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# International Financial Integration and Entrepreneurship

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# What Do We Do in This Paper?

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- Explore the relation between:  
International Financial Integration (IFI) and Entrepreneurship h11
- New micro data set of 24 million firms in 98 developed and developing countries, 2004/1999.
- Preliminary evidence:
  - IFI positively associated with higher levels of firm activity.
  - Robust: different measures of entrepreneurship (entry, size, skewness, age, vintage); *de jure* and *de facto* measures of IFI; different controls and specifications.
  - Credit channel and FDI channel: consistent with evidence.

## Slide 2

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**h11**

IFI: a country's linkages with international capital markets/financial market / international capita.

hbsuser, 8/23/2006

# Why Is this Interesting?

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- Entrepreneurship and firm creation are often described as keys to economic growth.
- International competition and IFI: important sources of creative destruction.
  - Capital Mobility: ↑ concerns in public and academic circles about the effects of international financial flows on the domestic entrepreneurial class and development.
- Theoretical effects of IFI on entrepreneurship: ambiguous.

# Entrepreneurship and IFI: Negative Effects

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- International capital and in particular FDI, can crowd out local efforts, negative effects local development [*Hirschman (1958), Grossman (1984), Rodriguez-Clare (1996), Markusen and Venables (1999), Hausmann and Rodrik (2003)*].
- In the presence of pre-existing distortions and weak institutional settings, international capital mobility can increase the likelihood of financial crises.
  - Higher volatility and risk from financial crisis can reduce entrepreneurship and innovative efforts in a country.

# Entrepreneurship and IFI: Positive Effects

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- Foreign capital: countries can borrow to invest,
- IFI can lead to the improvement of domestic financial sectors (increased competition),
  - The availability of funds has been found to be an important determinant of entrepreneurship.
- IFI should also facilitate international risk sharing.
- Potential positive role of knowledge spillovers and linkages from foreign firms on domestic firm activity and innovation.

# IFI and Entrepreneurship: Evidence?

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- A critical question in academic and policy circles is then:

Is international capital mobility fostering  
or destroying entrepreneurship?

- Little empirical work on effects of international capital mobility on firm dynamism:
  - Lack of an international firm data set comprehensive enough to allow studying both developed and developing countries.
- D&B data set: overcome this problem – study close to 24 million firms in 98 developing and developed countries.

# Relation to the Literature

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- Effects of the external environment and financial markets on entrepreneurship; [*Desai, Gompers, and Lerner (2003) and Klapper, Laeven, and Rajan (2005); Black and Strahan (2002)*].
  - We explore the determinants of entrepreneurship and firm dynamism in developed and developing countries using data for private and public firms
- Related micro work: Chari and Herny (2004) and Harrison, Love and McMillian (2004) study effects of IFI on firms' cost of capital and financing constraints.
  - Channels analysis: consistent with this evidence.



## Debate: Effects of IFI

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- By focusing on the micro effects: contribute to the broader debate on the effects of international financial integration.

“Capital account liberalization, it is fair to say, remains one of the most controversial and least understood policies of our day.” *Eichengreen (2001)*.
- Empirical (macro) evidence is mixed [*Prasad, Rogoff, Wei, Kose (2003)*].
- A new set of papers focuses on narrower aspects/potential mechanisms through which financial liberalization can lead to faster growth [*Forbes (2006), Kose, Prasad, Rogoff, Wei (2006)*].
- Our results suggest IFI has been associated with more firm activity.

# Outline

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- Introduction and Motivation
- The D&B Data Set
- Definitions
  - How to measure entrepreneurship?
  - How to measure IFI?
- Results
  - Cross-Section
  - Robustness
  - Rajan and Zingales Methodology
  - Differences in Differences (2004/1999)
  - Endogeneity Discussion
- Channels
  - FDI Channel
  - Credit Channel
- Preliminary Conclusions

# The D&B Data Set

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- Worldbase data: database of both public and private companies in more than 213 countries and independent territories in 2004. Compiled by Dun and Bradstreet.
- The unit of record is the ‘establishment’ rather than the firm.
- 4-digit SIC-1987 code of the primary industry in which firm operates; for several countries, SIC codes of up to 5 secondary industries listed in descending order of importance (analysis: 2 digit level).
- Exclude: information for which primary industry and year started; territories with less than 80 observations; government related firms (SIC 9).
- Final data: more than 24 million observations in 98 countries.

# Issues: Sample Frame

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- Variation in sample across countries: country sizes, sampling intensity.
- D&B collects data from various sources (not only official ones).
- Potential Biases:
  - Compare 2004/1999 (diff in diff): changes in firm activity and changes in IFI.
    - Although it still possible that sampling intensities may be correlated to changes in IFI –data/conversations did not suggest this to be the case.
  - Regional Dummies;
  - Weighted regressions;
  - Country sampling intensity (number of firms) and change in the sampling intensity of old firms;
  - Measure of informal sector;
  - Exclude outliers.

