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Marketplace Lending and Consumer Credit Outcomes: Evidence from Prosper

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Abstract

In 2005, Prosper launched the first peer-to-peer lending website in the US, allowing for consumers to apply for and receive loans entirely online. To understand the effect of this new credit source, we match application-level data from Prosper to credit bureau data. 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 than those 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.

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How do new sources of consumer credit affect individuals? On the one hand, increased credit supply could have significant benefits through at least two channels. First, new providers of credit can decrease market interest rates in the case of imperfect competition.[1] Second, they can extend credit to individuals who could not previously borrow at any interest rate, allowing these individuals to smooth consumption in response to negative income shocks. On the other hand, extensive research has documented that most individuals are financially unsophisticated.[2] As a result, increased credit supply can encourage individuals to make sub-optimal borrowing decisions and to borrow excessively to increase short term consumption at the expense of the long term.[3]

We study the effects of a new form of lending, marketplace lending, on consumer credit outcomes. Marketplace lending, also known as peer-to-peer lending, is a relatively new form of disintermediated lending where borrowers are matched with lenders, who can be either institutional or retail investors, through an online platform. Individuals seeking a loan submit an application to the platform, the platform scores and prices the loan, and lenders decide whether or not to invest in the loan. Conditional on sufficient funding, the loan is originated.

Marketplace lending has several innovative features, such as a reduction in screening costs through disintermediation for lenders and a reduction in search costs through an online application process for borrowers, which have important implications for the supply of and demand for unsecured consumer credit. In particular, marketplace lending allows investors who

[1] See Ausubel (1991) and Grodzicki (2017) for evidence on the level of competition in the credit card market.
[2] For an overview on financial literacy, see Lusardi and Mitchell (2014).
[3] For example, Cespedes (2017) finds that unsophisticated borrowers on Lending Club do not optimally choose loan amounts to minimize borrowing costs. See also Laibson (1997), Moore (2003), Lusardi and Mitchell (2007), Campbell (2006), Stango and Zinman (2009), and Agarwal et al. (2015).

want to invest in unsecured consumer credit to do so directly rather than through asset based securities (ABS) markets. As Morse (2015) argues, removing this layer of intermediation and its associated fees can increase investor returns and decrease interest rates charged to borrowers. Given that intermediation fees can be quite significant – Philippon (2014) estimates them to be on the order of 1.5-2 percent – marketplace lending has the potential to dramatically increase the amount of credit available to consumers.

To analyze the effects of this increased availability of credit to consumers, we use data from Prosper, a leading online marketplace in the US. Because Prosper provides extensive credit data on applicants who borrow through the platform as well as applicants who do not, we are able to match applicants to the Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data (CCP), which provides longitudinal credit bureau data for random subsample of the U.S. population. We are able to match approximately 6.6 percent of Prosper applications between 2013 and 2016 to the CCP. Applicants that we match to the CCP are quite similar in most respects to applicants that we cannot match. We then track credit outcomes such as credit scores and debt levels for up to three years after the individual's application for a Prosper loan.

In the short run, we find that borrowers reduce credit card use, as credit card utilization rates and debt levels fall relative to non-borrowers. In the quarter after the Prosper loan application, borrowers' utilization rates have fallen by approximately 12 percentage points relative to non-borrowers, 44 percent compared to 56 percent. Similarly, credit card debt levels are approximately 26 percent lower for borrowers. The reduction in credit card use helps increase the credit scores of borrowers in comparison to non-borrowers. One quarter after the

application to Prosper, the credit scores of borrowers have increased by approximately 13 points relative to non-borrowers.

Credit card use and credit scores of borrowers converge to those of non-borrowers, but debt levels diverge. Growth in total debt is significantly faster for borrowers than for non-borrowers over the three years following the loan application. As a result, twelve quarters later, borrowers have approximately 13 percent more debt than non-borrowers.

We then decompose debt into non-mortgage debt and mortgage debt. Non-mortgage debt jumps immediately due to the Prosper loan; in the quarter of the loan application, non-mortgage debt for borrowers is 35 percent higher than that of non-borrowers. However, as borrowers pay off their loan, non-mortgage debt converges for the two. Twelve quarters after the loan application, borrowers have approximately 10 percent more non-mortgage debt than non-borrowers.

Mortgage debt follows the opposite pattern. Initially, borrowers take out slightly more mortgage debt than non-borrowers; in the quarter of application, borrowers have approximately 3 percent more mortgage debt. Over time, this difference grows and, twelve quarters later, borrowers have approximately 23 percent more mortgage debt.

The higher level of mortgage debt is due to borrowers having more mortgage debt among existing homeowners and a higher propensity to have any mortgage debt among applicants who did not own a home at the time of loan application. For applicants that report owning a home on their Prosper application, borrowers have approximately 11 percent more mortgage debt than non-borrowers twelve quarters later. Meanwhile, for applicants that report not owning a home on their application, borrowers are 7 percentage points, or 37 percent,

more likely to report having any mortgage debt twelve quarters after application. Conditional on having mortgage debt, among those applicants that report not owning a home on their application, borrowers have approximately 26 percent more mortgage debt twelve quarters after loan application. Thus, it appears that borrowers exploit the increase in credit scores – arising in part from a decline in credit card debt – to take out new, larger mortgages in the case of existing homeowners and to buy a home for non-homeowners.

Despite their increased debt levels relative to non-borrowers, delinquency rates for borrowers are significantly lower following the Prosper loan application. For example, four quarters after the application, borrower delinquency rates are 1.1 percentage points, or 11 percent, lower than non-borrower delinquency rates, while twelve quarters later, their delinquency rates are approximately 1.8 percentage points, or 14 percent, lower.

Taken together, our results suggest that marketplace borrowers do not experience a dramatic increase in debt levels or significantly higher delinquency rates after taking out a loan. While debt levels do rise relative to non-borrowers, delinquency rates remain significantly lower. However, this increase in debt, particularly mortgage debt, does expose borrowers from marketplace lenders to significant risk in the event of economic downturns.

The most closely related papers to ours are Balyuk (2017), who also uses Prosper data to study the credit outcomes of Prosper borrowers, and Chava and Paradkar (2018). Balyuk (2017) finds borrowing from Prosper increases subsequent revolving credit limits and utilization rates, increases mortgage borrowing, and has no significant effect on delinquency rates. However, while we match Prosper applicants to CCP data, she uses only Prosper data to track credit outcomes. Thus, her sample is restricted to individuals who apply to Prosper multiple times so

that she can observe credit data after the initial application. This approach raises concerns about sample selection, as the credit outcomes of individuals who apply to Prosper multiple times are likely very different from individuals who only apply once both because credit needs will differ across populations and because underwriting requirements will prohibit individuals with impaired credit from applying again.[4] Because we follow individuals in the CCP, our sample is not subject to this issue.

Chava and Paradkar (2018) use credit bureau data to compare the credit outcomes of borrowers from an unnamed online marketplace lender to the outcomes of a matched sample of non-borrowers. Specifically, borrowers are matched to individuals in the same zip code who have a recent hard credit check and who have a similar credit card usage and credit scores in the months preceding the marketplace loan origination. Similar to our findings, they find that, in the short run, borrowers experience a decline in credit card utilization, an increase in credit scores, and an increase in debt. However, in contrast to our findings, they find that, in the long run, borrowers experience a significant increase in credit card debt, a significant decline in mortgage debt and a significant increase in default rates, specifically default rates on credit card accounts.

There are two major differences between our study and Chava and Paradkar (2018). First, roughly one-quarter of the population examined by Chava and Paradkar have subprime credit scores while our study contains only individuals with credit scores above 640 due to the underwriting criteria imposed by Prosper. Second, the references groups are not the same; in

[4] In our sample, the credit scores of individuals with one application decline by 14 points from the quarter before the Prosper application to four quarters after the application on average. For individuals with two or more applications, credit scores decline an average of 2 points over the same time frame.

our case, borrowers are compared to other individuals who applied for a marketplace loan but did not take one out and, in Chava and Paradkar (2018), it is individuals with similar credit profiles who had a recent bank-initiated hard credit check but may not have applied specifically for a marketplace loan.

The difference in the credit profiles of borrowers across our samples partially accounts for the differences in results. For instance, the increase in defaults in Chava and Paradkar (2018) is driven entirely by the subprime population, while there is no difference in default rates for their prime and superprime populations.

However, given that we find that borrowers have stronger credit performance than non-borrowers, the difference in credit profiles does not entirely explain the difference in results, suggesting that the difference in control groups is also important. Furthermore, we believe that our sample provides a more accurate control group, as the decision to apply for a marketplace loan specifically appears to be a powerful signal about expected credit outcomes. The importance of the choice of control group is most apparent in delinquency rates. In our sample, as shown in Figure 1, both borrowers and non-borrowers have large declines in delinquency rates in the quarters preceding the loan application but, in the quarters after application, delinquency rates for both populations increase dramatically, suggesting that individuals apply for a marketplace loan in anticipation of difficulty repaying their debts.

More broadly, our paper contributes to the literature on the expansion of consumer credit on consumer outcomes. The most studied part of this market is that of payday lenders. This literature shows mixed evidence; for instance, with papers such as Morse (2011) finding increased credit supply improves individual outcomes while Melzer (2011) find adverse

consequences of payday lenders.[5] The main differences between these papers and ours are characteristics of the user base for the two products and the characteristics of the products themselves. Individuals who borrow from payday lenders tend to be low income with little to no savings and poor credit histories while individuals who borrow from marketplace lenders tend to have relatively high credit scores, often have significant assets, and strong credit histories due to underwriting requirements. Due in part to the difference in credit-worthiness, the terms of payday loans are significantly different than the terms of marketplace loans; whereas Prosper offers loans of up to $35,000 for either three or five years in duration at interest rates of at most 36%, payday loans are typically small, short-duration, and very costly.[6]

1. Marketplace Lending Background

Marketplace lending—formerly called peer-to-peer lending—generally refers to platforms that bring together potential borrowers and lenders to facilitate the provision of loans. There is no formal definition of marketplace lending, but it can be broadly characterized as a non-bank entity that uses technology to simplify the loan process—including the application, decision process, funds distribution, and loan repayment—and operates as a two-sided market of consumers and investors. Along with interest, the borrower is typically charged a fee to originate the loan and investors pay for servicing the loans. In general, marketplace lenders offer uncollateralized low-dollar loans, with rapid decision times. The loans are

[5] Bhutta (2014), Carell and Zinman (2014), and Bhutta, Skiba, and Tobacman (2015) also study the effects of payday lending on consumers.

[6] For instance, Stegman (2007) reports that 80 percent of payday loans are for less than $300, with fees typically being $15 to $30 per $100 borrowed. Loans are repaid on the next payday, so loan duration is typically one to two weeks.

typically funded and repaid via electronic transfers, with the lender and borrower never meeting.

Marketplace lending has grown rapidly since inception in the early-2000s. Wardrop et al. (2016) estimates that marketplace business and consumer lending in North America increased from just more than $3 billion in 2013 to more than $28 billion in 2015. In the United States, Orchard Platform (2017) estimates that unsecured consumer marketplace lending went from negligible in 2011 to $46 billion by the end of 2017, growing by $12.3 billion (36.5%) in 2017 alone. Putting this in context, total consumer credit outstanding grew from $3.6 trillion in 2016 to $3.8 trillion by the end of 2017 (Federal Reserve Board, G19 series). This indicates that marketplace lending is still only a small fraction of total consumer lending, however, it is growing much more rapidly. To date, very little information is available on how taking out a marketplace loan impacts consumer well-being.

1.1. How it works: An application on the Prosper platform

A borrower files an application using Prosper's marketplace. The applicant provides basic information on his or her characteristics and financials and specifies how much money is being sought and how the proceeds from the loan will be used. Potential borrowers can apply for a three or five year loan of $2,000 to $35,000. Prosper verifies the borrower's identity, history, and credit information provided in the application. If approved, a Prosper Loan Grade credit grade and interest rate are assigned to the borrower. Approved loan requests are placed in the marketplace to attract investor commitments. During this period, Prosper is also performing additional verification checks on the borrower. However, eligibility for a loan does not guarantee that the loan will be funded; this occurs only after investors have committed at

least 70 percent of the amount requested. In practice, more than 98 percent of loan requests between 2013 and 2016 received full funding. However, only 74 percent of loan requests during these years resulted in completed loans as the applicant may deem the terms unacceptable or have secured financing elsewhere.

Individual investors see approved loan requests, known as listings, on the Prosper platform and decide which loans they would like to fund. For a given loan, investors pledge to fund portions of the loan—in increments of $25—until a sufficient amount of capital has been committed. Once a loan is funded by investors, WebBank originates and issues the loan to the borrower, net of an origination fee. Two business days after the loan is issued, Prosper uses the proceeds from the investors to buy the loan back from WebBank.

During the repayment period, Prosper manages and services loans from borrowers, remitting principal and interest payments, net of management and servicing fees, to the investors. Delinquent borrowers are subserviced out to debt collection agencies.

Borrowers are charged an origination fee of 1 to 5 percent of the loan amount depending on the loan grade assigned to the borrower. This fee is deducted from the loan proceeds and there is no fee if the loan application is not successful. The interest rate is set according to the loan grade as well. As of March 21, 2018, rates range from 5.99 percent for the most highly-rated applicants to 35.99 percent for the least highly-rated applicants.

The loans are repaid monthly. If the borrower chooses to pay via check, there is a check processing fee of up to $5 each month for all loans originated after August 1, 2017. If the borrower pays via direct debit from their bank account, there are no processing fees. In

addition, there is up to a $15 fee for unsuccessful ACH withdrawals and up to a $15 late payment fee for payments more than 15 days delinquent.

Investors pay a servicing fee of 1 percent of payments received on time. Investors receive principal and interest payments net of the servicing fee. If the borrower misses a payment, the servicing fee is not assessed.

2. Data and Empirical Framework

We use two sources of data. The first source is the marketplace lender Prosper and includes all applications that were listed on the marketplace between 2013 and 2016.[7] The data contain information on the loan application and the applicant. Data on the loan include the amount requested, the term of the loan, the proposed use of proceeds, Prosper's rating (AA, A, B, etc.), the borrower interest rate, the borrower APR, the estimated loss rate, and the estimated investor yield. Data on the applicant include FICO score (less than 600, 600-619, 620-639, etc.), self-reported monthly income, debt-to-income ratio, employment status, home ownership status, and location. The data also include individual-level credit bureau data from Experian that is pulled at the time of the application.

There are 819,839 applications in our initial sample. However, in many cases, an applicant submitted two applications in relatively quick succession. Examination of these applications suggest that they are duplicates, where the applicant posted an application,

[7] According to Prosper's 10-K filing for 2016, for an application to be listed on the marketplace, the applicant must have a FICO score of 640 or above, a debt-to-income ratio below 50 percent, a stated income of greater than $0, no bankruptcies filed in the previous 12 months, fewer than five credit bureau inquiries in the previous six months, and a minimum of three open trades listed on their credit report. These minimum criteria have varied slightly over time. Repeat borrowers are subject to slightly different requirements.

cancelled the listing, and then submitted another application with a small change. In these cases, we drop the initial application from our sample; specifically, we drop any application if the applicant submits an application within the two weeks of a cancellation of a previous listing. As a result, we drop 57,398 applications, leaving a sample of 762,441 applications.

