

# Lighthouse in the Dark: Search in Marketplace Lending

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# Background

- Over the last decade, 1.2 billion previously **unbanked** adults gained access to financial services, primarily boosted by Fintechs (WB)
- Fintech credit market: direct participation of individuals who lack knowledge/skills



- This paper: public information service by gov. (informational public goods)
  - Gradual introduction of **Private Lending Service Centres (PLcenters)** in China

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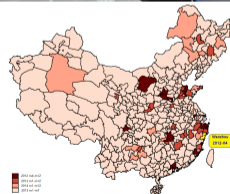


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# Private Lending Service Centres (PLcenters, 民间借贷登记服务中心)

Informational Public Goods ('Lighthouse')

- 2012 April Wenzhou first
- Gradually introduced to other 54 Chinese cities
- Initiated by gov, to monitor and guide private lending
- Gather private lending related agencies in one location
- Non-rivalrous and non-excludability
  - Free public information service centers: contract template
  - Disseminate financial knowledge: free seminars, posters, etc
  - Publish market information and promote transparency (e.g., Wenzhou Private Lending Rate Index)



This paper: its impact on ONLINE private lending market

# Research Question

What are the impact of PLcenters on online marketplace lending outcomes (lending amount, interest rate, etc)?

- Can PLcenters help borrowers get better outcomes?

**Data:** Renrendai, one of leading Peer-to-Peer (P2P) lending platforms in China

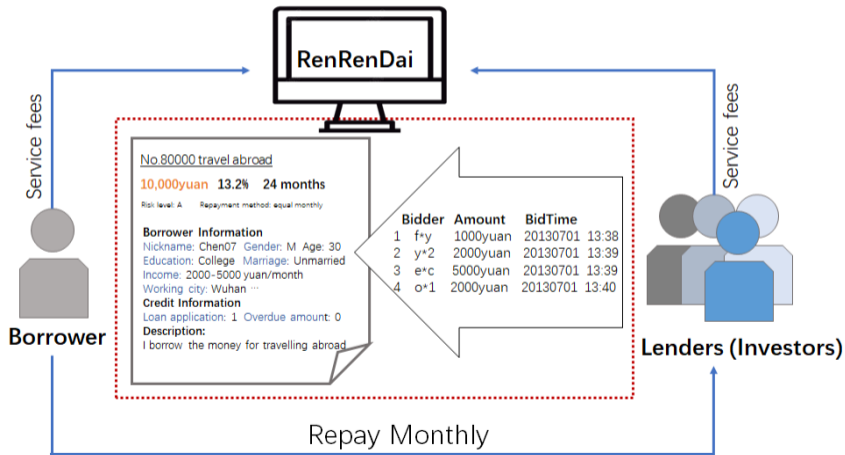
**Methodology:** Staggered Difference-In-Differences (DID)

- IV: new mayor's political motivation to introduce PLcenters

**Contribution:** (1) Fintech credit search friction; (2) Informational public goods

# Marketplace Lending

Renrendai 人人贷, online Peer to Peer Lending (P2P)



# Data

- Sample period: 2010 October to 2015 June
- 55/311 Chinese cities treated: opening dates from news/gov. announcements
- P2P data: 437,534 P2P loan request listings (散标) on Renrendai
  - Aggregate at (city, year-month) level
  - Average loan: \$8,482 , 26-month, annual 12.54%
  - Average borrower: 39yo with rating AA
  - Mainly individuals, lower educated
- City level data: China Stock Market & Accounting Research

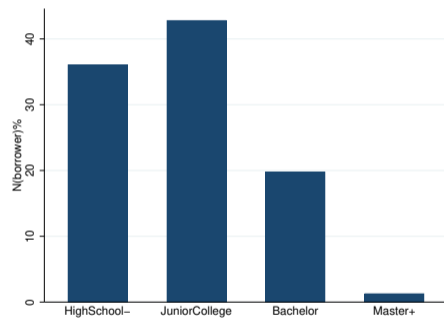


Figure: Education, borrowers

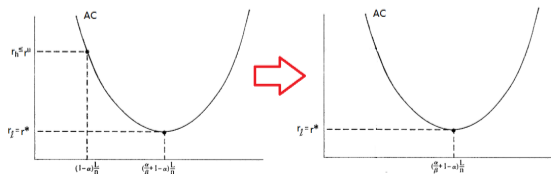


# Search Cost Framework (Salop and Stiglitz, 1977)

- A market with money as commodity. **PLcenter:  $c \downarrow$**
- Borrowers (money buyers): seek funding for an investment or consumption
  - Search cost  $c$ : e.g. lost leisure time, lost wages, the dis-utility of searching.
  - Three types:  $c \in [c_l, c_m, c_h]$ , borrowers with low, middle, and high search costs.

