Discussion of "FinTech and the Supply of Credit to Small Business"

by Mark Johnson

FMA 2020

Keer Yang – University of Minnesota

Summary and Main Contributions

- Price-setting mechanism of credit to small business in the FinTech era.
- Focus on the causes of price dispersion and the how equilirbium prices are determined on FinTech marketplace
- Main Findings:
  - document price dispersion in FinTech marketplace : when an applicant receives multiple offers, prices vary substantially
  - lender fixed effects explain most of the price variations
  - price dispersion is caused by lender's specialization in risk target + flat interest rate
  - highest interest rate lenders match with borrowers that have been rejected by lenders with lower rate

This Paper

- Very interesting paper.
- Novel data from a FinTech marketplace.
- Improves our understanding of pricing mechanism in online FinTech marketplace.
- My comments:
  - identification of lender habitats
  - offer price dispersion vs equilibrium price dispersion
  - testing information asymmetry
  - other comments

FinTech and Price Dispersion

- Price dispersion reflects imperfections in credit market.
  - positive searching costs
  - ex-ante heterogeneities in borrowers or lenders.
- FinTech marketplace is a type of online platform that assisted in originating loans to businesses
  - for online FinTech marketplace, searching costs are reduced to almost zero.
- What's the prevailing frictions that cause price dispersion in FinTech credit market

Lender Habitats: Specilization in Risk Tolerance

- Lender Habitats : lenders specialize in (prefer) specific categories of risk, rejecting applicants below lender-specific thresholds
  - (lender-specific) agency cost for lender
  - lenders' funding cost

- The paper uses borrower FICO score at 10th percentiles (LowFICO) of a given lender to measure lender habitats
  - LowFICO_j = 10th percentile of $\{\text{FICO}_{i,j,t}\}$, **across borrowers at differemt time**

- $\text{APR}_{ij} = \text{LowFICO}_j + \eta_i + \varepsilon_{ij}$
  - borrower fixed effects rule out channel such as endogenous matching between lenders and borrower.

- Other possible channels?
  - Is it time-invariant lender habitats or time-varying credit supply?

Lender Habitats or Time-Varying Credit Supply

- An example of time-varying credit supply
- Two periods with two borrows in each period, one with high FICO score (F_h) and one with low FICO score (F_l), in total four borrowers
- Two lenders:
  - Lender A, with constant funding cost. Offer R_h to high FICO score borrower and R_l to low FICO score borrower, ($R_h < R_l$)
  - Lender B, same funding cost as lender A in period 1, decreased funding cost but more financially constrained in period 2
  - So lender B does not invest in low FICO project at period 2
- average FICO for lender A, $F_A = \frac{R_h+R_l}{2}$; lender B, $F_B = \frac{2R_h+R_l}{3}$
- four borrowers, and seven offers

	Period 1	Period 2
High FICO borrow	(R_h, F_A),(R_h, F_B)	(R_h, F_A),$(R_h - c, F_B)$
Low FICO borrow	(R_l, F_A),(R_l, F_B)	(R_h, F_A)

Lender Habitats or Time-Varying Credit Supply

- The example is specifically designed, but the problem comes from averaging FICO score over time.
- Lenders with same risk tolerance may invest in different project due to credit supply shock
- Two Robustness Tests:
  - Add lender level control variables, controlling for lender credit supply. E,g, average interest by lender, average loan amount by lender.
  - Measure "time-varying" lender habitats:
    LowFICO$_{j,t}$ = 10th percentile of $\{\text{FICO}_{i,j,t}\}$

Offer Price Dispersion and Equilibrium Price Dispersion

- Price dispersion reflects market imperfections.
- The paper defines price dispersion as within applicant interest rate variation, which is offer price dispersion.
  - This definition perfectly controls for loan heterogeneity
- Offer price dispersion is a close but distinct concept as equilibrium price dispersion
  - Equilibrium price dispersion matters for welfare analysis
  - Only under certain assumptions, offer price dispersion results in equilibrium price dispersion

Offer Price Dispersion and Equilibrium Price Dispersion

- Table 3

Dependent Variable	
	(1)
lowFICO	-0.897***
	(0.128)
Maturity	
ln(Loan Amount)	
Borrower FE	X
LenderFE	
# Lenders	50
# Borrowers	28,007
Adjusted R-squared	0.703
Within R-squared	0.307
N	83,612

- Table 4

Panel A: Closed Deals	
Dependent Variable	
	(1)
FICO Score	-0.388***
	(0.070)
ln(Age)	-8.895***
	(1.945)
ln(Loan Amount)	
Term	
ln(Cash/Sales)	
Industry FE	X
Time FE	X
Lender FE	
# Lenders	50
Adjusted R-squared	0.260
N	25,712

- Table 3 shows lender specilization in risk tolerance affects within applicant interest rate offered.
- Do lender habitats affect equilibrium price dispersion?
- run a similar regression on closed deals (similar to regression table 4), and add "LowFICO"

Information asymmetry in FinTech Marketplace

- FinTech marketplace decreases borrowers search costs to almost zero, does it come at the cost of (higher) information asymmetry

Table 5

Dependent Variable	Closed				
	(1)	(2)	(3)	(4)	(5)
APR	-0.243***				-0.169***
	(0.043)				(0.042)
Maturity	0.124				0.044
	(0.169)				(0.278)
ln(Loan Amount)	-5.350***				-3.782***
	(1.146)				(1.036)
Credit Score		-0.113***			-0.105***
		(0.012)			(0.006)
ln(Age)			-1.252**		-2.114***
			(0.549)		(0.444)
ln(Cash/Sales)				-2.266***	-1.777***
				(0.329)	(0.324)
BorrowerFE	X				
LenderFE		X	X	X	X
# Lenders	50	50	50	49	49
Adjusted R-squared	0.397	0.134	0.107	0.084	0.121
Within R-squared	0.067	0.031	0.001	0.004	0.044
N	82,981	115,406	115,406	93,414	93,414

- Test One: whether applicants are more likely to choose loans with lower APR.
- Does the negative correlation between APR and funding probability rise naturally, given lenders heterogeneous marginal costs and no information asymmetry?

Information asymmetry in FinTech Marketplace

Table 5

Dependent Variable	Closed				
	(1)	(2)	(3)	(4)	(5)
APR	-0.243***				-0.169***
	(0.043)				(0.042)
Maturity	0.124				0.044
	(0.169)				(0.278)
ln(Loan Amount)	-5.350***				-3.782***
	(1.146)				(1.036)
Credit Score		-0.113***			-0.105***
		(0.012)			(0.006)
ln(Age)			-1.252**		-2.114***
			(0.549)		(0.444)
ln(Cash/Sales)				-2.266***	-1.777***
				(0.329)	(0.324)
BorrowerFE	X				
LenderFE		X	X	X	X
# Lenders	50	50	50	49	49
Adjusted R-squared	0.397	0.134	0.107	0.084	0.121
Within R-squared	0.067	0.031	0.001	0.004	0.044
N	82,981	115,406	115,406	93,414	93,414

- Suggestion:
  - Split the borrowers into high FICO borrowers vs low FICO borrowers.
  - Split lenders into FinTech vs non-FinTech lenders

Other Comments

- Why do Lenders Specialize?
  - Agency cost or time-invariant differences in funding cost.
- Connection between information asymmetry and lender habitats

Conclusion

- Very interesting paper.
- It improves our understanding of price setting mechanism of credit to small business in FinTech marketplace
- Hope my comments will help with the next version of the paper.