# Does Access to Equity Promote Trade? Evidence from IPO Approvals in China

Robin Kaiji Gong[1], Yao Amber Li[2], Stephen Teng Sun[3], Shang-jin Wei[4]

ABFER
May 20, 2024

[1]The Hong Kong University of Science and Technology. Email: rkgong@ust.hk.
[2]The Hong Kong University of Science and Technology. Email: yaoli@ust.hk.
[3]City University of Hong Kong. Email: tengsun@cityu.edu.hk.
[4]Columbia University, shangjin.wei@columbia.edu.

# Motivation

**Financial markets** play a crucial role in international trade.

- Financial institution is a source of comparative advantage.
  - Chor (2010); Ju and Wei (2011); Manova (2013); Nunn and Trefler (2014)

# Motivation

**Financial markets** play a crucial role in international trade.

- Financial institution is a source of comparative advantage.
  - Chor (2010); Ju and Wei (2011); Manova (2013); Nunn and Trefler (2014)
- Financing trade
  - Bank loans (Paravisini et al., 2015)
  - Trade credit (Ahn, Amiti and Weinstein, 2011; Antras and Foley, 2015)
  - **Public/private equity**?
    - Equity is *different* from debt due to information asymmetry, riskiness, and lack of collateral value (Brown, Fazzari, and Petersen 2009).
    - Lack of research on its effect on trade.
    - Policy relevant to developing countries.

# This Paper: IPO and Exports

Research question: how does IPO affect firm exports?

# This Paper: IPO and Exports

Research question: how does IPO affect firm exports?

- Challenge: IPOs are endogenous events that take place at firms' certain life-cycle stages (Pastor, Taylor, and Veronesi 2009).

# This Paper: IPO and Exports

Research question: how does IPO affect firm exports?

- Challenge: IPOs are endogenous events that take place at firms' certain life-cycle stages (Pastor, Taylor, and Veronesi 2009).
- Setting: IPO approvals in China
  - China: the "World factory" with its stock market cap ranked #2 globally
  - An approval-based system regulated by the China Securities Regulatory Commission, or CSRC (Zhang, 2013; Piotroski and Zhang, 2014; Shi, Sun, and Zhang, 2018; Qian, Ritter, Shao, 2022)
    - Regular review meetings held by the Stock Issuance Examination and Verification Committee (SIEVC) determine IPO application outcomes.
    - Other countries with approval-based systems: France, South Korea, India, Indonesia, ...

# This Paper: IPO and Exports

Research question: how does IPO affect firm exports?

- Challenge: IPOs are endogenous events that take place at firms' certain life-cycle stages (Pastor, Taylor, and Veronesi 2009).
- Setting: IPO approvals in China
  - China: the "World factory" with its stock market cap ranked #2 globally
  - An approval-based system regulated by the China Securities Regulatory Commission, or CSRC (Zhang, 2013; Piotroski and Zhang, 2014; Shi, Sun, and Zhang, 2018; Qian, Ritter, Shao, 2022)
    - Regular review meetings held by the Stock Issuance Examination and Verification Committee (SIEVC) determine IPO application outcomes.
    - Other countries with approval-based systems: France, South Korea, India, Indonesia, ...
- Research design: cohort-based stacked difference-in-differences (DiD)
  - Comparing exports of successful and unsuccessful first-time IPO applicants in the same application year cohort
  - Identification: Exploiting review meeting records to categorize rejections and exclude rejections based on **revenue/profitability-related clauses**

# Preview of Findings

1. IPO and firm-level exports
   - IPO approval improves a firm's exports by **around 40%** in the subsequent 6 years.
   - DiD estimates remain quantitatively similar and statistically significant after excluding revenue/profitability-based rejections.

# Preview of Findings

1. IPO and firm-level exports
   - IPO approval improves a firm's exports by **around 40%** in the subsequent 6 years.
   - DiD estimates remain quantitatively similar and statistically significant after excluding revenue/profitability-based rejections.

2. Margins of export growth
   - The effect is mainly on the **extensive margins** rather than the intensive margin: $\uparrow$ # destination-product markets; $\sim$ exports per destination-product market

# Preview of Findings

1. IPO and firm-level exports
   - IPO approval improves a firm's exports by **around 40%** in the subsequent 6 years.
   - DiD estimates remain quantitatively similar and statistically significant after excluding revenue/profitability-based rejections.

2. Margins of export growth
   - The effect is mainly on the **extensive margins** rather than the intensive margin: $\uparrow$ # destination-product markets; $\sim$ exports per destination-product market

3. The effect is more pronounced for
   - Firms with lower credit constraint, positive patenting, higher sales expenses, and less export experience
   - Less tangible and capital intensive, more advertising intensive, and more differentiated/complex products

# Preview of Findings

1. IPO and firm-level exports
   - IPO approval improves a firm's exports by **around 40%** in the subsequent 6 years.
   - DiD estimates remain quantitatively similar and statistically significant after excluding revenue/profitability-based rejections.

2. Margins of export growth
   - The effect is mainly on the **extensive margins** rather than the intensive margin: $\uparrow$ # destination-product markets; $\sim$ exports per destination-product market

3. The effect is more pronounced for
   - Firms with lower credit constraint, positive patenting, higher sales expenses, and less export experience
   - Less tangible and capital intensive, more advertising intensive, and more differentiated/complex products

$\Rightarrow$ Consistent with IPOs promoting investments into intangible capital, particularly **customer capital** (Gourio and Rudanko 2014)

- Supported by anecdotal evidence from textual analysis on IPO prospectuses

# Literature

- International trade: novel empirical evidence on equity financing and trade
  - Financial constraints in trade: Beck (2002), Manova (2008, 2013); Antràs and Foley (2015); Manova, Wei, and Zhang (2015); Manova and Yu (2016)
  - Bank loans and trade finance: Ahn, Amiti, and Weinstein (2011); Amiti and Weinstein (2011); Feenstra, Li and Yu (2014); Paravisini et al. (2014); Antràs and Foley(2015); Muûls (2015); Niepmann and Schmidt-Eisenlohr (2017); Demir and Javorcik (2018); Paravisini, Rappoport, and Schnabl (2023)
  - Searching, learning, and informational frictions: Arkolakis (2010); Albornoz et al. (2012); Allen (2014); Chaney (2014); Macchiavello and Morjaria (2015); Berman et al. (2021); Eaton et al. (2021); Fitzgerald, Haller and Yedid-Levi (2023)

# Literature

- International trade: novel empirical evidence on equity financing and trade
  - Financial constraints in trade: Beck (2002), Manova (2008, 2013); Antràs and Foley (2015); Manova, Wei, and Zhang (2015); Manova and Yu (2016)
  - Bank loans and trade finance: Ahn, Amiti, and Weinstein (2011); Amiti and Weinstein (2011); Feenstra, Li and Yu (2014); Paravisini et al. (2014); Antràs and Foley(2015); Muûls (2015); Niepmann and Schmidt-Eisenlohr (2017); Demir and Javorcik (2018); Paravisini, Rappoport, and Schnabl (2023)
  - Searching, learning, and informational frictions: Arkolakis (2010); Albornoz et al. (2012); Allen (2014); Chaney (2014); Macchiavello and Morjaria (2015); Berman et al. (2021); Eaton et al. (2021); Fitzgerald, Haller and Yedid-Levi (2023)
- IPO and equity financing: new question, new setting, and new empirical strategy
  - IPO decisions and Post-IPO performance: Lerner (1994); Pagano, Panetta, and Zingales (1998); Ritter and Welch (2002); Brown, Fazzari, and Petersen (2009); Pástor et al. (2009); Ferreira, Manso, and Silva (2014); Bernstein (2015, 2022); Acharya and Xu (2017); Cong and Howell (2021); Larrain, et al. (2023)
  - China's stock market: Fan, Wong, and Zhang (2007); Guo and Zhang (2012); Liu, Tang, and Tian (2013); Piotroski and Zhang (2014); Shi, Sun, and Zhang (2018); Brunnermeier, Sockin, and Xiong (2020); Carpenter and Whitelaw (2020)

# Data and Empirical Strategy

# The IPO Process in China

A multi-step process tightly regulated by the CSRC

1. The applicant (IPO issuing firm) restructures/re-establishes itself as a qualified stock share limited company.
   - The applicant conducts due diligence and receives “tutoring” from financial professionals to meet compliance requirements.

# The IPO Process in China

A multi-step process tightly regulated by the CSRC

1. The applicant (IPO issuing firm) restructures/re-establishes itself as a qualified stock share limited company.
   - The applicant conducts due diligence and receives "tutoring" from financial professionals to meet compliance requirements.
2. The applicant and the securities intermediaries (investment banks) jointly file and submit an application to the CSRC.
   - Applications are reviewed on a first-come, first-served basis.

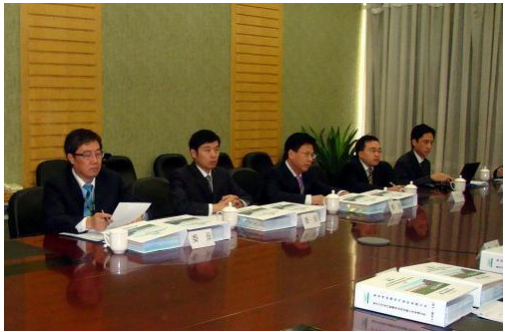
# The IPO Process in China

A multi-step process tightly regulated by the CSRC

1. The applicant (IPO issuing firm) restructures/re-establishes itself as a qualified stock share limited company.
   - The applicant conducts due diligence and receives "tutoring" from financial professionals to meet compliance requirements.
2. The applicant and the securities intermediaries (investment banks) jointly file and submit an application to the CSRC.
   - Applications are reviewed on a first-come, first-served basis.
3. The applicant (with its underwriters) attends a review meeting held by the SIEVC.
   - Applicants need to meet the "hard" listing requirements (profit, revenue, assets, etc.) to be eligible for review meetings.
   - Seven members from the SIEVC will discuss and vote on whether to approve or reject the IPO application based on the applicant's submitted materials and Q&A responses.
   - Applications receiving no less than five votes will be approved.
   - Once approval has been granted, the applicant must complete the listing process within a certain period (6 months before 2013; 12 months after 2013).


The CSRC Building

IPO Review Meeting by SIEVC



# Data

- Wind IPO Examination Database (WIND, 2000-2020)
  - Universe of IPO applications (**Main Board**, **Growth Enterprise Market (GEM) Board**, Sci-Tech Board)
  - Records of review meetings: meeting date, applicant identity, committee members, application outcome, etc.
  - Starting from 2010: the CSRC began to disclose the **reasons** and **clauses** used to make rejection decisions.

# Data

- Wind IPO Examination Database (WIND, 2000-2020)
  - Universe of IPO applications (**Main Board**, **Growth Enterprise Market (GEM) Board**, Sci-Tech Board)
  - Records of review meetings: meeting date, applicant identity, committee members, application outcome, etc.
  - Starting from 2010: the CSRC began to disclose the **reasons** and **clauses** used to make rejection decisions.
- Chinese Customs Trade Statistics (CCTS, 2000-2016)
  - Universe of export and import transactions
  - Transaction-level product code, country, value, quantity (before 2015), etc.