Our second data source is the FRBNY Consumer Credit Panel/Equifax Data (CCP), which provides longitudinal credit bureau data at a quarterly frequency for a sample of the U.S. population. The primary sample of the panel is created by drawing a 5 percent random sample of the national population with a credit record and a valid Social Security number (SSN). In addition, individuals living in the same household as the sampled respondent who have a credit record and valid SSN are included in the panel for those quarters. The CCP includes individual-level data from Equifax on credit scores, debt holdings, payment history, and some limited demographic data. Debt holdings are disaggregated by type, specifically mortgages, home equity lines of credit, auto loans, credit card debt, student debt, and other types of loans.[8]

2.1. Matching Procedure and Results

Because there is not a consistent identification key across the two data sources, we must match observations on observable characteristics common to both data sources. While both data sources have significant amounts of credit data on applicants, there are two primary challenges in matching the data. First, while the Prosper data contains credit bureau data from Experian, the CCP is drawn from Equifax data. As a result, in cases where Experian or Equifax data are incomplete, some of the credit data from the two sources will not match. In addition, credit sources will vary as they are based on different algorithms. Second, and likely more

[8] For additional information on the CCP, see Lee and van der Klaauw (2010).

importantly, the date on which credit bureau data are drawn will vary across the two sources. In the case of Prosper, the credit report will be pulled when the application is completed. In the case of the CCP, the credit report is pulled at the end of the quarter (Lee and van der Klaauw (2010)). Thus, data such as account balances and payments may vary significantly across the two data sources for a given individual.

These concerns inform our matching procedure in that we base our matching algorithm on variables that are unlikely to be missing from either credit reports and on variables that are either stable or predictable. Specifically, the key variables on which we match are the county of residence of the individual, whether or not the credit report shows a previous bankruptcy, whether or not the credit report shows any public records, whether or not the credit report shows any mortgage debt, the balance remaining on the mortgage debt, the monthly mortgage payment, the sum of original loan amounts on all existing installment loans, the total credit limit of all revolving accounts, whether or not they have any auto debt, the age of the oldest account on the credit report, the age of the newest account on the credit report, the age of the oldest installment account on the credit report, the age of the newest installment account on the credit report, and the total debt outstanding.

We do not require that all of these items match across the Prosper data and the CCP data; due to the concerns discussed above, it is unlikely that all of the items will match exactly for the same individual. However, we do require that county of residence, whether or not the credit report shows a previous bankruptcy, whether or not the credit report shows any public records matches, and the monthly real estate payment matches exactly between the Prosper data and CCP data. Furthermore, the outstanding real estate balance as listed in the Prosper

data must be no greater than the previous quarter's outstanding balance and no less than the following quarter's outstanding balance.

Among this universe of potential matches, we identify matches as cases where (1) the total credit limit of all revolving accounts and the sum of original loan amounts on all existing installment loans are both nonzero and match, or (2) the age of the newest account on the credit report and the age of the old account both match and the monthly real estate payment is nonzero, or (3) the total credit limit of all revolving accounts matches and the monthly real estate payment is nonzero, or (4) the Prosper applicant has multiple applications and matches to the same individual in the CCP across all of the applications.

This procedure results in a handful of matches to multiple individuals in the CCP. These multiple matches are overwhelmingly members of the same household, so we manually choose the best match on the basis of how closely the other matching variables align.

We match 49,695 applications to the CCP, or approximately 6.5 percent of the 762,441 applications in our sample. This match rate may seem high given that the CCP is based on a 5 percent random sample of the national population with a credit report and SSN. However, the CCP includes all individuals in the same household as the individual in the primary sample for a given quarter. As a result, the CCP sample covers significantly more individuals than 5 percent of the potential sample. For example, in the fourth quarter of 2016, individuals in the primary sample represented only approximately 29 percent of the entire CCP sample. Alternatively, if we apply the same matching algorithm to only the primary sample, we match only 18,823 applications, or approximately 2.5 percent of applications. Given these statistics and the differences between the credit data in the Prosper and CCP data, our match rate seems

reasonable. Table 1 presents summary statistics for Prosper applications by whether or not they are matched to the CCP.

Broadly speaking, the matched sample of applications is very similar to the unmatched sample. Applications that we match to the CCP result are funded to the funding threshold 99.2 percent of the time, the same as unmatched applications.[9] Similarly, 98.4 percent of matched applications are fully funded compared to 98.5 percent of unmatched applications. Finally, 74.2 percent of matched applications resulted in a loan origination, compared to 74.9 percent of unmatched applications.

The characteristics of the loan applications were also highly similar for matched and unmatched applications. Both sets of applications request approximately $13,600 and have monthly payments of about $412 on average. Approximately 69 percent of unmatched applications are for 36 month loans, while 70 percent of matched applications are. Average annual percentage rates (APR) are 17.6 percent for unmatched applications and 17.4 percent for matched applications. Predicted loan performance is also extremely similar, with Prosper's estimated return to be 6.8 percent for matched applications and 6.9 percent for unmatched applications.

Finally, applicant characteristics are also comparable. The distribution of credit scores is similar, with both populations comprised of approximately 52 to 54 percent of individuals with credit scores below 700, approximately 30 percent with credit scores between 700 and 739, and 16 percent with credit scores of 740 or above. Matched applicants have average monthly

[9] If a loan is not fully funded by investors, Prosper may offer a partial loan to the applicant. The funding threshold is the minimum amount of funding required for a partial loan to be hired, set at 70 percent for our period of analysis.

income of approximately $6,300 while unmatched applicants earn approximately $6,700 on average. In both populations, 47 percent own their home. Debt levels are also quite similar, with both matched and unmatched applicants having just slightly less than $140,000 in total outstanding debt and just slightly more than $1,000 in monthly debt payments. Finally, revolver balances are approximately $20,000 for both populations.

Taken together, these statistics show that the applications that we are able to match to the CCP are extremely similar to applications that we do not match. Therefore, we believe that our results are representative of the population of Prosper applicants.

2.2. Summary Statistics

Table 2 presents summary statistics on the credit profiles of Prosper applicants by whether or not the loan was originated. Data from the Prosper application is presented in Panel A and data from the CCP is presented in Panel B.[10]

In terms of the loan, the applications of both borrowers and non-borrowers overwhelmingly are funded, as even 97 percent of non-borrowers have enough funding pledged for the loan to be originated. Borrowers, on average, apply for smaller loans on average, with an average amount requested of $13,367 versus $14,305 for non-borrowers. This translates into monthly payments that are $32 smaller for borrowers.

Borrowers appear to have slightly worse credit profiles. According to the data from the application, borrowers are more likely to have a FICO score under 700 and less likely to have a FICO score of at least 740. They also have lower average monthly incomes; they earn $6,112 per month on average, compared to $6,786 for non-borrowers. Despite the lower incomes,

[10] See Appendix Table 1 for definitions of key variables.

borrowers are more indebted, with approximately $17,195 more in total debt and about $604 more in revolving debt.

The data from the CCP reinforces this notion that borrowers have slightly worse credit profiles. In the quarter before the loan application, borrowers have a slightly lower average credit score, although their credit scores are improving over the previous year more quickly. As with the application data, total indebtedness in the CCP data is higher for borrowers, with borrowers having about $14,719 more in debt. Moreover, this debt level is increasing more rapidly for borrowers; their total indebtedness increased by approximately $9,535 between four quarters before the loan application and the quarter before, while non-borrowers experiences an average increase of $7,839 over the same time period. Borrowers also have about $449 more in credit card debt, although growth in credit card was significantly higher from non-borrowers.

2.3. Empirical Methodology

In our analysis, we compare credit outcomes of Prosper borrowers over time to individuals whose Prosper application did not result in a loan.[11] Our outcome variables of interest include credit card utilization rates, debt-to-income ratios, credit scores, measures of outstanding debt, and delinquency rates. We track borrowers for up to twelve quarters following the Prosper loan application.

Formally, our main specification takes the following form:

$$Y_{i,t+x} = \alpha + \beta_1 LoanOriginated_{it} + \beta_2 Y_{i,t-1} + \beta_3 X_{i,t-1} + \beta_4 Z_{it} + \theta_t + \varepsilon_{i,t+x} \quad (1)$$

[11] Among applications that were funded, we cannot distinguish loans that are not made because Prosper opted not to fund the loan (due to inability to verify something on the application) from loans that are not made because the applicant opted to not originate the loan.

where *i* denotes individuals and *t+x* denotes quarter relative to the quarter of the Prosper loan application. The variable $Y_{i,t+x}$ is a credit outcome such as credit score or total outstanding debt *x* quarters after the Prosper loan application for individual *i*. In the regressions below, we vary *x* from zero to eight.

The key independent variable of interest is $LoanOriginated_{it}$, which is an indicator equal to one if the Prosper application resulted in a loan origination and zero otherwise. Because we include the dependent variable in the quarter before the loan application, $Y_{i,t-1}$, as a control, the main variable of interest, β_1, captures the cumulative change in Y_i through quarter *t+x* for borrowers relative to non-borrowers.

We control for credit card utilization, credit score, total outstanding debt, and delinquency status in the quarter prior to loan application, which we denote $X_{i,t-1}$. Additionally, to best control for observable differences between borrowers and non-borrowers, we include data from the Prosper application as controls, denoted Z_{it}. These controls include the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded. Finally, we also include quarter fixed effects θ_t. Standard errors are clustered by the date of the application.

3. Prosper Loan Reporting Practices and their Implications

Historically, marketplace lenders such as Prosper did not consistently report their loans to credit bureaus.[12] Therefore, any analysis of post-application credit outcomes may simply reflect this fact. In other words, if the Prosper loan is not reported to Equifax, the total indebtedness and delinquency rates of borrowers will be understated while their credit scores will be overstated. Therefore, in this section, we carefully examine the frequency with which Prosper loans are included in the CCP and how accurately the CCP data reflect the true credit profile of borrowers.

To begin, we document that Prosper loans do not appear to have been reported to the credit bureaus regularly early in our sample. However, the frequency with which the Prosper loans appear in the individual's credit file has increased over time. We identify whether or not the Prosper loan was reported to Equifax in two ways. The first definition identifies a loan as being reported if the CCP shows a new installment loan in the same quarter that the Prosper loan was originated or the quarter following loan origination. The second, narrower definition also requires that the total original amount on all outstanding installment loans increased from the previous quarter by the exact amount of the Prosper loan. While these are noisy measures of whether or not the loan was reported, the trend over time gives us meaningful information about Prosper's reporting tendencies.

As shown in Table 3, we find little evidence that Prosper loans were regularly reported to Equifax between the beginning of 2013 and first half of 2015. Approximately 12 to 16 percent of Prosper loans in those two and a half years have a new installment loan in the CCP

[12] See https://www.americanbanker.com/opinion/marketplace-lenders-have-duty-to-report-credit-data or https://www.reuters.com/article/us-usa-onlinelending-stacking/latest-threat-to-online-lenders-stacking-of-multiple-loans-idUSKCN0YW0SV for discussions of reporting incentives for marketplace lenders.

during the quarter of Prosper loan origination. More strikingly, less than 0.5 percent of Prosper loans appear in the CCP data using the narrower definition of whether the Prosper loan is reported.[13] The data suggest that Prosper loans began to be reported regularly in the second half of 2015; in the fourth quarter, the share of Prosper loans that appear in the CCP jumps to almost 90 percent using the broad definition and more than 50 percent using the narrow definition. The fraction of Prosper loans reported that appear in the CCP in 2016 remains at roughly similar levels. Taken together, these data suggest that Prosper began reporting loans regularly to credit bureaus in late 2015.

Next, we examine the extent to which the CCP data contains information about the Prosper loan. To do so, we compare credit history variables for borrowers whose Prosper loans we flag at being in the CCP to borrowers whose Prosper loans do not appear to be in the CCP. In particular, we compare changes in outstanding debt levels and debt limits from the quarter prior to the origination of the Prosper loan to the quarter of origination. We focus specifically on debt levels and limits for non-mortgage, non-credit card accounts as we would expect that the Prosper loan would be classified as a non-mortgage installment loan. The results are presented in Table 4.[14]

Before discussing the results, it is important to note that the CCP contains two different data series on debt levels and delinquencies – the credit trends version and the consumer modeling version. Both versions rely on the same underlying data but can differ in which

[13] One explanation for these low levels is due to a timing mismatch. However, identifying Prosper loans using new installment loans in the quarter of origination or the following quarter also shows relatively low rates through most of 2015.

[14] For evidence on whether the Prosper loan is reflected in credit scores, see Appendix Table 3.

accounts are excluded and which are included. The consumer modeling data series are a legacy series while the credit trends version is supposed to more accurately reflect status of a consumer's credit and is the series used in the New York Fed's Quarterly Report on Household Debt and Credit.

Before examining the credit bureau data, we first present the statistics on the Prosper loan amount. Both sets of borrowers – those whose Prosper loan appears to be in the CCP data and those whose Prosper loan does not – take out loans of slightly more than $13,000 on average; the former set of borrowers have an average Prosper loan amount of $13,448 and the latter set have an average loan amount of $13,334. Similarly, by the end of the quarter of loan origination, they have approximately $13,039 and $12,457 outstanding on those loans, respectively. Thus, if the Prosper loans were included in the CCP data, we would expect limits and balances on non-mortgage, non-credit card accounts to increase by roughly similar amounts.[15]

First, we examine the credit trends data series. Total credit limits on non-mortgage, not-credit card accounts increases by approximately $467 for individuals who take out a Prosper loan but whose Prosper loan does not appear to be in the CCP data over the course of the quarter of Prosper loan origination. For individuals whose Prosper loan appears in the CCP data, total limits on these accounts increases by approximately $207 during the quarter of origination. Moreover, the total debt outstanding on these accounts increases by approximately $465 for the former borrowers and decreases by approximately $1254 for the

[15] Borrowers can open and close other accounts or pay down existing non-mortgage, non-credit card debt more aggressively so their limits and balances on these accounts may not change by exactly the amount of the Prosper loan.

latter borrowers. Thus, it does not appear that the credit trends data series include the Prosper loans, even for borrowers whose Prosper loan appears to be included in the underlying Equifax data.

For the consumer modeling series, on the other hand, borrowers whose Prosper loan seems to be in the underlying Equifax data see significantly larger increases in limits and balances on for non-mortgage, non-credit card accounts following the origination of the Prosper loan. Moreover, the increases are broadly similar in magnitude to the average loan amount and balance on the Prosper loan. For these borrowers, the limit on non-mortgage, non-credit card limit accounts increases by approximately $13,654 during the quarter of the Prosper loan origination while the balance on those accounts increases by approximately $11,704. For borrowers whose Prosper loan cannot be identified in the CCP data, limits increase by approximately $3,536 and balances increase by $3,428.

