

Online social lending: the effect of legal and cultural frameworks

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October 2016

EFM Classification Codes: 720, 730, 770, 800

JEL Classifications: G21, G23

Keywords: personal loans, online social lending, peer-to-peer, P2P, civil law, common law, Hofstede cultural dimensions, World Value survey, international, small business, financial exclusion, microfinance.

Thanks to Thomson Reuters and participants at Behavioral Finance Infiniti annual conference, NYU/Northeastern social entrepreneurship annual conference, research seminars of California State Fullerton and Long Beach, Pepperdine, Denver, Willamette, Western Washington, Scranton, Sacred Heart and Fordham participants for comments. Thanks to Fordham Business and Fordham Office of Research for research support.

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Abstract

This study is based on a unique novel hand-collected dataset of 7,500 peer-to-peer (P2P) loans granted in common law nations (U.S.A., U.K., India and Kenya) and civil law nations (Italy, Brazil, Germany, Finland, China and South Korea) between 2008 and 2013. Unlike previous peer-to-peer lending studies that use domestic data, the multinational data allows for a world-wide comparison of P2P loans and lending decisions. Specifically, it contributes to the understanding of how credit risk premium is priced and managed in new models of financial intermediation in association to different mechanism of credit assessment and debt collection. Peer-to-peer loans granted in common law nations have significantly longer payback periods, and require interest rates that are about half the rates charged in civil law nations and decrease with law enforcement and national trust value measures. Furthermore, controlling for the number of bidding days, peer-to-peer loans in common law nations seem to get funded more quickly, especially in nations with higher Hofstede masculinity scores. Overall, results on peer-to-peer loans are consistent with those of LaPorta, Lopez de Silanes, Schleifer and Vishny (2008) for traditional financing models.

I. Introduction

By 2020, online peer-to-peer (P2P) lending sites are expected to have provided over \$25 billion world-wide in small loans to individuals and small businesses (Financial Times, 2014). Developed in the U.K. and U.S. in 2005, and fueled by the 2008 crisis, online P2P loan services have expanded as an alternative to banks and credit cards, matching investors with needy borrowers in over 35 sites world-wide. Unlike previous studies that consider one-country P2P lending data, this study is based on a unique novel hand-collected dataset of over 7,500 P2P loans granted in 10 nations between 2008 and 2013: common law nations (U.S.A., U.K., India and Kenya) and civil law nations (Italy, Brazil, Germany, Finland, China and South Korea). Specifically, as Aggarwal and Goddell (2014) point out as a need in finance literature, this study explores further the *connection* between national culture and individual behavior in relation to pricing and managing risk. Aggarwal and Goodell (2014) document less access to financing in association with the cultural dimensions of uncertainty avoidance and masculinity, besides smaller national wealth and worse investor protection. This is consistent with the findings of LaPorta, Lopez de Silanes, Shleifer and Vishny (2008) for traditional financing and legal backgrounds in civil vs. common law nations.

Peer-to-peer (P2P) loans, which average sizes of around \$6,000 in both civil and common law nations (in the U.S. up to \$35,000), are usually arranged in the U.S. at rates as low as 6 to 9%, a competitive alternative to average rates of 12.26% in commercial bank personal loans, 14.68% in national credit cards, and 5.12% in home equity lines of credit¹. As the sector grows, P2P lending is attracting the interest of the mainstream financial industry² that it professes to undermine, all

¹ Fordham Business Magazine, Fall 2012.

² In May 2013 Google purchased a 7% share of US Lending club. In September 2013, BlackRock joined Sequoia Capital banking US Prosper (BlackRock is the largest manager of money

while global regulators scrutinize P2P lending and explore its potential – in 2014 the Federal Reserve Bank of New York hosted a meeting to discuss the role crowd-funding can play in jump-starting the U.S. economy.

Because of their risky nature matching strangers with limited objective information, P2P loan agreements can arguably constitute a good scenario where to understand better the pricing and management of credit risk premiums in the presence of different debt collection mechanisms. In U.S. based Prosper, historical loss rates range from 2.3% for highly rated loans with returns of around 6.5%, to loss rates of 14% in the riskiest loan category of returns circa 15%.

This study is based on over 7,500 hand-collected loan applications posted online between 2008 and 2013 in Prosper (US), Yes_secure (UK), Zopa (UK), Rangde (India), Myc4.com (Kenya) – the common law subsample –, Fairplace (Brazil), Prestiamoci (Italy), Auxmoney (Germany), Fixura (Finland), Ppdai (China), and Popfunding (South Korea) – the civil law subsample. The analysis shows a significant difference between P2P loans and lending decisions in civil and common law nations. Overall, P2P loans in common law nations have longer maturities and appear to be granted more quickly at lower interest rates - circa 10%, vs. over 20% in civil law nations – that decrease with law enforcement and national trust value measures.

worldwide with \$4 trillion in managed assets). By December 2013, Lending Club & Prosper crossed \$4 billion in issued loans, a combined growth of 177%, nearly tripling their loan volume in twelve months (they are expected to issue \$6.7 billion in 2014). Lending Club became cash-flow positive in late 2012 and Prosper did so in 2014.

The remainder of this paper is organized as follows. Section II provides a background description of the online social lending industry and platform operating procedures. Section III reviews the literature on the effects of legal origin and cultural dimensions, with special emphasis on Hofstede cultural dimensions and World Value Survey scores. Section IV describes in detail the unique data set and samples, and emphasizes the most relevant summary statistics. Section V examines funding decisions on civil vs. common law nations, as well as in the different platforms object of study. Section VI presents a summary and conclusions.

II. Online Peer-to-Peer Lending

Person-to-person lending - also known as peer-to-peer lending, peer-to-peer investing, and social lending, and abbreviated frequently as P2P lending - refers to lending and borrowing between individuals through a for-profit online platform, without the intermediation of a traditional financial institution. The service started in the United Kingdom in 2005, but the United States platforms quickly took the lead in loan volume. In the direct unsecured P2P lending model, the investors loan to a portfolio of borrowers and have access to limited information that includes at least loan size, maturity and purpose, some measure of credit rating as well as loan interest rate on some platforms besides a statement and sometimes an image provided by the borrower. Subsequently, if the loan defaults, the platform sells it to a debt collection agency.

Overall, even though peer-to-peer lending, crowdfunding and microfinance seem alike, they are essentially different, at least at conception, in purpose and how they work. Crowdfunding builds collective pools of capital to support an initiative or project, and has historically been used for political campaigns, disaster relief and public projects. In crowdfunding, the individual seeking

monetary support typically offers something in return for a donation. Microfinance, on the other hand provides financial help to low-income families or individuals who traditionally lack access to banking and loans. In P2P, although sites in Africa include agriculture loans funded sometimes abroad, borrowers and lenders are for the most part middle class, reside in the same nation and seek profits in exchange for supporting a wide variety of purposes that include debt consolidation, home and car expenses, relocation or small business development. Overall, peer-to-peer lending appears to complement more the role of credit cards than that of bank debt, given the limited size of the loans - usually less than \$10,000 - and the absence of monitoring.

II.2. Institutional Background

U.K. based Zopa – “zone of possible agreement” – is the world’s oldest and Europe’s largest P2P lending service. Since its inception in 2005 it has lent over £1 billion. Founded a few months later than Zopa, U.S. based Prosper has facilitated funding of over \$5 billion and counts over 2.2 million members. With borrower rates as low as 5.99%, Prosper claims a net annualized return of 10.69% for investors. On average, Prosper lists over 5,000 loan applications a month, with historical loss rates ranging from 2% for highly rated loans with returns of around 6%, to loss rates of 14% in the riskiest loan category of returns circa 15%. The average loan amount is \$10,000, issued at fixed rates for terms of three or five years. U.S. based LendingClub is even larger in terms of total loan origination, with over \$13 billion in originated loans since it was founded in 2006.

