Winners and Losers of Marketplace Lending (MPL): Evidence from Borrower Credit Dynamics

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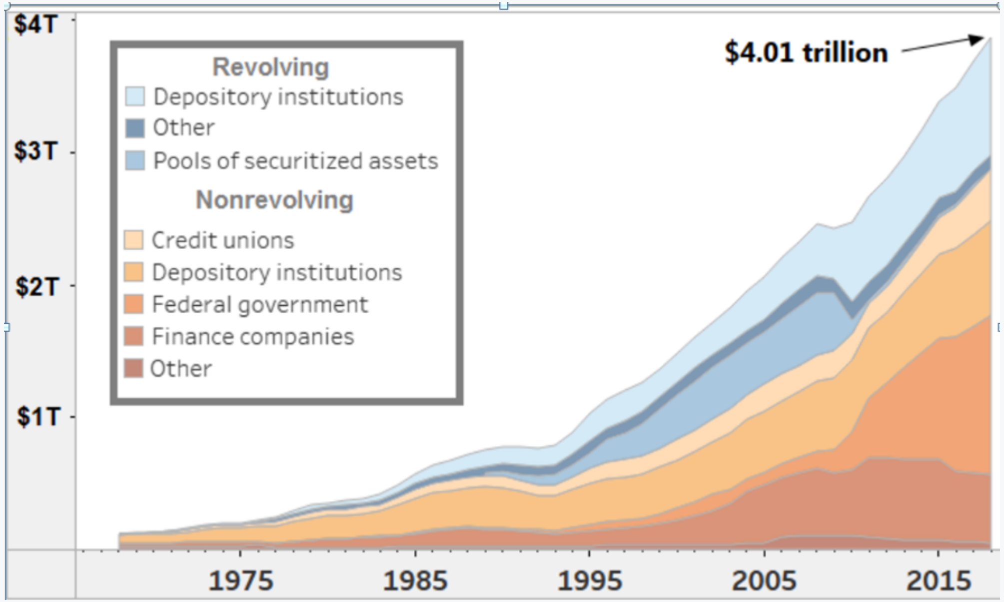
AGENDA

PART I：Introduction

BACKGROUND

Two important functions performed by banks: information processing and monitoring of borrowers

Consumer lending accounts for a significant share of bank balance sheets in the US, totaling around $4.01 trillion dollars (2018)



Federal Reserve, consumer debt outstanding, as of Dec. 2019

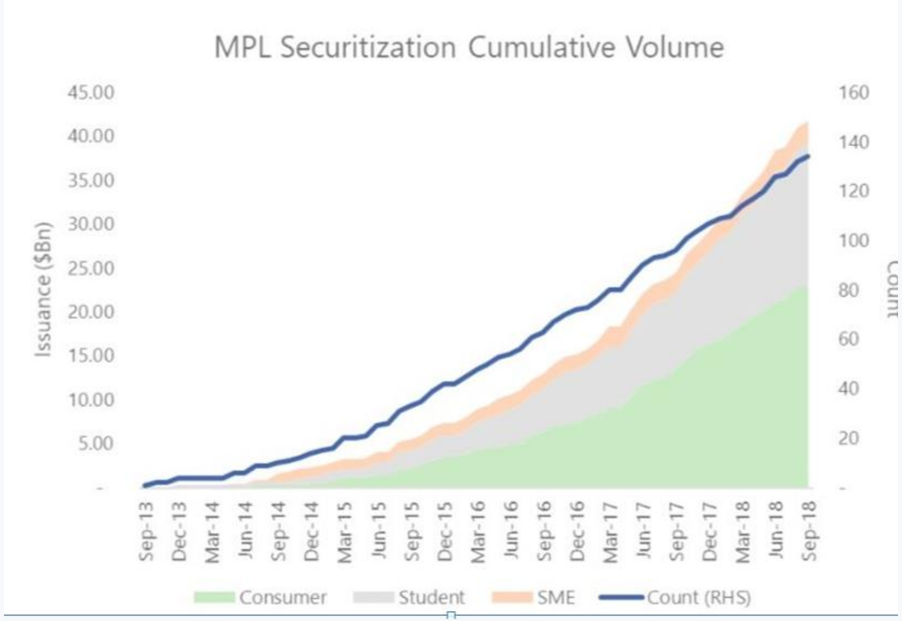
MAIN IDEA

However…

The credit market is still rife with several inefficiencies, and there are potentially profitable entry opportunities for MPL platforms

These platforms are trying to…

Directly match borrowers and lenders through alternative screening and monitoring; engage in alternative interest rate pricing schemes through the use of alternative data and techniques



MAIN IDEA

We are interested to know…

Who benefits from borrowing on MPL platforms!

