# Capital Market Financing, Firm Growth, and Firm Size Distribution


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# Motivation

- Capital markets developed substantially since early 1990s
- Equity market capitalization (%GDP) rose from 35% to 84% for median developed country
- From 17% to 59% for median emerging country
- Annual amount raised through equity or corporate bond offerings (%GDP) doubled for median country, early 1990s and late 2000s
- Yet, basic questions linger about firm dynamics around this activity

# Motivation

- These developments have raised concerns
- Large issuance activity leaves firms increasingly exposed to reversals in capital market financing
  - Acharya et al. (2015); IMF (2015)
- Firms use the proceeds to accumulate cash or make financial investments rather than make capital investments themselves
  - Shin and Zhao (2013); Shin (2014); Bruno and Shin (2015); Caballero et al. (2015)

# Motivation

1. How many firms from around the world obtain capital market financing?

2. What happens to the assets, sales, and number of employees of firms that issue debt and equity relative to non-issuers?

3. How does the comparative performance of issuers and non-issuers differ across the firm size distribution (FSD)?

# Main findings

1. Growth in capital markets during the 1990s and 2000s has been associated mainly with a growth in the intensive margin
   - Only a small number of large firms issue equity or bonds, and this number has not increased over time
   - About only 20 listed firms per country, per year issue securities in either domestic or international markets
   - Among these issuing firms a small subset receives the majority of funds raised through security issuances
   - The median listed firm that conducts an equity offering is more than twice as large (by total assets) as the median non-issuing firm
   - The median bond-issuing firm is more than 36 times as large as the median non-issuing firm
   - Issuers are larger than non-issuers throughout the FSD

# Main findings

2. Issuing firms have used their capital raisings to grow
   - Despite being larger, issuers grow faster than non-issuers in terms of assets, sales, and employment
   - Issuers experience a significant boost in these attributes in the year they sell securities
   - The boost in performance occurs across the FSD
   - The median issuer by size experiences asset growth of 12% per annum
   - The median non-issuer grows at 4.5%
   - Similar patterns are observed for the average sized issuers and non-issuers and for other deciles of the FSD
   - The FSD of issuing firms moves more to the right over time than that of non-issuing firms

# Main findings

3. The additional growth of issuers (vis-à-vis non-issuers) pronounced among smaller firms, and declines monotonically with firm size
   - The assets of issuing firms in the 1st decile grow at 13.3%, while those of non-issuing firms grow at 1.6%
   - The assets of issuing firms in the 9st decile grow at 7.7% while those of non-issuing firms grow at 6.4%
   - The FSD of issuers and non-issuers present very different dynamics
   - Because smaller, issuing firms grow faster than larger, issuing ones, their FSD tightens
   - Among non-issuing firms, larger firms grow faster than smaller ones; so they experience a widening of their FSD
   - The relation between growth and size is downward sloping for issuing firms and upward sloping for non-issuing firms

# Main findings

- Results robust to a number of specifications, although some heterogeneity in firm behavior around their capital raising activity
  a. Equity-issuing firms grow relatively faster than bond-issuing ones
     - Consistent with the view that high-growth firms use relatively more equity financing to cover their funding needs
     - (Stulz, 1990; McConnell and Servaes, 1995; Hovakimian et al., 2001, 2004; Gatchev et al., 2009)
  b. Smaller, foreign issuers grow faster than smaller, domestic issuers
  c. In developed countries with market-based financial systems, both smaller and larger firms raise capital through equity offerings
  d. Firms experience a larger boost in growth when issuing than in developed countries with bank-based systems
  e. In emerging economies, the differential between issuing and non-issuing firms remains fairly stable (Hsieh and Klenow, 2014)

# Main findings

- Results robust to a number of specifications, although some heterogeneity in firm behavior around their capital raising activity
  f. Firm age does not fully explain the results,
    - Smaller, issuing firms grow faster than larger, issuing ones across the different age groups
    - Even when firm age and firm size are correlated and younger firms tend to grow faster than older ones
    - (Cooley and Quadrini, 2001; Albuquerque and Hopenhayn, 2004; Clementi and Hopenhayn, 2006; Haltiwanger et al., 2013)

# Organization of the rest of the presentation

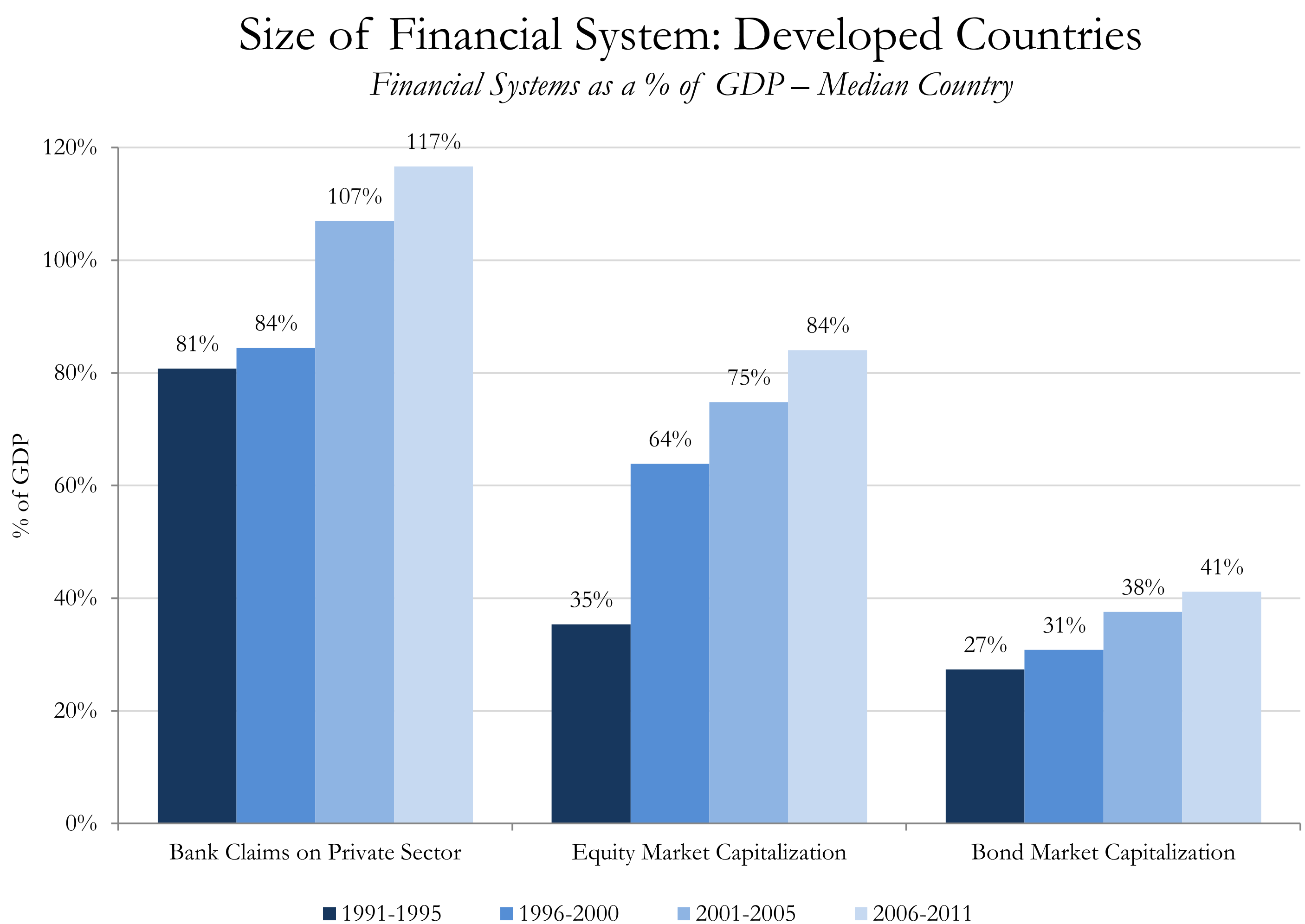
1. Data
2. Capital Market Growth: The Intensive and Extensive Margins
3. Which Firms Use Capital Markets?
4. How Do Assets, Sales, and Employment Evolve for Issuing and Non-issuing Firms?
5. Heterogeneity in Firm Behavior
6. The Role of Firm Age
7. Conclusions

# Data

- Data coverage for capital raising activity from SDC Platinum
  - Data coverage from 1990 to 2011
  - 31 developed
  - 20 emerging economies
  - 532,423 security issuances

- Balance sheet data for publicly listed firms from Bureau van Dijk's Orbis
  - Data coverage from 2003 to 2011
  - 45,527 firms from 51 countries
  - 27,185 firms did not raise any capital through equities or bonds in domestic or foreign markets between 2003 and 2011

