of 2006: 30,000 times tot. Sales or Total Assets. – in 2006 USD $5.2
     - Superintendent in charge might decide to include manufacturers in the survey even though they fail to meet the minimum reporting threshold.
     - Following Wooldridge (2002). We include a selection parameter.
   – **The Cost: Can't link Credit with Export performance.**
2. **Endogenous relationship of Credit and Export performance:**

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     - Superintendent in charge might decide to include manufacturers in the survey even though they fail to meet the minimum reporting threshold.
     - Following Wooldridge (2002). We include a selection parameter.
   - **The Cost: Can't link Credit with Export performance.**
2. **Endogenous relationship of Credit and Export performance:**
   - On the one hand: A firm's exports may lead a firm to receive external financing.
   - On the other hand: External financing may lead for a firm to export.
     - Construct a firm specific supply side IV that we use as an instrument for a firm's current new financial debt.

# Incidental Truncation – Bias Selection

$$\ln y_{i,s,t} = \beta_0 + \beta_1 \ln bloan_{i,s,t} + \beta_2 levrat_{i,s,t-1} + \Delta_i \gamma' + \Gamma_{s,t} \delta' + \varepsilon_{i,s,t} \ (1)$$

$$y_{1,i,s,t} = 1\{z_{i,s,t}\lambda' + \Lambda_i \alpha' + \Gamma_{s,t}\rho' + \nu_{i,s,t} > 0\} \ (2)$$

- Estimate parameters $\widehat{\lambda'}, \widehat{\alpha'}, \widehat{\rho'}$ with a probit of $y_{1,i,s,t}$ on $z_{i,s,t}$

# Incidental Truncation – Bias Selection

$$\ln y_{i,s,t} = \beta_0 + \beta_1 \ln bloan_{i,s,t} + \beta_2 levrat_{i,s,t-1} + \Delta_i \gamma' + \Gamma_{s,t} \delta' + \varepsilon_{i,s,t} \ (1)$$

$$y_{1,i,s,t} = 1\{z_{i,s,t}\lambda' + \Lambda_i \alpha' + \Gamma_{s,t}\rho' + \nu_{i,s,t} > 0\} \ (2)$$

- Estimate parameters $\widehat{\lambda'}, \widehat{\alpha'}, \widehat{\rho'}$ with a probit of $y_{1,i,s,t}$ on $z_{i,s,t}$

- Estimate Mills Ratio

$$\widehat{\lambda_{i,s,t}^M} = \frac{\phi(z_{i,s,t}\lambda' + \Lambda_i \alpha' + \Gamma_{s,t}\rho')}{1 - \phi(z_{i,s,t}\lambda' + \Lambda_i \alpha' + \Gamma_{s,t}\rho')}$$

# Reverse Causality - IV Estimation

- ## I stage:

$$\ln bloan_{i,s,t} = \eta_0 + \eta_1 \ln sloan_{i,s,t} + \eta_2 levrat_{i,s,t-1} + \eta_3 \widehat{\lambda_{i,s,t}^M} + \Delta_i \theta' + \Gamma_{s,t} \mu' + \xi_{i,s,t} \ (3)$$

$$\xi_{i,s,t} \perp \varepsilon_{i,s,t}$$

- ## II stage:

$$\ln y_{i,s,t} = \beta_0 + \beta_1 \ln \widehat{bloan}_{i,s,t} + \beta_2 levrat_{i,s,t-1} + \beta_3 \widehat{\lambda_{i,s,t}^M} + \Delta_i \gamma' + \Gamma_{s,t} \delta' + \varepsilon_{i,s,t} \ (4)$$

$$> 0$$

- In all specifications we cluster standard errors by sector

# Results

# Total Exports

| Dependant Variable: Total Exports (ln) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | No IV | | | |
| Total Bank Financed Debt t (ln) | **0.008** | | | |
| | **(0.003)\*\*** | | | |
| Leverage Ratio t-1 | -0.241 | | | |
| | (0.199) | | | |
| Inverse Mills Ratio | | | | |
| | | | | |
| First Stage: Firm Specific Bank Supply | | | | |
| F-stat First Stage | | | | |
| Manufacturer Fixed Effect | Yes | | | |
| Year Fixed Effect | Yes | | | |
| Sector-Year Fixed Effect | No | | | |
| Observations | 11,191 | | | |
| R-squared[a] | 0.887 | | | |

[a] Columns (1) and (3) report the Adjusted R-squared, while Columns (2) and (4) report the within R-squared. Clustered Standard errors in parentheses. \*\*\*, \*\*,\* Significant at 1%, 5% and 10% respectively.