# How to Measure Entrepreneurship?

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- No one view, no one definition:
  - Innovation (Schumpeter), the bearing of risk (Knight), the bringing together of factors of production (Say), the creation of organizations (Gartner), the pursuit of opportunity without regard to resources currently controlled (HBS).
- Various proxies:
  - Entry, average firm size, the skewness of the firm size, age, vintage; [*Black and Strahan (2002), Desai, Gompers, and Lerner (2003) and Klapper, Laeven, and Rajan (2005).*]

# Entrepreneurship: Measures

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- *Firm Size Distribution*: Small firms: source of innovation, change and employment.
  - Skewness of the distribution. IFI ( $\downarrow$  capital constraints)  $\rightarrow$  + skewed firm-size distribution.
- *Size*: log of the average number of employees. IFI (more capital)  $\rightarrow$  + (-) small firms enter and survive in the market
- *Firm Entry*: % new firms (two years or less). IFI (dynamic markets)  $\rightarrow$  + opportunities for startups.
- *Average age*: IFI (more dynamic environments)  $\rightarrow$  lower average age of firms.
- *Vintage*: a weighed average measure of age (how important young firms are to the productive capacity of an industry). IFI (more dynamic environment, more capital)  $\rightarrow$  smaller and younger firms.

# How to Measure IFI?

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- Process of international financial integration: complex and involves multiple phases.
  - Markets may be liberalized gradually, reforms can be anticipated (smooth effects)
  - *De jure* liberalization dates  $\neq$  *de facto* liberalization process (circumvent controls, non credible reforms)
  - Countries may not have access to foreign capital despite being officially open.
- Approach:
  - *de facto* and *de jure* indicators.

# De Jure Measure: IMF Index

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- *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)*, average dummy variables:
  - Capital market securities;
  - Money market instruments;
  - Collective investment securities;
  - Derivatives and other instruments;
  - Commercial credits;
  - Financial credits;
  - Guarantees, securities and financial backup facilities;
  - Direct investment;
  - Real estate transactions;
  - Personal capital transactions.



## De Facto Measures

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- *Capital Inflows/GDP*: Change liabilities of FDI + portfolio + debt + derivatives. IMF, IFS.
- *Inflows of Foreign Direct Investment/GDP*: Potential benefits derived from FDI beyond capital (technological transfers, spillovers and linkages).
- *Stock of Foreign Liabilities/GDP*: Proxy for thickness of the banking and equity relationships. LM (2005).
- *Gross Capital Flows/GDP*: Sum of the absolute values FDI+ portfolio + other investments of inflows and outflows (excludes monetary authorities and general government). Measure of overall foreign capital activity in the country. WB, WDI.
- *Equity inflows/GDP*: FDI + portfolio inflows. IMF, IFS.
- *Net Capital Flows/GDP*: Sum flows of foreign claims on domestic capital + flows of domestic claims on foreign capital. IMF, IFS.

## Other Controls

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- *Economic Development, Growth and Scale Effects*: (logarithm of) GDP per capita; (logarithm of) GDP; real GDP growth. WDI, WB. (+)
- *Institutional Quality*: Non-corruption, law and order (strength and impartiality of legal system and popular observance of the law) and bureaucratic quality; from ICRG (+/?)
- *Regulation*: Days required to start a business. WDI, WB. (-).
- *Industry Characteristics*: Industry dummies.

## Other Controls: Robustness

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- *Regulation*: Business disclosure index; legal rights of borrowers and lenders index. WB, WDI.
- *Financial Development*: Domestic credit/GDP, Market capitalization/GDP, M3/GDP. WB, WDI.
- *Macroeconomic Instability*: Inflation, GDP growth volatility.
- *Education Level*: Average years of schooling, secondary schooling; WB, WDI.
- *Growth Opportunities*: Growth forecasts. EIU.
- *LLSV*: IV estimation.

