

International Financial Integration
through Equity Markets:
Which Firms from Which Countries go Global?

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Structure of the Presentation

1. Purpose, Motivation, and Approach
2. Data Description
3. Methodology
4. Results
 1. Internationalization Process
 2. Country-level Analysis
 3. Firm-level Analysis
5. Conclusions

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Purpose and Motivation

International Financial Integration

- ✦ Financial globalization is at center stage in many debates
- ✦ Financial globalization has increase substantially since 1990s
 - ✦ Standard aggregate measures show unprecedented integration
 - ✦ Typical measures include: Capital flows, foreign assets and liabilities, co-movement of returns
 - ✦ But, relatively little evidence on how extensive this financial integration is
 - ✦ For example, the typical measures do not tell how many firms actively participate in international capital markets
 - ✦ Firm-level information can help complete our understanding of the process of integration

Purpose and Motivation

This Paper

- ✦ We study the extent of IFI by analyzing equity market activity/internationalization of firms from around the world
- ✦ With these data we can address several important questions
 - i. Does the intensity of internationalization mean that firms from all countries use international capital markets?
 - ii. How large is the proportion of firms that internationalize?
 - iii. From which countries are firms more likely to go abroad?
 - ✦ Do country characteristics matter? If so, which ones?
 - iv. Is it a specific subset of firms that internationalize?
 - ✦ Are the firms that internationalize different ex-ante?

Purpose and Motivation

Relevance to the Literature

- ✦ This analysis sheds light on some of the many debates taking place in the literature related to IFI
- ✦ For example
 - ✦ How integrated are countries financially?
 - ✦ Who are the potential winners and losers?
 - ✦ What matters for the participation in the international financial system?

Purpose and Motivation

Relevance to the Macro Literature on IFI

- ✦ Relation between domestic development and macro factors
- ✦ Different views on how macroeconomic variables are related to firm activity in international equity markets
 - ✦ Worse conditions increase the use of international capital markets
 - ✦ Bad fundamentals hinder the development of domestic markets, firms go abroad to escape a poor domestic environment
 - ✦ Better domestic environments increase the attractiveness of firms to foreign investors, thus internationalization
 - ✦ Good fundamentals related to more (not less) use of international capital markets
 - ✦ Only firms from good environments are able to go abroad (at attractive enough terms)

Purpose and Motivation

Relevance to the Micro Literature on IFI

- ✦ Several papers have studied the firm-level factors related to the participation in international markets
 - ✦ Potential benefits ex-post from the internationalization
 - ✦ Lower cost of capital / better terms
 - ✦ Wider investor bases
 - ✦ Liquidity
 - ✦ Commitment to higher standards of corporate governance and/or disclosure, reducing cost of capital wherever it is raised
 - ✦ Many papers provide supporting evidence
 - ✦ Firms that internationalize grow faster, extend their debt maturity, and obtain better financing opportunities

Purpose and Motivation

Relevance to the Micro Literature on IFI

- ✦ Research on the ex-ante characteristics of firms that internationalize is more scarce and recent
 - ✦ Characteristics that may affect the probability of internationalizing:
 - ✦ Firm size
 - ✦ Growth opportunities
 - ✦ Foreign sales
 - ✦ Reliance on domestic debt financing
 - ✦ Corporate governance

Approach

What We Analyze

- ✦ Extent of IFI by analyzing equity market activity of firms from around the world
 - ✦ Firms into two groups
 - ✦ “International firms:” those that raise capital, cross-list, and/or issue depositary receipts in global markets
 - ✦ “Domestic firms:” the rest
 - ✦ How the participation of firms in equity markets is related to
 - ✦ Country characteristics
 - ✦ Firm characteristics

Approach

Data We Collect

- ✦ We compile a comprehensive sample of
 - ✦ 39,517 firms
 - ✦ 111 countries
 - ✦ 12 years, 1989-2000

Approach

Level of Analysis

+ Country level

- + Proportion of international firms, share of market capitalization of international firms, share of trading abroad
- + What country characteristics are related to the probability of becoming an international firm

+ Firm level

- + Comparison of the characteristics of firms that access international markets with those that do not
- + What firm characteristics are related to the probability of becoming an international firm

Approach

Value Added of Empirical Work

- ✦ Comprehensive dataset allow for a more complete documentation of integration at the firm and country level
- ✦ Characterize well country- and firm-level factors related to the likelihood of using international markets
- ✦ Which (and how many) countries and firms are able to capture the gains from internationalization
- ✦ Broader process of internationalization
 - ✦ Capital raising, issuing, and trading
 - ✦ More than one international location
- ✦ 12 relevant years, opening up process and aftermath

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Description of the data

- ✦ Data on firms from around the world
- ✦ Data on internationalization
- ✦ Data sources
 - ✦ Four data sources for U.S. international trading activity
 - ✦ Two data sources for international activity in Europe
 - ✦ U.S.: Bank of New York, Nasdaq, NYSE, and Euromoney
 - ✦ Europe: London Stock Exchange and Frankfurt Stock Exchange
 - ✦ Information on firm characteristics (balance sheet and income statements plus book-to-price for firms locally) from Worldscope

Description of the data

- ✦ Aggregate and macroeconomic data
 - ✦ Variables related to economic and financial development
- ✦ Data sources
 - ✦ World Bank's WDI
 - ✦ IMF's IFS
 - ✦ Claessens, Klingebiel, and Schmukler (2002)

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Methodology

Macro-level Analysis

- ✦ Main variable to explain: degree of internationalization
 - ✦ Share of international firms over the total number of firms
 - ✦ We also look at market cap of international firms and value traded abroad for descriptive analysis
- ✦ Effects of several variables of interest
 - ✦ GDP, GDP per capita, Inflation, Fiscal surplus, Trade openness, Stock Market Liberalization, Law and Order, and Investor Protection
- ✦ Descriptive analysis, differences across groups
- ✦ Random-Effects Panel and Tobit regressions

Methodology

Firm-level Analysis

- ✦ Main variable to explain: probability of internationalization
- ✦ Effects of several variables of interest, as used in the literatures on internationalization and going public
- ✦ We employ (but not all report):
 - ✦ Size: total assets, (number of employees), and (total sales revenue)
 - ✦ Growth: growth in total sales revenue
 - ✦ Performance and valuation: (price-to-book value) and return on assets
 - ✦ Financial structure: (leverage, measured as liabilities to total assets)
 - ✦ International real activity: foreign sales over total sales

Methodology

Firm-level Analysis

- ✦ Differences in medians between international and domestic
- ✦ Estimations
 - ✦ Probit: predicts the going abroad decision over a future time period using information as of a certain early date
 - ✦ Cox: relates the hazard rate $h(t)$ (the probability of internationalizing at time t conditional on not having become international yet) to a set of observables co-variates
 - ✦ Before and after internationalization for the firm attributes

