Uncovering the Hidden Profit: How the Fintech Platform Optimizes its Profit by Strategic Information Releasing?

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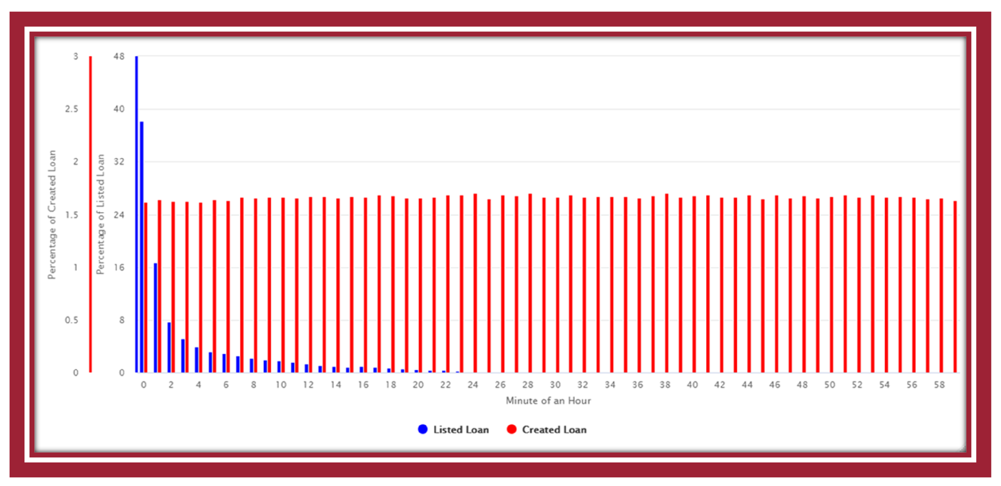
Abstract

In this paper, we illustrate a phenomenon in which **Prosper displays roughly 40% of all loans during the first minute of each releasing hour and charges much higher fees than loans in other minutes** after controlling for loan characteristics and numerous fixed effects. Our three identification tests produce a consistent argument that **Prosper intentionally lists loans with higher fees in the first minute to maximize its profit**. Moreover, **the results are more significant for loans with higher funding probability, such as those with small amounts, short terms, and high credit scores**. Finally, we examine the consequence of this deliberate loan listing action and find that **borrowers with loans in the first minute are less willing to request another loan through the platform.**

Motivation

"…the application of digital analytics raises new questions about conflicts. Are these platforms solely optimizing for our returns as investors? Or are they also optimizing for other factors, including their revenues?"

Gary Gensler (Chair of SEC)



- Loan Listing: loans displayed to the investors
- Loan Creation: loans submitted by borrowers

Research Question

- **Why Prosper puts more loans at the first minute?**
  - **Is this a strategy to maximize its own profit or convenience investors?**

Main Results

- **Prosper allocates more fees for loans post at the first minute.**
- **The fees are higher for loans with higher possibility to be funded.**
  - Short-term loans
  - Small size loans
  - Loans with higher Prosper score
- **Borrowers recognize this phenomenon by less likely to request future loans from Prosper if their loan allocated at the first minute.**

Contribution

- **Regulation of P2P platforms** (Cumming et al., 2019)
- **Information asymmetric in P2P consumer lending industry** (Vallee and Zeng, 2019; Weiss et al., 2020)
- **Decision-making of the lenders on P2P loan investment: loan-ordering effect** (Herzenstein et al., 2009; Larrimore et al., 2011; Duarte et al., 2012; Lin et al., 2013; Emekter et al., 2015)
- **P2P loan analysis: timing dimension** (Michels, 2012; Emekter et al., 2015; Tang, 2019; Cornaggia et al., 2019; Cole et al., 2021; Cumming et al., 2021)

Background Information

Loan Creation
↓
Screen Checking Process
↓
Pre-Listing Withhold
↓
Listing Start
↓
Listing End
↓
Loan Initiation