# Total Exports

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|---|---|---|---|---|
| | No IV | IV | | |
| Total Bank Financed Debt t (ln) | **0.008** | **0.051** | | |
| | **(0.003)**\*\* | **(0.023)**\*\* | | |
| Leverage Ratio t-1 | -0.241 | -0.286 | | |
| | (0.199) | (0.202) | | |
| Inverse Mills Ratio | | | | |
| | | | | |
| First Stage: Firm Specific Bank Supply | | **0.743** | | |
| F-stat First Stage | | **46.294** | | |
| Manufacturer Fixed Effect | Yes | Yes | | |
| Year Fixed Effect | Yes | Yes | | |
| Sector-Year Fixed Effect | No | No | | |
| Observations | 11,191 | 11,191 | | |
| R-squared[a] | 0.887 | 0.882 | | |

[a] Columns (1) and (3) report the Adjusted R-squared, while Columns (2) and (4) report the within R-squared. Clustered Standard errors in parentheses.  \*\*\*, \*\*,\*  Significant at 1%, 5% and 10% respectively.

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| | **(0.003)\*\*** | **(0.023)\*\*** | **(0.026)\*\*** | |
| Leverage Ratio t-1 | -0.241 | -0.286 | -0.319 | |
| | (0.199) | (0.202) | (0.227) | |
| Inverse Mills Ratio | | | | |
| First Stage: Firm Specific Bank Supply | | **0.743** | .682 | |
| F-stat First Stage | | **46.294** | 30.415 | |
| Manufacturer Fixed Effect | Yes | Yes | Yes | |
| Year Fixed Effect | Yes | Yes | No | |
| Sector-Year Fixed Effect | No | No | Yes | |
| Observations | 11,191 | 11,191 | 11,191 | |
| R-squared[a] | 0.887 | 0.882 | 0.91 | |

[a] Columns (1) and (3) report the Adjusted R-squared, while Columns (2) and (4) report the within R-squared. Clustered Standard errors in parentheses.
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| | **(0.003)\*\*** | **(0.023)\*\*** | **(0.026)\*\*** | **(0.023)\*\*** |
| Leverage Ratio t-1 | -0.241 | -0.286 | -0.319 | -0.278 |
| | (0.199) | (0.202) | (0.227) | (0.198) |
| Inverse Mills Ratio | | | | 0.583 |
| | | | | (0.611) |
| First Stage: Firm Specific Bank Supply | | **0.743** | .682 | **0.743** |
| F-stat First Stage | | **46.294** | 30.415 | **47.136** |
| Manufacturer Fixed Effect | Yes | Yes | Yes | Yes |
| Year Fixed Effect | Yes | Yes | No | Yes |
| Sector-Year Fixed Effect | No | No | Yes | No |
| Observations | 11,191 | 11,191 | 11,191 | 11,191 |
| R-squared[a] | 0.887 | 0.882 | 0.91 | 0.883 |

[a] Columns (1) and (3) report the Adjusted R-squared, while Columns (2) and (4) report the within R-squared.  Clustered Standard errors in parentheses.
\*\*\*, \*\*,\*  Significant at 1%, 5% and 10% respectively.

# Market Reach

| Dependent Variable: # of Export Destinations (ln) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | No IV | IV | IV | IV |
| Total Bank Financed Debt t (ln) | 0.002 | 0.024 | 0.027 | 0.023 |
| | (0.001) | (0.007)*** | (0.008)** | (0.007)*** |
| Leverage Ratio t-1 | -0.066 | -0.090 | -0.102 | -0.085 |
| | (0.081) | (0.082) | (0.095) | (0.082) |
| Inverse Mills Ratio | | | | 0.369 |
| | | | | (0.294) |
| First Stage: Firm Specific Bank Supply | | 0.743 | 0.682 | 0.743 |
| F-stat First Stage | | 46.294 | 30.415 | 47.136 |
| Manufacturer Fixed Effect | Yes | Yes | Yes | Yes |
| Year Fixed Effect | Yes | Yes | No | No |
| Sector-Year Fixed Effect | No | No | Yes | Yes |
| Observations | 11,191 | 11,191 | 11,191 | 11,191 |
| R-squared[a] | 0.871 | 0.862 | 0.89 | 0.863 |

[a] Columns (1) and (3) report the Adjusted R-squared, while Columns (2) and (4) report the within R-squared.  Clustered Standard errors in parentheses.  ***, **,*  Significant at 1%, 5% and 10% respectively.

