

## Skidmore College Creative Matter

---

Economics Student Theses and Capstone Projects

Economics

---

2017

# Can Loan Descriptions Predict the Funding Probability in a Peer to Peer Lending Platform?

Akil Boney-Gill  
Skidmore College

Follow this and additional works at: [https://creativematter.skidmore.edu/econ\\_studt\\_schol](https://creativematter.skidmore.edu/econ_studt_schol)

---

### Recommended Citation

Boney-Gill, Akil, "Can Loan Descriptions Predict the Funding Probability in a Peer to Peer Lending Platform?" (2017). *Economics Student Theses and Capstone Projects*. 66.  
[https://creativematter.skidmore.edu/econ\\_studt\\_schol/66](https://creativematter.skidmore.edu/econ_studt_schol/66)

This Restricted Thesis is brought to you for free and open access by the Economics at Creative Matter. It has been accepted for inclusion in Economics Student Theses and Capstone Projects by an authorized administrator of Creative Matter. For more information, please contact [jluo@skidmore.edu](mailto:jluo@skidmore.edu).



---

# CAN LOAN DESCRIPTIONS PREDICT THE FUNDING PROBABILITY IN A PEER TO PEER LENDING PLATFORM?

---

Study on Peer to peer lending



This thesis is submitted in partial fulfillment of the requirements for the course Senior Seminar (EC 375), during the Spring semester of 2017

Name: \_\_\_\_\_Akil Boney-Gill\_\_\_\_\_

Signature: \_\_AkilBoney-Gill\_\_\_\_\_

MAY 2, 2017  
SKIDMORE COLLEGE  
By Akil Boney-Gill

Akil Boney-Gill

EC-375

**Research Question:** How do loan descriptions predict the funding probability in a peer to peer lending platform and how can spelling errors found in loan descriptions be used to make up for asymmetric information?

### **Abstract**

The purpose of this empirical study is to determine if the orthographic quality of the description of a loan's purpose predict the total funding probability in a peer to peer lending platform. I hypothesize that the data I collect will show a negative correlation between spelling errors in loan descriptions and probability that the entire loan will be funded.

### **Introduction**

Peer to peer lending is the loaning of money to individuals or small businesses through online services that match lenders (investors) directly with borrowers (loan applicants) (similar to crowdfunding). Within the peer to peer lending market, there exists asymmetric information due to the fact that lenders have no clue what type of borrowers they are dealing with. Lenders have no idea whether a borrower is good for making loan payments. The question I am trying to answer is, are lenders using spelling errors in loan descriptions (an optional brief summary or few sentences placed in by a loan application by borrowers, explaining in more detail why they are requesting a loan) to compensate for the asymmetric information present in peer to peer lending markets? And can spelling errors determine funding probability?

One of the most relevant pieces of literature that I have come across that is related to my research question is " Small Business Borrowing and Peer-to-Peer Lending: Evidence from Lending Club" This research paper investigates the ability of borrowers and lenders to signal to each other in the peer to peer lending market. Researchers focus on small business loans and investigate the relationship between the loan description provided by borrowers and the impact of this description on the potential funding of the loan by lenders. Researchers find that the loan descriptions provided in loan applications can be used to predict the probability that the entire loan will be funded, similar to what my research question is trying to answer.

Using data from the Lending Club website, determine what key words are most likely to result in a project being funded. Then look at what key words are most important in terms of determining which investments are the most successful, where we define success as the loan eventually being repaid.

What distinguishes my research from this research paper is that, this paper is detecting for key words in the loan description that impact lender decisions, while my research question on the other hand is detecting spelling errors.

Securing the necessary credit and capital funding are some of the most difficult challenges individuals face when attempting to start a small business. When these individuals have a hard time securing funding from banks or other traditional institutions, they now have the choice to visit the many different crowdfunding websites to obtain the necessarily funds. "Since the invention of online peer to peer (P2P) lending websites, P2P lending has become an increasingly popular way for entrepreneurs to secure funds to start their small business, and there is a growing literature examining how these new funding sources have affected entrepreneurial activity." (Nowak, 2015)

To conduct this analysis, researchers exploit data from Lending Club. These researchers collected loan data from June 2007 to June 2014. The data set includes all information that is available to the lender.

Funding and text data presented unique challenges for researchers and required specific econometric techniques. Researchers are interested in the signaling function of loan descriptions, it is necessary to incorporate this text or character variable into the analysis. Methods for statistical analysis of text fall into the category of textual analysis. One approach used for incorporating the loan description required the researchers to pre-specify a list of words that they believed were significant and created indicator variables for each word, a procedure that is referred to as the bag of words method in the relevant literature.

This study investigates the ability of borrowers and lenders to signal to each other in a peer to peer lending market. We have shown that loan characteristics and the information that borrowers provide in the form of a loan description are useful in determining which loans are funded by investors. Simple statistics such as the number of words or characters in a loan description are shown to significantly impact the funding decision. We find that more words or characters in a loan description will decrease the probability of funding. In their results, these researchers also found that an index created from a textual analysis of the loan description can be used to forecast the performance of the loan. Their results show that 1 standard deviation increase in the index will decrease the odds of default by 14%. Therefore, it appears as if investors are not making investment decisions based on improper signals.

The purpose of my research proposal is to determine how the presence of spelling errors in a loan description affect funding probability in a peer to peer lending platform. I am also

testing whether in the presence of spelling errors found in loan descriptions can be seen as an unintentional signal made by borrowers in their loan applications indicating how careless he or she is to potential lenders. I would like to know whether the aspects of a borrower's writing quality can make up for the asymmetric information present in the peer to peer lending market. I hypothesize that a borrower's carelessness with grammatical errors in their loan application may impact their chance of having their loan fully funded because writing quality will help compensate the lender for asymmetric information. For my research, I have analyzed data on loan descriptions and whether loans have been fully funded, which is presented on peer to peer lending sites. This study is worth investing in, to understand the risks lenders and borrowers face in this market. I also hope that my findings will help me to develop suggestions for the owners of these peer to peer lending platforms on how they can get rid of the problem of asymmetric information. My results show that there is some negative correlation between spelling errors and the probability that the entire loan will be funded. Studying this may help discover how borrowers can ensure or at least increase their chance of having their loan request fully funded and help diminish the presence of asymmetric information. Throughout this paper, I will refer to several articles throughout this paper that provide evidence of discrimination within this market and other factors that may influence lenders willingness to let strangers borrow their money.

As my contribution to the research that is already out there regarding the determinants of loan funding probability and asymmetric information, is testing whether the presence of spelling errors impact the requested loan amount to the funded loan amount ratio. Another difference between my research question and previous research papers is that, I focus on errors in the loan description and other research questions focus on keywords.

