RESEARCH PAPERS OF WROCŁAW UNIVERSITY OF ECONOMICS No. 125
Financial Sciences 3 2010

Michał Kisiel
Wrocław University of Economics

CREDIT RISK MANAGEMENT MECHANISMS IN SOCIAL LENDING MARKETS

Summary: Online social lending encompasses a range of markets that allow individual borrowers and lenders to engage in credit transactions without traditional intermediaries such as banks. The credit risk management tools are of great importance in the most of the social lending models. In this article the commonly used credit risk evaluation and management tools are reviewed. Some of them are new and might be incorporated to financial institutions' procedures: using peer pressure to enhance loan performance and the usage of social networking websites to gather creditworthiness assessment information. The study exposes also few problematic areas where P2P lending markets show their immaturity and that must be improved to ensure further growth of social lending phenomenon.

Keywords: social lending, P2P lending, credit risk, credit risk management.

1. Introduction

Electronic markets for private loans are emerging in many parts of the world. Their history is short, but nevertheless they proved successful in filling the gap in the offer of financial institutions that traditionally have been serving individual customers. Direct link between demand for financing and capital supply they can offer, creates new opportunities for numerous market players. For individual investors, the P2P loans become one more class of assets that increases the possibilities of portfolio diversification. Individuals looking for a way to finance their consumption needs have to their disposal another alternative to a bank credit – which often can be less expensive and easier accessible in the days of restrictive credit policy. For a specific niche, those excluded from the financial markets, person-to-person lending offers access to relatively cheap financing without the necessity to fulfill all requirements imposed by banks and other institutions.

The elimination of financial intermediary – an idea that (at least in principle) was the basis for electronic loan marketplaces – became with the passage of time an unobtainable goal. Platforms of social lending encountered numerous challenges, the most important being to minimize the credit risk and to secure lenders' interests. Therefore the problem of choosing the appropriate mix of credit risk management tools is of essential nature for the growth and development of person-to-person lending platforms. The fundamental importance of the credit risk area, combined with the lack of market standards, forces the market participants to experiment with different approaches and to use various instruments. The observation of set of instruments that evolved to minimize the credit risk in social lending markets gives a unique and valuable possibility to check their effectiveness, both from scientific and practical perspective. The ability to quantify credit risk and to help the investors with risk assessment will give competitive advantage not only inside social lending niche, but could also be used to establish P2P lending as an alternative to retail banking services.

The article's goal is to identify and describe the main credit risk management mechanisms used by social lending platforms worldwide and to stress the differences between them and the established practices used in retail banking. In the first part, the phenomenon of social lending is presented and the main characteristics of person-to-person markets are described. The main currents in scientific discourse over social lending phenomenon are also summarized. Further, the attempt to the classification of P2P lending markets is made, considering the varied importance of credit risk management measures in existing models. In the third part the three-stage model of credit risk management mechanisms is presented and the details of specific tools are discussed.

2. The background of social lending markets

The functioning principles of Internet social lending services are similar to those for Internet auctions, differing, however, in one fundamental feature – the subject of transactions are not physical goods or services, but capital. Electronic platform enables the contact between a lender and a borrower, makes possible to finalize the transaction and to conclude loan contract. It is also an intermediary agent during debt repayment and possible vindication.

The commonly used terms person-to-person lending (P2P lending) and social lending indicate the basic characteristic of these services – substitution of impersonal intermediation done by a bank by personal contact between the parties to the contract. It should be, however, pointed out that though the slogan *cut on the middleman* is repeatedly recalled in the context of loan market and considered as an example of the disintermediation phenomenon observed in the financial sector, each typical social lending service plays in fact a number of roles being characteristic for a financial intermediary: from the aggregation of dispersed demand, down to the participation in the cash flow.

Internet lending markets have their roots in times much more distant than the appearance of Internet and other electronic media. Some researchers are pointing out the similarity between electronic societies and mutual loan associations that had their culminating point, full bloom, in the nineteenth century[1]. In both cases substantial role of mutual aid idea can be observed (both parties share similar social status), as well as the personal contact between a lender and a borrower (a capital donor knows who will receive financing and for what it will be spent). Reluctance towards institutionalized financial intermediaries is continuously stressed (via the opposition "heartless banker" versus "brotherly ties").

