Financial Fragility, Financial Literacy and SME Credit Availability Around the World

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What is 'Financial Fragility?'

- According to Bernanke and Gertler (QJE 1990), financial fragility is the opposite of financial stability:

  - "We argue that financial instability, or fragility, occurs when entrepreneurs who want to undertake investment projects have low net worth.
  - The heavy reliance on external finance that this implies causes the agency costs of investment to be high.
  - High agency costs, in turn, lead to low and inefficient investment.

What is 'Financial Fragility?'

- Mishkin (JEP 1999) defines financial instability in a similar manner:
  - "Financial instability occurs when shocks to the financial system interfere with information flows so that the financial system can no longer do its job of channeling funds to those with productive investment opportunities."
- Mishkin goes on to say that financial institutions play a key role in financial instability:
  - "When shocks to the financial system make adverse selection and moral hazard problems worse, then lending tends to dry up—even for many of those with productive investment opportunities."

Access to Finance & Financial Fragility

- Hence, access to finance by entrepreneurs plays a fundamental role in determining the financial fragility of an economy.

- When entrepreneurs are unable or unwilling to borrow from financial institutions, they are forced to forgo productive investment opportunities, which adversely affects the economy.

Access to Finance & Financial Fragility

- Around the world, the World Bank reports that "formal" SMEs account for more than 90% of all firms and for more than half of employment around the world (World Bank n.d.).

- In emerging economies, it says, SMEs account for up to 40% of GDP and for about 70% of new jobs.

Access to Finance & Financial Fragility

- In the U.S., the Small Business Administration reports that SMEs comprise:

   - 99.9% of all firms (33.2 million firms)

   - 46.4% of 62 million private sector employees

   - 43.5% of gross domestic product

   - 63% of net new job creation.

What is 'Financial Literacy?'

- The U.S. President Advisory Council on Financial Literacy (PACFL 2008) defines *financial literacy* as:
  - "The ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being."
- Lusardi and Mitchell (2007) define *financial literacy* as:
  - [Familiarity] with "the most basic economic concepts needed to make sensible saving and investment decisions"
- Lusardi and Tufano (2008) focus on *debt literacy*, a component of financial literacy, defining it as
  - "the ability to make simple decisions regarding debt contracts, in particular how one applies basic knowledge about interest compounding, measured in the context of everyday financial choices"
- Hence, **debt literacy** is critical for obtaining **access to finance**.

Debt Literacy & Access to Finance

- An entrepreneur cannot obtain a loan from a financial institution if she does not apply for credit when she needs credit.

- Kon and Storey (2003) define a "***discouraged borrower***" as:

  - "a good borrower (that) may not apply for a loan to a bank, because they feel they will be rejected" because of "application costs (that) can be considered as financial, in-kind, or psychic."

Debt Literacy & Access to Finance

- In the context of SME finance, we consider "discouragement" to be a form of debt illiteracy.

- A "discouraged borrower" is an entrepreneur
  - who needs credit,
  - who would have been approved for credit had she applied, but
  - fails to apply because she fears her application would be rejected by the prospective lender.

Debt Literacy & Access to Finance

- Commonly reported reasons for discouragement include:

  - complexity of application,
  - concerns about high interest rates,
  - concerns about discrimination, or
  - simple fear of rejection.

- When a good borrower does not apply for credit because she fears rejection, we attribute this to a lack of financial literacy about the loan-application process.

Debt Literacy & Access to Finance

- Back in 2009, I wrote a research study for the U.S. Small Business Administration entitled " Who Needs Credit and Who Gets Credit?" that ultimately was published in the *Journal of Financial Stability* in 2016