Prosper’s interest rates are fixed throughout the length of the auction. Prosper borrowers get their loan applications listed and active for lender bets until the loans are either fully funded or the 14 day listing period ends. If a listing does not receive enough funding no loan is made, but the

borrower can initiate another loan listing. Lenders bid the amount they would like to purchase for each loan – from \$2,000 to \$35,000 - at an interest rate determined systematically by the platform based on loan and borrower characteristics. Besides the interest rate and platform credit rating, investors can also consider borrower's personal loan descriptions, borrowing history, endorsements from friends, and community affiliations. Originally however, from 2006 to 2009, Prosper operated on a variable rate model, through an auction style used by Zopa in the U.K. In this auction style, lenders bid the minimum interest rate they would be willing to accept for their investment. The loan is then filled, beginning with the lowest interest rate and moving up to higher rates until the loan is completely funded.

Platform services include calculating interest rates and repayment terms, creating written documents, and disbursing funds in the process described further below. Both borrowers and lenders are charged fees. Prosper and Lending Club usually charge a 5% origination fee, interest rates are fixed (at about 14 or 15%) even after late payments, a \$15 fee for late or failed payments, and about 1% annual investor servicing fee. P2P platforms operate similarly all over the world, and obtain clearance in the Securities and Exchange Commission like institutions of different countries.

II.3. Verification

As described in Lin et al (2013), users can join Prosper.com by providing an email address, which is verified by the website. To engage in a transaction, borrowers must reside in the US, have a valid social security number, a valid bank account number, a minimum FICO (Fair Isaac Credit Organization) credit score of 520, and a valid driver's license and address. The details are verified

by Prosper.com, which also extracts a credit report from Experian, a major credit reporting agency in the U.S. Loan proceeds are credited to the bank account and funds withdrawn automatically for monthly loan repayments. Prosper lenders are also subject to verification of the social security number, driver's license number, and bank account number. To protect privacy, the true identity of borrowers and lenders is never revealed in the website. Communication occurs through usernames that are chosen when signing up.

II.4. Post-bidding, funding and repayment

Once the listing is closed, the platform staff reviews the closing terms and sometimes additional documentation is required from borrowers. After the review process is completed, funds are collected from the winning bidders' accounts and transferred to the borrower's account after deducting fees. Loans on Prosper.com can have maturities up to 5 years with repayments in equated monthly installments. The monthly repayment is automatically deducted from a borrower's bank account and distributed to lenders' Prosper accounts. If the monthly payment is made in time, the loan status for that month is considered current. If a monthly bill is not paid, the loan status will be changed to "late", "1 month late", "2 months late", etc. If a loan is late for 2 months or more, it is sent to a collection agency. Delinquencies are reported to the credit report agencies and can affect borrowers' credit scores (Lin et al. 2013).

III. Background literature

III.1. Online Social Lending

Lending on P2P sites is risky because, besides limited objective ‘hard’ information about the borrower, lenders face extra adverse selection due to observing credit grade categories rather than actual credit scores (Freedman et al. (2015)). However, despite the challenges, Iyer, Khwaja, Luttmer and Shue (2015) find that lenders are, to some extent, capable of estimating the creditworthiness of Prosper borrowers. There is a significant heterogeneity in P2P investor returns, as reported on Lendstats.com, and lender higher financial literacy and IQ is associated to higher returns (Grinblatt et al. (2012)). In addition, following some simple investment rules improves profitability of a P2P portfolio and leads to acceptable returns for all credit rating categories with exception of the high-risk one (Klafft (2008)).

Since P2P platforms report funded loan percentages and number of committed lenders, Herzenstein et al. (2011) study herding behavior, defined as a greater likelihood of bidding in auctions with more existing bids, and find that a 1% increase in the number of bids increases the likelihood of an additional bid by 15% before the loan receives full finding bidding. They conclude that strategic herding behavior in P2P loan auctions benefits bidders.

Besides images and messages, many P2P platforms allow borrowers to use their social networks and recommendations to reduce uncertainties and speed up the funding process at competitive interest rates. Using Prosper data, Lin, Prabhala and Viswanathan (2010) find borrowers with a strong social network to receive lower interest rates, and defaults less likely for borrowers whose neighbors are also less likely to default. Similarly, Freedman et al. (2015) find that loans with friend endorsements and bids have fewer missed payments and yield significantly higher returns,

and Everett (2010) finds that membership in an online lending community is associated with lower default risk only if membership holds the possibility of real-life personal connections.

Hildebrand, Puri and Rocholl (2014) explore the relationship between loan performance in Prosper and the incentive structure for an intermediary responsible for originating the loan. In Prosper, users can join groups headed by a leader who can endorse and aid borrowers in securing the funds necessary to make a listing successful. Borrowers are only able to join one group at a time, with permission from the group leader. Prior to 9/12/2007, Group Leaders could charge a fee for helping a borrower originate a loan while afterwards. Overall, Hildebrand et al. (2014) find that prior to the policy change, in the groups where leaders charged an incentive, default rates were substantially higher than in groups where leaders did not charge an incentive. Furthermore, they find that loans in which leaders have "skin in the game" seem to outperform.

Overall, despite diversification and other prudent rules of thumb used by most P2P lending investors, information asymmetries lead to substantial evidence of subjective behavior in online social lending. Duarte et al. (2010) find that borrowers who are perceived as less trustworthy in P2P lending sites are economically and significantly less likely to have their loan requests filled, even in the presence of adequate contracts and an effective legal system acting as an enforcement mechanism. More specifically, Duarte et al. (2010) find that borrowers deemed trustworthy receive 31% more bids than the average.

III.2. Legal Background effects

La Porta et al. (LLSV) (1997, 1998) show that legal backgrounds affect financial decision making, valuations, and ultimately, economic growth. They explain that commercial laws come from two broad traditions: common law and civil law. Legal rules of civil law countries have their origin in Roman Law, are usually developed by legal scholars, and then incorporated into commercial codes. In contrast, common law is British in origin, and legal rules of common law are developed by judges mostly in an attempt to solve specific disputes. Within civil law, there are three major traditions: French, German, and Scandinavian. In general, these civil and common legal traditions have spread around the world through a combination of conquest, imperialism, outright borrowing, and more subtle imitation (LaPorta et al. (1998)).

La Porta et al. (1998) find that common law countries generally provide the best legal protections to investors, and French civil law countries the worst ones, with German and Scandinavian civil law countries somewhere in the middle. Furthermore, La Porta et al. (1997) find that countries with poorer investor protections, measured by both the character of legal rules and the quality of law enforcement, have smaller and narrower equity and debt capital markets. Non surprisingly, common law nations are more effective at debt collection (see. Djankov et al. (2003, 2006)) as measured by the time it takes to evict a non-paying tenant or to collect a bounced check. This variable can be interpreted more broadly as the efficiency of contract enforcement by courts.

More recently, La Porta et al. (2006) find that laws mandating disclosure and facilitating private enforcement through liability rules benefit stock markets, and discuss three lines of criticism in the literature organized around the idea that legal origin is a proxy for something else (La Porta et al. (2008)). The three alternatives they consider are: culture, politics, and history. Their conclusion

is that, while all those factors influence laws, regulations, and economic outcomes, it is almost certainly false that legal origin is merely a proxy.

III.3. Cultural and national value effects

Williamson (1993) argues that, in the presence of adequate contracts and enforcement mechanisms, agents need not consider the trustworthiness of their potential counterparties. However, as Guiso, Sapienza and Zingales (2006) note, financial contracts are the “ultimate trust intensive contracts”. More specifically, in the context of P2P lending, and despite the similar legal background in the U.S. and U.K., Gonzalez and McAleer (2012) find significant differences in the loan characteristics of U.S. based Prosper and U.K. based Zopa. Thus, when studying P2P lending on sites around the world, one could argue that platform specific factors, cultural dimensions and national value effects ought to be examined alongside legal backgrounds.

