# Individual Preferences over NGO Projects: Evidence from Microlending on Kiva

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**Abstract**

Peer to peer (P2P) microfinance connects philanthropic citizens with poor entrepreneurs in the developing world. This paper presents evidence on how individual lenders choose between borrowers, and how lenders' preferences relate to the objectives of the microfinance sector. Using data from Kiva.org, we present estimates of the impact of publicly visible project characteristics on funding speed. Results suggest that Kiva lenders rationally consider indicators of the likelihood of repayment as well as borrowers' need. Smaller loans, groups and women get funded faster. Further, loans to sectors of activity with low entry costs fund faster than those with high entry costs. Meanwhile, loans requested to finance education and health projects are the fastest funding when controlling for other factors. Lastly, projects advertised by NGOs with better risk ratings, and less history of default and delinquent loans, fund faster. To sum up, although project selection by non-professional individual lenders could largely operate under principles far remote from the goals of development practitioners, the results presented in this paper suggest that Kiva lenders' choices are consistent with the microfinance promise, namely, a combination of poverty alleviation with financial sustainability. The analysis provides insights to help understand charitable behavior more generally.

## 1. Introduction

Peer to peer (P2P) microfinance connects philanthropic citizens with poor entrepreneurs in the developing world. This new approach to development finance is growing fast and a number of competing websites have been developed.[1] In 2009, every week, the pioneering American NGO Kiva raised $1 million in microloans (Bishop and Green, 1009). This paper presents evidence on how individual lenders choose between borrowers, and how lenders' preferences relate to the objectives of the microfinance sector.

This is an important question because individual users of P2P microfinance websites may have agendas at odds with those of practitioners. For development organizations and experts, the promise of microfinance lies in its potential to combine poverty alleviation with financial sustainability (Morduch 1999). However, given the non-professional (even recreational) nature of online individual lending, project selection may depend on a variety of factors, ranging from objective assessment of project characteristics to more subjective personal experience, values and tastes. Thus, it could be the criteria used by non-professionals to select projects do not promote the objectives established by microfinance practitioners.

The analysis of individual preferences in the case of online microfinance also provides insights to help understand charitable behavior more generally. P2P methods of NGO fundraising are growing, and involve giving individual donors increased control over which specific projects get funded. Although charitable giving has been the subject of a vast amount of economic literature,[2] researchers have mostly addressed the question of why people give, and little is known about how individuals choose between different types of charitable projects.

Using data on 114,689 loans funded on Kiva from the launch of the organization on April 17, 2006 to September 24, 2009, we present estimates of the impact of publicly visible project characteristics on funding speed. Due to Kiva's popularity and the fact that the database of loans has so far remained small relative to the number of website visits, all loan requests currently get funded. However, while some entrepreneurs are fully financed in a matter of hours, others may take up to one month to get enough contributions. These differences in funding speed across loan requests are a good measure of their relative popularity. Then, the

[1] See Kiva.org, Wokai.org, Worldvisionmicro.org, or babyloan.org.

[2] For surveys, see Andreoni (2006) and Rose-Ackerman (1996).

impact of loan and borrower characteristics on funding time may be interpreted as reflecting charitable lenders' preferences.

Empirical results suggest that Kiva lenders rationally consider indicators of the likelihood of repayment as well as borrowers' need when selecting projects. First, we find that requests for smaller loans and women get funded faster. This could be interpreted as a poverty alleviation motive on the part of lenders, who may seek to support individuals they view as more vulnerable and lacking access to local sources of capital. In addition, large groups fund faster than individual and small groups, which may indicate that lenders try to reach more beneficiaries with each dollar. Further, loans to sectors of activity with low entry costs fund faster than those with high entry costs, which supports the idea that lenders seek financially vulnerable, capital constrained borrowers. Meanwhile, loans requested to finance education and health projects are the fastest funding when controlling for other factors. This can be interpreted as lenders' willingness to finance local public goods.

Although poverty alleviation appears to be an important motive of Kiva lenders, our results also suggest that repayment prospects matter. Previous literature has shown that women have higher repayment rates, an important reason for the focus on women practiced by many microfinance institutions (Mayoux 2001, Morduch 1999, Pitt and Khandker 1997). The literature also indicates that loans to groups and smaller loan sizes have higher repayment rates (Barboza and Barreto 2006, Godquin 2004). Thus, the popularity of small loans, groups and women may indicate lenders' concern with repayment. In addition, loans for consumption rather than business fund slower, suggesting they are considered more likely to be subject to moral hazard.

Furthermore, an examination of the effect of objective indicators of risk reinforces this interpretation. Projects advertised by NGOs with better risk ratings, and less history of default and delinquent loans, fund faster, ceteris paribus. Moreover, loans requested through NGO partners that charge higher interest rates fund faster. Since higher rates help make microfinance institutions more financially sustainable, the latter result could be interpreted as lenders' concern with repayment.

To sum up, although project selection by non-professional individual lenders could largely operate under principles far remote from the goals of the microfinance industry, the results presented in this paper suggest otherwise. Although other factors such as personal

values and experience could matter as well, Kiva lenders rationally consider criteria that can be objectively related to borrowers' need and likelihood of repayment. In other words, the selection criteria of individual lenders are partly aligned with the broader goals of poverty alleviation and financial sustainability advanced by the microfinance sector.

