Discussion of
"The Limits of Lending: Banks and Technology Adoption Across Russia"

by
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Paper

The paper analyzes

- the impact of local banking structures on credit constraints
- and the effect of credit constraints on firm innovation

and finds

- regarding local banking structures that
  - more concentrated local banking
  - a higher portion of foreign-owned banks
  - a higher presence of central banks (spetsbanks)

  imply less credit constraints.
- that less credit constrained firms
  - innovate more regarding products, production methods and processes.

The paper concludes that access to credit facilitates the introduction of available new products and processes but does not stimulate own “inventions”, i.e. R&D, patents and trademarks.

Comments

- Impressive Paper!
- Very granular and extensive data set
- Many supporting robustness tests
- Convincing identification and exogeneity
- Well written

Comments – Story

The results are very convincing. However, the story might be related more to theory.

One of the main statements of the paper is:

- "banks … role in pushing the technological frontier is limited"

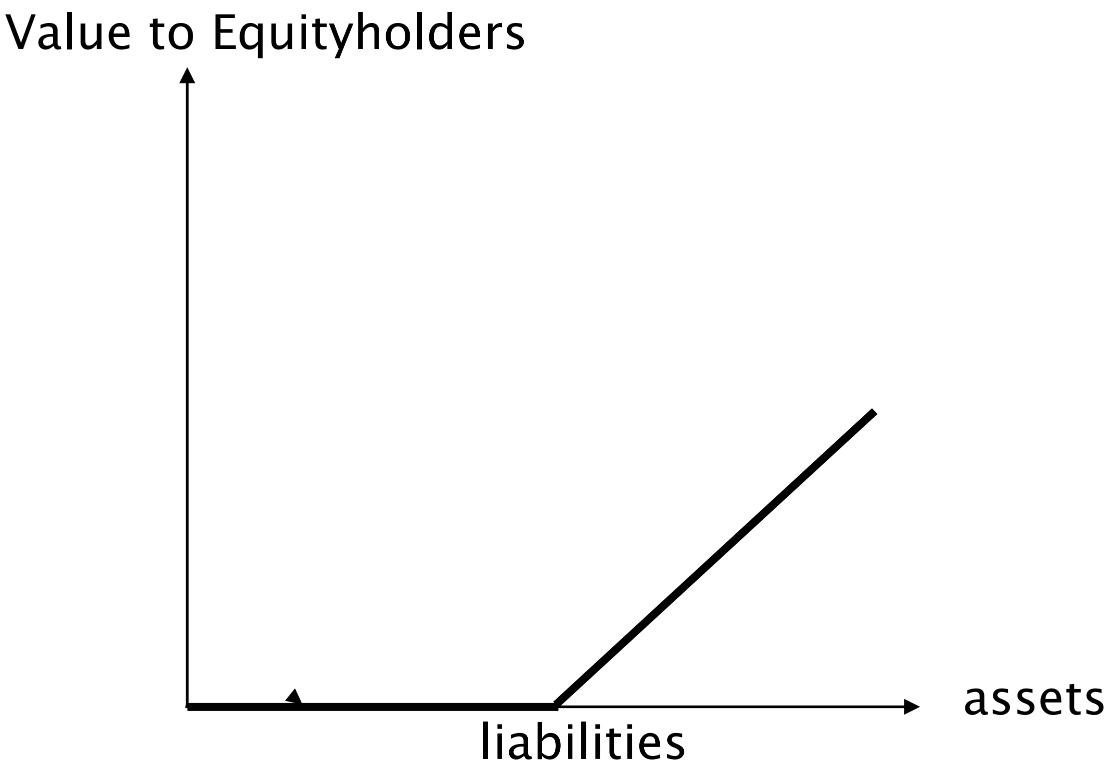
- Russia is a market with very limited access to firm equity.

→ If banks would like to have exposure to (Russian) firms they (largely) have to be creditors.

→ One of the first questions I had was: **Why would we expect another Silicon Valley in Russia only because of better access to credit?**