Thus, it appears that the main CCP data series on debt, the credit trends series, does not contain details of the Prosper loan for borrowers while the legacy series, the consumer modeling attributes series does for a subset of borrowers from late 2015 and all of 2016. Given these finding, for our analysis below, we use the credit trends series on debt levels but add in the outstanding debt on the Prosper loan when appropriate. As shown in Table 4, adjusting the data in this way results in increases in limits and balances similar to the Prosper loan data and the consumer modeling series. Moreover, it allows us to use the full set of matched applicants beginning in 2013, increasing the power of our tests and allowing us to study the credit outcomes over a longer time frame. In the appendix, however, we replicate all of our main

findings using the consumer modeling attributes data series and find qualitatively similar results.

4. Borrowing from Prosper and Credit Outcomes

In this section, we present our main results on the relationship between loan origination and credit outcomes. First, we examine the evolution of credit card utilization rates and debt levels. The regression results are presented in Table 5, while we plot the predicted values for borrowers and non-borrowers, holding the other controls at the mean, in Figure 2. Consistent with the fact that approximately three-quarters of applications cite debt consolidation as the purpose of the loan, individuals with a Prosper loan origination show a large, immediate, and statistically significant decline in credit card debt relative to applicants without a Prosper loan. As Figure 2 shows, in the quarter of the loan application, borrowers have a credit card utilization rate of approximately 44 percent, a decline of approximately 12 percentage points relative to pre-application levels. The non-borrowers' utilization rate, on the other hand, is virtually unchanged at 56 percent.

However, this difference in utilization rate begins to revert almost immediately. In the quarter after the loan application, the utilization rate for borrowers increases by about 5 percentage points and, relative to non-borrowers, it is only approximately 6 percentage points lower. Utilization rates of borrowers continue to climb, and two quarters after the application, the difference in utilization rate is about 3.5 percentage points, or about a quarter of the difference in the quarter of application. This convergence continues and, by the fourth quarter following the loan application, the difference in utilization rates is only 1.7 percentage points.

As Figure 2 shows, the convergence is the result of borrowers experiencing a long term increase in credit utilization, while non-borrowers have fairly constant utilization rates. Thus, while applicants with a Prosper loan origination have significantly lower credit card utilization rates immediately following the loan origination, this is largely a short term effect.

The level of credit card debt follows the same pattern, as columns 6 through 10 of Table 5 and Figure 3 show. Borrowers experience a large and significant decline in credit card debt in the quarter of the loan application while the credit card debt of non-borrowers increases slightly. This large decline for borrowers, however, begins to revert in the quarter following the loan application and, by the third quarter after application, the difference is no longer statistically significant.

Credit card debt plays an important role in the calculation of one's credit score.[16] Given the results above documenting a large, short-term decline in credit card use for borrowers relative to non-borrowers, one would expect that credit scores would also react in the short-term even if total debt levels were unchanged. This is precisely what we find, as the regression results in Table 6 and the predicted values in Figure 4 show.

The estimates in column 1 imply that, in the quarter of loan application, borrowers have credit scores that are 13 points higher than non-borrowers on average. As Figure 4 shows, this result is driven by a large increase in credit scores of borrowers, while credit scores of non-borrowers are roughly unchanged from the quarter before the loan application. After this initial increase, the credit scores of borrowers declines faster than those of non-borrowers. As a

[16] For instance, a simple regression using our data suggests that a decline of 10 percentage points in credit card utilization rate is associated with an 8-15 point increase in credit score, holding total debt constant.

result, four quarters after the loan application, borrowers have credit scores that are approximately 6.6 points higher. The difference in credit scores continues to decline, but borrowers still have credit scores that are significantly higher twelve quarters later, as shown in column 10.

In the short run, borrowers experience a decline in credit card debt relative to non-borrowers, leading to an increase in the credit score. Given the importance of credit scores in underwriting criteria, an important question is whether borrowers use this short term increase in credit scores to take on additional debt. Therefore, in Table 7 and Figure 5, we examine the relationship between loan origination and total debt levels.

In column 1, we find a significant and immediate increase in total outstanding debt for borrowers relative to non-borrowers. In the quarter of the loan application, total debt for borrowers is approximately 27 percent higher than non-borrowers. As Figure 5 shows, this relative increase is due to an increase in outstanding debt for borrowers while debt levels of non-borrowers is relatively unchanged.

Following the immediate increase, however, total debt reverts somewhat. In the quarter after the application, borrowers have approximately 19 percent more debt than non-borrowers. This convergence is driven by an increase in debt of non-borrowers, while borrowers have relatively constant levels of debt. This trend of increasing debt levels for non-borrowers and stable debt levels for borrowers continues through the fifth quarter following loan application. At this point, borrowers, who have approximately $84,000 in debt on average, have about 16 percent more debt than non-borrowers, who have approximately $71,000 in debt on average.

Subsequently, debt levels for both borrowers and non-borrowers slowly decline, with steeper declines for borrowers. As a result, twelve quarters after the loan application, borrowers have about 13 percent more debt than non-borrowers.

While borrowers do take on more debt than non-borrowers, focusing only on the total debt that individuals hold may miss important compositional changes in the types of debt. To examine this more closely, we next examine mortgage and non-mortgage debt separately. The results for non-mortgage debt are presented in Table 8 and Figure 6 and the mortgage debt results are presented in Table 9 and Figure 7.

Consistent with borrowers taking on new debt in the form of the Prosper loan and not immediately paying off existing debt, the results in Table 8 show that there is a large and significant increase of 35 percent in non-mortgage debt for borrowers in the quarter of the loan application relative to non-borrowers. As Figure 6 shows, this relative increase is due to a dramatic increase in non-mortgage debt levels of borrowers.

After this dramatic increase in non-mortgage debt in the quarter of the loan application, the difference declines steadily over time. In the quarter after the loan application, borrowers have approximately 28 percent more non-mortgage debt than non-borrowers. The difference declines to 21 percent after four quarters, 15 percent after eight quarters, and 10 percent after twelve quarters. While the difference in debt does decline over time, it is important to note that borrowers do continue to have significantly higher levels of debt three years post-application.

Mortgage debt follows a different pattern; strikingly, borrowers have significantly more mortgage debt than non-borrowers in the quarter of the application and this differential grows

fairly consistently over time. The estimate in column 1 of Table 9 implies that, in the quarter of loan application, borrowers have approximately three percent more mortgage debt outstanding than non-borrowers. By four quarters after the loan application, this differential grows to approximately 9 percent, as shown in column 5. Twelve quarters later, borrowers have approximately 23 percent more mortgage debt than non-borrowers.

The higher levels of mortgage debt by borrowers could be driven either by borrowers having larger mortgages on average relative to their pre-application levels or non-borrowers having small mortgages relative to pre-application levels. In other words, borrowers could be exploiting their higher credit scores to take on additional mortgage debt or non-borrowers could be downsizing in an attempt to reduce their debt levels.

Figure 7 shows that, in the short run, the higher levels of mortgage debt for borrowers is driven by declining debt for non-borrowers; in the quarter of loan application, non-borrowers see a significant decline in mortgage debt, while mortgage debt for borrowers is unchanged. In the long run, however, borrowers take on more mortgage debt while mortgage debt levels for non-borrowers is roughly unchanged from pre-application levels.

Next, we investigate further the evolution of mortgage debt. To do so, we separately analyze applicants who report owning a home on their Prosper application and applicants who do not. Doing so allows us to test the extent to which increasing levels of mortgage debt are driven by changes on the intensive margin – homeowners taking on larger mortgages – or the extensive margin – applicants becoming more likely to have any mortgage debt.

First, we study homeowners only and examine mortgage debt levels for borrowers relative to non-borrowers. The results are presented in Table 10 and Figure 8. There is some

evidence that, in the short run, borrowers see relative declines in outstanding mortgage debt. For instance, in the quarter after loan application, borrowers have approximately 4 percent less mortgage debt than non-borrowers, a difference that is statistically significant. However, by five quarters after application, borrowers have significantly more mortgage debt than non-borrowers, as column 6 shows. This difference generally grows over time and, twelve quarters after loan application, borrowers have approximately 11 percent more mortgage debt than non-borrowers.

Next, we study non-homeowners and examine both whether borrowers are more likely to report having any mortgage debt in subsequent quarters and, conditional on having any mortgage debt, the amount of mortgage debt. The regression results are presented in Table 11 and Table 12 and the predicted values for borrowers and non-borrowers are plotted in Figure 9 and Figure 10.

As Table 11 shows, borrowers become increasing more likely to have mortgage debt over time relative to non-borrowers. In the quarter of application and the quarter following application, the difference in the propensity to have any mortgage debt is positive and significant but relatively small in magnitude. However, in the second quarter following the loan application, approximately 10 percent of those with a Prosper loan have a mortgage, about 1.8 percentage point or 22 percent higher than those without a loan. This difference grows steadily over time such that, by twelve quarters after the loan, applicants with a loan are approximately 37 percent more likely to have any mortgage debt, at 24 percent versus 17 percent for applicants without a loan.

Furthermore, as Table 12 shows, conditional on having any mortgage debt, borrowers have significantly higher levels of mortgage debt. In the quarter of loan origination, borrowers had approximately 17 percent more mortgage debt than non-borrowers. While this difference fluctuates over time, three years following the loan application, borrowers had 26 percent more mortgage debt than non-borrowers. This suggests that, for non-homeowners, the increase in mortgage debt is due to both an increase in the extensive margin – where borrowers are significantly more likely to take out a mortgage to purchase a home – and the intensive margin – where borrowers tend to take out larger mortgages when they do purchase a home.

Given that the borrowers subsequently take on more debt than non-borrowers, we next examine delinquency rates, specifically whether or not the individual has any account with a balance at least 90 days past due.[17] As Table 13 shows, the difference in delinquency rates between borrowers and non-borrowers is small and insignificant initially. However, two quarters after the loan application, borrowers begin to exhibit significantly lower delinquency rates. Figure 11 shows that this relative decline is due to non-borrower delinquency rates growing relatively rapidly; whereas borrower delinquency rates increase from 8.8 percent in the quarter before the loan application to 9.3 percent two quarters after application, non-borrower delinquency rates increase to 10.4 percent. The difference in delinquency rates fluctuates over the next ten quarters but remains statistically significant. By twelve quarters after the loan application, borrowers have delinquency rates that are 1.8 percentage points lower.

[17] The results are largely similar for delinquencies of alternative durations.

5. Discussion of Endogeneity

While our regression specifications condition on many applicant characteristics, whether or not the application results in a loan is not random, even conditional on observables. This raises the concern that important omitted variables, such as financial sophistication or access to alternative sources of credit, biases our estimates. For instance, if non-borrowers are less creditworthy than borrowers, they cannot borrow from Prosper or other lenders. This in turn suggests that our estimates would overestimate the causal effect of a Prosper loan on credit score. Alternatively, suppose that non-borrowers are more credit worthy or more financially sophisticated than borrowers and thus can access to lower cost credit from other borrowers. This suggests that our estimates would underestimate the effect of a Prosper loan on credit scores.

In considering the direction and magnitude of the potential bias, it is important to note several facts. First, as shown in Table 2, non-borrowers have higher reported incomes, lower levels of total debt, lower levels of credit card debt, and higher credit scores. In addition, non-borrowers have slower growth in total debt, although they also have slower growth in credit scores and higher growth in credit card debt.

Second, in our sample, 99.2 percent of applicants, including 97 percent of non-borrowers, have their applications funded. Thus, it is not the case that non-borrowers are not creditworthy; in fact, given the requirements for applying for a loan on Prosper, including a credit score of at least 640, even non-borrowers are likely to have alternative borrowing

options. Taken together, these statistics suggest that non-borrowers may be choosing to borrow from other, more attractive sources of financing.

In Table 14, we provide evidence that non-borrowers are using new credit cards, other consumer loans from finance companies and home equity lines of credit instead of a Prosper loan. In columns 1 and 2, the dependent variable is an indicator variable equal to one if the individual opened a new credit card account in the quarter and zero otherwise. In fact, the estimates show that non-borrowers are significantly more likely to open a new credit card account than borrowers; the estimates imply that non-borrowers are 2 percentage points, or about 15 percent, more likely to open a new credit card in the quarter of loan application and the following quarter than borrowers.

In columns 3 and 4, the dependent variable is an indicator equal to one if the individual has a consumer loan from a finance company and zero otherwise. Again, we find that non-borrowers are significantly more likely to have a loan from a finance company in the quarters following a Prosper loan application. The estimate in column 4 implies that non-borrowers are approximately 4.9 percentage points, or 13 percent, more likely to have a loan from a finance company than borrowers in the quarter after the Prosper loan application.

Finally, in columns 5 and 6, the dependent variable is an indicator variable equal to one if the individual has a home equity line of credit (HELOC) and zero otherwise. We restrict the sample to applicants that indicate that they own their home on their Prosper application. We find that non-borrowers are significantly more likely to have a HELOC following their application than borrowers, with the estimate in column 6 suggesting that non-borrowers are 0.4

percentage points, or 4 percent, more likely to have a HELOC in the quarter after the Prosper application than borrowers.

Taken together, these results suggest that non-borrowers are using alternative sources of credit, rather than being unable to borrow from any lender. Given that virtually all of these non-borrowers had their Prosper applications funded, it appears that they actively choose these alternatives instead of taking out the Prosper loan.

6. Conclusion

In this paper, we study credit outcomes for applicants to a leading online, marketplace lending platform. In the short run, borrowers experience significant declines in credit card use. This in turn leads to significantly higher credit scores.

While these measures converge, debt levels of borrowers diverge from debt levels of non-borrowers. These increased debt levels are driven by higher levels of both non-mortgage and mortgage debt. While non-mortgage debt levels converge over time, mortgage debt diverges. In particular, among applicants who owned a house at the time of the loan application, borrowers have significantly higher mortgage balances while, among applicants who did not own a home, borrowers are significantly more likely to have taken out a mortgage to buy a home. Finally, borrowers enjoy significantly lower delinquency rates over the three years following the loan application.

Taken together, these results suggest that the marketplace lending has not lead to dramatic increases in household debt or in delinquency rates. Rather, borrowers have modestly higher debt levels, due largely to higher mortgage debt, and modestly lower delinquency rates.

However, our data cover a time of relatively strong macroeconomic conditions. The increased leverage could expose these borrowers to significant risk in the event of an economic downturn; as Mian and Sufi (2010) document, increased household leverage, particularly in the form of mortgage debt, prior to the Great Recession lead to sharp increases in default rates, and unemployment and decreases in consumption and investment. Thus, we believe that studying the role of marketplace lending as an amplification mechanism is worthy of further research.

References

Adams, Robert, Timothy Dore, Claire Greene, Traci Mach, and Jason Premo, 2017, "U.S. Consumers' Awareness and Use of Marketplace Lending," *Current Policy Perspectives*, No. 17-7, Federal Reserve Bank of Boston.

Agarwal, S., S. Chomsisengphet, C. Liu, and N. S. Souleles, 2015, "Do Consumers Choose the Right Credit Contracts?" *Review of Corporate Finance Studies*, 4, 239–257.

Ausubel, Lawrence M., 1991, "The Failure of Competition in the Credit Card Markets," *American Economic Review*, 81, 50-81.

Balyuk, Tetyana, 2017, "Financial Innovation and Borrowers: Evidence from Peer-to-Peer Lending," Unpublished working paper.