P2P development finance is an emerging sector and has so far been under explored in academic research. There is one other recent paper studying individuals' philanthropic preferences, also using Kiva data. Desai and Kharas (2009) compare analyses of data on Global Giving and Kiva transactions with the determinants of official development assistance. They conclude that while official aid allocation is driven by country characteristics, citizens who donate on Global Giving or Kiva are not primarily motivated by these factors. Instead, private aid allocation is found to respond to project characteristics. In the present paper, we use a larger, more recent, data set of Kiva transactions, and analyze preferences over characteristics in more detail. Moreover, although Desai and Kharas frame their discussion in terms of general motives for foreign aid, we interpret our results in light of debates in microfinance. The two papers are thus complementary in improving our understanding of aid allocation, P2P development finance, and charitable preferences. Other similar websites have been analyzed. Ashta and Assadi (2009) study European microlending websites using a comparative case study approach. The American peer-to-peer lending website Prosper.com has been thoroughly discussed by Pope and Sydnor (2008), Ravina (2008) and Freedman and Jin (2008). However, Prosper is not a development project, but a credit tool for US based customers. We are interested in Kiva as an actor in the development industry, and our results aim to shed light on issues in development finance.

Lastly, our results are related to economic research on the determinants of foreign aid allocation and effectiveness. Recent research in development economics and political economy has identified commercial and political agendas as important determinants of aid allocation by governmental donor agencies to poor countries (Dreher et al, 2007). In addition, the incentives of recipient governments themselves have often been blamed for the lack of visible results (Dreher et al, 2007). By contrast, private charitable actors in development, NGOs, have been found to be more likely than governments to allocate aid based on indicators of need (Gilles and Yontcheva, 2006). This strand of literature provides important insights for our understanding of development policy. However, while institutional sources of funding are still

dominant, NGOs increasingly rely on direct connections with individual donors, especially through the Internet. Meanwhile, NGOs' fierce competition for funding has been found to distort their incentives in ways sometimes detrimental to their primary missions (Cooley and Ron, 2002). Thus, it is important to understand how the preferences of individual donors may shape NGOs' agendas and effectiveness. For this, we must start by improving our knowledge of how individual preferences impact the choice of projects to support, and the present paper aims to fill this gap in the literature.

The remainder of the paper is organized as follows. Section 2 presents the data and empirical framework. The results are presented in section 3, and section 4 concludes.

## 2. Data and Empirical Framework

### 2.1. The data

The data used in this paper consist of the population of loans funded on Kiva from the beginning of the organization on April 17, 2006 to September 24, 2009. Kiva makes the source database available through an application programming interface (API).

The full original data set contained 133,700 observations, but 998 loan requests were still fundraising on the day the data were pulled. Since we are interested in funding speed, we drop these latest observations on loans not yet funded. Furthermore, maybe due to inconsistencies in the early storage of data by the organization, the first 205 loan observations have problematic reported time stamps for their posted and funded dates. In addition, two more loans had missing data for dates. We eliminate these observations as well, for a total of 1205 observations dropped.

In addition, Kiva has terminated its partnership with several microfinance institutions. Due to this, data are no longer available concerning the financial performance of these MFI. An additional 17,806 observations are dropped due to missing microfinance institution data. The final working data set contains 114,689 observations.

### 2.2. Data description

The key variable for the analysis is funding speed, measured in minutes. Figure 1 shows that the vast majority of loans (over 70,000) funded in 720 minutes (half a day) or less. Moreover, figure 2 shows that 68.17% of loans fund within 24 hours of being posted, and another 9.83%

get funded within the following 24 hours. This is due to the high popularity of Kiva, and the fact that the size of the database of loan ads has remained small relative to the number of prospective lenders.

**Figure 1. Distribution of Loan Funding Times**

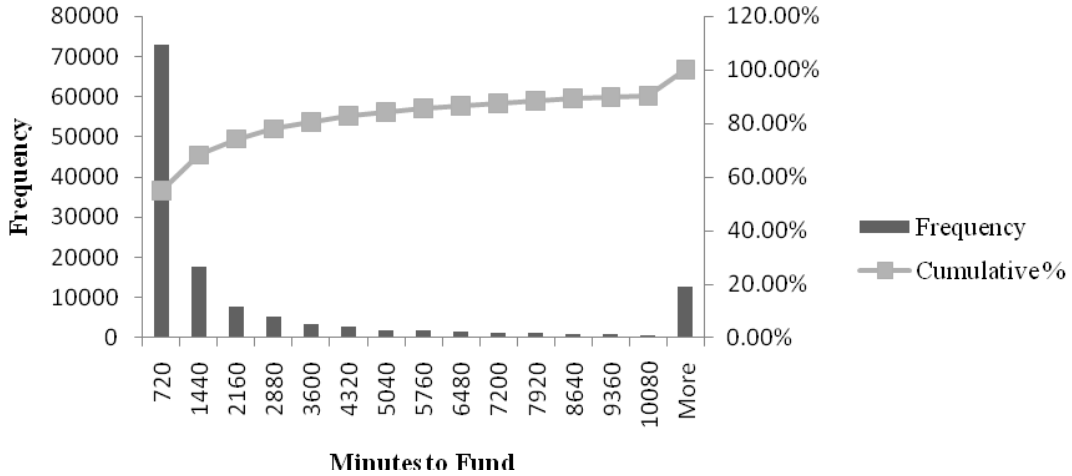
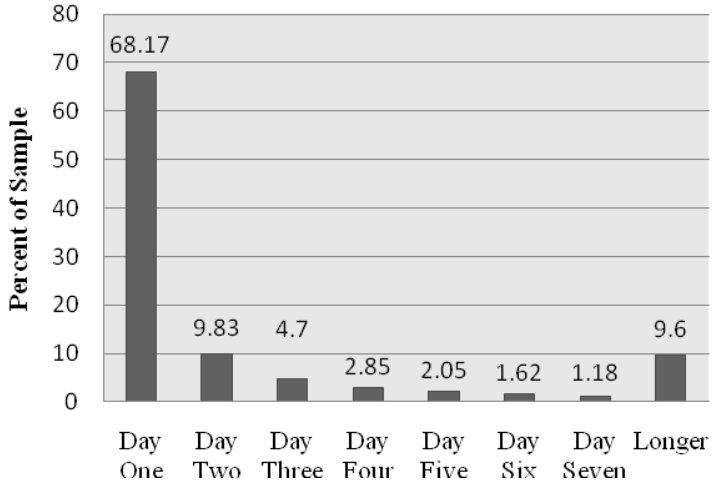



**Figure 2. Speed of Funding**



The average funding speed in the sample is 3193 minutes.[3] In the empirical analysis below, we assume that differences in funding speed between loans partly reflect their relative popularity among lenders. Then, the partial effects of project characteristics on funding time may be interpreted as reflecting lenders' preferences.