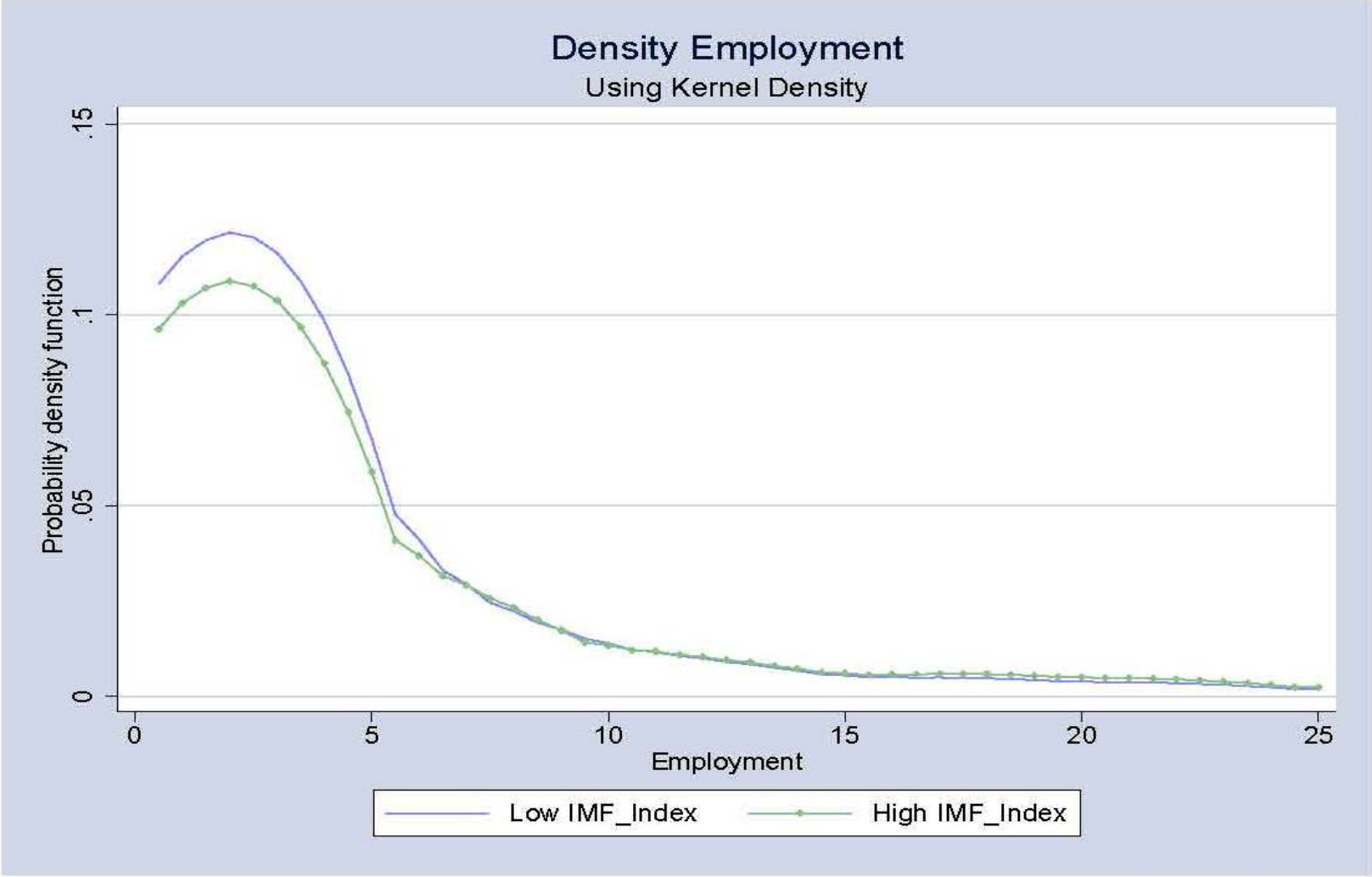


Figure 1

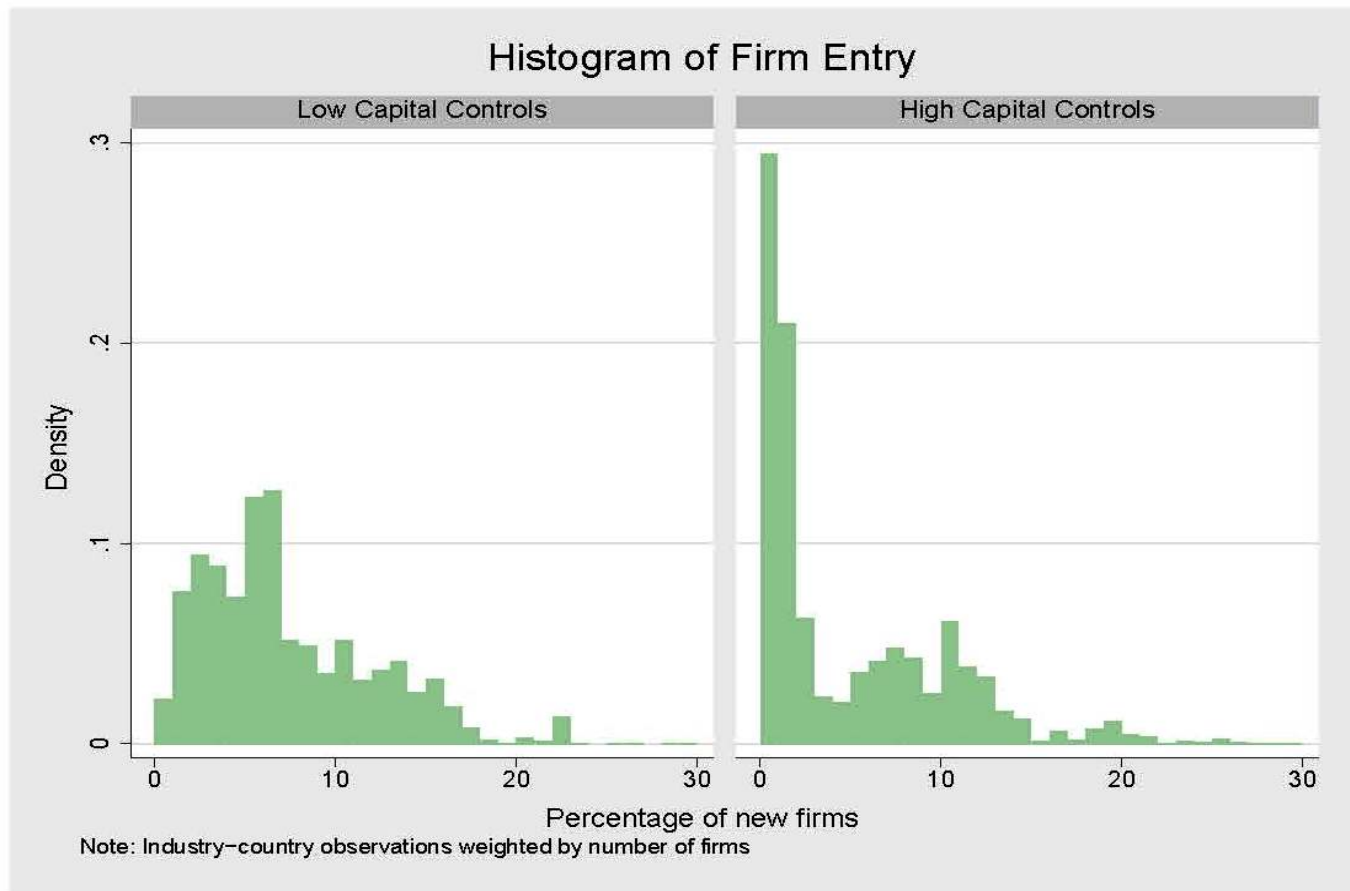


Figure 2

# Empirical Strategy: Cross Section

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$$E_{ic} = \alpha K_c + \beta X_c + \delta_i + \varepsilon_{ic}$$

- $E_{ic}$ : activity measure in industry  $i$  of country  $c$ ;  $K_c$  capital integration measure;  $X_c$  country level controls;  $\varepsilon_{ci}$  error term (White's correction for heteroskedasticity and clustering).
- Industry dummies: cross-industry differences in the technological level or other determinants of entrepreneurship.
  - Do firms in a country with more capital mobility exhibit more entrepreneurial activity relative to firms in a country with less capital mobility in the same industry?
- Weighted regressions (number of firms, employment).
- For entry: Tobit.

## Entrepreneurship and IFI: Entry (Tobit/Weighted)

	IMF index	Capital Inflows/GDP	FDI Inflows/GDP	Foreign Liabilities/GDP	Gross Capital Flows/GDP
Capital Mobility	-1.638 [0.599]***	0.098 [0.019]***	0.145 [0.046]***	0.010 [0.005]*	0.120 [0.015]***
Log GDP	0.702 [0.105]***	1.011 [0.114]***	0.798 [0.113]***	0.990 [0.133]***	1.319 [0.123]***
