Discussion of "Indirect Effects of Access to Finance"

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Summary

- This paper documents direct and indirect effects of access to finance on firm performance
- To measure indirect effects, the authors created experimental variation across markets in the share of firms having access to a new loan product
- Model-guided identification and estimation shows that the loan program has
  - Positive direct effects on business practices, service quality, and consumer satisfaction of treated firms
  - Negative indirect effects on the performance of firms with treated competitors
- Calibration of welfare gain suggests that
  - The loan program improved consumer and producer surplus, especially the former
  - The loan program had a private return of 74%, which is largely offset by business stealing effects, and a social return of 60%.

Key contributions

- Innovative experimental design that facilitate causal identifications of direct and indirect effects of access to finance
  - Making it possible to evaluate how access to finance affect the broader economy and the social welfare
  - Important for social planners and policy makers to account for (unintended) indirect effects
- Complement RCT with model-based identification and estimation
  - Differentiate indirect effects from various resources that were previously ignored
  - Facilitates calculation of welfare gain and return to capital that yield important policy implications

Unique context and comprehensive data

- Corporate-level RCT
  - 6000+ firms over 78 distinct (retail/service) markets
  - Partnership with a large bank, which introduced a new loan product for SMEs in Jiangxi province in 2013
  - The new loan product is attractive for Chinese SMEs, which are traditionally credit constraint
- Panel data
  - Conduct four rounds of field experiment with 3173 firms
    - 2013, 2015, 2016, 2020
  - Sales, profits, corporate balance sheets, source of funds, proceeds of funds, labor quality, managerial characteristics, …
- Cross-section data on product quality and prices, consumer experience
  - Facilitates evaluation of consumer and producer surplus
  - Precise estimation of social welfare and overall policy impacts

Careful identification of indirect effects

- Carefully crafted structural model of business stealing
  - Decompose the overall effect of access to finance to
    - Positive direct effect on quality and productivity
    - Negative indirect effect due to business stealing
- Enrich the model to incorporate different sources of indirect effect
  - Information diffusion, demand diffusion, quality gain for consumers
  - Treatment variations
  - Multiple periods
  - Imperfect take-up
- The full model that accounts for direct and indirect effects facilitates impact identification and welfare evaluation
  - Reduced form and IV estimation
  - Welfare gain for consumer and producer

Important policy implications

- Aggregate impact of a policy/program relies on careful estimation of both direct and indirect effects
  - There are potentially multiple indirect (unintended) effects, which are either difficult to evaluate or simply ignored
  - Most policy evaluation exercises focus on direct effects
  - From policymakers' perspective, the aggregate impact is more important
- This paper is able to differentiate direct and indirect effects on producers and consumers, which yields more informative estimation of social welfare
  - Indirect effects channelled through business stealing, diffusion of borrowing, diffusion of demand
  - Endorsed further with survey evidence

Comments

- Clarifications on experimental design
- Estimation
- Interpretation of results
- Calibration of welfare gain and return to capital

Clarifications on experiment design (1)

- What was the background of introducing the uncollateralised loans for SMEs?
  - Do they aim to support a particular industry, which may benefit markets specialize in that industry disproportionately?
- Are some firms existing clients of the partner banks?
  - What are the prior banking relationship?
  - No credit bureau in China, many banks use prior banking records for risk management → those with good banking records are more likely to receive uncollateralised loans
- Probability of borrowing
  - Why only 6.7% in the control group and 34% in the treated group borrowed despite SMEs' thirst for credit (Table 3)?
  - Who are more likely to borrow? → implications for aggregate effects

Clarifications on experiment design (2)

- Loan approval rate
  - What is the proportion of SMEs applicants that successfully get the loan?
  - SMEs expecting low approval rate may decide not to apply
  - If it is the supply, not the demand of funds, are driving the results, policymakers can better manage access to finance to improve productivity
- Are loan officers randomized? Would a loan officer take care of multiple markets?
  - Additional diffusion through loan officers?
- Treatment intensity may vary with loan officer characteristics
  - Relationship banking are highly influenced by loan officers
  - Experienced, well-connected loan officers are more likely to convince firms to apply for loan, get the loan approved, and disseminate information