Table 1 reports financial project characteristics. The average loan amount is $694.3, and the average loan term is 10.8 months. Loan amount and term are loan-specific. However, other financial variables are only known at the level of the microfinance organization working with the borrowers in question. Indeed, Kiva connects lenders and borrowers through local field partner. The latter are established microfinance NGOs and are in charge of posting their chosen borrowers' profiles online, and monitoring loan use and repayment. Overall, the data set covers 150 field partners from 50 countries. In practice, although the idea of Kiva is to promote a P2P approach between lenders and borrowers, the money collected online is disbursed to partner NGOs. The latter usually "backfills" loans already made to existing borrowers before advertising them on Kiva. However, lenders still bear the risk specific to their chosen project.[4]

**Table 1. Loan characteristics**

| **Loan Characteristics** | **Mean (standard deviation)** |
|---|---|
| Funding speed (in minutes) | 3193.4 |
| | (6708.2) |
| Loan amount (in US dollars) | 694.3 |
| | (586.5) |
| Loan term (in months) | 10.8 |
| | (4.3) |
| Default rate[a] | .7 |
| | (4.52) |
| Delinquency rate[a] | 4.47 |
| | (13.72) |
| Journal entries[a] (quantity) | 99.21 |
| | (195.39) |
| Interest rate[a] | 27.82 |
| | (13.82) |
| N | 114689 |

a: Field Partner averages

[3] The average funding speed was between 3600 and 3900 minutes in years 2006, 2008 and 2009. The exception was 2007, when it fell significantly (to 1252), most likely due to Kiva's transition from being a relatively unknown NGO to increased media exposure.

[4] This has generated controversy over the transparency of the Kiva model, although the debate sparked a quick reaction by Kiva to revamp its "how Kiva works" page (see Strom, 2009, and http://www.kiva.org/about/how)

Then, other than loan amount and term, variables in table 1 are NGO partner specific, not loan specific. First, Kiva assigns a risk rating, from one to five stars, to each of its field partners, taking into account financial sustainability and reliability. Five star rating constitutes the lowest risk. According to Kiva, the risk rating "is intended to provide more insight for those who are sensitive to repayment risk." A one-star field partner is usually young and unproven.

The default rate is very low overall, at 0.7%.[5] Moreover, most cases of default occurred in the first two years of Kiva. The rate has dramatically fallen over time, starting at 8.85% in 2006, 2.42% by the second year, 0.18% in 2008, and down to 0.002% in 2009. A similar measure of NGO reliability is the delinquency rate, calculated as the ratio of the amount of loans in repayment past due to the total amount of loans currently in repayment. The delinquency rate is a bit higher overall (4.47%), which indicates some late reimbursements. But as the low default rate shows, the vast majority of loans were eventually repaid.

Further, Kiva requires each field partner to provide at least one journal entry per loan, as an update to the lenders on the use of the loan and its benefits to borrowers. Some field partners do not always comply with this requirement, while others do more than required.

In addition, although individual Kiva lenders make interest-free loans, NGO field partners charge interest to their borrowers. Kiva lenders can observe the average interest rate charged by each NGO on its profile page, though not the one charged to each specific borrower. In the present sample, the average interest rate is 27.82%.

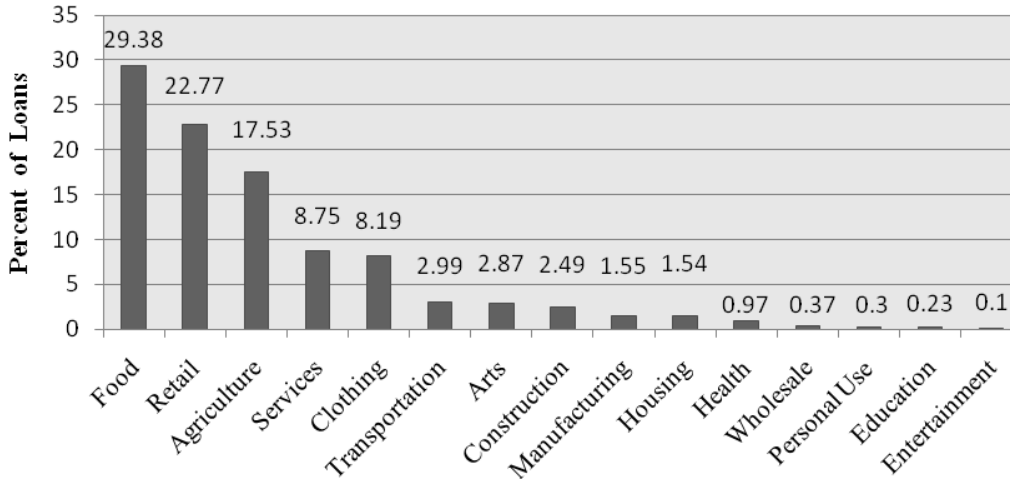
Figure 3 breaks down the sample by gender and group versus individual loans. Only 11.2% of the sample concerns group loans, and there are very few male or mixed groups. Most loans in the sample, 68%, were made to individual women borrowers, while 21% were for individual men. In the analysis below, a gender dummy variable is used, taking the value 1 for loans to women or groups of women, and zero otherwise.