Log GDP per capita	1.783 [0.220]***	0.966 [0.220]***	1.533 [0.202]***	1.468 [0.222]***	0.275 [0.238]
GDP Growth	0.386 [0.065]***	0.148 [0.059]**	0.101 [0.058]*	0.341 [0.068]***	0.105 [0.060]*
Days to Start Business	-0.002 [0.005]	-0.009 [0.005]*	-0.008 [0.005]	-0.005 [0.006]	-0.012 [0.005]**
Bureaucratic Quality	-1.141 [0.283]***	-1.096 [0.305]***	-1.224 [0.286]***	-0.728 [0.336]**	-1.341 [0.313]***
Non-Corruption	0.261 [0.188]	0.651 [0.208]***	0.333 [0.193]*	-0.083 [0.258]	0.497 [0.207]**
Law and Order	0.651 [0.143]***	0.857 [0.145]***	0.781 [0.146]***	0.890 [0.164]***	0.764 [0.146]***
# Observations	5736	4873	5680	4568	4531

## Example: Results for Entry

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- *IMF index*: 25th percentile (Ghana, 0.77) of the index → the 75th percentile (New Zealand, 0.15): 1% more entry in an industry on average;
  - 22% increase in entry over average entry (textiles and apparel: 4.52).
- *Capital Inflows*: 25th percentile (Mauritius, 2.364) → 75th percentile (Greece, 14.2): 26% + entry over average entry.
- *FDI/GDP*: 10% + over the industry average.
- *Days to Start a Business*: 25th percentile (UK, 18) → the 75th percentile (Philippines, 50): -0.07% ; 2% less entry in an industry on average.