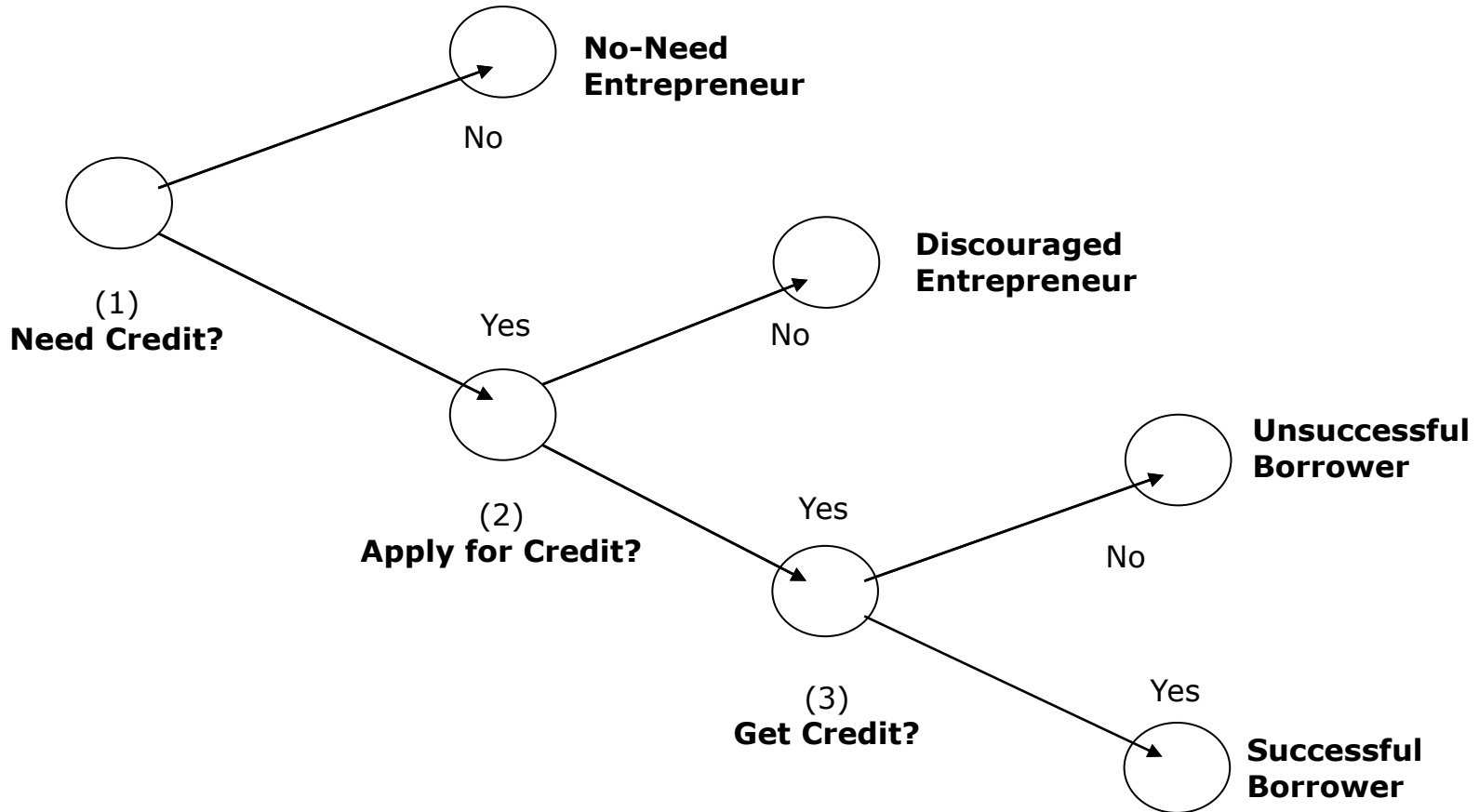**Journal of Financial Stability**
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Who needs credit and who gets credit? Evidence from the surveys of small business finances ☆

Rebel Cole [a] , Tatyana Sokolyk [b] [1]

Debt Literacy & Access to Finance

- In that study, we break the SME credit-allocation process down into three questions:

    - Do you need credit? Yes/No.

    - Did you apply for credit? Yes/No.

    - Did you get credit? Yes/No.

Three-Step Credit-Allocation Process

No-Need Entrepreneur

No

(1)
Need Credit?

Yes

Discouraged Entrepreneur

No

(2)
Apply for Credit?

Yes

Unsuccessful Borrower

No

(3)
Get Credit?

Yes

Successful Borrower

Debt Literacy & Access to Finance

- We analyzed data from the U.S. Federal Reserve's Surveys of Small Business Finances.

    - We found that "No-Need" entrepreneurs are similar to "Approved" borrowers.

    - We found that "Discouraged" entrepreneurs outnumber and are different from "Denied" borrowers.
        - There are three times more discouraged entrepreneurs than denied borrowers.

    - Using our model of loan denial (step 3), we estimated that as many as half of "Discouraged" entrepreneurs would have been approved for credit had they only applied.