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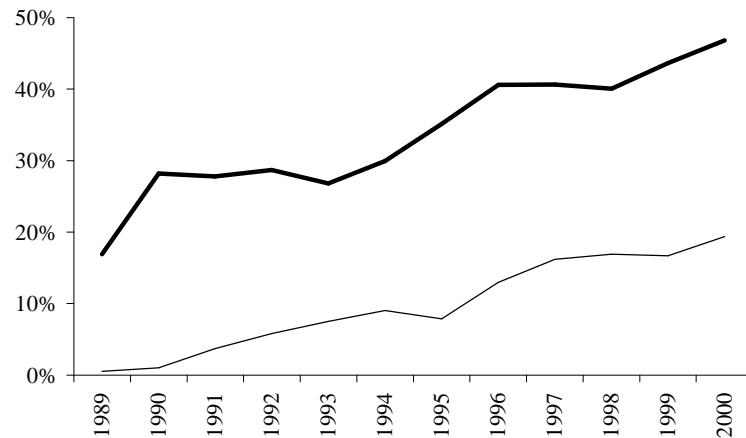
Internationalization Process

Evolution of Indicators

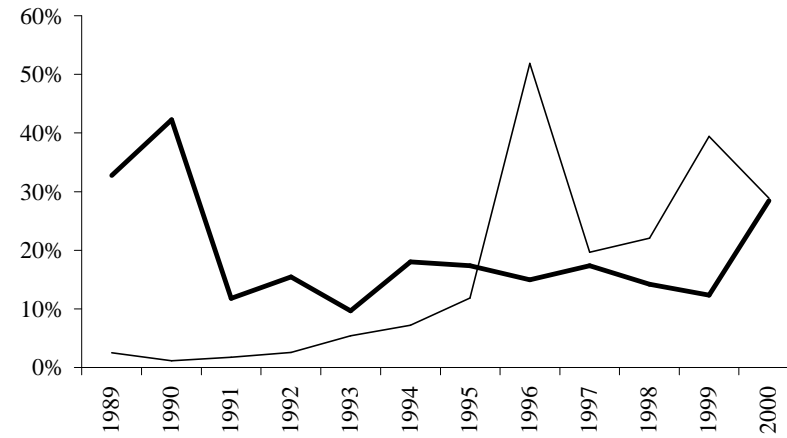
Number of New International Firms



Market Capitalization of International Firms/Total Market Capitalization



Value Traded Abroad/Value Traded Domestically



— Developed Countries — Developing Countries

Internationalization Process Summary Statistics by Region

Region	Number of Countries	Number of Countries with Active Stock Markets	Number of Countries with International Activity	Share of Countries with International Activity	Number of Firms Listed in the Domestic Market	Number of International Firms	Share of International Firms
Developing Countries	161	82	48	58.5%	23,910	889	3.7%
Africa (Developing)	53	17	11	64.7%	2,278	98	4.3%
Asia (Developing)	34	21	10	47.6%	11,504	332	2.9%
Eastern Europe (Including Former Soviet Union)	27	21	14	66.7%	7,632	151	2.0%
Latin America & Caribbean	34	20	10	50.0%	1,743	258	14.8%
Developed Countries	44	29	22	75.9%	13,061	1,657	12.7%
Total	205	111	70	63.1%	36,971	2,546	6.9%

Region	Total Market Capitalization/GDP	Market Capitalization of International Firms/GDP	Market Capitalization of International Firms/Total Market Capitalization	Value Traded Domestically/GDP	Value Traded Abroad/GDP	Value Traded Abroad/Value Traded Domestically
Developing Countries	27.4%	5.3%	19.9%	14.4%	0.8%	13.5%
Africa (Developing)	27.2%	4.7%	9.5%	5.3%	0.3%	0.4%
Asia (Developing)	35.6%	5.1%	15.2%	31.6%	0.6%	1.7%
Eastern Europe (Including Former Soviet Union)	11.3%	4.3%	28.9%	4.2%	0.1%	1.1%
Latin America & Caribbean	29.0%	4.7%	23.6%	3.1%	2.0%	61.2%
Developed Countries	109.1%	61.8%	46.9%	86.1%	12.8%	28.5%
Total	50.6%	19.7%	28.2%	34.3%	3.7%	17.7%

Internationalization Process

Summary Statistics by Region

- ✦ 63 percent of countries have some degree of internationalization
- ✦ Only seven percent of firms in the sample are internationalized
- ✦ Firms internationalizing tend to be the larger firms and are heavily trade abroad
 - ✦ They account for 28% of domestic market capitalization and their trading volume sums up to 18% of domestic trading activity

