

Adverse Incentives in Crowdfunding

Thomas Hildebrand,[†] Manju Puri,[‡] and Jörg Rocholl[§]

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This paper analyses the substantially growing markets for crowdfunding, in which retail investors lend to borrowers without financial intermediaries. Critics suggest these markets allow sophisticated investors to take advantage of unsophisticated investors. The growth and viability of these markets critically depends on the underlying incentives. We provide evidence of perverse incentives in crowdfunding that are not fully recognized by the market. In particular we look at group leader bids in the presence of origination fees and find that these bids are (wrongly) perceived as a signal of good loan quality, resulting in lower interest rates. Yet these loans actually have higher default rates. These adverse incentives are overcome only with sufficient skin in the game and when there are no origination fees. The results provide important implications for crowdfunding, its structure and regulation.

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[†] ESMT European School of Management and Technology. Email: thomas.hildebrand@esmt.org. Tel: +49 30 21231-5612.

[‡] Duke University and NBER. Email: mpuri@duke.edu. Tel: (919) 660-7657.

[§] ESMT European School of Management and Technology. Email: rocholl@esmt.org. Tel: +49 30 21231-1292.

Introduction

Markets for crowdfunding, barely known to a broader public until recently, have rapidly and significantly grown into a billion-dollar industry. In these markets, individuals can directly finance other individuals or companies without financial intermediation, making use of the growing availability and verifiability of information on these individuals and companies. According to an industry study, there were more than 450 active crowdfunding platforms worldwide in 2012, most of them based in North America and Western Europe, which represents an increase of more than 350% compared to 2007. In 2011, these platforms together raised an amount of almost \$1.5 billion in more than one million successfully funded campaigns.¹

As a consequence, crowdfunding, with its applicability to various areas and its significant potential pool of capital, has recently also received strong bipartisan support as a means to alleviate constraints for the financing of individuals and small business and thus of economic growth.² Accordingly, President Obama signed the “Jumpstart Our Business Startups (JOBS) Act” on April 5, 2012, legalizing crowdfunding by authorizing SEC-approved portals for companies to seek funding from anyone. Crowdfunding has attracted significant attention in particular in the form of online lending in peer-to-peer transactions, which, according to the Consumer Financial Protection Bureau (CFPB), “*could have significant implications for consumers seeking alternative sources of credit.*”³ While crowdfunding is thus commonly viewed as a means to fundamentally change the investment and financing process as well as providing more transparency, the potential of investors being taken advantage of by unscrupulous lenders has been expounded by a large number of regulators and academicians.⁴

¹ Crowdfunding.org, 2002

² See for example, “Pennies from Many“, New York Times, September 25, 2011.

³ GAO Report to Congressional Committees, Person to Person Lending, July 2011, Page 56.

⁴ The creation of the CFPB in the 2010 Dodd-Frank Act aims to protect consumers by regulating and enforcing consumer financial laws and thus restricting unfair treatment.

Despite the growing importance of crowdfunding markets and their perception as markets of the future, our understanding of their functioning is still quite limited. Clearly, they differ from traditional markets, in particular, because there is no formal intermediary. Is the absence of formal intermediaries made up by the endogenous creation of groups and certification by group leaders? What are the incentives of players? Are sophisticated investors taking advantage of unsophisticated investors? What are the implications for the kinds of loans originated as well as their interest and default rates? The answer to such questions would be a first step towards understanding these markets and discussing the appropriate regulatory framework for them.

In this paper we study the incentives of the players. In particular, we examine different modes of origination and the related incentives. We do this by examining the impact of the existence of origination fees (group leader rewards) on the online social lending platform Prosper.com, on which lenders can give their money directly to borrowers without the intermediation of a financial institution. Success rates of listings are higher in groups suggesting that groups are important. However, what are the group leader incentives? We are able to examine incentive effects for group leaders and how these change with and without the presence of origination fees. We analyze how these group leaders bid when rewards exist and how their bidding then affects the listing success, interest rates, and default rates of loans in their groups. We compare this effect to the corresponding evidence for the *same* group leaders when rewards in their groups do not exist anymore as well as for the counter-factual – groups in which the group leaders do not get a reward. Our results suggest the presence of perverse incentives in crowdfunding that are not fully recognized in the market.

We find a marked difference in group leaders' behavior before and after the elimination of rewards, in the number and kind of loans being originated, the interest rates of these loans, and their performance. When group leaders can earn rewards, they bid actively and promote listings, thus increasing the success probability of these listings. After the elimination of the rewards, group leaders bid on and thus promote far fewer listings, with the result that also far fewer

listings become successful. Furthermore, we find that the default rates of loans substantially decrease once group leaders are not allowed any more to charge rewards.

This change in group leader behavior with the resulting decrease in loan volume and improvement in loan performance is consistent with the notion that group leaders promote questionable loans in order to earn rewards. A more benign explanation is that as group leaders do not receive compensation any more, they are no longer willing to undergo costly verification work and to screen opaque borrowers of marginal creditworthiness. So more risky, marginal loans are not promoted. Perhaps the best place to see whether group leaders behave strategically to maximize their rewards is to examine their bidding behavior and this is where the bulk of our analysis is conducted.

We find that default rates are substantially higher for the listings that group leaders bid on when they earn rewards, yet the interest rates for these loans are substantially lower. Group leader bids thus enhance the credibility of loans and are perceived as a signal of higher quality. However, these loans have ex-post higher default rates (suggesting they are of lower quality). The evidence suggests the existence of adverse incentives for the group leaders that are not fully recognized by other lenders with group leaders using bidding as a strategic tool to induce other lenders to come in. These perverse incentives are overcome when the group leader has sufficient skin in the game, i.e. when he bids on and contributes a substantial fraction of the requested loan amount and is thus severely hurt by losing money when a borrower defaults. We find in this case that the default rates are significantly lower than for other loans and almost identical to those for loans after the elimination of group leader rewards.

Furthermore, the adverse incentives do not exist in these groups when the *same* group leaders earn no rewards anymore and in groups in which group leaders never earn a reward. Here, both default and interest rates are significantly lower for the listings that group leaders bid on. In sum,

this evidence suggests that group leaders forego strategic bidding only when they have skin in the game resulting in their screening listings carefully.

To the best of our knowledge, ours is the first paper to analyze the incentives of players in the rapidly growing arena of crowdfunding and furthermore to provide evidence on adverse incentives that do not appear to be fully recognized by the markets. Our paper is related to a number of different literatures.

First, it relates to the growing literature on irresponsible advice and lending by financial intermediaries and the resulting need for regulatory intervention and consumer protection, such as for example Bolton, Freixas, and Shapiro (2007), Bergstresser, Chalmers, and Tufano (2009), and Inderst and Ottaviani (2009).

Second, it is related to the classic literature that theorizes how incentives shape behavior to draw implications for financial markets. In theory, there are a host of papers that look at how information asymmetry can result in agency problems and the mechanisms needed to overcome them e.g., Holmstrom and Tirole (1997); Gorton and Pennacchi (1995) model the importance of skin in the game i.e., of the informed lender or monitor taking enough of a financial interest in the firm to reassure investors that the classic problems of adverse selection and moral hazard are overcome. Empirical work documenting how theorized effects translate into reality have lagged behind, largely because there are few natural experiments or settings where one can directly test for incentive effects. There are a few notable exceptions e.g. in a recent JPE issue, Muralidharan and Sundararaman (2011) examine an experiment testing incentive effects in a teacher pay performance program. By examining a setting where there is a change in rules that disallow origination fees we can see if for the same lenders there is a distinct change in behavior that would correspond to theory.

Third, it relates to the literature on the use of technological innovations and their effect on bank organization and lending processes. Examples comprise Ferrari, Verboven, and Degryse (2010), Degryse, Laeven, and Ongena (2009) as well as Berger and Udell (2002). The use of new technologies is also relevant in the context of the differentiation between hard and soft information, along the lines in Stein (2002) and Berger, Miller, Petersen, Rajan, and Stein (2005).

Finally, there are a growing number of papers that analyze online peer to peer lending. Hulme and Wright (2006) provide an overview of the historical origins and contemporary social trends of online social lending. Ravina (2012) and Pope and Sydnor (2009) analyze whether there is discrimination on Prosper.com in terms of socio-demographic variables such as race and gender. These characteristics are taken care of by the difference-in-difference methodology employed in this paper. Iyer, Khwaja, Luttmer, and Shue (2010) investigate whether lenders can infer soft information in Prosper. Lin, Prabhala, and Viswanathan (2013) test which role social networks and in particular “the company that borrowers keep”, i.e. the borrowers’ friends, play for the lending outcome. Duarte, Siegel, and Young (2012) show that loans of borrowers who appear more trustworthy are funded with a higher probability, compared to loans of borrowers who appear less trustworthy. Michels (2012) investigates whether unverifiable disclosures are associated with increased funding probabilities and/or reduced interest rates of loans. Unlike these papers, we look at the incentives of various players in crowdfunding and the implications for loan origination and performance, which have important implications for the sustainability and growth of crowdfunding markets.

The rest of the paper is structured as follows. The next section describes the market for crowdfunding as well as the institutional setting on the platform and provides an overview of the data. Section II presents the analysis and the univariate and multivariate results. In section III, we provide a number of robustness tests. Section IV concludes.

I. Institutional Setting and Data

A. The market for crowdfunding on Prosper.com

The market for crowdfunding on Prosper.com brings together potential borrowers and potential lenders.⁵ After registering on the platform, potential borrowers can post a listing in which they ask for money and provide different types of information so that potential lenders can better assess their creditworthiness. Until today, 71,890 loans have been originated out of more than 450,000 listings on Prosper.com. The total amount funded exceeds \$485,000,000.

Borrowers indicate the requested amount, which is between \$1,000 and \$25,000, as well as the maximum interest rate they are willing to pay.⁶ In our sample period between 02/13/2007 and 04/15/2008, we observe a total of 153,541 listings. The left-hand side of Panel A of Table I shows that potential borrowers ask for an average amount of \$8,164 and are willing to pay an average interest rate of 17.97%.⁷ Panel B shows that 8% of the listings are successful, i.e. they become loans. Listings are bid on in 53% of the cases and receive on average 16.86 bids.

<INSERT TABLE I ABOUT HERE>

Prosper.com assigns a unique identification number to each borrower and requires him to provide his social security and driver's license number so that Prosper.com can verify his identity and obtain his Experian Scorex PLUSSM credit report. Credit grades range from AA for the best to HR for the worst customers and are based on the Experian credit score. Panel C of Table I shows the distribution of potential borrowers by credit grade. The largest number of potential borrowers has the worst credit grade of HR, but there is also a substantial number of

⁵ Institutions are not allowed on Prosper.com during the sample period, so only private persons may serve as borrowers or lenders.

⁶ In some states, there are interest rate caps, while in other states the maximum interest rate may go up to 35% – an interest rate cap set by Prosper.com.

⁷ Definitions for all variables in the tables of the paper are given in Table XII.

potential borrowers with the best credit grades of AA/A and B. The borrower can provide additional information of which only some is verified, e.g. borrower state or house ownership.⁸ Panel D of Table I shows that potential borrowers have an average debt-to-income ratio of 65%, and 34% of them own a house. They have been in their current job for 36 months.

Lenders can screen the listings and place one or several bids of at least \$50 at any interest rate below or equal to the borrower's maximum rate. Bids cannot be canceled or withdrawn. The bidding is performed as an open uniform-price auction in which everybody can observe each other's actions. As long as the aggregate supply on a listing does not exceed the borrower's demand, bidders can see the amount, but not the interest rates of the other bids. Once the aggregate supply exceeds the borrower's demand, bidders can also see the marginal interest rate. Lenders who offer the highest interest rates are outbid and the resulting interest rate is bid down until the duration of the listing expires and the listing becomes a loan. Alternatively, borrowers can choose that the listing is closed as soon as the total amount bid reaches the amount requested. All winning bidders receive the marginal interest rate. In case the total amount bid does not reach the amount requested, the listing expires and no transaction takes place. In our sample period, all loans on Prosper.com are 36-months annuity loans, which can be paid back in advance. The platform charges fees to borrowers and lenders once a listing becomes a loan. Borrowers pay a one-time fee of between 1% and 5% of the loan amount depending on their credit grade, which is subtracted from the gross loan amount. Lenders pay a 1% annual servicing fee.