Throughout the remainder of this paper you will be guided through the process that I went through to make this research possible. Section 2 reviews literature, section 3 discusses my analytical framework, section 4 discusses my methodology, section 5 concludes with a discussion of my results and future prospect, section 6 is summary of robustness checks, and I end this paper with a collection of tables that explain my data.

## **Section 2: Literature Review**

### **Description-text related soft information in peer-to-peer lending – Evidence from two leading European platforms**

The study of (Dorfleitner, 2016) looks at how soft information presented in borrowers' loan descriptions plays a role in successful funding probability. In particular, researchers focus their time on the orthography of the loan description, including text length and the presence of social and emotional keywords. The authors of this article focus their investigation on two German peer to peer lending platforms, Smava and Auxmoney. To make this study possible, researchers used a unique set of controls, comprising soft information (material that cannot be verified or confirmed, such as feelings, perceptions, opinions and values) presented by text characteristics and the borrower's loan description provided within the loan application. Some examples of soft information presented in the loan application are pictures, personal experiences, or commonly used emotion evoking keywords. They also assess the profitability of the investments, which provides a quantitative link between the willingness to fund, the danger of default and the rationality of the investors. By using two differently designed platforms, one that requires a credit score (Smava) and one that does not (Auxmoney), they could obtain insights into the question of how the value of soft information depends on the presence or absence of hard information (material that can be verified). The study splits hard and soft information into

categories, then further separate variables that fall under these categories into sub categories, for example, the loan purpose and keywords commonly found within the loan application as soft information, and income as hard information.

The results that this study concluded that lenders using Auxmoney gain a higher return and lower default rates compared to Smava. Smava requires a minimum credit score for all loan applicants, therefore lenders have some basis to go from when determining whether they want to fund a loan. The results of this research also indicate that soft information play a small role in explaining the funding probability on Smava but hard information is a better determinant of whether lenders will fund a loan. In contrast to Auxmoney, where the providing a credit score is not mandatory and very few loans get fully funded. On Auxmoney, it appears that some soft information related to description text have a significant impact on funding probability, while only few of them show significant impact on probability of a borrower defaulting. Keywords that induce positive emotions also show significantly correlation with probability of the funding success. Another variable researcher investigate that is used on both platforms, is interest rate. In the loan applications on these platforms, borrowers provide a suggested maximum interest rate he or she is willing to pay, then the borrower and potential lender try to agree on an optimal interest rate. The results indicate that lenders associate higher interest rates with a lower chance of borrowers being able to pay off their loan. Therefore, lenders tend to away from loan requests from a borrower that comes with a high interest rate.

### **What's in a picture?**

The authors of this article were set on determining whether there is racial discrimination within peer to peer lending platforms. Their desire to perform such a study comes from belief



that because of discrimination towards certain groups of people in other environments, for example, blacks and women may not enjoy the same access to markets and opportunities as their counterparts.

I chose this article although it is not entirely related to my research question, because it points out physical appearances which is another factor that can be a determinant as to whether a borrower receives loan funding. This research article helped me develop my own research question during my brainstorming period for deciding how to uniquely construct my own research question.

According to the literature, theories of discrimination typically fall within either statistical discrimination (which is economically efficient for decision makers) or taste-based discrimination (which comes from hostility toward one group versus other groups of people and is often costly to the decision makers). When borrowers create their profile on a peer to peer lending platform they are given the choice to upload photos and other optional information (explanation as to how important the loan is to the individual or why they deserve the loan) that they believe may enhance the probability of having their loan funded.

This paper examines discrimination within peer to peer lending markets, and uses Prosper.com (a leader in online peer to peer lending in the United States) as the main source of data. The loan listings provided by Prosper.com included links to the pictures uploaded to a borrower's profile. Researchers coded variables from pictures and text descriptions that they exploited from prosper.com provided by loan applications that were posted from 2006 to 2007 in order to successfully conduct their investigation. In order to test for 'disparate treatment' of certain groups researchers estimate whether they are treated differently than their counterparts who are similar on other dimensions.

The empirical analysis reveals significant racial discrimination in this market. Researchers estimated that "listings with blacks in the picture are 2.4-3.2 percentage points less likely to be funded, much less than the average probability of being funded which is 9.3 percent. This signifies approximately a 30 percent reduction in the likelihood of receiving funding." (Pope, 2011) Research also found that listings where the borrower expresses a desire to pay down credit-card debt (one of the most popular stated loan purposes at the time) over credit requests for other purposes, such as loans for business expansions or automotive repairs or purchases to be favored within this market.

Researchers found the evidence of racial discrimination quite shocking when taking into account the fact that borrowers provide so much information about themselves in their credit profile, including credit grade, debt-to-income ratio, and a measure of income. In the end researchers found that lenders are more responsive to signals about race than they are to the abundance of credit history provided by individual borrowers.

The evidence is consistent with a combination of accurate statistical discrimination against blacks coupled with taste-based discrimination against whites. "Perhaps the most likely interpretation is that lenders understand the correlations between race and important characteristics for predicting default that they cannot perfectly observe, such as education and social- support networks, but they fail to fully appreciate the strength of these correlations or the importance of these unobservable factors in predicting default." (Pope, 2011)

### **Tell Me a Good Story and I May Lend You Money: The Role of Narratives in Peer-to-Peer Lending Decisions**

This research of (Herzenstein, 2011) inspects how identity claims presented by borrowers on their online peer to peer lending profile influence lender decisions in funding their loans on

the platform. More specifically, this research examines how borrower's self-presentation and identification content in their loan applications impact lender decisions, and predict the default probability borrowers whose loans have been fully funded. By collecting data from Prosper.com, the authors of this article found that soft information (unverifiable identity claims and other information that cannot be verified through credit reports) also has an impact on a lender's decisions not only hard (verifiable) information. Similar to my research question this article aims at determining how text related information in loan applications affect the probability that the entire loan will be funded, and therefore, it has given me some guidelines to go by when writing my paper.

The straightforward process of peer to peer lending process through begins with soon-to-be borrowers giving prosper.com the authorization to verify some of their personal information (such as, credit score, income, and job occupation). After analyzing this information made available to prosper.com, each individual borrower is designated a letter grade that reflects their riskiness of the borrower defaulting on loan payments. Letter grades range from AA (implying that the borrower is very low risk of defaulting on their loan payments), through A, B, C, D, and E to HR, which represents borrowers with the highest chance of defaulting on loan payments. After this process borrowers are finally free to post loan requests for auction, capped at \$25,000. They also have the option of adding a text description or anything they may want lenders to know in an open text-area made available; and this will be the borrowers narrative.

According to the literature, when lenders review loan applications they may be discouraged by grammatical errors or the profile of a person that identifies with a certain group of people that have stereotypical stigma attached to them. For example, if lenders see the application of an African American man they may just assume that he is lazy and poor and will

default on payments, regardless of the letter grade the applicant was assigned by the peer to peer lending platform.