# Market Penetration

| Dependent Variable: Market Penetration (ln) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | No IV | IV | IV | IV |
| Total Bank Financed Debt t (ln) | 0.006 | 0.027 | 0.032 | 0.026 |
| | (0.003)** | (0.020) | (0.024) | (0.020) |
| Leverage Ratio t-1 | -0.174 | -0.196 | -0.217 | -0.193 |
| | (0.164) | (0.166) | (0.186) | (0.164) |
| Inverse Mills Ratio | | | | 0.214 |
| | | | | (0.509) |
| First Stage: Firm Specific Bank Supply | | 0.743 | 0.682 | 0.743 |
| F-stat First Stage | | 46.294 | 30.415 | 47.136 |
| Manufacturer Fixed Effect | Yes | Yes | Yes | Yes |
| Year Fixed Effect | Yes | Yes | No | No |
| Sector-Year Fixed Effect | No | No | Yes | Yes |
| Observations | 11,191 | 11,191 | 11,191 | 11,191 |
| R-squared[a] | 0.85 | 0.848 | 0.884 | 0.848 |

[a] Columns (1) and (3) report the Adjusted R-squared, while Columns (2) and (4) report the within R-squared.  Clustered Standard errors in parentheses.  ***, **,*  Significant at 1%, 5% and 10% respectively.

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# Product Mix

| Dependent Variable: Market Penetration (ln) | (1) | (2) | (3) | (4) | | |
|---|---|---|---|---|---|---|
| | No IV | IV | IV | IV-HS6 | | |
| Total Bank Financed Debt t (ln) | 0.004 | 0.018 | 0.016 | 0.018 | | |
| | (0.002)** | (0.010)* | (0.010) | (0.010)* | | |
| Leverage Ratio t-1 | -0.09 | -0.105 | -0.107 | -0.104 | | |
| | (0.081) | (0.085) | (0.092) | (0.085) | | |
| Inverse Mills Ratio | | | | 0.08 | | |
| | | | | (0.284) | | |
| First Stage: Firm Specific Bank Supply | | 0.743 | 0.682 | 0.743 | | |
| F-stat First Stage | | 46.294 | 30.415 | 47.136 | | |
| Manufacturer Fixed Effect | Yes | Yes | Yes | Yes | | |
| Year Fixed Effect | Yes | Yes | No | No | | |
| Sector-Year Fixed Effect | No | No | Yes | Yes | | |
| Observations | 11,191 | 11,191 | 11,191 | 11,191 | | |
| R-squared[a] | 0.838 | 0.835 | 0.874 | 0.835 | | |

[a] Columns (1) and (3) report the Adjusted R-squared, while Columns (2), (4)-(6) report the within R-squared. Clustered Standard errors in parentheses. ***, **,* Significant at 1%, 5% and 10% respectively.

# Product Mix

| Dependent Variable: Market Penetration (ln) | (1) | (2) | (3) | (4) | (5) | |
|---|---|---|---|---|---|---|
| | No IV | IV | IV | IV-HS6 | IV-HS8 | |
| Total Bank Financed Debt t (ln) | 0.004 | 0.018 | 0.016 | 0.018 | 0.019 | |
| | (0.002)** | (0.010)* | (0.010) | (0.010)* | (0.010)* | |
| Leverage Ratio t-1 | -0.09 | -0.105 | -0.107 | -0.104 | -0.081 | |
| | (0.081) | (0.085) | (0.092) | (0.085) | (0.091) | |
| Inverse Mills Ratio | | | | 0.08 | 0.052 | |
| | | | | (0.284) | (0.284) | |
| First Stage: Firm Specific Bank Supply | | 0.743 | 0.682 | 0.743 | 0.743 | |
| F-stat First Stage | | 46.294 | 30.415 | 47.136 | 47.136 | |
| Manufacturer Fixed Effect | Yes | Yes | Yes | Yes | Yes | |
| Year Fixed Effect | Yes | Yes | No | No | No | |
| Sector-Year Fixed Effect | No | No | Yes | Yes | Yes | |
| Observations | 11,191 | 11,191 | 11,191 | 11,191 | 11,191 | |
| R-squared[a] | 0.838 | 0.835 | 0.874 | 0.835 | 0.827 | |

[a] Columns (1) and (3) report the Adjusted R-squared, while Columns (2), (4)-(6) report the within R-squared. Clustered Standard errors in parentheses. ***, **,* Significant at 1%, 5% and 10% respectively.