# Financial markets size



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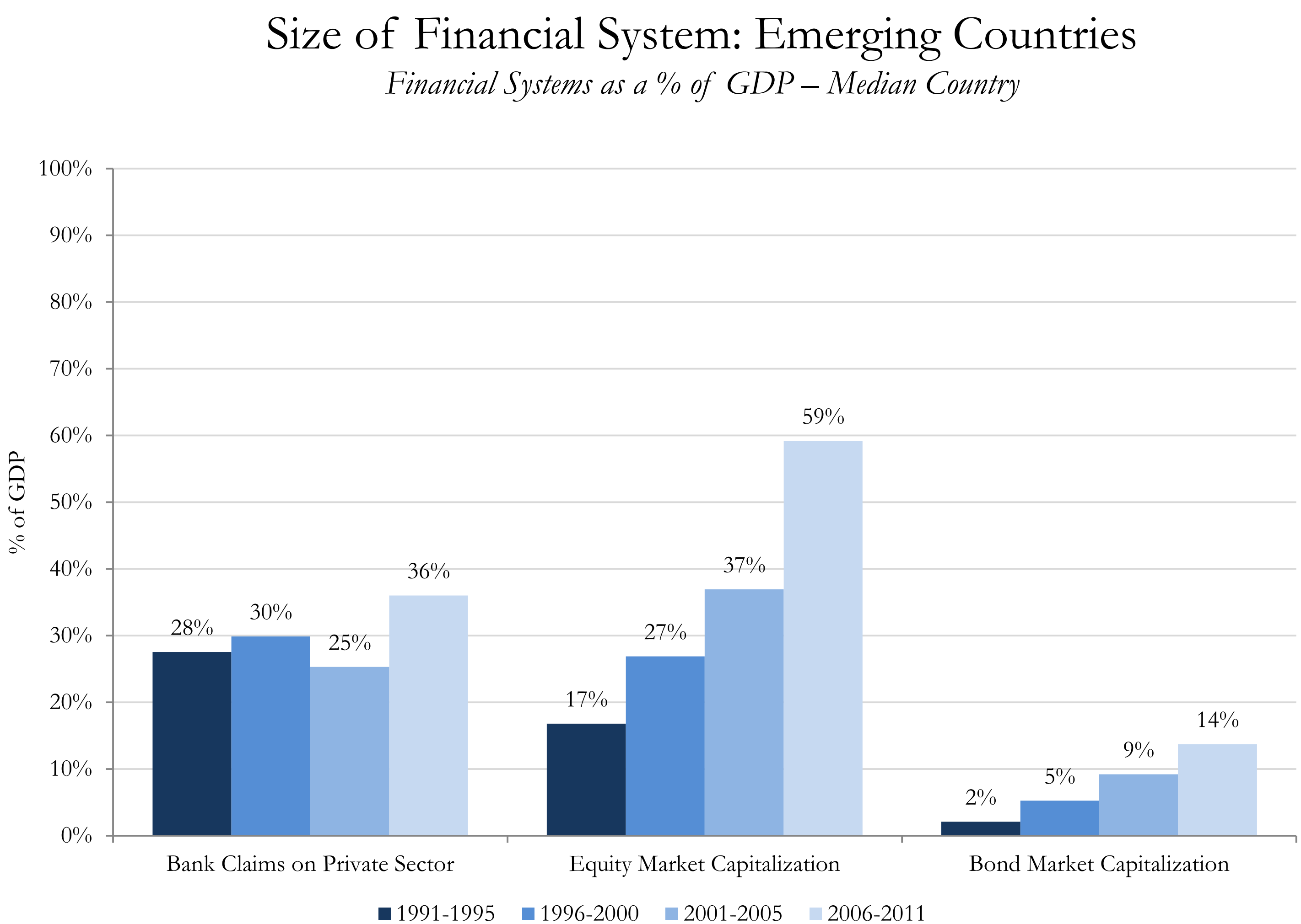
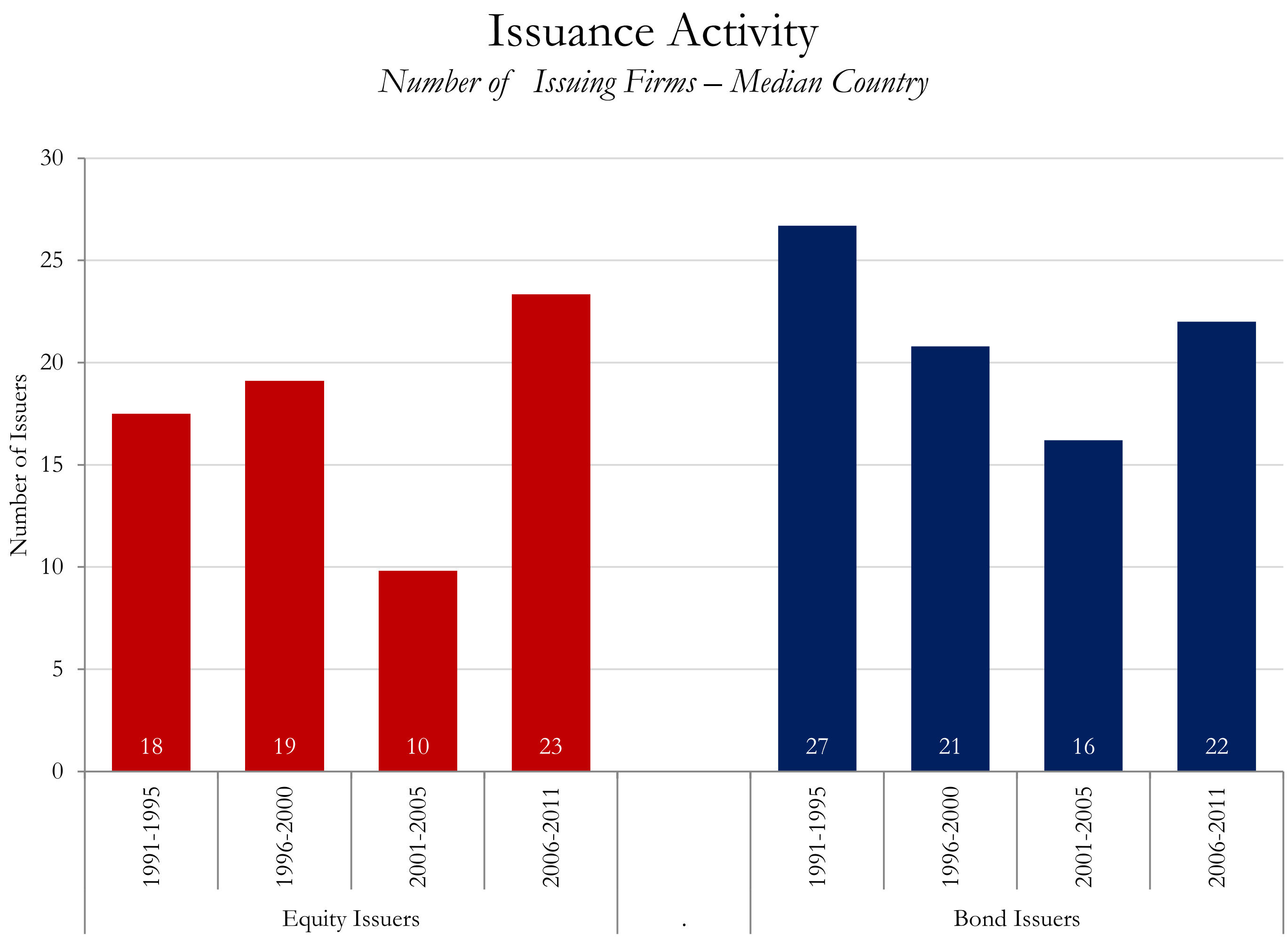
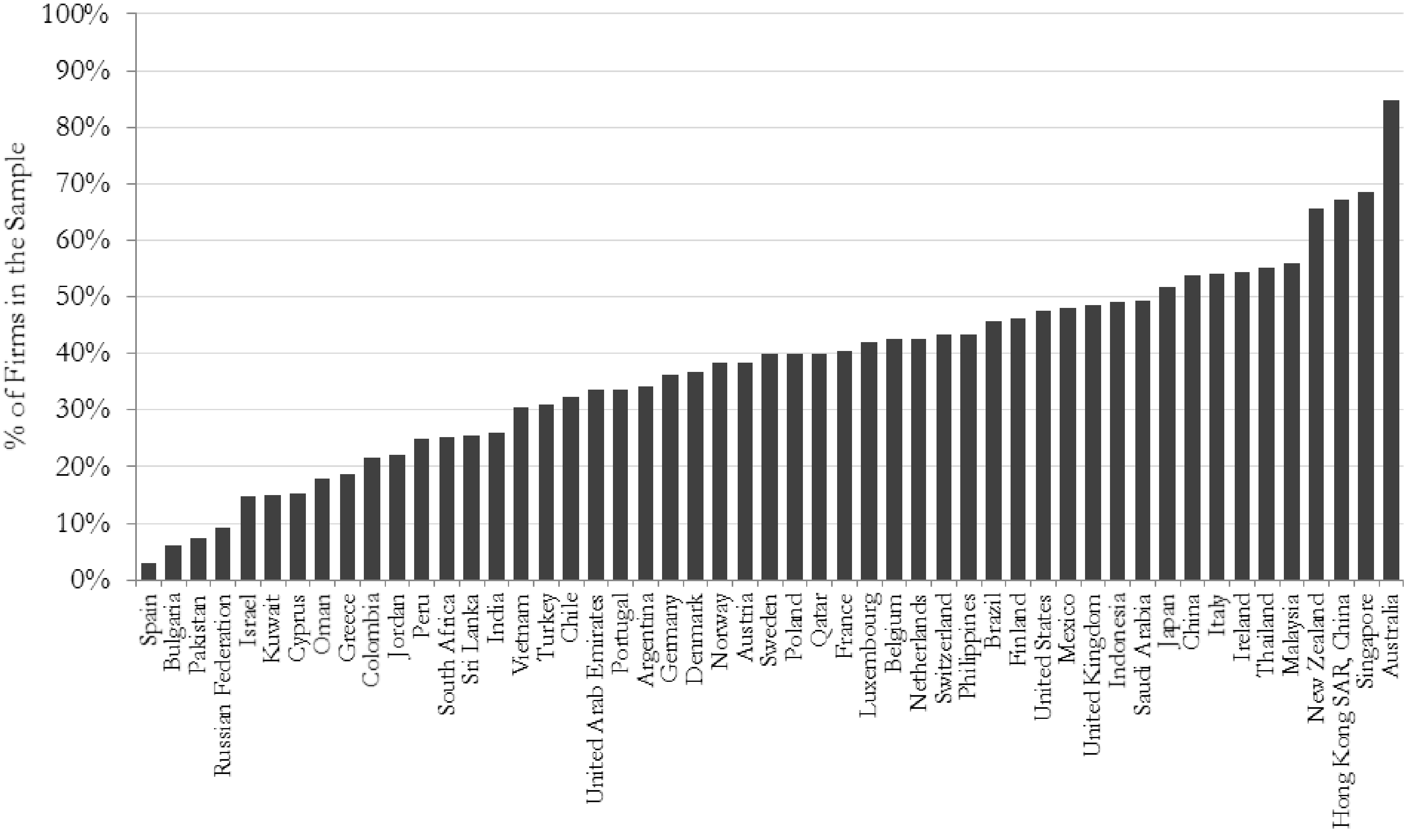