Bhutta, Neil, 2014, "Payday Loans and Consumer Financial Health," *Journal of Banking and Finance*, 47, 230-242.

Bhutta, Neil, Paige Skiba, and Jeremy Tobacman, 2015, "Payday Loan Choices and Consequences," *Journal of Money, Credit, and Banking*, 47, 223-260.

Campbell, John Y., 2006, "Household Finance," *Journal of Finance* 61, 1553–1604.

Carell, Scott and Jonathan Zinman, 2014, "In Harm's Way? Payday Loan Access and Military Personnel Performance," *Review of Financial Studies*, 27, 2805-2840.

Chava, Sudheer and Nikhil Paradkar, 2018, "Winners and Losers of Marketplace Lending: Evidence from Borrower Credit Dynamics," Unpublished working paper.

Cespedes, Jacelly, 2017, "Heterogeneous Sensitivities to Interest Rate Changes: Evidence from Consumer Loans," Unpublished working paper.

Equifax Credit Risk Insight Servicing and Black Knight McDash Data.

Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

Grodzicki, Daniel, 2017, "The Evolution of Competition in the Credit Card Market," Unpublished working paper.

Laibson, David, 1997, "Golden Eggs and Hyperbolic Discounting," *Quarterly Journal of Economics*, 112, 443-477.

Lee, Donghoon and Wilbert van der Klaauw, 2010, "An Introduction to the FRBNY Consumer Credit Panel," Staff Reports 479, Federal Reserve Bank of New York.

Lusardi, Annamaria and Olivia S. Mitchell, 2007, "Baby Boomer Retirement Security: the Role of Planning, Financial Literacy, and Housing Wealth," Journal of Monetary Economics, 54, 205–224.

--, 2014, "The Economic Importance of Financial Literacy: Theory and Evidence," *Journal of Economic Literature*, 52, 5-44.

Mian, Atif and Amir Sufi, 2010, "Household Leverage and the Recession of 2007 to 2009," *IMF Economic Review*, 58, 74-117.

Melzer, Brian, 2011, "Real Costs of Credit Access: Evidence from the Payday Lending Market," *Quarterly Journal of Economics*, 126, 517-555.

Morse, Adair, 2011, "Payday Lenders: Heroes or Villains?" *Journal of Financial Economics*, 102, 28-44.

--, 2015, "Peer-to-Peer Crowdfunding: Information and the Potential for Disruption in Consumer Lending," *Annual Review of Financial Economics*, 7, 463-482.

Moore, Danna, 2003, "Survey of Financial Literacy in Washington State: Knowledge, Behavior, Attitudes, and Experiences," Technical Report No. 03-39, Social and Economic Sciences Research Center, Washington State University.

Orchard Platform, 2017, "Quarterly Industry Report: Consumer Unsecured Q4 2017." Retrieved from https://www.orchardplatform.com/reporting/

Philippon, Thomas, 2014, "Has the US Finance Industry Become Less Efficient? On the Theory and Measurement of Financial Intermediation," *American Economic Review*, 105, 1408-1438.

Prosper Funding LLC. Prosper Lending Data.

Stango, Victor and Jonathan Zinman, 2009, "Exponential Growth Bias and Household Finance," *Journal of Finance*, 64, 2807-2849.

Stegman, Michael A., 2007, "Payday Lending," *Journal of Economic Perspectives*, 21, 169-190.

Wardrop, Robert, Robert Rosenberg, Bryan Zhang, Tania Ziegler, Rob Squire, John Burton, Eduardo Jr. Arenas Hernandez, and Kieran Garvey, 2016, "Breaking New Ground," United Kingdom: Cambridge Centre for Alternative Finance, https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2016-americas-alternative-finance-benchmarking-report.pdf.

Table 1: Comparison of Prosper Applicants Matched vs. Unmatched to Credit Bureau Data

	Non-Matched Applicants	Matched Applicants	Difference	
Loan Funded	0.992	0.992	0.000	
Loan Fully Funded	0.984	0.985	0.001	
Loan Originated	0.742	0.747	0.005	**
Listing Amount	13,591.18	13,603.89	12.71	
Monthly Payment	411.87	412.65	0.78	
Listing Term = 36 Months	0.694	0.703	0.009	***
Borrower APR	0.176	0.174	-0.002	***
Estimated Return	0.069	0.068	-0.001	***
FICO: < 700	0.540	0.525	-0.015	***
FICO: 700-739	0.303	0.313	0.010	***
FICO: 740+	0.157	0.162	0.005	***
Monthly Income	6,68.87	6,282.48	-386.39	**
Home Owner	0.472	0.474	0.002	
Total Balance	139,897.33	139,819.86	-77.48	
Monthly Debt Payments	1,060.37	1,069.64	9.27	**
Revolver Balance	20,171.53	20,048.78	-122.75	
Observations	712,746	49,695		
Match Rate:	6.52%			

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Notes: Data include applications listed on the Prosper marketplace between 2013 and 2016. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2: Summary Statistics

	Applicants with Origination	Applicants without Origination	Difference	
Panel A: Application Data				
Loan Originated	1.00	0.00	1.00	***
Loan Funded	1.00	0.97	0.03	***
Listing Amount	13366.89	14304.61	-937.72	***
Monthly Payment	404.65	436.30	-31.65	***
FICO: < 700	0.53	0.52	0.01	**
FICO: 700-739	0.31	0.31	0.00	
FICO: 740+	0.16	0.17	-0.02	***
Monthly Income	6112.34	6785.51	-673.16	***
Total Balance	144165.41	126970.72	17194.69	***
Revolver Balance	20201.34	19597.65	603.69	*
Panel B: CCP Data				
Credit Score$_{t-1}$	690.58	692.17	-1.59	***
ΔCredit Score $_{t-4\rightarrow t-1}$	5.94	3.42	2.52	***
Total Debt$_{t-1}$	143979.23	129260.10	14719.13	***
ΔTotal Debt $_{t-4\rightarrow t-1}$	9535.33	7839.21	1696.12	**
Credit Card Debt$_{t-1}$	12620.62	12172.04	448.57	*
ΔCredit Card Debt$_{t-4\rightarrow t-1}$	1482.07	1900.92	-418.85	***

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Notes: Data include applications listed on the Prosper marketplace between 2013 and 2016 that are matched to the CCP.

Table 3: Share of Prosper Loans in CCP

	Fraction of Prosper Borrowers with:	
	New Installment Loan in CCP	… and Matching Increase in Installment Loan Amount
2013Q1	0.121	0.000
2013Q2	0.146	0.000
2013Q3	0.153	0.003
2013Q4	0.125	0.001
2014Q1	0.137	0.001
2014Q2	0.154	0.003
2014Q3	0.134	0.000
2014Q4	0.128	0.002
2015Q1	0.133	0.001
2015Q2	0.158	0.003
2015Q3	0.448	0.220
2015Q4	0.887	0.566
2016Q1	0.899	0.608
2016Q2	0.860	0.528
2016Q3	0.835	0.496
2016Q4	0.842	0.521

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents the share of Prosper loan originations with a new installment loan in the CCP in the same quarter and the share that also shown an increase in total installment loan amounts equal to the size of the Prosper loan.

Table 4: Changes in Debt Around Loan Origination, by Whether Loan is Identified in CCP

	Prosper Loan in CCP	Prosper Loan Not in CCP	Difference	
Total Prosper Loan Amount	13448.03	13334.79	113.24	
Outstanding Prosper Loan Amount	13038.75	12457.10	581.65	***
Non-Mortgage, Non-Credit Card Limit (Credit Trends)	207.12	467.04	-259.92	**
Non-Mortgage, Non-Credit Card Debt (Credit Trends)	-1254.15	465.97	-1720.11	***
Non-Mortgage, Non-Credit Card Limit (Consumer Modeling)	13654.27	3536.02	10118.25	***
Non-Mortgage, Non-Credit Card Debt (Consumer Modeling)	11704.44	3428.67	8275.77	***
Non-Mortgage, Non-Credit Card Limit (Credit Trends) + Total Prosper Loan Amount	13593.90	13121.12	472.78	***
Non-Mortgage, Non-Credit Card Debt (Credit Trends) + Outstanding Prosper Loan Amount	11784.61	12923.08	-1138.47	***

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents summary statistics of change in key credit bureau variables in the quarter of Prosper loan origination by whether or not the Prosper loan is identified as appearing in the CCP data.

Table 5: Loan Origination and Credit Card Use, by Quarter

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quarter:	t	t+1	t+2	t+3	t+4	t	t+1	t+2	t+3	t+4
Dep. Variable:	Credit Card Utilization Rate					Ln Credit Card Debt				
Loan Originated	-0.129***	-0.063***	-0.035***	-0.023***	-0.017***	-0.306***	-0.136***	-0.062***	-0.027***	-0.012
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.007]	[0.007]	[0.008]	[0.009]	[0.009]
CC Utilization$_{t-1}$	0.537***	0.494***	0.461***	0.430***	0.394***					
	[0.007]	[0.007]	[0.007]	[0.008]	[0.008]					
Ln Credit Card Debt$_{t-1}$						0.815***	0.777***	0.749***	0.726***	0.695***
						[0.004]	[0.005]	[0.005]	[0.006]	[0.006]
Credit Score$_{t-1}$	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln Total Debt$_{t-1}$	0.006***	0.012***	0.012***	0.012***	0.012***	0.011***	0.026***	0.034***	0.036***	0.035***
	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]	[0.004]	[0.004]	[0.004]	[0.005]
Any Account Delinquent$_{t-1}$	0.013***	0.004	-0.001	-0.011*	-0.015**	-0.007	-0.059***	-0.079***	-0.106***	-0.123***
	[0.005]	[0.005]	[0.005]	[0.006]	[0.006]	[0.010]	[0.011]	[0.012]	[0.013]	[0.014]
Obs	47205	45519	44330	43174	42181	48747	47095	45956	44890	44017
R-Squared	0.48	0.41	0.37	0.34	0.31	0.7	0.64	0.60	0.56	0.51

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variables are, for columns 1 through 5, credit card utilization rate in quarter *t+x*, where *x* ranges from 0 in column 1 to 4 in column 5, and the natural log of credit debt in thousands of dollars plus 1 in quarter *t+x*, where *x* ranges from 0 in column 1 to 4 in column 5. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include the dependent variable, credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6: Loan Origination and Credit Score, by Quarter

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quarter:	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+12
Loan Originated	12.514***	10.588***	9.325***	7.504***	6.411***	4.863***	4.265***	3.994***	3.238***	3.478**
	[0.363]	[0.531]	[0.683]	[0.808]	[0.879]	[0.921]	[0.963]	[1.008]	[1.046]	[1.460]
Ln Credit Card $Debt_{t-1}$	3.017***	1.791***	0.082	-0.583	-1.167***	-0.801	-0.702	-0.498	-0.213	-0.278
	[0.189]	[0.282]	[0.355]	[0.395]	[0.431]	[0.493]	[0.526]	[0.554]	[0.592]	[0.867]
Credit $Score_{t-1}$	0.877***	0.842***	0.810***	0.801***	0.791***	0.776***	0.759***	0.744***	0.739***	0.707***
	[0.005]	[0.006]	[0.007]	[0.008]	[0.009]	[0.009]	[0.010]	[0.011]	[0.011]	[0.017]
Ln Total $Debt_{t-1}$	-0.378**	-0.654***	-0.811***	-1.015***	-0.977**	-1.523***	-1.539***	-2.023***	-2.260***	-3.826***
	[0.167]	[0.249]	[0.314]	[0.359]	[0.383]	[0.418]	[0.461]	[0.501]	[0.523]	[0.751]
Any Account $Delinq_{t-1}$	0.097	2.377***	3.644***	6.643***	9.844***	10.322***	10.006***	10.585***	8.898***	9.331***
	[0.486]	[0.703]	[0.896]	[1.009]	[1.109]	[1.236]	[1.350]	[1.429]	[1.601]	[2.307]
Obs	48747	47095	45956	44890	44017	43168	41558	38492	36236	16509
R-Squared	0.76	0.59	0.47	0.41	0.37	0.34	0.32	0.30	0.29	0.27

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variable is credit score in quarter *t+x*, where *x* ranges from 0 in column 1 to 12 in column 10. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include the natural log of credit card debt in thousands of dollars plus 1, credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7: Loan Origination and Total Debt, by Quarter

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quarter:	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+12
Loan Originated	0.244***	0.186***	0.176***	0.175***	0.167***	0.159***	0.156***	0.150***	0.131***	0.131***
	[0.005]	[0.006]	[0.007]	[0.008]	[0.009]	[0.009]	[0.010]	[0.011]	[0.012]	[0.020]
Ln Credit Card	-0.036***	-0.021***	-0.016***	-0.013***	-0.009	-0.011*	-0.013*	-0.013*	-0.006	0.009
$Debt_{t-1}$	[0.003]	[0.004]	[0.004]	[0.005]	[0.006]	[0.006]	[0.007]	[0.007]	[0.008]	[0.012]
$Credit\ Score_{t-1}$	0.000***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln $Total\ Debt_{t-1}$	0.694***	0.657***	0.635***	0.612***	0.588***	0.581***	0.573***	0.560***	0.550***	0.513***
	[0.005]	[0.005]	[0.006]	[0.006]	[0.006]	[0.007]	[0.007]	[0.008]	[0.008]	[0.013]
Any Account	0.000	-0.016	-0.023*	-0.032**	-0.048***	-0.029*	-0.028	-0.009	0.003	-0.028
$Delinquent_{t-1}$	[0.009]	[0.011]	[0.012]	[0.014]	[0.015]	[0.017]	[0.019]	[0.021]	[0.022]	[0.037]
Obs	48747	47095	45956	44890	44017	43168	41558	38492	36236	16509
R-Squared	0.89	0.84	0.79	0.73	0.67	0.62	0.58	0.53	0.49	0.40

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variable is the natural log of total outstanding debt in thousands of dollars plus 1 in quarter *t+x*, where *x* ranges from 0 in column 1 to 12 in column 10. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include the natural log of credit card debt in thousands of dollars plus 1, credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8: Loan Origination and Non-Mortgage Debt, by Quarter

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quarter:	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+12
Loan Originated	0.350***	0.278***	0.252***	0.234***	0.215***	0.194***	0.183***	0.170***	0.147***	0.100***
	[0.004]	[0.005]	[0.006]	[0.007]	[0.008]	[0.009]	[0.010]	[0.010]	[0.011]	[0.018]
Ln Non-Mort $Debt_{t-1}$	0.668***	0.629***	0.607***	0.581***	0.558***	0.548***	0.542***	0.523***	0.514***	0.472***
	[0.005]	[0.006]	[0.007]	[0.007]	[0.008]	[0.008]	[0.009]	[0.009]	[0.010]	[0.016]
Ln Credit Card $Debt_{t-1}$	-0.052***	-0.038***	-0.026***	-0.020***	-0.014***	-0.017***	-0.019***	-0.020***	-0.017**	-0.018*
	[0.003]	[0.003]	[0.004]	[0.004]	[0.005]	[0.005]	[0.006]	[0.007]	[0.007]	[0.010]
Credit $Score_{t-1}$	0.000***	0.000**	0.000	0.000	0.000	0.000	0.000	0.000	-0.000**	0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln Total $Debt_{t-1}$	0.002	-0.001	-0.003	-0.002	-0.004	-0.006	-0.005	0.003	0.003	0.015
	[0.004]	[0.005]	[0.006]	[0.006]	[0.006]	[0.007]	[0.007]	[0.008]	[0.008]	[0.014]
Any Account $Delinquent_{t-1}$	-0.004	-0.022**	-0.034***	-0.038***	-0.036***	-0.025*	-0.037**	-0.024	-0.006	-0.044
	[0.007]	[0.009]	[0.010]	[0.012]	[0.013]	[0.015]	[0.016]	[0.018]	[0.019]	[0.031]
Obs	48747	47095	45956	44890	44017	43168	41558	38492	36236	16509
R-Squared	0.83	0.75	0.67	0.58	0.51	0.45	0.40	0.37	0.34	0.27