Values are criteria for judgment, preferences and decision-making. They shape, define and are central to the understanding of culture (Gogolin et al. (2015)). Guiso et al (2006), define culture as “those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation”, and establish causality from culture to trust to economics. More recently, Guiso et al. (2006, 2013) examine the role of trust in investment decisions, and Hazarika et al. (2014) analyze the impact of institutional and cultural differences on global venture capital (VC) investing. In both developed and emerging economies, they find cultural distance and better legal rights and their enforcement to be significantly related to higher likelihood of VC success.

The Hofstede framework is by far the most used and cited cultural framework in academic finance, besides international business, management and applied psychology. Geert Hofstede (1980) describes national culture as a “collective programming of the human mind that distinguishes the members of one group or category of people from another”.³ The mechanisms for the mental programming shared by major groups in the population are thought to include symbols, heroes, rituals, and practices.

Hofstede’s measures were constructed from answers to a large survey study of 117,000 IBM employees across their worldwide subsidiaries in 70 countries between 1967 and 1973. Culture is classified into four major dimensions – small vs. large power distance, individualism vs. collectivism, masculinity vs. femininity, and uncertainty avoidance. *Power distance* measures the degree of equality between people in the country’s society. *Individualism* refers to the extent the society helps in reinforcing the individual achievement, whereas collectivism emphasizes collective action by individuals. *Masculinity* reflects the extent to which the society values the traditional masculine features such as assertiveness, achievement, competitiveness, and the accumulation of materialistic possessions. In contrast, femininity emphasizes relationships and quality of life. Higher *uncertainty avoidance* is associated to rule-based societies, and structured circumstances

Besides Hofstede’s parameters, previous work relies heavily on the national culture measures of the World Value Survey (WVS). The WVS is the largest study ever conducted on cultural values.

³ Hofstede admits that his is a simplified version of the more precise anthropological definition by Kluckholm (1951): “A value is a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means and ends of actions” (page 395).

It covers 97 societies on six continents, and samples populations that represent more than 88 percent of the total world population. The scores are the result of six waves of surveys conducted in 1981-84, 1989-93, 1994-98, 1999-2004, 2005-2008, and 2010-2014, in which sample respondents are randomly chosen to be representative across age, sex, occupation, and geographic region. The most recent survey includes almost 100 countries, and more than 100,000 respondents to 258 survey items on perceptions of life (importance of family, friends, leisure time, states of health, happiness, inclusion, and trust), the environment, work, politics and society, security, science, and national identity.

As expected, previous studies report correlation between Hofstede culture measures and trust (Chakrabarti et al. (2009), Guiso et al. (2006)). Previous recent work also examines the effect of culture on corporate debt maturity and access to financing. Specifically, Zheng et al. (2012) investigate the influence of national culture on corporate debt maturity choice. They argue that culture can shape contracting environments after controlling for legal, political, financial, and economic institutions. Using Hofstede's four cultural dimensions, they find robust evidence that firms located in countries with high uncertainty avoidance, high collectivism, high power distance, and high masculinity tend to use more short-term debt. In a related study, Aggarwal and Goodell (2014) document less access to financing in association with the cultural dimensions of uncertainty avoidance and masculinity, besides smaller national wealth and worse investor protection.

Research on value congruence, perceived vs. actual, attempts to explain and test why value congruence leads to positive outcomes in organizations, examining the role of trust, communication, predictability, and interpersonal attraction. Jeffrey (2009) finds that the

relationships that link individual and organizational values to outcomes are explained primarily by trust, followed by communication, and, to a lesser extent, interpersonal attraction. In a related book, *Trust: the social virtues and the creation of prosperity*, F. Fukuyama argues that prosperous countries tend to be those where business relations between people can be conducted informally and flexibly on the basis of trust - such as Germany, Japan and United States. In the field of traditional lending, Giannetti and Yafeh (2012) find that more culturally distant lead banks offer borrowers smaller loans at a higher interest rate and are more likely to require third-party guarantees.

Finally, previous research documents some evidence on the relation between information asymmetries, herding and national culture. Eunyoung et al. (2012) finds strong herding evidence using Korean P2P data, and Yum et al. (2012) examine in a microfinance setting how lenders seek the wisdom of crowds when information asymmetry is highest. In crowdfunding, Burtch, Ghose and Wattal (2014) find that pro-social lenders prefer culturally similar and geographically proximate borrowers.

IV. Sample selections, data and summary statistics

The study sample is based on about 7,500 peer to peer loans granted over online platforms between 2008 and 2013 in common law nations (United States, United Kingdom, India and Kenya) and civil law nations (Italy, Brazil, Germany, Finland, China and South Korea). It includes 1,500 P2P loans granted in the United States, 516 in the United Kingdom, 515 in Kenya and 901 in India, the common law subsample. The civil law subsample includes 313 observations from Brazil, 660 from Italy, 600 from Germany, 898 from Finland, 695 from China and 734 from South Korea.

The selection process includes random selections per time period in some platforms with a large number of loans, as well as the collection of as many loans as possible on other smaller platforms. Within each nation, the chosen P2P platform is the largest in the country with available public data. In the case of U.K., Zopa had publicly available loan information in 2011 (Gonzalez and McAleer, 2011), but not afterwards. Thus, the sample includes both 2011 Zopa loans and Yes_secure loans. In all by-country samples, loan amounts are expressed in U.S. dollars, and maturity or payback period in months. When the information is available, borrower gender is coded with value of 1 if borrower is male, 0 if female.

IV.1. By-country data sources

IV.1.1. The common law subsample

The U.S. subsample contains *Prosper* data on 1,500 P2P loans. 300 of these loans are partially funded and hand-collected in 2011 (Gonzalez and McAleer 2011). The rest, all completely funded, are randomly selected from the 2012 data available for academics. As on other P2P platforms, borrowers state loan size and purpose, can provide a statement to be made available to potential investors, and are classified by the site depending on their credit score. Prosper determines loan maturity period and interest rate based on loan size and borrower's credit score.

The U.K. sample includes 300 loans reported on *Zopa* in 2011 - when data was still publicly available - and 216 loans from *Yes_secure* posted between June 2010 and May 2013 - before discontinuing operations in April 2014. *Zopa* allows investors to bid both loan amounts and interest rates, and *Yes_secure* uses official borrower credit scores to assign credit ratings. *Yes_secure*

offers the possibility of borrow or lend up to 25,000 for term of 1 to 5 years, as well as the option of using endorsements from friends, family and colleagues.

P2P loan purposes in the U.K., as in other *wealthy* nations, are usually related to educational, car, home, and moving expenses, besides the general debt repayment purpose. Investors, as on other platforms, can hand pick loan applications on which to invest, or relay on an algorithm to do it for them based on their goals.

In India, the P2P sample is collected from *Rangde*. It includes 901 loans posted between April 2012 and November 2013. Interestingly, all loans are granted at a relatively low 8.5% interest rate, but small loan amounts relative to the average national salary reduce default probability. In fact, the site states that about half the loans are fully repaid. Like in Kenya, in most cases loans intend to be invested in small retail businesses, agriculture and cattle businesses. In India, loans for personal purposes are traditionally offered by private lenders at rates close to close to 50% for borrowers and 20% for lenders.

In Kenya, the P2P sample is collected from *Myc4*. The sub-sample includes 515 loans posted between January 2012 and November 2013, mostly for agriculture and small business purposes. Besides loan purpose and size goal, borrowers state the maximum interest they can commit to. Myc4 then reviews the information and lets investors bid loan amounts they are willing to lend and minimum interest rates. Interestingly, since most investors reside in other more developed nations, the platform offers risk sharing agreements to lenders to mitigate credit risk. According to platform reports, about 30% of the loans default and about 10% of the loan applications are not

funded. On average, the site post around 60 loans per month, and Kenya is one of the most active African countries on the platform.