Narratives provided by borrowers are useful to potential lenders in this market because a narrative gives meaning to events that unfold around the borrower. For example, a narrative might explain a person's past experiences, current situation, or future hopes. Researchers conducted a study on Prosper.com. On peer to peer lending sites, borrowers and lenders do not meet in person, therefore, researchers can assess the role of narratives in overcoming the uncertainty that arises during financial transactions between unacquainted actors.

### **Discrimination in Lending Markets: Status and the Intersections of Gender and Race**

According to researchers, lenders in traditional and peer to peer lending markets tend to discriminate between loan applicants, but the knowledge about the mechanisms driving lenders behavior is still a mystery. When lenders assess borrowers they are guided by cultural stereotypes about the borrowers' status. This persuades lenders toward funding higher status groups even when applicants have the same financial histories. The researchers examine how applicants' demographic characteristics combine to alter lenders' status assessments and, thereby, lenders' decisions in an artificial peer to peer lending market. This study provides experimental evidence that status is a likely driving force in lending discrimination. "These markets have a high degree of uncertainty because traditional indicators of creditworthiness, such as a credit score and past financial behavior more generally, are not perfect indicators of future behaviors and environments." Given this uncertain situation, researchers proposed that lenders' decisions may be guided by cultural status beliefs about the applicants' most noticeable population structural characteristics. This research paper shares similarities to the article "What's

in the picture?" (Harkness, 2016), because they both indicate that discrimination exists within the peer to peer lending market.

According to data gathered from the 1991 Home Mortgage Disclosure Act and the Federal Reserve Bank of Boston, blacks and Hispanics were about 82 percent less likely to receive housing loans from banks than comparable whites (Munnell et al. 1996). Researchers predicted that lenders will be more willing to provide funding to borrowers who are advantaged by their status characteristics, gender and race in particular.

**Hypothesis 1:** Borrowers' status will mediate the relationship between their gender and race and lenders' funding decisions.

"When both gender and race are salient, *the multiple jeopardy hypothesis* (argues that class, racial, ethnic, and gender inequalities carry on in later life and that groups who are disadvantaged by these dimensions of inequality in midlife e.g., women or people of color face increasing disadvantages in older age. Alternatively, the leveling hypothesis suggests that people who are privileged in early life have more to lose in later life, and that a leveling out of resources takes place)." (Harkness, 2016)

**Hypothesis 2:** Black women will be less likely to receive funding than black men, white women, and white men.

**Hypothesis 3:** Black women will be more likely to receive funding than black men and white women.

**EMPIRICAL TEST:** The author tested these hypotheses with an experiment recreating aspects of lending markets. This study mimicked the peer-to-peer (P2P) lending model, including its environment, conditions, and borrower profiles, as trained and untrained lenders alike may engage in Peer-to-peer lending.

**Borrower profiles:** The author developed the borrower profiles by drawing on actual listings posted in prosper.com's marketplace. Peer to peer loan applications generally contain a description of the borrower's purpose. On prosper.com, every loan applicant is assigned letter ratings for their loans, ranging from AA (lower risk, lower return) to HR (higher risk, higher return), roughly corresponding to their credit score. To control for financial history, all applicants in this study had the second highest grade of "B."

"Estimated returns are calculated by (i) taking the weighted average borrower interest rate for all loans originated during the period, adding (ii) estimated collected late fees and post charge-off principal recovery for such loans, and subtracting (iii) the servicing fee, estimated uncollected interest on charge-offs and estimated principal loss on charge-offs from such loans. The actual return on any Note depends on the prepayment and delinquency pattern of the loan underlying each Note, which is highly uncertain. Individual results may vary and projections can change. Past performance is no guarantee of future results and the information presented is not intended to be investment advice or a guarantee about the performance of any Note. Based on data from October 31, 2016 - November 8, 2016." – Prosper

To vary the gender (male or female) and race (white or black) of the applicants, the author developed avatar pictures for each listing. These controlled the presence of various status cues (e.g., age and socioeconomic signals) so applicants differed only by gender and race.

"Participants were informed the avatars were based on pictures provided by the real borrowers, with the avatars used instead to protect the identity of the applicants."

## **Dependent Measures**

**-Status.** To measure the applicants' perceived status, participants rated each borrower on 9-point scales ranging from not at all to extremely according to whether they were competent, capable, organized, skilled, and responsible.

**-Lending decisions.** Participants indicated how likely each borrower was to repay the loan and how likely they would be to fund each applicant on 100-point scales. Next, participants were endowed with a hypothetical \$1,000 to potentially lend (none, some, or all) to each borrower.

**-Multivariate Method.** The author employ mixed-effects linear regression as this study used a repeated-measures design, making responses dependent. A random intercept term designated by each participant's unique identification number is included to properly model the grouping structure of these data. All models include a categorical variable indicating the borrowers' gender and race (black female omitted), the presence of writing errors (dummy; with errors = 1), and loan type (dummy; debt consolidation = 1). The participants' gender (dummy; female = 1), racial/ethnic background (black non-Hispanic, Hispanic, Asian, other; white omitted), age (grand-mean centered), level of education (ranging from 1 = some high school to 8 = professional degree), marital status (dummy; married = 1), and level of economic conservatism (ranging from 0 = extremely liberal to 100 = extremely conservative; mean = 51.63, SD = 28.74) are also included in all models.

This research paper provides for me an example of another peer to per lending platform in the U.S. and gives me a better understanding of how the industry functions.

### **Determinants of Default in P2P Lending**

Lenders in the peer to peer lending market are held at a disadvantage compared to the borrowers due to the problem of information asymmetry. For this reason, peer to peer lending sites provide potential lenders with hard information about borrowers and a loan description indicating the purpose of their loan.

The first research question of this paper aims at analyzing factors that influence defaults on loan payments in peer to peer lending. A common trait for peer to peer lending businesses is that they bear less transaction costs than traditional banking corporations, due to their simpler business model that does not have strict banking regulations and puts borrowers in contact with lenders. Some similarities shared between traditional banking corporations and peer to peer lending markets are costs, for example, customer evaluation costs before the loan is approved. On top of that, there are costs involved in monitoring loan payment and loan recovery costs. Since peer to peer loans are not accounted on the books of the peer to peer lending platform, no liability for loans is needed.

"Peer to peer loans are not accounted on the books of the peer to peer lending platform, so no liability for the loans is needed. It does not experience financial frictions due to the coexistence of long term loans and short term deposits." (Serrano, 2015) With that being said, the utilization of the internet is not only for peer to peer lending, but also for online banking because computerization reduces manual processes that would otherwise increase efficiency. Bank's operating costs are one of the major factors that influence interest margins, because banks pass on the cost of operating to their clients. Due to peer to peer lending platforms having low intermediation costs, the efficiency is transferred to users as higher revenue for lenders and lowered interest rates for borrowers, compared to conventional financial institutions.