The right-hand side of Panel A of Table I shows that the average amount of these loans is \$7,097. While borrowers indicate in their listings that they are willing to pay on average 20.01%, they end up paying 17.29%, as can be seen in Panel B. Successful listings receive a substantially higher number of bids, which amounts to more than 161. The distribution of loans across credit grades is substantially different from the distribution of listings, and most loans are given to

⁸ Additionally, the borrower has the possibility to post one or more photos, e.g. of herself or the object that she wants to finance with the loan.

customers with the credit grade of AA/A. Finally, Panel D shows that borrowers with successful listings have a lower debt-to-income ratio and are more likely to be home owners. A borrower who defaults on his loan is reported to credit bureaus. Prosper.com uses collection agencies to recover the outstanding balances, and their fees are borne by the lenders. Loans are unsecured with no second market unless they become overdue.

B. The Group System

Platform members can organize themselves in groups. Each user can form a group by defining the group purpose as well as the nature and interests of its members and thus become a group leader. Each user can be member and thus group leader of at most one group. The group leader administers her group and can also act as a lender/borrower. Furthermore, the group leader has the right to grant or deny users access to her group and ask for verification of the information they provide. Many group leaders request additional information from potential borrowers, a process referred to as vetting. Furthermore, some group leaders request to review every listing before it is posted in the group and explicitly offer help to potential borrowers in writing and designing the listing.

The group leader can exploit her informational advantage and the fact that everybody can observe each other's actions to promote listings in her group. In particular, she can place a bid on the respective listing, thereby signaling a financial commitment to the trustworthiness of the borrower. Furthermore, the group leader can write an endorsement for the potential borrower, i.e. a short text in which she describes why this respective borrower is particularly trustworthy. We concentrate on the analysis of bids as the most credible commitment by the group leaders, who are more active than other group members and the key facilitators in their groups.

Group leaders may either provide their service for free, for example because of the interest they earn on loans or the benefits from social interaction, or charge a fee on loans closed in their

group.⁹ We distinguish between *no-reward groups* and *reward groups* and define a group as a reward group if the group leader requires a group leader reward at least for one listing in her group. Otherwise, the group is defined as a no-reward group.

Table II provides an overview of listings and loans across reward groups, no-reward groups, and outside groups. The left-hand side of Panel B shows that the success probability is highest for listings in no-reward groups, followed by those in reward groups and outside groups. This observation is mirrored by the different number of bids and the different probabilities with which there was bidding at all across these different groups. Panel C shows that most listings are posted either outside a group (118,683) or in a reward group (32,966); much fewer listings are posted in no-reward groups (1,892). Panel D presents the borrower characteristics for the different types of groups and shows that the debt-to-income ratio, current and past delinquencies are lowest for potential borrowers in no-reward groups. Finally, Panel E shows the information on group-specific characteristics. Group leaders are most active in no-reward groups in terms of bidding on listings. The share of listings with at least one group leader bid is here (46%) considerably higher than in reward groups (32%).

<INSERT TABLE II ABOUT HERE>

C. The Existence and Elimination of Rewards

Prosper.com officially started its business in 2006. Since then, there have been several policy changes on the platform, which are summarized in Figure 1.

⁹ The group leader obtains a one-time reward (“match reward”, 0.5% of the loan amount except for E-loans and HR-loans) once the listing is completely funded and a monthly payment (“payment reward”, 1% p.a. for AA-loans and A-loans, 2% p.a. for B-loans, C-loans and D-loans, 4% p.a. for E-loans and HR-loans.). Alternatively, the group leader can also choose to only partly capture this reward.

<INSERT FIGURE 1 ABOUT HERE>

We focus in our analysis on group leader rewards, which exist since the beginning of our sample period on 02/13/2007 and are eliminated in the summer of 2007. As early as on 06/14/2007, first rumors on their elimination appear in online platforms.¹⁰ The official policy change then takes place on 09/12/2007.¹¹ As the first rumors may already change group leader's behavior, we choose the midpoint between the occurrence of the first rumors and the official change as the relevant date, which is the week of 07/30/2007. Prosper.com motivates the elimination of group leader rewards in its announcement by "(t)he original philosophy ... to enable borrowers in close-knit communities to leverage the reputation and peer pressure of their group..., where compensation is not the dominant motivation for the group leader's services." This event imposes a change on reward group leaders and systematically changes their incentives in the loan granting process. It thus represents an ideal setting to analyze how group leaders bid when rewards exist and what this means for loan outcomes. It also allows us to analyze how group leaders' bidding behavior and loan outcomes react to this sudden change in incentives. To exclude possible influences of other significant policy changes, we restrict our analysis to the loans originated between 02/13/2007 and 04/15/2008 in which no other significant policy change occurs and follow their performance until 03/01/2010.¹² The policy change of interest in our study is thus well centered in the sample period.

¹⁰ See <http://www.getrichslowly.org/forum/viewtopic.php?f=2&t=399&sid=80594d9d8a970cf51dc7e011ddaf325c> (accessed 06/18/2012).

¹¹ Prosper.com abolishes this group leader reward on 09/12/2007, following an announcement on 09/05/2007.

¹² During the sample period, there are two minor policy changes: On 10/30/2007, Prosper.com changes the lender servicing fee from 0.5% to 1% for A-loans and from 0.5% to 0% for AA-loans. Moreover, from this date on Prosper.com allows borrowers who already have a current loan to create a new listing in order to obtain a second loan. Second loans are allowed only for borrowers whose first loan has been active for some time and whose two loans together do not exceed the maximum amount of \$25,000. To control for this latter policy change, we remove from the analysis the corresponding listings in which borrowers apply for second loans. On 01/04/2008, Prosper.com changes the borrower closing fees from 1% to 2% for the credit grades A and B, from 1% to 3% for the credit grades C and D, and from 2% to 3% for the credit grades E and HR. We provide further evidence for the robustness of our results to these additional changes in the robustness section.

II. Empirical Analysis and Results

A. Univariate Analysis

A.1. Group Leader Bids

Group leaders can use bids as an important mechanism to promote listings in their groups. However, the existence of rewards for group leaders may create adverse incentives for these group leaders. Rewards for successful listings may induce them to use bids to persuade other lenders to bid even on weak listings, by making other lenders believe that these listings are creditworthy. Thus, in the first step, it is important to understand how bids are used in no-reward and reward groups and which outcomes are associated with them. In the observed period, group leaders bid on 32.7% of the listings and these bids tend to be successful: among all first group leader bids on a listing, only 13% are outbid. Mostly, these bids constitute small amounts – very often \$50 or \$100 – so that the median amount of the first group leader bid is \$70. Usually, these bids are placed very fast. If a group leader bids, her first bid is typically also the first overall bid on the respective listing.

Table III analyzes for no-reward and reward groups the listing success, interest rates, and loan performance based on whether the group leaders bids on a listing.

<INSERT TABLE III ABOUT HERE>

Panel A of Table III shows how success rates of listings are related to group leader bids. In no-reward groups, success rates for listings with (55.7%) are much higher than for those without a group leader bid (22.7%). This is true for all credit grades, which shows that group leader bids increase the probability of funding regardless of the riskiness of the listing. The analysis of reward groups draws a similar picture: here, only 15.0% of the listings without a group leader bid are funded, while the listing success is significantly increased by group leader bids (29.5%). From Panel B of Table III we observe that in no-reward groups, group leader bids do not

significantly influence the interest the borrower has to pay, except for slightly lower interest rates for credit grades B, D, and HR. The effect is more pronounced for reward groups. The analysis by credit grade reveals that loans with a group leader bid are associated with significantly smaller interest rates, in particular for the riskier credit grades. For example, borrowers with a loan in the credit grade HR pay on average 26.2% if the listing has no group leader bid, but only 24.2% if the group leader bids on the listing. From Panel C of Table III we see that in no-reward groups, loans of the riskier credit grades E and HR have lower failure rates if they have a group leader bid. By sharp contrast, loans in reward groups with a group leader bid in general have significantly higher failure rates than loans without a group leader bid (19.0 vs. 15.8). This is the case for almost all credit grades. Apparently, group leader bids do not work as credible signals in reward groups, as they lead to loans with higher default rates, yet lower interest rates.

Taken together, in both group types the success rates of listings with group leader bids are much higher than for listings without these bids. Yet, while in no-reward groups this mechanism is associated with listings of good quality despite their bad credit grade E or HR, in reward groups failure rates are systematically increased for listings with a group leader bid, while interest rates are decreased. Group leader bids thus lead to adverse outcomes in reward groups. If this is due to adverse incentives for group leaders, then we should expect to see a different pattern in their behavior before and after the change in reward structure. Our subsequent analysis thus focuses on group leader bidding behavior in reward groups before and after the elimination of rewards.

A.2. Group Leader Bidding Before and After the Elimination of Group Leader Rewards

We thus analyze next how the existence of rewards affects the group leader bidding behavior. Figure 2 shows the weekly share of listings with at least one group leader bid in no-reward and reward groups. In no-reward groups, this share does not show any remarkable trend over the

sample period. By sharp contrast, in reward groups the share decreases dramatically from about 40% to less than 10% once group leader rewards are eliminated.¹³

<INSERT FIGURE 2 ABOUT HERE>

Group leaders of reward groups thus significantly lower the effort they put into listings and in particular risky listings after the elimination of rewards – as opposed to group leaders of no-reward groups who do not change their behavior.

The bidding behavior and outcome patterns are analyzed in more detail in Table IV. In particular, Table IV distinguishes between the time period before and after the elimination of rewards and analyzes the effect of group leader bids on the different outcomes before and after this change. Panel A of Table IV shows that the listing success increases with a group leader bid both before and after the elimination of rewards. This pattern holds for each credit grade and is both statistically and economically highly significant. The results suggest that group leader bids are perceived as a credible signal for loan quality and help to induce other lenders to contribute to a loan. They also show that the impact of a group leader bid tends to be even more important after the elimination of rewards. While the listing success without a group leader bid is very similar before and after the change, it is much higher for group leader bids after the change than for group leader bids before the change. For example, for credit grades AA/A, while before the change the listing success increases from 33.9% without a group leader bid to 48.0% with a group leader bid, the corresponding increase after the change is from 32.6% to 67.6%.

<INSERT TABLE IV ABOUT HERE>

Panel B shows the results for the analysis of the interest rates. The pattern is again very similar before and after the elimination of the rewards. Interest rates are significantly lower for loans

¹³ The decrease of group leader bids in reward groups is significant for all credit grades, and it is most distinct for riskier credit grades. For example, it decreases from 34.7% to 3.9% for credit grade HR

with group leader bids than for loans without group leader bids, and this pattern holds in particular before the change. Group leader bids are thus again perceived as a credible signal for the quality of borrower listings and induce other lenders to charge lower interest rates for the resulting loans.

Finally, Panel C analyzes the performance of loans before and after the elimination of group leader rewards dependent on whether the group leader bids on them. In strict contrast to the results in Panel A and Panel B, the patterns here are completely different before and after the change. Before the change, loans with a group leader bid exhibit significantly higher default rates than loans without a group leader bid. This means that other lenders trust the group leader bid, as they are willing to participate in these loans at lower interest rates, but they are significantly hurt by the weaker performance of these loans. While group leader bids are perceived as a signal for loans of higher quality, they are in fact associated with loans of lower quality. These bids lead other lenders to participate in loans in which they should not participate, at least not at the given interest rates.

After the change however, loans with a group leader bid exhibit significantly lower default rates than loans without a group leader bid and thus show the same pattern as the results for the no-reward groups. The striking result in Table III that group leader bids in reward groups are associated with lower interest rates and yet higher default rates is thus only due to the pattern in the time when rewards exist. Without rewards, the patterns in these groups are very similar to those in no-reward groups.

Group leader bids thus do not work when group leader rewards exist, while they work properly when no such rewards exist. The results suggest that group leaders much more carefully screen and choose the listings that are funded when they have skin in the game. An open question is why – when group leader rewards exist – other lenders are willing to contribute to loans with group leader bids at lower interest rates and yet higher default rates. This suggests that co-lenders

do not fully foresee the consequences of the adverse incentives created by upfront rewards, most likely because of the short period between the creation of the webpage and the point of time when these lenders have to make their decisions.¹⁴

B. Multivariate Analysis

In order to determine the driving factors behind the results described above and to control for the joint influences, we now turn to the multivariate analysis. First, we only consider listings and loans in reward groups, conducting an event study in a traditional regression framework. Second, we use no-reward groups as the reference group for the evaluation of the developments in the reward groups, employing a difference-in-difference approach.