IV.1.2. The civil law subsample

In Brazil, the P2P loan data is collected from *Fairplace*. The sub-sample includes 313 loans established in 2010, about 20% of them with small businesses purposes, and about 50% with debt repayment purposes. Fairplace lets borrowers choose a target interest rate, assigns a credit score, and lets investors bid interest rates and loan amounts. Final interest rates are substantially higher than in other civil law nations, with a mean rate of 90%, arguably due to historical high inflation and economic instability. Nevertheless, an average of about 60 loan applications are posted per month, and not surprisingly, a significant amount of borrowers resubmit loan applications in an effort to be granted less demanding lending conditions.

In Italy, P2P loan data is obtained through *Prestiamoci*. The sub-sample includes 660 loans posted between January 2010 and April 2013. Borrowers choose maturity and interest rate, and although few loans are posted per month, the platform claims to fund loan requests quickly, potentially within 24 hours. A small percentage of the loan requests are associated to small business purposes, and besides the usual home and car related ones, consumer loan purposes also include vacations. When full funding is not achieved, it is common to find another loan request from the same borrower within two weeks fine-tuning conditions.

In Germany, the P2P loan data for this study is collected on *Auxmoney*. The subsample includes 1,200 loans established between April 2012 and March 2013. The platform website describes the

algorithm used to estimate borrower credit rating as particularly advanced and comprehensive – it considers borrower browsing history elements besides credit history, for example. The borrowers choose interest rates within the range allowed in their Auxmoney scores, and investors can build their portfolios manually or rely on the platform algorithm. As in other platforms, data on late payments is made available to potential investors, and borrowers may attempt to alleviate information asymmetries by answering investor questions, posting images and/or recommendations and investments from friends - not frequent during the examined time period. As usual in developed nations, there are some loan requests related to small businesses and a majority of loans that target debt repayment. Interestingly, there are multiple loan requests under the same project number for different loan sizes and with different incomes and/or insurance values.

In Finland, P2P loan data is collected from *Fixura*. The sub-sample includes 898 loans posted between January 2012 and December 2013. As in Auxmoney in Germany, Fixura lets borrowers apply for an interest rate. Fixura then publishes the borrower's rate and a Fixura credit score, and asks lenders to choose lending amounts within discrete options, if not relying on the site's algorithm.

In China, P2P loans are collected from *Ppdai*. The sub-sample includes 695 loan applications from 2012. In Ppdai borrowers are asked to self-select into profile categories, based on age, income, expenses, studies and credit points on the site. Interestingly, a significant subset of the loans are requested from within university networks. After the borrower self-selects into a profile category, Ppdai estimates a credit rating and the interest rate associated to the loan application. Many loan

purposes are related to small businesses, mostly retail stores, as well as debt repayment. Individual consumer loan purposes include motorcycles instead of cars, as well as computers, refrigerator and air conditioning related expenses instead of roof ones.

South Korean P2P loans are collected from *Popfunding*. Unfortunately, no post-2008 loan information has been found. The sub-sample includes data on 734 loans. This subsample reports extensive borrower information, including gender, age, marital status, monthly income and expenses, and home and/or car ownership. Borrowers can also post images, and loan descriptions arguably suggest that P2P loans are the last resort for the borrowers. Interestingly, the interest rate cannot be auctioned at more than 30%.

IV.2. Univariate statistics

Table 2 presents initial summary statistics that list and compare loan characteristics in civil and common law nations. Overall, and despite national and platform differences within civil and common law subsamples, there are significant differences between P2P loans granted in nations with common law background vs. civil law background. More specifically, loans granted in common law nations have longer maturities, and are agreed upon with lower interest rates.

The univariate statistics by nation are reported in tables 3. Within the common law nations, Rangle in India has a fixed relatively low interest rate (8.5 % vs. close to 20% in other common law nations) and Myc4 in Kenya a much shorter payback period. This is interesting given that Myc4 offers the mostly foreign lenders shared credit exposure (14 months on average vs. over 30 in other

common law nations). Not surprisingly given the interest rates, loan amounts are significantly smaller in Rangde.

Within the civil law nations, Brazil has unusually high interest rates. Italy offers competitive rates and payback periods, but as indicated previously, fewer loans are posted per month and a substantial number of borrowers need to re-submit and fine-tune their loan applications. German and Finish loans have higher interest rates (close to 20%), but also higher payback periods (close to 40 months instead of 30). Both in China and South Korea, loan maturities are shorter than in other civil law nations, and in China's Ppdai interest rates seem competitive.

V. P2P loan funding

Table 4 examines the determinants of loan interest rate in P2P sites all over the world. Results suggest that interest rates increase with loan size, and decrease high higher law enforcement. Interest rates also decrease with higher national measures of trust, masculinity and individualism, characteristics usually associated to common law nations. Overall, controlling for loan characteristics and national values, having a civil law background appears associated to lower interest rates on P2P loans. This is interesting because although institutional investors fund more than half the P2P loans, the volume of participation by individual investors continues growing.

Thus, general individual investors appear to judge more favorably and be less risk averse in their informal assessments of strangers when national values and legal backgrounds favor investor protection, the development and depth of financial markets, and personal trust. This is interesting because within new financial intermediation models there is evidence of substantial judgement

based on heuristics, rules of thumb and subjective non-optimal interpretations (Gonzalez and Komarova, (2014, 2015)).

Tables 5 and 6 report the results of a series of regressions that examine the likelihood and a measure of speed in P2P loan funding. Table 5 studies all nations grouped in civil vs common law nations, as well as the block of six civil law nations. Table 6 studies each nation separately.

The multivariate analysis of the regression series reported in Tables 5 and 6 uses as dependent variable the percentage of the loan application that has already been funded. Regressions control for loan amount, payback period, remaining days for bidding - or alternatively, the number of days investors have been bidding – national legal and cultural measures, number of investors and borrower characteristics. With the exception of Brazil and India's Rangde, interest rates are examined in first stage regressions as a function of loan and borrower characteristics controlling for national consumer sentiment and average wages adjusted by purchase power, as well as national Hofstede and World Value measures. Specifically, it includes Hofstede masculinity and individuality scores. Panel A considers the civil vs. civil law nation classification and Panel B national LLSV measures of law enforcement and time to collect bounced checks. As in Table 4, payback periods are expressed in months and loan sizes are converted to US dollars.

Panels A and B of Table 5 show that higher interest rates appear associated to lower percentages of loan funding, and that higher Hofstede individualism and individualism measures speed funding. Interestingly, higher national measures of trust do not always facilitate funding of P2P loans. Arguably this is the case because in China (civil law) and India (common law) for example,

higher trust national scores are usually associated to meeting people in person, not over the internet. In China, for example, most ecommerce sales are paid for after the customer has received and examined the purchased goods. As expected, the longer it takes to collect bounced checks the lower is the relative speed of funding.

Overall, controlling for legal background, loan and borrower characteristics, P2P loans appear to be funded more quickly in common law nations with higher masculinity Hofstede scores. The effect of Hofstede individualism and law enforcement is inconclusive and significant only in some of the regressions. As expected, funded loan percentages decrease with loan size, maturity and days left for funding.

In the regressions reported in table 6, the analysis considers individual P2P platforms, and two-stage interest rates when they are not fixed, like in Table 5⁴. Overall, the larger the loans and the lower the borrowers' credit rates, the longer it takes to complete funding all over the world, even with higher interest rates. This is consistent with investors being risk averse and investing for-profit rather than pro-social reasons, as the sites and press claim at times.

VI. Conclusions

This study is based on a unique novel hand-collected dataset of over 7,300 peer-to-peer (P2P) loans granted in common law nations (U.S.A., U.K., India and Kenya) and civil law nations (Italy,

⁴ National analysis does not consider Zopa loans and not-fully funded Prosper loans. Publicly reported Zopa loans include only practically fully funded loans. In the case of Prosper, fully funded loan data for academics in 2012 and 2013 reports different loan characteristics from those partially funded and collected manually in 2011, as the site quickly evolved to become the premier lending site in North America.