### **Is Crowdfunding Different? Evidence on the Relation between Gender and Funding Success from a German Peer-to-Peer Lending Platform**

According to previous research on traditional banking, lenders often discriminate against women that apply for loans. However, studies of peer to peer lending platforms in the United States find that women who request loans have a better chance of receiving fully loans than do



men. Researchers use data from smava.com regarding the successfulness of women's loan applications to answer their question of whether a relationship exists between gender and funding probability. The conclusion that researchers came to, show that there is no relationship between gender and an individual borrower's chance to receive funds on peer to peer lending platform. "Several robustness checks confirm this finding. Hence, female discrimination seems to be eased by the 'wisdom of the lending crowd'." (Barasinska, 2014)

### **Group social capital and lending outcomes in the financial credit market: An empirical study of online peer-to-peer lending**

The peer to peer lending market has no financial intermediaries; which researchers believe leads to the problem of asymmetry. Due to the problem of asymmetric information, researchers believe that lenders and borrowers using the market encounter less favorable lending outcomes, for example, high default rate. Researchers studied the relationship between individual's group social capital and their funding probability in a peer to peer lending market. "Despite its ability to facilitate economic exchange, social capital as public goods may also cause free-rider problems, particularly in an online environment. Based on the analyses of transaction data collected from one of the largest online peer to peer lending platform in the U.S., we found that the borrower's general group social capital (i.e., group membership) and relational social capital (i.e., group credibility and verifiability, and group trust) yielded inconsistent effects, and the borrower's structural social capital (i.e., group inclusiveness) had a negative impact on, his/her funding and repayment performance." (Chen, 2016) "The friendship networks of borrowers have been found to be positively associated with the likelihood of their loans getting funded, and negatively related to the interest rate and default risk on funded loans." (Chen, 2016)

This article is where I developed the idea of using the lemons market theory to explain the asymmetric information within the peer to peer lending market.

### **Competition for Lending in the Internet Era: The case of Peer-to-Peer Lending**

#### **Marketplaces in the USA**

Peer to peer online markets build an example of a two-sided market as they attract and match lenders and borrowers. In this article, researchers provide a descriptive analysis on the competitive strategies used by these platforms, in a two-sided market environment, and they try to find whether these two platforms differentiate from each other or from banks. To provide evidence on this comparison, researchers collect data Prosper.com and LendingClub.com, the two leading peer to peer lending platforms in the U.S. Researchers concluded that these platforms are substitutes with one another and that they are frontally competing. This article more closely defines the peer to peer lending industry and gave me a better understanding of the market. (Mariotto)

### **Trust and Credit: The Role of Appearance in Peer-to-peer Lending**

"Although it is well known that appearance-based impressions affect labor market and election outcomes, little is known about the role appearance plays in financial transactions." (Duarte, 2012) Researchers address this question using photographs of potential borrowers from a peer to peer lending site. Consistent with the trust-intensive nature of lending, researchers found that borrowers who appeared more trustworthy were more likely of having their loans funded. Moreover, borrowers who appeared more trustworthy had higher credit scores and defaulted on loans less often. Overall, our findings suggested that impressions of trustworthiness matter in financial transactions as they predict lender's and borrower's behavior. This journal

article reveals what other factors that I may have overlooked that can determine a lender's willingness to fund loans.

### **The influence of parafoveal typographical errors on eye movements in reading. *European Journal of Cognitive Psychology***

The research covers three experiments requiring comprehensive reading, which analyzes the impact typographical errors in parafoveal vision has on the time it takes to inspect with foveal vision and saccade targeting. During each experiment, researchers altered the presentation of words to produce the appearance of typographical errors, then adjusted them for foveal inspection. For the first experiment, researchers created errors by altering the presentation of words by replacing the first letter of word with a repeated appearance of its second letter. Although, there were no observed significant impacts on foveal inspection time. During the second experiment the target 1 skipping effect was taken out because of orthographic illegality and showed shorter foveal inspection times as a function of the presence of the error. Lastly, the third experiment influenced lexical and sublexical properties of the parafoveal typing error. Properties of the parafoveal error again influenced priorfoveal inspection times. Results suggested that the determining properties were sublexical rather than lexical. (Pynte, 2004)

### **Do Social Networks Solve Information Problems for Peer-to-Peer Lending? Evidence from Prosper.com**

Researchers used transaction data collected from prosper.com between June 1, 2006 and July 31, 2008, to determine what information problems exist on this peer to peer lending site and whether social networks help alleviate the information problems. The collected data, narrows

down three causes of information problems. The first cause is the presence of adverse selection for lenders due to the fact that borrower's credit/ letter grades are made available rather than their credit scores. This selection is partially offset when Prosper posts more detailed credit information on the website. Second, a large portion of lenders make mistakes in the loan selection process but they eventually learn through trial and error. Third, the presence of high interest rates typically implies a lower rate of return because higher interest rates attract lower quality borrowers. This article is relevant to my research because this is where I developed the idea to look for informational problems lurking within the peer to peer lending market.

Based on existing literature on micro-finance theories, social networks might be able to identify riskiness of a borrower either due to friends and associates who observe the essential type of borrower's predictable habits or due to the monitoring within social networks which provides a stronger incentive to pay off loans based on actual results. Findings show results in favor of this argument and in opposition of it at the same time. The results produced show that loans endorsed and bid on by friends had less missed payments and yielded higher rates of return than other loans.

### **Herding behavior in online P2P lending: An empirical investigation**

This article is relevant to my research question because researchers investigate lender behavior in the peer to peer (P2P) lending market of Korea, where individuals bid on unsecured microloans requested by other individual borrowers. Online peer to peer exchanges are on a steady growth rate, even though these lenders in this market are not professional investors. In addition, lenders are taking very big risks because loans in peer to peer lending are granted without any kind of security. While the peer to peer lending market shares some characteristics

of other online markets with respect to herding behavior, it also has characteristics that may discourage it.

This study empirically examines herding behavior in the peer to peer lending market where seemingly conflicting conditions and features of herding are present. Researchers use a large sample of daily data from one of the largest peer to peer lending platforms in Korea and find relevant evidence of herding and its diminishing marginal effect as bidding advances within the peer to peer lending market. The findings of this paper suggest that herding in the market is unwise and lenders should not follow in the footsteps of others. Researchers use a multinomial logit market-share model in which relevant variables from prior studies on peer to peer lending are assessed.

### **Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards**

Licensing occurs in a variety of professions: doctors, lawyers, barbers, real-estate salesmen, contractors, accountants, and stockbrokers for example. They must all pass state examinations believed to assure a minimum level of competence.

Minimum quality standards are not limited to professions. Many consumer products, such as drugs and other potentially hazardous products must satisfy federal safety standards. Banks' and insurance companies' portfolios are subject to frequent examination for their "soundness." And there is agitation for minimum quality standards in a number of currently unregulated markets, from baby pajamas to TV repairmen.