# Data

- Wind IPO Examination Database (WIND, 2000-2020)
  - Universe of IPO applications (**Main Board**, **Growth Enterprise Market (GEM) Board**, Sci-Tech Board)
  - Records of review meetings: meeting date, applicant identity, committee members, application outcome, etc.
  - Starting from 2010: the CSRC began to disclose the **reasons** and **clauses** used to make rejection decisions.
- Chinese Customs Trade Statistics (CCTS, 2000-2016)
  - Universe of export and import transactions
  - Transaction-level product code, country, value, quantity (before 2015), etc.
- Sample selection
  - Include firms in the manufacturing sector
  - Exclude meetings before 2006's stock market reforms (Tan et al., 2020)
  - Exclude meetings prior to IPO suspensions (Cong and Howell, 2021)

# Empirical Specifications

$$y_{it} = \sum_{k=-4}^{k=6} \beta_k \cdot \mathbb{1}(k = t - \tau(i)) \cdot \mathbb{1}(\text{IPO\_Approval}_i = 1) + \alpha_i + \kappa_{\tau(i),t} + \lambda_{s(i),t} + \mu_{b(i),t} + \epsilon_{ist}$$

- $y_{it}$: firm $i$'s log exports in year $t$
- $\mathbb{1}(k = t - \tau(i))$: an indicator for the year gap between year $t$ and firm $i$'s review meeting year $\tau(i)$ being $k$
- $\mathbb{1}(\text{IPO\_Approval}_i = 1)$: an indicator for the approval of firm $i$'s IPO application

# Empirical Specifications

$$y_{it} = \sum_{k=-4}^{k=6} \beta_k \cdot \mathbb{1}(k = t - \tau(i)) \cdot \mathbb{1}(\text{IPO\_Approval}_i = 1) + \alpha_i + \kappa_{\tau(i),t} + \lambda_{s(i),t} + \mu_{b(i),t} + \epsilon_{ist}$$

- $y_{it}$: firm $i$'s log exports in year $t$
- $\mathbb{1}(k = t - \tau(i))$: an indicator for the year gap between year $t$ and firm $i$'s review meeting year $\tau(i)$ being $k$
- $\mathbb{1}(\text{IPO\_Approval}_i = 1)$: an indicator for the approval of firm $i$'s IPO application
- $\alpha_i$: firm fixed effects
- $\kappa_{\tau(i),t}$: application cohort-year fixed effects
  - Comparison: approved/rejected applicants **in the same application year cohort**
- $\lambda_{s(i),t}$, $\mu_{b(i),t}$: HS2 sector-year and board-year fixed effects

# Empirical Specifications

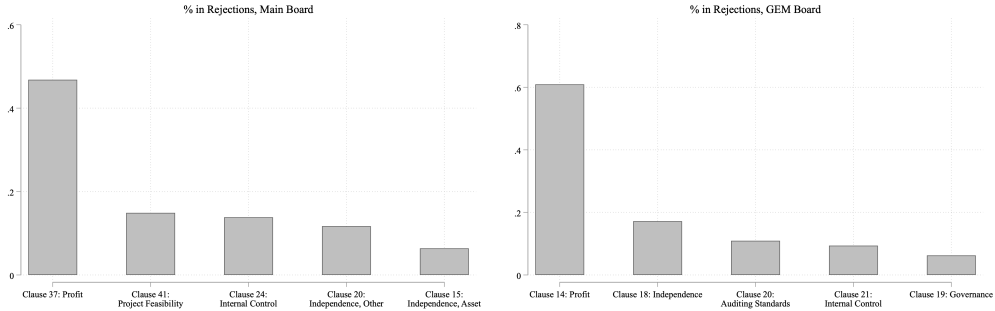
$$y_{it} = \sum_{k=-4}^{k=6} \beta_k \cdot \mathbb{1}(k = t - \tau(i)) \cdot \mathbb{1}(\text{IPO\_Approval}_i = 1) + \alpha_i + \kappa_{\tau(i),t} + \lambda_{s(i),t} + \mu_{b(i),t} + \epsilon_{ist}$$

- $y_{it}$: firm $i$'s log exports in year $t$
- $\mathbb{1}(k = t - \tau(i))$: an indicator for the year gap between year $t$ and firm $i$'s review meeting year $\tau(i)$ being $k$
- $\mathbb{1}(\text{IPO\_Approval}_i = 1)$: an indicator for the approval of firm $i$'s IPO application
- $\alpha_i$: firm fixed effects
- $\kappa_{\tau(i),t}$: application cohort-year fixed effects
  - Comparison: approved/rejected applicants **in the same application year cohort**
- $\lambda_{s(i),t}$, $\mu_{b(i),t}$: HS2 sector-year and board-year fixed effects
- Threat: IPO approval might be related to unobserved shocks that affect exports
  - Productivity shocks, foreign market shocks, etc.
  - Solution: exclude rejections due to revenue/productivity risks

# Categorization of Rejections

- Clause 37 (Main) or Clause 14 (GEM): circumstances affecting revenue/profitability
  - Most commonly cited: 46.8% for main board, 60% for GEM board
  - The underlying factors may directly affect firms' export performance

Figure: Shares of Most Cited Clauses in Rejections




*Note*: The figure displays the distribution of the most commonly cited clauses in rejection cases for both the Main Board and the GEM Board from 2010 to 2016.

Details of the Clauses

# Categorization of Rejections

What circumstances are included in **clause 37** (main board) and clause 14 (GEM board)?

- 37.1&37.2: There has been or will be a material change in...
  - the business model, product or service mix of the issuer that has an adverse effect on the continued profitability of the issuer;
  - the issuer's industry position or the industry's business environment that has an adverse effect on the continued profitability of the issuer;
- 37.3: Significant reliance on related parties or customers with significant uncertainties in the issuer's operating income or net profit for the most recent year;
- 37.4: The issuer's net profit for the most recent year was mainly derived from investment income outside the scope of the consolidated financial statements;
- 37.5: Risk of adverse changes in the acquisition or use of important assets or technologies such as trademarks, patents, proprietary technologies, and franchises in use by the issuer;
- 37.6: Other circumstances that may have an adverse effect on the continued profitability of the issuer.

⏩ Clause 14 for IPOs on the GEM Board ⏩ Original Documentation (in Chinese)

# Reasons of Rejections (Clause 37)

Example 1: Chongqing Jinguan Automobile (Main, clause 37; 16 March, 2011)

- Since 2009, your company's product mix and customers have undergone significant changes. Sales to new customers and revenue declined significantly in 2010, which constitutes a major adverse impact on your company's continued profitability.

# Reasons of Rejections (Clause 37)

Example 1: Chongqing Jinguan Automobile (Main, clause 37; 16 March, 2011)

- Since 2009, your company's product mix and customers have undergone significant changes. Sales to new customers and revenue declined significantly in 2010, which constitutes a major adverse impact on your company's continued profitability.

Example 2: Shenzhen Meikai Electronics (Main, clause 37; 1 November, 2010)

- Your company's leading products include digital TV system equipment, electronic transformers, and power supply products. The three product categories have significant differences in terms of sales channels and customers. The company's business is relatively fragmented and its operation is volatile.

# Identification Assumption

Assumption: rejections *not* based on revenue/profitability-related clauses are not directly related to the unobserved applicant characteristics that affect export performance.

*Similar to Romer and Romer (1989, 2023)'s "narrative approach"*

# Identification Assumption

Assumption: rejections *not* based on revenue/profitability-related clauses are not directly related to the unobserved applicant characteristics that affect export performance.

*Similar to Romer and Romer (1989, 2023)'s "narrative approach"*

- Other commonly cited clauses
  - Clause 15, 20 (Main)/Clause 18 (GEM): independence
    - Common cases: competition or transactions with related parties
    - Unrelated to fundamentals; mostly domestic activities
  - Clause 24 (Main)/Clause 21 (GEM): internal control
    - Common cases: financial reporting reliability; regulatory compliance
    - Normally petty misdemeanors; also common among public firms; limited monitoring capacity of SIEVC (Huang and Li, 2016; Fang et al., 2020)
  - Clause 41 (Main)/Clause 27 (GEM): investment project feasibility
    - Related to planned investment activities conditional on fundraising through IPOs
- Anecdotally, many approved cases are of low quality or fraudulent
  ⇒ positive sorting unlikely between the approved and the rejection cases not based on revenue/profitability-related clauses

⏩ Examples of Other Clauses

# Summary Statistics

| | Mean | Std. Dev. | 25 pct | 50 pct | 75 pct |
|---|---|---|---|---|---|
| *Panel A. Full Sample* | | | | | |
| Exports (in million RMB) | 28.23 | 66.42 | 1.33 | 7.96 | 28.42 |
| # Products | 7.40 | 11.21 | 2.00 | 4.00 | 8.00 |
| # Destinations | 20.86 | 21.55 | 5.00 | 14.00 | 30.00 |
| # Dest.-prod. pairs | 45.92 | 84.39 | 7.00 | 21.00 | 49.00 |
| Avg. exports per pair (in million RMB) | 1.19 | 5.43 | 0.10 | 0.31 | 0.82 |
| IPO approval rate | 0.86 | 0.35 | | | |
| Expected POP | 12.06 | 5.95 | 8.13 | 10.90 | 14.38 |
| Expected fund raised (in billion RMB) | 0.45 | 0.52 | 0.21 | 0.31 | 0.49 |
| # Observations | | | 6796 | | |
| *Panel B. Restricted Sample* | | | | | |
| Exports (in million RMB) | 27.97 | 63.99 | 1.42 | 8.87 | 29.57 |
| # Products | 7.50 | 11.60 | 2.00 | 4.00 | 8.00 |
| # Destinations | 20.84 | 21.77 | 5.00 | 14.00 | 30.00 |
| # Prod-dest pairs | 46.19 | 84.81 | 7.00 | 21.00 | 50.00 |
| Avg. exports per pair (in million RMB) | 1.32 | 6.06 | 0.10 | 0.33 | 0.83 |
| IPO approval rate | 0.93 | 0.25 | | | |
| Expected POP | 12.51 | 6.23 | 8.46 | 11.14 | 15.15 |
| Expected fund raised (in billion RMB) | 0.46 | 0.47 | 0.23 | 0.33 | 0.52 |
| # Observations | | | 4841 | | |

*Note*: The table presents the summary statistics of the main firm-level variables used in our analysis, including the value of exports, number of products, destinations, and destination-product pairs, average exports per destination-product pair, IPO approval rate, expected Public Offering Price (POP), and expected funds raised through the IPO. Panel A encompasses all WIND-CCTS-matched firm-year observations, while Panel B excludes IPO filings before 2010 and revenue- or profitability-related IPO rejection cases.