Brazil, Germany, Finland, China and South Korea) between 2008 and 2013. Because of its risky nature matching strangers looking for borrowing and lending opportunities online, social lending platforms in different nations can arguably constitute a good scenario where to examine the pricing of credit risk premiums. Unlike previous studies that consider only U.S. data, this study examines P2P loan characteristics and relative speeds in matching lenders and borrowers in different nations, and in association to different mechanisms of borrower credit assessment and debt collection, within a variety of legal frameworks and cultural dimensions.

Overall, P2P loans in common law nations have longer payback periods, and are funded at much lower interest rates- circa 10% in common law nations vs. over 20% in civil law nations. In addition, P2P loans in common law nations appear to be funded more quickly, especially in nations with higher Hofstede masculinity scores. These results are consistent with those of LaPorta, Lopez de Silanes, Scheleifer and Vishny (2008) for traditional financing models, where common law nations appear more advantageous. In addition, the results of this study, based on public data, further support the relevance of online social lending as an alternative to banks and credit cards towards small loans that serve consumer and small business purposes.

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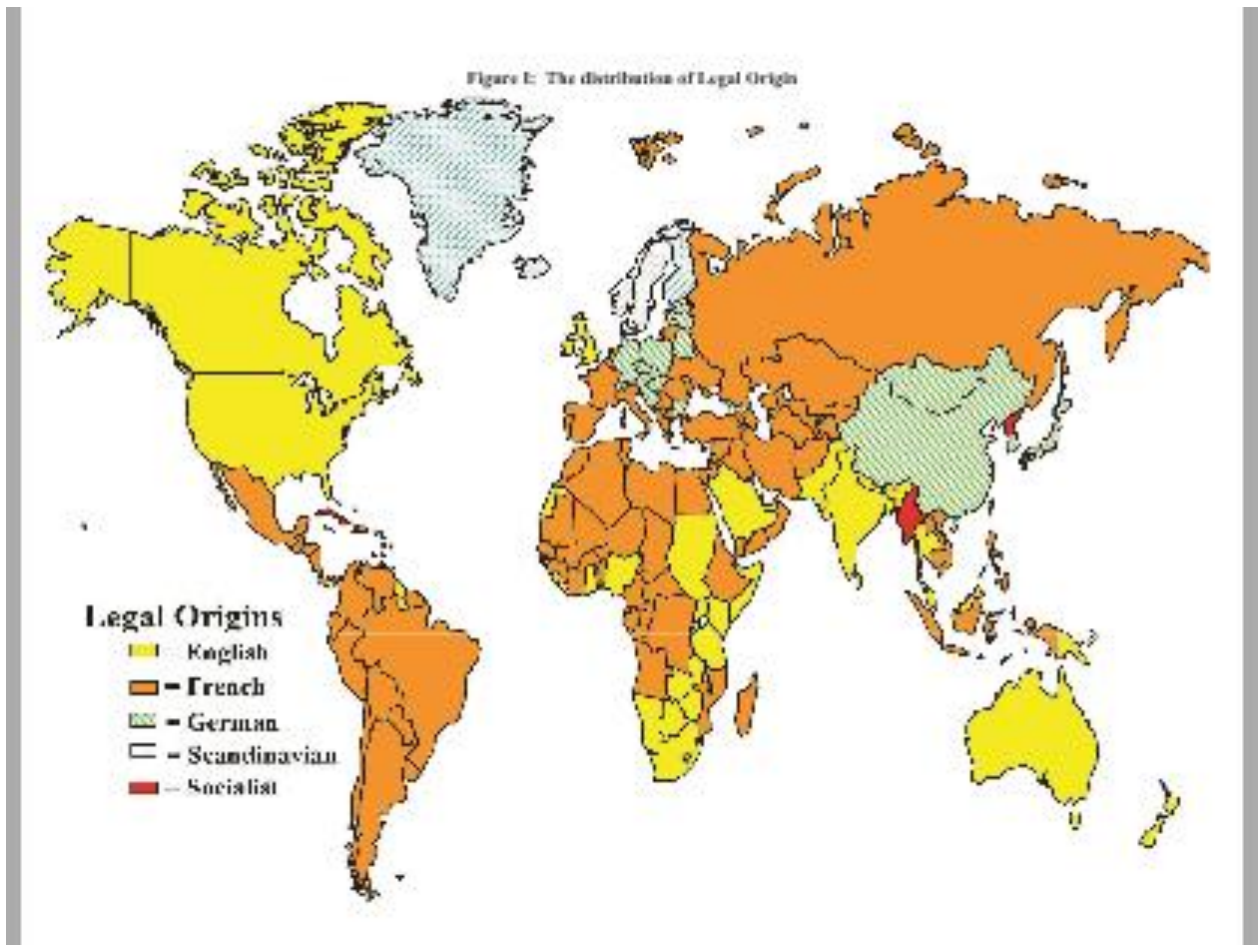
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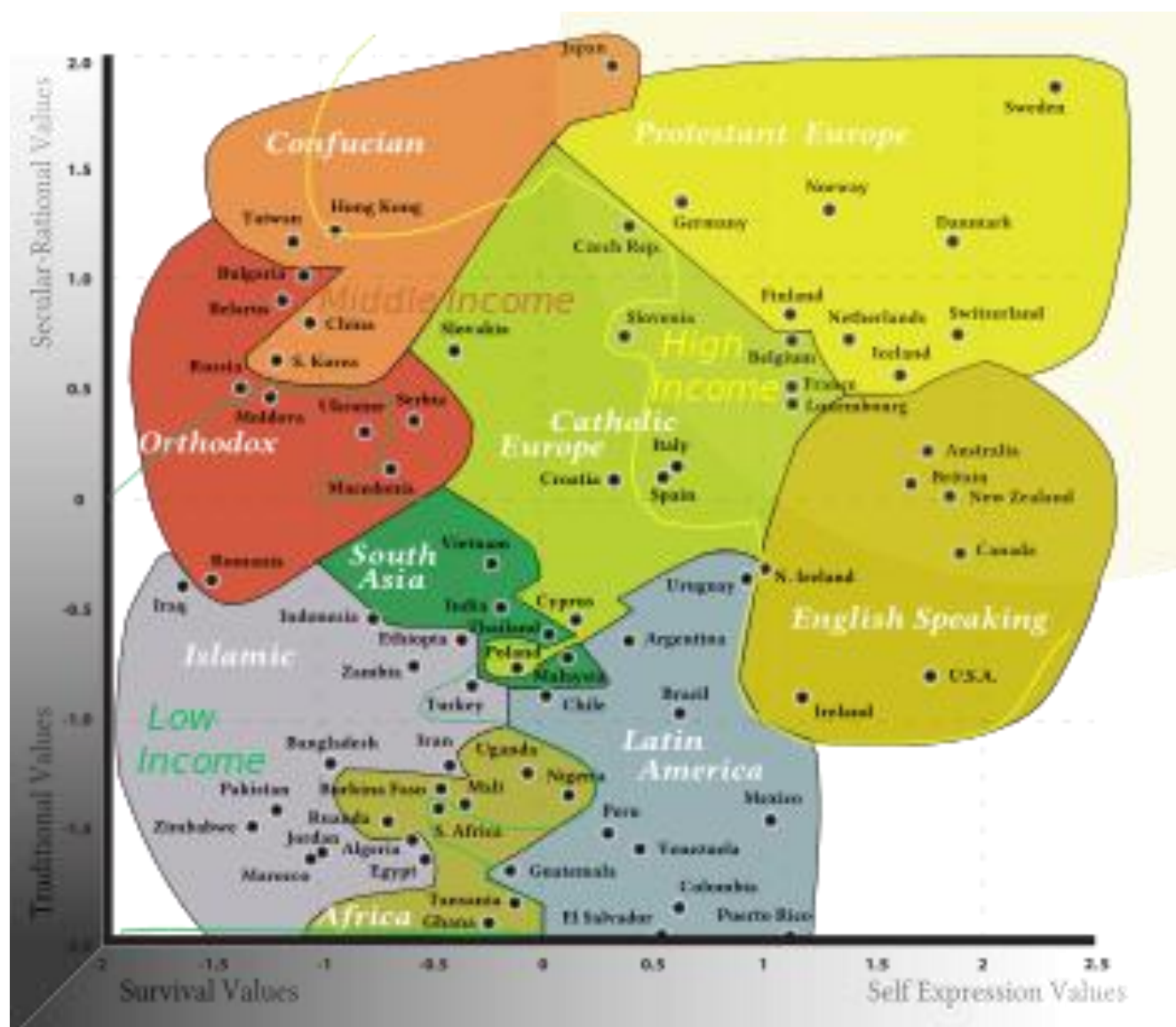
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A recreation of the 2010 Inglehart–Welzel cultural map of the world, created by political scientists Ronald Inglehart and Christian Welzel based on the World Values Survey.