## Entrepreneurship and IFI: Skewness (OLS/Weighted)

	IMF index	Capital Inflows/GDP	FDI Inflows/GDP	Foreign Liabilities/GDP	Gross Capital Flows/GDP
Capital Mobility	-8.816 [2.823]***	0.234 [0.063]***	3.200 [1.402]**	0.053 [0.015]***	0.188 [0.034]***
Log GDP	6.272 [1.035]***	6.269 [1.026]***	16.706 [2.597]***	4.212 [0.491]***	5.517 [0.680]***
Log GDP per capita	-0.618 [0.944]	0.902 [1.146]	17.659 [13.310]	0.694 [0.506]	0.244 [1.189]
GDP Growth	-1.463 [0.293]***	-1.229 [0.380]***	-4.586 [2.388]*	-0.670 [0.209]***	-0.993 [0.332]***
Days to Start Business	-0.064 [0.030]**	-0.040 [0.030]	-0.214 [0.221]	-0.017 [0.015]	-0.034 [0.026]
Bureaucratic Quality	-2.389 [1.194]**	-3.439 [1.575]**	-39.851 [10.374]***	-2.089 [0.894]**	-2.788 [1.541]*
Non-Corruption	2.999 [0.804]***	3.540 [1.008]***	9.400 [8.135]	2.655 [0.638]***	3.475 [0.795]***
Law and order	0.531 [0.699]	0.017 [0.858]	2.599 [5.699]	0.202 [0.483]	-0.187 [0.803]
# Observations	4597	4238	4547	3554	3976
R <sup>2</sup>	0.38	0.38	0.41	0.52	0.46

## Example Results: Skewness

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- *IMF index*: 25th percentile (Ghana, 0.77) of the index → the 75th percentile (New Zealand, 0.15): decrease 46% skewness.
- *Capital Inflows*: 25th percentile (Mauritius, 2.364) → 75th percentile (Greece, 14.2): 24% reduction in firms size.
- *FDI/GDP*: 8% over the industry average.

# Robustness

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- Other proxies for entrepreneurship: size, age, vintage.
- Only wholly owned firms.
- Equity flows, net capital flows.
- Other proxies for regulation.
- Macroeconomic instability: inflation, growth volatility.
- Domestic financial development.
- Population, education levels.
- Only manufacturing sector.
- Excluding the U.S. from the sample (other outliers); regional dummies.
- Sampling intensity.
- Growth forecasts; legal origins (IV).
- Rajan and Zingales methodology: Is there more entrepreneurial activity in “naturally high” activity industries in countries with higher financial integration?

## Differences in Differences (1999/2004)

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- Measure the difference between entrepreneurship in the two periods of the group of countries which experienced liberalization, and the control group of countries which did not.

$$DE_{ic} = \gamma L_t + \beta DX_c + d_I + v_{ic}$$

- $L$ : dummy whether the country liberalized;  $\gamma$ : difference between the change in entrepreneurship in liberalized countries and the change in control countries; DiD estimator:  $\hat{\gamma} = DE_{ic/L=1} - DE_{ic/L=0}$
- Key identifying assumption: in the absence of liberalization, both the liberalized and control observations would have experienced the same change in entrepreneurship over the period.
  - Two periods; include differenced control variables.

## Results DiD: Skewness (OLS/Weighted)

	IMF index	Capital Inflows/GDP	FDI Inflows/GDP	Foreign Liabilities/GDP	Gross Capital Flows/GDP
D Capital Mobility	7.039 [3.786]*	0.661 [0.346]*	0.586 [0.290]**	0.256 [0.118]**	0.653 [0.197]***
D Log GDP	-55.415 [72.300]	-432.685 [216.790]*	71.320 [123.786]	424.433 [108.562]***	-459.390 [147.251]***
D Log GDP per capita	44.663 [76.852]	453.169 [173.589]**	-90.924 [125.799]	-588.679 [137.700]***	383.610 [155.676]**
D GDP Growth	-1.044 [1.333]	-1.574 [2.923]	5.730 [2.447]**	0.481 [1.593]	-7.351 [2.644]***
D Bureaucratic Quality	9.329 [5.810]	8.108 [8.577]	-4.360 [14.808]	-9.499 [11.728]	-6.545 [8.844]
D Law and Order	-3.176 [1.542]**	17.567 [4.824]***	-5.006 [7.860]	9.376 [5.923]	-22.759 [6.560]***
D Non-Corruption	0.352 [2.034]	2.619 [4.853]	9.176 [5.553]	-19.782 [8.912]**	10.896 [5.895]*
# Observations	2104	1927	1452	1921	1817
R <sup>2</sup>	0.360	0.420	0.550	0.320	0.510