Internet social lending services differ, however, from their predecessors with a number of essential characteristics, the most important being:

- wider social range (not limited to professional or territorial communities),
- communication using the electronic means,
- extended credit risk management mechanisms (being the substitutes for creditworthiness assessment based e.g. on reputation in the social environment),
- transparency (instead of more or less discretionary form of offered aid).

The phenomenon of Internet P2P lending markets is only starting to draw attention of scientists from various branches. Few investigations concerning social lending done to date concentrate mainly on the problem: what are the selection criteria for investors when choosing potential borrowers[2], what is the influence of various variables on the probability of funding a loan[3] and on the probability to pay off the debt[4], as well as what is the role played by the newly emerging "financial intermediaries"[5]. The growth of P2P lending is also monitored by research institutions, also those linked with the banking sector[6].

[1] M.K. Hulme, C. Wright C., *Internet Based Social Lending. Past, Present and Future*, Social Futures Observatory 2006, http://www.socialfuturesobservatory.co.uk/pdf_download/internetbased-sociallending.pdf.

[2] S. Freedman, G.Z. Jin, *Dynamic Learning and Selection: the Early Years of Prosper.com*, http://www.prosper.com/downloads/research/Dynamic-Learning-Selection-062008.pdf.

[3] In the case of American service Prosper.com an important variable appeared the race – black borrowers have less chance to obtain financing and pay higher prices for borrowed money. It has also been proved that there are statistically important dependencies between group membership as well as recommendations from other users-investors and the probability of obtaining the loan (E. Ravina, *Love & Loans: The Effects of Beauty and Personal Characteristics in Credit Markets*, Working Paper, Columbia University 2008, http://www.law.yale.edu/documents/pdf/LEO/E.Ravina2.pdf; D.G. Pope, J.R. Sydnor, *What's in a Picture? Evidence of Discrimination from Prosper.com*, Working Paper, University of Pennsylvania 2008, http://wsomfaculty.case.edu/sydnor/prosperpaper.pdf; J. Ryan, K. Reuk, C. Wang, *To Fund Or Not To Fund: Determinants of Loan Fundability in the Prosper.com Marketplace*, The Stanford Graduate School of Business, January 2007, http://www.prosper.com/Downloads/Research/Prosper_Regression_Project-Fundability_Study.pdf).

[4] M. Aldrich, C. Krumme, E. Martinez-Villalpando, C. DeTar, *Using Pattern Recognition to Analyze Prosper.com*, http://courses.media.mit.edu/2008fall/mas622j/Projects/CharlieCocoErnestoMatt.

[5] S.C. Berger, F. Gleisner, *Emergence of Financial Intermediaries in Electronic Markets: The Case of Online P2P Lending*, "Business Research" 2009, Vol. 2

[6] B. Owczarek, A. Stelmaszczyk, P. Janczewski, *Pożyczki społeczne w Polsce*, Accenture & Gemius, czerwiec 2008; *The Power of People. Online P2P Lending Nibbles at Banks' Loan Business*, Deutsche Bank Research, July 2007; *Welcome to the Machine, Innovations in P2P Lending May Put Computers over People*, Deutsche Bank Research, November 2009.

3. Typology of P2P lending markets

The growth of electronic markets for individual lending is oriented in a number of directions simultaneously. Therefore, disregarding the early crystallization stage of this phenomenon, the evident specialization becomes apparent. Depending on the chosen model of activity, the credit risk management problem can take various forms. So before discussing the instruments used to minimize this risk, it is worthwhile to list the actually existing P2P lending markets.

Among the first businesses that can be assumed the predecessors of contemporary Internet lending markets for individual persons was the service CircleLending.com[7], initiated in 2001. Its aim was to be an intermediary in administrative procedures for mutual loans of acquaintances or relatives. The loans could have been of mortgage type, for housing or education purposes. Upon the commission paid by customers the company prepared the contract, helped to establish the mortgage backing, sent letters to remind the pay off dates, kept the books of payments, and gave advice to both parties concerning tax allowances.