Furthermore, loan use is an important factor lenders may consider when choosing borrowers. Sectors of activity include agriculture, arts, clothing, construction, education,

[5] Kiva as "the collection of funds from a borrower or MFI field partner is doubtful and 180 days past the originally scheduled repayment date (for any expected repayment, not just at the term of the loan)". Another risk measure provided is the delinquency rate, which represents the percentage of a field partner's loans that are currently in repayment and past due.

entertainment, food, health, housing, manufacturing, personal use, retail, services, transportation, and wholesale. The distribution of loans by sector is shown in Figure 4. In addition to reflecting information about how the loan will be used, sectors may be used by lenders to infer need and likelihood of repayment. For example, a loan requested to fund a transportation business, where borrowers are often pictured next to their vehicle, may not convey the same information as those featuring borrowers in manufacturing, who are often involved in making handicrafts.

**Figure 4. Sectors of Activity**




Finally, since the purpose of the following empirical analysis is to infer Kiva lenders' preferences, it is important to control for factors that are not characteristics of the loan ads but that could affect funding speed. We include a competition measure, which counts the number of active competing ads faced each loan request. Indeed, one would expect loans to be more quickly funded when they are part of a smaller pool of applicants. Lastly, given that most loans get funded in less than 24 hours, differences in time zones may play a role. A time zone variable is created to represent the distance, in time zone hours, from each country to the Pacific Coast of the United States.

2.3. Empirical Framework

In order to identify the determinants of funding speed and infer lenders' preferences, we estimate the following equation using pooled OLS:

$$y=\alpha+X\beta+Z\gamma+\varepsilon \qquad (1)$$

The dependent variable, *y*, is funding time measured in minutes. *X* is a set of loan and field partner characteristics publicly available to prospective lenders, including dummy variables for gender and group, number of entrepreneurs, and field partner characteristics: a dummy variable for field partner risk rating,[6] the delinquency rate, default rate, total journal entries, and average interest rate of the field partner posting the loan. *Z* is a set of controls for loan amount, the loan term in months, sector of activity dummies (the base sector is agriculture), number of competing loans, country and year of posting dummies. We also interact the female and group dummies with the risk rating and default rate, to investigate the extent to which results for group and gender can be attributed to risk aversion versus altruism on the part of lenders.

In addition, daily news events and media coverage of Kiva may affect visitors' traffic, and/or draw lenders attention to certain regions or development issues. Media attention on Kiva that drives significant amounts of traffic to the site may improve the funding times of all loans. By contrast, media attention to a specific sector or country may reduce the funding times of a subset of loans in particular by pointing lenders' attention toward highlighted characteristics.

To control for such factors, our final specification includes dummies for the day each loan was posted , instead of year dummies. This helps account for unobserved factors that come with loans being posted on a given day, and helps check that the results indeed capture lender preferences over loan and field partner characteristics.

[6] The field partners are rated one to five stars, five being the best performing, lowest risk. The dummy variable equals one if the field partner scored four or five stars, indicating a safe investment, zero otherwise. Using the rating itself, rather than the dummy variable for good rating, does not change the results.

## 3. Results

This section presents estimates of the effect of loan and borrower characteristics on funding speed. Equation (1) is estimated and the results are reported in Table 2.

**Table 2. Determinants of Funding Time**

| Independent Variable | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Female | -1327.56* | -979.79* | -1230.68* | -1035.19* |
| | (84.53) | (86.58) | (76.23) | (77.90) |
| Female*Risk Rating | -418.29* | -605.25* | -450.73* | -510.07* |
| | (95.48) | (98.59) | (86.08) | (88.68) |
| Female*Default Rate | -55.78** | -59.56** | 7.41*** | -24.00 |
| | (23.42) | (23.11) | (21.59) | (21.27) |
| Group | 2766.43* | 2761.21* | 2717.07* | 2742.74* |
| | (116.18) | (129.50) | (106.49) | (117.64) |
| Group Number (Interaction | -441.27* | -492.45* | -420.47* | -476.18* |
| with Group) | (14.12) | (14.85) | (12.73) | (13.36) |
| Group*Risk Rating | -493.77* | -331.03** | -1080.78* | -622.62* |
| | (120.46) | (136.05) | (110.73) | (123.88) |
| Group*Default Rate | omitted | omitted | omitted | omitted |
| | | | | |
| Risk Rating 4-5 Stars | 958.09* | 203.78** | 1121.43* | 494.62* |
| (low risk) | (87.15) | (102.78) | (79.16) | (93.29) |
| Default Rate | 89.50* | 123.10* | -3.20 | 86.61* |
| | (23.02) | (23.27) | (21.30) | (21.49) |
| Delinquency Rate | -5.94* | -7.89* | -2.39*** | .65 |
| | (1.51) | (1.98) | (1.40) | (1.83) |
| Total # Journals | .55* | -1.86* | -.15*** | -1.76* |
| | (.08) | (.12) | (.08) | (.11) |
| Average Interest Rate | -29.59* | -27.75* | -21.83* | -22.73* |
| Charged by NGO/MFI | (1.40) | (2.21) | (1.29) | (2.05) |
| Loan Amount | 3.53* | 3.65* | 3.37* | 3.54* |
| | (.04) | (.04) | (.03) | (.04) |
| Loan Term | 102.56* | 137.75* | 112.82* | 160.90* |
| | (4.99) | (6.26) | (4.58) | (5.72) |
| Competition Measure | 5.26* | 5.45* | 4.79* | 3.98* |
| | (.05) | (.04) | (.22) | (.22) |
| Time Zone | -142.78* | omitted | -102.55* | 856.20 |
| | (5.79) | | (5.40) | (71.76) |
| Country Dummies | no | yes | no | yes |
| Day Dummies | no | no | yes | yes |
| N | 114689 | 114689 | 114689 | 114689 |
| Adjusted $R^2$ | .2269 | .2631 | .3898 | .4184 |

* Significant at the 1% level.
** Significant at the 5% level.
*** Significant at the 10% level.