B.1. Traditional regression framework

B.1.1. Listing Success

Table V shows odds ratios of logistic regressions of listing success. In specification (1), we evaluate the influence that different listing characteristics and borrower characteristics have on listing success, abstracting from group characteristics and group leader bids. Listing success is decreasing in credit grade risk, debt-to-income ratio, and the number of historical and current records in the credit report; it is increasing in homeownership and in income.

<INSERT TABLE V ABOUT HERE>

In addition to these general listing characteristics and borrower characteristics, in specifications (2) and (3) we also evaluate the influence of different group characteristics. The probability that the listing is funded increases significantly if the group leader requires the listing to be reviewed

¹⁴ Lenders do not possess the full information that is used in this paper, as their decisions are made within the sample period, while the data for this paper cover the whole sample period.

before it is posted in the group (*Listing Review Requirement*), if the group leader offers help in designing the listing (*GL Offers Help*), or if the group leader writes an endorsement (*GL Endorsement*). Most importantly for the purpose of our study, group leader bids are highly important for the success of a listing, as can be seen at the top of specifications (2) and (3). In specification (2), we include a dummy variable for group leader bids into the regression (*GL Bid*). Listings with a *GL Bid* exhibit particularly high funding probabilities; *GL Bid* is thus perceived as a signal of high quality, inducing other lenders to contribute to the loan amount. In specification (3), we analyze to what extent the influence of this *GL Bid* on listing success in reward groups is different before and after the elimination of group leader rewards. The specification shows that the influence of a group leader bid on listing success in reward groups is significant both before and after the change, while it is higher after the change. Both results are consistent with the evidence from the univariate analysis and indicate that – after the elimination of group leader rewards – potential lenders trust more than before the correctness of the group leader’s signal that comes from his bid. This suggests that after this change, lenders might be less concerned about the group leader behaving opportunistically and promoting listings only for their own benefit.

B.1.2. Interest Rates of Loans

In order to determine the influence of the different variables on the interest rates that borrowers have to pay to the lenders if their listing is funded, we run Tobit regressions of this interest rate (in percent) on the same independent variables as in the regressions in Table V. Table VI reports the results, where the dependent variable is truncated at left at 0% and at right at 35%, which is the maximum interest rate possible on Prosper.com.¹⁵ Naturally, the sample is restricted to those listings that are completely funded and therefore become loans.

¹⁵ OLS regression results differ only marginally and are therefore not reported here.

<INSERT TABLE VI ABOUT HERE>

The interest rate of loans in the reference group, which are AA/A-loans, is about 7%. The borrower's credit grade is by far the most important factor for the interest rate charged to the borrower. Apart from that, the interest rate is increasing in the debt-to-income ratio and in the number of historical and current records in the credit report. Furthermore, a higher amount requested typically increases the interest rate.

Specification (2) shows that loans originated from listings with a *GL Bid* benefit from particularly low interest rates. Consistent with the earlier evidence, *GL Bid* is thus perceived as a credible signal for the quality of a loan and induces other lenders to ask for lower interest rates. We also find that the interest rate of the loan is significantly lower if the group leader claims to verify additional information from the borrower (*Vetting*) or if the group leader offers help in designing the listing (*GL Offers Help*). Finally, from specification (3) we deduce that a group leader bid is associated with lower interest rates before and after the elimination of rewards. Other lenders thus trust the group leader bid as a credible signal throughout the sample period, independently of whether the group leader earns a reward or not. However, after the elimination of group leader rewards, the interest rate of loans with a *GL Bid* in reward groups is about 0.8% smaller than before. This result indicates that group leader bids have a significant influence on the resulting interest rate in this group type, while the signal is more credible after the elimination of group leader rewards than before.

B.1.3. Loan Performance

In order to analyze the determinants of loan performance in reward groups, we specify Cox proportional hazards models with the same independent variables as before. The underlying assumption of the models is that the coefficients are not time-varying, i.e. the importance of a

variable for the probability of defaulting or being late is constant over time.¹⁶ Loans are exposed to the process from the time they are originated until they are either completely paid back, they default, or their data runs out. The results are reported in Table VII.

<INSERT TABLE VII ABOUT HERE>

Specification (1) of Table VII shows that hazard rates are increasing in the credit grade risk and the debt-to-income ratio. Hazard rates are decreasing in income, whereas borrowers who are unemployed or retired have higher hazard rates. Furthermore, if the listing has a short duration or if it is closed as soon as it is funded, the corresponding loan is potentially exposed to a higher hazard rate. Together, this suggests that borrowers in urgent need of money exhibit higher hazard rates. The results in specifications (2) to (4) suggest that hazard rates are reduced if the group leader verifies the information provided (*Vetting*) or if he generally offers help in designing the listing (*GL Offers Help*).

Most importantly for the purpose of this study, specification (2) shows that a *GL Bid* increases failure rates. This result is again consistent with the evidence from the univariate analysis as they show that group leader bids in reward groups do not work properly as a signal of good listing quality. They are wrongly viewed as loans with high quality, as their default rates are higher, yet their interest rates are lower than those for loans without a *GL Bid*. One may wonder whether before the elimination of group leader rewards it is profitable for the group leaders of reward groups to promote listings in their groups by placing a group leader bid on them. Further analysis shows that in this time period the group leader rewards more than compensate for the slightly higher failure rates in these groups.

¹⁶ If e.g. a loan with credit grade HR is more susceptible to have a failure than a loan of the reference group AA/A, the strength of this relationship does not depend on time. Thus, for example, the HR-loan does not become more susceptible to fail over time, compared to the AA/A-loan.

Most importantly, the influence of the elimination of group leader rewards on loan performance in reward groups can be deduced from specification (3): while before this policy change a *GL Bid* is associated with a ceteris paribus higher hazard rate (coefficient of 1.043), after this event the hazard rate is significantly smaller not only than before the change but also than the benchmark of 1 (coefficient of 0.766). In line with the evidence from the univariate analysis, the overall higher default rates for loans with group leader bids are thus due only to the time period when rewards exist. In contrast, group leader bids work properly as a quality signal after the elimination. Consequently, the results suggest that – before the elimination of group leader rewards – leaders in these groups overpromote bad listings with the help of their bids, which leads to higher failure rates for these loans. In contrast, after the policy change, the mechanism works properly as the group leader has now no incentive any more to bid strategically.

The evidence so far suggests that rewards give group leaders an incentive to promote bad listings by bidding on them as these rewards more than offset the losses due to the higher likelihood of failure. This behavior is different when the same group leaders can earn no rewards anymore. An alternative way to align incentives, i.e. to make group leaders screen listings very carefully, is that group leaders participate to a large fraction in the loan and thus have substantial skin in the game even when they earn rewards. We therefore further differentiate in specification (4) whether a group leader participates in more or less than 33% of the loan.¹⁷ The results show that

¹⁷ The threshold of 33% is obtained as follows: A listing yields a negative payoff to a regular bidder under the following simplified condition: $-\alpha + \alpha I(1 - p) + \alpha(1 - p) < 0$, where α = share of the loan amount supplied by this bidder, I = interest rate obtained, p = probability of default. The recovery rate is assumed to be zero. This can be simplified to $-\alpha(Ip + p - I) < 0$, so that $\alpha > 0$ implies $(Ip + p - I) > 0$ for a listing with a negative payoff. Suppose the group leader knows p and I from historical data. To make it profitable for him to still bid on a listing with a negative payoff, group leader fees and upfront payment have to outweigh the loss: $F(1 - p) + U > \alpha(Ip + p - I)$, where F = group leader fee (interest rate paid on the full loan amount), and U = upfront payment to the group leader (relative to the loan amount). Since $(Ip + p - I) > 0$ as before, $(F(1 - p) + U) / (Ip + p - I) > \alpha$ yields an upper bound for a profitable group leader bid on this listing. For each credit grade we compute the critical value α according to this last formula. As an example, consider a borrower with the credit grade B in a reward group. For this borrower, we have the average interest rate $I = 15\%$, the probability of default $p = 18\%$, the group leader fee $F = 2\%$ and the upfront fee $U = 0.5\%$. According to the formula above this yields a cutoff criterion of $(0.02 \times (1 - 0.18) + 0.005) / (0.15 \times 0.18 + 0.18 - 0.15) = 0.37 > \alpha$. Consequently, the group leader should not

the failure rates are substantially lower before the elimination of group leader rewards when the group leader participates in more than 33% of the loan. By contrast, before the event, the failure rate is higher than 1 if the group leader participates in less than 33% of the loan. This means that the potential losses in this case are not high enough to outweigh the rewards, i.e. only substantial skin in the game induces a group leader to carefully screen borrowers and promote the creditworthy listings by bidding on them, even if he can earn rewards. These results suggest that a high and credible bid by the group leader serves indeed as a credible signal about the quality of screening, as the other lenders correctly assume that a higher participation by the group leader leads to skin in the game and thus more careful screening.

B.2. Difference-in-difference approach

An alternative approach to the traditional regression framework discussed so far is to use the no-reward groups as a reference group and to carry out a difference-in-difference analysis. The crucial assumptions for this analysis are that the elimination of group leader rewards only affects reward group leaders and that all other trends affect both group types in the same way, i.e. are uncorrelated with the group type. We now present the corresponding results.

B.2.1. Listing success

Table VIII shows odds ratios of logistic regressions of listing success, similar to Table V. The difference between Table V and Table VIII is that in the latter we do not only consider reward groups, but also no-reward groups and – in specification (1) – also listings posted outside groups. Specification (1) shows that listings that are not posted in a group (*No Group*) or that are posted in a reward group (*Reward Group*) have significantly lower funding probabilities than those

participate in more than 37% of B-loans in which a regular bidder would lose money. The resulting overall critical value of 33% is the weighted average over these critical values of the credit grades.

posted in no-reward groups. More importantly for our study, specifications (2) to (4) of Table VIII show that the results obtained in the event study with respect to listing success continue to hold and are specific to the reward groups, thus induced by the elimination of group leader rewards.

<INSERT TABLE VIII ABOUT HERE>

Specification (3) breaks down the influence of group leader bids for reward and no-reward groups. The results show that a *GL Bid* works in the same way and is thus perceived as a signal of a high quality of loans in both groups, while the effect is stronger for no-reward than for reward groups. Specification (4) constitutes the key part of our difference-in-difference analysis with two sources of identifying variation: (i) the time before and after the removal of rewards, (ii) the distinction between listings inside and outside reward groups. Our inference is based on evaluating whether reward groups perform differently after the elimination of rewards. The specification shows that after this event the influence of a group leader bid in the reward groups is significantly higher than before.

B.2.2. Interest Rates of Loans

Table IX reports the estimation results of tobit regressions of interest rates in the difference-in-difference setting. Specification (1) shows that interest rates of loans funded outside groups (*No Group*) or in reward groups (*Reward Group*) are higher than those of loans in no-reward groups.

<INSERT TABLE IX ABOUT HERE>

As in the event study, specification (2) shows that a *GL Bid* as a signal of perceived high quality decreases the interest rate. Specification (3) further distinguishes this effect of a *GL Bid* in no-reward and reward groups. Finally, specification (4) again employs the difference-in-difference

approach. In particular, a *GL Bid* reduces interest rates before and after the elimination of rewards, while this effect is more pronounced afterwards. Altogether, the results are again fully consistent with those for the traditional regression framework (Table VI).

B.2.3. Loan Performance

Table X presents the results for loan performance. Specification (1) shows that the group type significantly influences hazard rates even after controlling for other factors. Loans in reward groups (*Reward Group*) and loans resulting from listings posted outside groups (*No Group*) exhibit higher hazard rates than loans in no-reward groups as the reference group. The other results remain stable when compared to those obtained in Table VII. Additionally, from specification (3) of Table X we see again that the adverse effect of *GL Bid* only applies to reward groups, whereas in no-reward groups *GL Bid* significantly lowers the hazard rate of the loan.

<INSERT TABLE X ABOUT HERE>

Overall, we find that the results from the difference-in-difference approach strongly support those obtained from the earlier analysis. This evidence assures that the effects described above are indeed driven by the existence and elimination of group leader rewards and not by any other event or trend that hits all group listings (i.e. those of both reward and no-reward groups) in the same way.

III. Robustness

In this section, we provide several analyses on the robustness of our results. In particular, we show that our results are not due to other policy changes during our sample period. We also investigate the choice of the timespan used for the analysis of the loan performance.

A. Second Loans

Prosper.com allows borrowers with an existing loan to demand a second loan after 10/30/2007. In our previous analyses, we control for this fact by removing second loans from the sample. We further test the robustness of our results with respect to this policy change by completely removing from the sample all members with more than one loan – i.e. not only their second loans but also their first ones as well as the corresponding listings. Our results do not change.