Social lending services that decided to choose the **community-oriented model** (**closed capital market**) concentrated on the formal aspect of transactions and made the loans similar to financial products offered by specialized institutions. The importance of information transformation, linking supply and demand, was of secondary importance there. Both the lender and the borrower were already a part of the same social network, and employment of an intermediary enabled to release the economic relation out of any emotional element. The ties between the parties to the contract (e.g. blood relationship) not only allowed to omit the stage of participants verification, but became an element minimizing the credit risk.

The great majority of currently P2P lending services in the world is not limiting their clientele to family and friends networks. One of the first markets using the formula of public auction was the platform Zopa.co.uk that started in the United Kingdom in 2005.

In the lending market based on the **auction model** (**open capital market**) the borrower declares the demand for financing and proposes the upset price for expected loan. Lenders bid their offers using one or two parameters – the amount and/or interest, and adjust their offers to the perceived risk of transaction. The mechanism connecting demand with supply can also be of an anonymous character – the lender defines only the basic loan parameters (amount, time limit, interests), and the automated system chooses the borrowers' offers that fit defined conditions and distributes money among them.

Regardless the mechanism used for matching offers, in the open market model of key importance is the credit risk problem. The lender does not know the borrower personally, and considering the transaction has to rely only on the set of information

[7] Now this website belongs to Virgin Money US (http://virginmoney.com).

delivered by the auction service. Risk assessment is of a subjective and non-formalized character – each investor can use own methodology, and the lending platform, which generally does the preliminary verification of borrowers, cannot guarantee that gathered information conforms to facts, is also not responsible for any financial losses incurred by the borrower.

One of fundamental disadvantages of the dominating model of Internet P2P lending markets is for the lender the lack of possibility to terminate the investment earlier. Lack of organized secondary market forces the investor to search for a partner ready to conclude a transfer agreement, and assessing the price of transferred loan may involve difficulties.

The appearance of **secondary markets** was a logical consequence of the expansion of social lending phenomenon, but their real development has been triggered by extrinsic factors – legal regulations that introduced securities trading standards. American supervision agency SEC has called in question the activities of LendingClub.com service, pointing out to the fact that this service, playing a role of an intermediary in receivables trade (and also acting directly in transaction as a party) undertakes operations that require licensing. LendingClub market adjusted itself to legal requirements by changing the formula of activity and registering in SEC its issued bonds called "Member Payment Dependent Notes"[8]. Each one of the series of bonds corresponded to single loan offered via the Internet market.

The transformation of private loans into notes opened the way to the creation of secondary market, managed by separate entity with broker's license. The mechanism of matching the parties to the transaction, is the following:

- seller publishes the offer containing the expected price of the loan being sold,
- buyer can review the loan data, including pay off history and changes of borrower credit rating,
- buyer makes buying order for chosen notes.

Among various trends in P2P lending evolution, the tendency appears to reinforce private lending as another form of investment, being supplementary to the range of financial assets already existing in the market. This requires far reaching changes in currently functioning model of Internet markets, abandoning the underlying idea of social lending: direct contact between a lender and a borrower. An example of potential of the new model of direct lending can be the already non-existing American service PertuityDirect.com. Functioning of this market was based on an investment fund named The National Retail Fund[9] that collected payments from lenders-investors. Funds were in the next step used to fund the loans offered to selected borrowers. Investors could point out the type of borrowers (defined by their credit score range) they wished to lend to, but could not choose particular individuals.

[8] Prospectus available at SEC: https://www.lendingclub.com/extdata/prospectus.pdf.

[9] http://www.nationalretailfund.com/.

The consequence of such a matching mechanism is such, that contrary to the social lending services a lender knows neither the person taking the loan, nor the details of a financial situation of this person. Lender's participation in auction and competition with other investors is no longer necessary, but free choice of loan conditions, in particular interest rate, becomes impossible. The paid off debt can be, however, automatically reinvested and exiting the investment is possible in any moment.