◂ Summary Statistics (ASIE Variables)

# Balance Test

| | *IPO application approved* | | | |
|---|---|---|---|---|
| | CCTS | | CCTS-ASIE | |
| | (1) | (2) | (3) | (4) |
| Avg. log exports | -0.00542 | -0.000400 | -0.00292 | -0.000153 |
| | (0.00651) | (0.00536) | (0.00739) | (0.00672) |
| Avg. log # dest.-prod. pairs | 0.00175 | -0.00199 | 0.00667 | 0.00566 |
| | (0.0121) | (0.00859) | (0.0131) | (0.00982) |
| Expected POP (RMB) | -0.00425 | 0.000162 | -0.00433 | 0.000310 |
| | (0.00342) | (0.00211) | (0.00344) | (0.00258) |
| Expected fund raised (Billion RMB) | 0.101*** | 0.0414 | 0.0959** | 0.0438 |
| | (0.0353) | (0.0271) | (0.0446) | (0.0396) |
| Avg. log sales | | | 0.000738 | -0.00172 |
| | | | (0.0214) | (0.0180) |
| Avg. log employment | | | -0.000192 | -0.00788 |
| | | | (0.0133) | (0.00926) |
| Gross profit margin | | | 0.231 | 0.176 |
| | | | (0.162) | (0.134) |
| Leverage | | | -0.115 | -0.0962 |
| | | | (0.0796) | (0.0925) |
| Sample | Full | Restricted | Full | Restricted |
| # observations | 791 | 618 | 662 | 517 |
| p-value | 0.049** | 0.515 | 0.033** | 0.114 |

*Note*: The table reports covariate balance tests for IPO approvals. The analysis is conducted at the firm level. Columns 1 and 2 encompass WIND-CCTS-matched firms, of which Column 1 includes the full sample, and Column 2 includes the restricted sample of firms that filed IPO applications between 2010 and 2016, excluding revenue- or profitability-related IPO rejection cases. Columns 3 and 4 encompass WIND-CCTS-ASIE-matched firms, of which Column 1 includes the full sample and Column 2 includes the restricted sample. The dependent variable is an indicator that takes a value of 1 if the firm's first IPO application is approved by the SIEVC. Cohort fixed effects, HS2 fixed effects, and Board fixed effects are controlled in all columns. Robust standard errors, clustered at the HS2-application cohort level, are shown in parentheses. The p-value reports the probability that the covariates measured in the year of application do not jointly influence the probability of an IPO approval.

# Findings

# Regression Estimates

*Panel A. Full Sample*

| | log exports (1a) | log des-prod markets (2a) | log avg. exports per market (3a) | log exports top market (4a) |
|---|---|---|---|---|
| IPO Approval×Post | 0.393** | 0.262*** | 0.134 | 0.0920 |
| | (0.153) | (0.0842) | (0.107) | (0.196) |
| # Observations | 6788 | 6788 | 6788 | 5121 |

*Panel B. Restricted Sample*

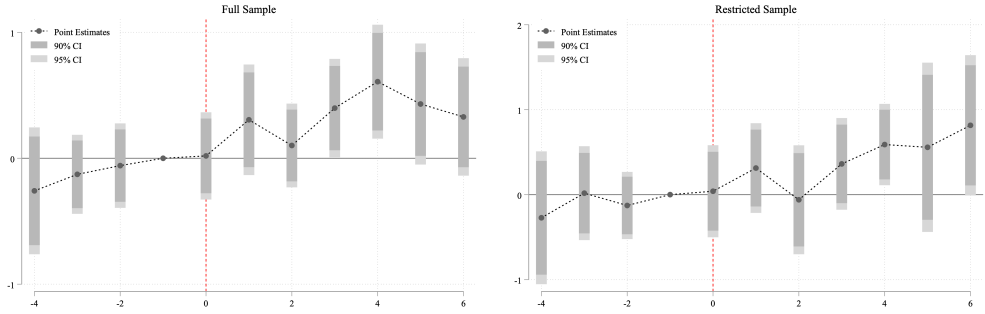
| | log exports (1b) | log des-prod markets (2b) | log avg. exports per market (3b) | log exports top market (4b) |
|---|---|---|---|---|
| IPO Approval×Post | 0.373** | 0.307*** | 0.0629 | 0.102 |
| | (0.183) | (0.0953) | (0.165) | (0.242) |
| # Observations | 4766 | 4766 | 4766 | 3695 |

*Note*: The table reports the estimated effects of IPO approval on firms' export outcomes. The dependent variables include log exports, log number of destination-product markets, log average exports per destination-product market, and log exports of top destination-product market. The variable IPO Approval is an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. The variable Post takes a value of 1 if the year is equal to or after the SIEVC review meeting year. All columns control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. Robust standard errors, clustered at the HS2-application cohort level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

⏩ Destination-Product Level Analysis

# IPO and Exports

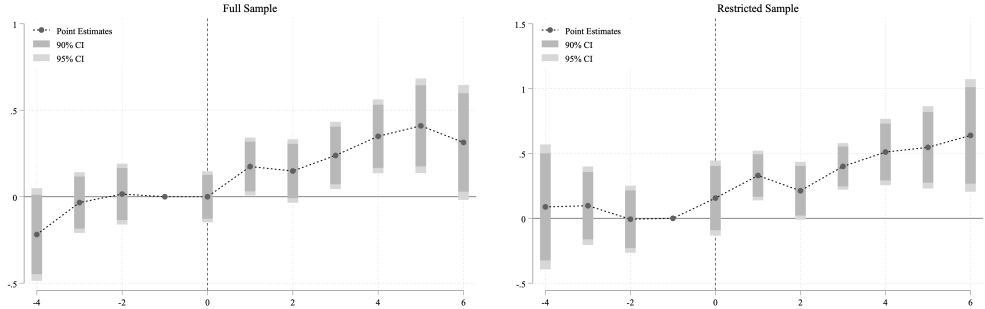
Figure: Effect of an IPO Approval on Firm Exports




*Note*: The figure plots the event study coefficients for the difference-in-differences specification that estimates the effect of IPO approval on log exports. The underlying regressions control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. Robust standard errors are clustered at the HS2-application cohort level.

# Extensive Margins of Exports: # Destination-Product Markets

Figure: Effect of an IPO Approval on # Destination-Product Markets

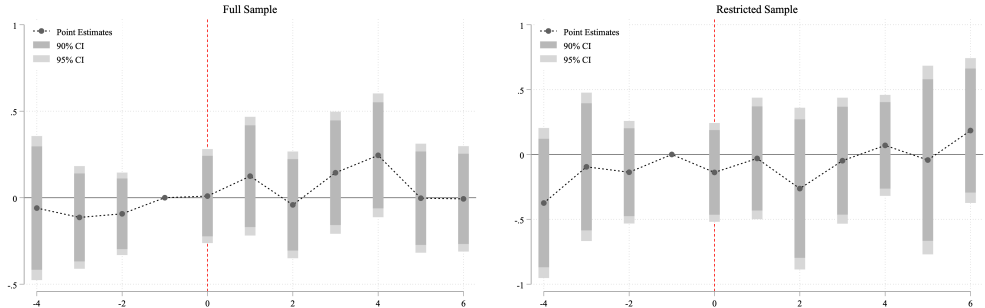



*Note*: The figure plots the event study coefficients for the difference-in-differences specification that estimates the effect of IPO approval on log number of destination-product markets. The underlying regressions control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. Robust standard errors are clustered at the HS2-application cohort level.

⏩ # Destinations and # Products

# Intensive Margins of Exports: Average Exports

Figure: Effect of an IPO Approval on Average Exports per Destination-Product Market

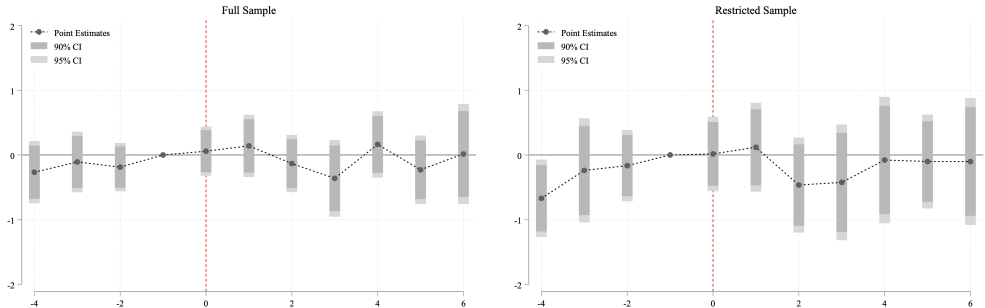



*Note*: The figure plots the event study coefficients for the difference-in-differences specification that estimates the effect of IPO approval on log average exports per destination-product market. The underlying regressions control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. Robust standard errors are clustered at the HS2-application cohort level.

⏩ Average Value of Incumbent Destination-Product Markets

# Intensive Margins of Exports: Top Exports

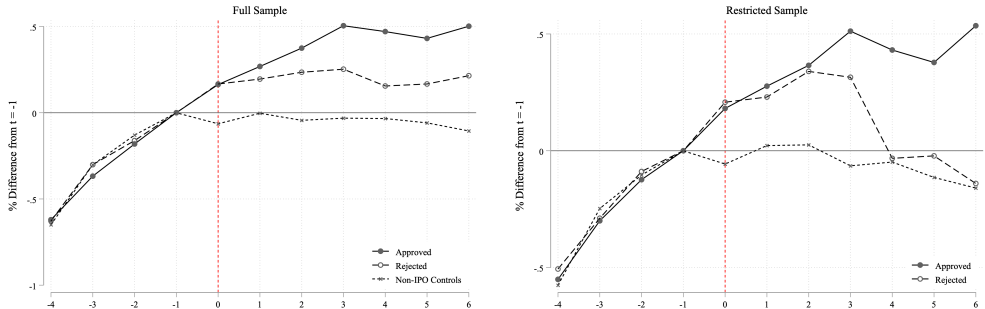
Figure: Effect of an IPO Approval on Exports of Top Destination-Product Market




*Note*: The figure plots the event study coefficients for the difference-in-differences specification that estimates the effect of IPO approval on log exports in the firm's top destination-product market. The underlying regressions control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. Robust standard errors are clustered at the HS2-application cohort level.

# Export Growth Before/After IPO Review Meetings

Figure: Time Trend of Average Exports Relative to the Base Period




*Note*: The figure plots the time trends of the average firm exports (relative to the base period, or one year before the IPO review meeting). Specifically, the relative exports for firm $i$ in year $t$ is computed as $2 * (Export_{it} - Export_{i\tau(i)-1})/(Export_{it} + Export_{i\tau(i)-1})$, where $\tau(i)$ denotes the year of firm $i$'s IPO review meeting. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. Each connected line represents the average exports of approved IPO applicants, rejected IPO applicants, and non-IPO control applicants, selected based on nearest-neighbor matching.