One may argue that the possibility to obtain a second loan may not only play a role for lenders who request a second loan, but also for lenders who do not do so (but may *have considered* doing so). In order to control for this, in a separate analysis we only consider those observations between the elimination of group leader rewards and 10/30/2007, when the possibility to request a second loan is introduced. The condensed Table XI shows the coefficients of group leader bids for listing success (Panel A), interest rates (Panel B) and loan performance (Panel C).¹⁸ Compared to the corresponding numbers in Tables V, VI, and VII, the results do not change materially, showing that the possibility to obtain a second loan does not drive our results.

<INSERT TABLE XI ABOUT HERE>

B. Fee Changes During the Sample Period

We also test whether the two fee changes after the elimination of group leader rewards – i.e. the change of lender fees on 10/30/2007 and the change of borrower fees on 01/04/2008 – influence our results. This can also be controlled by limiting the analysis to the time period before 10/30/2007, when the first of the two fee changes takes place. Therefore, we again refer the

¹⁸ To economize space, only these core results on group leader bids are reported. The results on listing characteristics, borrower characteristics, and the remaining group characteristics do not change substantially, either. The full tables are available upon request.

reader to Tables V, VI and VII, which show that our results are not driven by either of the two fee changes, but indeed by the elimination of group leader rewards.¹⁹

C. Choice of Timespan for Analysis of Loan Performance

In the analysis of the loan performance, we use the maximum number of months available for each loan. While this approach allows us to exploit the maximum amount of available information, its drawback is that there are more observations per loan for loans originated at the beginning than for those at the end of our sample period. To test for the robustness of our results, we rerun the analysis restricting the maximum performance evaluation time to an equal number of 22 months for all loans. We find that our results are again not affected by this change.

IV. Conclusion

The rapidly and significantly growing markets for crowdfunding, in which individuals can directly finance other individuals or companies without financial intermediation, can be applied to various areas and provide a significant potential pool of capital. This insight has led politicians across the spectrum to alleviate the constraints for this type of financing for companies; as well as to carefully watch online lending in peer-to-peer transactions across individuals. Proponents thus view crowdfunding as a way to fundamentally change the investment and financing process as well as the role of financial intermediation. However, a large number of regulators and academicians are concerned about the potential of investors being taken advantage of by unscrupulous lenders. These markets, despite having developed into a billion-dollar industry,

¹⁹ We conduct a similar robustness check for the difference-in-difference approach. Again, the corresponding results show that our findings are robust with respect to the two fee changes described above. The corresponding tables are available from the authors upon request.

have received relatively little attention with respect to its appropriate regulation and not much is known about the involved agents' actions.

We find, in the presence of rewards, group leader bids result in lower interest rates but higher default rates. Thus, while group leader bids enhance the credibility of an issue and the perception of higher quality, these issues do not appear to be of higher quality as evidenced ex-post by higher default rates suggesting that group leaders behave strategically. It is only when group leaders have sufficient skin in the game that we see default rates reduce along with a decrease in interest rates. The results suggest there are perverse incentives of the group leaders that are not fully recognized by the market. We do not see similar perverse incentives in groups where the leaders do not get rewards. Interestingly, in the same groups, once the rewards are eliminated this perverse behavior disappears, instead now when group leaders bid we see lower interest rates along with lower default rates.

The results shed light on the functioning of the growing markets for crowdfunding and the incentives of the agents in these markets. They also provide some insight on the ongoing debate about the proper regulatory framework for consumer lending. While the results cannot be simply generalized to other financial markets in which consumer protection is also of vital interest, our results provide evidence from a clean experiment that shows that proper incentives are crucial for giving borrowers access to credit and to induce lenders to carefully screen loan applicants. Our results suggest the importance of further research on the necessary incentives to improve consumer protection in the markets for crowdfunding particularly and in the finance and lending industry more generally.

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Figure 1: Timeline of Policy Changes on Prosper.com

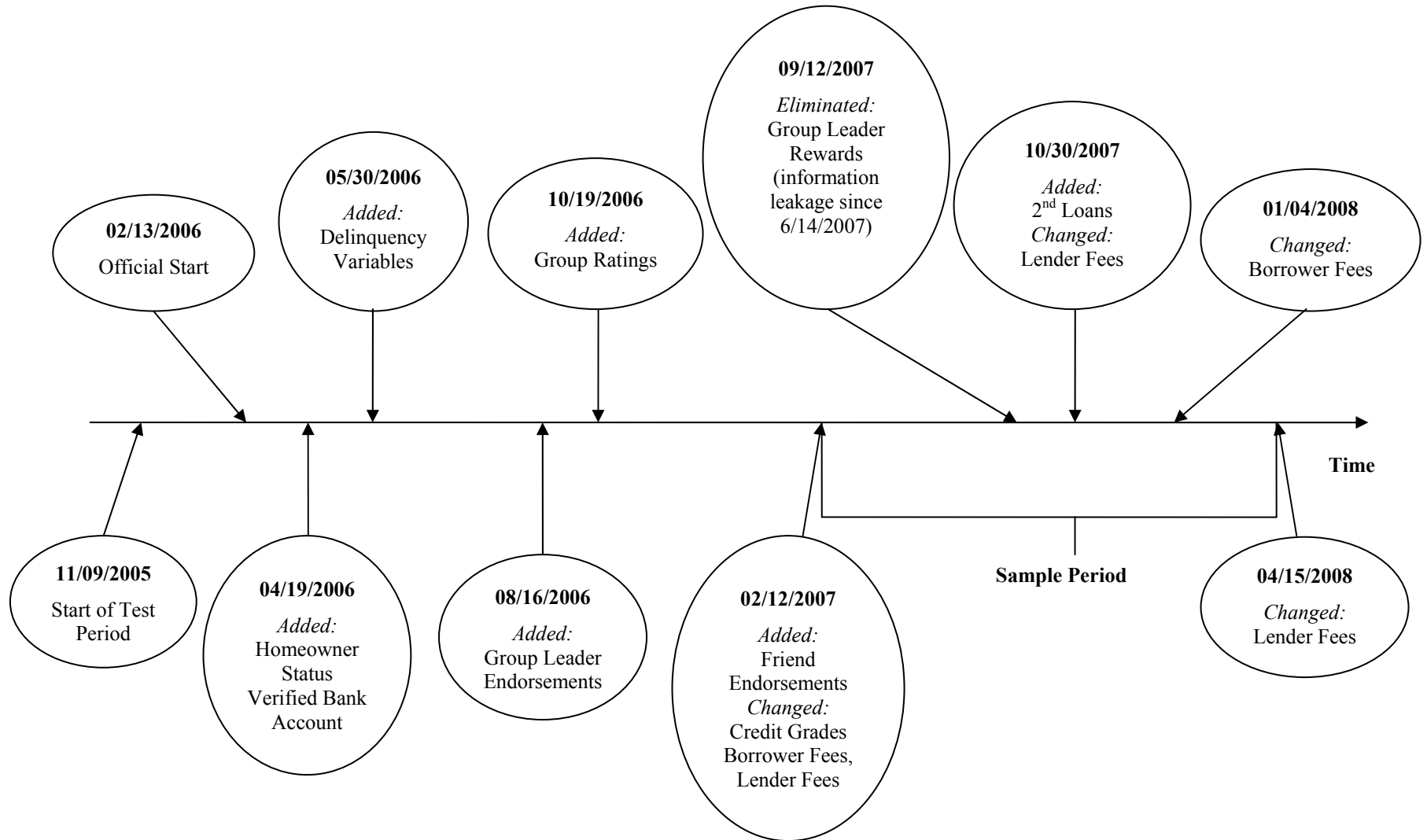
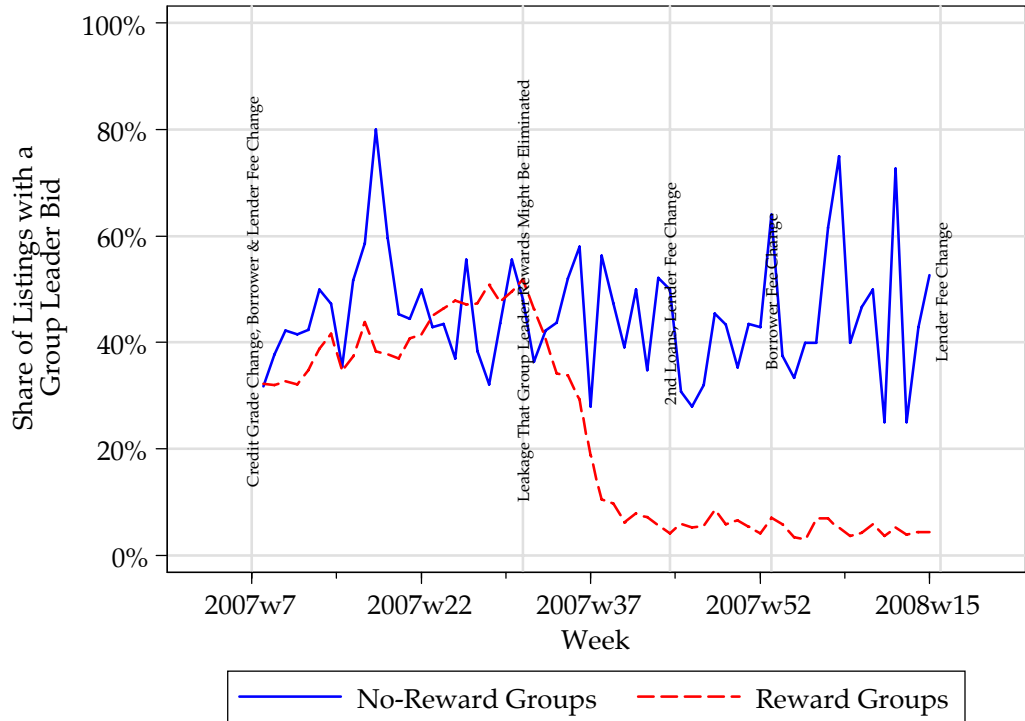


Figure 2: Group Leader Bids



In this figure we report – by group type – the weekly share of listings (i.e. of requests for borrowing money) with at least one group leader bid.

Table I: Social Lending Overview

In this table we report general descriptive statistics on Prosper.com, distinguishing between listings (i.e. all requests for borrowing money) and loans (i.e. successfully and completely funded requests for borrowing money). Panel A summarizes listing characteristics, Panel B reports success measures for these listings, Panel C provides the distribution of credit grades, and Panel D shows borrower characteristics.

	Listings			Loans		
	N	Mean	S.D.	N	Mean	S.D.
PANEL A: LISTING CHARACTERISTICS						
Amount Requested (in \$1,000)	153,541	8,164.26	6,485.81	12,183	7,097.08	6,010.22
Borrower Maximum Rate (%)	153,541	17.97	7.62	12,183	20.01	6.92
Duration (Days)	153,541	7.52	2.11	12,183	7.70	2.12
Listing Closed As Soon As Funded (Dummy)	153,541	0.31	0.46	12,183	0.23	0.42
PANEL B: SUCCESS MEASURES						
Listing Success (Dummy)	153,541	0.08	0.27	12,183	1.00	0.00
Number of Bids	153,541	16.86	63.29	12,183	161.64	152.67
Listing Was Bid On (Dummy)	153,541	0.53	0.50	12,183	1.00	0.00
Borrower Rate (%)	153,541	17.75	7.57	12,183	17.29	6.62
PANEL C: DISTRIBUTION OF CREDIT GRADES						
AA/A	9,583			3,143		
B	8,517			1,979		
C	16,513			2,530		
D	24,771			2,292		
E	27,423			1,072		
HR	66,734			1,167		
<i>TOTAL</i>	<i>153,541</i>			<i>12,183</i>		
PANEL D: BORROWER CHARACTERISTICS						
Debt-to-Income Ratio	153,541	0.65	1.65	12,183	0.40	1.18
Is Borrower Home Owner (Dummy)	153,541	0.34	0.48	12,183	0.47	0.50
Current Delinquencies	153,541	3.63	4.95	12,183	1.19	2.90
Delinquencies Last 7 Years	153,541	11.51	16.82	12,183	5.53	11.99
Total Credit Lines	153,541	25.66	14.30	12,183	24.51	14.16
Months in Current Occupation	153,541	36.15	64.16	12,183	37.41	65.08

Table II: Social Lending: Overview by Group Type

In this table we report general descriptive statistics on Prosper.com, distinguishing between listings (i.e. all requests for borrowing money) and loans (i.e. successfully and completely funded requests for borrowing money). We further distinguish whether the listing was not posted in a group ("No Group"), in a no-reward group ("No-reward Group") or in a reward group ("Reward Group"). Panel A summarizes listing characteristics, Panel B reports success measures for these listings, Panel C provides the distribution of credit grades, Panel D shows borrower characteristics; and Panel E gives group characteristics for those listings / loans that were posted in groups.