Debt Literacy & Access to Finance

This article was featured in the ***Wall Street Journal*** in its 2015 annual special issue on Small Businesses.

Entrepreneurial Access to Finance

- But what about entrepreneurs outside of the U.S.?

- One valuable source of information about entrepreneurial access to finance in countries around the world is a set of surveys conducted on behalf of the World Bank.

- These are known as the World Bank Enterprise Surveys.

The World Bank Enterprise Surveys

- What is a WBES?

- It is "a firm-level survey of a representative sample of an economy's private sector."

- The surveys cover a broad range of business environment topics including access to finance.

The World Bank Enterprise Surveys

- Since 2006, the WB has conducted these surveys using a consistent methodology that allows for comparisons across countries.

- These surveys in 155 different countries interviewed more than 194,000 enterprises.

- In many cases, there are two and even three surveys conducted a several years apart.

- In total, there are almost 300 surveys for which data are currently available.

Access to Finance

- One important topic covered by the WBES is 'access to finance.'

- When access to finance is constrained, so is the growth of SMEs;

- This, in turn, has a negative impact on a country's economy.

SME Credit Availability Around the World

- As a follow-up to my study of SME access to finance in the U.S., I have used data from the WBES to ask the same questions but using data from more than 150 countries.
- Fortunately, the WBES provides sufficient information to classify surveyed firms into the same four groups of firms:
  - No-Need Entrepreneurs
  - Discouraged Entrepreneurs
  - Approved Borrowers
  - Denied Borrowers

Research Question

What determines:

(i) the need for credit,

(ii) discouragement from applying for credit,

and, finally,

(iii) success in obtaining credit?
- – Firm characteristics
- – Owner characteristics
- – Market characteristics
  - – Governance
  - – Financial sector development.
- • - Economic development.

Governance

Owner characteristics

Firm characteristics

Market characteristics

**Credit Need/
Credit Discouragement/
Credit Access**
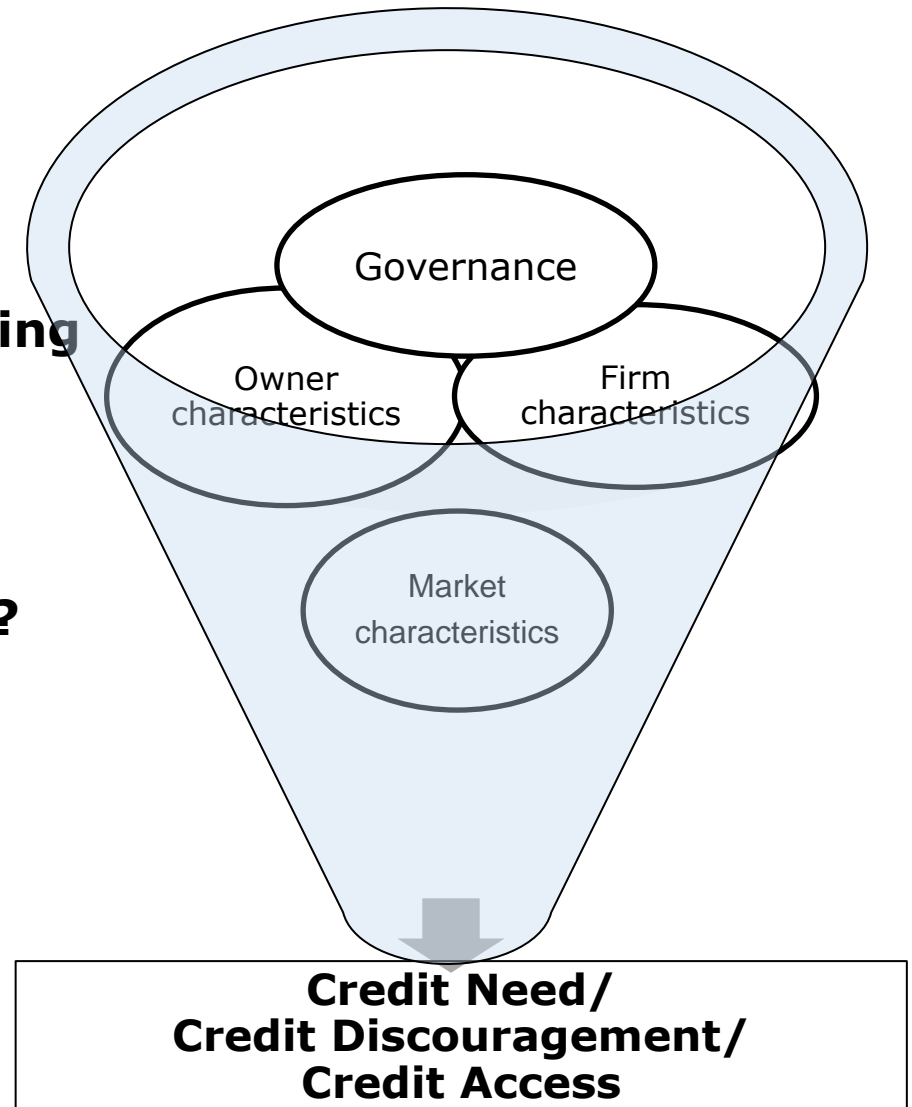
Why is this study important?