Data & Methodology

- P2P loan data: Prosper completed listing loans (1,310,935)
- Time range: Jan 2011- Dec 2021
- Fee measurement

$$Prosper\ Fee = APR - Borrower\ Rate$$

  - APR: Annual Percentage Rate
    - Total cost of borrowing

Empirical Model

$$Prosper\ Fee_i = \alpha + \beta First\ Minute_i + X_i'\delta + \eta_{te} + \lambda_{lt} + \mu_t + \varepsilon_{it}$$

- $First\ Minute_i$: the loan is post at the first minute of an hour
- X_i': Controls (Michels, 2012; Emekter et al., 2015; Tang 2019)
- η_{te}: Loan terms FE
- λ_{lt}: City-Year FE
- μ_t: Date FE/ Date-Hour FE

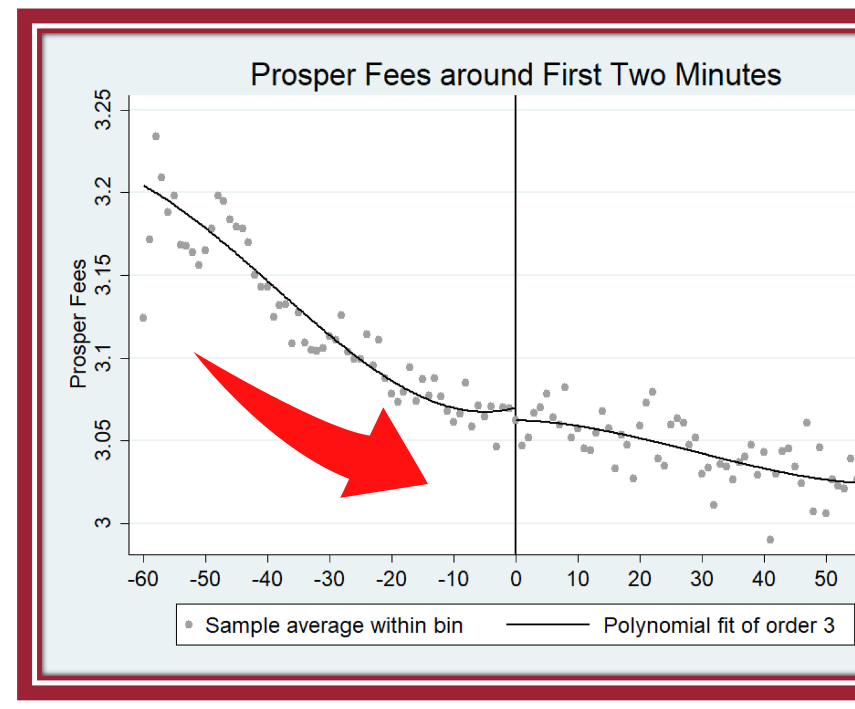
Results

- **Main Results**

Dependent Variable	(1) Prosper Fee	(2) Prosper Fee	(3) Prosper Fee
First Minute	0.033***	0.012***	0.018***
	[22.241]	[9.866]	[12.820]
Controls	NO	YES	YES
Loan Terms	YES	YES	YES
City-Year FE	YES	YES	YES
Date FE	YES	YES	NO
Date-Hour FE	NO	NO	YES
Observations	1,310,935	1,310,935	1,310,935
Adjusted R-squared	0.366	0.606	0.607

Results

- **RDD Style Analysis: Loans within First Two Minutes**



- **RDD Style Analysis (Regression Results)**

	(1)	(2)	(3)
Seconds Range	[-60,60]	[-40,40]	[-20,20]
Dependent Variable	Prosper Fee	Prosper Fee	Prosper Fee
First Minute	0.014***	0.010***	0.006**
	[9.232]	[5.556]	[2.403]
Controls	YES	YES	YES
Loan Terms	YES	YES	YES
City-Year FE	YES	YES	YES
Date-Hour FE	YES	YES	YES
Observations	699,860	442,898	193,599
Adjusted R2	0.641	0.636	0.638