Internationalization Process

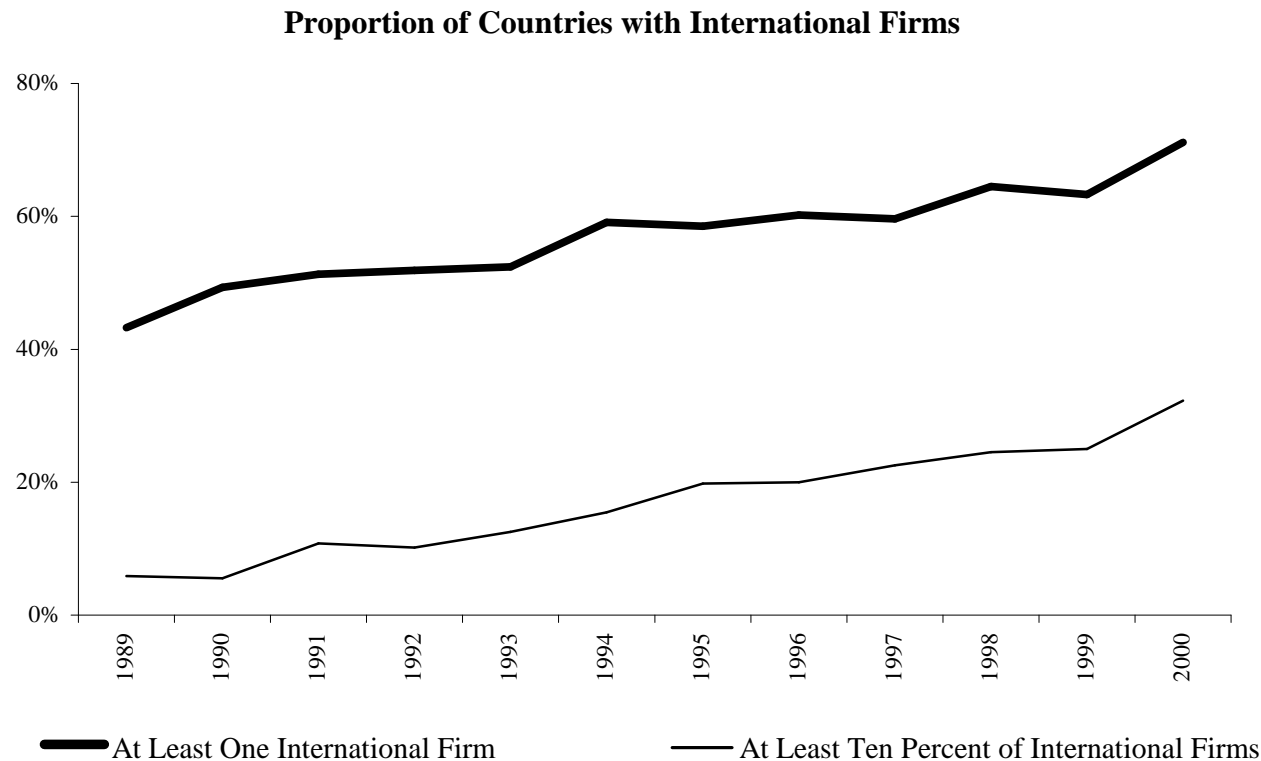
Sectoral Composition

Industry Classification	All Countries			Developed Countries			Developing Countries		
	Number of Firms	Percent of International Firms in the Sector	Percent of Firms from the Sector among International Firms	Number of Firms	Percent of International Firms in the Sector	Percent of Firms from the Sector among International Firms	Number of Firms	Percent of International Firms in the Sector	Percent of Firms from the Sector among International Firms
Agriculture, Forestry, and Fishing	75	2.67%	0.40%	29	3.45%	0.35%	46	2.17%	0.47%
Mining	229	15.72%	7.19%	169	16.57%	9.79%	60	13.33%	3.72%
Construction	459	4.14%	3.79%	329	3.04%	3.50%	130	6.92%	4.19%
Manufacturing	3,991	5.14%	40.92%	2,745	3.90%	37.41%	1,246	7.87%	45.58%
Transportation and Public Utilities	639	10.17%	12.97%	472	7.42%	12.24%	167	17.96%	13.95%
Wholesale Trade	601	3.83%	4.59%	512	2.93%	5.24%	89	8.99%	3.72%
Retail Trade	436	4.36%	3.79%	367	2.72%	3.50%	69	13.04%	4.19%
Finance, Insurance, and Real Estate	1,530	5.42%	16.57%	1,116	4.12%	16.08%	414	8.94%	17.21%
Services	563	7.10%	7.98%	461	7.38%	11.89%	102	5.88%	2.79%
Public Administration	68	13.24%	1.80%	4	0.00%	0.00%	64	14.06%	4.19%
Total	8,591	5.83%	100.00%	6,204	4.61%	100.00%	2,387	9.01%	100.00%

✚ Manufacturing, Finance, and Transportation are the most internationalized sectors

Internationalization Process

Countries with Internationalization



✚ Steady increase in the number of countries with some internationalization, but not very deep within countries

Internationalization Process

Number of International Firms

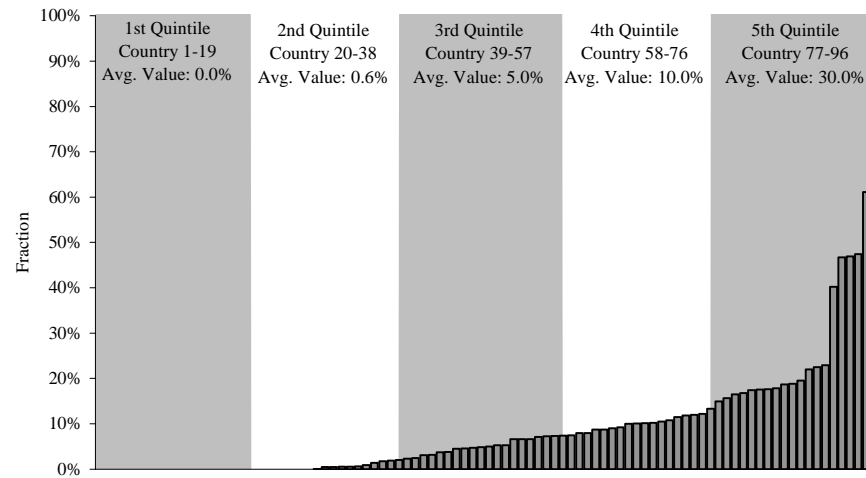


✚ Selective pattern of internationalization: still few firms, but rising gradually

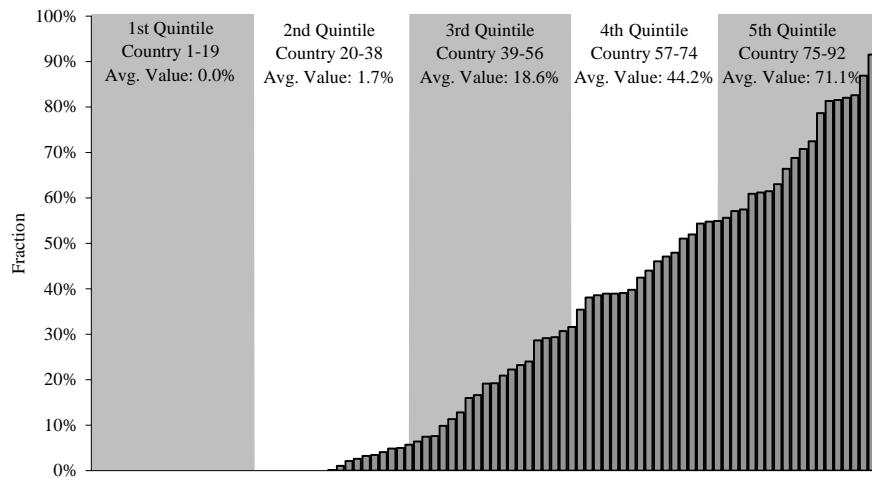
Internationalization Process

Distribution of Internationalization

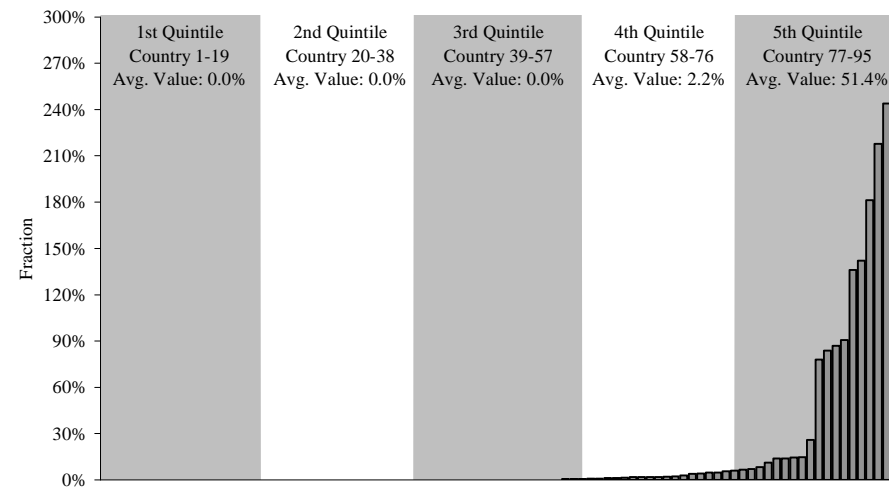
Number of International Firms/Number of Firms Listed in the Domestic Market