The separation of Internet platform from financial vehicle (investment fund) has serious consequences. Market operator becomes responsible for examining creditworthiness of borrowers and should work out procedures ensuring appropriate quality of assets transferred to the fund. Individual investors have no influence on the choice of lenders entering the portfolio (though mechanisms are possible enabling indirect influence, e.g. through voting among investors). From the borrower perspective, application for a loan becomes simpler, more resembling applying for a quick bank credit. The borrower complying with initial requirements can obtain financing without auction and without waiting for the collection of the whole sum. The fund can invest not only in private lending, but also in other asset types, e.g. treasury bonds. The management can therefore elastically adjust to the demand for lending capital and temporarily invest money in more or less risky financial instruments.

4. Credit risk management tools

In private lending markets credit risk takes the form that differs from that for banking. Firstly, the main difference can be attributed to the fact that any P2P lending service, contrary to a bank (being also an intermediary), does not take credit risk. **Credit risk is shifted fully onto a lender**. The threat of loan default as to amounts and dates set in the contract (**active credit risk**) affects only the capital donor. Secondly, passive credit risk, consisting in impossibility to collect funds to finance loans granted does not appear at all in most private lending markets – the exhaustion of free capital resources means stopping transactions until subsequent investors arrive.

The condition for subsistence and development of Internet P2P lending markets was to provide investors with appropriate tools that enabled the identification, quantification, and minimization of credit risk they were facing. The capabilities of an individual are in this respect very limited – a private lender makes usually the decision conditional on **confidence** in a borrower. The necessary condition to finalize the transaction is therefore personal acquaintance between two parties, resulting from already existing social links (e.g. blood relationship, professional community). The requirement of personal acquaintance can be fulfilled only in community-oriented P2P lending model, and the development of open capital markets has led to an inevitable substitution of confidence by **information**. The social lending phenomenon has in this sense undergone the evolution quite similar to that of banking, where the subjective measures of creditworthiness have been substituted by "industrialized confidence", based on elaborated borrower databases and complex methods of analyzing the gathered information.

The set of mechanisms supporting the evaluation and minimalizing the credit risk involves a number of elements. They can be aggregated in the following way:

- Creditworthiness evaluation stage, including:
  - identification of parties to the transaction,
  - verification of borrower identity in virtual communities and e-commerce platforms,
  - publishing credit history and credit score of potential borrowers,
  - in-house creditworthiness evaluation systems,
  - publishing of synthetic indices of borrower ability to service the debt complemented by data concerning earnings and employment,
  - publishing of borrower's "story" – justification of loan application.
- Transaction stage, including:
  - instruments permitting to distribute risk between numerous entities,
  - formalization of loan agreement and collateralization.
- Loan monitoring stage, including:
  - instruments of social control,
  - support for the debt collection process (for defaulted loans).

Identification of social lending services users is usually done during the sign-up process and makes the initial condition for admission to undertake transactions. Concerning the virtual character of the market, this mechanism of credit risk minimizing is crucial for the secure functioning of the platform. The basic problem, as a matter of fact common for P2P lending services and Internet banks, is lack of reliable tools precluding identity theft. This problem could be overcome only by mechanisms adapted to electronic environment (e.g. comparison of biometric data read from ID smart card with the data from a biometric device connected to user's computer). Currently the following items are verified first of all:

- consistency of data given during the registration with those from the ID document (sent as a picture file, fax or copy),
- banking account data – through comparison of sender's verification transfer data with those given during the registration,
- telephone number – verified in conversation or by SMS message,
- consistency of domicile address – verified by e.g. confirmed receipt of a letter sent to this address.

The imperfection of currently applied solutions is due to the lack of physical contact between the user and the representative of lending service, and to the verification process transferred to third party (e.g. bank opening an account or postman delivering letters). Any mistake at the identity verification stage creates an enormous threat for trade security in the electronic market, particularly because with the current state of technique development the prosecution of identity thief based only on electronic traces is strongly hindered.[10]

The identification stage, due to its critical importance, is being continuously improved in developing lending markets. An interesting direction of evolution can be observed for users' authentication – social verification, consisting in screening potential borrowers by experienced lenders active in the market. Such a solution has been recently introduced by Polish platform Kokos.pl, where the verifier in reward for interview (concerning domicile, liabilities, earnings etc.) receives points in the affiliate programme.