- **Prosper Disclosure Policy Changes in 2013**
  - After 2013, prosper remove soft information on its platform

	(1)	(2)	(3)
Time Periods	Full	2011-2015	2012-2014
Dependent Variable	Prosper Fee	Prosper Fee	Prosper Fee
First Minutes	-0.024***	-0.025***	-0.023**
	[-2.746]	[-2.776]	[-2.409]
First Minutes*Policy 2013	0.045***	0.042***	0.024**
	[5.181]	[4.292]	[1.999]
Controls	YES	YES	YES
All FEs	YES	YES	YES
Observations	1,246,152	401,089	133,927
Adjusted R2	0.609	0.580	0.576

- **IV Method: Total Loan Applications [t-1]**
  - Relevance: Total Loan application submitted by borrower will increase the likelihood of being placed in the first minutes
  - Exclusion: Cannot be controlled by the platform, and there is no direct link between total loan applications and Prosper Fees
  - 2SLS Model

	(1)	(2)
Stage	1st	2nd
Dependent Variable	First Minute	Prosper Fee
Ln(Total Loan Applications)	0.015***	
	[12.182]	
Estimated First Minute		0.385***
		[3.599]
Controls & FEs	YES	YES
Observations	1,310,935	1,310,935
Adjusted R-squared	0.451	0.606
F-Stat	50.934	

Scan for the full paper

Results

- **Subgroup Analysis**
  - Small-size (Small Loan), high credit grade (High Credit), and short-term loans (Short Term) have a high probability of being funded (Herzenstein et al., 2009; Puro et al., 2010; Kollenda, 2021).

VARIABLES	(1) Prosper Fee	(2) Prosper Fee	(3) Prosper Fee
First Minutes	-0.079***	-0.099***	-0.062***
	[-34.049]	[-56.968]	[-42.687]
Small Loan	-0.191***		
	[-120.314]		
First Minutes*Small Loan	0.114***		
	[49.297]		
High Credit		-0.535***	
		[-415.139]	
First Minutes*High Credit		0.151***	
		[84.815]	
Short Term			0.787***
			[664.195]
First Minutes*Short Term			0.118***
			[72.653]
Controls	YES	YES	YES
All FEs	YES	YES	YES
Observations	1,310,935	1,310,935	1,310,935
Adjusted R-squared	0.611	0.516	0.608

- **Consequences Analysis**
  - Each loan contains unique borrower's ID
  - Next Loan: Whether same borrower requests another loan with Prosper in the future

		Next Loan	
	Total Loans	0	1
First Minutes=0	815,041	579,092	235,949
		(71.05%)	(28.95%)
First Minutes=1	495,894	380,613	115,281
		(76.75%)	(23.25%)

- **Consequences Analysis (Regression Analysis)**

Dependent Variable	(1) Next Loan	(2) Next Loan	(3) Next Loan
First Minute	-0.005***	-0.003***	-0.004***
	[-4.831]	[-3.181]	[-3.256]
Controls	NO	YES	YES
Loan Terms	YES	YES	YES
City-Year FE	YES	YES	YES
Date FE	YES	YES	NO
Date-Hour FE	NO	NO	YES
Observations	1,310,935	1,310,935	1,310,935
Adjusted R2	0.0689	0.0879	0.0879

Robustness Check

- Robust to various additional controls
  - Investment Type/ Group Indicator/ City-month fixed effects/ Member ID
- Falsification Tests
  - Creation First Minutes/ Sample before 2011
  - No Significant Results

Conclusion

- Prosper allocates more fees for loans post at the first minute
- The fees are higher for loans with
  - Short-term/ Small size / Higher Prosper score
- Borrowers are less likely to request future loans from Prosper if their loan allocated at the first minute