# Robustness and Extensions

Robustness Tests

- Alternative restricted IPO sample ⏩ Alternative sample
- Time-varying effects of IPO characteristics ⏩ Time-varying controls
- Connected auditors (Yang, 2013) ⏩ Connected auditors
- Permutation tests (Chetty, Looney, and Kroft, 2009) ⏩ Permutation tests

# Robustness and Extensions

Robustness Tests

- Alternative restricted IPO sample ⏩ Alternative sample
- Time-varying effects of IPO characteristics ⏩ Time-varying controls
- Connected auditors (Yang, 2013) ⏩ Connected auditors
- Permutation tests (Chetty, Looney, and Kroft, 2009) ⏩ Permutation tests

Extensions

- Entry and Exit in Foreign Markets ⏩ Participation
- Comparison with Matched Non-IPO Firms (Fracassi, Previtero, and Sheen, 2022) ⏩ Pairwise Comparison
- IPO Suspensions and Export Growth (Cong and Howell, 2021) ⏩ IPO Suspensions

# How Do IPO Approvals Affect Exporters' Activities?

# Potential Channels

IPO approvals may affect firm exports through various non-mutually exclusive channels:

- Financing channels
  - Working capital and physical investment (similar to bank credits) (Ahn, Amiti and Weinstein 2011; Amiti and Weinstein 2011; Cingano, Manaresi and Sette 2016)
  - Intangible capital investment (Brown, Fazzari and Petersen 2009; Hall and Lerner 2010; Falato et al. 2022)

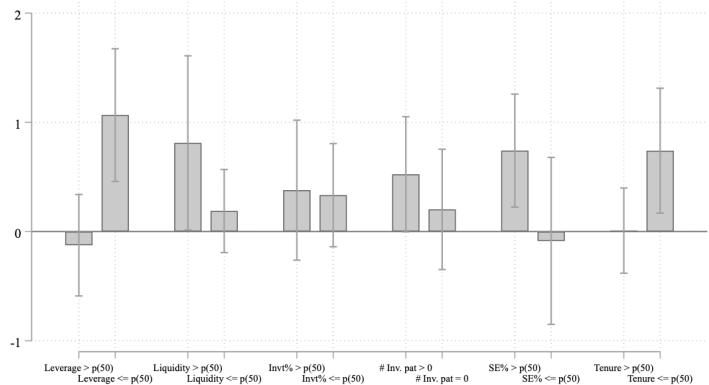
# Potential Channels

IPO approvals may affect firm exports through various non-mutually exclusive channels:

- Financing channels
  - Working capital and physical investment (similar to bank credits)
    (Ahn, Amiti and Weinstein 2011; Amiti and Weinstein 2011; Cingano, Manaresi and Sette 2016)
  - Intangible capital investment
    (Brown, Fazzari and Petersen 2009; Hall and Lerner 2010; Falato et al. 2022)
- Non-financing channels
  - Information disclosure and certification
    (Demers and Lewellen 2003; Chemmanur and Yan 2009; Hsu, Reed and Rocholl 2010; Tetlock 2014)
  - Others: risk-sharing, corporate governance, etc.
    (Fan, Wong, and Zhang 2007; Bodnaruk, et al. 2008; Chod and Evgeny 2011; Krishnan et al. 2011)

# Firm Heterogeneity

Figure: Firm Heterogeneity Analysis

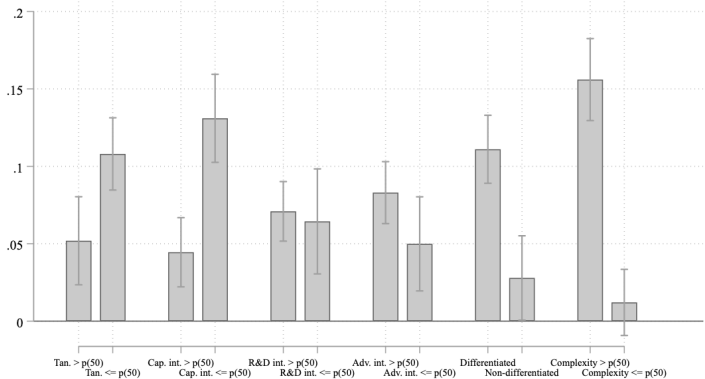



*Note*: The figure plots the estimated effects (and their 95% confidence intervals) of IPO approvals on firms' export outcomes by subsamples of firm-year observations. The dependent variable is log exports. All columns control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. Robust standard errors are clustered at the HS2-application cohort level.

⏩ Regression Results

# Product Heterogeneity: Extensive Margin

Figure: Product Heterogeneity Analysis: Extensive Margin




*Note*: The figure plots the estimated effects (and their 95% confidence intervals) of IPO approvals on firm-destination-product level market participation by subsamples of firm-destination-product-year observations. The dependent variable is an indicator that takes a value of 1 if the firm incurs positive exports to the destination-product market in a given year. All columns control for firm-destination-HS4 fixed effects, application cohort-year fixed effects, destination-HS4-year fixed effects, and board-year fixed effects. Robust standard errors are clustered at the destination-product level.

# Other Dimensions of Firm Outcomes

Caveat: limited length of post-period ($\leq$ 3 years); data quality of ASIE after 2008.

After IPO approvals, firms have

1. improved overall sales
2. increased selling expenses
3. increased assets, lower leverage, improve liquidity
4. more patents (invention + utility model)

Related studies: Allen et al. (2023); Larrain et al. (2023)

*Panel A. Operational outcomes*

| | Log sales (1) | Log employment (2) | Operating profit (3) |
|---|---|---|---|
| IPO Approval×Post | 0.160** | -0.216 | 0.0125 |
| | (0.0732) | (0.223) | (0.0225) |
| | 2863 | 2863 | 2863 |

*Panel B. Expenses*

| | Log selling expenses (1) | Log mgmt expenses (2) | Log acct expenses (3) |
|---|---|---|---|
| IPO Approval×Post | 0.302*** | 0.287*** | -0.131 |
| | (0.0978) | (0.105) | (0.206) |
| | 2126 | 2126 | 2126 |

*Panel C. Financial outcomes*

| | Log assets (1) | Leverage (2) | Liquidity (3) |
|---|---|---|---|
| IPO Approval×Post | 0.533*** | -0.131*** | 0.156** |
| | (0.103) | (0.0431) | (0.0635) |
| | 2863 | 2863 | 2863 |

*Panel C. Investment and innovation outcomes*

| | Invt. intensity (1) | Inv.pats per worker (2) | All pats per worker (3) |
|---|---|---|---|
| IPO Approval×Post | 0.0404 | 0.0109** | 0.0576** |
| | (0.0432) | (0.00522) | (0.0230) |
| | 2857 | 2857 | 2857 |

*Note*: The table reports the effects of IPO approval on firms' operational and financial outcomes constructed from the ASIE data. All columns control for firm fixed effects, application cohort-year fixed effects, CIC2-year fixed effects, ownership type-year fixed effects, and board-year fixed effects. Robust standard errors, clustered at the CIC2 industry-application cohort level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

# Potential Channels: Empirical Evidence

1. Equity financing is a poor substitute for debt financing (Brown, Fazzari, and Petersen 2009) in export activities.
   - More pronounced effects on firms with low financial leverage and high liquidity

# Potential Channels: Empirical Evidence

1. Equity financing is a poor substitute for debt financing (Brown, Fazzari, and Petersen 2009) in export activities.
   - More pronounced effects on firms with low financial leverage and high liquidity
2. IPO approvals boost export activities through financing intangible investments
   - More pronounced effects on firms with higher selling expenses and positive innovation; products with low asset tangibility and capital intensity and high advertising intensity

# Potential Channels: Empirical Evidence

1. Equity financing is a poor substitute for debt financing (Brown, Fazzari, and Petersen 2009) in export activities.
   - More pronounced effects on firms with low financial leverage and high liquidity
2. IPO approvals boost export activities through financing intangible investments
   - More pronounced effects on firms with higher selling expenses and positive innovation; products with low asset tangibility and capital intensity and high advertising intensity
3. IPO approvals reduce informational friction in export activities
   - more pronounced effects on firms with less export experience; differentiated and more complex products

Conceptual Framework

# Textual Analysis: LDA Model

*"What do firms talk about when they talk about IPO?"*

- Textual data from **Business Development Goals (BDG)** and **Usage of Raised Funds (URF)** in the IPO prospectuses of approved firms on the Main Board and GEM Board (2007–2016) Details

# Textual Analysis: LDA Model

*"What do firms talk about when they talk about IPO?"*

- Textual data from **Business Development Goals (BDG)** and **Usage of Raised Funds (URF)** in the IPO prospectuses of approved firms on the Main Board and GEM Board (2007–2016) Details
- Procedure of Textual Analysis
  - Preprocessing: separate text into sentences; remove punctuations and stopwords
  - Tokenization and Vectorization: generate a *bag of words* and vectorize sentences
    - Exclude words that appear in less than 50 sentences or more than 20% sentences
  - Topic Modeling: apply the Latent Dirichlet Allocation(LDA) algorithm on each section's textual data to generate and assign topics
    - For each topic, the algorithm generates a list of representative words and their frequencies
    - Use coherence scores to determine the optimal number of topics

  Example

# Textual Analysis: Results

- BDG: 102,485 sentences ⇒ 12 topics
  - Growth Strategy, Innovation, Talent, Customer Service, Fundraising, Sales Network, Uncertainty, Revenue, Board, Liquidity, Assets, Management
  - International market-related[a]: 8,020 (7.82%)
- URF: 319,178 sentences ⇒ 12 topics
  - Business Capability, Production line, Marketing Strategy, Market Potential, Capacity, Fixed Assets, Liquidity, Environment, Global Market, Land use, Fundraising, Board
  - International market-related: 23,036 (7.22%)

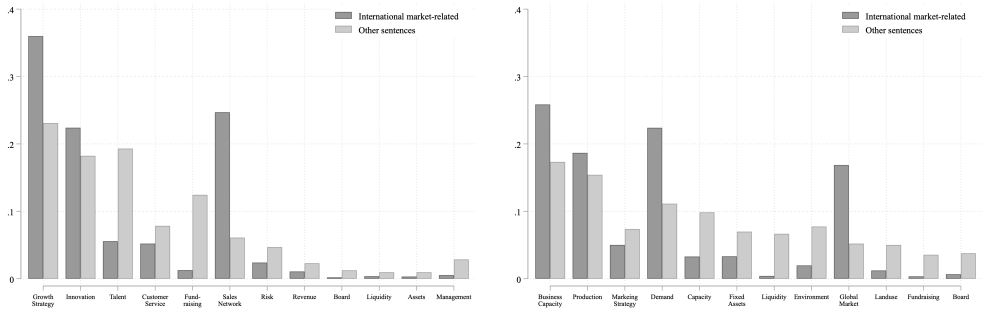
Wordcloud

[a]Note: International market-related sentences refer to sentences containing the following keywords: international, global, world, foreign, export, import.