# Number of issuing firms



# Percentage of issuing firms over 2003-2011

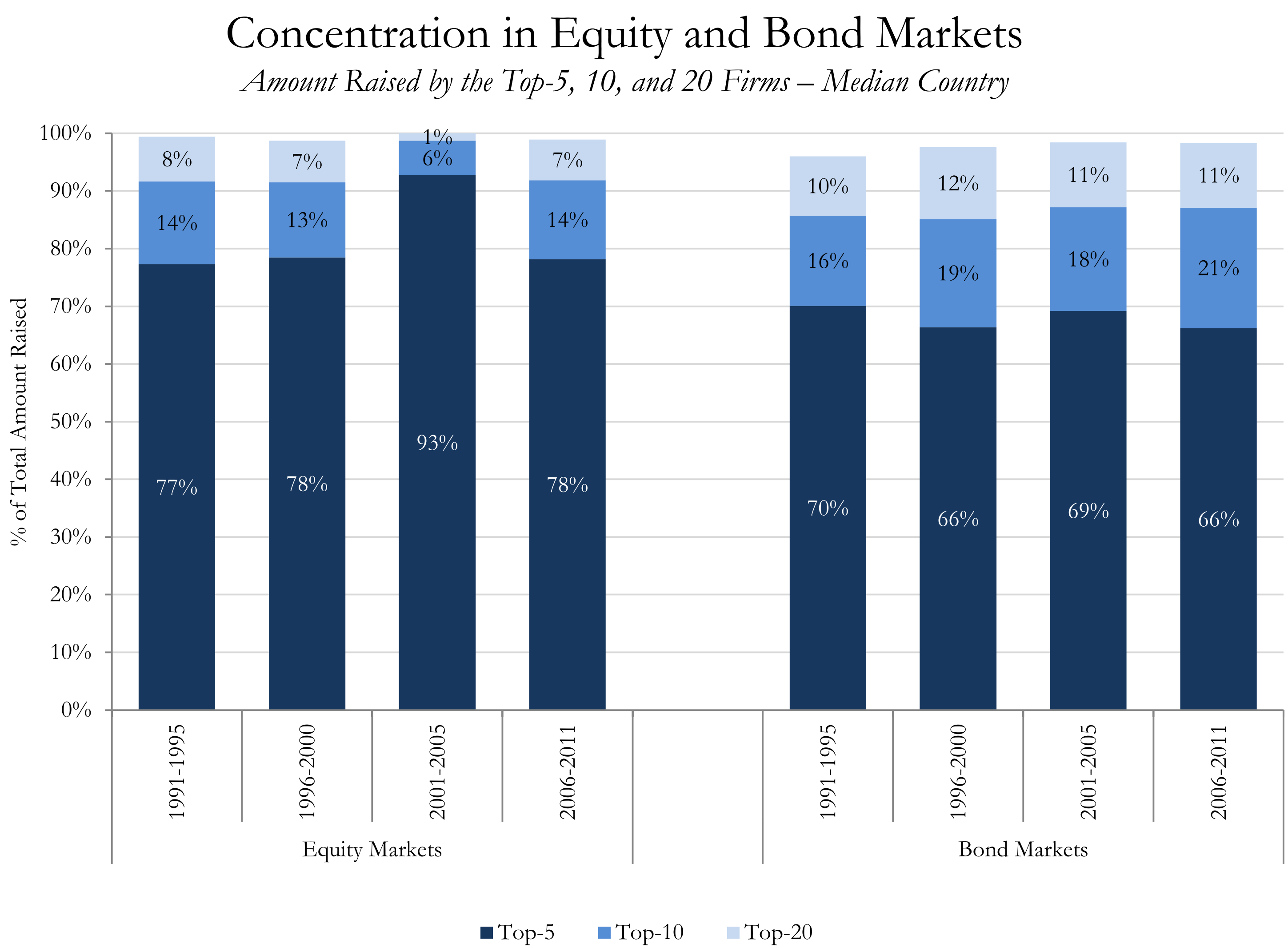


# Number of issuing firms

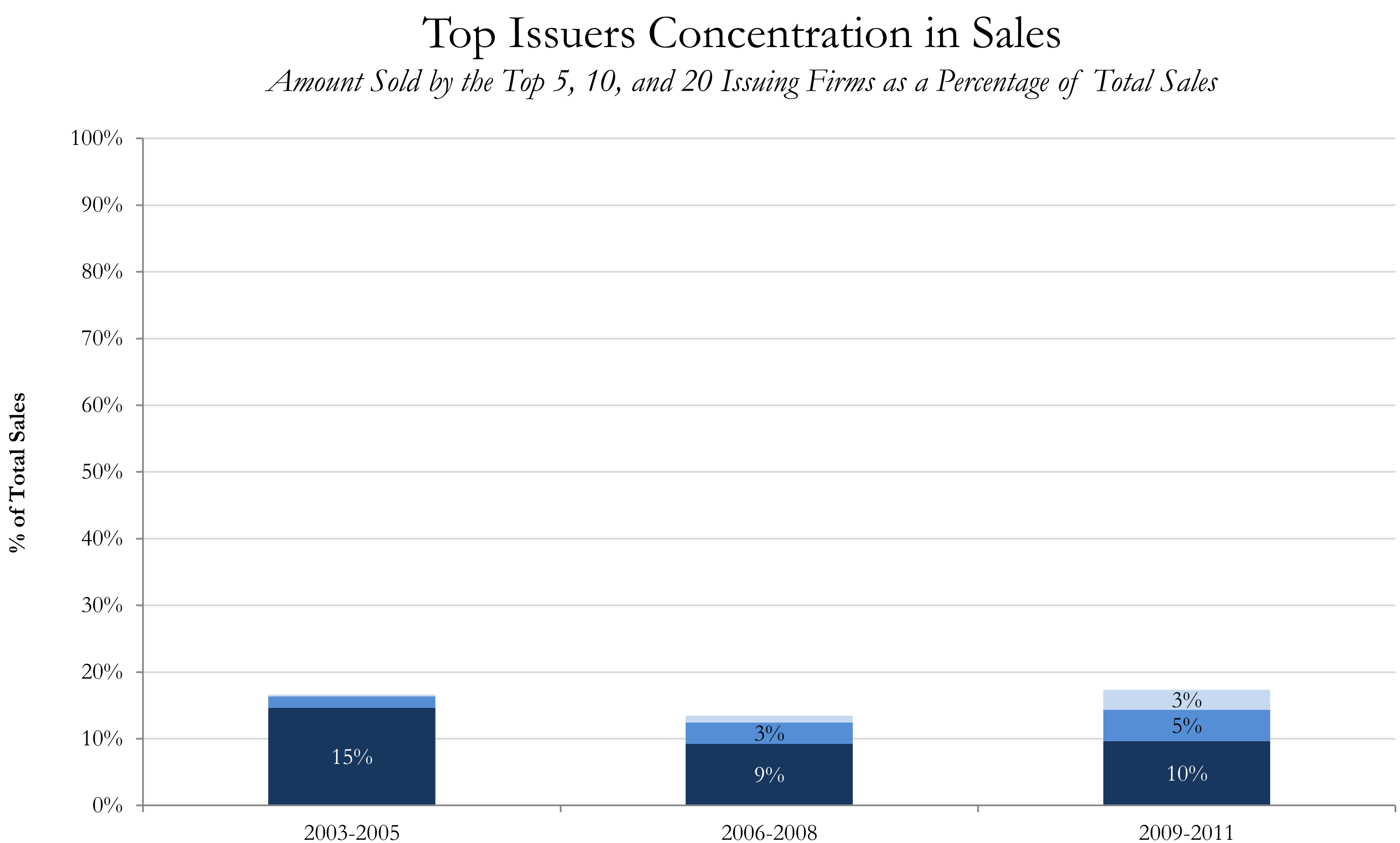
*Emerging Economies*

| Country | Number of Firms | |
|---|---|---|
| | Non-issuing Firms | Issuing Firms |
| Argentina | 71 | 37 |
| Brazil | 297 | 250 |
| Bulgaria | 402 | 26 |
| Chile | 172 | 82 |
| China | 1,268 | 1,471 |
| Colombia | 94 | 26 |
| India | 3,501 | 1,233 |
| Indonesia | 230 | 222 |
| Jordan | 202 | 57 |
| Malaysia | 472 | 596 |
| Mexico | 81 | 75 |
| Pakistan | 525 | 42 |
| Peru | 142 | 47 |
| Philippines | 145 | 111 |
| Russian Federation | 1,161 | 117 |
| South Africa | 285 | 96 |
| Sri Lanka | 187 | 64 |
| Thailand | 260 | 320 |
| Turkey | 268 | 120 |
| Vietnam | 565 | 247 |