- Very few studies analyze "***No-Need***" firms or "***Discouraged***" firms.
    - "Discouraged" firms are much more numerous than "denied" firms.
    - To improve availability of credit, it is critically important to better understand these firms
    - Most studies of "credit-constrained" firms pool "discouraged" firms with "denied" firms.
    - This can lead to faulty conclusions if the two groups differ systematically (which they do).
- We provide new evidence on these issues, analyzing 2006-2021 WB data from 153 countries.

Existing Literature:
Studies using World Bank SME Surveys

- *Beck et al.* (2008; 48 countries, 3,000 firms): finds that, in countries with poor institutions, firms (and especially small firms) use less finance.
- *Brown et al*. (2011; 20 countries in Europe, 8,000 firms): Finds that small and financially opaque firms are less likely to apply for credit. Most interestingly, they find that firms applying for credit rarely are denied credit.
- *Chakravarty and Xiang* (2013; 10 countries; 8,000 firms): Finds that discouraged firms differ across developed and developing countries; and that larger firms, more transparent firms, and firms with stronger banking relationships are less likely to be discouraged.
- *Love and Peria* (2015) Finds that low levels of competition reduce such access to finance, and that the impact depends upon the existence and coverage of mechanisms for sharing credit information, such as public credit registries.

Existing Literature: Studies using World Bank SME Surveys

- *Hope et al.:* (*JIBS*, 2011; 68 countries, 30,000 firms, 2002-2005): finds that firms with greater financial reporting credibility are less financially constrained than other firms, and this effect is stronger for firms with a controlling shareholder.
- *Zheng et al.: (JIBS, 2013*; 38 countries; 3,835 firms, 1999-2000): Finds that bank corruption is driven in part by cultural influences. Specifically, corruption is higher in countries with greater collectivism.
- *Cheng et al*.: (*MS*, 2020; 125 countries, 58,000 firms, 2006-2015): Finds that audited firms have more exports than unaudited firms.
- Qi and Nguyen: (JIBS, 2021; 30 countries, 8,000 firms) Finds that SMEs with government connections are significantly less likely to be discouraged from approaching banks for a loan as compared to SMEs without such connections

Methodology:
Univariate and Multivariate Tests

- Once we have classified each firm, we calculate univariate statistics for each group and test for significant differences in means across groups.

- We then run a series of multilevel logistic regression models (MELOGIT in Stata) to explain each step of the credit approval process:

  - 1. Need credit? (Yes or No?)

  - 2. Apply for credit? (Yes or No?)

  - 3. Get credit? (Approved or Denied?)

Methodology:
Heckman Correction for Sample Selection Bias.

- Neither firms that "need credit" nor firms that "apply for credit" are random samples of the population of firm.
- We address this issue by implementing the two-step Heckman sample-selection correction methodology.
- We first estimate a model of the need for credit, and then estimate a model of discouragement.
- We also use the Heckman procedure to first estimate a model of discouragement before estimating a model of denial.
- We include the Inverse Mills Ratio in the second stage equations to account for selection bias.

Methodology: Identification

- In the Heckman methodology, identification relies upon an exclusion restriction, where at least one variable is included in the selection equation that is excluded from the second-stage equation.
- For our first selection equation of the need for credit, we use a variable that identifies firms that were registered when founded.
- This variable should affect historical demand for credit, making such firms less likely to need credit.
- There is no reason for this variable to affect the likelihood that a firms was subsequently discouraged from applying from credit.

