Fintech Lending: Financial Inclusion, Risk Pricing, and Alternative Information

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The opinions expressed in this paper are the authors’ own views and do not necessarily represent the views of the Federal Reserve Bank of Philadelphia, Federal Reserve Bank of Chicago, or the Federal Reserve System.
This is Wells Fargo’s home page - Banking is Being Unbundled
Growth in Fintech Lending

- Fintech Lending Growth (Source: Survey conducted by University of Cambridge and University of Chicago):
  - Consumer loans -- reached $28.5 Billion in 2015
  - Business loans -- reached $5.6 Billion in 2015,
- Fintech lenders challenge incumbent banks with technologically advanced product offerings that are cheaper, faster, and more transparent – and they are not subject to the same rigorous oversight.
- Fintech has been playing an increasing role in shaping the new financial landscapes.
Research Motivation

From previous research Jagtiani and Lemieux (2016):
- Technology has enabled lending -- increased the ability of large banks to provide small dollar loans to consumers and businesses.
- Found an increase in bank lending in areas where larger banks do not have a physical presence.

In this paper, we explore the advantages/disadvantages of Consumer loans made by a large Fintech lender and similar loans that were originated through traditional banking channels – risk, pricing, credit decision, credit access, etc.
The Data
Data

- **Fintech Loans** -- Loan-level consumer loan data from the LendingClub (consumer loan platform) – focusing on cards & debt consolidation purposes

- **Traditional Loans** -- Loan-level credit cards data (Revolvers Only) from the Y-14M Stress Test data – submitted to FRB monthly by CCAR banks.

- **FRBNY Equifax Consumer Credit Panel** – all consumers with credit records

- **Other Data** -- FDIC Summary of Deposits – for banking market concentration and bank branch information, economic factors (from the Haver Analytics database)
Composition of LendingClub
Consumer Loan Origination (2007-15)
Mostly Cards and Debt Consolidation Purposes

Figure 1: Lending Club Loans (Origination Amount) by Loan Purposes
By Origination Year 2007-2015

- wedding
- vacation
- small_business
- renewable_energy
- other
- moving
- medical
- major_purchase
- house
- home_improvement
- educational
- debt-consolidation
- credit_card
- car
Who Are LendingClub’s Customers?
LendingClub Borrowers vs. FRBNY Equifax CCP Population: FICO Scores

Figure 3A: Equifax Consumers' FICO Scores

Figure 3B: Lending Club Borrowers' FICO Score
Lending Club Borrowers vs. FRBNY Equifax CCP Population

Home Ownership

DTI Ratio

Figure 2A: Homeownership Ratio
Lending Club Borrowers vs. Equifax Consumers

Figure 2B: DTI Ratio
Lending Club Borrowers vs. Equifax Consumers
Geographic Distribution of Fintech Lending & Implications for Consumer Credit Access
Geographic Distribution of LendingClub Portfolio (% Total Principal Outstanding)
LendingClub initially concentrated in Northeast and West Coast, today they have loans in every state.

As of 2010

As of 2016
About 50% of LendingClub Loans are in Highly Concentrated Banking Market

HHI based on Deposit Taking in 5-Digit Zip

Figure 5A: Landscapes of U.S. Banking Market by 5-Digit Zip HHI (2007-2016)

Figure 5B: Lending Club Consumer Loans Outstanding -- by 5-Digit Zip HHI Markets
In 2014-2015, 40% of LendingClub Loans Originated in Areas that Lost >5% of Bank Branches. Changes in Branches are NOT significant in the regressions.

**Geographic Landscapes**

**Figure 6A:** Bank Branch Landscapes
Share of 3-Digit Zip Codes with Changes in Bank Branches

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**LendingClub Portfolio**

**Figure 6B:** Distribution of Lending Club Loans (In Dollar) in 3-Digit Zip Codes with Declining Bank Branches

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The Roles of Alternative Information in Credit Decisions
“By filling in more details of people’s financial lives, this information may paint a fuller and more accurate picture of their creditworthiness. So adding alternative data into the mix may make it possible to open up more affordable credit for millions of additional consumers.....”