- Is there misreporting on loan applications regarding the stated aim of debt consolidation?
- Does MPL borrowing impacts credit scores or credit availability?
- Immediate V.S. long-term benefits/costs generated by MPL platforms on their borrowers?

PART II： Empirical Methodology

PREPARATIONS

Characteristics of individuals who borrow on peer-financed lending platforms:

1 million borrowers on MPL platforms in the month immediate prior to peer-financed loan origination

compared to

nationally representative 5% random sample of the U.S. population

More financially constrained

More credit cards

Higher average credit debt

Higher credit utilization ratio

Lower credit scores

PREPARATIONS

- Proxy variable for credit score: Vantage 3.0

	MPL Platform Borrowers	National Average	Homeowners Average
	(I)	(II)	(III)
Panel A: Credit Characteristics			
# Open Trades	10.49	4.68	7.58
# Auto Trades	1.02	0.66	0.84
# Mortgage Trades	0.86	0.79	1.07
# Student Loan Trades	2.23	1.66	1.49
# Credit Card Trades	3.84	1.97	2.74
Vantage Score	656.44	675.47	733.84
Total Balance	$232,463	$208,195	$310,142
Auto Balance	$20,659	$17,038	$20,648
Mortgage Balance	$189,597	$186,237	$274,244
Student Loan Balance	$24,425	$19,122	$20,210
Credit Card Balance	$9,821	$4,197	$5,994
Credit Card Utilization	69.42%	30.89%	28.55%
Panel B: Income Characteristics			
Monthly Income	$3,602	$3,437	$5,232
Debt-to-Income	41.03%	27.82%	45.39%

REGRESSION MODEL

$$ln(Y_{i,t}) = \sum_{\tau \neq -1} \beta_\tau Quarter_{i,\tau} + \gamma \mathbf{X}_{i,t} + \alpha_i + \delta_{yq} + \epsilon_{i,t}$$

αi represents a vector of individual fixed effects;

δyq represents a vector of year-quarter fixed effects;

Xi,t represents a vector of individual-level time-varying controls;

β represents percentage differences (differences from the quarter prior to MPL loan origination)

Yi,t represents balances along four broad trade lines (auto, mortgage, student debt, and credit card); credit utilization ratios, credit limits, probabilities of default, and credit scores