The first column does not include country dummies; these are included in column (2) for comparison. Lenders may choose entrepreneurs to fund partly based on country preferences. Moreover, economic and political conditions specific to each country may affect microfinance operations, notably through risk and default. Although including country dummies leaves most results qualitatively and quantitatively only slightly changed, the effect of journal reporting is reversed from a positive to a negative sign. It could be that NGOs' ability to use Kiva's journal reporting is affected by differences in internet accessibility across countries.

Furthermore, the relative size of the borrower and lender side of the Kiva credit market may affect funding speed. For example, an increase in the loan pool, all else equal, may worsen funding times. To account for the borrower size of the market, we control for the size of the pool faced by each loan. In addition, an increase in the number of potential lenders visiting the website, possibly due to Kiva's exposure in the media, may decrease funding times by relaxing competitive pressure between loans. The lender side of the market is unobservable, but including dummy variables for each loan's day of posting controls for unobserved differences between days, including changes in website visits and media exposure.[7]

Thus, comparing columns (1) with (2) and (3), representing the inclusion of country and day controls, respectively, shows that although most results are qualitatively unaffected to a large extent, it is important to control for day and country dummies. The following interpretation of the results is based on column (4), which makes use of both country and day of posting controls.

### 3.1. Repayment Concerns and Poverty Alleviation Motives

First, loans to women (and groups of women) raise funds faster than loans to men and mixed groups. For loans rated safer (4 or 5 stars), evaluated at the median default rate (equal to zero), the magnitude of this advantage is 1545 minutes, i.e. over one day. This is large, considering that the median funding time is just over 500 minutes, less than 10 hours.

[7] Further exploration of the role of competition is beyond the scope of this research, and will be addressed in the following chapter.

This result could be interpreted as lenders' seeking to reduce gender inequality and target borrowers in need. However, the literature suggests that a rational concern for repayment is a plausible explanation. Indeed, women have extraordinarily high repayment rates in microfinance (Mayoux 2001). Morduch (1999) points out that many microfinance institutions focus on women, and that it often helps the programs be more successful financially. Further, over 90% of Grameen Bank's borrowers are women (Morduch, 1999). Women are widely targeted for microfinance loans because of their higher repayment rates and responsible use of borrowed funds (Pitt and Khandker 1997).[8]

Interacting women with risk shows that women's advantage is larger for low risk loans (rated 4 or 5) than for riskier ones. This suggests that risk averse lenders (those who pick the safer loans) also tend to choose women. This reinforces the interpretation that the observed faster funding times of loans to women reflect lenders' concern for repayment.

However, the advantage of women is still substantial (1035 minutes) among riskier loans (rated 3 or less). Thus, although concern for repayment is important, poverty alleviation motives can still partly explain women's faster funding times on Kiva. Women's high repayment rates are often associated with social capital creation, formed through increased participation in the community and in labor markets, and increased importance within the family unit (Mayoux 2001).

Furthermore, the results show that loans to large groups are funded faster than loans to individuals. Group lending is one of the most celebrated innovations in microfinance (Morduch 1999a). By using joint liability and peer monitoring, group lending helps overcome information and enforcement problems inherent to credit markets (Ghatak 1999, Ghatak and Guinnane 1999, Barboza and Barreto 2006). Thus, lenders may perceive that group lending helps improve the probability of repayment and fund those loans first.

However, groups between 2 and 5 borrowers fund slower than individuals, although joint liability is certainly used with groups of this size. The Grameen Bank uses groups of five, for example. This suggests the result is open to an alternative interpretation. Indeed, the choice to fund larger groups may be extended to a desire to do more good with each dollar lent.

[8] Moreover, proponents of development funding targeting women cite their aversion to social criticism, their greater commitment to family investment as a proportion of income and their aversion to corruption as contributors to their high repayment rates.

Lenders may perceive that when funding a loan to a large group, their contribution reaches a greater number of beneficiaries than when lending to an individual. This interpretation is consistent with the increasing advantage of groups as the number of group members expands.

Nevertheless, the interaction term between group and risk rating shows that concern for repayment is still a plausible interpretation. In the case of safer loans (rated 4 or 5), the group advantage is faster by 622 minutes, compared to riskier loans. That is, in the case of loans most likely to be picked by lenders with higher risk aversion, groups do even better. This suggests that a preference for groups at least partly reflects lenders' rational concerns for repayment.

Thus, the fast funding speed of large groups can be explained by both repayment concerns and altruistic motives. In fact, the two can go hand in hand. Barboza and Barreto (2006) find that learning by association among microfinance group members is a valuable learning opportunity for group members who wouldn't qualify for a loan on their own. Learning by association also has a positive impact on repayment rates. This evidence suggests that Kiva lenders funding group loans are able to combine financial sustainability with outreach objectives.

Examining the effect of microfinance field partners' risk rating may help clarify the interpretation of group and gender effects. First, for individuals and male or mixed groups, safer loans fund 494 minutes slower than riskier loans. In the case of individual loans to women, there is no practically meaningful difference in funding time between safe and risky loans. Safer loans carry an advantage (638 minutes) only in the case of groups of women. This provides further evidence that group and gender effects have something to do with risk aversion on the part of lenders.