# Are Results Causal?

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- Issues: policy endogeneity and omitted variables biases.
  - Different proxies for entrepreneurial activity; de facto de jure measures of IFI; control for other variables that might affect entrepreneurial activity.
  - Industry characteristics as opposed to country characteristics.
  - Imperfect control for exogenous growth: growth forecast from (EIU).
  - Imperfect attempt to account for possible endogeneity biases: IV with LLSV.
  - DID, RZ
- Channels: mechanisms consistent with such an interpretation are supported by the empirical evidence.
- Even after all of these tests, our preliminary evidence should be interpreted with caution.

# Channels

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- Investigate several possible channels through which international financial integration might affect entrepreneurial activity:
  - FDI Channel: Does capital mobility affect entrepreneurship through a change in the activity of foreign firms?
  - Credit Channel: Does capital mobility affect entrepreneurship through a credit availability channel?

## FDI: Channel – Same Sector

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- Effects of foreign firms on new *domestic* firms in the same industry.

$$\text{Domestic Entry}_{ic} = \alpha \text{Share of Foreign Firms}_{ic} + \beta X_c + \delta_i + \varepsilon_{ic}$$

- *Share of Foreign Firms* in sector  $i$  is the number of foreign firms to total firms in industry  $i$ .



## Results: FDI Channel – Same Sector

	Domestic Skewness	Domestic Entry
Foreign Firms	1.805 [0.373]***	1.025 [0.001]***
Log GDP	1.396 [0.596]**	0.070 [0.004]***
Log GDP per capita	-23.729 [2.306]***	0.005 [0.008]
GDP Growth	-5.990 [0.616]***	0.002 [0.003]
Days to Start Business	-0.218 [0.033]***	0.000 [0.000]
Bureaucratic Quality	-17.472 [1.721]***	0.004 [0.009]
Non-Corruption	18.531 [1.081]***	0.048 [0.007]***
Law and order	9.863 [1.037]***	0.031 [0.005]***
# Observations	4899	5108
R <sup>2</sup>	0.39	

# FDI Channel: Linkages

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- Upstream and downstream sectors:
  - U.S. input and output (IO) matrices: technology determines flows across industries.

$$DownStreamPresence_c = \sum_j Z_{ji\_US} \times W_{jc}$$

- $Z_{jc}$ : ratio of the inputs industry  $j$  in the U.S. sourced from industry  $i$  in the U.S. to the total output of industry  $i$ ;
- $W_{jc}$ : % foreign firms in industry  $j$  in country  $c$ .

$$DomesticEntry_{ic} = \alpha DownStreamPresence_{ic} + \beta X_c + \delta_i + \varepsilon_{ic}$$

- Similar regression for upstream presence.

## Results : FDI Channel – Linkages

	Upstream Industries	Downstream Industries	Upstream Industries	Downstream Industries
Dependent Variable:	Domestic Skewness (OLS)		Domestic Entry (Tobit)	
Foreign Firms	68.773 [57.957]	242.920 [74.639]***	83.090 [2.578]***	161.822 [2.047]***
Log GDP	1.360 [0.684]**	1.843 [0.727]**	-0.001 [0.028]	-0.009 [0.019]
Log GDP per capita	-24.319 [2.623]***	-27.242 [2.752]***	0.004 [0.108]	0.005 [0.070]
GDP Growth	-6.509 [0.707]***	-6.661 [0.757]***	-0.123 [0.030]***	-0.113 [0.020]***
Days to Start Business	-0.241 [0.038]***	-0.298 [0.040]***	-0.003 [0.002]*	-0.003 [0.001]***
Bureaucratic Quality	-17.215 [2.041]***	-17.317 [2.129]***	-0.448 [0.087]***	-0.147 [0.057]***
Non-Corruption	18.061 [1.364]***	18.943 [1.441]***	0.250 [0.060]***	0.019 [0.040]
Law and order	11.094 [1.217]***	10.341 [1.265]***	0.402 [0.053]***	0.215 [0.034]***
# Observations	3886	3597	4051	3618
R <sup>2</sup>	0.38	0.44		