Is there an economic justification for regulating quality? Not in traditional theory: devotees of this theory explain the existence of licensing and other minimal quality standards either as misguided economic paternalism or as a means - tacitly controlled by industry or professional representatives - to capture monopoly profits.

But it is not clear that traditional economic tools are adequate for investigating the licensing problem in its full complexity. "Markets which have minimum quality standards tend to be characterized by informational asymmetry, in which the seller knows the quality of his service or product, but the buyer does not." This article is relevant to my research question because it gives me a better understanding of the lemons market theory. It is difficult, for example, for a patient to ascertain the exact quality of a physician's services or for a housewife (or househusband) to verify the radiation leakage of a microwave oven. Thus, uncertainty and differences in information seem to characterize markets with licensing or other forms of minimum quality standards, and, until recently, these aspects of markets have been outside the purview of economic theory.

#### **Effects of Spelling Errors on the Perception of Writers. The Journal of General Psychology**

This research paper aims at answering several questions, but the main question researchers of this article are trying to answer is, "can our perceptions of other people be influenced by their spelling ability?" The purpose/interest that lies behind this research question is the curiosity of whether a reader that comes across spelling errors uses that to determine how he or she views the author. Researchers found evidence showing that perception of another person's intelligence can sometimes be associated with the smallest amount of information about that individual, for example, a person's writing skills. Readers may view poor writing skills as an indicator of the author being poorly educated or unintelligent.

One of the main questions this research paper aims at answering is, whether spelling errors are taken as an indication of low intellectual abilities in general, are they attributed to low verbal skills in particular, or do we not take spelling errors to reflect other cognitive abilities at all? For this research paper, investigators found college students to volunteer for their study,

which required them to read essays, some containing spelling errors and others spelling error free, and after reading it, share their perceptions of the author after reading the essay.

Researchers hypothesized that the authors of the essays that contained no spelling errors would be viewed as being/having high cognitive and intellectual skills, compared to the authors of essays that were filled with spelling errors.

Researchers were also curious as to whether spelling ability is perceived as an indicator for writing skills, or is it also seen as a reflection of general intellectual skills? They hypothesized that the presence and abundance of spelling errors would impact college student's ratings of the author's writing skills and general intellectual ability.

The paper also discusses whether spelling errors in a writing piece impacts the reader's perception of the writer's level of intellect. The paper suggests that readers associate spelling ability with intelligence.

If perception of the writer's intellectual agility is affected by the presence of spelling errors, it would be useful to know whether spelling ability is actually correlated with intelligence. In order to test whether there is a correlation between intellectual ability and the spelling ability, researchers measured the correlation between spelling ability and the scores on a brief intelligence test.

Researchers investigated the perceived relationship between spelling ability (which was measured by a standard oral dictation spelling test) and cognitive skills by performing three experiments that examined whether college students' ratings of an authors' intellectual ability (measured by scores on a brief intelligence test), logical ability, and writing skills were affected by the presence of spelling errors.

The first experiment involved the presented 4 spelling errors in a short essay given to college students to read, and surprisingly did not significantly affect ratings. Results also found a correlation between spelling ability of college students, and cognitive skills. In the second experiment, college students rated the author of a short essay as having less ability due to the abundance of spelling errors. The impact spelling errors had on the ratings of writing skills was more noticeable and distinct than it was on the ratings of logical ability and intellectual ability. In the third experiment, this finding was replicated, in which the essay included misspellings that were made by real writers. The responses from these college students indicate that they associate spelling errors with a person's abilities, but more so with writing skills than intellectual and logical abilities. The results of these experiments suggest that spelling errors have some impact on how people are perceived based on knowledge of their writing alone, especially when spelling errors are prevalent in their writing.

This research paper is relevant to my topic because it also addresses the idea that writing quality has an impact on people's perception of others.

### **Didn't You Run the Spell Checker? Effects of Type of Spelling Error and Use of a Spell Checker on Perceptions of the Author. Reading Psychology**

The research this article focuses on uses college students to investigate the perception of writer's choice to proofread writing for spelling errors when using a word processor. Undergraduate students volunteered to be a part of the test which required them to read essays and afterwards, complete questionnaire regarding their perceptions of the author and the quality of their writing. Spelling errors were narrowed down to three sub categories (no error, homophone error, non-homophone error) and information was provided about the author's usage of spell checkers when using word processor (no information, author did not use a spell checker,



author did use a spell checker). When the undergraduate students read the essay and came across non-homophone spelling errors, which are usually detected by a spell checker tool, that in turn impacted their perception of the author's abilities and the quality of the essay negatively. The student participants placed the blame entirely on the author of the text for failing to write a spelling error free essay. The final results propose that a person's opinions about a writer and their writing is influenced by the amount and type of spelling errors detected in the text. Researchers concluded that readers of a text hold its author responsible for any spelling errors, regardless of whether there are spell checker tools available or not.

### **The Economics of Information, Frictions, and Consumer Behavior**

This research concerns the effects of informational frictions on consumer behavior, focusing on consumer search and the use of the internet. The book examines how geography can impact behavior on peer to peer lending markets. Extensive literature on the traditional credit market finds that investors and lenders are sensitive to their distance from the borrower, due to the cost of information gathering and monitoring. Recent empirical work has found mixed results. Researchers found that local lenders tend to bid earlier, bid larger amounts, and are more informed in the sense that they are better able to evaluate the underlying risk of borrowers. Lastly, I develop a simple model of social learning with heterogeneous agents that provides testable predictions. My results are consistent with this model; a listing with more early local bidding activity will attract more lenders, leading to a higher probability of funding and a lower final interest rate, if funded.

This work suggests that the behavioral differences between local and nonlocal lenders are driven mostly by informational frictions and not merely preferences. Local lenders are better informed because they have easier and cheaper access to information, and this asymmetry

contributes to explaining why geographic-based frictions are still present and relevant in online lending markets. The second chapter develops a dynamic model of consumer search that exploits intertemporal variation in within-period price and search cost distributions to estimate the population distribution from which consumers' search costs are initially drawn. Researchers show that static approaches to estimating this distribution generally suffer from a dynamic sample selection bias because forward-looking consumers may delay their purchase in a way that depends on their individual search cost. They analyze identification of the population search cost distribution using only price data and develop estimable nonparametric bounds on the distribution function and a nonlinear least squares estimator for parametric models. Researchers apply our estimators to analyze the online market for two widely used econometrics textbooks.