Identity verification in social networks is an innovation. This tool until now has not been used for credit risk assessment in consumer lending. The idea behind this measure is to link the user's profile, already existing in P2P lending service, with other profiles created for various Internet communities – starting from purely recreational (like Facebook.com or Nasza-klasa.pl), down to the services that support professional networking and career development (LinkedIn.com, GoldenLine.pl). A potential investor interested in borrower's credibility can thus considerably extend the available information. The users of social networks advertise information not only directly connected with creditworthiness (e.g. education, actual profession, employment, professional career), but also with many private life details (circles of friends, marital status, children etc.). These additional data allow:

- to ensure that lenders are real persons, not fictitious people,
- to compare information with that obtained from other sources, e.g. through verification done by the P2P lending market operator.

An additional element supporting risk assessment when lending to a particular person could be the information on user's history in e-auction services and other social lending services. The possibility to trace transactions done on other social lending markets is helpful when the investor is trying to determine whether the lender is cumulating liabilities. This might be particularly important in the case of social lending markets that do not report late payments and defaults to credit bureaus.

The comments of partners to the transaction in auction services (e.g. Ebay.com, Allegro.pl) allow to state if the potential borrower was an honest payer and fair trader, carrying out due responsibilities. It should be pointed out that the data from auction services offer extremely valuable information, since their context is close to the situation of private loan given through Internet (pecuniary transaction in the anonymous environment, electronic contact with the other party to the transaction, an opportunity to delay the due payment). Important correlations can therefore be expected between positive user's history in auction services and repayment of debt. Preliminary analyses done by investors being active in social lending markets indicate the existence of such dependence[11].

[10] Identity theft problem has been one of the major reasons why Polish social lending service Monetto.pl collapsed. The suits against swindlers using other people's personal data for registration and obtaining loans were discontinued due to difficulties with the identification of actual offenders.

[11] See an example from the Polish market: http://www.pozyczki20.com/splacalnosc-a-allegro-pl/.

Publication of credit score is another tool that helps a potential lender to decide rationally: enter or abandon a particular lending project. Availability and detail level of borrowers data taken from external databases depends on legal regulations being in force on the given territory and on the character of credit bureaus (industry registers, created by credit institutions and making information available only to its members or private registers functioning on commercial rules and trading data to various entities). Usually, due to the above restrictions, a lender has access not to the full credit report, but exclusively to the information on:

- borrower presence in registers that collect the so called negative information (i.e. persons that do not pay their liabilities in time),
- current repayment of borrower's loans taken out from credit institutions that report to the credit agency,
- borrower's credit score, calculated using a number of variables (timeliness of repayments, use of credit products, etc.).

The above data require some knowledge to be correctly interpreted. Therefore in social lending markets the frequent practice is to publish an additional description of the credit bureau's scoring – e.g. by indicating what the probability of default for a given score range is, or to which percentile of population a given person can be attributed concerning his/her credit scoring.

The data from external databases, commonly used by banks in examining creditworthiness, play an important role in social lending markets:

- they allow to assess the borrowers' financial situation, but **bad credit history, contrary to banks, is not a disqualifying factor** – it permits solely to evaluate transaction risk more precisely,
- they can be a solid base for quantitative assessment of the probability that loan will default and to estimate the **risk premium**,
- in some markets they can serve to divide borrowers into segments served by separate sub-markets[12].

Creditworthiness appraisal systems made in-house appear most often in those markets where the access to credit information databases is hindered[13]. P2P market operator works out own methodology of risk scoring, using the available borrower's data. Similarly as in generic scoring systems created by banks, the tools used by social lending services aim at assessing the risk of loan going default. The creation of such a solution requires an appropriate historical database as the foundation for statistical analysis. In the case of social lending services it is now impossible due to the short history of their existence. Therefore it becomes necessary to take data from outside – an example can be the model used by the service Smava.pl, developed by the experts from *Biuro Informacji Kredytowej* − Polish credit bureau[14].

[12] For example in British Zopa.co.uk.

[13] They can also be a supplement to the data obtained from credit bureau – such an approach characterizes the largest P2P lending market in the world – American service Prosper.com.