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variable is the natural log of total outstanding non-mortgage debt in thousands of dollars plus 1 in quarter *t+x*, where *x* ranges from 0 in column 1 to 12 in column 10. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include the natural log of total outstanding non-mortgage debt in thousands of dollars plus 1, the natural log of credit card debt in thousands of dollars plus 1,,credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 9: Loan Origination and Mortgage Debt, by Quarter

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quarter:	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+12
Loan Originated	0.031***	0.015	0.049***	0.080***	0.091***	0.117***	0.128***	0.131***	0.141***	0.228***
	[0.008]	[0.010]	[0.012]	[0.014]	[0.015]	[0.016]	[0.017]	[0.019]	[0.020]	[0.033]
Ln Mortgage $Debt_{t-1}$	0.751***	0.715***	0.687***	0.643***	0.622***	0.594***	0.553***	0.524***	0.497***	0.425***
	[0.011]	[0.011]	[0.011]	[0.011]	[0.012]	[0.012]	[0.013]	[0.014]	[0.014]	[0.022]
Ln Credit Card $Debt_{t-1}$	0.005	0.016**	0.011	0.001	0.006	0.003	-0.014	-0.013	-0.004	0.045**
	[0.006]	[0.007]	[0.008]	[0.009]	[0.009]	[0.010]	[0.011]	[0.012]	[0.013]	[0.020]
Credit $Score_{t-1}$	0.001***	0.001***	0.001***	0.001***	0.001***	0.002***	0.002***	0.002***	0.002***	0.002***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln Total $Debt_{t-1}$	0.040***	0.058***	0.073***	0.102***	0.106***	0.131***	0.155***	0.168***	0.176***	0.173***
	[0.006]	[0.007]	[0.009]	[0.010]	[0.010]	[0.011]	[0.013]	[0.013]	[0.014]	[0.021]
Any Account $Delinquent_{t-1}$	-0.005	-0.034*	-0.031	-0.045*	-0.099***	-0.074***	-0.075**	-0.064*	-0.059*	-0.080
	[0.015]	[0.020]	[0.022]	[0.023]	[0.026]	[0.028]	[0.031]	[0.033]	[0.035]	[0.055]
Obs	48745	47093	45954	44888	44015	43166	41557	38491	36235	16508
R-Squared	0.91	0.85	0.82	0.77	0.73	0.70	0.67	0.63	0.60	0.49

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variable is the natural log of total outstanding mortgage debt in thousands of dollars plus 1 in quarter *t+x*, where *x* ranges from 0 in column 1 to 12 in column 10. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include the natural log of total outstanding mortgage debt in thousands of dollars plus 1, the natural log of credit card debt in thousands of dollars plus 1,,credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 10: Loan Origination and Mortgage Debt, by Quarter - Homeowners Only

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quarter:	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+12
Loan Originated	-0.024*	-0.043***	-0.011	0.025	0.02	0.048*	0.043*	0.050*	0.068**	0.111**
	[0.013]	[0.017]	[0.019]	[0.023]	[0.024]	[0.025]	[0.026]	[0.029]	[0.031]	[0.046]
Ln Mortgage $Debt_{t-1}$	0.512***	0.458***	0.420***	0.401***	0.383***	0.352***	0.331***	0.325***	0.287***	0.250***
	[0.036]	[0.036]	[0.036]	[0.037]	[0.038]	[0.039]	[0.040]	[0.041]	[0.042]	[0.058]
Ln Credit Card $Debt_{t-1}$	0.013	0.025**	0.024*	0.004	0	0.005	-0.014	-0.017	-0.018	0.023
	[0.009]	[0.012]	[0.012]	[0.014]	[0.015]	[0.016]	[0.017]	[0.018]	[0.020]	[0.032]
Credit $Score_{t-1}$	0.001***	0.001***	0.001***	0.001***	0.001**	0.001***	0.001***	0.001***	0.001**	0.001*
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.001]
Ln Total $Debt_{t-1}$	0.479***	0.499***	0.534***	0.561***	0.560***	0.608***	0.632***	0.639***	0.666***	0.664***
	[0.044]	[0.046]	[0.047]	[0.049]	[0.050]	[0.051]	[0.054]	[0.055]	[0.058]	[0.085]
Any Account $Delinquent_{t-1}$	-0.012	-0.072	0.005	-0.06	-0.114**	-0.092	-0.055	0.029	0.036	0.126
	[0.036]	[0.046]	[0.046]	[0.052]	[0.056]	[0.056]	[0.057]	[0.064]	[0.064]	[0.105]
Obs	23148	22521	22116	21721	21365	21013	20360	18938	17925	8282
R-Squared	0.53	0.38	0.33	0.29	0.26	0.25	0.23	0.22	0.19	0.17

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variable is the natural log of total outstanding mortgage debt in thousands of dollars plus 1 in quarter *t+x*, where *x* ranges from 0 in column 1 to 12 in column 10. The sample is restricted to individuals who reported owning a home on their application. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include the natural log of total outstanding mortgage debt in thousands of dollars plus 1, the natural log of credit card debt in thousands of dollars plus 1,,credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 11: Loan Origination and Has Any Mortgage Debt, by Quarter - Non-Homeowners Only

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quarter:	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+12
Loan Originated	0.015***	0.010***	0.018***	0.024***	0.029***	0.035***	0.040***	0.040***	0.042***	0.065***
	[0.002]	[0.003]	[0.004]	[0.004]	[0.004]	[0.005]	[0.005]	[0.006]	[0.006]	[0.010]
Has Mortgage $Debt_{t-1}$	1.056***	0.549***	0.376***	0.152	0.136	0.043	0.017	-0.006	-0.178	-0.019
	[0.110]	[0.101]	[0.100]	[0.106]	[0.109]	[0.110]	[0.117]	[0.120]	[0.122]	[0.196]
Ln Credit Card $Debt_{t-1}$	0.003*	0.009***	0.008***	0.008***	0.011***	0.009***	0.006*	0.006*	0.008**	0.019***
	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.004]	[0.006]
Credit $Score_{t-1}$	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln Total $Debt_{t-1}$	-0.003**	0.000	0.002	0.007***	0.008***	0.012***	0.016***	0.018***	0.019***	0.017***
	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]	[0.003]	[0.003]	[0.005]
Any Account $Delinquent_{t-1}$	-0.008**	-0.011**	-0.011*	-0.012*	-0.018***	-0.015*	-0.018**	-0.021**	-0.024**	-0.034**
	[0.004]	[0.005]	[0.006]	[0.006]	[0.007]	[0.008]	[0.008]	[0.009]	[0.010]	[0.015]
Obs	25599	24574	23840	23169	22652	22155	21198	19554	18311	8227
R-Squared	0.57	0.43	0.35	0.28	0.25	0.22	0.18	0.16	0.14	0.12

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variable is an indicator variable equal to one if mortgage debt was nonzero in in quarter *t+x*, where *x* ranges from 0 in column 1 to 12 in column 10, and zero otherwise. The sample is restricted to individuals who reported not owning a home on their application. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include whether or not mortgage debt was nonzero, the natural log of credit card debt in thousands of dollars plus 1,,credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 12: Loan Origination and Mortgage Debt, by Quarter – Non-Homeowners Only

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quarter:	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+12
Loan Originated	0.170**	0.244***	0.219***	0.191***	0.187***	0.217***	0.250***	0.222***	0.186***	0.250***
	[0.070]	[0.064]	[0.062]	[0.061]	[0.059]	[0.059]	[0.059]	[0.061]	[0.061]	[0.078]
Ln Credit Card $Debt_{t-1}$	-0.095***	-0.139***	-0.145***	-0.177***	-0.158***	-0.163***	-0.165***	-0.167***	-0.161***	-0.170***
	[0.030]	[0.031]	[0.034]	[0.028]	[0.029]	[0.029]	[0.026]	[0.028]	[0.028]	[0.036]
Credit $Score_{t-1}$	0.003***	0.003***	0.004***	0.004***	0.004***	0.004***	0.003***	0.004***	0.004***	0.002***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Ln Total $Debt_{t-1}$	0.453***	0.351***	0.286***	0.231***	0.203***	0.185***	0.154***	0.160***	0.149***	0.138***
	[0.036]	[0.028]	[0.024]	[0.023]	[0.022]	[0.021]	[0.022]	[0.024]	[0.021]	[0.027]
Any Account $Delinquent_{t-1}$	0.01	-0.045	-0.184*	-0.14	-0.164*	-0.147*	-0.093	-0.108	-0.105	-0.023
	[0.123]	[0.111]	[0.109]	[0.090]	[0.089]	[0.087]	[0.078]	[0.081]	[0.075]	[0.094]
Obs	1597	1935	2261	2545	2785	3059	3152	3111	3113	1790
R-Squared	0.39	0.34	0.27	0.23	0.2	0.18	0.17	0.16	0.15	0.14

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variable is the natural log of total outstanding mortgage debt in thousands of dollars in quarter *t+x*, where *x* ranges from 0 in column 1 to 12 in column 10. The sample is restricted to individuals who reported not owning a home on their application but have outstanding mortgage debt in quarter *t+x*. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include the natural log of total outstanding mortgage debt in thousands of dollars, the natural log of credit card debt in thousands of dollars plus 1,,credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 13: Loan Origination and Any Delinquent Account, by Quarter

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Quarter:	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8	t+12
Loan Originated	0.000	-0.004*	-0.011***	-0.012***	-0.012***	-0.010***	-0.007*	-0.012***	-0.014***	-0.019***
	[0.001]	[0.002]	[0.003]	[0.003]	[0.004]	[0.004]	[0.004]	[0.004]	[0.005]	[0.006]
Ln Credit Card $Debt_{t-1}$	-0.005***	-0.004***	-0.003	-0.002	0.001	0.001	0.002	-0.001	-0.003	0.002
	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
Credit $Score_{t-1}$	-0.000***	-0.000***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln Total $Debt_{t-1}$	0.000	-0.002*	-0.002	-0.001	-0.001	0.000	-0.001	0.003	0.003	0.004
	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
Any Account $Delinquent_{t-1}$	0.788***	0.653***	0.551***	0.454***	0.357***	0.281***	0.210***	0.158***	0.121***	0.036***
	[0.007]	[0.009]	[0.010]	[0.009]	[0.009]	[0.010]	[0.009]	[0.009]	[0.009]	[0.010]
Obs	48747	47126	46020	44989	44144	43335	41764	38715	36494	16676
R-Squared	0.74	0.54	0.37	0.24	0.17	0.13	0.11	0.09	0.09	0.11

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variable is an indicator variable equal to one if any account was 90 days or more past due in quarter *t+x*, where *x* ranges from 0 in column 1 to 12 in column 10, and zero otherwise. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include the natural log of credit card debt in thousands of dollars plus 1,,credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

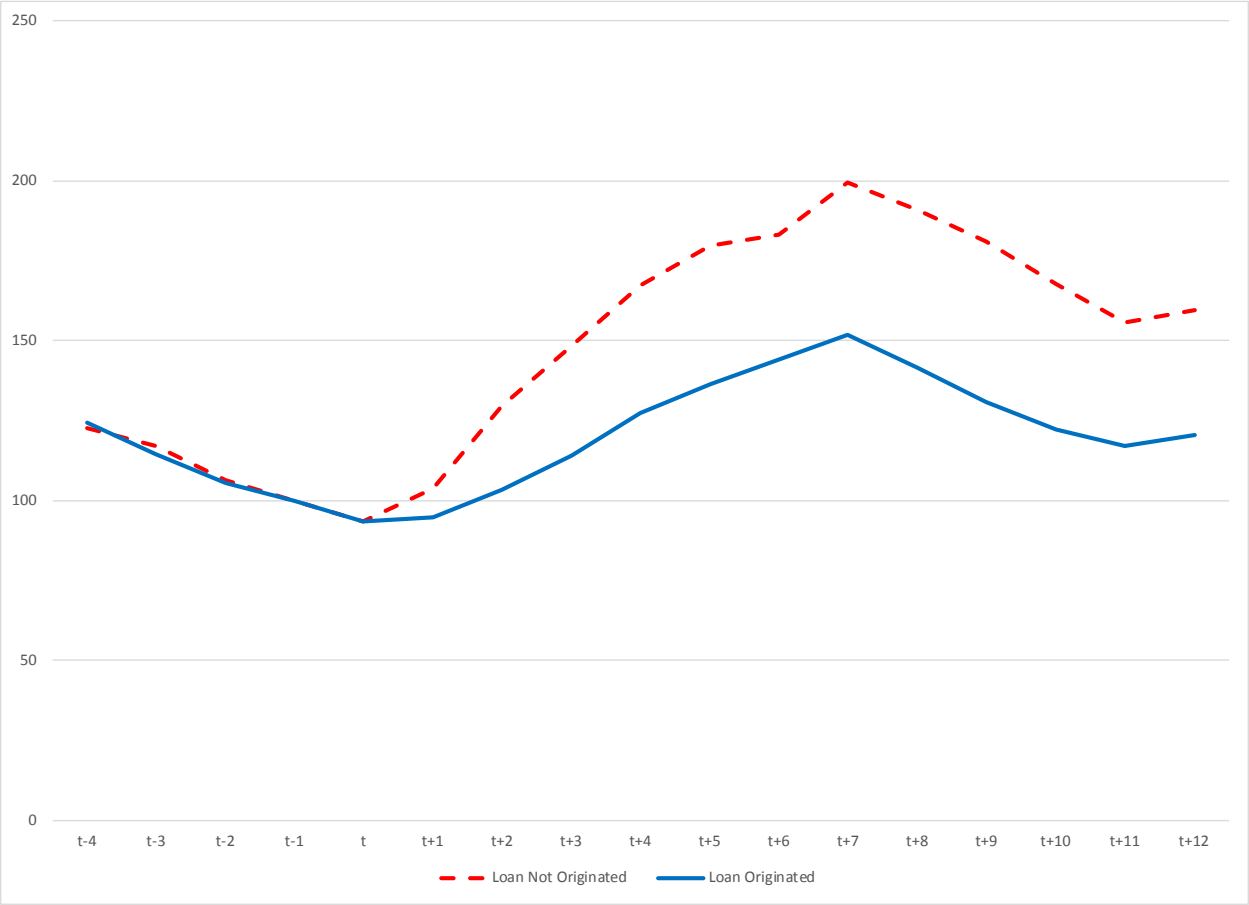
Table 14: Loan Origination and Alternative Credit Sources