	Listings			Loans		
	No Group	No-reward Group	Reward Group	No Group	No-reward Group	Reward Group
PANEL A: LISTING CHARACTERISTICS (MEANS)						
Amount Requested (in \$1,000)	8,339.88	7,701.37	7,558.58	7,094.72	6,351.56	7,220.77
Borrower Maximum Rate (%)	17.61	17.90	19.28	19.29	18.14	21.62
Duration (Days)	7.42	7.87	7.86	7.46	7.84	8.10
Listing Closed As Soon As Funded (Dummy)	0.31	0.21	0.29	0.25	0.16	0.20
PANEL B: SUCCESS MEASURES (MEANS)						
Listing Success (Dummy)	0.06	0.35	0.12	1.00	1.00	1.00
Number of Bids	13.66	60.75	25.83	157.10	155.33	170.93
Listing Was Bid On (Dummy)	0.50	0.82	0.66	1.00	1.00	1.00
Borrower Rate (%)	17.44	16.84	18.91	16.70	15.12	18.70
PANEL C: DISTRIBUTION OF CREDIT GRADES (N)						
AA/A	7,641	301	1,641	2,303	181	659
B	6,532	146	1,839	1,366	73	540
C	12,572	293	3,648	1,572	119	839
D	18,896	346	5,529	1,258	130	904
E	21,005	261	6,157	514	63	495
HR	52,037	545	14,152	432	88	647
<i>TOTAL</i>	<i>118,683</i>	<i>1,892</i>	<i>32,966</i>	<i>7,445</i>	<i>654</i>	<i>4,084</i>
PANEL D: BORROWER CHARACTERISTICS (MEANS)						
Debt-to-Income Ratio	0.63	0.61	0.74	0.31	0.59	0.53
Is Borrower Home Owner (Dummy)	0.35	0.35	0.34	0.49	0.42	0.44
Current Delinquencies	3.60	2.34	3.84	0.87	1.29	1.77
Delinquencies Last 7 Years	11.39	8.68	12.11	4.55	5.66	7.31
Total Credit Lines	25.56	24.79	26.07	24.10	24.30	25.31
Months in Current Occupation	31.33	43.07	53.11	27.02	43.07	55.45
PANEL E: GROUP CHARACTERISTICS (MEANS)						
GL Bid (Dummy)		0.46	0.32		0.70	0.58
GL Bids Successfully (Dummy)		0.41	0.29		0.55	0.33
Vetting (Dummy)		0.29	0.09		0.30	0.14
Listing Review Requirement (Dummy)		0.66	0.41		0.80	0.64
GL Offers Help (Dummy)		0.18	0.08		0.28	0.11
GL Endorsement (Dummy)		0.53	0.38		0.71	0.60
N	118,683	1,892	32,966	7,445	654	4,084

Table III: Listing Success, Interest Rates, and Loan Performance by Group Leader Bid

In this table we report univariate results by group leader bids and credit grade. The table distinguishes between No-Reward Groups and Reward Groups. Panel A shows success rates of listings (i.e. of the requests for borrowing money) by the different credit grades from AA/A (best) to HR (worst). Panel B shows the corresponding interest rates of loans (i.e. of the successfully and completely funded requests for borrowing money). Panel C shows failure rates of loans (per 1,000 loan-days). In this panel, any payment which is not made on time is considered as a failure, so that failure events are late payments, charge-offs and defaults. T-statistics of the test on equality of means. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

PANEL A: LISTING SUCCESS

Credit Grade	No-Reward Groups (N=1,892)			Reward Groups (N=32,966)		
	Without GL-Bid	With GL-Bid	t-statistic	Without GL-Bid	With GL-Bid	t-statistic
AA/A	46.8%	78.1%	(-5.92)***	33.6%	50.0%	(-6.65)***
B	38.3%	64.6%	(-3.26)***	23.1%	38.5%	(-6.99)***
C	21.9%	60.6%	(-7.27)***	17.0%	33.2%	(-10.76)***
D	14.4%	56.0%	(-9.09)***	10.6%	26.4%	(-14.20)***
E	10.1%	42.5%	(-6.11)***	3.8%	18.0%	(-15.05)***
HR	4.7%	32.4%	(-8.30)***	2.0%	11.1%	(-17.49)***
Average	22.7%	55.7%	(-14.07)***	15.0%	29.5%	(-21.14)***

PANEL B: INTEREST RATES

Credit Grade	No-Reward Groups (N=654)			Reward Groups (N=4,084)		
	Without GL-Bid	With GL-Bid	t-statistic	Without GL-Bid	With GL-Bid	t-statistic
AA/A	9.3%	9.3%	(-0.17)	11.1%	11.4%	(-1.43)
B	13.6%	12.4%	(1.73)*	15.4%	14.6%	(2.49)**
C	15.5%	15.6%	(-0.08)	18.3%	16.8%	(5.47)***
D	19.2%	17.4%	(1.74)*	20.7%	19.7%	(3.44)***
E	21.8%	20.6%	(0.82)	24.6%	23.8%	(2.03)**
HR	24.2%	19.7%	(2.41)**	26.2%	24.2%	(4.84)***
Average	17.3%	15.8%	(2.20)**	19.4%	18.4%	(4.49)***

PANEL C: LOAN PERFORMANCE

Credit Grade	No-Reward Groups (N=654)			Reward Groups (N=4,084)		
	Without GL-Bid	With GL-Bid	t-statistic	Without GL-Bid	With GL-Bid	t-statistic
AA/A	2.1	6.3	(10.46)***	7.2	10.8	(12.81)***
B	12.2	3.4	(-11.03)***	13.9	16.0	(5.77)***
C	8.8	10.7	(2.62)**	16.8	17.1	(0.73)
D	8.1	10.4	(2.96)***	16.6	17.5	(2.89)***
E	18.2	13.1	(-3.84)***	18.9	23.1	(8.98)***
HR	30.6	21.1	(-5.82)***	24.1	26.7	(5.33)***
Average	10.3	11.4	(3.27)***	15.8	19.0	(22.09)***

Table IV: Listing Success, Interest Rates, and Loan Performance in Reward Groups by Group Leader Bid (Before vs. After Elimination of Group Leader Rewards)

In this table we report univariate results for reward groups by credit grade. We distinguish whether the listing (i.e. the request for borrowing money) or the loan (i.e. the successfully and completely funded request for borrowing money) was created before or after the elimination of group leader rewards and whether the group leader placed a bid on it or not. Panel A shows success rates of listings by the different credit grades from AA/A (best) to HR (worst). Panel B shows the corresponding interest rates of loans. Panel C shows failure rates of loans (per 1,000 loan-days). In this panel, any payment which is not made on time is considered as a failure, so that failure events are late payments, charge-offs and defaults. T-statistics of the test on equality (before vs. after the elimination of group leader rewards) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

PANEL A: LISTING SUCCESS

Credit Grade	Before (N=25,990)			After (N=6,976)		
	Without GL Bid	With GL Bid	t-statistic	Without GL Bid	With GL Bid	t-statistic
	AA/A	33.9%	48.0%	(-5.25)***	32.6%	67.6%
B	23.0%	37.2%	(-6.10)***	23.8%	59.1%	(-4.43)***
C	17.5%	32.9%	(-9.62)***	15.6%	38.2%	(-3.69)***
D	11.2%	25.9%	(-12.42)***	9.1%	40.3%	(-5.11)***
E	3.9%	18.1%	(-14.41)***	3.6%	15.8%	(-2.87)***
HR	1.9%	10.9%	(-17.04)***	2.4%	18.7%	(-4.60)***
Average	15.2%	28.8%	(-18.58)***	14.5%	40.0%	(-9.82)***

PANEL B: INTEREST RATES

Credit Grade	Before (N= 3,483)			After (N=601)		
	Without GL Bid	With GL Bid	t-statistic	Without GL Bid	With GL Bid	t-statistic
	AA/A	11.2%	11.4%	(-0.87)	10.9%	11.7%
B	15.3%	14.6%	(2.05)**	15.7%	14.6%	(1.12)
C	18.3%	16.8%	(4.84)***	18.5%	16.6%	(2.35)**
D	20.8%	19.8%	(3.56)***	20.3%	19.3%	(1.12)
E	24.1%	23.8%	(0.86)	25.8%	23.6%	(1.02)
HR	25.8%	24.1%	(4.23)***	27.1%	25.8%	(0.83)
Average	19.3%	18.4%	(3.62)***	19.7%	18.6%	(1.74)*

PANEL C: LOAN PERFORMANCE

Credit Grade	Before (N= 3,483)			After (N=601)		
	Without GL Bid	With GL Bid	t-statistic	Without GL Bid	With GL Bid	t-statistic
	AA/A	7.6	10.7	(10.3)***	5.6	11.4
B	13.6	16.3	(6.53)***	14.7	13.1	(-1.57)
C	17.5	17.3	(-0.58)	14.0	11.3	(-2.92)***
D	18.1	17.9	(-0.40)	11.9	9.0	(-3.75)***
E	18.9	23.5	(8.71)***	18.8	12.0	(-5.15)***
HR	24.1	27.1	(5.52)***	24.3	17.0	(-6.04)***
Average	16.1	19.5	(21.04)***	14.9	12.1	(-7.09)***

Table V: Listing Success (Only Reward Groups) – Multivariate Analysis

larger than 1 indicate relatively higher (respectively smaller) success probabilities than in the reference group. In all three specifications, only listings (i.e. requests for borrowing money) in reward groups are considered. The reference group is AA/A-listings before the elimination of group leader rewards without a group leader bid. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
		1.884***
		1.085
		1.530***
		1.197**
		3.839***
		0.796***
		0.894***
		1.040***
		0.928
		0.634***
		0.421***
		0.235***
		0.099***
		0.054***
		0.960***
		1.148***
		0.736*
		1.110
		1.508**
		1.906***
		2.251***
		0.805*
		1.116
		0.705***
		0.529***
		0.960***
		0.997
		0.955**
		0.993***
		0.986***
		0.990**
		1.093
		1.034***
		0.958***
		0.999*
		0.982
		0.999**
	32,966	32,966
	0.174	0.257