Other field partner level indicators that lenders may use to infer the likelihood of repayment include the default rate, delinquency rate, the extent to which an NGO uses journal reporting, and the average interest rate charged. The delinquency rate does not appear to have a statistically significant effect after controlling for day and country dummies. However, a one standard deviation increase (4.52) in the default rate is associated with a 391 minute increase in funding time. This suggests a concern for repayment on the part of lenders.

In addition, a one standard deviation increase in the number of journal entries (195.40) recorded by the field partner is associated with a decrease in funding time of 343 minutes. Some field partners post more journals than others, and this is information lenders may use to

assess their reliability. Lenders may perceive it as a signal of a higher probability of repayment from increased monitoring. However, this can also be an indicator of the likelihood that lenders will receive regular feedback on the impact of their contribution. This may enhance lenders' utility from being on Kiva, as well as reassure them on moral hazard problems.

Furthermore, a one standard deviation increase (13.82) in the average interest rate charged by the field partner is associated with a 313 minute decrease in funding time. In the microfinance industry, MFI are often criticized for charging high interest rates, forsaking their outreach mission in order to fulfill financial sustainability obligations.

The tradeoff between interest rates high enough to cover the high costs of offering micro financial services to the poor, and low interest rates that do not cover these costs but allow for more depth of outreach, is a classic debate among microfinance practitioners, donors, and scholars. The fact that higher interest rate loans fund over five hours faster on Kiva could be indicative of Kiva lenders' concern for financial sustainability, and value of a MFI's ability to cover high costs associated with the industry. [9]

Kiva lenders' preference for higher interest rates may help NGOs achieve both financial sustainability and poverty alleviation. Indeed, high interest rates not only make an NGO more financially sustainable, they may also indicate a focus on poorer borrowers. A recent World Bank study of 346 microfinance institutions found that the MFI that charge the highest interest rates and fees are those institutions that target women and the poorest segments of clients, focusing primarily on outreach (Cull et al 2008).

Finally, loan size and loan term are shown to have a non-negligible effect on funding time. An increase in the requested loan amount by one standard deviation (694) is associated with a large increase in funding time, by 2456 minutes, over a day and a half. Lenders may favor smaller loans due to an aversion to risk, as smaller loans can be seen as more financially sustainable projects and more likely to be reimbursed (Godquin, 2004). The success of smaller loan sizes may also indicate the willingness of the lender to support borrowers perceived as poorer, since entrepreneurs with lower incomes are likely to undertake smaller projects (Morduch 1999a).

[9] The average interest rate charged by Kiva field partners overall is 25.82%, in line with high interest charged in the microfinance industry.

In addition, an increase in the length of the loan term, a variable that tells lenders when they can expect their money back, also increases funding time. A one standard deviation increase in loan term (4.3 months) is associated with an increase in funding time by about nine hours (534 minutes). This result can be interpreted as lenders' concern for timely repayment. Moreover, repayment provides feedback on the direct impact of one's contribution, which makes being a Kiva lender all the more enjoyable.

### 3.2. Outreach and sectors of activity

So far, the results suggest that Kiva lenders' preferences are characterized by altruism and concern with repayment. In other words, they are in line with two important stated goals of the microfinance sector: poverty alleviation and financial sustainability. This can be further investigated by looking at the details of sector dummies' coefficients, to discuss the relative funding speed between different sectors of activity.

Lenders can sort by sector when selecting a project. Entrepreneurs' projects are organized into fifteen different sectors. [10] Sectors may differ by costs of entry into business faced borrowers, and entrepreneurs working in sectors with high entry costs could be seen as having had some prior access to capital. Lenders wishing to target borrowers in need may then prefer sectors with low entry costs. Moreover, some sectors may be seen as connected to local public good provision, and lenders concerned with poverty alleviation may favor them. In the regression, agriculture is the base sector, so that the sector coefficients represent differences relative to agriculture, and day of posting and country are controlled for. The sector coefficients, which correspond to the details of sector dummies from column (4) in Table 2, are reported in Table 3.

[10] A sixteenth category, Green, indicates if a project has environmental benefits. This category was not one of the original Kiva sectors, and is used only as a cross listing sector-no entrepreneurs are listed only as Green. None of the entrepreneurs in the data set are listed as "Green".

**Table 3. Sector coefficients**

| **Sector Dummy Variable Agriculture = Base Category** | **(1)** |
|---|---|
| Arts | -338.14* |
| | (94.68) |
| Clothing | 2368.43* |
| | (66.77) |
| Construction | 750.14* |
| | (101.26) |
| Education | -2170.09* |
| | (299.99) |
| Entertainment | -587.56 |
| | (459.77) |
| Food | 1088.41* |
| | (50.26) |
| Health | -1567.74* |
| | (150.09) |
| Housing | 1870.08* |
| | (128.90) |
| Manufacturing | -1210.44* |
| | (125.24) |
| Personal | 2599.13* |
| | (308.84) |
| Retail | 2197.55* |
| | (52.68) |
| Services | 621.30* |
| | (64.43) |
| Transportation | 1940.94* |
| | (94.10) |
| Wholesale | 1281.76* |
| | (235.62) |

* Significant at the 1% level.
** Significant at the 5% level.
*** Significant at the 10% level.

Controlling for other factors, the sector that raises funds the slowest is personal use, taking 2420 minutes longer to fund than the base sector, agriculture. Clothing, housing, and retail follow as the next slowest, all taking over 2000 minutes longer to fund, compared to the base sector. The personal use and housing sectors are of particular interest, as they contain loan requests for consumptive purposes, rather than business investments, as the remaining thirteen sectors. These represent two of the three least popular sectors of activity on Kiva.