Table 1**Summary of National Measures**

Summary of national Hofstede, World Value and LLSV measures used in analysis.

Country	Hofstede Masculinity	Hofstede Individualism	World Value Trust
U.S.	62.00	91.00	0.36
U.K.	66.00	89.00	0.29
India	56.00	48.00	0.41
Kenya	60.00	25.00	.
Brazil	49.00	38.00	0.03
Italy	70.00	76.00	0.33
Germany	66.00	67.00	0.38
Finland	26.00	63.00	0.57
China	66.00	20.00	0.55
S. Korea	39.00	18.00	0.27

Country	Rule of law	Time to collect bounced check	Law Enforcement	Avg. Wages adjusted by PP	Avg. Consumer Confidence
U.S.	10.00	3.99	8.73	3,263	65
U.K.	8.57	4.62	8.50	3,065	-25
India	4.17	4.66	4.53	295	120
Kenya	5.42	5.54	5.03	596	103
Brazil	6.32	5.19	5.30	778	114
Italy	8.33	6.47	5.18	2,445	90
Germany	9.23	5.04	8.40	2,720	6
Finland	10.00	5.48	7.50	2,925	7
China		5.19	5.00	656	104
S. Korea	5.35	4.32	5.52	2,903	105

Sources: LLSV, Nielsen TradingEconomics.com (consumer confidence), World Bank, Mywage.org, Statista.com.

Table 2**Key Summary Statistics of Civil and Common Law P2P Loans**

The sample is based on 7,332 peer to peer loans granted over the internet between 2008 and 2013 in common law nations (United States, United Kingdom, India and Kenya) and civil law nations (Italy, Brazil, Germany, Finland, China and South Korea). The P2P online loan sample is based on 1,500 observations in United States, 516 in United Kingdom, 515 in Kenya and 901 in India, the common law subsample. The civil law subsample includes 313 observations from Brazil, 660 from Italy, 600 from Germany, 898 from Finland, 695 from China and 734 from South Korea. Loan sizes are expressed in US dollars. Payback periods are expressed in months.

	Common Law Nations				Civil Law Nations			
	N= 2,832 loans				N=4,500 loans			
	Mean	Median	Max.	Min.	Mean	Median	Max.	Min.
Loan size	6,721.8*	4,000*	125,000	90	5,429.8	3780	32,000	160
Loan size/PP Wages	1.98*	1.7*			3	2.72		
Payback period	36.34*	36*	60	3	29.63	24	60	2
Interest Rate (%)	10.2*	8.5*	50	5	23.16	16	32	5

*Significantly different at 0.05 level from loans in civil law nations

Table 3

Summary Statistics of P2P Loans by Sample Nation

The P2P online loan sample is based on 1,500 observations in United States, 516 in United Kingdom, 515 in Kenya and 901 in India, the common law subsample. The civil law subsample includes 313 observations from Brazil, 660 from Italy, 600 from Germany, 898 from Finland, 695 from China and 734 from South Korea. Loan amounts are expressed in US dollars. Payback periods are expressed in months.

Panel 3.1.1. United States

Source: prosper.com. N=1200. Fully funded loans posted between January and December 2012.

	Mean	Median	Max.	Min.
Loan amount	13,337.4	12,000	35,000	1,000
Payback period	40.5.	36	60	36
Interest Rate (%)	13.1	13.11	24.7	6.03
Debt to Income (%)	15.7	16	35	0
Revolving credit used (%)	56.9	60	100	0
Work experience (Yrs.)	5.7	5	10	1
Open lines of credit	10.4	10	36	2

Panel 3.1.2. United States

Source: prosper.com. The sample consists of 300 loan requests randomly observed and recorded during February 2011. Credit rating goes from 0 (worst) to 5 (best). Experience is the number of days since the borrower first joined the platform. Highest and Lowest contribution refer to the highest and lowest amount lent by a single lender towards a particular loan

	Mean	Median	Maximum	Minimum
Loan amount	10,610	8,000	12500	2000
Payback period	39.84	36	60	12
Interest Rate (%)	17.58	17.13	29.57	7
Credit Rating	2.36	2	5	1
Days left for bidding	6.18	6	11	1
Borrower Experience	91.87	11	2449	0
Progress (%)	41.47	37	99	1
Number of investors	73.46	58	324	2
Highest contribution	381.05	200.17	5000	25
Lowest contribution	25.58	25	200	25

Panel 3.2.1. United Kingdom

Source: yes_secure.com. N=216. Loans posted between June 2010 and May 2013.

	Mean	Median	Max.	Min.
Loan amount	5,007.93	4,648	16,128	1,728
Payback period	28.55	24	60	12
Interest Rate (%)	18.98	18	50	5
Percentage Loan funded	91.34	100	100	0
Loan Credit rating (6 best)	3.5	3	6	1
Number of investors	71.3	67	186	12

Panel 3.2.2. United Kingdom

Source: Zopa. N= 300. Loans recorded during February 2011.

	Mean	Median	Maximum	Minimum
Loan amount (\$)	11326.5	9946.84	24590.8	6.5
Payback period	44.38	36	602	12
Interest Rate (%)	12.48	9.84	100	12
Credit Rating (5 best)	2.98	3	5	1
Days left for bidding	134.8	0	403	0
Days since borrower joined	358.99	355	2202	0
Percentage Loan funded	96.1	100	100	0
Borrower Stability	2.39	2	5	0
Borrower Affordability	2.73	3	5	0

Panel 3.3. India

Source: rangde.org. N=901. Loans posted between April 2012 and November 2013.

Gender takes value of 1 if borrower is male, 0 if female. Interest rate is 8.5%.

	Mean	Median	Max.	Min.
Loan amount	155.8	144	270	90
Payback period	42.04	50	52	12
Percentage Loan funded	93.45	100	100	0
Days left for bidding	2.04	2	25	0
Borrower gender	0.02	0	1	0
Number of investors	13.79	9	77	1

Panel 3.4. Kenya

Source: myc4.com. N=515. Loans posted between January 2012 and November 2013.

Gender takes value of 1 if borrower is male, 0 if female. As in the other subsamples, loan amounts are expressed in US dollars. Payback periods are expressed in months.

	Mean	Median	Max.	Min.
Loan amount	998.91	661.2	10,092.6	145.8
Payback period	14.05	12	30	3
Interest Rate (%)	14.3	12	30	5
Percentage Loan funded	72	100	100	1
Days left for bidding	23.4	8	45	0
Borrower gender	0.37	0	1	0
Borrower age	38.1	37	83	16
Number of employees	1.54	1	8	0
Number of investors	27.9	22	279	1

Panel 3.5. Brazil

Source: fairplace.com.br. N=313. Loans posted in 2010.