Growth Strategy (BDG)

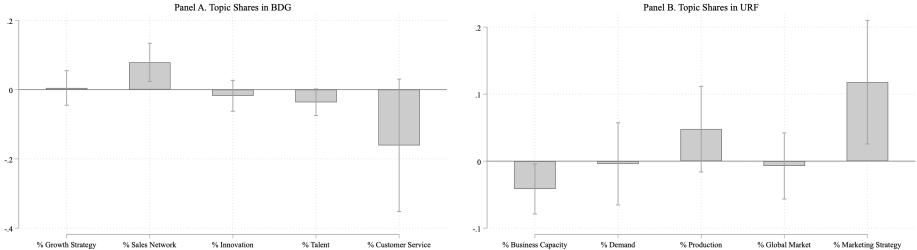

Business Capability (URF)

# Textual Analysis: Average Share of Topics




*Note*: The figure shows the average shares of the top 6 topics in international market-related sentences and other sentences in the BDG and the URF sections of IPO prospectuses of approved firms on the Main Board and GEM board from 2007 to 2016. The shares are computed as the number of international market-related (other) sentences with the focal topic as the dominant topic divided by the total number of international market-related (other) sentences in the BDG/URF section of each firm's IPO prospectus. A sentence is defined as international market-related if it contains the following keywords: international, global, world, foreign, export, and import. The topics are categorized based on the LDA algorithm.

# Textual Analysis: Topic Shares and Post-IPO Export Growth




*Note*: The figure shows the estimated coefficients and their 90%, 95%, and 99% confidence intervals of regressing log exports on the triple interactions among IPO approval indicator, post-period dummy, and the share of each 5 most frequent topic in the BDP and URF sections, respectively. The underlying regressions control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. Robust standard errors are clustered at the HS2-application cohort level.

⏩ Example: Songz Automobile Air Conditioning

# Concluding Remarks

# Concluding Remarks

- New question, new setting, and new empirical strategy

# Concluding Remarks

- New question, new setting, and new empirical strategy
- IPOs promote firms' exports
  - Expansion on the **extensive margins**: increases in export range and product scope
  - Robust to a battery of specification checks

# Concluding Remarks

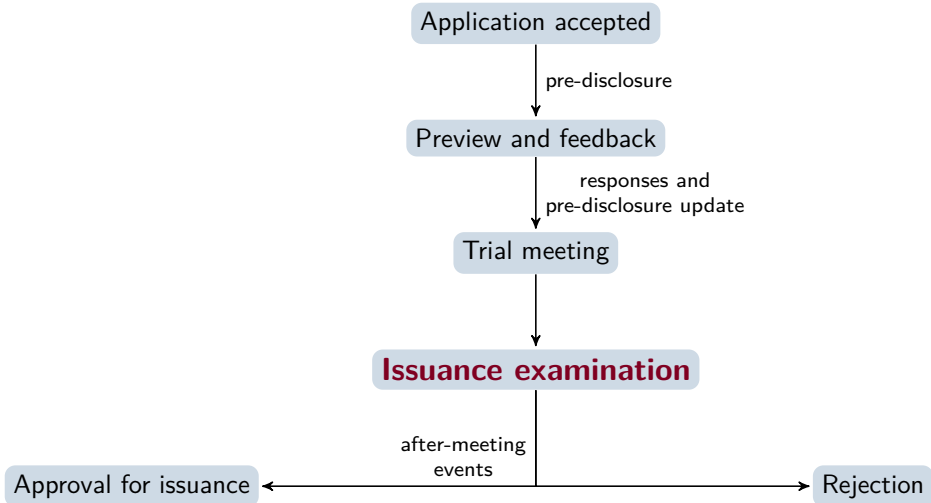
- New question, new setting, and new empirical strategy
- IPOs promote firms' exports
  - Expansion on the **extensive margins**: increases in export range and product scope
  - Robust to a battery of specification checks
- IPO's role: financing intangible investment
  - Firm heterogeneity: financial leverage and liquidity; innovation, and selling activities; export experience
  - Product heterogeneity: asset tangibility and capital intensity; R&D and advertising intensity; product differentiation
  - Textual analysis: market-driven expansion

# Concluding Remarks

- New question, new setting, and new empirical strategy
- IPOs promote firms' exports
  - Expansion on the **extensive margins**: increases in export range and product scope
  - Robust to a battery of specification checks
- IPO's role: financing intangible investment
  - Firm heterogeneity: financial leverage and liquidity; innovation, and selling activities; export experience
  - Product heterogeneity: asset tangibility and capital intensity; R&D and advertising intensity; product differentiation
  - Textual analysis: market-driven expansion
- Policy implications
  - Financial institution in export-oriented economies
  - Financial and non-financial barriers faced by (top) exporters in emerging economies

# Appendix

# IPO Examination Procedure




Back

# Categorization of Rejections

| Clause | # Cases | Percentage | Details of the clause |
|---|---|---|---|
| Panel A. Main board (Administrative Measures for Initial Public Offering and Listing of Shares) | | | |
| All | 94 | | |
| Clause 37 | 44 | 46.81 | The issuer shall not have the following circumstances affecting the continued profitability |
| Clause 41 | 14 | 14.89 | The board of directors of the issuer should carefully analyze the feasibility of the investment projects of the proceeds, be sure that the investment projects have good market prospects and profitability, effectively prevent investment risks and improve the efficiency of the use of proceeds. |
| Clause 24 | 13 | 13.83 | There has been no significant change in the main business and directors and senior management of the issuer and no change in the actual controller in the last three years. |
| Panel B. GEM board (Interim Measures for the Administration of Initial Public Offering of Shares and Listing on GEM) | | | |
| All | 64 | | |
| Clause 14 | 39 | 60.94 | The issuer should have sustained profitability and not have the following circumstances. |
| Clause 18 | 11 | 17.19 | The issuer has complete assets, independent business and personnel, finance and institutions, and has a complete business system and the ability to operate independently directly to the market. There is no competition with the controlling shareholder, the actual controller and other enterprises under their control, as well as connected transactions that seriously affect the independence of the company or are unfair. |
| Clause 20 | 7 | 10.94 | The issuer's accounting basics are standardized, and the financial statements have been prepared in accordance with enterprise accounting standards and relevant accounting systems. |

*Note*: The table provides a breakdown of the most frequently cited clauses in rejection cases in the Main Board and the GEM board from 2010 to 2016, including the clause titles, the number of cases, their percentage in all rejected cases, and the specific clause details.

Back

# Categorization of Rejections

What circumstances are included in clause 37 (main board) and **clause 14** (GEM board)?

- 14.1&14.2: There has been or will be a material change in...
  - the business model, product or service mix of the issuer that has an adverse effect on the continued profitability of the issuer;
  - the issuer's industry position or the industry's business environment that has an adverse effect on the continued profitability of the issuer;
- 14.3: Risk of adverse changes in the acquisition or use of important assets or technologies such as trademarks, patents, proprietary technologies and franchises in use by the issuer;
- 14.4: Significant reliance of the issuer's operating income or net profit on related parties or customers with significant uncertainty in the most recent year;
- 14.5: The issuer's net profit for the most recent year was mainly derived from investment income outside the scope of the consolidated financial statements;
- 14.6: Other circumstances that may have an adverse effect on the continued profitability of the issuer.

Back

# Original Documentation of Clause 37 (in Chinese)

## 中国证券监督管理委员会令

第 32 号

《首次公开发行股票并上市管理办法》已经2006年5月17日中国证券监督管理委员会第180次主席办公会议审议通过，现予公布，自2006年5月18日起施行。

主 席 尚福林

二〇〇六年五月十七日

第三十七条 发行人不得有下列影响持续盈利能力的情形：

（一）发行人的经营模式、产品或服务的品种结构已经或者将发生重大变化，并对发行人的持续盈利能力构成重大不利影响；

（二）发行人的行业地位或发行人所处行业的经营环境已经或者将发生重大变化，并对发行人的持续盈利能力构成重大不利影响；

（三）发行人最近1个会计年度的营业收入或净利润对关联方或者存在重大不确定性的客户存在重大依赖；

（四）发行人最近1个会计年度的净利润主要来自合并财务报表范围以外的投资收益；

（五）发行人在用的商标、专利、专有技术以及特许经营权等重要资产或技术的取得或者使用存在重大不利变化的风险；

（六）其他可能对发行人持续盈利能力构成重大不利影响的情形。

Back

# Reasons of Rejections (Other Clauses)

Example 1: Sinomine Resource Group (GEM, clause 18; 29 September, 2010)

- Your company has competition and transactions with direct or indirect shareholders and other related parties, and it is impossible to judge the fairness of related transactions and whether your company has the ability to operate directly and independently.

Example 2: TCC Huaihua Cement Company Limited (Main, clause 24; 27 April, 2012)

- Your company has not accounted for production safety expenses in accordance with the regulations.

Example 3: Zhejiang Jiali Technology Co.,Ltd. (Main, Clause 41, 16 December, 2011)

- Your company's fund-raising project is not compatible with the existing production and operation, and there is a market sales risk in the new capacity.

Back

# Summary Statistics (ASIE Variables)

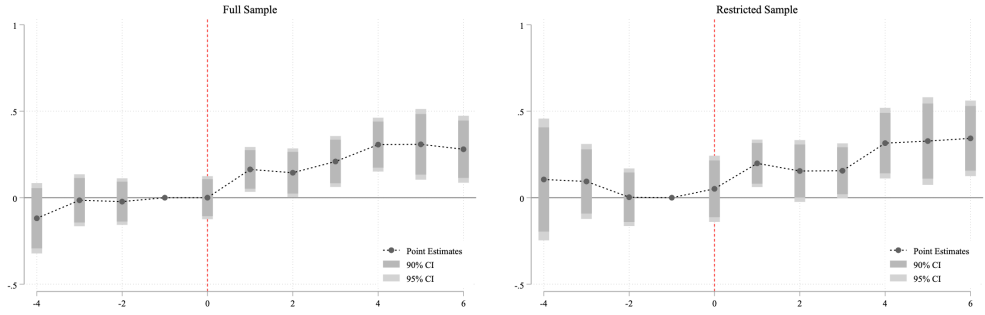
| | Mean | Std. Dev. | 25 pct | 50 pct | 75 pct |
|---|---|---|---|---|---|
| *Panel A. Full Sample* | | | | | |
| Sales (in million RMB) | 861.86 | 1808.76 | 197.05 | 376.20 | 841.69 |
| Employment | 1040.47 | 1585.98 | 258.00 | 594.00 | 1225.00 |
| Profit margin | 0.17 | 0.18 | 0.07 | 0.13 | 0.21 |
| Leverage | 0.44 | 0.24 | 0.26 | 0.43 | 0.59 |
| # invention patents | 1.55 | 3.76 | 0.00 | 0.00 | 2.00 |
| Selling expenses intensity | 0.06 | 0.08 | 0.02 | 0.04 | 0.07 |
| # Observations | | | 4541 | | |
| *Panel B. Restricted Sample* | | | | | |
| Sales (in million RMB) | 850.99 | 1792.29 | 208.83 | 383.88 | 842.61 |
| Employment | 987.25 | 1571.89 | 206.00 | 533.50 | 1188.00 |
| Profit margin | 0.17 | 0.17 | 0.08 | 0.13 | 0.21 |
| Leverage | 0.43 | 0.24 | 0.24 | 0.41 | 0.58 |
| # invention patents | 1.45 | 3.30 | 0.00 | 0.00 | 2.00 |
| Selling expenses intensity | 0.06 | 0.08 | 0.02 | 0.04 | 0.07 |
| # Observations | | | 2886 | | |

*Note*: The table presents the summary statistics of the firm-level variables from the ASIE database used in our analysis, including sales, employment, gross profit margin, financial leverage, number of invention patents, and selling expenses intensity. Panel A encompasses all WIND-CCTS-ASIE-matched firm-year observations, while Panel B excludes IPO filings before 2010 and revenue- or profitability-related IPO rejection cases.