Loans for personal use are sometimes requested for work on one's house, or consumption purposes such as paying for a wedding or other event. Housing loans are usually requested to remodel or finish a house, although the professional activity of the borrower is often mentioned to reassure lenders on where the money to repay will come from. Thus, housing and personal use loans do not always finance the small businesses that are the primary attraction of microcredit in developing countries. Lenders may perceive that by funding these loans, they are less likely to be repaid than when financing self-employment projects that will create revenue streams.

Furthermore, loans for sectors likely to have the lowest cost of entry fund faster, ceteris paribus, than others. Lenders may perceive that entrepreneurs engaged in industries with high cost of entry have had prior access to capital, which could imply that they are less credit constrained relative to entrepreneurs in activities with low entry costs, such as manufacturing, arts, and agriculture. Loans in the manufacturing sector funded 1210 minutes faster than agricultural loans. Meanwhile, loan in the arts sector were funded 338 minutes faster, on average, than loans in the base sector.

On Kiva, examples of loan use in manufacturing include shoe-making, furniture-making, and making wool clothing, mattresses or blankets. Specific activities in the arts sector include weaving, embroidery, and various handicrafts. Inputs for these activities can be acquired in varying increments, without a large initial investment in inventory or equipment. The image of these sectors may also contribute to lender's outreach motives. In other words, not only are these activities characterized by lower entry costs than retail and transportation, for example, but entrepreneurs in manufacturing and arts make the kind of crafts one often finds in fair trade stores. In addition, agriculture is often part of the poverty image used in development NGO advertising. [11]

Sectors requiring relatively large initial investments include clothing, retail, transportation, food, and wholesale. Clothing mainly refers to clothing sale, i.e. a specific subset of retail. Entrepreneurs who make clothes are advertised under the manufacturing or arts sectors. Clothing and other retail businesses involve shop owners requesting money to increase inventory. Wholesale primarily involves inventory purchases for resale to retail establishments.

[11] See www.worldvision.org for example.

In those sectors, the associated pictures often show the borrower in her shop, with inventory on the shelves or hangers. As a result, from a lender's point of view, such borrowers may appear less needy and capital constrained. Then, the impact of one's loan to poverty alleviation may seem lower than in other sectors.

Similarly, in the food sector, entrepreneurs often already own a restaurant or stall, and capital is requested to remodel the outlet or for inventory purchases.[12] In other cases, loans are requested to start a retail food business, an activity that requires larger fixed start up costs than say, agriculture or handicraft manufacturing. Lenders may infer that such activities are not undertaken by the poorest borrowers, and thus find that to contribute to poverty alleviation, money would be better put to use in sectors with low entry costs.

A similar intuition may apply to explain the much slower funding times of transportation loans, which fund 1940 minutes slower than requests for agriculture. Such loans typically cover repair expenses of a taxi or delivery vehicle, or the purchase of a vehicle for use in business or daily commuting to work. Again, pictures often show the entrepreneurs next to the vehicle, which may give the impression that they have easier access to capital in the first place, or are initially better off.

Loans in the construction or services sectors are made up of a mixture of enterprises. Controlling for other factors, loans in these sectors fund slower than low entry cost projects in manufacturing, arts, and agriculture, but faster than the projects just discussed requiring high costs of entry. This is due to the fact that these two sectors represent a mixture of enterprises, belonging to both high and low entry cost industries, or involve both slow funding entry cost levels and fast funding entry cost levels. This may explain why they end up in the middle in terms of relative funding speed between sectors.

Construction, for example, includes loan requests to fund the construction of rental rooms for factory workers, purchase of timber, inventory of timber/tools, workshop construction, and machine repair, all of which indicate high entry costs. On the other hand, purchasing mason tools, furniture making supplies, woodworking materials, and concrete block production all involve low entry costs. As a sector, therefore, construction represents a mixture of entry costs and therefore funds quicker than the low entry cost sectors, but slower

[12] Food production (raw) falls into the agriculture sector.

than sectors requiring high initial investments.

The services sector has a similar variety. This sector includes projects with high entry costs, such as internet cafés, auto repair, beauty salon, video game rental, photo copying, and photography. Services also encompass low cost of entry enterprises, such as cobbler services, tailoring/sewing, renting camping gear to tourists, and recycling. Construction and services therefore potentially average out to mid-range entry costs, and accordingly have mid-range funding speeds. [13]

Finally, the fastest raising sectors, ceteris paribus, are education and health, which respectively raised funds 2170 minutes and 1567 minutes faster than the base sector, agriculture. The third is entertainment. Like in other sectors, loans requested are income-generating opportunities for borrowers. However, lenders may also perceive them as contributing to the overall well being of communities. Education, health, and recreation are important aspects affecting quality of life and community cohesiveness. Kiva attracts lenders who seek to contribute to poverty alleviation by promoting capitalism and self-employment, and they may be particularly averse to moral hazard problems or to the government or bureaucratic provision of public goods.

Education typically refers to two types of loan use. First, for some borrowers, the project description says that the loan is requested to help pay for their children's school fees. Although the stated purpose of the loan is not business then, the professional occupation of the borrower is often mentioned, to give some reassurance that the loan can be paid pack. Second, education loans may be used to operate a school. In both cases, lenders support investments in the human capital of children. Thus, loans in this sector not only reflect a contribution to a local public good, they also support people who help others become more productive and self-reliant.