	Mean	Median	Max.	Min.
Loan amount	4312.4	4986.7	12079.1	1112.91
Payback period	20.1	24	24	12
Interest Rate (%)	90	100	400	50
Percentage Loan funded	68.2	100	100	0
Days loan outstanding	23.4	21	55	1
Loan size / Monthly Income (%)	13.6	11	54	1
Loan credit rating (4 best)	2.3	2	4	1
Number of investors	36.5	26	157	0

Panel 3.6. Italy

Source: prestiamoci.it. N=660. Loans posted between January 2010 and April 2013.

	Mean	Median	Max.	Min.
Loan amount	6,641.21	6,750	27,000	810
Payback period	36.85	36	48	12
Interest Rate (%)	8.01	7.5	12.5	6.5
Percentage Loan funded	83.79	100	100	9

Panel 3.7. Germany

Source: auxmoney.com. N=600. Loans posted between April 2012 and March 2013. Loan amounts are expressed in US dollars. Payback periods are expressed in months.

	Mean	Median	Max.	Min.
Loan amount	10,113.86	8,100	33,750	1,350
Payback period	44.73	48	60	12
Interest Rate (%)	12.65	13	14.95	5
Percentage Loan funded	30.52	22	100	0
Days loan outstanding	19.7	13		
Other loan applications	0.6	0	9	0
Insurance	286.48	238.41	929.5	32.3
Monthly Income	2,993.2	2,362.5	9,000	320

Panel 3.8. Finland

Source: fixura.com. N=898. Loans posted between January 2012 and December 2013.

Gender takes value of 1 if borrower is male, 0 if female.

	Mean	Median	Max.	Min.
Loan amount	6677.54	6075	13500	405
Payback period	42.4	48	60	12
Interest Rate (%)	17.7	19.5	32	6
Percentage Loan funded	29.7	24	100	0
Days left for bidding	8.2	9	13	1
Borrower age	37.1	34	76	21
Borrower gender	0.52	1	1	0
Loan credit rating (5 best)	2.92	3	5	1

Panel 3.9. China

Source: ppdai.com. N=695. Loans posted in 2012.

	Mean	Median	Max.	Min.
Loan amount	1898.8	704	32000	160
Payback period	10.38	8	26	2
Interest Rate (%)	15.77	18	26	9
Percentage Loan funded	69.3	79	100	0
Days left for bidding	2	0	13	0
Loan credit rating (5 best)	1.88	2	5	1
Number of investors	37.1	22	581	0

Panel 3.10. South Korea

Source: popfunding.com. N=734. Loans posted in 2008. Gender takes value of 1 if borrower is male, 0 if female.

	Mean	Median	Max.	Min.
Loan amount	2492.53	2970	9900	990
Payback period	16.42	15	30	6
Interest Rate (%)	28.37	30	30	5
Percentage Loan funded	34.78	15	100	0
Days loan open	17.44	13		
Gender	0.58	1	1	0
Age	36.9	35	72	22
# Past delinquencies	0.97	0	21	0
# Early Payments	4	0	51	0
Owns car	0.4	0	1	0
Married	0.44	0	1	0