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# Product Mix

| Dependent Variable: Market Penetration (ln) | (1) No IV | (2) IV | (3) IV | (4) IV-HS6 | (5) IV-HS8 | (6) IV-HS10 |
|---|---|---|---|---|---|---|
| Total Bank Financed Debt t (ln) | 0.004 | 0.018 | 0.016 | 0.018 | 0.019 | 0.02 |
| | (0.002)** | (0.010)* | (0.010) | (0.010)* | (0.010)* | (0.010)** |
| Leverage Ratio t-1 | -0.09 | -0.105 | -0.107 | -0.104 | -0.081 | -0.074 |
| | (0.081) | (0.085) | (0.092) | (0.085) | (0.091) | (0.094) |
| Inverse Mills Ratio | | | | 0.08 | 0.052 | 0.126 |
| | | | | (0.284) | (0.284) | (0.280) |
| First Stage: Firm Specific Bank Supply | | 0.743 | 0.682 | 0.743 | 0.743 | 0.743 |
| F-stat First Stage | | 46.294 | 30.415 | 47.136 | 47.136 | 47.136 |
| Manufacturer Fixed Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effect | Yes | Yes | No | No | No | No |
| Sector-Year Fixed Effect | No | No | Yes | Yes | Yes | Yes |
| Observations | 11,191 | 11,191 | 11,191 | 11,191 | 11,191 | 11,191 |
| R-squared[a] | 0.838 | 0.835 | 0.874 | 0.835 | 0.827 | 0.825 |

[a] Columns (1) and (3) report the Adjusted R-squared, while Columns (2), (4)-(6) report the within R-squared. Clustered Standard errors in parentheses. ***, **,* Significant at 1%, 5% and 10% respectively.

# Are there any differences across firms size ?

- In the case of Colombia, Law 590 of 2000 classifies firms by size.
- We proceed to classify firms in our data within 3 categories:

**Small**: <=15000 mwg.

**Medium**: A firm's who's total assets are between 15000 – 30000 mwg.

**Large**: Firms whose total assets are higher than 30000 mwg.

# Total Exports by Size

| Dependent Variable: Total Exports (ln) | Firm Size[a] | | | Firm Size[a] | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Small | Medium | Large | Small | Medium | Large |
| Total Bank Financed Debt t (ln) | 0.080 | 0.100 | 0.024 | 0.084 | 0.098 | 0.024 |
| | (0.042)* | (0.029)*** | (0.033) | (0.043)* | (0.029)*** | (0.033) |
| Leverage Ratio t-1 | -0.727 | -0.467 | 0.122 | -0.768 | -0.420 | 0.128 |
| | (0.439)* | (0.324) | (0.251) | (0.428)* | (0.320) | (0.255) |
| Inverse Mills Ratio | | | | -0.709 | 3.781 | 1.798 |
| | | | | (0.747) | (3.620) | (4.223) |
| First Stage IV: Financial Supply t | 0.693 | 0.885 | 0.665 | 0.677 | 0.884 | 0.665 |
| F-stat: Significance IV First Stage | 14.285 | 23.276 | 25.421 | 13.452 | 23.024 | 25.235 |
| Manufacturer Fixed Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3,018 | 2,191 | 5,982 | 3,018 | 2,191 | 5,982 |
| R-squared (within) | 0.872 | 0.836 | 0.868 | 0.87 | 0.837 | 0.868 |

[a] Small size corresponds to firms with Total Assets below 15000 minimum wages.  Medium size firms corresponds to firms with Total Assets between 15000 - 30000  minimum wages.  Large size corresponds to firms with Total Assets above 30000 minimum wages. Clustered Standard errors in parentheses.  ***, **,*  Significant at 1%, 5% and 10% respectively.

# Market reach by Size

| Dependent Variable: # Export Destinations t (ln) | Firm Size[a] | | | Firm Size[a] | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Small | Medium | Large | Small | Medium | Large |
| Total Bank Financed Debt t (ln) | 0.001 | **0.041** | 0.030 | **0.002** | **0.040** | 0.030 |
| | (0.017) | **(0.016)**\*\* | (0.011)\*\*\* | (0.018) | **(0.016)**\*\* | (0.011)\*\*\* |
| Leverage Ratio t-1 | -0.181 | -0.080 | -0.058 | -0.192 | -0.058 | -0.052 |
| | (0.148) | (0.175) | (0.117) | (0.151) | (0.177) | (0.121) |
| Inverse Mills Ratio | | | | -0.194 | 1.776 | 1.736 |
| | | | | (0.268) | (1.658) | (1.488) |
| First Stage IV: Financial Supply t | 0.693 | **0.885** | 0.665 | **0.677** | **0.884** | 0.665 |
| F-stat: Significance IV First Stage | 14.285 | **23.276** | 25.421 | **13.452** | **23.024** | 25.235 |
| Manufacturer Fixed Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3,018 | 2,191 | 5,982 | 3,018 | 2,191 | 5,982 |
| R-squared (within) | 0.848 | 0.811 | 0.853 | 0.848 | 0.812 | 0.853 |

[a] Small size corresponds to firms with Total Assets below 15000 minimum wages. Medium size firms corresponds to firms with Total Assets between 15000 - 30000 minimum wages. Large size corresponds to firms with Total Assets above 30000 minimum wages. Clustered Standard errors in parentheses. \*\*\*, \*\*,\* Significant at 1%, 5% and 10% respectively.