$$r = \begin{cases} \emptyset \text{ (Not Enter)} \xrightarrow{\text{PLcenter}} r_l \text{ (Enter and Search)}, & \text{if } c_h \\ r_l \text{ or } r_h \text{ (Enter, Not Search)} \xrightarrow{\text{PLcenter}} r_l \text{ (Enter, Search)}, & \text{if } c_m \\ r_l \text{ (Enter, Search)} \xrightarrow{\text{PLcenter}} r_l \text{ (Enter, Search)}, & \text{if } c_l \end{cases}$$

- Predictions: (1) trading/participants  $\uparrow$ ; (2)  $R \downarrow$ ; (3)  $sd(R) \downarrow$



# Empirical Analysis

## Basic Setting

$$Y_{ct} = \beta_0 + \beta_1 \text{Treat}_{ct} \times \text{Post}_{ct} + \beta_2 \text{Post}_{ct} + \beta_3 \text{Treat}_{ct} + \beta_4 X_{c,t}^c + \beta_5 X_{c,t}^b + \beta_6 X_{c,t}^l + \alpha_c + \nu_t + \epsilon_{ct},$$

where

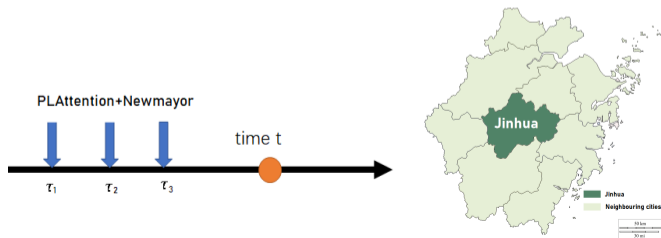
- $Y_{ct}$  is city  $c$ 's average marketplace lending outcomes (success rate, number of applications, lending amount, interest rate, dispersion of interest rates, etc) at  $t$ .
- $\text{Treat}_{ct} \times \text{Post}_{ct} = 1$  if borrower's working city  $c$  has PLcenters at  $t$ .
- $\alpha_t$  and  $\zeta_c$  are time and city fixed effects.
- $X_{c,t}^c$  is the city control variables
- $X_{c,t}^b$  is the borrower and loan characteristics
- $X_{c,t}^l$  is the lender characteristics, including average lending amount, the average number of lenders, and the proportion of auto bids

# Empirical Analysis

## Identification

- IV: new mayor' political motivation to impress the provincial government

$$NewmayorPL_{ct} = \sum_{\tau}^t \left( \underbrace{D(Newmayor)_{c\tau}}_{\text{city } c\text{'s mayor is in the first year of tenure}} \times \underbrace{D(PLAttention)_{c\tau}}_{\text{city } c\text{'s province has high private lending attention}} \right)$$



# Result 1: PLcenters boost marketplace lending

Transaction Volume  $\uparrow$  (in thousand USD)

	full			success		
	(1) Tot.A	(2) N(L)	(3) N(A)	(4) Tot.A	(5) N(L)	(6) N(A)
Treated	1711.8*** (15.73)	170.2*** (15.95)	141.1*** (15.36)	455.5*** (5.56)	56.20*** (6.43)	55.82*** (6.38)
BorrowerControls	Yes	Yes	Yes	Yes	Yes	Yes
LenderControls	Yes	Yes	Yes	Yes	Yes	Yes
CityControls	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month FE	Yes	Yes	Yes	Yes	Yes	Yes
$R^2$	0.076	0.114	0.167	0.476	0.474	0.476
Observations	13057	13057	13057	6296	6296	6296

where *BorrowerControls* is the average borrower characteristics including degree, marriage status, income, gender, working industry, credit score, and age. *Tot.A* is total loan amount. *N(L)* is the number of loans. *N(A)* is the number of applicants.

## Result 2: PLcenters help borrowers get better outcomes

$R \downarrow$ ,  $SuccessRate \uparrow$

	full				success		
	(1) R	(2) Maturity	(3) Avg.A	(4) SuccR	(5) R	(6) Maturity	(7) Avg.A
Treated	-0.833* (-1.91)	2.100** (2.54)	0.490 (0.36)	0.0572*** (2.62)	-1.520*** (-2.79)	1.975 (1.29)	0.0154 (0.02)
BorrowerControls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LenderControls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CityControls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$R^2$	0.066	0.177	0.179	0.627	0.094	0.406	0.706
Observations	13057	13057	13057	13057	6296	6296	6296

where *BorrowerControls* is the average borrower characteristics including degree, marriage status, income, gender, working industry, credit score, and age.