[14] Borrowers are classified into 9 groups characterized by various probability of insolvency during the whole loan payoff period. Rating is based on the analysis of regularities appearing in the population of borrowers that take 12-month loans and are recorded in the bureau's database.

A complementary tool or an element of own creditworthiness evaluation system can be the publication of a summary of user's activity in the lending service. The list giving number and status of currently taken loans allows the investor to assess the scope of liabilities and their timely repayments. When this information is complemented by the data concerning investment activities (loans offered), it can be found if the user borrows money to speculate in the market.

An important supplement to the information on credit history is **quantitative indices of financial situation**. In the majority of currently operating social lending markets these indices are calculated basing on data delivered by a borrower (as stated in application). Verification of actually earned incomes gives rise to some difficulties, but is practiced through the requirement to present the income certificate.

The most commonly used index is DTI (debt-to-income ratio, calculated as the ratio of net income to the cost incurred to service the debt) or debt service ability index, being the quotient of credit charges and income to one's disposal (excluding repayments). These indices allow assessing the debt burden for a given borrower, and consequently the risk of troubles with repayment. They can also be used to make preliminary selection of borrowers in some markets, where excessively indebted persons are rejected.

The set of information presented to the lender is most frequently provided with **information contained in the loan listing**, which usually describes the loan purpose and the circumstances that caused the quest for financing. Such a "story" can be complemented by photos and links to other webpages. The story told by the borrower aims at attracting potential investors, building emotional links (e.g. through arousing compassion or showing common interests that are connected with the loan purpose), as well as holding dialogue through questions and answers, permitted in most P2P lending markets.

Information contained in the listing can create "soft" element of borrower's creditworthiness evaluation – it allows to deduce his/her motivations, education (e.g. based on the mode of expression, spelling errors etc.), and to point out possible divergences with other data available under the social lending service. Investigations undertaken to assess the influence of lending listing on the probability of getting the funding have shown statistically important dependencies (concerning e.g. the length of description or including photos)[15]. This can prove that borrower's offer is in fact one of information sources taken into account by investors ready for the financial engagement.

The **risk partition mechanism** is a tool directly imported from banking. The idea is to divide the capital invested by lender (in the case of banking – deposit maker) into a number of small loans. The dispersion of transaction into many micro-loans allows minimizing the impact of one partner's insolvency on return from investment.

---

[15] J. Ryan, K. Reuk, C. Wang, op. cit.

In currently operating P2P lending markets risk partition can be achieved in two ways:

- through automatically created loan portfolio based on investor's preferences – an example being the portfolio plans in American service Prosper.com. An investor chooses the risk level and expected profit, and the choice of appropriate loan projects is done automatically,
- through diversification done on his own by a lender, who divides financial means into several offers.

Formalization of loan agreements is a necessity in those markets, where transactions are concluded among persons who do not know each other, and the contact between them is of a virtual character only. Such a mechanism secures the lender interests – makes the enforcement of unpaid loans easier, eases the assignment of receivables and their possible transfer to specialized entities dealing with debt collections.

It is worthwhile to point out the fact that the written form of agreement is not in all cases forced by binding regulations – in Poland it is obligatory exclusively for goods of value exceeding 500 PLN. This threshold is relatively high, taking into account the fact that lenders usually take advantage of risk partition mechanism.

In some P2P lending markets lenders do not enter into agreement directly with a borrower, but other legal construct appears in the capital transfer process. Among currently functioning in the world social lending services there appear models based on:

- Exchange of private loan into securities or notes. An intermediary in such a transaction can be a bank. For example, in the American service LendingClub a lender buys securities issued by a bank, which entitle to receive monthly payments equal to installments from the loan funded using these securities.
- Intermediation of a specialized institution that supervises the loan transfer to the final borrower, tracks its utilization and enforces repayment. This model is typical for P2P lending markets that concentrate on the financial help for micro-entrepreneurs from the Third World (microfinance). A broker who knows a local community and its specificity is able to guarantee the proper utilization of loan funds.