Comments – Story

The results very nicely relate to theory = Merton model



→ Equityholders have a convex cash flow claim

→ = call option

Comments – Story

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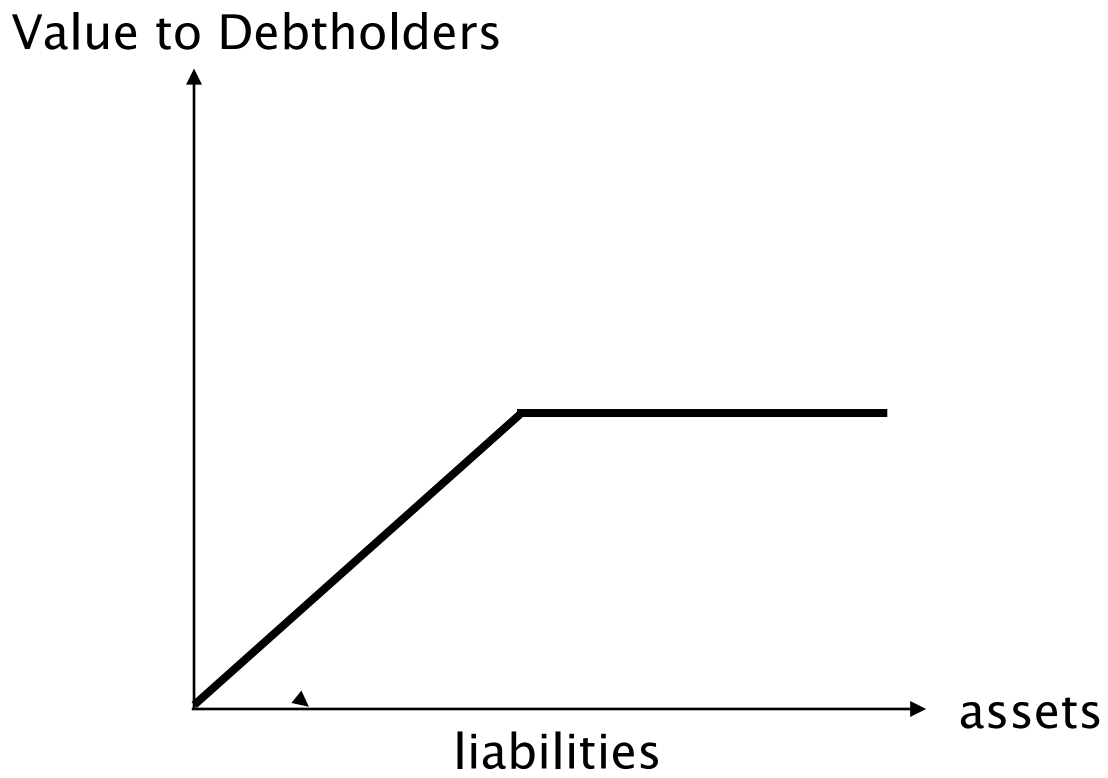

→ Debtholders have a concave cash flow claim

→ = (riskless debt and) short put option

Comments – Story

- Equityholders have a convex cash flow claim = call option
- Debtholders have a concave cash flow claim = short put option

Introduction of already available new products and processes

→ some upside but low downside risk

→ potentially same asset volatility (no increase in risk)

Invention of new processes

→ Strong upside but also strong downside risk

→ Substantial increase in asset volatility

→ **Only equityholders have an interest in higher asset volatility!**

→ **Could it be that banks (as pure debtholders) even hinder innovation?**

Comments – Story

- The authors document that other studies find positive effects of financial intermediation on innovation.

- Amore, Schneider and Zaldokas (2013), Chava, Oettl, Subramanian and Subramanian (2013), Nanda and Nicholas (2014) = **USA**
- Benfratello, Schiantarelli and Sembenelli (2008), Presbitero and Zazzaro (2010) = **Italy**

- **Could it be that differences between developed and emerging countries explain the difference in results to these prior studies?**

- **Drawing from your own literature review**
- Innovative assets
  - are intangible (Hall and Lerner, 2010)
  - difficult for banks to collateralize (Carpenter and Petersen, 2002)
  - may erode the value of existing collateral (Minetti, 2011)
  - are more opaque for banks (Ueda, 2004)
- and innovative firms typically generate volatile cash flows (Brown, Martinsson and Petersen, 2012)

Comments – Story

- **Could it be that differences between developed and emerging countries explain the difference in results to these prior studies?**

- The level of local firm competition and use of technology is important:
  - What is the level of firm competition in regions?
  - Do other firms in a region use new products and processes or do they „already“ innovate?
  - Does implementing available new products and processes already imply a substantial technological leadership in the local market?

- The market conditions are important:
  - Do firms have to introduce new products and processes / innovate or can they gain maket share and power by corruption?
  - For example, in a market with only a few banks firms might be able to increase market value by bribing officials – bribery might be a substitute for innovation!

- Culture is important:
  - Do customers demand entirely new products or do they first “only” focus on a “Western lifestyle” (especially after decades of communism)?

Comments – Credit Constrained

I like your measure of being credit constrained (= prior loan application rejected) a lot, but

- What was the reason for the loan rejection? A too high riskiness of the firm or a bank being capital constrained?

→ Alternative stories: Only „good“ firms receive credit and innovate vs. only „good“ banks grant credit and support innovation.

- How is „credit constrained“ related to „firm has a loan“?
  - What is the timeline? Are there firms which were rejected but still received a loan from another bank? Having a loan is based on the time of the survey – when were firms rejected?
  - Given that you observe that in regions with more banks firms are more credit constrained, could it be that firms „shop around“ more, i.e. receive more rejections but have the same likelihood of eventually obtaining a loan?
  - The also relates to the transparency variables: larger, older etc. firms might shop around more and are rejected more often, i.e. appear to be more credit constrained.

Comments – Credit Constrained

The paper argues that concentrated banking markets together with firm opaqueness implies less credit constraints.

→ The opposite interpretation would be that large, public etc. firms in competitive banking markets experience more credit constraints.

It also argues that there is a non-linearity in the impact of banking concentration and access to credit.

➔ This is very interesting and might be explored further.

➔ Perhaps you can at least show a figure including market concentration *and* firm opaqueness and their impact on being credit constrained which better describes this pattern?

Comments – Minor

- Almost all regression models are non-linear regression models but include fixed effects.

→ Incidental parameters problem?

→ As a robustness test, also run OLS

- The (weak) inverse relationship between corruption and Spetsbank might be very interesting to explore. Is there more corruption in more concentrated banking markets?

- Readers permanently have to switch between main tables and tables in the appendix.

- Paper very long

Conclusion

- Very polished paper – Impressive battery of robustness tests!
- Well executed econometrics!
- Very interesting and important paper which helps us to better understand the relation of access to credit and economic development.
- I highly recommend reading it!