# Market Penetration by Size

| Dependent Variable: Market Penetration t (ln) | Firm Size[a] | | | Firm Size[a] | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Small | Medium | Large | Small | Medium | Large |
| Total Bank Financed Debt t (ln) | 0.079 | 0.059 | -0.006 | 0.082 | 0.058 | -0.006 |
| | (0.035)** | (0.027)** | (0.026) | (0.037)** | (0.026)** | (0.026) |
| Leverage Ratio t-1 | -0.547 | -0.387 | 0.180 | -0.576 | -0.362 | 0.180 |
| | (0.335) | (0.200)* | (0.191) | (0.321)* | (0.201)* | (0.192) |
| Inverse Mills Ratio | | | | -0.515 | 2.005 | 0.062 |
| | | | | (0.577) | (3.194) | (3.582) |
| First Stage IV: Financial Supply t | 0.693 | 0.885 | 0.665 | 0.677 | 0.884 | 0.665 |
| F-stat: Significance IV First Stage | 14.285 | 23.276 | 25.421 | 13.452 | 23.024 | 25.235 |
| Year Fixed Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Manufacturer Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3,018 | 2,191 | 5,982 | 3,018 | 2,191 | 5,982 |
| R-squared (within) | 0.846 | 0.798 | 0.825 | 0.844 | 0.799 | 0.825 |

[a] Small size corresponds to firms with Total Assets below 15000 minimum wages. Medium size firms corresponds to firms with Total Assets between 15000 - 30000 minimum wages. Large size corresponds to firms with Total Assets above 30000 minimum wages. Clustered Standard errors in parentheses. ***, **,* Significant at 1%, 5% and 10% respectively.

# Product Mix by Size

| Dependent Variable: # of Exported Products - hs6 (ln) | Firm Size[a] | | | Firm Size[a] | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Small | Medium | Large | Small | Medium | Large |
| Total Bank Financed Debt t (ln) | 0.035 | 0.036 | 0.011 | 0.037 | 0.036 | 0.011 |
| | (0.023) | (0.014)** | (0.014) | (0.024) | (0.015)** | (0.014) |
| Leverage Ratio t-1 | -0.141 | -0.138 | -0.020 | -0.157 | -0.137 | -0.014 |
| | (0.124) | (0.104) | (0.175) | (0.127) | (0.106) | (0.179) |
| Inverse Mills Ratio | | | | -0.289 | 0.109 | 1.522 |
| | | | | (0.339) | (2.171) | (1.992) |
| First Stage IV: Financial Supply t | 0.693 | 0.885 | 0.665 | 0.677 | 0.884 | 0.665 |
| F-stat: Significance IV First Stage | 14.285 | 23.276 | 25.421 | 13.452 | 23.024 | 25.235 |
| Year Fixed Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Manufacturer Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3,018 | 2,191 | 5,982 | 3,018 | 2,191 | 5,982 |
| R-squared (within) | 0.842 | 0.778 | 0.821 | 0.84 | 0.778 | 0.821 |

[a] Small size corresponds to firms with Total Assets below 15000 minimum wages. Medium size firms corresponds to firms with Total Assets between 15000 - 30000 minimum wages. Large size corresponds to firms with Total Assets above 30000 minimum wages. Clustered Standard errors in parentheses. ***, **,* Significant at 1%, 5% and 10% respectively.

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# In sum..

- An increase in Bank Financing from avg. in sample up to 75th percentile
  - Increase in 1.5 destinations
  - 37.6% of Market Penetration
  - Increase in Product Mix 2 products.

# Conclusions

- Access to credit improves a firm's export performance. Results suggest that new credit increases a firm's total volume of exports not only through it's impact on a firm's Intensive, and Extensive margins, but also because a firm's increases it's product mix.

- Across firms, the adjustment in the intensive and the extensive margins are higher for middle and small firms.

# Future work

- Isolate the impact of banking relationship and market specific effect on bank funding
- Deal with market specific drivers of export market demand.
- Compare results with domestic firms