	(1)	(2)	(3)	(4)	(5)	(6)
Quarter:	t	t+1	t	t+1	t	t+1
Loan Originated	-0.009**	-0.024***	-0.043***	-0.049***	-0.001	-0.004**
	[0.004]	[0.004]	[0.003]	[0.004]	[0.001]	[0.002]
Dependent Variable	New Credit Card		Has Consumer Loan		Has HELOC	
Sample	All		All		Homeowners	
Obs	48745	47124	48745	47093	23147	22520
R-Squared	0.04	0.02	0.57	0.42	0.93	0.85

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table presents OLS regression results for where the dependent variable is the credit outcome in quarter *t+x*, where *x* is equal to 0 or 1. In columns 1 and 2, the dependent variable is an indicator variable equal to one if the applicant opened a new credit card in quarter *t+x* and zero otherwise. In columns 3 and 4, the dependent variable is an indicator variable equal to one if the applicant has a consumer loan from a finance company in quarter *t+x* and zero otherwise. In columns 5 and 6, the dependent variable in an indicator variable equal to one if the applicant has a HELOC in quarter *t+x* and zero otherwise and the sample is restricted to applicants who report owning a home on their application. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. See prior tables for definitions of dependent variables. Additional controls include the dependent variable, the natural log of credit card debt in thousands of dollars plus 1,,credit score, the natural log of total outstanding debt in thousands of dollars plus 1, and delinquency status in the quarter prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include quarter fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

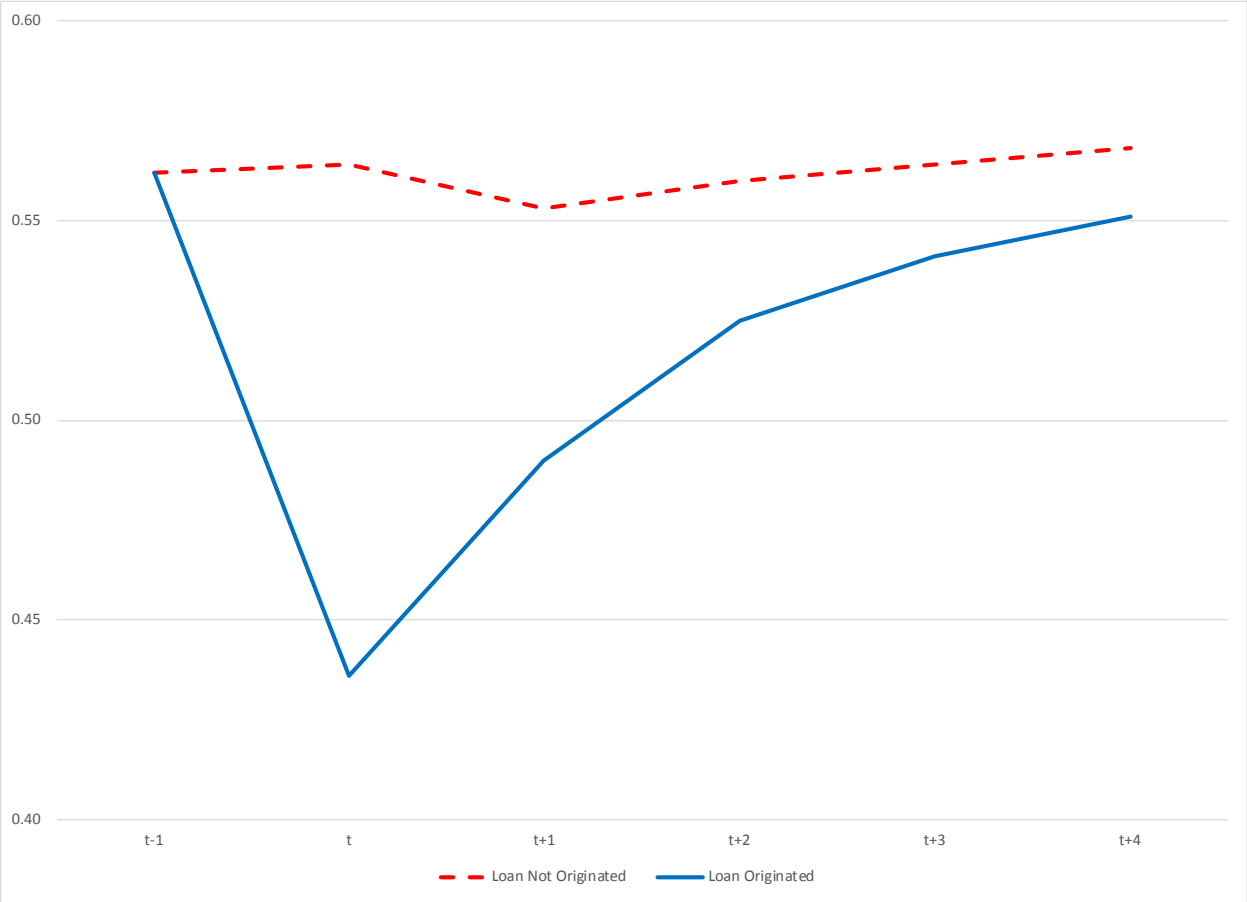
Figure 1: Relative Delinquency Rates, by Quarter



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the share of applicants with any account 90 days or more past due for borrowers and non-borrowers with the value in the quarter of loan application equal to 100.

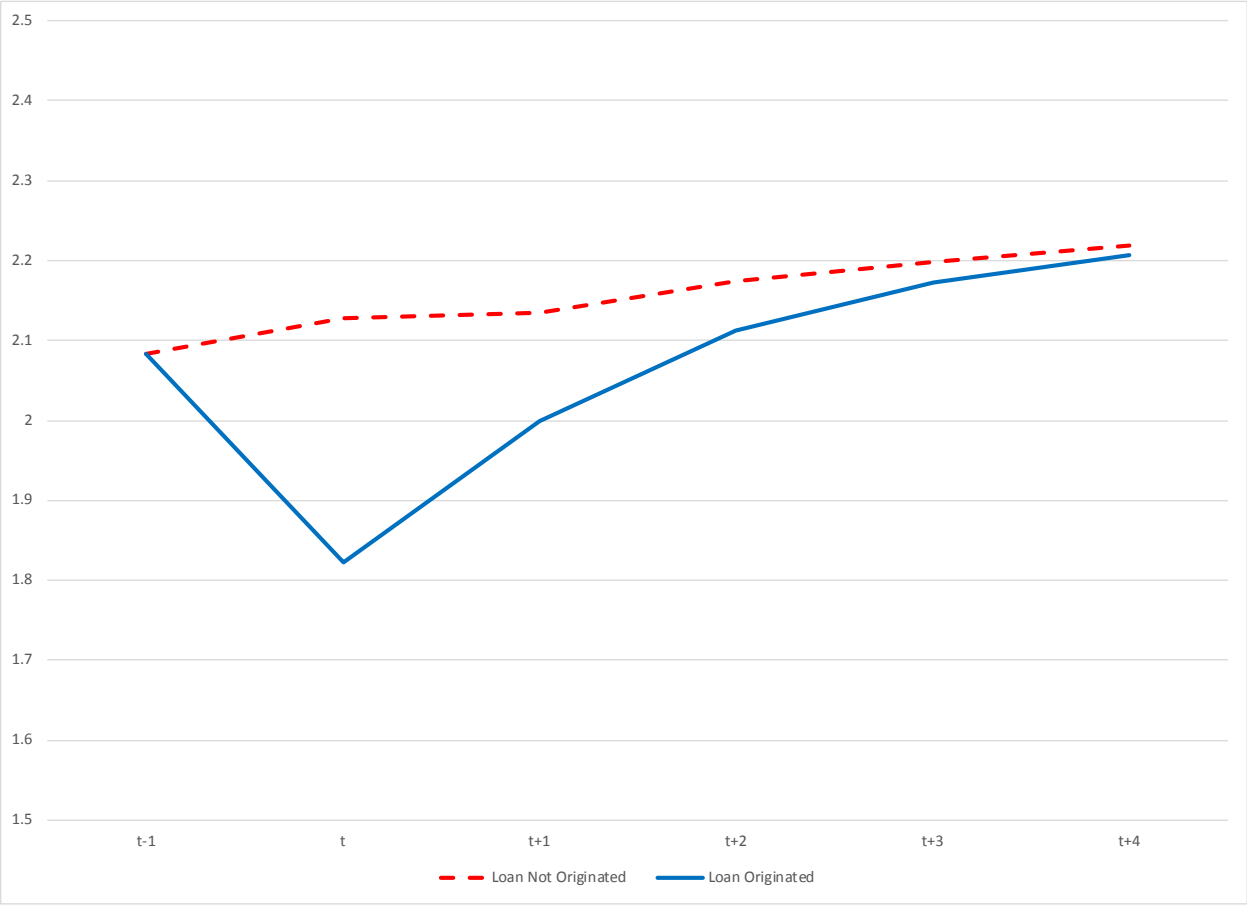
Figure 2: Predicted Credit Card Utilization Rate, by Quarter



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the predicted credit card utilization rate by quarter for borrowers and non-borrowers using the estimates in Table 5. The other control variables are evaluated at their mean value.

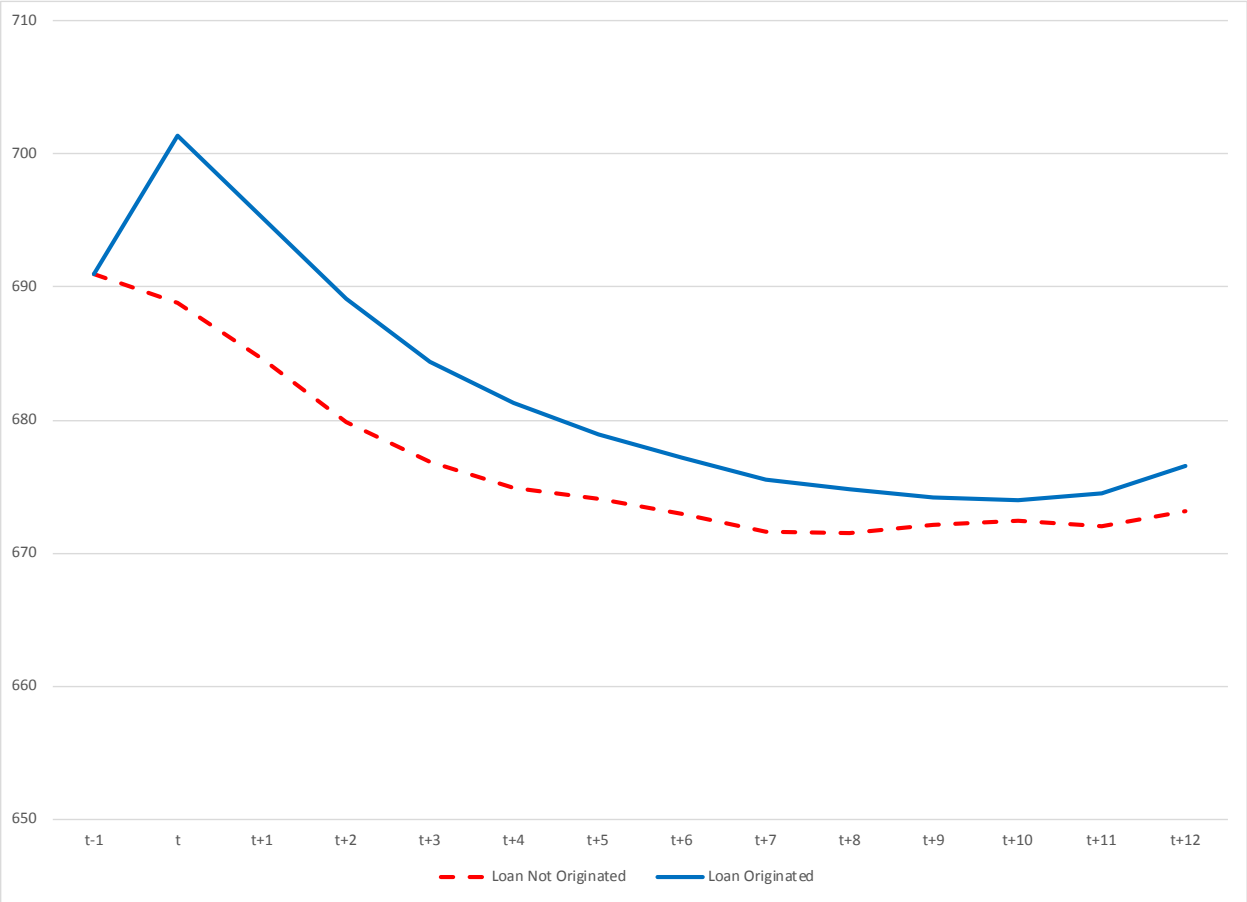
Figure 3: Predicted Credit Card Debt, by Quarter



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the predicted natural log of credit card debt in thousands of dollars plus one by quarter for borrowers and non-borrowers using the estimates in Table 5. The other control variables are evaluated at their mean value.

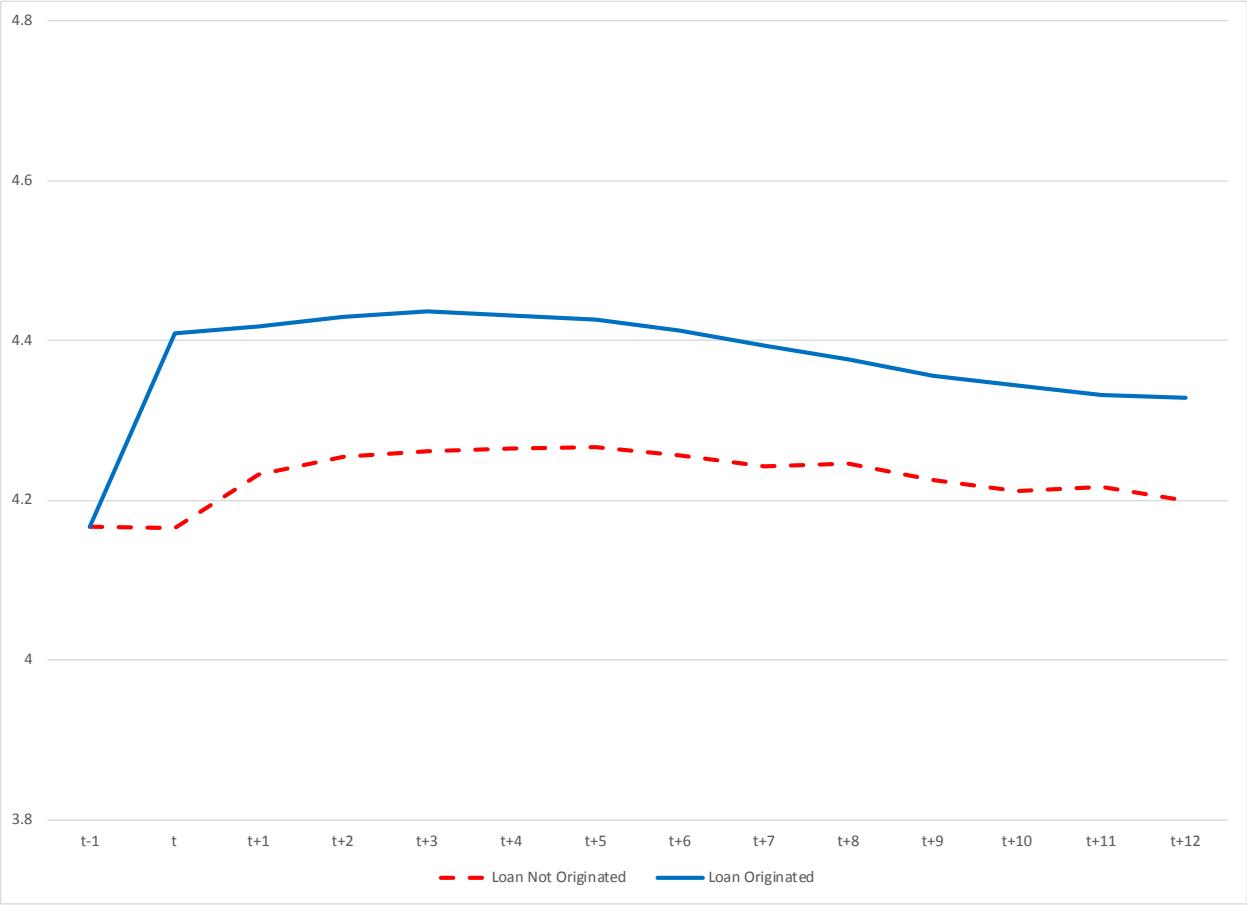
Figure 4: Predicted Credit Score, by Quarter



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the predicted credit score by quarter for borrowers and non-borrowers using the estimates in Table 6. The other control variables are evaluated at their mean value.