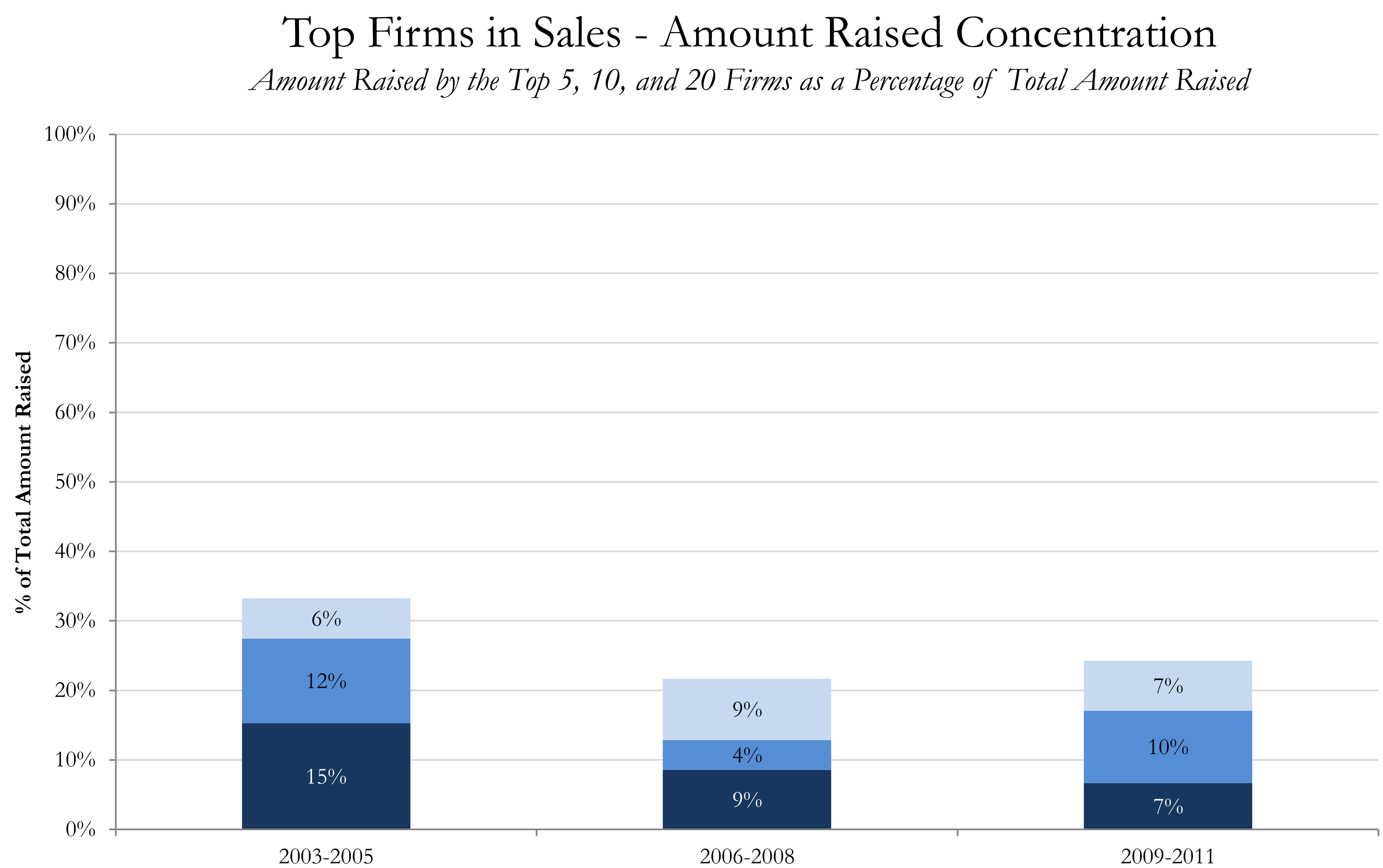
# Share captured by top issuing firms



# Concentration in sales by top security issuers



# Concentration in raisings by top firms in sales

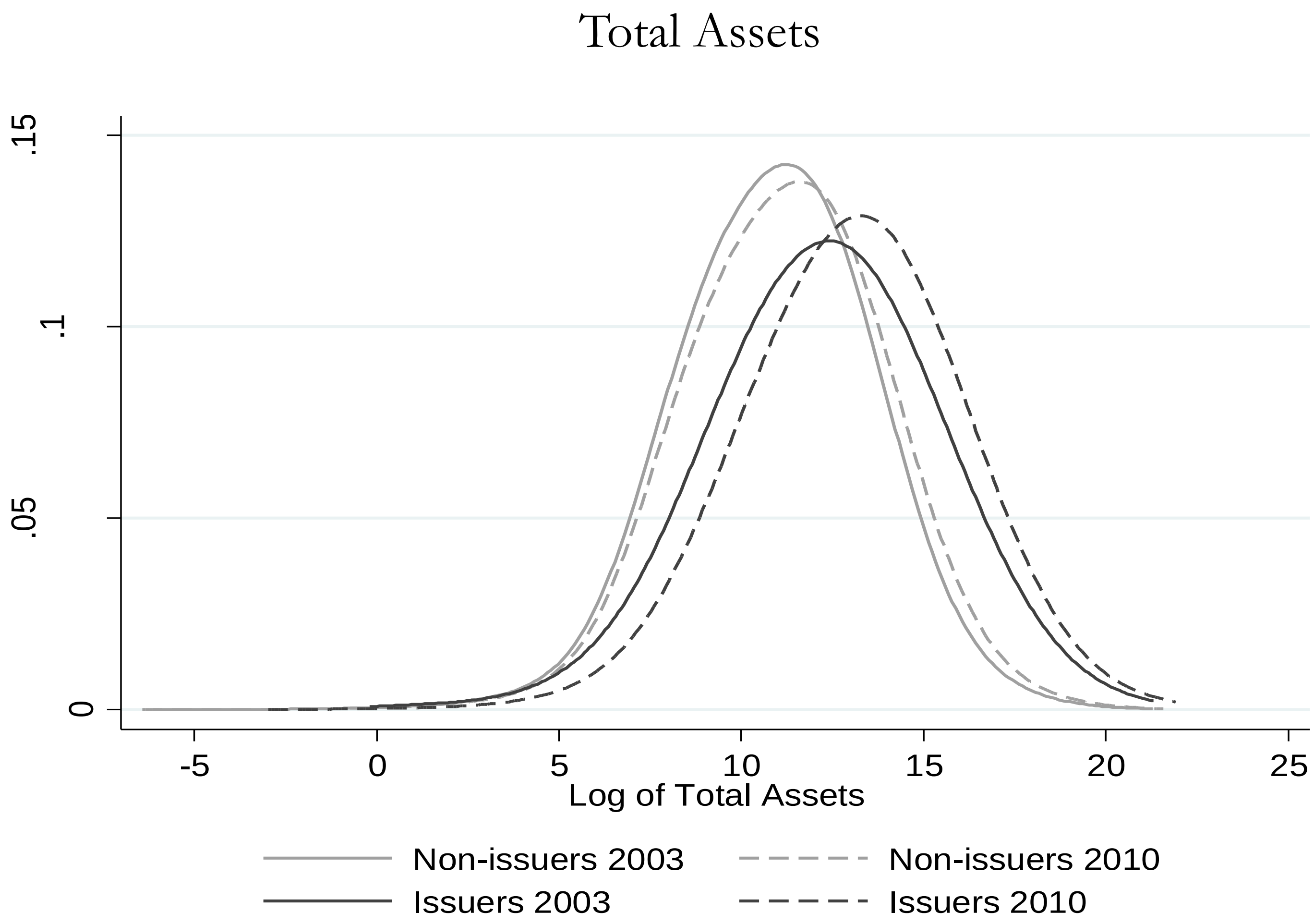


# Attributes of non-issuers vs. issuers

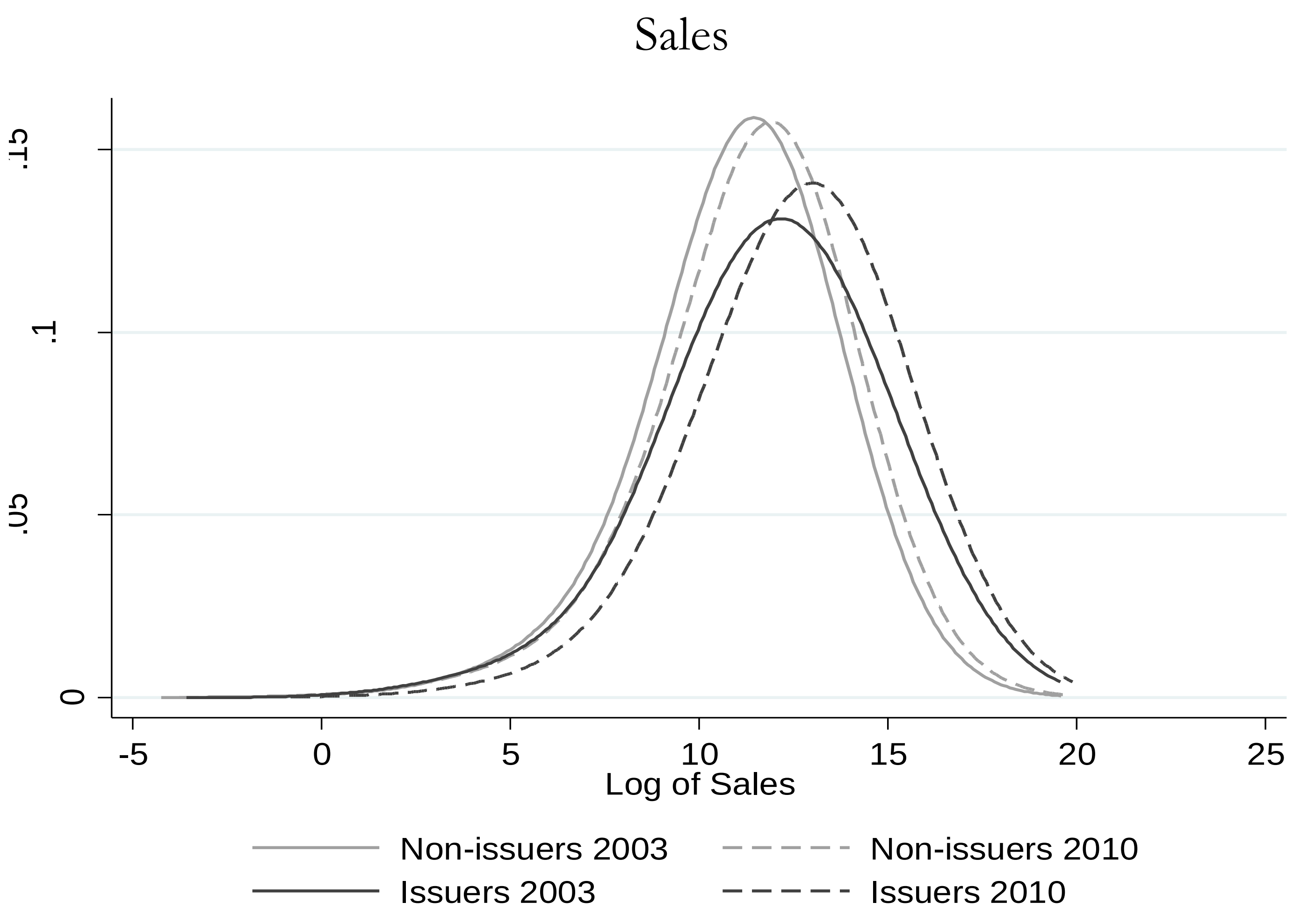
*Firm Characteristics*

| | Non-issuers | Issuing Firms | Equity Issuers | Bond Issuers |
|---|---|---|---|---|
| **Total Assets** | 99,823 | 316,528 *** | 255,701 *** | 3,685,394 *** |
| **Sales** | 73,700 | 132,457 *** | 114,015 ** | 1,011,641 *** |
| **Number of Employees** | 327 | 705 *** | 470 *** | 3,080 *** |
| **Asset Growth** | 4.31% | 9.29% *** | 10.48% *** | 9.43% *** |
| **Sales Growth** | 5.48% | 9.37% *** | 9.48% *** | 8.68% *** |
| **Employee Growth** | 0.87% | 4.44% *** | 4.97% *** | 4.18% *** |
| **Leverage** | 49.36% | 55.33% *** | 54.18% *** | 60.55% *** |
| **Long Term Debt/Total Liabilities** | 14.75% | 22.48% *** | 21.50% *** | 36.29% *** |
| **Retained Earnings/Total Assets** | 5.56% | 6.05% ** | 4.42% ** | 8.64% ** |
| **ROA** | 3.66% | 3.59% | 3.06% ** | 4.00% |
| **Firm Age (2011)** | 26 | 20 *** | 19 *** | 32 |
| | | | | |
| **Number of Firms** | 27,185 | 18,342 | 16,198 | 4,877 |
| **Percentage of Total Firms** | 59.71% | 40.29% | 35.58% | 10.71% |
| **No. of Observations for Total Assets** | 191,616 | 133,869 | 116,268 | 40,059 |

# Firm size distribution (FSD)



# Firm size distribution



# Firm size distribution

# Quantile regressions

*Using Total Assets as a Proxy for Size*

| | Quantile | | | | | Mean |
|---|---|---|---|---|---|---|
| | **1st Decile** | **3rd Decile** | **5th Decile** | **7th Decile** | **9th Decile** | |
| **Constant** | 3,517 *** | 15,067 *** | 64,710 *** | 207,537 *** | 893,746 *** | 55,443 *** |
| *(Size of Non-issuers in 2003)* | [51] | [493] | [1,542] | [4,370] | [24,998] | [1,083] |
| **Issuer Dummy** | 1.631 *** | 3.154 *** | 3.532 *** | 4.915 *** | 9.468 *** | 3.806 *** |
| *(Relative Size of Issuers vs. Non-issuers in 2003)* | [0.085] | [0.172] | [0.146] | [0.195] | [0.573] | [0.138] |
| **2010 Dummy** | 1.118 *** | 1.253 *** | 1.362 *** | 1.398 *** | 1.543 *** | 1.340 *** |
| *(Relative Size in 2010 vs. 2003 for Non-issuers)* | [0.021] | [0.059] | [0.050] | [0.050] | [0.067] | [0.013] |
| **Issuer Dummy x 2010 Dummy** | 2.145 *** | 1.936 *** | 1.620 *** | 1.384 *** | 1.091 | 1.621 *** |
| *(Relative Growth of Issuers vs. Non-issuers)* | [0.153] | [0.150] | [0.096] | [0.083] | [0.091] | [0.027] |
| **Average Growth of Non-issuers** | 1.6% | 3.3% | 4.5% | 4.9% | 6.4% | 4.3% |
| **Average Growth of Issuers** | 13.3% | 13.5% | 12.0% | 9.9% | 7.7% | 11.7% |
| **No. of Observations** | 47,596 | 47,596 | 47,596 | 47,596 | 47,596 | 47,596 |

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- Issuing firms 63% larger than non-issuing firms in 2003