"Our results suggest that static estimates of the search cost distribution are biased upwards, in a distributional sense, relative to the true population distribution. In a small-scale simulation study, we show that this is typical in a dynamic setting where consumers with high search costs are more likely to delay purchase than those with lower search costs. The third chapter examines consumer search behavior in the market for 3D enabled high definition televisions. Utilizing a newly developed methodology, I examine price dispersion in a vertically differentiated market and separately identify the effects of search friction and product differentiation on price. I estimate that 65.6% of the price variation in this market is explained by search friction with the rest being attributable to vertical differentiation. Furthermore, I find that the search intensity in this market polarized: 69% of consumers only search one store while 17% of consumers search all the stores. My analysis concludes that search frictions are relatively more important than vertical differentiation in explaining the price dispersion in the 3D HDTV market." (Senney, 2016)

## **Non-bank Financing in Ireland: A Comparative Perspective**

This research paper provides a statistical overview that firms use non-bank financing in Ireland as well as a comparison vis-a-vis other Eurozone countries. It includes a wide variety of both non-bank debt finance (issued debt, trade credit, loans from friends/family/business partners, mezzanine debt and peer to peer lending/crowdfunding) as well as equity finance (venture capital, business angel and equity from friends and family and business partners). Researchers attempt to answer the following research questions: "(a) what firm characteristics are correlated with applications for, and usage of, specific types of bank finance? (b) What groups of firms or industries are more likely to apply for and use different types of non-bank finance? (c) Do Irish SMEs differ from other European enterprises and, if so, in what way? This overview should help provide evidence with which to understand the policy options available to diversify the financing options of Irish enterprises beyond their current reliance on bank lending." (O'TOOLE†T, 2015)

### **Section 3: Analytical Framework**

The economic model that I incorporate into my research is the Lemons Market theory which observes how the quality of traded goods in a market can diminish in the presence of asymmetric information between buyers and sellers. In the original model, the goods being traded are cars and only "lemons" (a metaphoric term for a car that is only discovered to be defective after you have bought it and taken it out of the lot).

In the peer to peer lending market, the information that is asymmetric is whether the borrower is good for repaying loans because only he or she knows their level of responsibility. Spelling error can be used as a signal to potential lenders (an unintentional signal that makes up

for asymmetric information) as the borrower's probability of defaulting on any loan payments and in the end determine whether a lender wants to fund the borrower's loan. I predict that spelling errors can be used as a representation of a borrower's carelessness. I predicted that after running my regressions, there would be a negative correlation between loan funding and spelling errors. Thus, by using the lemons market theory as the economic theory for my research question, I will be using spelling errors as my independent variable and loans as my dependent variable (the economic outcomes of peer to peer lending are commonly measured with funding performance such as funding success and repayment performance (or default probability)).

This empirical study builds on top of previous studies done on German peer to peer lending platforms (Auxmoney and Smava) by Figueredo and Varnhagen (2005) which finds that a text is inferior if it can be detected by a spellchecker. Therefore, I use Microsoft word's spell check as one of my methods to detect spelling errors and according to a study done by Pynte (2004), who says that orthography (the conventional spelling system of a language) makes a text difficult to interpret and therefore, potentially decreases the chance of successful loan funding.

Understanding what determines a lender's decision in funding a borrower's loans is an important theoretical analysis. In terms of research, there are limited studies that break down the nature of peer to peer lending in depth on a macro and micro level, due to it being a fairly new online lending industry. My methodology section describes data, its sources, my choice of variables and how I expect each independent variable to affect funding probability.

According to Simon Cunningham, founder of Lending Memo ( U.S. based peer to peer lending platform), interest rates are determined by what borrowers are willing to pay and what investors are willing to earn. Cunningham also said, "it is entirely market-driven. The only thing that causes rates to move is investor and borrower demand in the platform." Interest rates in peer

to peer lending platforms are based on risk factors then categorized by several letter grades by LendingClub. Borrowers with the lowest interest rates tend to be those with the lowest risk of default and those with highest interest rates are the borrowers with the highest risk of default. The letter grading scale LendingClub uses organizes the grades from A to G, with "A" having the lowest interest rates and "G" having the highest interest rates.

The higher interest rates accompanied by assigned letter grades can either be a compensation for the higher risk of default by the borrower or an incentive to make the loan appear more attractive for potential lenders. Interest rates also protects lenders against future rises due to inflation.

The fact that interest rates in this market are risk-adjusted and interest rates for traditional banking systems are impacted by the Federal Reserve, separates peer to peer lending from traditional banking. Borrowers that tend to be attracted to peer to peer loans are borrowers who are looking for a better deal than credit cards.

According to Dorfleitner (2016), researchers were required to use an instrumental variable to resolve the problem endogeneity. "In our setting, the interest rate the borrowers are being charged can be subject to endogeneity because these rates are posted by the borrowers themselves while considering their own solvency. We account for this problem by applying simultaneous instrumental variable probit regressions estimated via maximum likelihood with the risk free interest rate as instrumental variable. A suitable instrument should explain a part of the variation of the dependent variable whereas it should not be directly related to the explained variable in the structural equation." (Dorfleitner, 2016)

I originally considered using a probit model because my research question and set up was similar enough to run a similar procedure, but the process would have taken too long.

#### Section 4: Methods

$$\textbf{Model 1: } loan\_amnt = \beta_0 + \beta_1 \ln(\textit{SpellingErr}) + \beta_2 \textit{AnnInc} + \beta_3 \textit{LetterG} + \varepsilon_i$$

$$\textbf{Model 2: } loan\_amnt = \beta_0 + \beta_1 \ln(\textit{SpellingErr}) + \beta_2 \textit{AnnInc} + \beta_3 \textit{IntRt} + \varepsilon_i$$

LendingClub (lendingclub.com) has a collection data gathered from loan applications provided by borrowers, including verified and unverified information, for example, loan description, home ownership status, work occupation and income. My data set consists of loan data collected from 100 loan descriptions on the peer to peer lending platform LendingClub from May 2007 to December 2007.

I have analyzed loan descriptions in order to derive several variables, which I have used to examine the relationship between spelling errors derived from the loan description and loan funding probability in a peer to peer lending platform. The orthographic quality of a description text is measured by one of the independent variable. The Spellingerror variable is derived using the automatic spelling check provided by Microsoft Word and grammarcheckforsentence.com which detects spelling and grammatical errors in a sentence when it is entered into the site. Furthermore, when necessary, I manually identified other incorrect spellings that cannot be detected by spell check programs mentioned, for example, abbreviations or names that are not stored in the spell check's dictionary. SpellingErr is an explanatory variable (a variable in which it is unclear as to whether it is independent).

To organize the data that, I gathered from LendingClub, I used a random number generator on a Microsoft excel spreadsheet to randomly select 100 different loan applications

provided by lendingclub.com from 2007. When I finished organizing the data, I realized that I overlooked the possibility that some borrowers did not provide a description for the purpose of their loan request. Therefore, I left the number of spelling errors in the loan descriptions blank for borrowers who failed to provide a description.