Table VI: Interest Rates (Only Reward Groups) – Multivariate Analysis

In this table we report the regression coefficients from Tobit regressions of the lender interest rate of loans (i.e. of successfully and completely funded requests for borrowing money). In all three specifications, only loans in reward groups are considered. In specification (1), we do not account for any group-specific information. Specification (2) reports the overall effect of a group leader bid on the interest rate. Specification (3) compares the effect of a group leader bid before and after the elimination of group leader rewards on the interest rate in the reward groups. The reference is AA/A-loans before the elimination of group leader rewards without a group leader bid. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)		(2)		(3)	
Group Leader Bids						
GL Bid			-0.774***	(-6.13)		
GL Bid: Before					-0.695***	(-5.31)
GL Bid: After					-1.471***	(-4.52)
Group Characteristics						
Vetting			-0.609***	(-3.76)	-0.536***	(-3.24)
Listing Review Requirement			0.287**	(2.32)	0.297**	(2.40)
GL Offers Help			-0.299*	(-1.72)	-0.310*	(-1.78)
GL Endorsement			-0.184	(-1.46)	-0.160	(-1.27)
Listing Characteristics						
After	1.750***	(11.72)	1.623***	(10.39)	1.856***	(10.00)
Amount Requested (in \$1,000)	0.287***	(27.28)	0.294***	(27.97)	0.296***	(28.08)
Duration	-0.037	(-1.39)	-0.009	(-0.33)	-0.009	(-0.34)
Listing Closed As Soon As Funded	3.366***	(25.30)	3.160***	(23.50)	3.167***	(23.56)
Borrower Characteristics						
Credit Grade: B	2.988***	(15.20)	2.985***	(15.33)	2.969***	(15.25)
Credit Grade: C	5.828***	(31.83)	5.830***	(32.11)	5.809***	(31.97)
Credit Grade: D	8.663***	(44.90)	8.724***	(45.52)	8.703***	(45.39)
Credit Grade: E	12.259***	(52.01)	12.438***	(52.95)	12.409***	(52.79)
Credit Grade: HR	12.995***	(53.71)	13.246***	(54.77)	13.220***	(54.64)
Debt-to-Income Ratio	0.151***	(3.85)	0.169***	(4.36)	0.172***	(4.43)
Is Borrower Home Owner	-0.520***	(-4.30)	-0.544***	(-4.53)	-0.548***	(-4.57)
\$1-24,999	0.952**	(2.05)	1.125**	(2.45)	1.110**	(2.41)
\$25,000-49,999	0.316	(0.69)	0.465	(1.03)	0.453	(1.00)
\$50,000-74,999	0.013	(0.03)	0.181	(0.40)	0.170	(0.37)
\$75,000-99,999	-0.290	(-0.60)	-0.158	(-0.33)	-0.171	(-0.36)
\$100,000	-0.746	(-1.52)	-0.644	(-1.32)	-0.664	(-1.36)
Part-Time	0.189	(0.60)	0.201	(0.64)	0.190	(0.61)
Self-Employed	0.056	(0.28)	-0.000	(-0.00)	0.002	(0.01)
Retired	-0.386	(-1.04)	-0.393	(-1.07)	-0.385	(-1.05)
Not Employed	1.802***	(2.68)	1.750***	(2.62)	1.738***	(2.61)
Current Delinquencies	0.082***	(3.82)	0.079***	(3.72)	0.078***	(3.69)
Delinquencies Last 7 Years	0.017***	(3.55)	0.016***	(3.47)	0.016***	(3.48)
Public Records Last 10 Years	0.156**	(2.48)	0.167***	(2.69)	0.174***	(2.79)
Total Credit Lines	0.013**	(2.29)	0.013**	(2.35)	0.013**	(2.35)
Inquiries Last 6 Months	0.074***	(5.85)	0.077***	(6.10)	0.076***	(6.05)
Amount Delinquent (in \$1,000)	0.020**	(2.03)	0.016*	(1.69)	0.017*	(1.72)
Public Records Last 12 Months	0.179	(0.80)	0.164	(0.74)	0.152	(0.68)
Current Credit Lines	-0.049*	(-1.72)	-0.050*	(-1.76)	-0.050*	(-1.76)
Open Credit Lines	0.041	(1.34)	0.045	(1.46)	0.044	(1.45)
Revolving Credit Balance (in \$1,000)	0.006***	(2.78)	0.006***	(2.82)	0.006***	(2.78)
Bankcard Utilization	0.431***	(2.85)	0.415***	(2.77)	0.413***	(2.76)
Months in Current Occupation	0.000	(0.29)	0.000	(0.63)	0.000	(0.64)
Constant	7.032***	(13.57)	7.022***	(13.65)	6.971***	(13.55)
N	4,084		4,084		4,084	
pseudo R	0.181		0.184		0.185	

Note: In specification (3), the difference between the regression coefficients of “GL Bid: Before” and “GL Bid: After” is significant at 5%.

Table VII: Loan Performance (Only Reward Groups) – Multivariate Analysis

In this table we report the exponentiated regression coefficients obtained from a Cox Proportional Hazards Model. Any payment which is not made on time is considered as a failure, so that failure events are late payments, charge-offs and defaults. In all three specifications, only loans (i.e. successfully and completely funded requests for borrowing money) in reward groups are considered. In specification (1), we do not account for any group-specific information. Specification (2) reports the overall effect of a group leader bid on the failure probability of loans. Specification (3) compares the effect of a group leader bid before and after the elimination of group leader rewards on the failure probability of loans in the reward groups. Finally, specification (4) analyzes whether before the elimination of group leader rewards, the group leader participates with more than 33% of the loan amount in the loan, if she places a bid on the listing (i.e. whether she “has skin in the game”). The reference is AA/A-loans before the elimination of group leader rewards without a group leader bid. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)		(2)		(3)		(4)	
Group Leader Bids								
GL Bid			1.018*	(1.72)				
GL Bid: Before					1.043***	(3.85)		
GL Bid: After					0.766***	(-8.19)		
GL Bid: Before, Participation ≤ 33%							1.050***	(4.43)
GL Bid: Before, Participation > 33%							0.801***	(-6.63)
GL Bid: After, Participation ≤ 33%							0.792***	(-7.15)
GL Bid: After, Participation > 33%							0.060***	(-5.63)
Group Characteristics								
Vetting			0.895***	(-7.94)	0.915***	(-6.31)	0.921***	(-5.80)
Listing Review Requirement			1.004	(0.41)	1.005	(0.53)	1.005	(0.52)
GL Offers Help			0.961***	(-2.72)	0.959***	(-2.86)	0.953***	(-3.27)
GL Endorsement			1.079***	(7.49)	1.084***	(7.98)	1.085***	(8.03)
Listing Characteristics								
After	0.903***	(-14.95)	0.891***	(-7.86)	0.972*	(-1.65)	0.971*	(-1.73)
Amount Requested (in \$1,000)	1.055***	(95.57)	1.051***	(56.90)	1.051***	(57.31)	1.051***	(56.96)
Duration	0.989***	(-8.18)	0.984***	(-7.48)	0.984***	(-7.40)	0.984***	(-7.40)
Listing Closed As Soon As Funded	1.292***	(41.68)	1.166***	(14.91)	1.168***	(15.04)	1.165***	(14.82)
Borrower Characteristics								
Credit Grade: B	1.665***	(44.87)	1.660***	(25.05)	1.652***	(24.80)	1.648***	(24.70)
Credit Grade: C	2.095***	(67.03)	2.008***	(36.93)	1.989***	(36.42)	1.989***	(36.40)
Credit Grade: D	2.499***	(77.72)	2.210***	(40.56)	2.193***	(40.15)	2.193***	(40.15)
Credit Grade: E	3.290***	(86.94)	3.023***	(50.47)	2.992***	(49.96)	3.001***	(50.10)
Credit Grade: HR	3.853***	(96.45)	3.645***	(57.80)	3.601***	(57.19)	3.629***	(57.49)
Debt-to-Income Ratio	1.010***	(4.58)	1.017***	(5.84)	1.018***	(5.96)	1.019***	(6.40)
Is Borrower Home Owner	1.129***	(18.22)	1.079***	(7.75)	1.078***	(7.71)	1.078***	(7.71)
\$1-24,999	1.162***	(5.61)	1.386***	(7.10)	1.382***	(7.02)	1.379***	(6.99)
\$25,000-49,999	1.094***	(3.42)	1.252***	(4.93)	1.250***	(4.88)	1.247***	(4.84)
\$50,000-74,999	0.975	(-0.93)	1.154***	(3.10)	1.151***	(3.04)	1.152***	(3.07)
\$75,000-99,999	0.959	(-1.53)	1.196***	(3.79)	1.192***	(3.71)	1.192***	(3.73)
\$100,000	0.857***	(-5.49)	1.056	(1.13)	1.048	(0.98)	1.048	(0.97)
Part-Time	0.987	(-0.80)	1.105***	(3.83)	1.105***	(3.82)	1.105***	(3.83)
Self-Employed	1.128***	(11.29)	0.978	(-1.42)	0.979	(-1.35)	0.981	(-1.19)
Retired	1.139***	(6.62)	1.269***	(9.18)	1.275***	(9.36)	1.281***	(9.54)
Not Employed	1.248***	(5.96)	1.538***	(7.31)	1.536***	(7.29)	1.554***	(7.48)
Current Delinquencies	1.020***	(20.96)	1.024***	(18.98)	1.024***	(18.86)	1.024***	(18.84)
Delinquencies Last 7 Years	0.998***	(-7.65)	0.998***	(-7.08)	0.998***	(-7.10)	0.998***	(-6.86)
Public Records Last 10 Years	1.037***	(14.72)	1.062***	(14.38)	1.064***	(14.97)	1.065***	(14.97)
Total Credit Lines	1.005***	(15.61)	1.003***	(7.00)	1.003***	(7.17)	1.003***	(7.24)
Inquiries Last 6 Months	1.041***	(71.62)	1.035***	(44.94)	1.035***	(44.74)	1.036***	(45.08)
Amount Delinquent (in \$1,000)	0.999*	(-1.91)	1.003***	(4.08)	1.003***	(4.23)	1.003***	(4.14)
Public Records Last 12 Months	0.966***	(-3.33)	0.962**	(-2.39)	0.958***	(-2.66)	0.961**	(-2.50)
Current Credit Lines	1.001	(0.86)	1.006**	(2.44)	1.005**	(2.35)	1.005**	(2.11)
Open Credit Lines	0.988***	(-6.50)	0.991***	(-3.53)	0.991***	(-3.50)	0.992***	(-3.25)
Revolving Credit Balance (in \$1,000)	1.000***	(4.65)	1.001***	(6.08)	1.001***	(5.93)	1.001***	(5.81)
Bankcard Utilization	0.935***	(-8.28)	0.944***	(-4.97)	0.945***	(-4.89)	0.946***	(-4.78)
Months in Current Occupation	1.000***	(-3.18)	1.000***	(-2.97)	1.000***	(-2.95)	1.000***	(-3.09)
N	410,514		157,090		157,090		157,090	

Note: In specification (3), the difference between the regression coefficients of “GL Bid: Before” and “GL Bid: After” is significant at 1%.

Table VIII: Listing Success (Difference-in-Difference) – Multivariate Analysis

In this table we report odds ratios of the logistic regression of funding success, i.e. the exponentiated regression coefficients. Coefficients larger (respectively smaller) than 1 indicate relatively higher (respectively smaller) success probabilities than in the reference group. In specification (1) all listings (i.e. all requests for borrowing money) are considered, in specifications (2) to (4) only group listings are analyzed. Specification (2) reports the overall effect of a group leader bid on listing success. Specification (3) additionally distinguishes whether the group leader bid occurs in a listing in a no-reward group or in a reward group. Specification (4) compares the effect of a group leader bid before and after the elimination of group leader rewards on listing success in the reward groups. The reference is AA/A-listings before the elimination of group leader rewards in no-reward groups without a group leader bid. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	All Listings		Only Listings in Groups			
	(1)	(2)	(3)	(4)		
Group Leader Bids						
GL Bid		1.974*** (15.90)				
GL Bid: No-Reward			2.967*** (8.57)		2.962*** (8.56)	
GL Bid: Reward			1.894*** (14.36)			
GL Bid: Reward, Before					1.851*** (13.46)	
GL Bid: Reward, After					2.461*** (6.83)	
Group Characteristics						
No Group	0.162*** (-29.83)					
Reward Group	0.414*** (-14.18)	0.573*** (-8.57)	0.737*** (-3.06)	0.730*** (-3.15)		
Vetting		1.090 (1.48)	1.105* (1.71)	1.086 (1.40)		
Listing Review Requirement		1.484*** (9.53)	1.479*** (9.43)	1.471*** (9.28)		
GL Offers Help		1.354*** (4.85)	1.322*** (4.42)	1.321*** (4.41)		
GL Endorsement		3.843*** (28.98)	3.845*** (28.94)	3.835*** (28.87)		
Listing Characteristics						
After	0.857*** (-6.09)	0.795*** (-4.40)	0.785*** (-4.61)	0.748*** (-5.05)		
Amount Requested (in \$1,000)	0.887*** (-57.39)	0.894*** (-29.77)	0.894*** (-29.75)	0.894*** (-29.79)		
Duration	1.063*** (11.67)	1.036*** (3.71)	1.038*** (3.86)	1.038*** (3.87)		
Listing Closed As Soon As Funded	1.140*** (5.13)	0.939 (-1.38)	0.937 (-1.42)	0.937 (-1.44)		
Borrower Characteristics						
Credit Grade: B	0.612*** (-12.81)	0.660*** (-5.24)	0.655*** (-5.33)	0.658*** (-5.27)		
Credit Grade: C	0.302*** (-32.71)	0.424*** (-11.94)	0.420*** (-12.06)	0.422*** (-11.98)		
Credit Grade: D	0.153*** (-47.83)	0.239*** (-19.35)	0.236*** (-19.49)	0.238*** (-19.37)		
Credit Grade: E	0.060*** (-56.96)	0.102*** (-26.54)	0.101*** (-26.64)	0.102*** (-26.54)		
Credit Grade: HR	0.027*** (-71.02)	0.056*** (-33.09)	0.055*** (-33.19)	0.055*** (-33.11)		
Debt-to-Income Ratio	0.900*** (-9.89)	0.967** (-2.47)	0.967** (-2.48)	0.967** (-2.53)		
Is Borrower Home Owner						
\$1-24,999	1.167*** (6.22)	1.161*** (3.47)	1.163*** (3.52)	1.163*** (3.52)		
\$25,000-49,999	1.316*** (2.70)	0.821 (-1.25)	0.826 (-1.20)	0.827 (-1.20)		
\$50,000-74,999	1.895*** (6.35)	1.221 (1.26)	1.223 (1.27)	1.226 (1.29)		
\$75,000-99,999	2.391*** (8.54)	1.645*** (3.09)	1.647*** (3.10)	1.652*** (3.12)		
\$100,000	3.000*** (10.42)	2.025*** (4.19)	2.032*** (4.21)	2.040*** (4.24)		
Part-Time	3.409*** (11.42)	2.405*** (5.06)	2.418*** (5.09)	2.434*** (5.13)		
Self-Employed	1.000 (0.00)	0.861 (-1.43)	0.853 (-1.51)	0.855 (-1.50)		
Retired	0.924* (-1.86)	1.074 (0.99)	1.073 (0.99)	1.076 (1.02)		
Not Employed	0.643*** (-5.72)	0.686*** (-2.90)	0.683*** (-2.93)	0.683*** (-2.93)		
Current Delinquencies	0.632*** (-3.18)	0.591** (-2.43)	0.588** (-2.45)	0.591** (-2.43)		
Delinquencies Last 7 Years	0.917*** (-14.53)	0.962*** (-4.88)	0.962*** (-4.88)	0.962*** (-4.85)		
Public Records Last 10 Years	0.995*** (-5.07)	0.997* (-1.65)	0.997 (-1.62)	0.997 (-1.60)		
Total Credit Lines	0.970** (-2.38)	0.958** (-2.00)	0.958** (-2.01)	0.958** (-2.03)		
Inquiries Last 6 Months	0.993*** (-5.57)	0.994*** (-3.25)	0.993*** (-3.33)	0.993*** (-3.34)		
Amount Delinquent (in \$1,000)	0.974*** (-8.93)	0.986*** (-3.28)	0.986*** (-3.22)	0.986*** (-3.18)		
Public Records Last 12 Months	0.993*** (-2.89)	0.991** (-2.47)	0.990** (-2.47)	0.990** (-2.49)		
Current Credit Lines	1.084* (1.88)	1.083 (1.15)	1.085 (1.19)	1.087 (1.21)		
Open Credit Lines	1.004 (0.59)	1.034*** (3.39)	1.034*** (3.37)	1.034*** (3.36)		
Revolving Credit Balance (in \$1,000)	0.973*** (-4.25)	0.957*** (-4.12)	0.957*** (-4.09)	0.957*** (-4.07)		
Bankcard Utilization	1.000 (1.09)	0.999 (-1.43)	0.999 (-1.50)	0.999 (-1.50)		
Months in Current Occupation	1.081** (2.43)	1.005 (0.10)	1.006 (0.11)	1.006 (0.12)		
	1.000*** (-2.62)	0.999** (-2.37)	0.999** (-2.34)	0.999** (-2.37)		
N	153,541	34,858	34,858	34,858		
pseudo R	0.258	0.275	0.275	0.275		