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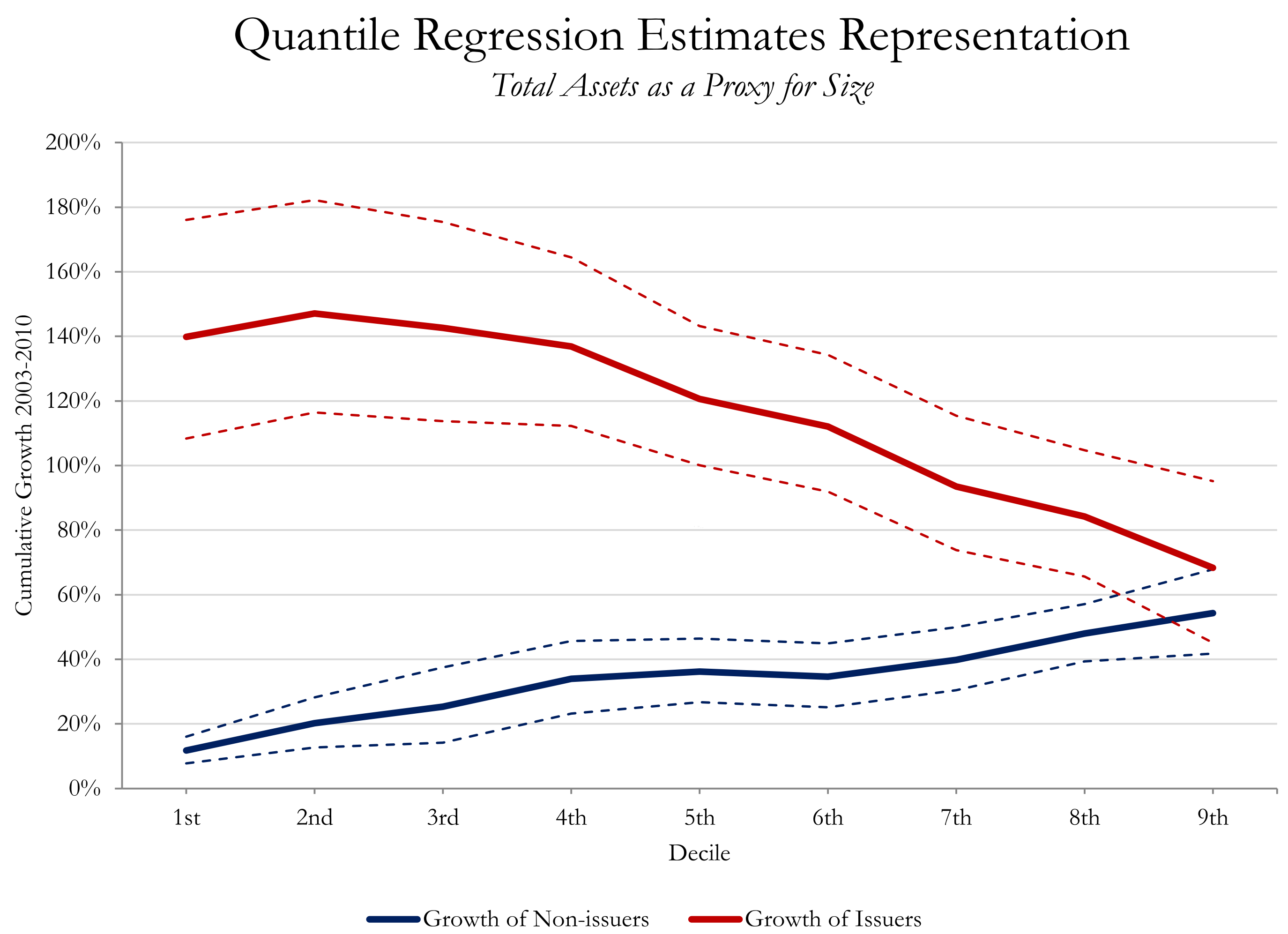
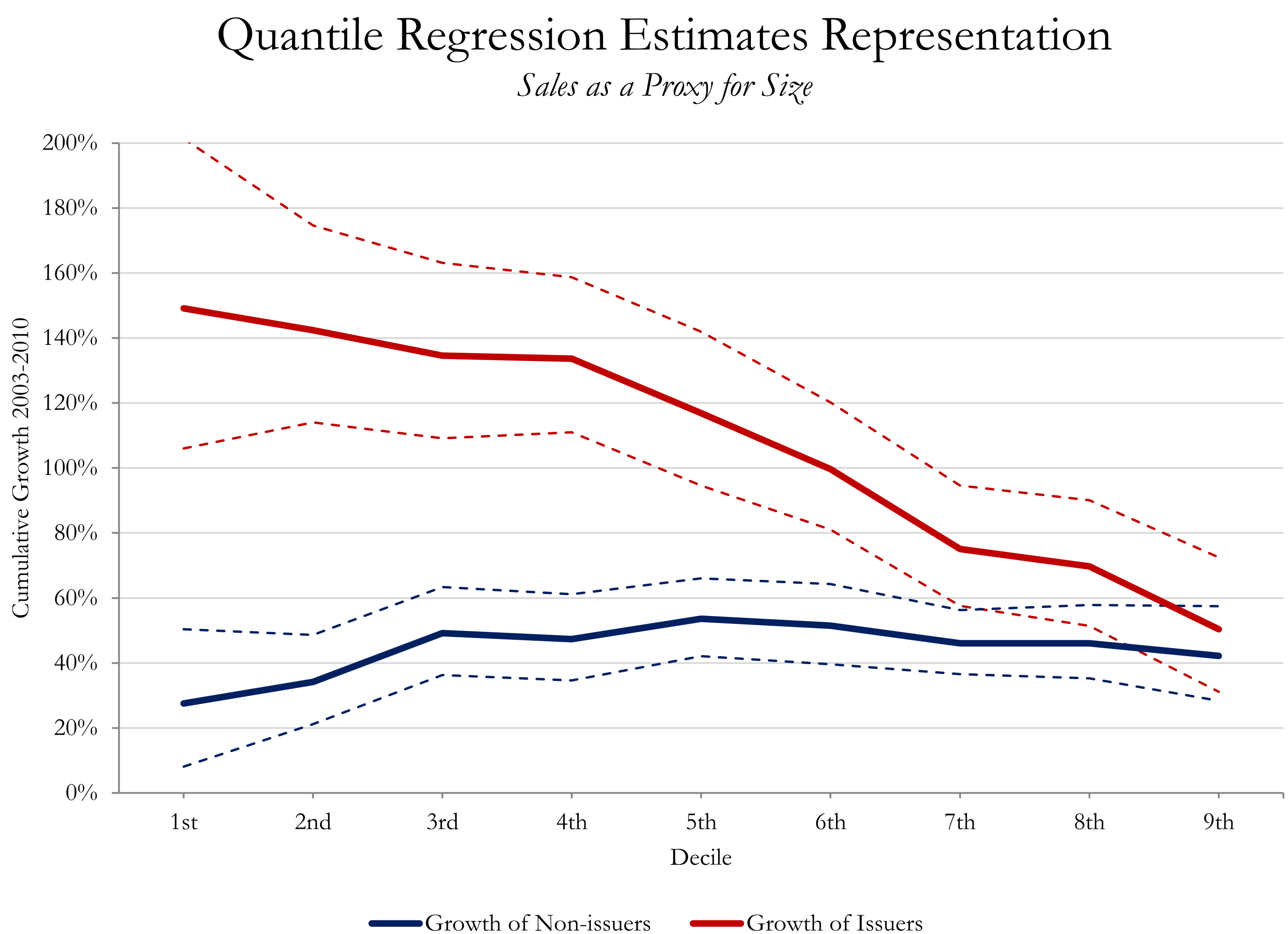
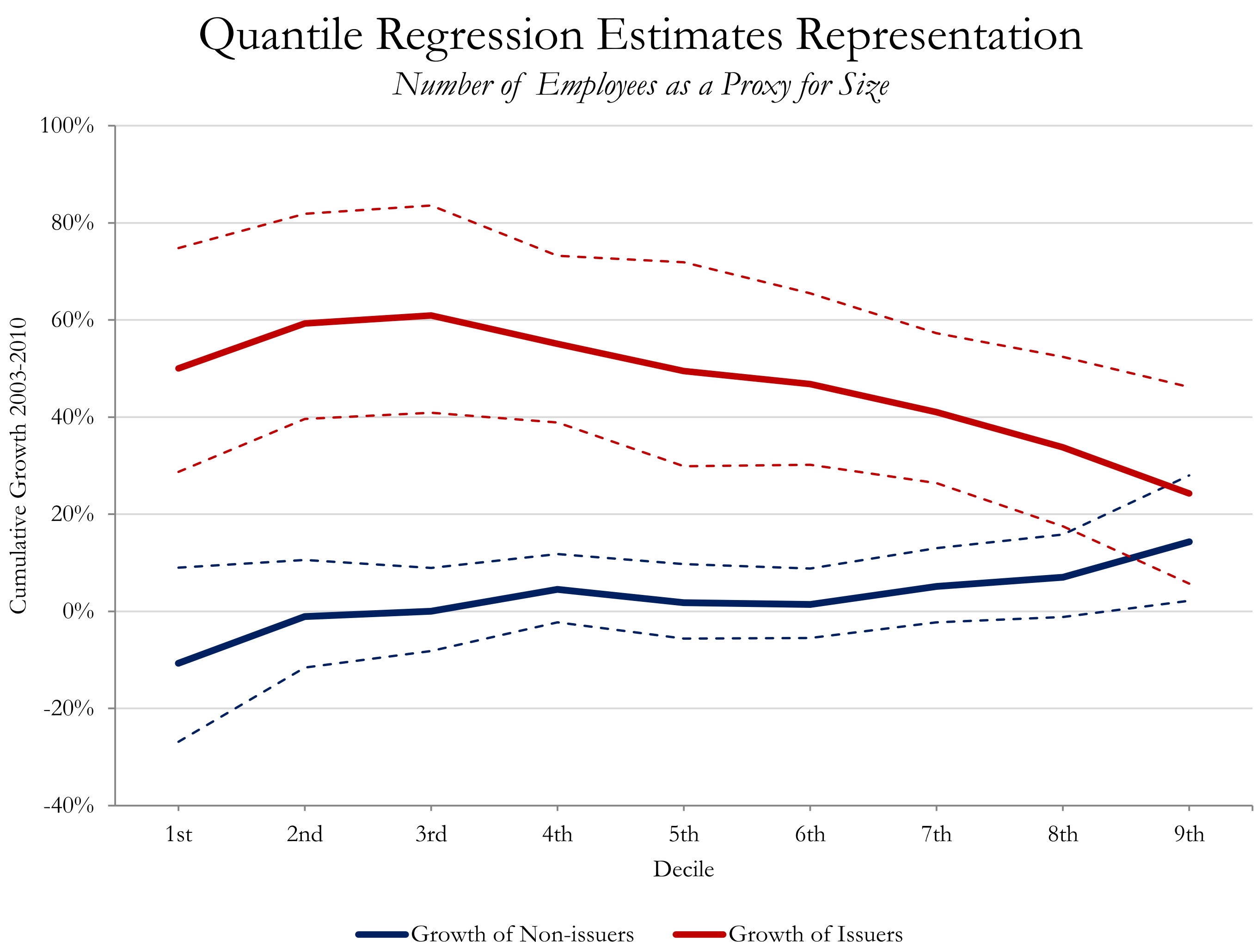
# Cumulative growth: assets