Market Capitalization of International Firms/Total Market Capitalization



Value Traded Abroad/Value Traded Domestically



Internationalization Process

Distribution of Internationalization

- ✦ Internationalization is not evenly spread across countries
- ✦ The average international firm is typically much larger than the average domestic firm
- ✦ Trading abroad is less likely than listing or capital raising are
 - ✦ Nevertheless, for a small subset of countries international trading activity is quite important in terms of domestic trading

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Country-Level Analysis Summary Statistics

All Countries						
	Median		Number of Observations		Mann-Whitney U-Test	
	Countries without Activity in International Equity Markets	Countries with Activity in International Equity Markets	Countries without Activity in International Equity Markets	Countries with Activity in International Equity Markets	Z-statistic	P-value
Size						
Log of GDP (Million U.S. dollars)	8.73	11.20	456	835	-21.70	0.00
Income Level						
Log of GDP per capita (U.S. dollars)	7.32	8.19	452	835	-10.69	0.00
Macroeconomic Policies						
Log of (1+Inflation)	0.08	0.06	376	797	0.41	0.68
Fiscal Surplus/GDP	0.03	0.02	316	710	2.47	0.01
Openness						
Stock Market Liberalization	0.00	1.00	240	696	-17.15	0.00
Trade (Exports+Imports)/GDP	0.80	0.67	254	802	5.13	0.00
Institutional Framework						
Law and Order	4.00	4.00	30	69	-1.26	0.21
Investor Protection	4.70	5.30	31	67	-1.84	0.07

Countries with Activity in International Equity Markets - by Market Capitalization						
	Median		Number of Observations		Mann-Whitney U-Test	
	Least Internationalized Countries (Bottom 20 Percent)	Most Internationalized Countries (Top 20 Percent)	Least Internationalized Countries (Bottom 20 Percent)	Most Internationalized Countries (Top 20 Percent)	Z-statistic	P-value
Size						
Log of GDP (Million U.S. dollars)	9.04	12.37	155	155	-14.46	0.00
Income Level						
Log of GDP per capita (U.S. dollars)	7.53	9.89	155	155	-13.41	0.00
Macroeconomic Policies						
Log of (1+Inflation)	0.08	0.03	150	153	6.89	0.00
Fiscal Surplus/GDP	0.02	0.01	129	140	1.69	0.09
Openness						
Stock Market Liberalization	1.00	1.00	156	108	-5.29	0.00
Trade (Exports+Imports)/GDP	0.93	0.64	154	154	7.19	0.00
Institutional Framework						
Law and Order	4.00	6.00	12	13	-2.76	0.01
Investor Protection	5.30	5.30	11	13	7.19	0.00

Country-Level Analysis Summary Statistics

Countries with Activity in International Equity Markets - by Value Traded						
Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-Test	
	Least Internationalized Countries	Most Internationalized Countries	Least Internationalized Countries	Most Internationalized Countries	Z-statistic	P-value
	(Bottom 20 Percent)	(Top 20 Percent)	(Bottom 20 Percent)	(Top 20 Percent)		
Size						
Log of GDP (Million U.S. dollars)	9.59	11.21	331	156	-12.26	0.00
Income Level						
Log of GDP per capita (U.S. dollars)	7.53	8.92	331	156	-11.21	0.00
Macroeconomic Policies						
Log of (1+Inflation)	0.09	0.07	300	156	2.78	0.01
Fiscal Surplus/GDP	0.02	0.01	262	138	2.24	0.03
Openness						
Stock Market Liberalization	1.00	1.00	300	132	-4.74	0.00
Trade (Exports+Imports)/GDP	0.90	0.59	323	156	6.99	0.00
Institutional Framework						
Law and Order	4.00	5.00	27	13	-1.31	0.19
Investor Protection	5.30	5.70	26	12	-1.37	0.17

Countries with Activity in International Equity Markets - by Number of International Firms						
Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-Test	
	Least Internationalized Countries	Most Internationalized Countries	Least Internationalized Countries	Most Internationalized Countries	Z-statistic	P-value
	(Bottom 20 Percent)	(Top 20 Percent)	(Bottom 20 Percent)	(Top 20 Percent)		
Size						
Log of GDP (Million U.S. dollars)	9.99	11.83	167	167	-11.08	0.00
Income Level						
Log of GDP per capita (U.S. dollars)	7.13	9.93	167	167	-14.61	0.00
Macroeconomic Policies						
Log of (1+Inflation)	0.09	0.03	153	163	6.89	0.00
Fiscal Surplus/GDP	0.03	0.02	149	163	4.73	0.00
Openness						
Stock Market Liberalization	1.00	1.00	168	108	-4.08	0.00
Trade (Exports+Imports)/GDP	0.73	0.74	165	165	-1.93	0.05
Institutional Framework						
Law and Order	4.00	6.00	14	14	-2.96	0.00
Investor Protection	5.30	5.00	14	13	-0.76	0.45

Country-Level Analysis

Summary Statistics

- ✦ Countries with international activity are generally larger, have higher income per capita, lower inflation rates, have more liberalized stock markets and better investor protection
 - ✦ However, they show lower fiscal surplus and higher trade openness
- ✦ Within the group of countries with some internationalization (as measured by the three indicators), the comparison between the most and the least internationalized quintiles yields very similar results
- ✦ However, this median analysis does not account for the, possibly high, correlations among the variables