One of characteristic features of social lending making them distinct from the banking forms of financing is **lack of any legal form of collateral**. In the markets functioning around the world one can very rarely find loans that are offered under collateral (the existing exceptions include the relatively new niche of loans for entrepreneurs). The only solution that gained moderate popularity is loan repayment insurance, usually bought by a borrower. The scope of such insurance does not, however, include all kinds of risk that could appear during the debt repayment period.

Lack of repayment securing is a consequence of efforts to simplify as much as possible the process of concluding and finalizing the transaction, and is also due to the low value of individual agreements. Even the simplest legally binding form of repayment guarantee (e.g. a promissory note) would involve additional costs and extension of time necessary to conclude an agreement. It can, however, be expected that in the future, along with increasing pressures to secure lender's interests, some attempts will appear to apply additional legal instruments that reinforce the position of capital donors. An important facilitation would be in this case the possibility to appoint the collateral in an electronic way, without paper documents. However, to put this postulate into effect, law changes that adjust traditional collateral forms to the electronic environment would be necessary.

Making use of **social control** mechanisms as a mean to minimize credit risk can be regarded as an innovation introduced by P2P lending markets into the set of credit risk management instruments. The essence of these solutions is to make use of social environment pressure (peer pressure) inducing the borrowers to thoroughly repay their loan obligations.

In the currently functioning lending markets at least three ways can be observed in which social pressure is used as a tool to discipline the users:

- permitting the borrowers to join into groups based on common characteristic (e.g. domicile, employment, similar interests). These groups jointly develop their creditworthiness score, so their leaders and participants are interested in keeping good repayment reputation. Tight links inside the group can be additionally amplified by the possibility of obtaining loans inside the group (mutual aid) and the incentives system. A group leader can be rewarded when someone from his group gets one's loan funded and timely repays installments.
- Recommendations from other users in the form of written comments. In some markets it is also customary to present in the Internet page a listing of information, if the users giving earlier recommendation to the given borrower did really place an offer in the auction. The true engagement of recommending person into auction is perceived by lenders as strengthening the earlier offered support ("put your money where your mouth is"), and at the same time as a measure that effectively disciplines the borrower.
- Information concerning friends and family engagement into loan project financing. The fact that someone from the nearest social network of the borrower gives support can be treated as a sign of trust and additional pressure for timely loan repayment.

Effectiveness of social control mechanisms depends on their appropriate construction. The solutions that were intended to increase repayment capacity can in fact lead to the opposite effect. In the Prosper.com market, group leaders were rewarded with money for each financed loan taken by a group member. This led to the situation in which some groups attracted new members on a large scale, without care for verification, what in longer term became the reason of increased percentage of unpaid loans.

The area that causes most problems for already functioning P2P lending markets is insufficient support of borrowers in the process of recovering the liabilities that are not repaid in due time. The basic problem here is a small amount of particular lending agreements that makes rather unprofitable the use of some instruments being helpful in debt collection.

Primary reaction to delayed repayment is usually a reminder addressed to the borrower – appropriate actions at this stage are usually undertaken by a lending market operator. When the monitory letters are fruitless, the initiative is transmitted to a lender or a specialized debt collection agency is appointed. Further proceedings depend not only on a lender decision, but also on the model according to which the lending market is functioning. The lender being not a party to the transaction (e.g. in the model where a loan is being transformed into securities) cannot contact with a debtor on his own (this would expose him to be alleged to do debt collection without appropriate license). In other cases the lender can undertake own negotiations with the borrower, including further conciliation or court proceedings. This requires, however, appropriate knowledge and financial input.

5. Conclusions

Shifting the burden of identifying and minimalizing credit risk from the intermediary to the lender is the one of the most prominent features of P2P lending markets. This shift of responsibility means that an investor is encumbered with the task that he is not prepared for. Clearly, one of the most visible trends in emerging P2P lending marketplaces is developing mechanisms that will help the lender to make rational and well-informed decisions. These tools are designed to assist the investor in three main stages: **assessing creditworthiness** of the potential counterparty (providing essential data from different sources), **formalization of the loan agreement** and **repayment monitoring**.