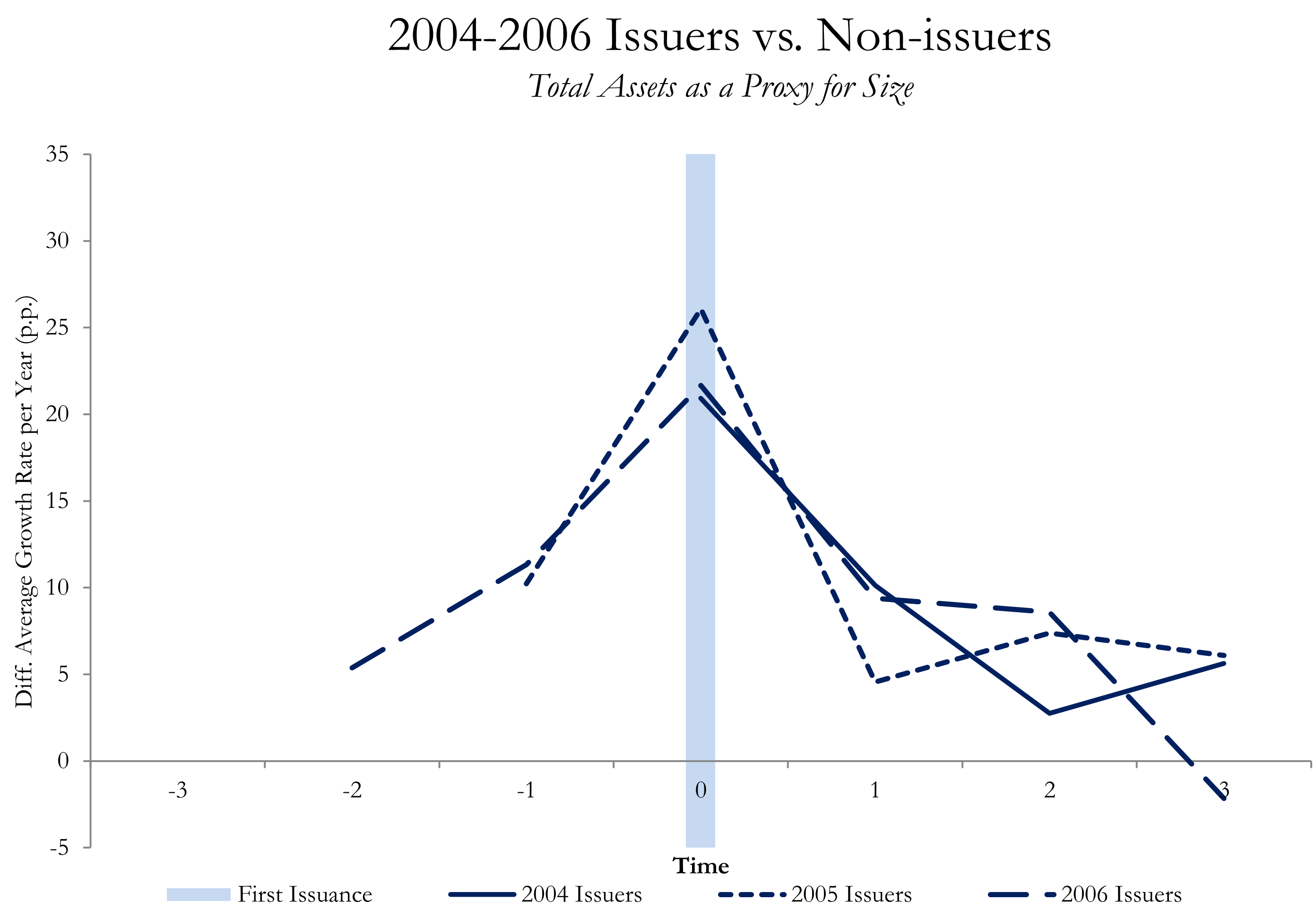
# Cumulative growth: sales



# Cumulative growth: number of employees



# Event studies: firm dynamics around issuance



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