# Credit Channel

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- Is firm creation in industries which are more reliant on external finance positively or negatively affected by the measures of IFI?
  - Divide sample into those industries with high dependence on external finance measured by Rajan and Zingales (1998).

$$E_{ic} = \alpha K_c + \theta K_c \times \text{High External Finance}_i + \beta X_c + \delta_i + \varepsilon_{ic}$$

# Results: Credit Channel – Skewness of Empl.

	IMF index	Capital Inflows/GDP	FDI Inflows/GDP	Foreign Liabilities/GDP	Gross Capital Flows/GDP
Capital Mobility	-7.660 [2.014]***	0.071 [0.039]*	0.191 [0.078]**	0.007 [0.004]	0.144 [0.034]***
High External Finance Dep. x Capital Mobility	-5.373 [2.484]**	0.385 [0.058]***	0.312 [0.146]**	4.076 [0.675]***	0.016 [0.035]
Log GDP	8.080 [0.254]***	7.791 [0.331]***	4.089 [0.120]***	8.856 [0.359]***	5.657 [0.209]***
Log GDP per capita	0.221 [0.633]	1.965 [0.847]**	1.274 [0.265]***	0.652 [0.830]	0.800 [0.496]
GDP Growth	-1.855 [0.186]***	-1.721 [0.210]***	-0.948 [0.076]***	-1.132 [0.207]***	-1.267 [0.111]***
Days to Start Business	-0.106 [0.013]***	-0.091 [0.017]***	-0.003 [0.006]	-0.079 [0.016]***	-0.033 [0.009]***
Bureaucratic Quality	-3.388 [0.756]***	-4.153 [1.015]***	-2.227 [0.366]***	-3.587 [1.000]***	-3.549 [0.583]***
Non-Corruption	2.431 [0.476]***	3.352 [0.641]***	2.988 [0.227]***	2.015 [0.603]***	3.346 [0.341]***
Law and order	0.281 [0.384]	-0.887 [0.521]*	0.658 [0.179]***	0.172 [0.514]	0.047 [0.274]
# Observations	4219	3791	4044	3487	3382
R <sup>2</sup>	0.39	0.44	0.56	0.44	0.51

# Conclusions

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- Preliminary results: within correlation of capital account integration and entrepreneurship is positive and significant.
  - Credit and FDI channel: consistent with evidence.
- Note: our work is silent on growth and welfare.
- More micro firm level data should enhance the general understanding of the process by which the effects of liberalization are transmitted to the real economy.

## Correlation Matrix: Main Variables

	Entry	Age	Empl.	Skew. Empl.	IMF Index	FDI Inflows	Gross Capital Flows	Capital Inflows	Foreign Liabilities	Log GDP
Entry	1.0000									
Age	-0.4185	1.0000								
Empl.	-0.1764	0.2184	1.0000							
Skew. Empl.	0.0791	-0.0400	-0.4111	1.0000						
IMF Index	-0.0863	-0.0177	0.4191	-0.2326	1.0000					
FDI Inflows/GDP	-0.0574	-0.1044	0.1143	-0.1183	0.0393	1.0000				
Gross Capital Flows/GDP	-0.0034	0.0613	-0.1939	0.1235	-0.3083	0.3083	1.0000			
Capital Inflows/GDP	-0.0425	0.0399	-0.1348	0.1108	-0.2837	0.4168	0.9296	1.0000		
Foreign Liabilities/GDP	0.0369	0.0520	-0.3018	0.1912	-0.3675	0.2491	0.9391	0.8335	1.0000	
Log GDP	0.0599	0.0760	-0.3461	0.4772	-0.1722	-0.2725	0.1611	0.1199	0.2053	1.0000

# Comparisons D&B and US Census Data

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## US Census Bureau, Statistics of US Businesses (2001/2002)

- 24,846,832 establishments;
- $\frac{3}{4}$  establishments no payroll: self-employed operating unincorporated businesses;
- 7,200,770 employer establishments: total sales of \$22 trillion.
- 3.7 million small employer establishments (less than 10 employees).
- 12.4% of establishments were new in 2001/2002.

## D&B sample (2004)

- 6,185,542 establishments (excluded establishments with no year started).
- 4,293,886 establishments > 1 employee: total sales of \$17 trillion.
- 3.2 million establishments: 1-10 employees
- 9.9% of establishments are new. Firms 1-4 employees: 15.9%; firms > 500: 11%



## Entrepreneurship --- Summary Statistics by Region (2004)

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Region	# Firms	Age Median	Empl. Median	Entry (% New Firms)	% Foreign Firms	% Foreign Firms by Empl.
Industrialized	22,452,753	12	2	7	0.7	6.0
Developing	2,263,304	12	15	2	0.9	10.8
Western Hemisphere	322,312	15	8	1	1.9	14.9
Developing Asia	115,543	12	50	4	4.9	7.9
Middle East	14,315	12	35	3	3.4	14.0
Central-Eastern Europe	1,805,366	11	17	2	0.4	12.8
Africa	11,136	13	40	3	3.9	17.2