## Result 3: PLcenters reduce dispersion of interest rates

$sd(R) \downarrow$

Less financially sophisticated mainly drive the effects

**Table:** The Effect of PLcenters on Dispersion of Interest Rates

	full	full,/finlaw	full,finlaw	success	success,/finlaw	success,finlaw
	(1)	(2)	(3)	(4)	(5)	(6)
	sd(R)	sd(R)	sd(R)	sd(R)	sd(R)	sd(R)
Treated	-0.974*** (-3.27)	-0.975*** (-3.27)	-1.118 (-1.34)	-0.711* (-1.72)	-0.786* (-1.71)	0.255 (0.13)
BorrowerControls	Yes	Yes	Yes	Yes	Yes	Yes
LenderControls	Yes	Yes	Yes	Yes	Yes	Yes
CityControls	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month FE	Yes	Yes	Yes	Yes	Yes	Yes
$R^2$	0.040	0.043	0.045	0.079	0.076	0.441
Observations	11971	11885	2261	3829	3711	411

where *BorrowerControls* is the average borrower characteristics including degree, marriage status, income, gender, working industry, credit score, and age.

# Result 3: PLcenters reduce dispersion of interest rate

Less extremely low proposals

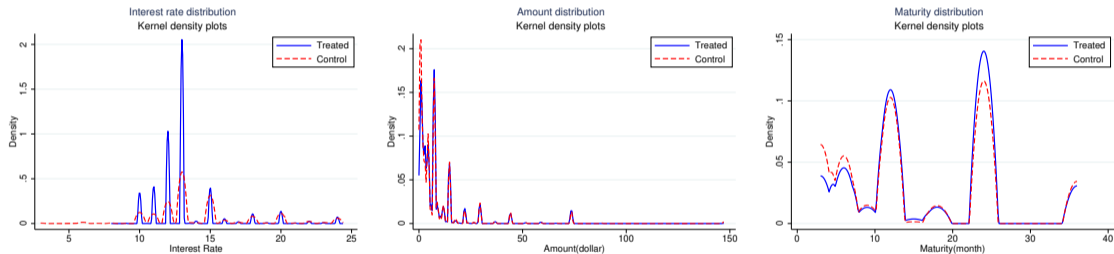


Figure: Distribution of contract terms

# Takeaways

- PLcenters boost the marketplace lending.
- PLcenters help borrowers understand the market better, lower their search costs and help them get better outcomes ( $R \downarrow$ ,  $SuccessRate \uparrow$ ).
- PLcenters move the market closer to efficiency.
- Implication: government's provision of public information service as public goods to reduce search frictions in Fintech credit market.

Thanks!



# Appendix

## First Stage

Table: First Stage, 2SLS

	full	success
	(1)	(2)
	Treated	Treated
NewMayorPL	0.0497*** (26.20)	0.0553*** (16.49)
BorrowerControls	Yes	Yes
LenderControls	Yes	Yes
CityControls	Yes	Yes
City FE	Yes	Yes
Year-Month FE	Yes	Yes
$R^2$	0.475	0.598
Observations	13057	6296

where *BorrowerControls* is the average borrower characteristics including degree, marriage status, income, gender, working industry, credit score, and age .

Table: Exclusion

	full
	(1)
	D(Newmayor)
L12.GDP	0.00000590 (0.33)
population	0.000234 (0.45)
area	-0.00000748** (-2.45)
Constant	0.353 (1.47)
City FE	Yes
Year-Month FE	Yes
Observations	9900
$R^2$	0.191

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# Appendix

Table: Exclusion, Placebo Test

	full	success
	(1)	(2)
	R	R
IV	-0.0308 (-0.24)	0.0264 (0.13)
govexpend	0.000780 (0.43)	0.000450 (0.22)
bookper100	0.000600 (0.67)	0.000812 (0.96)
LoanType(1=Consump.)	-0.0256 (-0.41)	-0.120 (-1.26)
haveloan	-1.034*** (-3.96)	0.00735 (0.02)
Maturity	-0.0635*** (-5.29)	0.0516*** (2.35)
Amount	0.0194 (1.08)	0.0213 (0.50)
Constant	8.786*** (7.13)	15.66*** (3.93)
BorrowerControl	Yes	Yes
LenderControl	Yes	Yes
City FE	Yes	Yes
Year-Month FE	Yes	Yes
Observations	3154	870
R <sup>2</sup>	0.444	0.466

The sample is restricted to the period without any PLcenter.