Methodology: Identification

- For our second selection equation of discouragement, we use a variable that identifies firms that applied for an import license within the past two years.
- Such firms should be less likely to be discouraged from applying for credit.
- There is no reason for this variable to affect the likelihood that a lender would deny the firm credit.
- Each of our excluded variables are highly significant in the relevant selection equation.

Data - Source

- Our data are taken from the World Bank's (WB) Enterprise Surveys (WBES).

- WB conducted these surveys in 153 countries between 2006 and 2021.

- Since 2006: WB uses the "Global Methodology," which attempts to make the surveys comparable across countries and years.

- Our final sample includes 173,432 firm-year observations from 292 surveys in 153 countries over the 2006 – 2021 period.

Data - Source

- Our focal explanatory variable in this study is based upon a governance index created from World Bank's Worldwide Governance Indicators.
  - Six dimensions, annually 1996-2021.
    - Voice and Accountability
    - Political Stability & Absence of Violence/Terrorism
    - Government Effectiveness
    - Regulatory Quality
    - Rule of Law
    - Control of Corruption
  - Scores range from -2.5 to +2.5.

Data - Source

- We equally weight each of the six dimensions and then create a variable for governance deciles to facilitate economic interpretation.

- We hypothesize that entrepreneurs in countries with better governance will be:

  - Less likely to be discouraged from applying.

  - Less likely to be denied credit.

Data - Source

- We also include two additional country-level control variables from IMF World Development Indicators:

  - Bank credit to GDP: common proxy for the development of the country's financial system.

  - GDP per capita: common proxy for overall economic development of a country's economy.

Data – Explanatory Variables

Owner Characteristics
- Experience of Management
- Domestic vs. Foreign owned
- Gender (female owned)

Firm Characteristics
- Age
- Size (# employees)
- Organizational form (prop, partner, corp)
- Website
- Import
- Quality
- Registered
- Export
- Industry FE

Need Credit?
Discouraged?
Denied?

Environmental Characteristics
- Governance Index
- GDP per capita
- Bank Credit / GDP
- Year FE (2007-2021)
- Region FE

Descriptive Statistics: Dependent Variables

There are almost four times more discouraged firms than denied firms. (46,719 discouraged vs. 12,059 denied).

		Need	No Need
All	165,512	54.6	45.4
		Discouraged	**Applied**
Need Credit	89,869	52.0	48.0
		Denied	**Approved**
Applied	42,915	28.1	71.9

Descriptive Statistics:
Need vs. No Need

Variable	Need	No Need	Difference	t-Statistic	
Governance (decile)	5.368	5.750	-0.383	-27.08	***
Bank Credit/GDP (decile)	5.239	5.772	-0.533	-37.35	***
GDP per Capita	6.829	9.497	-2.669	-48.16	***
Registered	0.884	0.917	-0.033	-20.90	***
Import License	0.118	0.093	0.024	15.96	***
Quality	0.209	0.226	-0.016	-7.99	***
Website	0.479	0.528	-0.048	-19.64	***
Employment	52.0	49.3	2.7	6.94	***
Firm Age	18.570	19.660	-1.080	-14.10	***
Mgr. Experience	18.466	19.366	-0.900	-15.22	***
Proprietorship	0.330	0.300	0.030	12.88	***
Partership	0.174	0.176	-0.002	-1.27	
Female Owner	0.328	0.306	0.022	9.52	***
Foreign Owner	0.063	0.091	-0.027	-21.00	***

Descriptive Statistics: Applied vs. Discouraged

Variable	Applied	Discouraged	Difference	t-Statistic
Governance (decile)	6.059	4.722	1.337	74.36***
Bank Credit/GDP (decile)	5.833	4.684	1.149	60.25***
GDP per Capita	8.974	4.837	4.137	67.41***
Import License	0.160	0.078	0.083	38.82***
Quality	0.262	0.159	0.103	38.31***
Website	0.610	0.358	0.252	77.89***
Employment	68.7	36.5	32.2	60.26***
Firm Age	20.114	17.133	2.981	30.31***
Mgr. Experience	20.105	16.938	3.167	40.85***
Proprietorship	0.214	0.437	-0.223	-73.06***
Partership	0.154	0.192	-0.038	-14.91***
Female Owner	0.377	0.282	0.095	30.49***
Foreign Owner	0.070	0.057	0.014	8.56***