Country-Level Analysis Regressions

	Number of International Firms over Total Firms - All Countries							
	RE Panel (1)	Tobit (2)	RE Panel (3)	Tobit (4)	RE Panel (5)	Tobit (6)	RE Panel (7)	Tobit (8)
Log of GDP	0.027 *** [5.212]	0.061 *** [23.132]	0.028 *** [5.119]	0.044 *** [15.096]	0.052 *** [8.903]	0.078 *** [26.723]	0.055 *** [8.988]	0.096 *** [26.984]
Log of GDP per Capita	0.038 *** [5.933]	0.023 *** [9.340]	0.041 *** [6.032]	0.047 *** [16.906]	0.017 ** [2.402]	0.010 *** [4.503]	0.018 ** [2.444]	0.016 *** [7.025]
Log (1+Inflation)	-0.019 *** [3.578]	-0.065 *** [7.103]			-0.022 *** [3.974]	-0.049 *** [5.300]		
Fiscal Surplus/GDP			0.226 *** [4.084]	0.470 *** [7.397]			0.128 ** [2.279]	0.263 *** [4.468]
Trade (Exports+Imports)/GDP					0.157 *** [12.321]	0.199 *** [28.296]	0.164 *** [11.920]	0.214 *** [27.959]
Constant	-0.532 *** [13.773]	-0.820 *** [25.636]	-0.567 *** [14.277]	-0.797 *** [27.310]	-0.752 *** [16.864]	-1.032 *** [29.772]	-0.813 *** [17.826]	-1.313 *** [30.915]
Number of Observations	1,133	1,133	1,064	1,064	1018	1018	962	962
Number of Countries	104	104	100	100	88	88	86	86

Country-Level Analysis Regressions

	Number of International Firms over Total Firms - All Countries							
	RE Panel (1)	Tobit (2)	RE Panel (3)	Tobit (4)	RE Panel (5)	Tobit (6)	RE Panel (7)	Tobit (8)
Log of GDP	0.039 *** [5.072]	0.043 *** [22.042]	0.038 *** [5.050]	0.043 *** [20.045]	0.042 *** [5.207]	0.048 *** [21.121]	0.041 *** [5.118]	0.053 *** [23.141]
Log of GDP per Capita	0.025 *** [2.907]	0.021 *** [7.236]	0.018 ** [2.127]	0.019 *** [9.558]	0.028 *** [2.977]	0.021 *** [7.841]	0.019 ** [2.106]	0.024 *** [10.594]
Log (1+Inflation)	-0.017 *** [3.589]	-0.037 *** [5.080]	-0.018 *** [3.861]	-0.049 *** [6.707]				
Fiscal Surplus/GDP					0.033 [0.688]	0.105 ** [2.110]	0.064 [1.315]	0.171 *** [3.430]
Stock Market Liberalization	0.017 *** [3.493]	0.053 *** [9.250]	0.016 *** [3.474]	0.066 *** [11.881]	0.020 *** [3.800]	0.059 *** [9.963]	0.018 *** [3.654]	0.045 *** [8.286]
Trade (Exports+Imports)/GDP	0.116 *** [9.475]	0.107 *** [21.249]	0.127 *** [10.161]	0.137 *** [23.704]	0.129 *** [9.612]	0.146 *** [26.924]	0.138 *** [10.243]	0.156 *** [24.494]
Law and Order Index	-0.007 *** [3.395]	0.000 [0.075]			-0.008 *** [3.680]	0.001 [0.480]		
Investor Protection Index			-0.006 [0.811]	-0.016 *** [11.841]			-0.008 [0.921]	-0.016 *** [11.428]
Constant	-0.631 *** [12.538]	-0.693 *** [29.502]	-0.572 *** [9.107]	-0.645 *** [27.647]	-0.702 *** [13.263]	-0.798 *** [36.436]	-0.619 *** [9.544]	-0.781 *** [31.059]
Number of Observations	771	771	808	808	707	707	761	761
Number of Countries	67	67	67	67	64	64	64	64

Country-Level Analysis

Regressions

- ✦ Multivariate analysis takes account the correlations among the variables
- ✦ Tobit estimations take into account the censoring of the data at zero value
- ✦ The ratio of international firms is greater for countries with
 - ✦ Larger GDP, higher income, more stable macroeconomic environment, greater financial openness, greater trade openness
- ✦ In addition, countries with better investor protection and law and order experience less internationalization
- ✦ Remain unchanged when two-period lagged explanatory variables are used

Country-Level Analysis

Regressions

- ✦ The economic size of the coefficients seem significant
- ✦ For the panel regressions:
 - ✦ A 1% increase in the country's GDP and GDP per capita would both result in an increase in the proportion of international firms to total firms of 3 percentage points
 - ✦ A 1% rise in inflation would result in a ratio 2 percentage points lower
 - ✦ An increase of 1 standard deviation in the stock market liberalization index would result in a 0.7 percentage points increase
 - ✦ A 1 standard deviation increase in the trade to GDP ratio would result in an increase of 4.5 percentage points in the ratio

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Firm-Level Analysis Summary Statistics

Median Values

Firm-Level Variables	Domestic Firms			International Firms		
	All Countries	Developed Countries	Developing Countries	All Countries	Developed Countries	Developing Countries
Size						
Total Assets (Million U.S. dollars)	275.3 (64,480)	316.3 (49,890)	164.7 (14,590)	1,654.1 (10,323)	2,454.1 (6,801)	916.1 (3,522)
Growth						
Log (1+Sales Growth)	0.048 (64,480)	0.046 (49,890)	0.058 (14,590)	0.081 (10,323)	0.079 (3,522)	0.087 (6,801)
Performance						
Return on Assets	0.037 (64,480)	0.031 (49,890)	0.065 (14,590)	0.054 (10,323)	0.047 (3,522)	0.073 (6,801)
Others						
Foreign Sales / Total Sales	0.000 (43,109)	0.000 (33,858)	0.000 (9,251)	0.29 (6,925)	0.44 (5,081)	0.00 (1,844)

Firm-Level Analysis

Summary Statistics - International vs. Domestic

- ✦ Based on median comparisons, international firms are larger, grow faster, have higher returns on assets, and carry on more international business than domestic firms
- ✦ The size difference between international and domestic firms is quite large (275 versus 1,654 million U.S. dollars)
- ✦ The relative differences between international and domestic are similar for both developed and developing countries groups