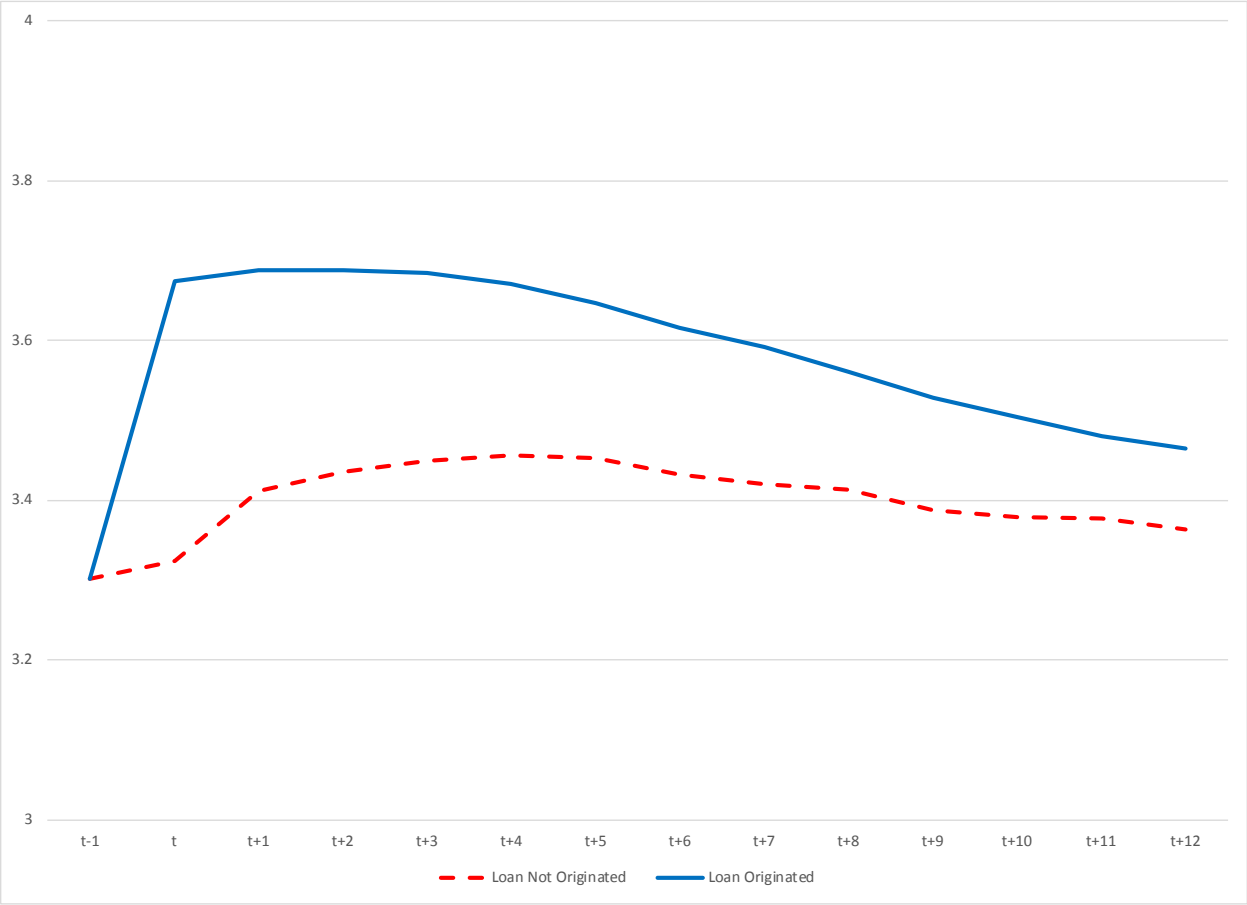
Figure 5: Predicted Total Debt, by Quarter



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the predicted natural log of total debt in thousands of dollars plus one by quarter for borrowers and non-borrowers using the estimates in Table 7. The other control variables are evaluated at their mean value.

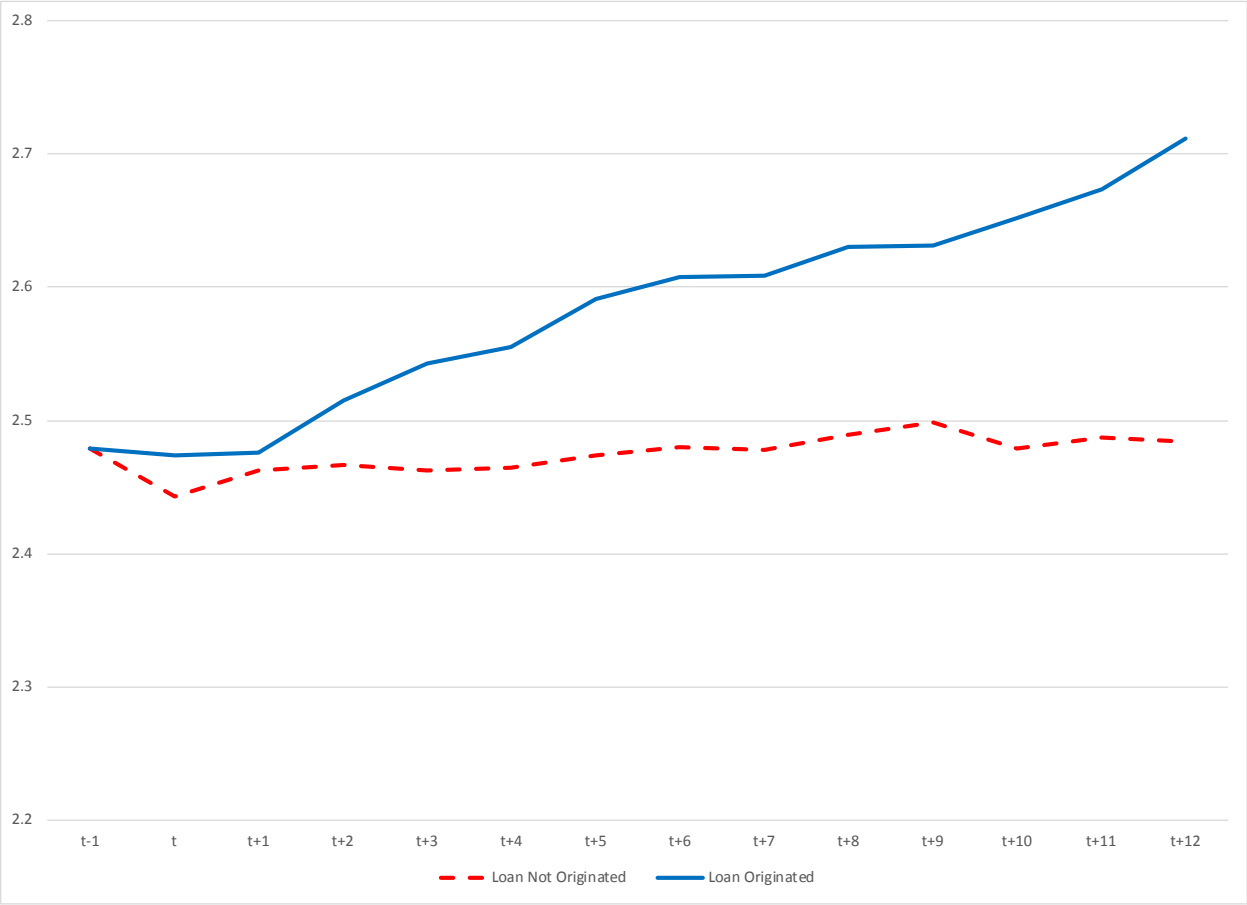
Figure 6: Predicted Non-Mortgage Debt, by Quarter



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the predicted natural log of non-mortgage debt in thousands of dollars plus one by quarter for borrowers and non-borrowers using the estimates in Table 8. The other control variables are evaluated at their mean value.

Figure 7: Predicted Mortgage Debt, by Quarter



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

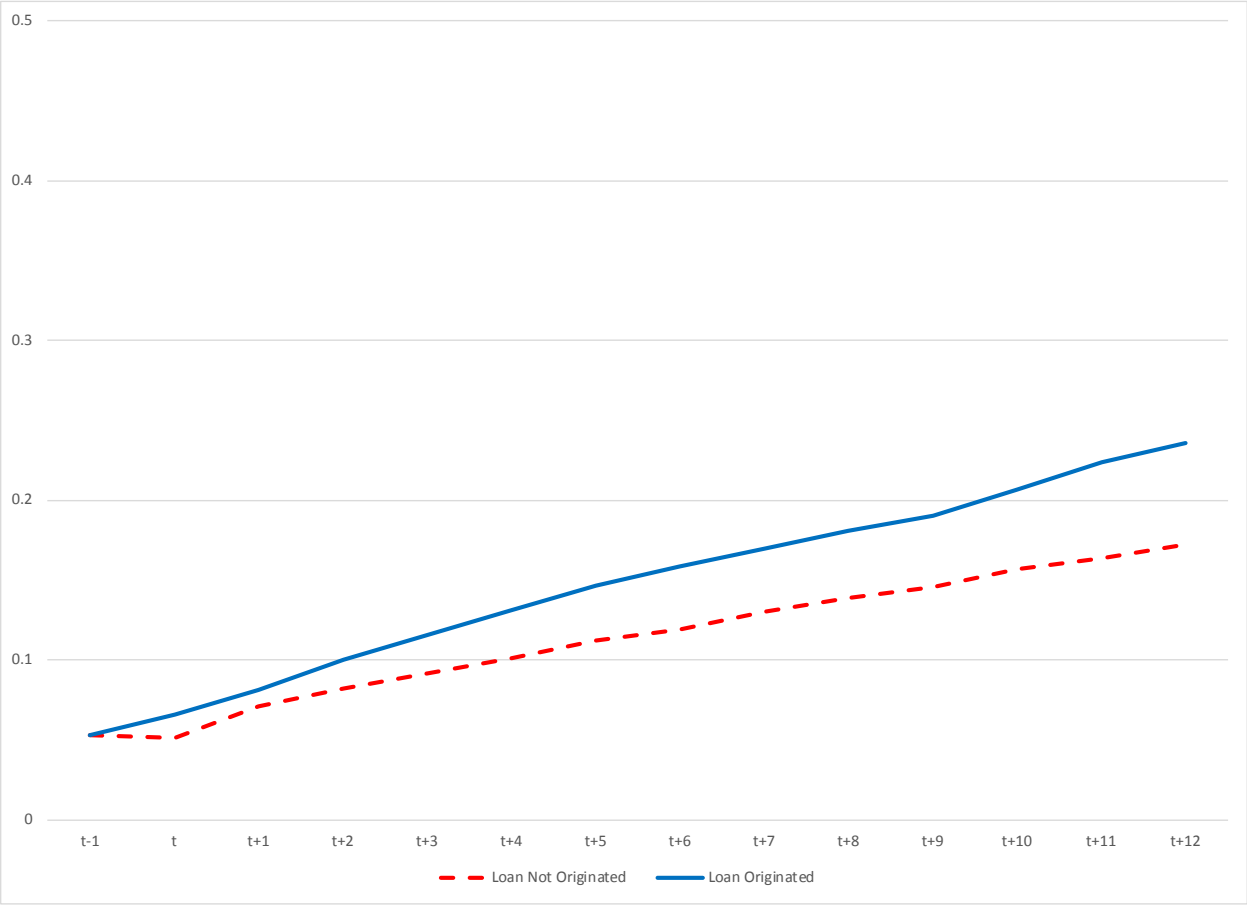
Note: This figure plots the predicted natural log of mortgage debt in thousands of dollars plus one by quarter for borrowers and non-borrowers using the estimates in Table 9. The other control variables are evaluated at their mean value.

Figure 8: Predicted Mortgage Debt, by Quarter - Homeowners Only

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the predicted natural log of mortgage debt in thousands of dollars plus one by quarter for borrowers and non-borrowers using the estimates in Table 10. The sample is restricted to applicants that report owning a home on their application. The other control variables are evaluated at their mean value.