Figure 1

Loan amount by Sample Nation

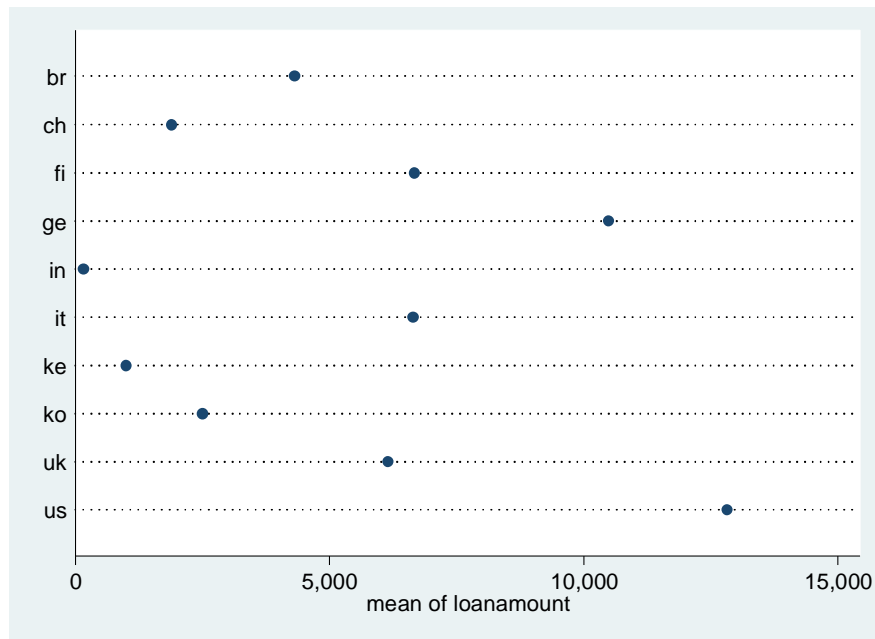


Figure 2

Payback by Sample Nation

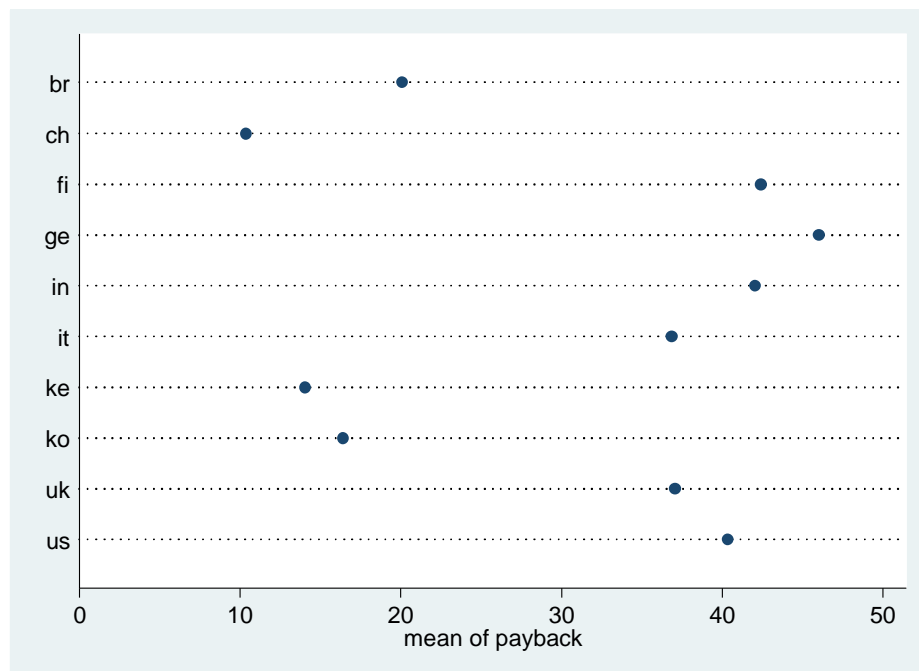


Figure 3
Interest Rate by Sample Nation

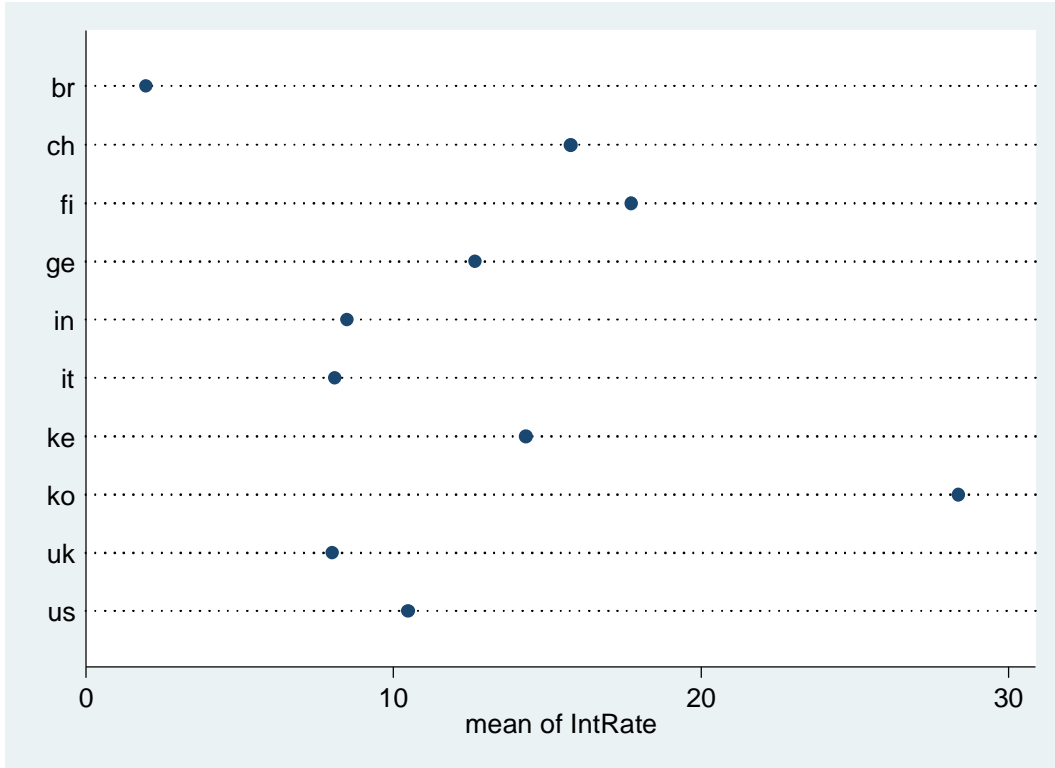


Table 4**Determinants of Interest Rates**

The sample consists of 7332 online peer-to-peer loans from sites in 8 nations (excluding loans from Brazil, and India; Rangde - where interest rate is unique). The loans were posted between 2008 and 2013. The payback period is expressed in months. Common is coded as 1 and civil law as 0. Loan sizes and other currency variables are expressed in US dollars. The analysis excludes data from India and Brazil. t statistics are expressed in parenthesis.

	Interest Rate	Interest Rate	Interest Rate
Application Loan Size	0.001 (4.42)	0.01 (7.15)	0.001 (0.9)
Payback period	0.03 (0.39)	-0.03 (-3.94)	-0.11 (-5.1)
Law Enforcement	-0.93 (-9.01)		
Time to collect bounced check	-2.95 (-1.03)		
Civil vs. Common Law nation		0.22 (1.26)	6.65 (26.68)
Trust			-7.84 (-6.7)
Hofstede Individualism	-0.11 (-24.57)	-0.13 (-25.6)	
Hofstede Masculinity	-0.22 (-34.86)	-0.22 (-35.06)	
Constant	54.1 (45.55)	34.4 (9.13)	16.76 (25.2)
Adj. R-square (%)	46	42.31	19.07
N	6068	6068	5553

Table 5**Determinants of Lending Decision**

The sample consists of 7332 online peer-to-peer loans from sites in 8 nations (excluding loans from India – fixed interest rates). The loans were posted between 2008 and 2013. The dependent variable is the percentage of loan application that is already funded. The payback period is expressed in months. Loan sizes and other currency variables are expressed in US dollars. The analysis considers a first stage regression interest rates. t statistics are expressed in parenthesis.

Panel A

	Loan Funded (%)	Loan Funded (%)	Civil Law Loan Funded (%)
Interest Rate	-2.45 (-19.17)	-0.46 (-3.0)	-0.57 (-2.6)
Application Loan Size	-0.001 (-4.19)	-0.001 (-3.85)	-0.004 (-2.34)
Payback period	-0.15 (-4.16)		0.01 (0.19)
Days left for bidding	-0.05 (-8.08)	-0.05 (-6.6)	-0.16 (-11.5)
Civil vs. Common Law nation	-24.72 (-13.84)	-15.7 (-9.5)	
Trust	-75.36 (-13.88)		
Hofstede Individualism		0.13 (3.96)	-0.01 (-0.12)
Hofstede Masculinity		0.7 (14.5)	0.55 (9.1)
Constant	153.5 (43.84)	32.5 (5.5)	29.4 (3.6)
Adj. R-square (%)	28.78	25.1	21.3
N	3756	3241	2644

Panel B

	Loan Funded (%)	Loan Funded (%)
Interest Rate	3.59 (11.88)	3.63 (16.09)
Application Loan Size	0.001 (1.8)	0.001 (1.76)
Payback period	0.09 (1.71)	0.11 (1.9)
Days left for bidding	0.02 (-1.84)	-0.01 (-0.6)
Law Enforcement	-8.09 (-4.26)	-14.48 (-13.86)
Time to collect bounced check	4.16 (1.38)	-6.93 (-3.36)
Trust		-19.82 (-18.75)
Hofstede Individualism	0.52 (5.74)	
Hofstede Masculinity	1.02 (18.27)	
Constant	-12.6 (-2.9)	21.9 (12.71)
Adj. R-square (%)	13.2	9.8
N	2046	2223

Table 6**Lending Decisions by platform**

The sample consists of 7332 online peer-to-peer loans from 10 platforms headquartered in 10 nations. The loans are posted between 2008 and 2013. Loan sizes and other currency variables are expressed in US dollars. The analysis considers first stage interest rates. t statistics are expressed in parenthesis.

Panel 6.1 Common Law Nations

US all loans are fully funded. India fixed interest rate for all loans.

	UK – Yes_Secure Lending (%)	India - Lending Decision (%)	Kenya - Lending Decision (%)
Interest Rate	-0.56 (-0.7)		1.6 (1.1)
Application Loan Size	-0.001 (-2.1)	-0.02 (-1.6)	-0.02 (-4.5)
Payback period		3.7 (5.5)	
Days left for bidding	-0.01 (-1.9)	-0.8 (-8.3)	-4.9 (-13.2)
Number of investors	0.25 (7.6)	0.32 (7.04)	0.76 (9.7)
Borrower's gender			-4.55 (-1.6)
Constant	88.7 (5.7)	-95.4 (-2.69)	87.3 (5.4)
Adj. R-square (%)	18.9	20.9	57.1
N	211	596	358

Panel 6.2. Civil Law Nations

	Brazil - Lending (%)	Italy - Lending (%)	Finland - Lending (%)	China - Lending (%)	S. Korea - Lending (%)
Interest Rate	-0.11 (-2.4)	-0.12 (-1.53)	-0.12 (-0.5)	0.21 (1.22)	2.2 (0.44)
Application Loan Size	-0.01 (-7.1)	-0.001 (-3.04)	-0.001 (-1.95)	-0.003 (-4.72)	-0.001 (-0.21)
Payback period		0.2 (1.46)	0.1 (1.02)	-0.26 (-1.01)	0.71 (1.87)
Days of bidding	-0.2 (-1.1)	0.13 (12.5)			1.2 (16.2)
Days left for bidding			-0.13 (-0.38)	0.14 (2.1)	
Borrower's credit rate			2.4 (2.22)		
Number of investors	0.7 (12.2)			0.29 (6.32)	
Borrower's Age			-0.04 (-0.41)		-0.19 (-1.05)
Borrower's Gender			-2.1 (-0.87)		-2.57 (-0.92)
Car					-3.95 (-0.8)
Constant	87.4 (9.4)	76.5 (11.3)	46.2 (4.8)	57.1 (16.2)	12.46 (1.08)
Adj. R-square (%)	31.3	25.95	2.1	10.73	29.1
N	292	447	439	399	594

Appendix

Interest Rates - expressed in percentage - in P2P Loans vs Credit Card in the United States

	P2P Loans	Credit Card
Excellent credit	6.7	10.4
Good credit	7.16	14.91
Fair credit	17.3	23.3