Similarly, since health loans are requested to finance a pharmacy business or a clinic, such enterprises provide communities with access to key inputs in fulfilling basic needs. As in the case of education loans, lenders support a local public good. Furthermore, with the prospect of repayment, lenders concerned about moral hazard can be further assured that education and

[13] It is difficult to determine the precise mixture of low and high entry cost ventures within these two sectors, and would require a per loan assessment by hand. The ambiguous results may be a direct reflection of lenders' mixed perceptions of the businesses within these sectors.

health are not provided by a business, and not as a handout.

A final example of public goods provision, loans requested for an "entertainment" business are found at least as popular (and even more popular in column (4)) than agriculture. Such loans involve running a video game center, organizing bingo nights, or the purchase of an instrument for an individual making a living in musical performance, playing at weddings and funerals, for example.

Loans benefiting the community in general, such as those in the education, health, and entertainment sectors, are not largely represented on Kiva, but they raise funds faster than all other sectors, ceteris paribus. It could be that the availability of education, health, and entertainment is viewed as important for the well-being of communities, and the popularity of these loans would then reflect a willingness to provide people not only with income earning opportunities, but a better quality of life overall. Thus, in addition to seeking repayment, the evidence presented above suggests that Kiva lenders consider poverty alleviation an important objective. For this, they seek poorer borrowers and sectors where a loan is more likely to make a difference.

### 3.3. Public Goods and Risk

The results on education, health and entertainment suggest a public good motive on the part of lenders, further reinforcing the interpretation that they make decisions partly out of altruism. However, these results may hide interaction effects with other variables, such as gender, group, risk and default. Looking at how the relative funding speeds of those sectors changes depending on these variables helps provide further insight into the preferences of Kiva lenders over poverty alleviation and likelihood of repayment. For this, education, health and entertainment are interacted with the dummies for group, low risk, and female. Day of posting and country dummies are included, as in the fourth column of Table 2. The corresponding interaction coefficients can be found in Table 4.

**Table 4. Public goods sectors**

| **Sector Dummy Variable Agriculture = Base Category** | **(1)** |
|---|---|
| Education*Group | -1553.26*** |
| | (927.83) |
| Education*Female | 1692.47** |
| | (667.50) |
| Education*Risk Rating | -1748.07* |
| | (613.05) |
| Education*Default | omitted |
| Health*Group | -3286.31* |
| | (438.20) |
| Health*Female | 1803.39* |
| | (324.04) |
| Health*Risk Rating | -571.89*** |
| | (324.93) |
| Health*Default | -63.32 |
| | (74.05) |
| Entertainment*Group | -215.07 |
| | (1828.92) |
| Entertainment*Female | 341.89 |
| | (1021.17) |
| Entertainment*Risk Rating | -855.06 |
| | (1200.75) |
| Entertainment*Default | -15.54 |
| | (179.77) |

* Significant at the 1% level.
** Significant at the 5% level.
*** Significant at the 10% level.

When these interaction terms are included in the regression, the estimated average difference in funding speed between education and agriculture accounts for risk, gender, and number of entrepreneurs.[14] The education advantage is higher for group loans, and also for low risk projects (defined as having a risk rating of 4 or 5 stars). However, it is smaller for women. It could be that in choosing women borrowers, lenders perceive that earned income is more likely to be spent on education in the household. For example, Pitt and Khandker (1997) find

[14] The interaction of education with default rate was omitted due to collinearity.

that household expenditure on education increases more when women are the microfinance program participants, compared to men. This could explain why the funding speed advantage of loans for education projects is smaller for women, thereby supporting the idea that loans to women fund faster partly due to altruistic motives, and not solely due to higher repayment rates.

This intuition is reinforced by similar results regarding the interaction effects of health with the variables for group, risk, gender and default. With the interaction terms, the estimated ceteris paribus advantage of health loans in terms of funding time accounts for repayment and altruistic motives. That is, similar to education, the advantage of health related projects is larger for group loans and those that are safer (rated lower risk, or from field partners with lower default rates), but smaller for loans to women. Lenders might expect women to spend more on items that benefit the household as a whole, including health. However, when funding loans to men, lenders concerned with poverty alleviation may value the additional guarantee that the project contributes to local public good provision.

Lastly, once interaction terms are included, none of the entertainment variables are statistically significant, although qualitatively, the results are similar to those for education and health discussed above. Following the interpretation of entertainment loans as contributing to communities' quality of life, this reinforces the intuition derived from interaction effects with education and health.

Kiva lenders' choices appear to reflect both a poverty alleviation motive and concern with repayment. The results shed light on the behavior individual lenders when they are given the choice between specific microloans. Given the non-professional, even recreational, nature of lending on Kiva, one may be concerned that lenders make decisions divergent from the goals of microfinance. The evidence presented in this paper suggests otherwise. Kiva lenders rationally make choices in a way that is consistent with the microfinance promise, outreach combined with financial sustainability.

## 4. Conclusion

This paper presents evidence on how individual lenders choose between borrowers, and how lenders' preferences relate to the objectives of the microfinance sector. Using data from Kiva.org, we present estimates of the impact of publicly visible project characteristics on

funding speed. Results suggest that Kiva lenders rationally consider indicators of the likelihood of repayment as well as borrowers' need. Thus, although project selection by non-professional individual lenders could largely operate under principles far remote from the goals of development practitioners, the results of this paper suggest otherwise. Kiva lenders' choices are consistent with the microfinance promise that is, a combination of poverty alleviation with financial sustainability.

The analysis provides insights to help understand charitable behavior more generally. With the rise of P2P development finance, individual donors are given an increasing influence on the allocation of aid between specific projects. The present paper contributes to understanding the donor/lender side of the P2P market. This is important because individual funders' agendas and preferences, much like those of institutional donors, may in turn shape the behavior of NGOs using the new generation of online fundraising tools.

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