Back

# Extensive Margins of Exports: # Destinations

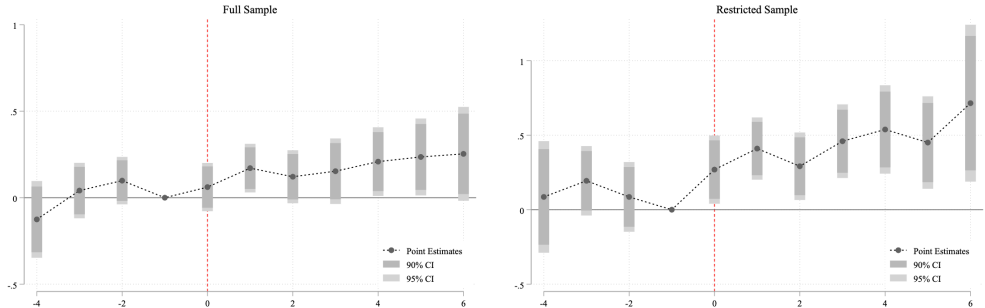
Figure: Effect of an IPO Approval on # Destinations




*Note*: The figure plots the event study coefficients for the difference-in-differences specification that estimates the effect of IPO approval on log number of destinations. The underlying regressions control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. Robust standard errors are clustered at the firm level.

# Extensive Margins of Exports: # Products

Figure: Effect of an IPO Approval on # Products

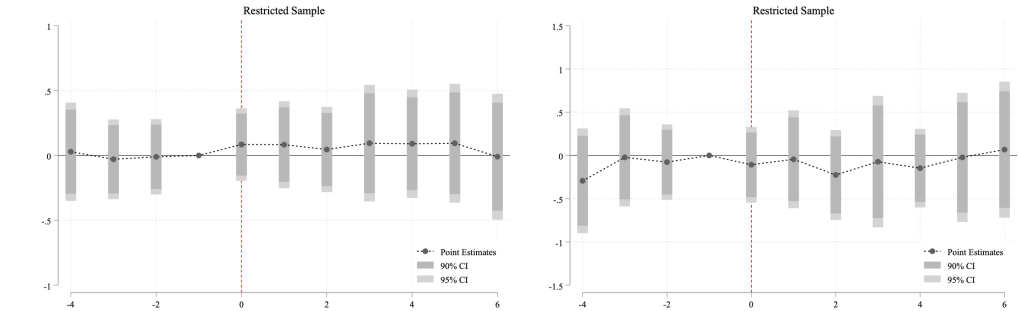



*Note*: The figure plots the event study coefficients for the difference-in-differences specification that estimates the effect of IPO approval on log number of products. The underlying regressions control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. Robust standard errors are clustered at the firm level.

Back

# Intensive Margins of Exports: Average Exports of Incumbent Pairs

Figure: Effect of an IPO Approval on Average Exports per Incumbent Destination-Product Market




*Note*: The figure plots the event study coefficients for the difference-in-differences specification that estimates the effect of IPO approval on log average exports per *incumbent* destination-product market in the firm's *ex-ante* export portfolio. The underlying regressions control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. Robust standard errors are clustered at the firm level.

Back

# Destination-Product Level Analysis

| Panel A. Full Sample | | | | |
|---|---|---|---|---|
| | participation | log exports | log quantity | log price |
| | (1) | (2) | (3) | (4) |
| IPO Approval×Post | 0.0238*** | 0.125** | 0.168*** | -0.0360 |
| | (0.00407) | (0.0620) | (0.0650) | (0.0285) |
| # Observations | 899176 | 164094 | 138972 | 138972 |
| Panel B. Restricted Sample | | | | |
| | log exports | log exports | log quantity | log price |
| | (5) | (6) | (7) | (8) |
| IPO Approval×Post | 0.0724*** | 0.118 | 0.232* | -0.0778 |
| | (0.00854) | (0.108) | (0.120) | (0.0589) |
| # Observations | 577002 | 109542 | 86734 | 86734 |

*Note*: The table reports the effects of IPO approval on firm-destination-product level export outcomes. The dependent variables include an indicator variable of participation in each destination-product market, log exports, log quantity, and log price at each destination-product market conditional on participation. The variable IPO Approval is an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. The variable Post takes a value of 1 if the year is equal to or after the SIEVC review meeting year. All columns control for firm-destination-HS4 fixed effects, application cohort-year fixed effects, destination-HS4-year fixed effects, and board-year fixed effects. Robust standard errors, clustered at the destination-product level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Back

# Robustness: Alternative Restricted Sample

*Alternative Restricted Sample*

| | log exports | log des-prod markets | log avg. exports per market | log exports top market |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| IPO Approval×Post | 0.387** | 0.258** | 0.126 | 0.317 |
| | (0.156) | (0.101) | (0.0964) | (0.217) |
| # Observations | 4920 | 4920 | 4920 | 3813 |

*Note*: The table reports the estimated effects of IPO approval on firms' export outcomes, using the alternative restricted sample that excludes international-market-related rejections. The dependent variables include log exports, log number of destination-product markets, log average exports per destination-product market, and log exports of top destination-product market. The variable IPO Approval is an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. The variable Post takes a value of 1 if the year is equal to or after the SIEVC review meeting year. All columns control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. Robust standard errors, clustered at the HS2-application cohort level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

◂ Back

# Robustness: Controlling for IPO Characteristics

*Controlling for IPO Characteristics*

| | log exports (1) | log des-prod markets (2) | log avg. exports per market (3) | log exports top market (4) |
|---|---|---|---|---|
| IPO Approval×Post | 0.392** | 0.260*** | 0.129 | 0.0302 |
| | (0.168) | (0.0858) | (0.157) | (0.242) |
| # Observations | 4756 | 4756 | 4756 | 3688 |

*Note*: The table reports the estimated effects of IPO approval on firms' export outcomes, using the restricted sample that excludes revenue/profitability-related rejections. The dependent variables include log exports, log number of destination-product markets, log average exports per destination-product market, and log exports of top destination-product market. The variable IPO Approval is an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. The variable Post takes a value of 1 if the year is equal to or after the SIEVC review meeting year. All columns control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, board-year fixed effects, and IPO characteristics (expected POP and expected fund raised) interacted with year dummies. Robust standard errors, clustered at the HS2-application cohort level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

◂ Back

# Robustness: Excluding Politically Connected Applicants

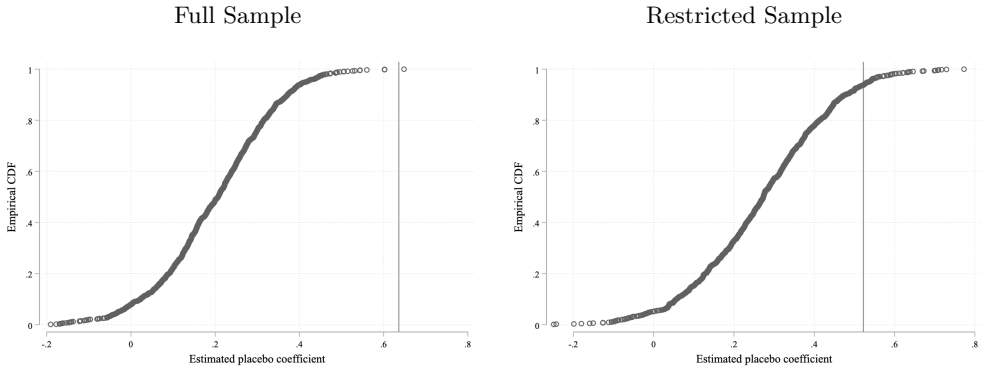
*Excluding Applicants with Politically Connected Auditing Firms*

| | log exports | log des-prod markets | log avg. exports per market | log exports top market |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| IPO Approval×Post | 0.325* | 0.320*** | 0.00674 | -0.0238 |
| | (0.175) | (0.0883) | (0.149) | (0.245) |
| # Observations | 3910 | 3910 | 3910 | 3006 |

*Note*: The table reports the estimated effects of IPO approval on firms' export outcomes, using the restricted sample that excludes revenue/profitability-related rejections. The sample further excludes applicants with politically connected auditing firms. The dependent variables include log exports, log number of destination-product markets, log average exports per destination-product market, and log exports of top destination-product market. The variable IPO Approval is an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. The variable Post takes a value of 1 if the year is equal to or after the SIEVC review meeting year. All columns control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. Robust standard errors, clustered at the HS2-application cohort level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

◂ Back

# Robustness: Permutation Test

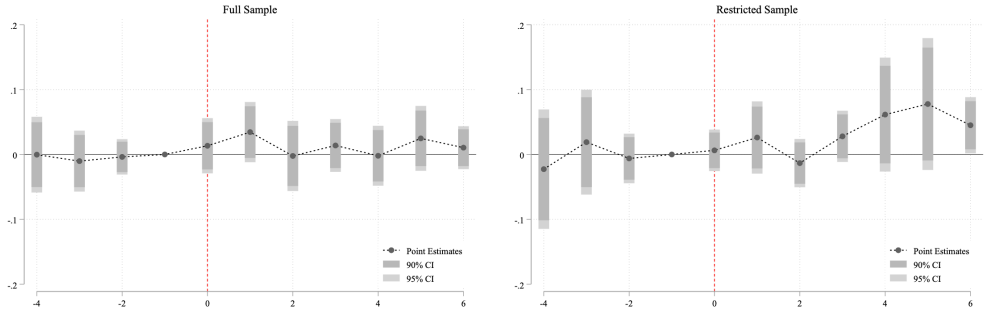



*Note*: These figures present the empirical distribution of placebo estimates for the difference-in-difference specification examining the effect of IPO on log exports. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. The CDFs are constructed from permuting treatment status to IPO applicant firms 500 times and estimating the corresponding coefficients. Dotted vertical lines represent the true estimates.

◂ Back

# Robustness: Export Participation

Figure: Effect of an IPO Approval on Export Participation




*Note*: The figure plots the event study coefficients for the difference-in-differences specification that estimates the effect of IPO approval on export participation. The underlying regressions control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. The full sample refers to all WIND-CCTS-matched firm-year observations. The restricted sample refers to WIND-CCTS-matched firm-year observations that exclude IPO filings before 2010 and revenue- or profitability-related IPO rejection cases. Robust standard errors are clustered at the HS2-applicant cohort level.