The majority of credit risk management tools used on P2P lending markets is well known to retail banks and consumer finance companies. However, some of them may be treated as innovations that could be used outside of the social lending context. The most important of the "new" tools are: **peer pressure** (unused in modern banking) and **using social networking sites to gather information about borrower's creditworthiness**[16]. Reviewing credit risk management tools used on P2P lending markets exposes also few critical loopholes. These shortcomings are fundamental to the security of markets and they focus in the areas of **identity verification, loan collateral** and **debt collection**. Insufficient effectiveness of credit risk management measures is lowering investors' trust and it slows down the development of this promising phenomenon.

[16] Social networking sites are used increasingly in recruitment process in many industries as a source of personal information unobtainable in other way.

Literature

1. Aldrich M., Krumme C., Martinez-Villalpando E., DeTar C., *Using Pattern Recognition to Analyze Prosper.com*, http://courses.media.mit.edu/2008fall/mas622j/Projects/CharlieCocoErnestoMatt.
2. Berger S.C., Gleisner F., *Emergence of Financial Intermediaries in Electronic Markets: The Case of Online P2P Lending*, "Business Research" 2009, Vol. 2.
3. Freedman S., Jin G.Z., *Dynamic Learning and Selection: the Early Years of Prosper.com*, http://www.prosper.com/downloads/research/Dynamic-Learning-Selection-062008.pdf.
4. Hulme M.K., Wright C., *Internet Based Social Lending. Past, Present and Future*, Social Futures Observatory 2006, http://www.socialfuturesobservatory.co.uk/pdf_download/internetbasedsociallending.pdf.
5. Pope D.G., Sydnor J.R., *What's in a Picture? Evidence of Discrimination from Prosper.com*, Working Paper, University of Pennsylvania 2008, http://wsomfaculty.case.edu/sydnor/prosperpaper.pdf.
6. Owczarek B., Stelmaszczyk A., Janczewski P., *Pożyczki społeczne w Polsce*, Accenture & Gemius, czerwiec 2008.
7. Ravina E., *Love & Loans: The Effects of Beauty and Personal Characteristics in Credit Markets*, Working Paper, Columbia University 2008, http://www.law.yale.edu/documents/pdf/LEO/E.Ravina2.pdf.
8. Ryan J., Reuk K., Wang C., *To Fund Or Not To Fund: Determinants of Loan Fundability in the Prosper.com Marketplace*, The Stanford Graduate School of Business, January 2007, http://www.prosper.com/Downloads/Research/Prosper_Regression_Project-Fundability_Study.pdf.
9. *The Power of People. Online P2P Lending Nibbles at Banks' Loan Business*, Deutsche Bank Research, July 2007.
10. *Welcome to the Machine, Innovations in P2P Lending May Put Computers over People*, Deutsche Bank Research, November 2009.

NARZĘDZIA ZARZĄDZANIA RYZYKIEM KREDYTOWYM NA RYNKACH POŻYCZEK SPOŁECZNOŚCIOWYCH

Streszczenie: Mianem rynków pożyczek społecznościowych określa się internetowe platformy pozwalające osobom fizycznym zawierać umowy pożyczkowe bez tradycyjnych pośredników, takich jak banki. Modele rynków *social lending* są bardzo zróżnicowane: od zamkniętych społeczności, poprzez otwarte rynki, gdzie strony transakcji wyłaniane są podczas aukcji, aż do rynków wtórnych i funduszy inwestycyjnych. Problem zarządzania ryzykiem kredytowym jest jedną z podstawowych bolączek w większości wymienionych modeli. W artykule przedstawiono mechanizmy oceny i minimalizacji ryzyka kredytowego stosowane w branży *P2P lending*. Część z nich nie była do tej pory stosowana przez tradycyjne instytucje pośredniczące na rynku finansowym i stanowić może wkład rynków pożyczek społecznościowych do praktyki zarządzania ryzykiem kredytowym – np. użycie mechanizmów kontroli społecznej do wzmocnienia motywacji pożyczkobiorców do spłaty, jak również wykorzystanie danych z serwisów społecznościowych do oceny wiarygodności kredytowej. W artykule wskazano także obszary, gdzie praktyka zarządzania ryzykiem kredytowym jest szczególnie niewystarczająca i gdzie konieczne jest wypracowanie nowych narzędzi, by zapewnić dalszy rozwój zjawiska *social lending*.