Estimation

- Why some dependent variables are in log, others are in dollar term?
- To facilitate comparison across firms and different indicators, consider
  - Fixed assets (10,000 RMB) → log(fixed assets)
  - Profit (10,000 RMB) → growth of profit / profit margin

Table 4: Direct and indirect effects: Main outcomes

Dep. var.:	log Sales	Profit (10,000 RMB)	log Number of Employees	log Wage Bill	Fixed Assets (10,000 RMB)	log Material Cost	Shutdown
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post*Treated	0.099***	12.64***	0.075**	0.101***	5.468	0.077*	-0.028***
	(0.035)	(3.099)	(0.029)	(0.029)	(4.537)	(0.041)	(0.010)
Post*Share Competitors Treated	-0.086**	-9.478*	-0.066*	-0.069*	-3.013	-0.050	0.001
	(0.041)	(4.802)	(0.038)	(0.037)	(4.558)	(0.047)	(0.018)
Firm FE and Post	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,612	8,612	8,612	8,602	8,612	8,605	8,847

Alternative interpretation of indirect effects

- The negative indirect effects are interpreted as business stealing effects
- Alternative explanation: Over supply → lower price → lower sales
  - This can be ruled out if the price is rigid, or consumer demand is stable

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Supply versus demand

- Loan increases product quality and firm productivity
- Based on direct effects:
  - Access to finance → firm productivity↑→ supply ↑→ price↓ → demand ↑ → Sale ↑

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Table 7: Direct and indirect effects: Consumer experience

Dep. var.:	log Price	Advice from Sellers	Service Quality	Shopping Environment	Value for Money	Overall Satisfaction
	(1)	(2)	(3)	(4)	(5)	(6)
Treated	-0.052*	0.238***	0.753***	0.991***	0.574***	0.836***
	(0.027)	(0.035)	(0.0950)	(0.0969)	(0.081)	(0.060)
Share Competitors Treated	-0.007	-0.098**	-0.175	-0.345***	-0.211**	-0.231**
	(0.037)	(0.046)	(0.120)	(0.128)	(0.087)	(0.095)
Observations	2,781	1,804	1,804	1,804	1,804	1,804

Supply versus demand

- Loan increases product quality and firm productivity
- Based on direct effects:
  - Access to finance → firm productivity↑→ supply ↑→ price↓ → demand ↑ → Sale ↑
- Based on indirect effects:
  - Access to finance by peers → firm productivity↑↑ → supply↑↑ → price↓↓
  - But why enhanced competition that increases supply does not bring down price further?

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- Could the demand diffusion effects be driven by nonlinear indirect effects?
- Suggestions
  - Check whether the indirect effects vary with the scale of *share competitors treated*?
  - Check the distribution of the four different measures of competition

Table 9: Effects on main outcomes by peers' location and competition status

	All Sample			Treated and Pure Control		
VARIABLES	log Sales	Profit (10,000 RMB)	log Number of Employees	log Sales	Profit (10,000 RMB)	log Number of Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Post*Treated	0.089**	11.60***	0.079**	0.098	-2.024	0.041
	(0.041)	(2.776)	(0.031)	(0.188)	(10.96)	(0.057)
Post*Share Local Competitors Treated	-0.099*	-11.49**	-0.053	-0.021	-3.065	0.020
	(0.054)	(5.173)	(0.038)	(0.069)	(4.019)	(0.041)
Post*Share Local Non-competitors Treated	0.156***	13.41***	0.056**	0.132**	16.68***	0.015
	(0.046)	(4.416)	(0.027)	(0.053)	(5.291)	(0.024)
Post*Share Non-Local Competitors Treated	-0.065	-9.798	-0.022	0.009	-6.108	-0.0002
	(0.045)	(12.10)	(0.047)	(0.111)	(16.41)	(0.070)
Post*Share Non-Local Non-competitors Treated	0.094	8.412	-0.018	0.035	10.94	-0.042
	-0.062	(15.83)	-0.047	(0.249)	(18.67)	-0.062
Firm FE and Post	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,220	8,220	8,220	6,967	6,967	6,967

Firm- and Market-level effects

- It appears that some negative indirect effects were not captured by the model. What are missing?