For my research models, I use several variables that I exploit from loan applications made available on lendingclub.com. My independent variables are as follows: IntRt, which represents the nominal interest rate borrowers must pay on their loan; annual\_inc, which is self-reported annual income received; LetterG, which Letter grade assigned to each borrower depending on their level of riskiness; and lastly,  $\ln(\text{SpellingErr})$ , which is measured by words in the loan description that are misspelled, not properly separated by a space, missing a capitalization, missing a hyphenation and misspelling that are homophone, which are detectable by Microsoft Word spell check and grammarcheckforsentence.com. These variables are also more narrowly defined in table 1 and table 2.

Although, all variables were not immediately ready to be used in my regression. For example, the LetterG variable that I collected from lendingclub had to be converted from a letter to a numerical form so that it could be quantified/measured in the regression. Therefore, I assigned loan with letter grades of "A" to the number "1" gave lower letter grades higher numerical values ending with letter grade "G", giving it "7" (Table 4 lists the interest rates associated with assigned letter grades). Also, I was required to turn the variable for spelling errors into a semi log function ( $\ln(\text{SpellingErr})$ ) in order to put the variable into a percentage, because if I had not the OLS estimates would have been too large and the results would not have made sense. My dependent variable loan\_amnt accounts for the amount of money actually

funded to borrower divided by amount of money requested by borrower (probability that an entire loan will be funded).

In order to run regressions using loan descriptions, I needed to convert each loan description into a quantifiable representation/ value that could be read by Stata. Therefore, to more narrowly define loan descriptions, I started off by counting the amount of words in each loan description, then counting the amount of misspelled words and then dividing the total word count for the loan application by misspelled words.

The letter grades assigned to each individual by LendingClub work as a type of credit score. In this case I use letter grades as indicators of income/ financial stability; high letter grades will equate to high income/financially stable and individuals with low letter grades will equate to low income/ financially unstable. According to investopedia.com, a person's credit score shows whether he or she has a history of being financially stable.

Some psychological studies done by Figueredo and Varnhagen (2005) and Kreiner (2002) support the theory that spelling errors of a description text damage and lower the creditworthiness of the applicant in the eyes of the potential lender. "Other aspects are the signaling role of the text length and certain keywords appearing in the description. Some keywords that are able to evoke special emotions may have a positive effect on the probability of successful funding." (Dorfleitner, 2016)

A person's economic status tends to reflect in their educational background, and people who come from low income backgrounds tend to have poorer academic skills. It is likely for lenders to discriminate against borrowers who present some obvious spelling errors in their loan description, and accurate statistical discrimination is economically efficient for the lender.



## Section 5: Results

In this section, I first analyze the factors influencing the dependent variable, `loan_amnt` and second those regarding the default probability. After running the regressions on data for both model 1 and model 2, the findings that I encountered were not that surprising. For results in both model 1 and model 2, I found that for every increase in the variable `ln(SpellingErr)` by 1 standard deviation, there would be a rounded up change of  $-0.703$  in the dependent variable `loan_amnt`. In other words, an increase in spelling errors by 1% would decrease the probability that an entire loan will be funded by 7.03% (See table 3). As I hypothesized, the data shows a negative correlation between spelling errors in loan descriptions and probability that an entire loan will be funded. This indicates that lenders may be using the amount of spelling errors that they find in a borrower's loan description as an additional way to determine their level of riskiness, and as a way to compensate for the existing asymmetric information in favor of these borrowers. Some of my findings also contradict some of the findings of the study done in "Small Business Borrowing and Peer-to-Peer Lending: Evidence from Lending Club", which concludes that it looks as if lenders do not make their decisions on whether to invest based on the unintentional signals made by borrowers, because their results show that an increase in a text index by 1 standard deviation causes the chances of borrowers defaulting to decrease by 14%. Although, some of my results do support some the conclusions made in "Small Business Borrowing and Peer-to-Peer Lending: Evidence from Lending Club", which finds that the loan descriptions provided by borrowers can be used to predict the probability that an entire loan will be funded. This proves that due to the presence of spelling errors found in loan descriptions, lenders are less willing to fund borrower's loans.

This should serve as an incentive for borrowers to check over their loan descriptions for spelling errors because it would in their best interest to have a little spelling errors as possible to increase their chances of having their loan funded. Proper spelling makes borrower's loan requests more desirable to lenders. My research shows that orthographic quality of the description is of some importance to potential lenders in the market. One common error I found within many borrower's loan descriptions was that they did not end their final sentence with a punctuation mark.

My results for the `annual_inc` variable used in both model 1 and model 2 were very similar. My findings in both models show that for each time that the `annual_inc` variable increased by 1 standard deviation, the `loan_amnt` would increase by .004. Demonstrating a positive correlation between income and the requested loan amount to the total amount funded ratio.

Table 3 also shows that after running both regressions for both models, there were some similar results for the level of significance between the two models. Annual income for both models are highly significant; spelling errors are moderately significant, Interest rate for model 1 is moderately significant; grades for model 2 are moderately significant; and constant for both models have a low level of significance (See table 3).

In the first model, I used the dependent variable `LetterG` instead of interest rate, and my results show a correlation between `LetterG` and `loan_amnt`, similar to that of `IntRt` and `loan_amnt` of the second model. My results table show that for each time that the `LetterG` variable increased by 1 standard deviation, the `loan_amnt` would decrease by .015.

For my results from model 2, which incorporates interest rate as an independent variable, there were some unexpected findings. The results showed that for each time the `IntRt` variable

increased by 1 standard deviation, loan\_amnt would decrease by .917. The impact IntRt variable had on funding was expected because higher interest rates are associated with riskier borrowers and lower interest rates are associated with more responsible borrowers, therefore, my results show that the riskier a borrower is, the less lenders are willing to fund their loans (decreasing the probability that their entire loan will be funded).

Unlike traditional banking, within LendingClub's peer to peer lending platform, there is a fixed interest rate that varies among borrowers and there is no discrimination involving interest rates, because interest rates are fixed based on what letter grade you are assigned by the platform. Although, in traditional banking there are many factors that play a role in the interest rate you receive on a loan, such as race, occupation, age, neighborhood. In the past, the majority of peer to peer loan applications have been for personal usage, such as, financing home improvements or paying off credit card debt. Although, recently the number of peer to peer lenders getting involved in the mortgage business has been increasingly growing (reaching more and more into traditional banking territory). That being said, for future research I hope to perform studies to test whether there is some correlation between the type projects loans are being requested for and the probability that their entire loan will be funded. Also, for the future of peer to peer lending I would like to see if someday will the type of projects loans are being requested for will have an impact on interest rates. For future research and improvement within the peer to peer lending market, I suggest improvement of the situation of asymmetric information.