Firm-Level Analysis

Summary Statistics - International vs. Domestic

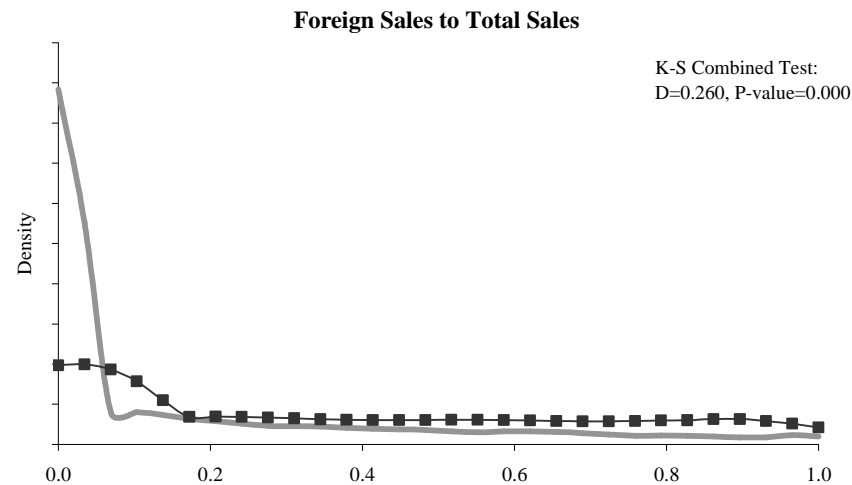
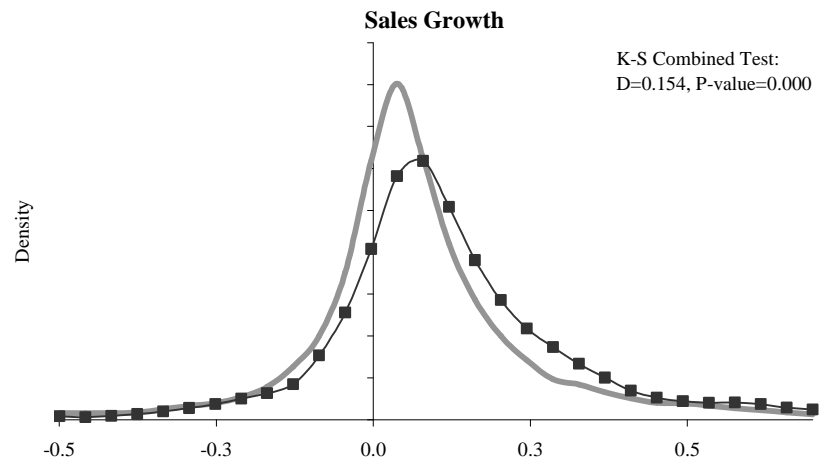
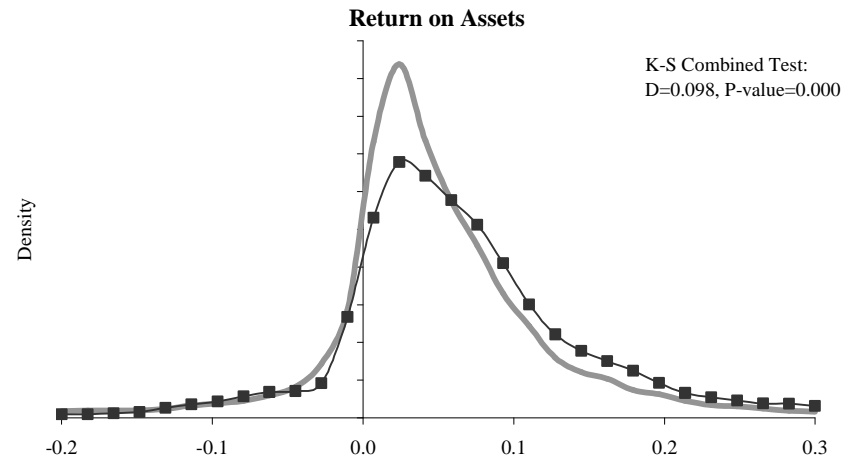
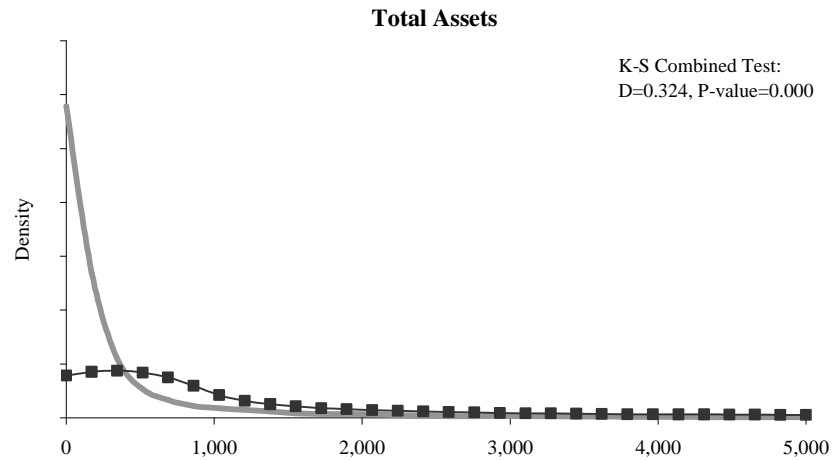
Differences in Median Values between International and Domestic Firms (Mann-Whitney U-test)

Firm-Level Variables	All Countries		Developed Countries		Developing Countries	
	Z-statistic	P-value	Z-statistic	P-value	Z-statistic	P-value
Size						
Total Assets (Million U.S. dollars)	82.78	0.00	69.76	0.00	52.14	0.00
Growth						
Log (1+Sales Growth)	14.87	0.00	13.12	0.00	6.42	0.00
Performance						
Return on Assets	25.87	0.00	22.23	0.00	4.73	0.00
Others						
Foreign Sales / Total Sales	55.50	0.00	60.54	0.00	17.26	0.00

- ✚ The medians are statistically different between international and domestic firms
- ✚ These differences are also relevant within developing and developed countries

Firm-Level Analysis

Summary Statistics – Kernel Distributions



— Domestic Firms -■- International Firms

Firm-Level Analysis

Summary Statistics – Kernel Distributions

- ✦ The Kernel distributions confirm the previous results for the differences of medians
- ✦ For most of the analyzed characteristics, the international firms' distributions are skewed to the right, relative to the domestic firms' distributions
- ✦ Kolmogorov-Smirnov tests confirm statistically this difference among the two groups

Firm-Level Analysis

Summary Statistics – Developed vs. Developing

**Differences in Median Values between Firms from Developed and Developing Countries
(Mann-Whitney U-test)**

Firm-Level Variables	Domestic Firms		International Firms	
	Z-statistic	P-value	Z-statistic	P-value
Size				
Total Assets (Million U.S. dollars)	41.92	0.00	20.71	0.00
Growth				
Log (1+Sales Growth)	-3.39	0.00	-0.91	0.36
Performance				
Return on Assets	-56.44	0.00	-18.02	0.00
Others				
Foreign Sales / Total Sales	61.85	0.00	42.78	0.00

- ✚ The medians for both groups are statistically different between firms from developed and developing countries
- ✚ The statistical significance is greater for the domestic firms' group, but this may in part be a function of the number of firms