Descriptive Statistics: Approved vs. Denied

Variable	Approved	Denied	Difference	t-Statistic
Governance (decile)	6.353	5.321	1.032	35.64***
Bank Credit/GDP (decile)	6.119	5.106	1.013	33.71***
GDP per Capita	9.741	7.073	2.669	22.12***
Quality	0.284	0.208	0.076	16.18***
Website	0.656	0.490	0.166	32.09***
Employment	76.6	48.6	28.0	27.81***
Firm Age	20.9	18.0	2.9	16.32***
Mgr. Experience	20.8	18.3	2.5	19.47***
Proprietorship	0.179	0.302	-0.122	-27.98***
Partership	0.150	0.164	-0.014	-3.64***
Female Owner	0.395	0.333	0.062	11.91***
Foreign Owner	0.069	0.074	-0.005	-1.77*

MELOGIT Regression Results: No Need (odds ratios)

Variable	Odds Ratio	Z-Statistic
Governance (decile)	0.980	-1.17
Bank Credit/GDP (decile)	0.998	-0.11
GDP per Capita	1.020	2.70***
Registered	1.307	13.15***
Quality	0.984	-1.02
Website	1.009	0.70
Employment	0.956	-7.96***
Firm Age	1.030	3.02***
Mgr. Experience	1.000	0.61
Proprietorship	0.962	-2.23**
Partership	0.908	-5.02***
Female Owner	0.953	-3.75***
Foreign Owner	1.635	21.40***

MELOGIT Regression Results: Discouraged (odds ratios)

Variable	Odds Ratio	Z-Statistic
Governance (decile)	0.955	-2.16**
Bank Credit/GDP (decile)	0.923	-3.80***
GDP per Capita	0.984	-2.82***
Import License	0.644	-9.13***
Quality	0.855	-6.88***
Website	0.705	-18.10***
Employment	0.707	-28.99***
Firm Age	1.012	0.73
Mgr. Experience	0.998	-2.39**
Proprietorship	1.225	7.30***
Partership	1.151	3.92***
Female Owner	0.908	-4.23***
Foreign Owner	1.131	1.06
IMR	0.781	-0.77

MELOGIT Regression Results: Denied (odds ratios)

Variable	Odds Ratio	Z-Statistic
Governance (decile)	0.911	-4.23***
Bank Credit/GDP (decile)	0.953	-2.37**
GDP per Capita	1.003	0.46
Quality	0.985	-0.43
Website	0.795	-5.43***
Employment	0.726	-8.40***
Firm Age	0.952	-2.21**
Mgr. Experience	0.999	-1.12
Proprietorship	1.104	2.37**
Partership	1.118	2.24**
Female Owner	0.937	-2.06**
Foreign Owner	1.157	1.13
IMR1	0.761	-0.79
IMR2	1.296	1.78*

The "Discouraged Counter-Factual."

- We use our model for "denied credit" to "predict" the outcomes for the discouraged entrepreneurs.

- We take the coefficients from our denied model and the values of the explanatory values for the discouraged entrepreneurs to predict values for denied.

- We then use the 10th percentile predicted value for actual denied borrowers (90% have higher values) as the breakpoint for the predicted values of discouraged entrepreneurs.

- We find that about half of the discouraged entrepreneurs would have been approved for credit had they applied.

Summary and Conclusions

- In this study, we use data from the World Bank's Enterprise Surveys of SMEs around the world to analyze the availability of credit:
  Who needs, who applies, and who gets credit.
  - Around the world, about 55% of firms needed credit.
  - Of these, more than half (52%) were discouraged from applying from credit.
  - Of those that applied, 28% were denied credit.
  - Hence, there are almost four times as many discouraged entrepreneurs than denied borrowers.

Summary and Conclusions

- Using our model of loan denial, we estimate that about half of the discouraged entrepreneurs would have been approved for credit had they applied for credit.

- We attribute this to "debt illiteracy" of these entrepreneurs.

- Therefore, perhaps the best way to improve access to finance (and, consequently, to reduce financial fragility) is to improve the financial literacy of these discouraged entrepreneurs.

Summary and Conclusions

- We also find that country-level governance affects the availability of credit to SMEs.

- Entrepreneurs in countries with better governance are less likely to be discouraged from applying for credit when they need credit.

- Entrepreneurs in countries with better governance also are less likely to be denied credit when they apply for credit.

- Therefore, policies that improve governance improve access to finance and reduce financial fragility.

Thank you!