Back

# Neighborhood Matching

Table: Effect of Successful/Failed IPO Attempt on Firm Exports

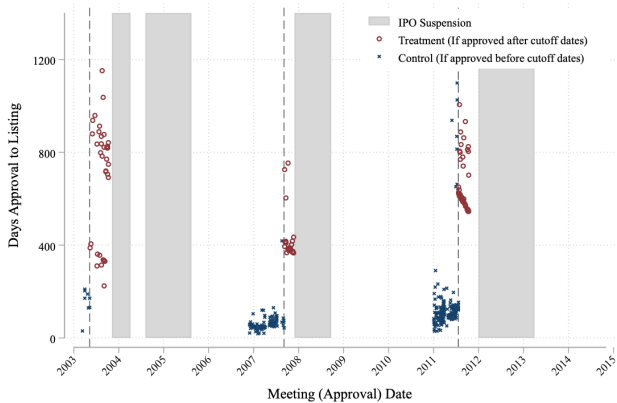
| | Log exports | | Log # dest.-prod. pairs | | Log exports per pair | |
|---|---|---|---|---|---|---|
| | IPO Approval = 1 | IPO Approval = 0 | IPO Approval = 1 | IPO Approval = 0 | IPO Approval = 1 | IPO Approval = 0 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Treatment×Post | 0.464*** | 0.195 | 0.391*** | 0.180* | 0.0725 | 0.0144 |
| | (0.0753) | (0.200) | (0.0444) | (0.103) | (0.0589) | (0.134) |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Treatment-control pair-year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 8574 | 1372 | 8574 | 1372 | 8574 | 1372 |

*Note*: The table reports the effects of IPO suspensions on export growth. The dependent variable is one-year export growth after the IPO approval date. The variable treated is an indicator variable with value 1 if and only if the IPO approval date is after the observed discontinuity in delay. The control variables include revenue, leverage, total investment that year, age, and indicators for being state-owned, PE/VC backed, and the exchange (SH/SZ). Robust standard errors, two-way clustered at the 2-digit industry level and the year-quarter level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Back

# IPO Suspensions: Setup

Figure: IPO Delays of Applications before IPO Suspensions




*Note*: This figure shows the delay (days between IPO approval and listing) for all IPO firms. The x-axis is the date of IPO approval. The sample includes firms approved to IPO in the 12 months before IPO suspensions in 2004, 2007, and 2012. The sample is divided into treatment and control groups based on the observable discontinuity in delay. Blue crosses are control firms, and red circles are treated firms. Firms with less than 200 days of delay are excluded. The year labels indicate the end of each calendar year.

# IPO Suspensions: Findings

Table: Effect of Suspension-Induced IPO Delay on Firm Exports

| *Dependent variable:* $\Delta ln(Export_{t+1})$ | | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Treated | -0.319*** | -0.289*** | -0.504* |
| | (0.0457) | (0.0818) | (0.244) |
| Approval date | | | 0.00349 |
| | | | (0.0156) |
| Approval date$^2$ | | | 0.000 |
| | | | (0.000) |
| Controls | N | Y | Y |
| Industry fixed effects | Y | Y | Y |
| Year fixed effects | Y | Y | Y |
| # Observations | 204 | 198 | 198 |

*Note*: The table reports the effects of IPO suspensions on export growth. The dependent variable is one-year export growth after the IPO approval date. The variable treated is an indicator variable with value 1 if and only if the IPO approval date is after the observed discontinuity in delay. The control variables include revenue, leverage, total investment that year, age, and indicators for being state-owned, PE/VC backed, and the exchange (SH/SZ). Robust standard errors, two-way clustered at the 2-digit industry level and the year-quarter level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Back

# Regression: Firm Heterogeneity

Table: Firm Heterogeneity Analysis

*Dependent variable: log exports*

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IPO Approval×Post | -0.125 | 1.066*** | 0.811* | 0.188 | 0.379 | 0.333 | 0.524* | 0.203 | 0.741*** | -0.0855 | 0.00896 | 0.740** |
| | (0.237) | (0.310) | (0.407) | (0.194) | (0.327) | (0.241) | (0.269) | (0.281) | (0.264) | (0.390) | (0.199) | (0.292) |
| p-value of difference | 0.002*** | | 0.171 | | 0.916 | | 0.405 | | 0.064* | | 0.044** | |
| Sample | Leverage > p(50) | Leverage ≤ p(50) | Liquidity > p(50) | Liquidity ≤ p(50) | Invt% > p(50) | Invt% ≤ p(50) | # Inv.pats > 0 | # Inv.pats = 0 | SE% > p(50) | SE% ≤ p(50) | Tenure > p(50) | Tenure ≤ p(50) |
| Observations | 1901 | 1863 | 1831 | 1938 | 1872 | 1923 | 2405 | 1435 | 1906 | 1894 | 2201 | 2386 |

*Note*: The table reports the heterogeneous effects of IPO approval on firms' export outcomes. The dependent variable is log exports. The variable IPO Approval is an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. The variable Post takes a value of 1 if the year is equal to or after the SIEVC review meeting year. All columns control for firm fixed effects, application cohort-year fixed effects, HS2-year fixed effects, and board-year fixed effects. Robust standard errors, clustered at the HS2-application cohort level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

◂ Back

# Regression: Product Heterogeneity

Table: Product Heterogeneity Analysis

*Panel A. Dependent variable: participation*

| | (1a) | (2a) | (3a) | (4a) | (5a) | (6a) | (7a) | (8a) | (9a) | (10a) | (11a) | (11a) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IPO Approval×Post | 0.0519*** | 0.108*** | 0.0445*** | 0.131*** | 0.0709*** | 0.0644*** | 0.0830*** | 0.0499*** | 0.111*** | 0.0279** | 0.156*** | 0.0121 |
| | (0.0145) | (0.0119) | (0.0114) | (0.0145) | (0.00981) | (0.0173) | (0.0102) | (0.0155) | (0.0112) | (0.0139) | (0.0135) | (0.0109) |
| p-value of difference | 0.003*** | | 0.000*** | | 0.744 | | 0.074* | | 0.000*** | | 0.000*** | |
| Sample | Tan. > p(50) | Tan. ≤ p(50) | Capital int. > p(50) | Capital int. ≤ p(50) | R&D int. > p(50) | R&D int. ≤ p(50) | Adv. int. > p(50) | Adv. int. ≤ p(50) | Differentiated | Non-differentiated | Complexity > p(50) | Complexity ≤ p(50) |
| Observations | 113257 | 443057 | 286067 | 270247 | 436123 | 140767 | 391569 | 185321 | 435458 | 122382 | 338695 | 237993 |

*Panel B. Dependent variable: log exports, conditional on participation*

| | (1b) | (2b) | (3b) | (4b) | (5b) | (6b) | (7b) | (8b) | (9b) | (10b) | (11b) | (11b) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IPO Approval×Post | 0.0720 | 0.326* | -0.0148 | 0.468* | 0.190 | -0.321 | 0.0673 | 0.100 | 0.238 | -0.0387 | 0.421** | -0.0872 |
| | (0.168) | (0.171) | (0.129) | (0.274) | (0.125) | (0.214) | (0.120) | (0.254) | (0.150) | (0.165) | (0.167) | (0.146) |
| p-value of difference | 0.289 | | 0.111 | | 0.039** | | 0.906 | | 0.214 | | 0.022** | |
| Sample | Tan. > p(50) | Tan. ≤ p(50) | Capital int. > p(50) | Capital int. ≤ p(50) | R&D int. > p(50) | R&D int. ≤ p(50) | Adv. int. > p(50) | Adv. int. ≤ p(50) | Differentiated | Non-differentiated | Complexity > p(50) | Complexity ≤ p(50) |
| Observations | 20504 | 85043 | 57590 | 47955 | 88220 | 21318 | 79382 | 30156 | 82701 | 24563 | 63839 | 45669 |

*Note*: The table reports the effects of IPO approval on firm-destination-product level market participation and log exports. The variable IPO Approval is an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. The variable Post takes a value of 1 if the year is equal to or after the SIEVC review meeting year. All columns control for firm-destination-product fixed effects, application cohort-year fixed effects, HS4-country-year fixed effects, and board-year fixed effects. Robust standard errors, clustered at the destination-product level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

◂ Back

# Regression: Destination Heterogeneity

Table: Destination Heterogeneity Analysis

*Panel A. Dependent variable: participation*

| | (1a) | (2a) | (3a) | (4a) | (5a) | (6a) | (7a) | (8a) | (9a) | (10a) | (11a) | (12a) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IPO Approval×Post | 0.0600*** | 0.0777*** | 0.0756*** | 0.0333 | 0.0652*** | 0.0886*** | 0.0757*** | 0.0528*** | 0.0691*** | 0.0739*** | 0.0720*** | 0.0858*** |
| | (0.0148) | (0.0105) | (0.00883) | (0.0345) | (0.0105) | (0.0150) | (0.00947) | (0.0202) | (0.0151) | (0.0103) | (0.00940) | (0.0209) |
| p-value of difference | 0.327 | | 0.234 | | 0.201 | | 0.306 | | 0.791 | | 0.548 | |
| Sample | Distance > p(50) | Distance <= p(50) | WTO member | non-WTO member | GDP per capita > p(50) | GDP per capita <= p(50) | CHN import % > p(50) | CHN import % <= p(50) | IFRS adoption | Non-IFRS adoption | Sales volatility > p(50) | Sales volatility <= p(50) |
| Observations | 169493 | 403047 | 517622 | 54918 | 401097 | 171443 | 448321 | 124219 | 210970 | 360032 | 492817 | 80601 |

*Panel B. Dependent variable: log exports, conditional on participation*

| | (1b) | (2b) | (3b) | (4b) | (5b) | (6b) | (7b) | (8b) | (9b) | (10b) | (11b) | (12b) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IPO Approval×Post | 0.0842 | 0.130 | 0.102 | 0.222 | 0.0981 | 0.0897 | 0.160 | -0.345 | 0.0868 | 0.129 | 0.122 | 0.207 |
| | (0.196) | (0.130) | (0.111) | (0.331) | (0.125) | (0.204) | (0.115) | (0.316) | (0.170) | (0.136) | (0.119) | (0.209) |
| p-value of difference | 0.846 | | 0.227 | | 0.972 | | 0.132 | | 0.847 | | 0.724 | |
| Sample | Distance > p(50) | Distance <= p(50) | WTO member | non-WTO member | GDP per capita > p(50) | GDP per capita <= p(50) | CHN import % > p(50) | CHN import % <= p(50) | IFRS adoption | Non-IFRS adoption | Sales volatility > p(50) | Sales volatility <= p(50) |
| Observations | 32480 | 76709 | 100780 | 8409 | 81902 | 27285 | 88998 | 20189 | 43264 | 66278 | 98327 | 10887 |

*Note*: The table reports the effects of IPO approval on firm-destination-product level market participation and log exports. The variable IPO Approval is an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. The variable Post takes a value of 1 if the year is equal to or after the SIEVC review meeting year. All columns control for firm-destination-product fixed effects, application cohort-year fixed effects, HS4-country-year fixed effects, and board-year fixed effects. Robust standard errors, clustered at the destination-product level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