Firm-Level Analysis

Probit Regressions

	Marginal Probability of Becoming an International Firm - with Country Dummies					
	All Countries		Developed Countries		Developing Countries	
	(1)	(2)	(3)	(4)	(5)	(6)
Size						
Log of Total Assets	0.014 *** [14.285]	0.010 *** [11.799]	0.010 *** [11.438]	0.008 *** [9.850]	0.039 *** [9.470]	0.030 *** [7.096]
Growth						
Log (1+Sales Growth)	0.008 ** [2.425]	0.009 *** [3.727]	0.005 [1.601]	0.010 ** [2.463]	0.019 * [1.677]	0.021 *** [3.233]
Performance						
Return on Assets	0.005 [0.864]	0.011 * [1.708]	0.007 [0.395]	0.006 [0.276]	0.009 [0.533]	0.027 * [1.763]
Others						
Foreign Sales to Total Sales		0.017 *** [3.795]		0.013 *** [3.441]		0.071 * [1.680]
Country Variables	No	No	No	No	No	No
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	5,254	3,344	4,112	2,773	1,142	571
Number of Countries	39	39	19	19	20	20
Number of International Firms	303	186	178	129	125	57
Pseudo R-squared	0.332	0.375	0.322	0.368	0.31	0.383

Firm-Level Analysis

Probit Regressions

- ✦ Firm characteristics do affect the probability of internationalizing
 - ✦ Larger firms and firms growing faster are more likely to go abroad
 - ✦ More foreign sales increase this probability
 - ✦ There may be some collateral value to having international activities
 - ✦ Return on assets is not statistically significant, but other firm characteristics such as growth in sales could already be controlling for firm performance
- ✦ Separating for developed and developing countries only yields some differences in the magnitude of the coefficients
 - ✦ The probability in developing countries shows a greater sensitivity to firm characteristics

Firm-Level Analysis

Probit Regressions

- ✦ The economic significance seems important
 - ✦ A 1% increase in total assets would raise the probability of becoming international by approximately 1.4 percentage points
 - ✦ A 1% increase in sales growth would increase this probability in 0.8 percentage points
 - ✦ A 1 standard deviation in foreign sales would raise this probability in 0.4 percentage points
 - ✦ Return on assets is a quantitatively less important determinant for the probability of internationalizing

Firm-Level Analysis

Cox Regressions

	Hazard Ratio - with Country Dummies					
	All Countries		Developed Countries		Developing Countries	
	(1)	(2)	(3)	(4)	(5)	(6)
Size						
Log of Total Assets	1.716 *** [17.720]	1.657 *** [12.895]	1.719 *** [14.078]	1.670 *** [10.909]	1.730 *** [11.140]	1.637 *** [7.388]
Growth						
Log (1+Sales Growth)	1.306 *** [4.898]	1.252 *** [3.256]	1.339 *** [3.859]	1.244 *** [2.730]	1.171 [1.205]	1.062 [0.263]
Performance						
Return on Assets	1.375 ** [2.186]	1.750 ** [2.539]	1.111 [0.256]	2.738 ** [2.341]	1.370 ** [2.011]	1.249 [0.953]
Others						
Foreign Sales to Total Sales		3.198 *** [5.654]		2.677 *** [4.286]		5.650 *** [3.664]
Country Variables	No	No	No	No	No	No
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	64,172	43,226	49,186	33,890	14,986	9,336
Number of Countries	65	57	23	22	42	35
Number of International Firms	2,145	1,310	362	286	237	125
Pseudo R-squared	0.114	0.128	0.117	0.13	0.119	0.167

Firm-Level Analysis

Cox Regressions

- ✦ Coefficients greater than one indicate that increases in the variable enhance the probability of the firm going abroad
- ✦ The results confirm those of the Probit regressions
 - ✦ Firm size, sales growth, and foreign sales share are positively related to the probability of internationalizing
 - ✦ Return on assets affects again positively, this time being statistically significant
- ✦ Separating for developed and developing countries confirm the general results

Firm-Level Analysis

Cox Regressions

- ✦ To compare the magnitude of the coefficients, the logarithms of these are to be multiplied by the standard deviation of the explanatory variables
 - ✦ Again, firm's size yields the largest impact on this decision, raising in nearly 140 percent the baseline probability of becoming international with a one standard deviation increase
 - ✦ Foreign sales also yield economically important effects, followed by sales growth
 - ✦ The economic effects of return on assets seems relatively small

Firm-Level Analysis

Differences Before and After Internationalization

	Firm Characteristics			
	Total Assets	Sales Growth	Return on Assets	Foreign Sales to Total Sales
	(1)	(2)	(3)	(4)
Before Internationalization Dummy (a)	3,666.7 *** [9.516]	0.060 *** [5.064]	0.021 *** [2.933]	0.116 *** [10.143]
After Internationalization Dummy (b)	5,858.1 *** [14.479]	0.022 *** [4.387]	0.001 [0.296]	0.146 *** [17.442]
Country Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Number of Observations	74,803	74,803	74,803	50,034
Number of Firms	10,154	10,154	10,154	8,048
Before Int. Dummy - After Int. Dummy, (b)-(a)	2,191	-0.038	-0.021	0.030
Test (b)-(a)=0; P-value	0.000	0.002	0.006	0.002

Firm-Level Analysis

Differences Before and After Internationalization

- ✦ Before becoming international, the average firm is larger, has higher sales growth, has a higher return on assets, and has more foreign sales to total sales than domestic firms do
- ✦ Subsequent to internationalization, and relative to domestic firms, the average firm gains further in size, grows at a slower pace, and increases the share of foreign sales
- ✦ These differences are statistically significant

Structure of the Presentation

1. Purpose, Motivation, and Approach
2. Data Description
3. Methodology
4. Results
 1. Internationalization Process
 2. Country-level Analysis
 3. Firm-level Analysis
- 5. Conclusions**

Conclusions

Main Findings

- ✦ By analyzing the use by firms of international markets, the scope of IFI more limited than commonly thought
 - ✦ Many countries have a couple of firms participating in international markets
 - ✦ But significantly fewer countries have a non-negligible proportion of internationally active firms
- ✦ Both macro and micro factors are related to the participation of firms abroad and explain the lack of IFI
- ✦ Countries with better macroeconomic conditions are the ones with more significant internationalization

Conclusions

Main Findings

- ✦ At firm level, larger firms and those with more foreign sales are more likely to internationalize
- ✦ Firms that grow faster and have higher rates of return are also more prone to go abroad
- ✦ The differences in macro and micro variables are present before firms internationalize
- ✦ Supply-side factors related to the structure of capital markets seem to affect internationalization
 - ✦ Macro fundamentals, size, foreign sales

Conclusions

Direction for More Research

- ✦ Spillovers to the firms with no direct link to the international system and the associated welfare effects
- ✦ Policies to increase the likelihood of internationalization
- ✦ Prospects and viability of stock markets across countries
- ✦ Which firms cannot be expected to join IFI, even when certain policies improve?
- ✦ Provision of local and global financial services