### **Section 6: Robustness:**

I started off with one economic model that included both interest rate and letter grade, but after running a regression, I ran a VIF test which detected imperfect multicollinearity between

the two variables. This led me to splitting my one model into two, one model containing interest rate, but not letter grades as a variable, and the second model using letter grade as a variable but not interest rate. Then I ran the Park's test to test for the potential presence of heteroscedasticity, using annual income as a size variable. After running the Park's test, my results appeared to be heteroskedastic. Lastly, I ran the T-test to determine whether the estimated coefficient is significantly different from zero. In my results from the T-test, the estimated t-value was greater than the critical t-value, forcing me to reject the null hypothesis that  $\beta$  is equal to zero.

### Section 7: Tables

**Table 1:**

<b>Independent Variables</b>	<b>Description</b>
ln(SpellingErr)	Words in the loan description that are misspelled, not properly separated by a space, missing a capitalization, missing a hyphenation and misspelling that are homophone. Spell check is based on spelling errors detectable by Microsoft Word spell check and <a href="http://grammarcheckforsentence.com">grammarcheckforsentence.com</a>
IntRt	The nominal interest rate borrowers must pay on their loan
annual_inc	Self-reported annual income received sometimes verified or unverified
LetterGr	Letter grade assigned to each borrower depending on their level of riskiness

**Table 2:**

<b>Dependent Variables</b>	<b>Description</b>
loan_amnt	Amount of money actually funded to borrower divided by amount of money requested by borrower (probability that an entire loan will be funded)

**Table 3: Regressions for 2007**

Variables	Model 1	Model 2

Annual Income	.004* (.001)	.004* (.001)
ln(SpellingErr)	-.703** (.701)	-.703** (.704)
Interest rate	-.920** (.500)	
Letter grade		-.015** (.008)
Constant	1.108*** (.059)	1.050*** (.009)
R-Squared	0.3128	0.3179
Adjusted R-Squared	0.1071	0.1086
N	94	94

All standard errors are in parenthesis  
 \* indicates significance at 10% level of significance  
 \*\* indicates significance at 5% level of significance  
 \*\*\* indicates significance at 1% level of significance

**Table 4: 2016 LendingClub Loan Grades**

Interest Rates	
Based on each loan application and credit report, every loan is assigned a grade ranging from A1 to G5 with a corresponding interest rate. Each loan grade and its corresponding interest rate is displayed below.	
Loan Grade	Interest Rate
A1	5.32%
A2	6.99%
A3	7.24%
A4	7.49%
A5	7.99%
B1	8.24%
B2	10.49%
B3	11.39%
B4	11.44%
B5	11.49%

C1	12.74%
C2	13.49%
C3	13.99%
C4	14.99%
C5	15.99%
D1	16.99%
D2	17.99%
D3	18.99%
D4	19.99%
D5	21.49%
E1	22.74%
E2	23.99%
E3	24.74%
E4	25.49%
E5	26.24%
F1	28.69%
F2	29.49%
F3	29.99%
F4	30.49%
F5	30.74%
G1	30.79%
G2	30.84%
G3	30.89%
G4	30.94%
G5	30.99%

## References

- Barasinska, N., & SchÃ¶fer, D. (2014). Is Crowdfunding Different? Evidence on the Relation between Gender and Funding Success from a German Peer-to-Peer Lending Platform. *German Economic Review*.
- Chen, X., Zhou, L., & Wan, D. (2016). Group social capital and lending outcomes in the financial credit market: An empirical study of online peer-to-peer lending. *Electronic Commerce Research and Applications*, 15, 1-13.
- Dorfleitner, G., Priberny, C., Schuster, S., Stoiber, J., Weber, M., Castro, I. D., & Kammler, J. (2016). Description-text related soft information in peer-to-peer lending â Evidence from two leading European platforms. *Journal of Banking & Finance*, 64, 169-187.
- Duarte, J., Siegel, S., & Young, L. (2012). Trust and Credit: The Role of Appearance in Peer-to-peer Lending. *Review of Financial Studies*, 25(8), 2455-2484.
- Figueredo, L., & Varnhagen, C. K. (2005). Didn't You Run the Spell Checker? Effects of Type of Spelling Error and Use of a Spell Checker on Perceptions of the Author. *Reading Psychology*, 26(4-5), 441-458.
- Freedman, S., & Jin, G. Z. (n.d.). Do Social Networks Solve Information Problems for Peer-to-Peer Lending? Evidence from Prosper.com. SSRN Electronic Journal. Retrieved November 14, 2007.
- Harkness, S. K. (2016). Discrimination in Lending Markets: Status and the Intersections of Gender and Race. *Social Psychodeslogy Quarterly*, 79(1), 81-93.

- Herzenstein, M., Sonenshein, S., & Dholakia, U. M. (2011). Tell Me a Good Story and I May Lend You Money: The Role of Narratives in Peer-to-Peer Lending Decisions. *Journal of Marketing Research*, 48(SPL).
- Kreiner, D. S., Schnakenberg, S. D., Green, A. G., Costello, M. J., & Mcclin, A. F. (2002). Effects of Spelling Errors on the Perception of Writers. *The Journal of General Psychology*, 129(1), 5-17.
- Lee, E., & Lee, B. (2012). Herding behavior in online P2P lending: An empirical investigation. *Electronic Commerce Research and Applications*, 11(5), 495-503.
- Leland, H. E. (1979). Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards. *Journal of Political Economy*, 87(6), 1328-1346.
- Mariotto, C. (n.d.). Competition for Lending in the Internet Era: The Case of Peer-to-Peer Lending Marketplaces in the USA. SSRN Electronic Journal.
- Meet your new asset class, personal loans | Prosper. (n.d.).
- Michels, J. (2012). Do Unverifiable Disclosures Matter? Evidence from Peer-to-Peer Lending. *The Accounting Review*, 87(4), 1385-1413.
- Nowak, A., Ross, A., & Yench, C. (2015). Small Business Borrowing and Peer-to-Peer Lending: Evidence from Lending Club.
- O'TOOLE†T, CONOR M. *The Economic and Social Review*, Vol. 46, No. 1, Spring, 2015, pp. 133–161
- Pynte, J., Kennedy, A., & Ducrot, S. (2004). The influence of parafoveal typographical errors on eye movements in reading. *European Journal of Cognitive Psychology*, 16(1-2), 178-202.
- Pope, D. G., & Sydnor, J. R. (2011). What's in a Picture?: Evidence of Discrimination from Prosper.com. *Journal of Human Resources*, 46(1), 53-92.



- Pynte, J., Kennedy, A., & Ducrot, S. (2004). The influence of parafoveal typographical errors on eye movements in reading. *European Journal of Cognitive Psychology*, 16(1-2), 178-202.
- Senney, G. T. (2016). *The Economics of Information, Frictions, and Consumer Behavior*. Ohio: Ohio State University. Department of Economics.
- Serrano-Cinca, C., Gutiérrez-Nieto, B., & López-Palacios, L. (2015). Determinants of Default in P2P Lending. *Plos One*, 10(10).