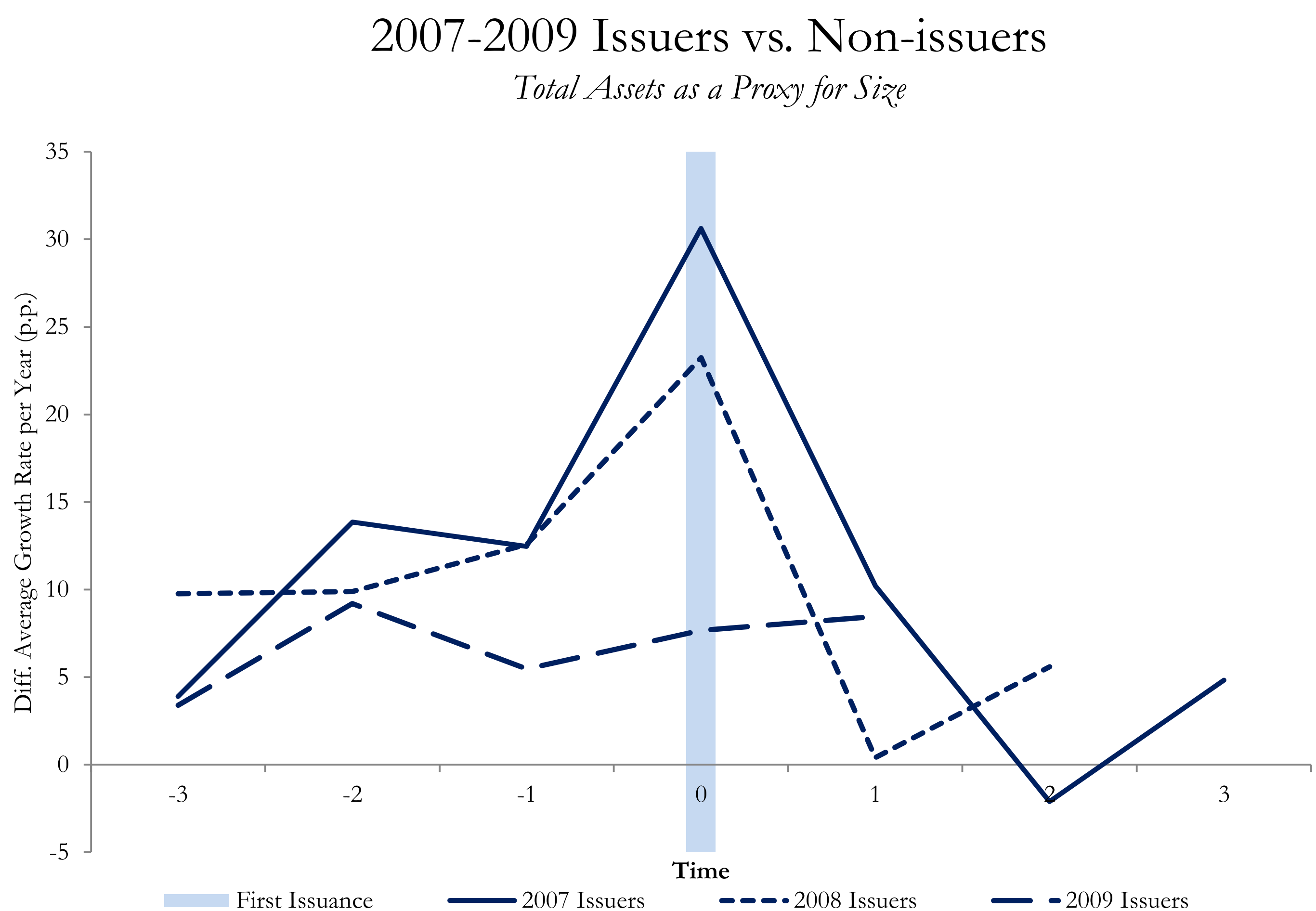
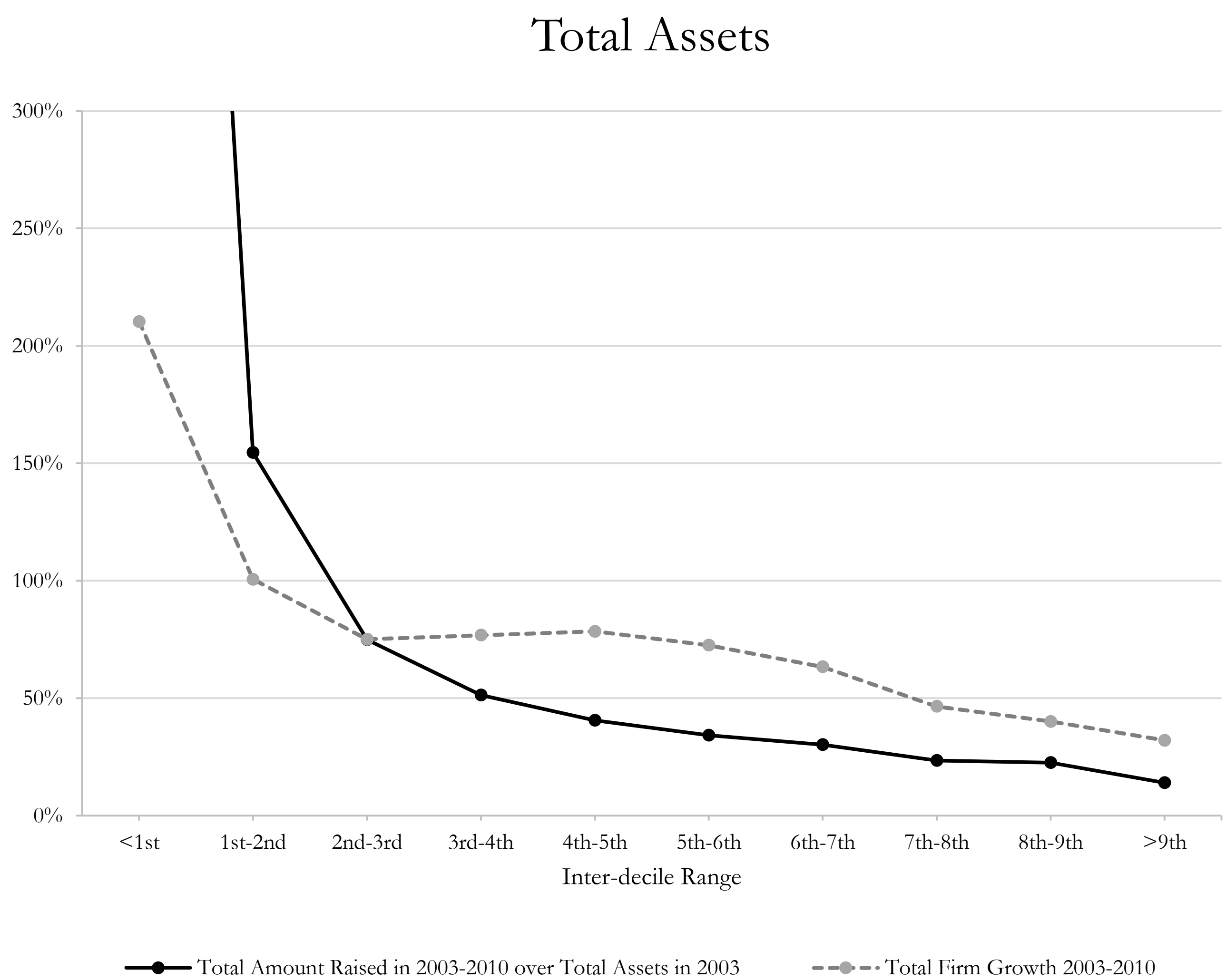


# Capital raised and firm growth



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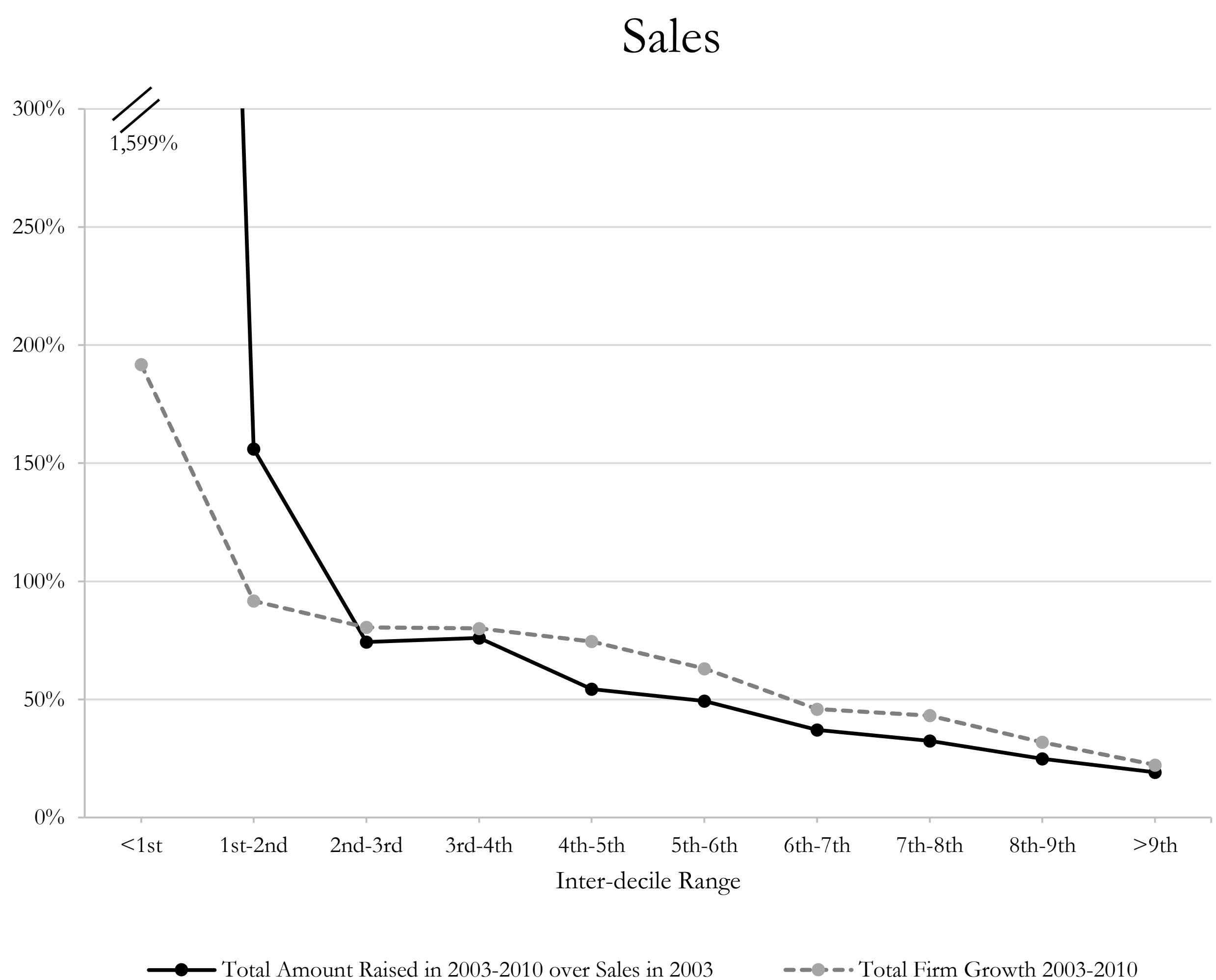