## IFI: Summary Statistics by Region (2004)

Country	<i>De Jure</i> IMF index	<i>De Facto</i> Capital Inflows/GDP	<i>De Facto</i> FDI Flows/GDP	<i>De Facto</i> Foreign Liabilities/GDP	<i>De Facto</i> Gross Capital Flows/GDP	<i>De Facto</i> Net Capital Flows/GDP
Industrialized	0.27	18.66	3.10	239.50	50.16	-3.47
Developing	0.59	6.91	2.96	93.92	15.11	2.46
Western Hemisphere	0.36	5.69	3.17	103.88	14.67	1.60
Developing Asia	0.93	5.00	1.88	82.21	9.05	3.58
Middle East	0.56	5.66	0.67	73.44	14.13	-7.99
Central-Eastern Europe	0.46	13.97	3.72	99.84	24.88	11.15
Africa	0.77	3.28	3.47	92.39	8.27	1.63

## Entrepreneurship and IFI: Size Log Employ (OLS/Weighted)

	IMF index	Capital Inflows/GDP	FDI Inflows/GDP	Foreign Liabilities/GDP	Gross Capital Flows/GDP
Capital Mobility	0.518 [0.232]**	-0.064 [0.019]***	-0.006 [0.055]	-0.010 [0.004]***	-0.020 [0.009]**
Log GDP	0.001 [0.054]	-0.037 [0.057]	0.124 [0.110]	-0.041 [0.075]	-0.020 [0.094]
Log GDP per capita	-0.102 [0.103]	-0.571 [0.187]***	-1.835 [0.464]***	-1.133 [0.339]***	-1.777 [0.418]***
GDP Growth	0.143 [0.030]***	0.104 [0.050]**	0.048 [0.083]	-0.042 [0.093]	-0.011 [0.073]
Days to Start Business	0.001 [0.003]	0.005 [0.004]	-0.005 [0.008]	0.000 [0.005]	-0.007 [0.007]
Bureaucratic Quality	-0.027 [0.131]	0.462 [0.251]*	1.557 [0.434]***	0.496 [0.224]**	1.878 [0.380]***
Non-Corruption	-0.467 [0.083]***	-0.537 [0.134]***	-0.317 [0.242]	-0.002 [0.205]	-0.297 [0.208]
Law and order	0.020 [0.066]	0.203 [0.101]**	-0.060 [0.196]	0.262 [0.127]**	-0.213 [0.175]
# Observations	5625	4644	5570	4470	4445
R <sup>2</sup>	0.48	0.67	0.69	0.81	0.75

## Example Results: Firm Size

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- *IMF index*: 25th percentile (Ghana, 0.77) of the index → the 75th percentile (New Zealand, 0.15): decrease 32% average firm size.
- *Capital Inflows*: 25th percentile (Mauritius, 2.364) → 75th percentile (Greece, 14.2): 76% reduction in firms size
- *FDI/GDP*: 2% over the industry average

# Rajan and Zingales Methodology

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$$E_{ic} = \theta(Z_i \times K_c) + \delta_i + \gamma_c + \varepsilon_{ic}$$

- Cross-country interaction ( $K_c$ ), cross-industry ( $Z_i$ ) interaction effects ( $\theta$ );
- Is there more entrepreneurial activity in “naturally high” activity industries in countries with higher financial integration.
- U.S. as a proxy for the “natural” entrepreneurial activity in an industry.
  - Reflect technological barriers in that industry (economies of scale, technology)
  - Methodology only requires that the rank ordering in the U.S. corresponds to the rank ordering of natural barriers across industries and this rank ordering to correspond to that of other countries.

# Entrepreneurship and IFI: RZ Methodology

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Dependent Variable	Entry Tobit	Skew. OLS	Entry Tobit	Skew. OLS	Entry Tobit	Skew. OLS
New Firms in US x IMF Index	-0.183 [0.042]***					
Skewness Firms in US x IMF Index		-0.149 [0.011]***				
New Firms in US x Inflows/GDP			0.006 [0.003]**			
Skewness Firms in US x Inflows/GDP				0.001 [0.000]***		
New Firms in US x FDI Inflows/GDP					0.019 [0.011]*	
Skewness Firms in US x FDI Inflows/GDP						0.002 [0.001]**

*IMF index*: 25th percentile → the 75th percentile 15% less entry over sample mean; -42% skewness.

*Capital Inflows*: 10% more entry; 5% skewness.

*FDI/GDP*: 8% more entry; 4 % skewness.