Richard Cordray (March 2017)
Increasing Roles of Alternative Information – Relative to FICO Scores

LendingClub increasingly relied on their own alternative data in assigning Rating Grades A-G and in their risk pricing.
FICO vs. Rating Grades (2007-15)

2007

Figure 8A: FICO Distribution by Lending Club Rating 2007 Origination

- Rating Grade: A, B, C, D, E, F, G
- FICO Score: >=750, 700-749, 680-699, <680

2011

Figure 8B: ICO Distribution by Lending Club Rating 2011 Origination

- Rating Grade: A, B, C, D, E, F, G
- FICO Score: >=750, 700-749, 680-699, <680

2015

Figure 8C: FICO Distribution by Lending Club Rating 2015 Origination

- Rating Grade: A, B, C, D, E, F, G
- FICO Score: >=750, 700-749, 680-699, <680
Rating Grades Assigned by LendingClub (2014-15)

- Rating grades are not correlated with FICO (as of origination)
- We will show that rating grades are highly correlated with default probability
- Alternative information seems to be effective in further identify consumer risks that are not captured by FICO scores
Examining PD of LendingClub Loans with FICO<680 and Rated A or B

PD is correlated with Rating Grades
Probability of 60+DPD in 12 Months

FICO<680 Only

PD is closely related to A-G rating

Probability of being 60+DPD within 12 Mo After Origination -- Lending Club Loans Originated in 2014-15 (FICO<680 Only)

Probability of being 60+DPD within 12 Months after Origination -- Lending Club Loans Originated in 2014-2015 -- By Credit Scores and Rating Grades
Probability of 60+DPD in 24 Months

FICO<680 Only

PD is closely related to A-G rating
Lending Club Loans
A-Rated and B-Rated Only

PD is correlated rating grade, regardless of FICO scores
Examining PD of A-Rated and B-Rated Loans

PD is correlated with Rating Grades

FICO scores are too broad to capture PD of individual borrowers
LendingClub Use Alternative Data to Identify Subprime Borrowers that Have a Lower Default Probability

Default in 12 Months

Subprime borrowers (FICO<680) who were rated A or B by LendingClub actually have PD similar to other borrowers who received the same rating grades A or B
Again, Lending Club can identify those subprime borrowers that have a lower PD

- We find Low PD for subprime borrowers (FICO<680) who were rated A or B by LendingClub
- This is not correctly captured by FICO
- Fintech rating and pricing decisions benefit from alternative data
Risk Pricing
LendingClub’s interest rates are highly correlated with PD

Larger Spreads for Lower Grades

Larger PD for Larger Spreads

Figure 9A: Average Spread by Rating Grades -- Cards and Debt Consolidation (2007-2015)

Figure 9B: Probability of Being 60+DPD Within 12 Months after Origination (Origination in 2014-2015)
Higher PD for Worse Loan Grades
Declining PD Over the Years for All Loans

Figure 11: Lending Club Loans
60+DPD within 12 Months After Origination -- by Loan Grade and years

Probability of Default

Year of Origination

Grade A  Grade B  Grade C  Grade D  Grade E  Grade F  Grade G

PD of Lending Club vs. Bank Loans

Loans Originated in 2014-15; Higher PD for LendingClub Loans; Smaller Spreads on LendingClub Loans, given the default risk

Figure 12B: LendingClub Loans vs. Y-14M Credit Card Loans (Revolvers Only) -- Probability of 60+DPD Within 12 Months after Origination (2014-2015)

Figure 12C: LendingClub Loans vs. Y-14M Credit Card Loans (Revolvers Only) -- Probability of 60+DPD Within 24 Months after Origination (2014-2015)
Controlling for FICO Scores, Lending Club Borrowers, on Average, Are Slightly More Likely to Default – Self Selection

Figure 14B: Lending Club vs. Y-14M Cards (Revolvers Only) -- Probability of 60+DPD within 12 Mos Loans Originated in 2014-15

Figure 14C: Lending Club vs. Y-14M Cards (Revolvers Only) -- Probability of 60+DPD within 24 Mos Loans Originated in 2014-2015
Data indicate that rating grades are good at identifying riskier borrowers.

We explore this further using Logistic regression:

- Dependent variable is the probability that the loan becomes delinquent within 12 months
- Control for additional factors (credit spreads, borrower’s risk characteristics, and economic factors).

Results confirm that rating grades are highly significant; FICO scores are not significant after controlling for other risk factors.
Takeaways

❖ Alternative Data Sources: There is additional information in LendingClub’s ratings that are not already incorporated in traditional risk factors like FICO scores

❖ Rating grades (based increasingly on alternative data) have a decreasing correlation with FICO scores over the years – but remain effective in predicting future loan defaults

❖ Alternative data have allowed some borrowers to be assigned better ratings and to receive lower priced credit

❖ Lower Funding Cost: given the same risk of default, consumers pay smaller spreads on loans from LendingClub than from carrying credit card balances