◂ Back

# Decomposition

Table: Destination Heterogeneity Analysis

| | All | Low tangibility | Non-capital intensive | R&D intensive | Advertising intensive | Differentiated |
|---|---|---|---|---|---|---|
| Total effect | 0.268** | 0.286** | 0.286*** | 0.219* | 0.298*** | 0.291*** |
| | (0.120) | (0.111) | (0.0746) | (0.116) | (0.103) | (0.100) |
| Explained % | 100 | 106.7 | 106.7 | 81.7 | 111.2 | 108.6 |
| Extensive margin effect | 0.215** | 0.159* | 0.199*** | 0.165* | 0.214*** | 0.189*** |
| | (0.0935) | (0.0904) | (0.0531) | (0.0916) | (0.0597) | (0.0611) |
| Explained % | 100 | 74.0 | 92.6 | 76.7 | 99.5 | 87.9 |
| Intensive margin effect | 0.0530 | 0.127* | 0.0869 | 0.0542 | 0.0839 | 0.102 |
| | (0.0843) | (0.0657) | (0.0580) | (0.0814) | (0.0866) | (0.0827) |
| Explained % | 100 | 239.6 | 164.0 | 102.3 | 158.3 | 192.5 |

*Note*: The table reports the estimated effect of IPO approvals on each component of the applicants' export growth and its relative importance. The coefficients are estimated by regressing each export growth component on IPO approval, an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. Each regression controls for for application year-cohort, HS2 industry, and board fixed effects. Robust errors are shown in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

◂ Back

# Conceptual Framework: Setup

- Following Arkolakis (2010), a firm of productivity $\phi$ in country $i$ reach consumers in a destination country $j$ with probability $n_{ij}(\phi)$
- Effective demand:

$$q_{ij}(\phi) = n_{ij}(\phi)\frac{Y_j}{P_j}(\frac{p_{ij}(\phi)}{P_j})^{-\sigma}$$

  - $Y_j$: national income in $j$
  - $P_j$: price index in $j$

- Marginal cost of export: $c_{ij}(\phi) = \tau_{ij}/\phi$ (normalize wage in $i$ to 1)
- Fixed cost: $f_{ij}^P + f_{ij}^M(n)$
  - $f_{ij}^P$: physical fixed cost (Property, Plant, and Equipment, or PP&E)
  - $f_{ij}^M(n_{ij}(\phi))$: intangible fixed cost (product innovation; marketing; etc.)
    - Assumption: $\frac{df_{ij}^M(n)}{dn} > 0$, $\frac{d^2 f_{ij}^M(n)}{dn^2} > 0$, $f_{ij}^M(0) = 0$

# Conceptual Framework: Debt and Equity Financing

- Firms rely on external financing (debt $D$ and equity $E$) to fund the fixed costs
  - Collateralized debt: borrow $D \leq \lambda f^P$, where $\lambda \leq 1$
    - Cost of debt: $R^d$ normalized to 1
  - External equity: raise $E = f^P + f^M(n) - D$ by selling $1 - s$ of equity
    - Outside option return on equity: $R^e > R^d = 1$ (risks, agency costs, tax shield, other frictions)
- Given capital structure $(D, E)$, profit will be divided in the following ways:
  1. Payoff to debtholders: $R^d D$
  2. Division between external equity holder and the entrepreneur:
     - External equity holders: $(1 - s)$ of residual profit $\geq R^e E$ (participation constraint)
     - Entrepreneur: $s$ of residual profit

# Conceptual Framework: Firm Problem

- An entrepreneur chooses price $p$, consumer reach $n$, external equity $E$, and ownership share $s$ for each destination market to maximize residual profit.
  - Pricing strategy is independent of capital structure and consumer reach: $p^*(\phi) = \frac{\sigma}{\sigma-1}\frac{\tau}{\phi}$
    - $\pi^*(\phi) \equiv \frac{1}{\sigma}(\frac{\sigma}{\sigma-1})^{1-\sigma}\frac{Y}{P^{1-\sigma}}(\frac{\tau}{\phi})^{1-\sigma}$

- Profit-maximization problem:

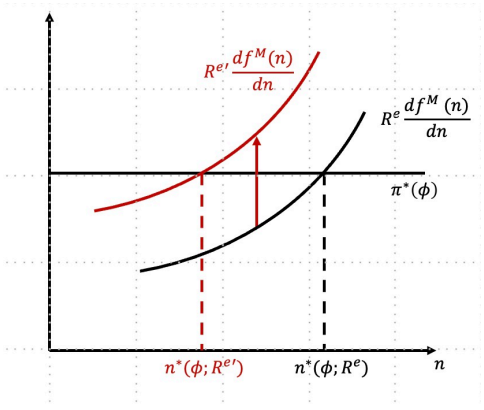
$$\begin{aligned} \max_{n,s,E} \quad & s(n\pi^*(\phi) - (f^P + f^M(n) - E)) \\ \text{s.t.} \quad & f^P + f^M(n) - E \leq \lambda f^P \\ & R^e E \leq (1-s)(n\pi^*(\phi) - (f^P + f^M(n) - E)) \end{aligned}$$

  - Both borrowing constraint and participation constraint bind for exporting firms.
    - $D = \lambda f^P$, $E = (1-\lambda)f^P + f^M(n)$, $s = \frac{n\pi^*(\phi) - \lambda f^P - R^e((1-\lambda)f^P + f^M(n))}{n\pi^*(\phi) - \lambda f^P}$
    - Profit-maximization problem reduce to: $\max_n n\pi^*(\phi) - \lambda f^P - R^e((1-\lambda)f^P + f^M(n))$

# Conceptual Framework: Comparative Statics I

**Proposition 1.** (intensive margin) For any given $\phi$, the profit-maximizing level of consumer reach, $n^*(\phi; R^e)$, is decreasing in $R^e$.

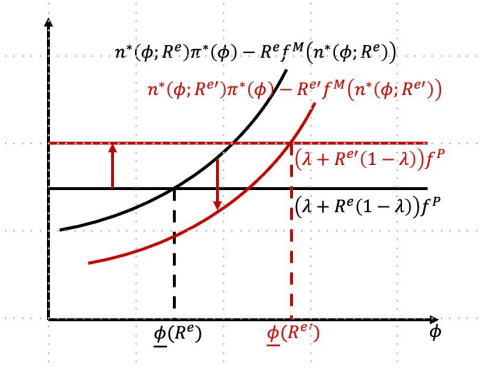
- First-order condition: $\pi^*(\phi) = R^e \frac{df^M(n)}{dn}$



# Conceptual Framework: Comparative Statics II

**Proposition 2.** (extensive margin) The cutoff productivity, $\underline{\phi}$, is increasing in $R^e$.

- $\underline{\phi}$ fulfills the breakeven condition:
  $n^*(\underline{\phi}; R^e)\pi^*(\underline{\phi}) = \lambda f^P + R^e((1-\lambda)f^P + f^M(n^*(\underline{\phi}; R^e)))$



# Conceptual Framework: Predictions

**Prediction 1.** A reduction in equity financing cost increases an exporter's sales to a given destination-product market.

**Prediction 2a.** A reduction in equity financing cost expands an exporter's market span.

**Prediction 2b.** A reduction in equity financing cost has a greater effect on expanding an exporter's market span in industries more dependent on intangible assets.

Back

# Composition of Foreign Markets

| *Dependent variable: share of destinations* | | | | | | |
|---|---|---|---|---|---|---|
| | % long distance | % non-WTO | % high-income | %low CHN penetration | % IFRS adoption | % high-volatility |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| IPO Approval×Post | 0.0167 | 0.00428 | 0.0377* | 0.0609** | 0.0480** | 0.00116 |
| | (0.0367) | (0.0177) | (0.0214) | (0.0278) | (0.0230) | (0.0154) |
| # Observations | 27679 | 27679 | 27679 | 27679 | 27679 | 27679 |

*Note*: The table reports the effects of IPO approval on the firm-product level composition of destination markets. The variable IPO Approval is an indicator that takes a value of 1 if the firm's IPO application is approved by the SIEVC. The variable Post takes a value of 1 if the year is equal to or after the SIEVC review meeting year. All columns control for firm-product fixed effects, application cohort-year fixed effects, HS4-year fixed effects, and board-year fixed effects. Robust standard errors, clustered at the firm level, are shown in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

◂ Back

# Details of Prospectus Sections

- The section of *Business Development Goals* includes:
  - Medium- and long-term strategic planning
  - Measures taken to achieve the strategic objectives and their implementation
  - Measures planned for the future
  - Assumptions for the formulation of strategic objectives and specific plans
  - Possible difficulties in implementation
- The section of *Usage of Raised Funds* includes:
  - Management for the investment and use of raised funds
  - The contribution of the proceeds to the issuer's main business, the impact on the issuer's future business strategy, and its role in the issuer's innovation
  - Investment direction and arrangement for the use of the raised funds
  - Relationship between the fund-raising investment projects and the main business and core technology
  - Disclosure of usage of proceeds based on materiality principle

Back

# Example: LDA Procedure

Take the following sentence from the Business Development Goals section of Huaiji Dengyun Auto-parts (Holding) Co. (002715.SZ) as an example:
*In terms of overseas market expansion, we make full use of the good relationships we have already established with international companies to sell our valve products by leveraging our partners' global network channels and experience.*

- Preprocessing: we separate the sentence from the text and remove punctuations and stopwords, such as "of," "the," "have," and "by."
- Tokenization and Vectorization: we tokenize and map the sentence to a vector space
  - overseas, market, expansion, full use, company, international, companies, establish, good, relationship, leverage, partner, global, network, channel, experience, sell, company, valve, product
- Topic Modeling: apply the LDA algorithm on the text corpus to identify topics
  - The dominant topic of the sentence is marketing/branding-related: Market, Client, Network, Brand, ...

Back

# Market/Tech-related Topics (BDG)


Figure: Growth Strategy


Figure: Sales Network


Figure: Customer Service


Figure: Innovation

# Market/Tech-related Topics (URF)


Figure: Business Capacity


Figure: Market Potential


Figure: Marketing Strategy


Figure: Global Market


Figure: Fundraising


Figure: Assets

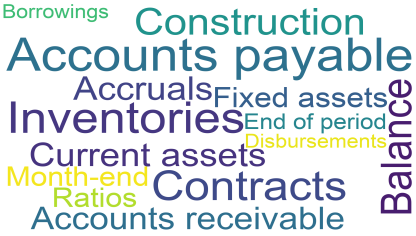



Figure: Liquidity


Figure: Revenue

# Finance-related Topics (URF)


Figure: Fundraising


Figure: Fixed Assets


Figure: Liquidity


Figure: Capacity

# Example: Songz Automobile Air Conditioning

- The company's overall business objectives are: by 2011, to develop into a leading enterprise with independent development capability and technological innovation, to establish an overseas marketing network with international competitiveness, to maintain the domestic leading level of automobile air-conditioning technology and market share, and to endeavor to become a world-class supplier in the field of automobile air-conditioning; and to bring in talented people, innovate technology, and to build up an international first-class vehicle air-conditioning production base.
- The company will further strengthen its international market development. The international market of automobile air-conditioning products is broad, and the company will utilize the technical advantages of the products, by virtue of its own cost being significantly lower than the advantages of international similar products, to gradually expand the international market under the premise of meeting the needs of the domestic market. At present, we have begun to develop the market of neighboring countries. The company's products have successfully entered more than 20 countries such as India, Indonesia, Vietnam, Kuwait, Iran, etc. The company will continue to strengthen the development of the international market, and gradually establish an overseas marketing network.

Back