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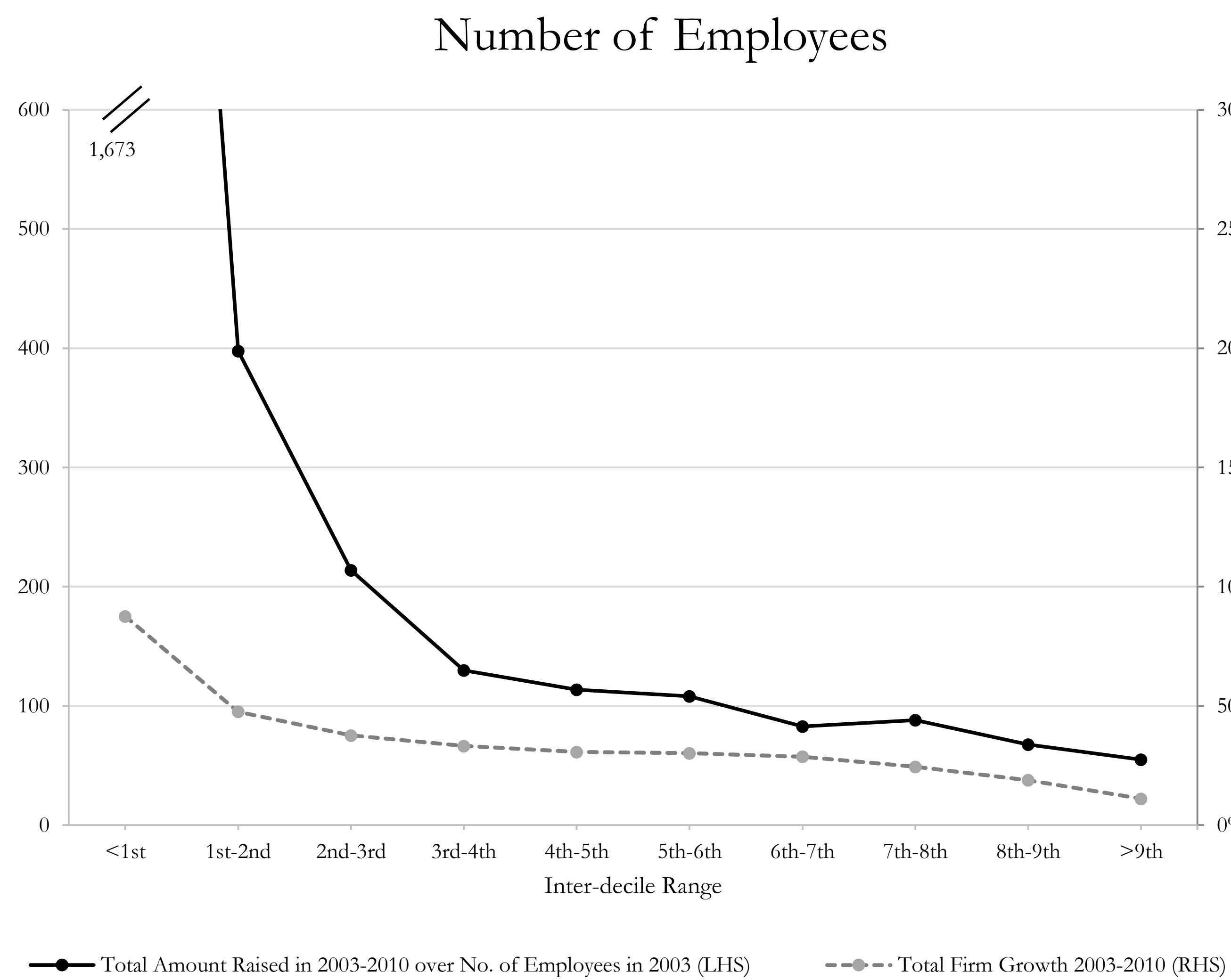

# Robustness

- Specific type of issuers and markets
  - Equity issuers, bond issuers, domestic issuers, foreign issuers
- Excluding and just with financial and utility firms
- Excluding IPOs
- Excluding China and India
- M&A activity
  - Firms engaging in M&A are usually not larger and do not grow faster ex ante or ex post than other firms raising equity or bonds
- Different estimates of the standard errors
  - Clustering at country-, sector-, and country-sector level

# Robustness

- Split the sample before/after the global financial crisis
- Use 2011 as end year
- Use of Worldscope data for a longer sample (1995-2011)
- Split developed and developing countries, with developed countries divided by type of financial system

# Robustness

- Firm age
  - Mean regressions controlling for firm age
    - For pooled data and across different sub-groups of issuers and economies
  - Growth regressions controlling for firm age
    - For pooled data and across different sub-groups of issuers and economies
  - Quantile regressions for young, mature, and old firms

# Firm age

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | *Young Firms (<10 years old)* | | | |
| ***Quantile*** | **1st Decile** | **3rd Decile** | **5th Decile** | **7th Decile** | **9th Decile** | ***Mean*** |
| Average Growth of Non-issuers | 0.8% | 2.1% | 3.7% | 4.8% | 16.6% | 5.2% |
| Average Growth of Issuers | 36.4% | 21.7% | 25.1% | 19.2% | 9.5% | 21.6% |
| | | | *Mature Firms (>10, <30 years old)* | | | |
| Average Growth of Non-issuers | 2.7% | 2.8% | 4.4% | 5.3% | 8.5% | 4.7% |
| Average Growth of Issuers | 13.1% | 14.2% | 16.5% | 15.6% | 12.7% | 14.3% |
| | | | *Old Firms (>31 years old)* | | | |
| Average Growth of Non-issuers | 3.3% | 3.7% | 3.3% | 3.6% | 4.8% | 3.3% |
| Average Growth of Issuers | 7.5% | 7.0% | 6.1% | 6.2% | 6.0% | 7.1% |

# Conclusions

1. For the median country only a small number of large firms issue equity or bonds

2. Issuers grow faster than non-issuers in terms of assets, sales, and employment

3. The additional growth of issuers (relative to non-issuers) is particularly pronounced among smaller firms

4. The FSD of issuers and non-issuers behave differently

5. Differences across countries and across old and new firms, but overall conclusions remain

# Conclusions and policy discussion

- Bonds versus equity
  - Bond issuers tend to be larger than equity issuers
  - Conflicts with the view that smaller and more opaque firms tap bond markets before raising funds through equity issuances
  - Don’t focus just on bond markets (also dominated mostly by public sector)
- Capital structure
  - Not the only factor that changes when firms issue
  - Issuances associated with an immediate, enduring boost in firm size
  - Issuers grow comparatively rapidly in the year they issue securities
  - This growth does not simply represent an increase in corporate assets: sales and the number of employees grow, too
  - Issuance related to changes in the real side of firms

# Conclusions and policy discussion

- Capital markets and growth
  - Direct, positive connection between issuance and growth at firm level
  - It is not just the availability of well-functioning securities markets that fosters the growth of listed firms

- Firm size distribution (FSD) and financial constraints
  - Growth depends on whether the firms are issuers or non-issuers
  - Among issuers, smaller firms grow faster; among non-issuers, larger firms grow faster than smaller firms
  - The boost in growth when issuing is consistent with the view that financial constraints (internal funds) might affect growth of firms, even large ones
  - Financial constraints seem especially binding for smaller firms

# Conclusions and policy discussion

- Effects of capital market development
  - For most countries, only a few large firms issue securities and grow fast
  - Capital market development around the world has not, in general, involved smaller firms issuing securities to fuel growth
  - Among large firms, need to understand which ones use capital markets
  - As securities markets develop, the extensive margin among listed firms might expand, so that smaller listed firms could participate more
- What drives the changes in firm dynamics at issuance?
  - Supply side? Shocks to capital markets?
  - Demand side?
  - That firms grow more rapidly before issuing suggests that more business opportunities might propel them to raise capital, and grow

# Conclusions and policy discussion

- Fostering capital markets directly benefits few, large firms
  - Effects on smaller firms, if any, still need to be understood and quantified
- But don't rely just on banks
  - That's not where the growth in financing has taken place
  - They have moved away from corporate financing
  - Switch in the type of companies they serve?
- If goal is to serve smaller firms, don't rely just on the typical institutional investors
  - DC pension funds and mutual funds invest in large, liquid firms
  - Constant monitoring pushes them to safer assets
  - Insurance companies or investors with longer horizons might help
  - But those investors also rely on capital markets as exit strategy

Thank you!