Note: In specification (4), the difference between the regression coefficients of “GL Bid: Reward, Before” and “GL Bid: Reward, After” is significant at 5%.

Table IX: Interest Rates (Difference-in-Difference) – Multivariate Analysis

In this table we report the regression coefficients from Tobit regressions of the lender interest rate of loans (i.e. of successfully and completely funded requests for borrowing money). In specification (1) all loans are considered, in specifications (2) to (4) only group loans are analyzed. Specification (2) reports the overall effect of a group leader bid on the interest rate. Specification (3) additionally distinguishes whether the group leader bid occurs in a loan in a no-reward group or in a reward group. Specification (4) compares the effect of a group leader bid before and after the elimination of group leader rewards on the interest rate of loans in the reward groups. The reference is AA/A-loans before the elimination of group leader rewards in no-reward groups without a group leader bid. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	All Loans		Only Loans in Groups			
	(1)	(2)	(3)	(4)	(4)	(4)
Group Leader Bids						
GL Bid		-0.821*** (-6.77)				
GL Bid: No-Reward				-1.099*** (-3.69)	-1.097*** (-3.68)	
GL Bid: Reward				-0.781*** (-6.14)		
GL Bid: Reward, Before					-0.729*** (-5.58)	
GL Bid: Reward, After					-1.297*** (-4.04)	
Group Characteristics						
No Group	2.060*** (12.76)					
Reward Group	1.342*** (8.14)	1.261*** (8.40)	1.047*** (4.06)	1.074*** (4.16)		
Vetting		-0.512*** (-3.58)	-0.520*** (-3.63)	-0.480*** (-3.31)		
Listing Review Requirement		0.132 (1.11)	0.135 (1.13)	0.141 (1.18)		
GL Offers Help		-0.718*** (-4.71)	-0.697*** (-4.53)	-0.697*** (-4.53)		
GL Endorsement		-0.075 (-0.63)	-0.076 (-0.64)	-0.062 (-0.52)		
Listing Characteristics						
After	1.345*** (15.42)	1.480*** (10.50)	1.488*** (10.54)	1.618*** (10.14)		
Amount Requested (in \$1,000)	0.253*** (36.49)	0.289*** (28.98)	0.289*** (28.99)	0.290*** (29.05)		
Duration	-0.007 (-0.39)	0.009 (0.38)	0.008 (0.32)	0.008 (0.34)		
Listing Closed As Soon As Funded	3.286*** (37.07)	2.960*** (22.84)	2.966*** (22.86)	2.971*** (22.90)		
Borrower Characteristics						
Credit Grade: B	3.619*** (31.20)	2.894*** (15.67)	2.897*** (15.69)	2.886*** (15.63)		
Credit Grade: C	6.299*** (54.49)	5.731*** (33.45)	5.738*** (33.47)	5.722*** (33.34)		
Credit Grade: D	9.586*** (74.34)	8.621*** (47.38)	8.629*** (47.38)	8.614*** (47.26)		
Credit Grade: E	13.580*** (80.37)	12.239*** (54.53)	12.242*** (54.55)	12.221*** (54.40)		
Credit Grade: HR	13.420*** (75.66)	12.902*** (55.74)	12.906*** (55.76)	12.892*** (55.67)		
Debt-to-Income Ratio	0.157*** (4.70)	0.161*** (4.44)	0.161*** (4.43)	0.164*** (4.50)		
Is Borrower Home Owner	-0.152* (-1.82)	-0.500*** (-4.35)	-0.501*** (-4.36)	-0.505*** (-4.39)		
\$1-24,999	0.220 (0.64)	0.993** (2.32)	0.980** (2.29)	0.971** (2.27)		
\$25,000-49,999	-0.340 (-1.00)	0.477 (1.13)	0.468 (1.11)	0.461 (1.09)		
\$50,000-74,999	-0.473 (-1.38)	0.253 (0.59)	0.244 (0.57)	0.238 (0.56)		
\$75,000-99,999	-0.733** (-2.08)	-0.161 (-0.36)	-0.171 (-0.38)	-0.181 (-0.41)		
\$100,000	-1.132*** (-3.16)	-0.557 (-1.22)	-0.573 (-1.26)	-0.586 (-1.29)		
Part-Time	-0.423** (-2.19)	-0.027 (-0.10)	-0.026 (-0.09)	-0.035 (-0.12)		
Self-Employed	0.221 (1.55)	0.149 (0.78)	0.147 (0.76)	0.143 (0.75)		
Retired	0.129 (0.49)	-0.254 (-0.70)	-0.251 (-0.70)	-0.246 (-0.68)		
Not Employed	0.605 (1.18)	1.148* (1.85)	1.146* (1.84)	1.128* (1.82)		
Current Delinquencies	0.072*** (4.15)	0.068*** (3.27)	0.068*** (3.27)	0.068*** (3.25)		
Delinquencies Last 7 Years	0.025*** (7.07)	0.020*** (4.55)	0.020*** (4.54)	0.020*** (4.54)		
Public Records Last 10 Years	0.203*** (4.70)	0.227*** (3.75)	0.227*** (3.75)	0.232*** (3.83)		
Total Credit Lines	0.019*** (4.83)	0.013** (2.48)	0.014** (2.51)	0.014** (2.52)		
Inquiries Last 6 Months	0.141*** (14.18)	0.076*** (6.16)	0.076*** (6.15)	0.076*** (6.10)		
Amount Delinquent (in \$1,000)	0.018*** (3.14)	0.015 (1.55)	0.015 (1.56)	0.015 (1.59)		
Public Records Last 12 Months	0.445*** (2.83)	0.180 (0.83)	0.176 (0.81)	0.167 (0.77)		
Current Credit Lines	-0.054*** (-2.59)	-0.028 (-1.03)	-0.028 (-1.02)	-0.028 (-1.02)		
Open Credit Lines	0.054** (2.40)	0.024 (0.81)	0.023 (0.79)	0.023 (0.78)		
Revolving Credit Balance (in \$1,000)	0.001 (1.29)	0.004** (2.05)	0.004** (2.05)	0.004** (2.02)		
Bankcard Utilization	0.416*** (3.73)	0.447*** (3.08)	0.448*** (3.09)	0.449*** (3.09)		
Months in Current Occupation	0.001 (0.97)	0.001 (0.89)	0.001 (0.88)	0.001 (0.91)		
Constant	5.087*** (12.68)	5.847*** (11.80)	6.048*** (11.35)	5.989*** (11.22)		
N	12,183	4,738	4,738	4,738		
pseudo R	0.160	0.180	0.180	0.180		

Note: In specification (4), the difference between the regression coefficients of “GL Bid: Reward, Before” and “GL Bid: Reward, After” is significant at 10%.