More details will be discussed in 'robustness check' section later

PART III： Results and Robustness Checks

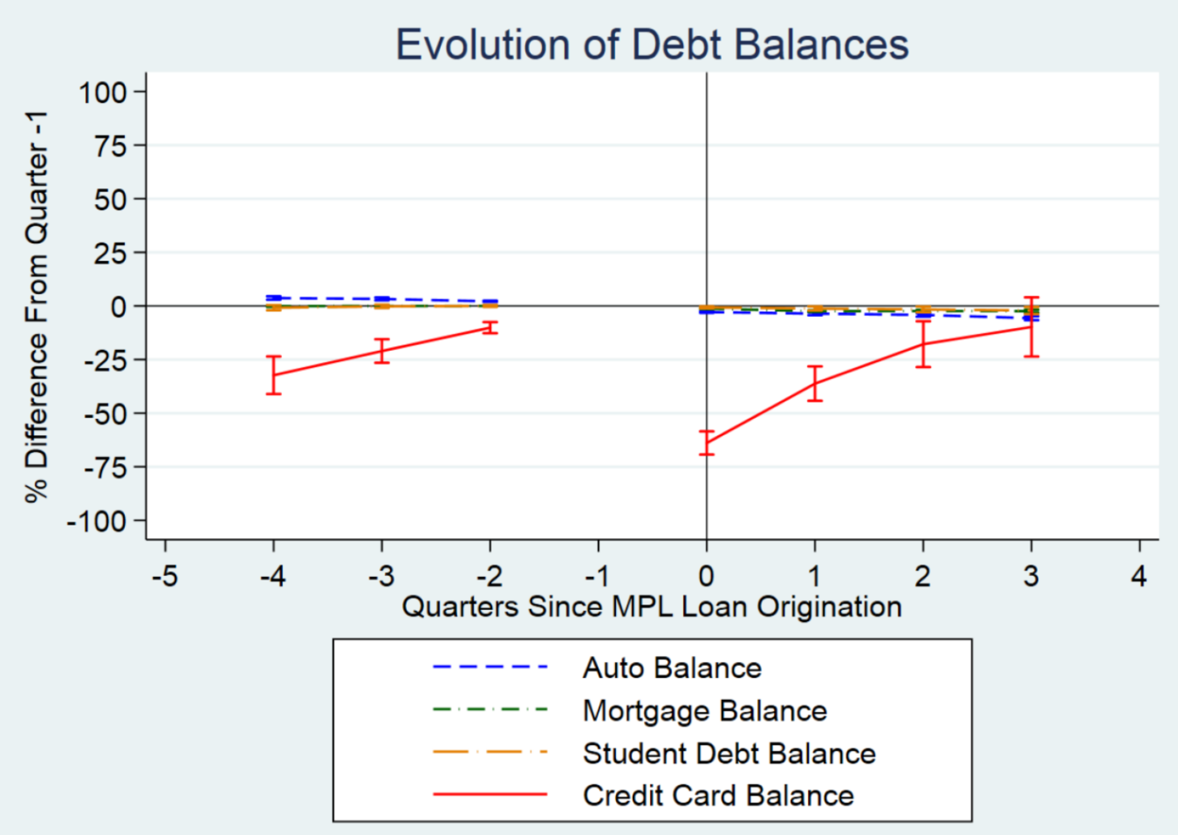
MAIN RESULTS

- A steady decline in xx balances
- MPL borrowers tend to rack up credit card debt prior to loan origination. In the quarter of loan origination, credit card balances are much lower
- In subsequent quarters, these borrowers begin re-accumulating additional credit card debt (similar changes in credit score)

	Auto Balance	Mortgage Balance	Student Debt Balance	Credit Card Balance
	(I)	(II)	(III)	(IV)
Pre-MPL Loan Origination Trends				
$Quarter_{-4}$	3.72***	-0.03	-0.82	-32.30***
	(0.41)	(0.21)	(0.62)	(4.47)
$Quarter_{-3}$	3.29***	-0.004	-0.17	-21.00***
	(0.33)	(0.14)	(0.40)	(2.80)
$Quarter_{-2}$	2.18***	0.01	0.04	-10.10***
	(0.16)	(0.08)	(0.24)	(1.32)
Post-MPL Loan Origination Trends				
$Quarter_{0}$	-2.83***	-1.21***	-0.65***	-63.90***
	(0.20)	(0.11)	(0.24)	(2.76)
$Quarter_{+1}$	-3.55***	-2.42***	-1.19**	-36.20***
	(0.38)	(0.18)	(0.49)	(4.10)
$Quarter_{+2}$	-4.16***	-2.36***	-1.60**	-17.80***
	(0.42)	(0.27)	(0.68)	(5.45)
$Quarter_{+3}$	-5.68***	-2.40***	-2.13**	-9.77
	(0.47)	(0.33)	(0.85)	(7.04)
Observations	5,753,781	3,529,229	3,218,142	10,499,164
Adjusted R^2	0.82	0.96	0.98	0.59
Controls	✓	✓	✓	✓
Fixed Effects	*I, Y-Q*	*I, Y-Q*	*I, Y-Q*	*I, Y-Q*

MAIN RESULTS

- Borrowers utilize peer-financed funds in a manner consistent with the vast majority of stated reasons on MPL platform loan applications



IMPACTS ON CREDIT PROFILE

- $Utilization = \frac{Credit\ Balance}{Credit\ Limit}$
- As indebted as before: are credit limits also affected? Yes
- Are extension decisions made prior to observing the subsequent upturn in credit accumulation? Yes

	Credit Card Utilization	Credit Card Limit Growth	Credit Card Default Rates	Credit Score (Vantage 3.0)
	(I)	(II)	(III)	(IV)
Pre-MPL Loan Origination Trends				
$Quarter_{-4}$	-2.79***	0.00	0.51***	-0.23
	(0.67)	(0.57)	(0.10)	(0.29)
$Quarter_{-3}$	-1.94***	0.08	0.34***	-0.21
	(0.43)	(0.42)	(0.09)	(0.20)
$Quarter_{-2}$	-1.02***	0.06	0.18***	-0.16
	(0.21)	(0.22)	(0.05)	(0.10)
Post-MPL Loan Origination Trends				
$Quarter_{0}$	-12.00***	0.59**	-0.02	2.89***
	(0.42)	(0.28)	(0.04)	(0.13)
$Quarter_{+1}$	-9.02***	0.83*	0.29***	1.50***
	(0.62)	(0.47)	(0.07)	(0.23)
$Quarter_{+2}$	-5.87***	0.02	0.84***	0.48*
	(0.79)	(0.69)	(0.12)	(0.29)
$Quarter_{+3}$	-4.18***	-0.26	1.47***	-0.20
	(1.04)	(0.89)	(0.18)	(0.39)
Observations	11,146,916	9,986,676	10,128,710	11,147,416
Adjusted R^2	0.60	0.01	0.15	0.67
Controls	✓	✓	✓	✓
Fixed Effects	$I, Y\text{-}Q$	$I, Y\text{-}Q$	$I, Y\text{-}Q$	$I, Y\text{-}Q$