Thank you

Additional results

Country-Level Analysis

Regressions - Developing Countries

Number of International Firms over Total Firms - Developing Countries								
	RE Panel	Tobit	RE Panel	Tobit	RE Panel	Tobit	RE Panel	Tobit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log of GDP	0.022 *** [5.074]	0.035 *** [14.356]	0.024 *** [5.196]	0.066 *** [19.302]	0.037 *** [6.949]	0.055 *** [15.309]	0.040 *** [7.141]	0.061 *** [17.377]
Log of GDP per Capita	0.020 *** [3.238]	0.058 *** [12.466]	0.024 *** [3.628]	0.045 *** [10.394]	0.008 [1.158]	0.038 *** [9.615]	0.014 * [1.820]	0.027 *** [6.610]
Log (1+Inflation)	-0.023 *** [5.150]	-0.071 *** [7.657]			-0.026 *** [5.343]	-0.074 *** [8.008]		
Fiscal Surplus/GDP			0.213 *** [3.232]	0.486 *** [5.978]			0.167 ** [2.423]	0.483 *** [5.099]
Trade (Exports+Imports)/GDP					0.082 *** [6.257]	0.108 *** [8.364]	0.085 *** [5.824]	0.117 *** [9.406]
Constant	-0.329 *** [7.847]	-0.841 *** [19.287]	-0.381 *** [8.439]	-1.031 *** [22.885]	-0.459 *** [9.084]	-0.882 *** [18.373]	-0.540 *** [10.031]	-0.891 *** [18.954]
Number of Observations	739	739	662	662	662	662	595	595
Number of Countries	78	78	74	74	64	64	62	62

Country-Level Analysis

Regressions - Developing Countries

	Number of International Firms over Total Firms - Developing Countries							
	RE Panel (1)	Tobit (2)	RE Panel (3)	Tobit (4)	RE Panel (5)	Tobit (6)	RE Panel (7)	Tobit (8)
Log of GDP	0.030 *** [4.453]	0.035 *** [14.102]	0.029 *** [4.388]	0.050 *** [18.311]	0.035 *** [4.720]	0.059 *** [19.309]	0.033 *** [4.533]	0.044 *** [15.136]
Log of GDP per Capita	0.021 ** [2.542]	0.026 *** [8.160]	0.012 [1.455]	0.015 *** [4.631]	0.024 *** [2.706]	0.023 *** [7.183]	0.014 [1.620]	0.021 *** [6.243]
Log (1+Inflation)	-0.018 *** [3.917]	-0.042 *** [5.696]	-0.019 *** [4.087]	-0.052 *** [5.465]				
Fiscal Surplus/GDP					0.093 [1.337]	0.104 [1.383]	0.134 * [1.883]	0.228 *** [3.137]
Stock Market Liberalization	0.018 *** [3.460]	0.070 *** [8.163]	0.020 *** [3.820]	0.068 *** [8.846]	0.018 *** [3.109]	0.057 *** [7.760]	0.019 *** [3.301]	0.070 *** [9.367]
Trade (Exports+Imports)/GDP	0.075 *** [5.631]	0.083 *** [8.731]	0.082 *** [5.936]	0.102 *** [10.310]	0.086 *** [5.712]	0.086 *** [9.332]	0.092 *** [5.981]	0.111 *** [10.652]
Law and Order Index	-0.007 *** [3.236]	-0.009 *** [3.613]			-0.008 *** [3.377]	-0.005 ** [2.031]		
Investor Protection Index			-0.007 [0.933]	-0.012 *** [5.450]			-0.007 [0.916]	-0.013 *** [6.133]
Constant	-0.465 *** [8.199]	-0.610 *** [20.964]	-0.383 *** [5.612]	-0.708 *** [19.131]	-0.549 *** [8.830]	-0.817 *** [23.328]	-0.447 *** [6.155]	-0.684 *** [18.290]
Number of Observations	543	543	561	561	477	477	503	503
Number of Countries	51	51	51	51	48	48	48	48

Country-Level Analysis

Regressions - Developing Countries

- ✚ The results are not different – no particular group of countries drives the estimations
- ✚ Some of the coefficients are larger in magnitude, which could reflect that country characteristics matter more

Firm-Level Analysis

Probit Regressions

	Marginal Probability of Becoming an International Firm - with Country Variables					
	All Countries		Developed Countries		Developing Countries	
	(1)	(2)	(3)	(4)	(5)	(6)
Size						
Log of Total Assets	0.018 *** [13.353]	0.012 *** [11.156]	0.010 *** [9.528]	0.007 *** [8.523]	0.042 *** [10.399]	0.024 *** [7.694]
Growth						
Log (1+Sales Growth)	0.011 *** [2.605]	0.010 *** [3.060]	0.008 *** [2.664]	0.010 ** [2.353]	0.020 [1.555]	0.016 *** [3.192]
Performance						
Return on Assets	0.003 [0.306]	0.002 [0.185]	-0.009 [0.359]	-0.007 [0.320]	0.011 [0.573]	0.016 [1.268]
Others						
Foreign Sales to Total Sales		0.031 *** [5.462]		0.016 *** [4.027]		0.050 [1.560]
Country Variables	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	No	No	No	No	No	No
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	4,620	3,227	3,489	2,544	1,131	683
Number of Countries	31	31	12	12	19	19
Number of International Firms	254	153	134	99	120	54
Pseudo R-squared	0.257	0.302	0.302	0.352	0.264	0.35

Firm-Level Analysis

Cox Regressions

	Hazard Ratio - with Country Variables					
	All Countries		Developed Countries		Developing Countries	
	(1)	(2)	(3)	(4)	(5)	(6)
Size						
Log of Total Assets	1.717 *** [16.904]	1.658 *** [12.448]	1.631 *** [11.113]	1.547 *** [8.444]	1.779 *** [12.673]	1.833 *** [8.551]
Growth						
Log (1+Sales Growth)	1.368 *** [5.707]	1.356 *** [4.303]	1.384 *** [4.328]	1.274 *** [3.215]	1.365 *** [2.928]	1.322 [1.582]
Performance						
Return on Assets	1.410 ** [2.450]	1.902 ** [2.294]	0.856 [0.266]	2.323 * [1.848]	1.574 *** [3.300]	1.779 ** [2.078]
Others						
Foreign Sales to Total Sales		2.454 *** [4.985]		4.048 *** [5.493]		2.433 *** [3.070]
Country Variables	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	No	No	No	No	No	No
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	55,415	37,704	40,912	28,621	14,503	9,083
Number of Countries	50	46	14	14	36	32
Number of International Firms	1,753	1,032	258	205	211	107
Pseudo R-squared	0.081	0.097	0.115	0.135	0.085	0.121