Firm-level outcome (Table 4)

Dep. var.:	log Sales	Profit (10,000 RMB)
	(1)	(2)
Post*Treated	0.099***	12.64***
	(0.035)	(3.099)
Post*Share Competitors Treated	-0.086**	-9.478*
	(0.041)	(4.802)
Firm FE and Post	Yes	Yes
Observations	8,612	8,612

Market-level outcome (Table 10)

Dep. var.:	log Market Revenue	Market Profits
	(1)	(2)
Post*Share Market Treated	0.058	53.41
	(0.037)	(130.1)
Market FE and Post	Yes	Yes
Observations	234	234

- Why are the direct effects no longer significant in this case?
- How sensitives are the estimation results to different model specifications?

Table 5: Indirect effects by treatment status

Dep. var.:	log Sales	Profit (10,000 RMB)	log Number of Employees	log Wage Bill	Fixed Assets (10,000 RMB)	log Material Cost
	(1)	(2)	(3)	(4)	(5)	(6)
Post*Treated	0.070	7.729	0.032	0.041	0.468	0.052
	(0.087)	(11.47)	(0.054)	(0.052)	(5.880)	(0.124)
Post*Share Competitors Treated*Treated	-0.049	-3.398	-0.013	0.005	3.181	-0.019
	(0.106)	(14.46)	(0.064)	(0.062)	(7.702)	(0.151)
Post*Share Competitors Treated*Untreated	-0.094**	-10.90**	-0.078*	-0.087*	-4.466	-0.057
	(0.045)	(4.230)	(0.044)	(0.044)	(5.175)	(0.054)
Firm FE and Post	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,612	8,612	8,612	8,602	8,612	8,605

Note: Standard errors clustered at the market level. *** p<0.01, ** p<0.05, * p<0.1.

Indirect effects on untreated firms

- If there are spillovers across markets, the control group should be affected.
- Given the business stealing effects, firms in pure control group should be worse off as their customers are lured away by treated firms
  - Were the documented direct effects driven by the improvement of treated firms or the deterioration of untreated firms?
- Suggestion: check how untreated firms' performance vary over time
  - If untreated firms' performance remains unchanged, how to justify the business stealing effects?

Heterogeneity across industries

- Price elasticity
  - For industries with low price elasticity, one can better document evidence of business stealing effects
- Technology adoption
  - In industries with faster technological progress, firms are more likely to borrow to introduce new products, improve quality, while lowering price
  - Further mitigate the concerns that treatment may not be random across industries

Welfare gain calculation

- Calculation of welfare gain are based on consumer and producer surplus derived from the direct and indirect effects on revenues/profits
- It would be nice to map the direct and indirect effects of the loan program to welfare gain (decompose welfare gain by direct and indirect effects)
  - Clearer transitions from causal estimation to calibration
  - Better highlight the consequences of ignoring indirect effects
- Why emphasize on return to capital in welfare gain estimates?
  - There is no evidence that firms increase capital after obtaining the loan (column 5 Table 5)
- To backup potentially omitted indirect effects, one may calibrate the welfare gain by the market-level estimation
  - The difference may reflect the omitted indirect effects

More about calibration

- Current calibration focuses on whether firms have borrowed. In reality, the borrowing amount matters for both firms and policymakers
  - What if the direct and indirect effects vary with loan size?

- Is it possible to incorporate the indirect effects on1 untreated firms in the calculation of welfare gain?

- For easy reference, a table that summarizes calibration parameter and their sources would be helpful.

Minor comments

- Explain key concepts in the introduction
  - Industry equilibrium, business stealing, market
- External validity
  - How representative are banking patterns in Jiangxi and borrowing behaviour of SMEs there?
- Market-level data
  - Simple aggregate or (weighted) average of firm-level data?
- Variable definitions
  - How is customer satisfaction measured? Are prices adjusted for quality?
  - Perhaps a sample of selective survey questions, especially for the 2020 survey

Conclusion

- Rigorously implemented experimental design
- Comprehensive data collection
- Carefully crafted identification and estimation strategies
- Extend the generalizability of existing experimental studies on credit access
- By accounting for multiple indirect effects, this paper strengthens the linkage between micro-level causal evidence and macro aggregate impact
  - This substnatially improves welfare estimation and informs policy making

Good luck for publication!