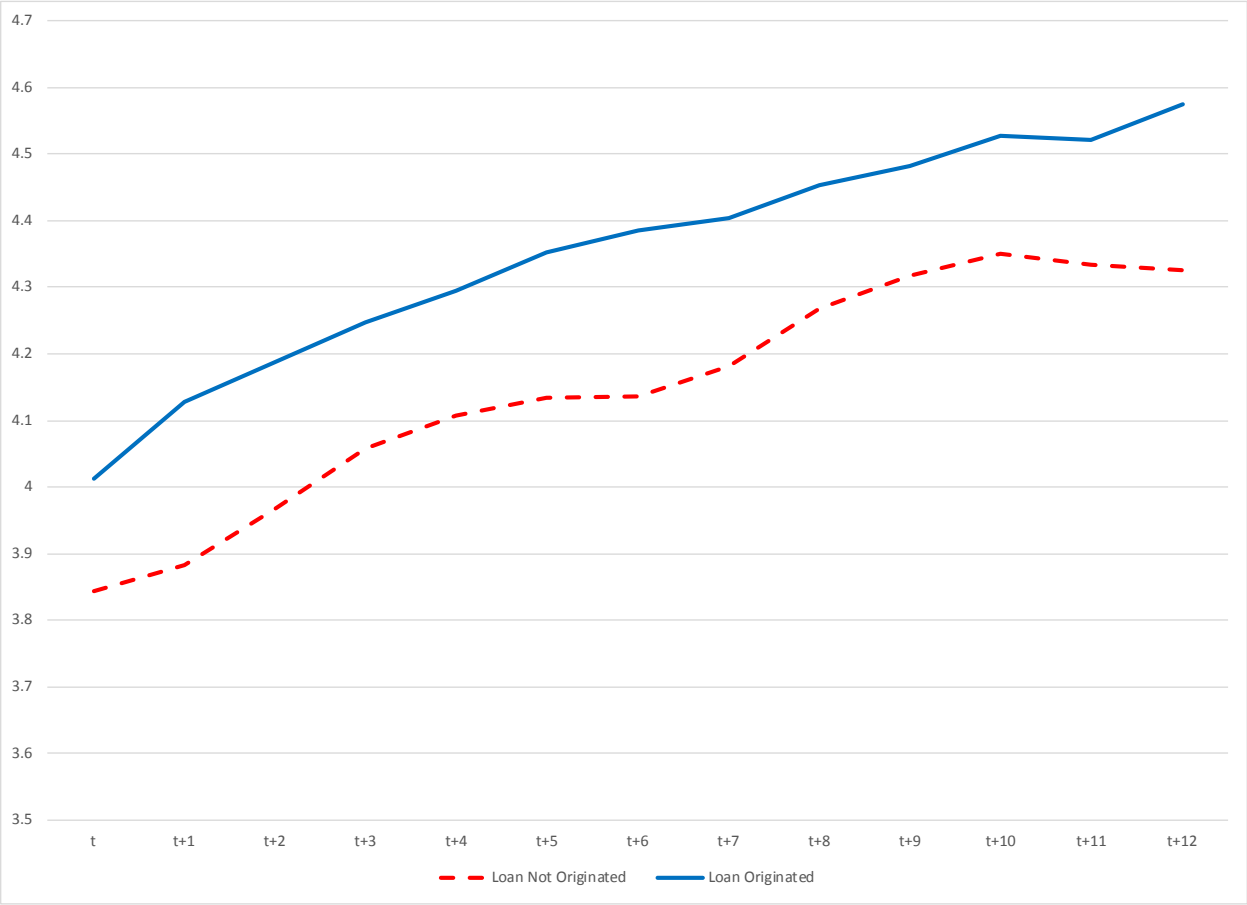
Figure 9: Predicted Share with Any Mortgage Debt, by Quarter - Non-Homeowners Only



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the predicted share of applicants with any mortgage debt by quarter for borrowers and non-borrowers using the estimates in Table 11. The sample is restricted to applicants that report not owning a home on their application. The other control variables are evaluated at their mean value.

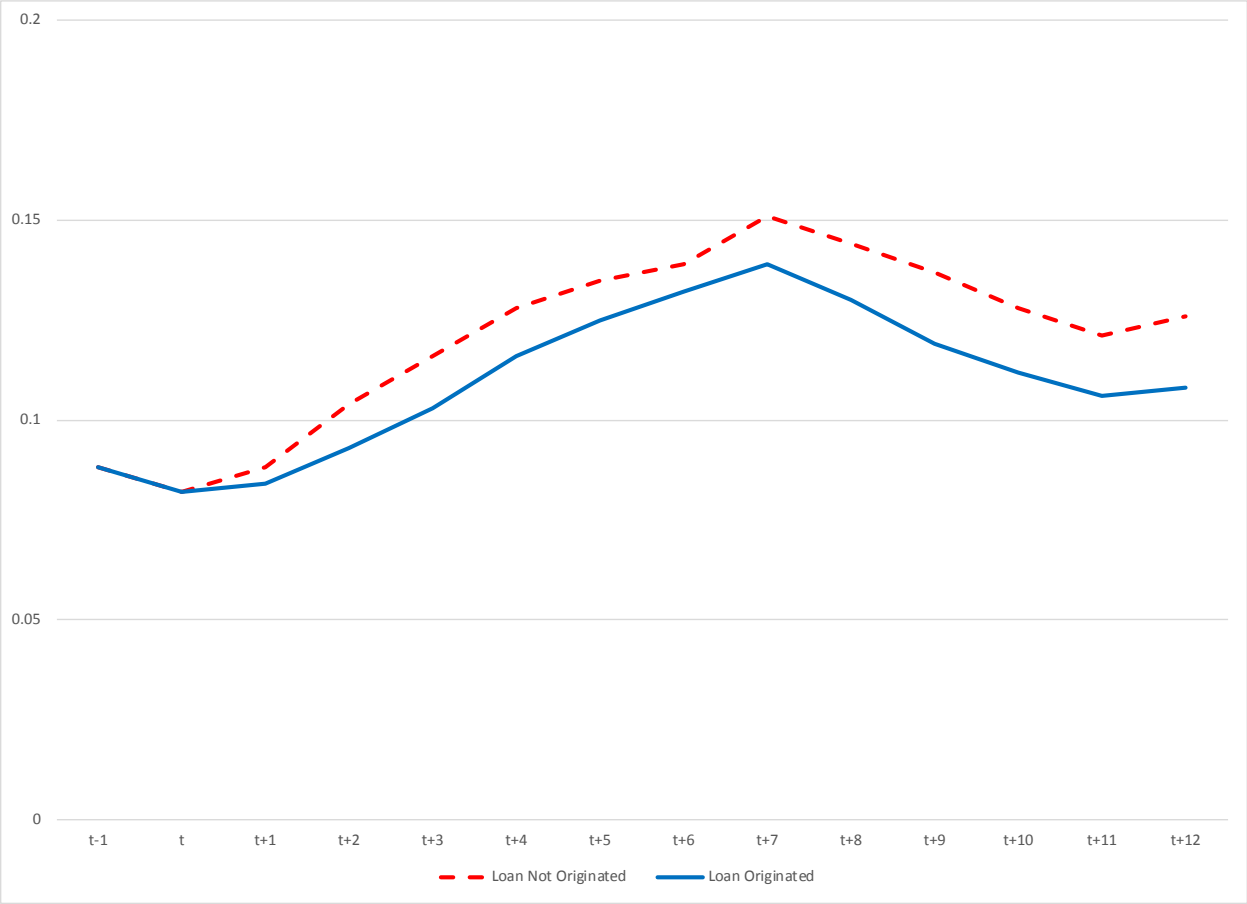
Figure 10: Predicted Mortgage Debt, by Quarter – Non-Homeowners Only



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the predicted natural log of mortgage debt in thousands of dollars by quarter for borrowers and non-borrowers using the estimates in Table 12. The sample is restricted to applicants that report not owning a home on their application. The other control variables are evaluated at their mean value.

Figure 11: Predicted Delinquency Rate, by Quarter



Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This figure plots the predicted share of applicants with any account 90 days or more past due for borrowers and non-borrowers using the estimates in Table 14. The other control variables are evaluated at their mean value.

Appendix Table 1: Key Variable Definitions

Variable	Definition	Source
Credit Score	Equifax risk score	CCP
Total Debt	Total balance (CCP) + Outstanding balance on all Prosper loans (Prosper)	CCP, Prosper
Credit Card Debt	Balance on all bankcard accounts	CCP
Credit Card Limit	Limit on all bankcard accounts	CCP
Credit Card Utilization Rate	Credit Card Debt / Credit Card Limit	CCP
Mortgage Debt	Balance on all first mortgage and home equity installment accounts	CCP
Non-Mortgage Debt	Total Debt – Mortgage Debt	CCP, Prosper
Any Delinquent Account	Any account that is at least 90 days past due (including Prosper loans)	CCP, Prosper
New Credit Card	Newest bankcard establishment less than 4 months ago	CCP
Has Consumer Loan	Positive balance on all consumer loan accounts	CCP
Has HELOC	Positive balance on all home equity revolving accounts	CCP
Loan Funded	Application was sufficiently funded by investors for loan to be made	Prosper
Loan Originated	Application resulted in loan made to applicant	Prosper
Listing Amount	Loan amount requested by applicant	Prosper
Monthly Payment	Monthly payment associated with application	Prosper
Borrower APR	Borrower APR	Prosper
Estimated Return	Estimated return to investors of loan	Prosper
FICO	FICO score (at time of application)	Prosper
Monthly Income	Monthly income as reported by applicant (at time of application)	Prosper
Home Owner	Applicant reported owning home on application	Prosper

Appendix Table 2: Results Using only Loans Identified in CCP

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Quarter:	t	t+1	t+2	t+3	t+4	t+5	t+6	t+7	t+8
					Dependent Variable: Credit Score				
Loan Originated	13.937***	12.239***	10.451***	8.241***	7.718***	6.001***	4.396***	3.828**	2.014
	[0.586]	[0.844]	[1.081]	[1.316]	[1.433]	[1.505]	[1.629]	[1.708]	[1.814]
Obs	21815	21024	20457	19915	19481	19065	18309	16496	15234
R-Squared	0.76	0.56	0.44	0.38	0.35	0.33	0.31	0.29	0.29
					Dependent Variable: Total Debt (Consumer Modeling Definition)				
Loan Originated	0.195***	0.150***	0.150***	0.169***	0.158***	0.144***	0.148***	0.160***	0.148***
	[0.006]	[0.008]	[0.010]	[0.012]	[0.014]	[0.015]	[0.018]	[0.020]	[0.024]
Obs	21811	21012	20429	19868	19414	18958	18180	16351	15082
R-Squared	0.93	0.87	0.81	0.75	0.70	0.66	0.62	0.57	0.54
					Dependent Variable: Non-Mortgage Debt (Consumer Modeling Definition)				
Loan Originated	0.294***	0.241***	0.241***	0.232***	0.220***	0.198***	0.212***	0.204***	0.187***
	[0.006]	[0.008]	[0.010]	[0.011]	[0.013]	[0.014]	[0.016]	[0.018]	[0.020]
Obs	21769	20953	20378	19807	19351	18893	18104	16279	15009
R-Squared	0.87	0.78	0.70	0.61	0.54	0.48	0.43	0.39	0.36
					Dependent Variable: Mortgage Debt (Consumer Modeling Definition)				
Loan Originated	0.026***	-0.006	-0.006	0.044**	0.037*	0.059***	0.057**	0.066**	0.081**
	[0.009]	[0.013]	[0.016]	[0.020]	[0.021]	[0.022]	[0.024]	[0.029]	[0.032]
Obs	21773	20965	20405	19854	19416	18997	18231	16419	15158
R-Squared	0.96	0.91	0.87	0.83	0.80	0.77	0.74	0.70	0.66

	Dependent Variable: Any Account Delinquent (Consumer Modeling Definition)								
Loan Originated	-0.002	-0.005**	-0.010***	-0.012***	-0.011**	-0.011**	-0.006	-0.007	-0.014**
	[0.001]	[0.002]	[0.003]	[0.004]	[0.004]	[0.005]	[0.005]	[0.006]	[0.006]
Obs	30009	28968	28235	27541	27003	26475	25321	22812	21044
R-Squared	0.73	0.43	0.21	0.13	0.09	0.08	0.09	0.09	0.11

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP) and Prosper Funding LLC data.

Note: This table replicates the results in Tables 6, 7, 8, 9, and 13 with two significant differences. First, the sample of borrowers is restricted to those whose loan can be identified in the CCP. See text for description of how loans are identified in CCP. Second, the measures of debt and delinquencies use data from the consumer modeling data series in the CCP, rather than the credit trends data series. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. See the corresponding table for the additional control variables. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 3: Changes in CRISM Variables Around Loan Origination, by Whether Loan is Identified in CCP

	Prosper Loan in CCP	Prosper Loan Not in CCP	Difference	
Credit Score	8.74	8.23	0.52	
Vantage 3 Score	8.65	11.58	-2.93	***
Debt to Income	-13.50	-14.96	1.46	
Installment Loan Payment	373.26	66.80	306.46	***
Total Debt Payment	262.63	-24.57	287.20	***

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP), Equifax Credit Risk Insight Servicing and Black Knight McDash (CRISM), and Prosper Funding LLC data.

Note: This table presents summary statistics of change in key credit bureau variables from CRISM in the month of Prosper loan origination by whether or not the Prosper loan is identified as appearing in the CCP data.

Appendix Table 4: Results using CRISM Data, by Month

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Month:	t	t+1	t+2	t+3	t+6	t+9	t+12	t+18	t+24
					Dependent Variable: Credit Score				
Loan Originated	9.809***	15.622***	15.763***	15.545***	14.081***	11.937***	10.681***	8.905***	9.142***
	[0.394]	[0.565]	[0.721]	[0.836]	[1.088]	[1.350]	[1.530]	[1.887]	[2.494]
Sample					In CRISM				
Obs	16364	16253	16160	16088	15809	15482	15117	12964	10021
R-Squared	0.85	0.77	0.7	0.64	0.48	0.38	0.33	0.27	0.23
					Dependent Variable: Credit Score				
Loan Originated	10.567***	17.469***	18.196***	17.849***	17.343***	15.470***	15.325***	12.281***	13.432**
	[0.735]	[0.920]	[1.220]	[1.401]	[1.994]	[2.442]	[2.682]	[3.414]	[6.219]
Sample					In CRISM, Loan Identified in CCP				
Obs	6905	6859	6816	6793	6691	6569	6417	5225	3323
R-Squared	0.85	0.75	0.66	0.59	0.44	0.35	0.32	0.27	0.25
					Dependent Variable: Vantage 3 Score				
Loan Originated	12.511***	20.743***	18.780***	17.022***	12.605***	8.911***	7.853***	5.926***	5.635**
	[0.551]	[0.736]	[0.841]	[0.930]	[1.092]	[1.281]	[1.433]	[1.774]	[2.329]
Sample					In CRISM				
Obs	16364	16253	16160	16088	15809	15482	15117	12964	10021
R-Squared	0.71	0.6	0.56	0.52	0.42	0.35	0.31	0.24	0.21
					Dependent Variable: Vantage 3 Score				
Loan Originated	9.740***	19.417***	17.788***	16.574***	14.945***	10.532***	11.390***	8.067**	8.498
	[0.940]	[1.143]	[1.341]	[1.491]	[1.958]	[2.269]	[2.506]	[3.240]	[5.854]
Sample					In CRISM, Loan Identified in CCP				
Obs	6905	6859	6816	6793	6691	6569	6417	5225	3323
R-Squared	0.74	0.62	0.56	0.52	0.4	0.34	0.31	0.24	0.24

Source: Authors' calculations based on FRBNY Consumer Credit Panel (CCP), Equifax Credit Risk Insight Servicing and Black Knight McDash (CRISM), and Prosper Funding LLC data.

Note: This table presents OLS regression results where the dependent variable is credit score or Vantage 3 score in month *t+x*, where *x* ranges from 0 in column 1 to 12 in column 10, and zero otherwise. The key independent variable is *LoanOriginated*, which is an indicator variable equal to one if the application results in a loan origination and zero otherwise. Additional controls include the dependent variable in the month prior to loan application from the credit bureau data and the Prosper risk rating, the log listing amount, the length of the loan, the estimated loss rate, the borrower APR, the log monthly payment, the use of proceeds, FICO score bins, monthly debt payments, debt-to-income ratio, employment status, monthly income, homeownership status, the log number of credit lines, and amount funded from the Prosper data. All specifications include month-year fixed effects. Standard errors are clustered by the date of the application. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.