IDEAS ON MODEL CHECKS

- What if the origination of MPL loans affect the job profiles of borrowers, thus increasing the occurrences of credit card defaults? Use dummy dependent variable

	$\mathbb{P}$(Income Change)	$\mathbb{P}$(Job Change)
	(I)	(II)
Pre-MPL Loan Origination Trends		
$Quarter_{-4}$	-0.02	1.63*
	(0.14)	(0.86)
$Quarter_{-3}$	0.17	0.28
	(0.11)	(0.32)
$Quarter_{-2}$	0.06	0.16
	(0.06)	(0.16)
Post-MPL Loan Origination Trends		
$Quarter_{0}$	-0.15**	-0.52**
	(0.07)	(0.20)
$Quarter_{+1}$	-0.15	-0.55
	(0.12)	(0.39)
$Quarter_{+2}$	-0.20	-0.62
	(0.16)	(0.54)
$Quarter_{+3}$	-0.27	-0.70
	(0.21)	(0.69)
Observations	16,174,176	16,174,176
Adjusted R^2	0.01	0.01
Controls	✓	✓
Fixed Effects	*I, Y-Q*	*I, Y-Q*

IDEAS ON MODEL CHECKS, CONT'D

- Region-specific factors: replace δyq with (5-digit) ZIP-code* δyq
- Region- and individual-specific factors: cohorts of MPL borrowers are matched to their geographically and socioeconomically proximate non-MPL borrowing neighbors.
- Fixed effects cross-sectional regression specification:

$$\overline{ln\left(\frac{Y_{i,t}}{Y_{i,t-1}}\right)} = MPL\_Borrower_i + \gamma\overline{\mathbf{X}}_{i,t} + \alpha_c + \epsilon_{i,t}$$

- Other related topics: cross-sectional heterogenity

CONCLUSION

- Incidences of misreporting appear to be rare
- These loans fail to change the fundamental behavior of the relatively undisciplined and financially troubled borrowers
- The temporary financial relief is incorrectly interpreted by some traditional lenders who extend new credit to these borrowers, who consume it and are thus more indebted on aggregate post-origination. The increased overall indebtedness results in MPL borrowers having higher probabilities of default in the months following MPL loan inception.
- Subprime borrowers, who account for nearly 1 in 4 people borrowing on such platforms, are most negatively affected.

PART 4：Personal View

PERSONAL VIEW

- As for empirical approaches: logically consistent
- On the other hand, the findings are heavily dependent on data samples and approaches
- Balyuk, Tetyana, Financial Innovation and Borrowers: Evidence from Peer-to-Peer Lending (May 6, 2019). Rotman School of Management Working Paper No. 2802220
- Borrowers who do not reduce their credit utilization still enjoy higher credit limits from banks after P2P loan take-up. Borrowers with the lowest FICO scores receive larger increases in credit limits, but these borrowers do not lower their utilization ratios as much as borrowers with higher FICO scores
- Data on bank screening algorithms could clarify which of these is the first-order mechanism, but such data are not widely available

PERSONAL VIEW

- Dore, Timothy and Mach, Traci, Marketplace Lending and Consumer Credit Outcomes: Evidence from Prosper (2019-04-02). FEDS Working Paper No. 2019-022.
- In 2005, Prosper launched the first peer-to-peer lending website in the US
- Post application, borrowers' credit scores increase and their credit card utilization rates fall relative to non-borrowers in the short run. In the longer run, total debt levels for borrowers are higher that of non-borrowers. Differences in mortgage debt are particularly large and increasing over time. Despite increased debt levels relative to non-borrowers, delinquency rates for borrowers are significantly lower.
- Data sampling
- Regulation

Thank you!