Table X: Loan Performance (Difference-in-Difference) – Multivariate Analysis

In this table we report the exponentiated regression coefficients obtained from a Cox Proportional Hazards Model. Any payment which is not made on time is considered as a failure, so that failure events are late payments, charge-offs and defaults. In specification (1) all loans (i.e. all successfully and completely funded requests for borrowing money) are considered, in specifications (2) to (5) only group loans are analyzed. Specification (2) reports the overall effect of a group leader bid on the failure probability of loans. Specification (3) additionally distinguishes whether the group leader bid occurs in a loan in a no-reward group or in a reward group. Specification (4) compares the effect of a group leader bid before and after the elimination of group leader rewards on the failure probability of loans in the reward groups. Finally, specification (5) analyzes whether before the elimination of group leader rewards, the group leader participates with more than 33% of the loan amount in the loan, if she places a bid on the listing (i.e. whether she “has skin in the game”). The reference is AA/A-loans before the elimination of group leader rewards in no-reward groups without a group leader bid. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	All Loans		Only Loans in Groups					
	(1)	(2)	(3)	(4)	(5)	(5)	(5)	
Group Leader Bids								
GL Bid		1.011 (1.05)						
GL Bid: No-Reward			0.870*** (-4.26)	0.873*** (-4.16)				
GL Bid: Reward			1.022** (2.07)					
GL Bid: Reward, Before				1.042*** (3.85)				
GL Bid: Reward, After				0.787*** (-7.56)				
GL Bid: No-Reward, Participation ≤ 33%						0.914*** (-2.72)		
GL Bid: No-Reward, Participation > 33%						0.754*** (-4.51)		
GL Bid: Reward, Before, Participation ≤ 33%						1.051*** (4.61)		
GL Bid: Reward, Before, Participation > 33%						0.793*** (-6.94)		
GL Bid: Reward, After, Participation ≤ 33%						0.813*** (-6.52)		
GL Bid: Reward, After, Participation > 33%						0.063*** (-5.53)		
Group Characteristics								
No Group	1.248*** (15.12)							
Reward Group	1.328*** (19.65)	1.327*** (18.75)	1.179*** (5.81)	1.191*** (6.16)	1.217*** (6.89)			
Vetting		0.875*** (-10.57)	0.872*** (-10.82)	0.886*** (-9.44)	0.893*** (-8.80)			
Listing Review Requirement		1.009 (0.89)	1.011 (1.07)	1.011 (1.15)	1.011 (1.12)			
GL Offers Help		0.951*** (-3.81)	0.960*** (-3.12)	0.961*** (-3.04)	0.952*** (-3.74)			
GL Endorsement		1.062*** (6.21)	1.061*** (6.16)	1.066*** (6.57)	1.065*** (6.52)			
Listing Characteristics								
After Elimination of Group Leader Rewards	0.921*** (-11.19)	0.905*** (-7.40)	0.908*** (-7.22)	0.969** (-2.04)	0.970** (-2.03)			
Amount Requested (in \$1,000)	1.054*** (94.18)	1.053*** (62.22)	1.053*** (62.24)	1.053*** (62.60)	1.053*** (62.15)			
Duration	0.987*** (-9.32)	0.985*** (-7.39)	0.984*** (-7.70)	0.985*** (-7.56)	0.985*** (-7.60)			
Listing Closed As Soon As Funded	1.301*** (41.41)	1.161*** (15.06)	1.163*** (15.22)	1.164*** (15.35)	1.163*** (15.24)			
Borrower Characteristics								
Credit Grade: B	1.654*** (44.23)	1.662*** (26.22)	1.661*** (26.20)	1.656*** (26.01)	1.653*** (25.92)			
Credit Grade: C	2.074*** (65.77)	2.051*** (39.90)	2.056*** (40.01)	2.040*** (39.56)	2.037*** (39.46)			
Credit Grade: D	2.469*** (76.17)	2.274*** (43.92)	2.279*** (44.03)	2.265*** (43.69)	2.263*** (43.62)			
Credit Grade: E	3.242*** (85.22)	3.134*** (54.48)	3.135*** (54.50)	3.108*** (54.06)	3.113*** (54.12)			
Credit Grade: HR	3.800*** (94.09)	3.888*** (63.65)	3.890*** (63.67)	3.856*** (63.21)	3.878*** (63.43)			
Debt-to-Income Ratio	1.012*** (5.12)	1.015*** (5.18)	1.015*** (5.16)	1.015*** (5.34)	1.016*** (5.80)			
Is Borrower Home Owner	1.126*** (17.77)	1.090*** (9.19)	1.090*** (9.14)	1.089*** (9.06)	1.088*** (9.00)			
\$1-24,999	1.148*** (5.12)	1.153*** (3.55)	1.149*** (3.47)	1.146*** (3.39)	1.143*** (3.34)			
\$25,000-49,999	1.086*** (3.12)	1.063 (1.54)	1.061 (1.50)	1.059 (1.44)	1.056 (1.38)			
\$50,000-74,999	0.970 (-1.12)	0.979 (-0.54)	0.977 (-0.57)	0.975 (-0.63)	0.976 (-0.60)			
\$75,000-99,999	0.953* (-1.75)	1.006 (0.15)	1.005 (0.12)	1.001 (0.03)	1.001 (0.03)			
\$100,000	0.856*** (-5.51)	0.879*** (-3.06)	0.876*** (-3.13)	0.871*** (-3.28)	0.870*** (-3.31)			
Part-Time	1.000 (0.02)	1.107*** (4.26)	1.109*** (4.36)	1.108*** (4.32)	1.108*** (4.32)			
Self-Employed	1.120*** (10.65)	0.984 (-1.03)	0.984 (-1.03)	0.984 (-1.07)	0.985 (-0.96)			
Retired	1.127*** (6.12)	1.277*** (9.50)	1.277*** (9.51)	1.281*** (9.62)	1.286*** (9.78)			
Not Employed	1.249*** (5.96)	1.261*** (4.32)	1.256*** (4.24)	1.252*** (4.17)	1.267*** (4.40)			
Current Delinquencies	1.020*** (20.60)	1.022*** (17.78)	1.022*** (17.77)	1.022*** (17.65)	1.022*** (17.58)			
Delinquencies Last 7 Years	0.998*** (-7.64)	0.998*** (-4.96)	0.998*** (-5.03)	0.998*** (-5.03)	0.999*** (-4.79)			
Public Records Last 10 Years	1.037*** (14.68)	1.061*** (15.23)	1.061*** (15.14)	1.064*** (15.74)	1.064*** (15.76)			
Total Credit Lines	1.005*** (15.49)	1.004*** (9.89)	1.004*** (9.95)	1.004*** (10.14)	1.004*** (10.16)			
Inquiries Last 6 Months	1.040*** (70.07)	1.037*** (48.45)	1.037*** (48.45)	1.037*** (48.24)	1.037*** (48.59)			
Amount Delinquent (in \$1,000)	1.000* (-1.66)	1.002*** (2.94)	1.002*** (3.04)	1.002*** (3.18)	1.002*** (3.07)			
Public Records Last 12 Months	0.965*** (-3.46)	0.938*** (-4.14)	0.936*** (-4.28)	0.932*** (-4.57)	0.935*** (-4.37)			
Current Credit Lines	1.002 (0.99)	1.003 (1.42)	1.003 (1.42)	1.003 (1.29)	1.002 (0.99)			
Open Credit Lines	0.988*** (-6.75)	0.992*** (-3.52)	0.991*** (-3.56)	0.992*** (-3.51)	0.992*** (-3.18)			
Revolving Credit Balance (in \$1,000)	1.000*** (5.03)	1.001*** (5.48)	1.001*** (5.54)	1.001*** (5.39)	1.001*** (5.26)			
Bankcard Utilization	0.937*** (-8.04)	0.928*** (-6.71)	0.928*** (-6.68)	0.930*** (-6.56)	0.930*** (-6.48)			
Months in Current Occupation	1.000*** (-3.59)	1.000 (-1.62)	1.000* (-1.68)	1.000 (-1.60)	1.000* (-1.77)			

N 410,514 178,883 178,883 178,883 178,883

Note: In specification (4), the difference between the regression coefficients of “GL Bid: Reward, Before” and “GL Bid: Reward, After” is significant at 1%.

Table XI: Robustness Checks (Only Reward Groups: Only listings/loans between 02/13/2007 and 10/30/2007) – Multivariate Analysis

In this table we summarize results from robustness checks of the multivariate regressions. More specifically, we only report the coefficients on group leader bids, which are of main interest for the purpose of our study. The full tables are available from the authors upon request. In all four specifications, only listings (i.e. requests for borrowing money) in reward groups are considered and the sample is restricted to those observations that relate to listings / loans that were posted / funded before 30th October 2007. In specification (1), we do not account for any group-specific information. Specification (2) reports the overall effect of a group leader bid on listing success. Specification (3) compares the effect of a group leader bid before and after the elimination of group leader rewards on listing success in the reward groups. Finally, specification (4) analyzes whether before the elimination of group leader rewards, the group leader participates with more than 33% of the loan amount in the loan, if she places a bid on the listing (i.e. whether she “has skin in the game”). The reference is AA/A-listings before the elimination of group leader rewards without a group leader bid. In panel A we report odds ratios of the logistic regression of funding success, i.e. the exponentiated regression coefficients. Coefficients larger (respectively smaller) than 1 indicate relatively higher (respectively smaller) success probabilities than in the reference group. Panel B reports the regression coefficients from Tobit regressions of the lender interest rate of loans (i.e. of successfully and completely funded requests for borrowing money). Panel C reports the exponentiated regression coefficients obtained from a Cox Proportional Hazards Model. Any payment which is not made on time is considered as a failure, so that failure events are late payments, charge-offs and defaults. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	All Listings/Loans (1)	Only Listings/Loans in Groups		
		(2)	(3)	(4)
PANEL A: LISTING SUCCESS				
<i>Group Leader Bids</i>				
GL Bid		1.833*** (13.08)		
GL Bid: Before			1.803*** (12.53)	
GL Bid: After			2.730*** (4.92)	
N	28,165	28,165	28,165	
pseudo R	0.172	0.258	0.259	
PANEL B: INTEREST RATES				
<i>Group Leader Bids</i>				
GL Bid: Reward		-0.731*** (-6.11)		
GL Bid: Reward, Before			-0.723*** (-5.93)	
GL Bid: Reward, After			-0.882** (-2.00)	
N	3,708	3,708	3,708	
pseudo R	0.195	0.198	0.198	
PANEL C: LOAN PERFORMANCE				
<i>Group Leader Bids</i>				
GL Bid: Reward		1.037*** (3.35)		
GL Bid: Reward, Before			1.047*** (4.14)	
GL Bid: Reward, After			0.834*** (-3.90)	
GL Bid: Reward, Before, Participation ≤ 33%				1.054*** (4.76)
GL Bid: Reward, Before, Participation > 33%				0.800*** (-6.65)
GL Bid: Reward, After, Participation ≤ 33%				0.870*** (-2.99)
GL Bid: Reward, After, Participation > 33%				0.105*** (-4.50)
N	283,076	144,462	144,462	144,462

Table XII: Variable Definitions

Variable	Definition
After (Dummy)	The listing is created after the elimination of group leader rewards. “Before” is the reference in the multivariate analyses.
Amount Delinquent (in \$1,000)	Amount delinquent indicates the past due amounts owed by the borrower. This includes accounts included in Chapter 13 bankruptcies, but excludes all other bankruptcies.
Amount Requested (in \$1,000)	The amount requested by the borrower in the listing.
Bankcard Utilization (Dummy)	Describes whether the borrower uses a banking card for her transactions.
Before (Dummy)	The listing is created before the elimination of group leader rewards. “Before” is the reference in the multivariate analyses.
Borrower Maximum Rate (%)	Maximum interest rate the borrower would be ready to pay.
Borrower Rate (%)	Interest rate paid by the borrower.
Credit Grade: AA/A, B, C, D, E, HR	Each borrower is assigned a credit grade based on her Experian credit score. AA designates the lowest risk, HR the highest. “Credit Grade: AA/A” is the reference in the multivariate analyses.
Current Credit Lines	The number of open or closed accounts in the borrower’s name that the borrower is paying on time.
Current Delinquencies	The number of accounts of the borrower that are currently late. This includes accounts with charged-off balances.
Debt-to-Income Ratio	The sum of the borrower’s monthly debt payments divided by the borrower’s monthly income. This value is capped at 10.01.
Delinquencies Last 7 Years	The number of times the borrower has been more than 90 days late with a payment.
Duration (Days)	The time for which the listing is open for bidding by potential lenders.
GL Bid (Dummy)	The group leader places a bid on the listing.
GL Bids Successfully (Dummy)	The group leader places a successful bid on the listing, i.e. the bid is not outbid.
GL Endorsement (Dummy)	The group leader writes an endorsement (a short text statement) on the borrower / her listing (before the loan is funded or the listing expires).
GL Offers Help (Dummy)	The group leader provides help in designing and writing the listing.
Income Information: Unavailable / \$1-24,999 / \$25,000-49,999 / \$50,000-74,999 / \$75,000-99,999 / \$100,000+	The income range of the borrower at the time the listing is created. “Unavailable” is the reference in the multivariate analyses.
Inquiries Last 6 Months	The number of times a bank or other business has requested the borrower’s credit profile from a consumer credit rating agency.
Is Borrower Home Owner (Dummy)	Specifies whether or not the member is a verified homeowner at the time the listing is created.
Listing Closed As Soon As Funded (Dummy)	The listing is automatically closed as soon as it is completely funded, i.e. once the total amount bid reaches or exceeds the amount requested.
Listing Review Requirement (Dummy)	The group leader reviews the listing before it is open for bidding by the lenders.
Listing Success (Dummy)	The listing is successful, i.e. becomes a loan.
Listing Was Bid On (Dummy)	At least one bid is placed on the listing.
Months in Current Occupation	The length in months of the employment status of the borrower at the time the listing is created.
No Group (Dummy)	The listing is not posted in any group.
No-Reward Group (Dummy)	If the group leader does not request a reward for any listing posted in the group in the sample period, the group is considered as a no-reward group. Otherwise the group is considered as a reward group.
Number of Bids	The number of bids placed on the listing.
Occupation Status: Full-Time / Part-Time / Self-Employed / Retired / Not Employed	The occupation status of the borrower at the time the listing is created. “Full-Time” is the reference in the multivariate analyses.
Open Credit Lines	The total number of open accounts.
Participation > 33% (Dummy)	The group leader participates to more than 33% in the listing/loan.
Public Records Last 10 Years	The number of public records on the borrower’s credit report in the last 10 years. Public records include bankruptcies, liens and judgments.
Public Records Last 12 Months	The number of public records on the borrower’s credit report in the last 12 months. Public records include bankruptcies, liens and judgments.
Revolving Credit Balance (in \$1,000)	The total outstanding balance that the borrower owes on open credit cards or other revolving credit accounts.
Reward Group (Dummy)	If the group leader does not request a reward for any listing posted in the group in the sample period, the group is considered as a no-reward group. Otherwise the group is considered as a reward group.
Total Credit Lines	The total number of credit lines appearing on the borrower’s credit report.
Vetting (Dummy)	The group leader asks the borrower to provide information.