Social identity in online microfinance: A field experiment at Kiva

Roy Chen¹, Yan Chen², Yang Liu², Qiaozhu Mei²

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Kiva.org: 1st peer-to-peer microfinance site
Kiva Statistics (as of May 2012)

- Users lend to entrepreneurs in developing countries (recently added US student loans and Kiva Cities).
- Zero-interest, $25 and up.
- **Kiva Lenders**
  - 1,182,424 lenders: 765,453 of which have loaned
  - $313,973,925 loaned
- **Kiva borrowers**
  - 784,045 borrowers
  - 98.95% repayment rate
How Kiva Works

• Borrower screening
  – Partner with local microfinance institutions
  – Pre-screen borrowers
• Loan request posted on Kiva website for one month
• Anyone can make a loan towards the borrower
• Loan expires if not fulfilled within a month
Growth of Loans on Kiva

Last 6-9 months: more expired loans, need more lending activities
Distribution of Number of Loans

Few lenders made many loans; many lenders made few loans.

How do we increase lender participation?
Kiva Lending Teams

- Lending teams created in August 2008
  - 22,626 lending teams
  - Heterogeneity among teams

- Why lending teams?
  - Premal Shah: make Kiva “as fun and compelling as possible”
  - Atheist team captain: “The whole idea of teams in the Kiva context implies there should be competition.”
Kiva Lending Team: Atheists, Agnostics, Skeptics, Freethinkers, Secular Humanists and the Non-Religious
A Common Interest team on Kiva.org since Aug 26, 2008

Summary · Loans · Members · Goalsbeta · Graphsbeta

Location: Earth
Category: Common interest
Team URL: http://www.kiva.org/team/atheists
We loan because: We care about the suffering of human beings.
About us: Those of us who know we are one human family.
**New to the team? Read this: is.gd/51mxq
** FriendFeed: friendfeed.com/rooms/aasfhnr
** Facebook Group: is.gd/bzMJ
Check out: http://atheist-monkey.blogspot.com/
Team Since: Aug 26, 2008

Kiva Lending Team: Kiva Christians
A Friends team on Kiva.org since Aug 31, 2008

Summary · Loans · Members · Goalsbeta · Graphsbeta

Location: Worldwide
Category: Friends
Team URL: http://www.kiva.org/team/christians
We loan because: Pure and undefiled religion before God the Father is this: to care for orphans and widows in their misfortune and to keep oneself unstained by the world. (Jas 1:27)
About us: A group of believers in Jesus Christ, brought together through a common purpose: to help those in need around the world.
Check out: http://whoisjesus-really.com/
Team Since: Aug 31, 2008
Kiva Lending Team: **Crazy Canucks**

**Summary**

- **Location:** Canada
- **Category:** Local Area
- **Team URL:** [http://www.kiva.org/team/crazy_canucks](http://www.kiva.org/team/crazy_canucks)
- **We loan**
  - We live in a well-to-do nation and want to help those less fortunate than ourselves
- **About us:** We are CANADIAN !!!
- **Team Since:** Aug 28, 2008

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Kiva Lending Team: **University of Michigan Alumni and Current Students**

**Summary**

- **Location:** Ann Arbor, Michigan and worldwide
- **Category:** Alumni Groups
- **Team URL:** [http://www.kiva.org/team/umalumnistudents](http://www.kiva.org/team/umalumnistudents)
- **We loan**
  - It's important to try to make a difference when and where you can.
- **About us:** Kiva lenders with ties to the University of Michigan.
- **Team Since:** Sep 1, 2008
Microfinance Literature

- Mostly focused on the borrower side
  - Armendariz and Morduch (2010) and many more
- Lender side
  - Lender bias: Jenq, Pan and Theseir (2012)
  - Sensitivity of giving to transaction costs: Meer and Rigbi (2011)
  - Observation of 120 teams: Hartley (2010)
  - Effect of lending teams:
    Chen, Chen, Liu and Mei (2012)
Why do lenders make zero-interest loans?

- Social preference
  - Altruism
  - Generalized reciprocity
  - Inequity averse
- Efficacy
- Other reasons?
“I Loan Because …”
Understanding Motivations for Pro-Social Lending

Yang Liu, Roy Chen, Yan Chen, Qiaozhu Mei, Suzy Salib

WSDM’12
Motivation Statement

- An option to fill when registered on Kiva
- About 100,000 users articulate their lending motivations
Categories of Motivations

1. **General altruism:**
   - e.g., “I believe in a global community.”

2. **Group-specific altruism:**
   - e.g., “I want to help women succeed in business and in life.”

3. **Empathy:**
   - e.g., “I am disabled and I know what it’s like to feel helpless.”

4. **Reciprocity:**
   - e.g., “I am very fortunate to have several people in my life to lend me a hand when I needed help. I hope that I can do the same for someone.”

5. **Equality and social safety net:**
   - e.g., “I want to help others who are less fortunate. Everyone deserves a fair chance.”
More Categories of Motivations

6. Social responsibility and social norms:
   – e.g., “I have the ability and I’m lucky enough to be able to.”

7. Effective development tool:
   – e.g., “I believe in change through bottom-up initiatives and sustainable business models.”

8. Personal satisfaction
   – e.g., “It makes my heart smile.”

9. Religious duty:
   – e.g., “I believe that sometimes God works thru people to answer prayers. What a privilege!”

10. External reasons:
    – e.g., “It’s for a community service project at my university.”
Human Coding

- 21 coders, randomly divided into 7 groups
- 4,510 statements randomly selected and coded
- Each statement coded by 3 independent coders
- Incentivized coding
  - bonus for matching the “truth”
- Inter-rater reliability
  - Intraclass Correlation Coefficients (ICC): 0.4-0.8
Distribution of Human-Coded Motivation Statements

- General Altruism
- Group Altruism
- Empathy
- Reciprocity
- Equality
- Norms
- Tool
- Satisfaction
- Religious
- External

The chart illustrates the distribution of human-coded motivation statements across various categories, with "General Altruism" having the highest number of statements.
 Regression Analysis – Loan Per Month

<table>
<thead>
<tr>
<th>Ten categories of motivation</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gnl. Altruism</td>
<td>-0.12***</td>
</tr>
<tr>
<td>Grp. Altruism</td>
<td>-0.14**</td>
</tr>
<tr>
<td>Tool</td>
<td>0.19***</td>
</tr>
<tr>
<td>Religious</td>
<td>0.27***</td>
</tr>
<tr>
<td>External</td>
<td>-0.26***</td>
</tr>
<tr>
<td>&gt;=1 Team</td>
<td></td>
</tr>
<tr>
<td># Teams</td>
<td>E f f e c t o f</td>
</tr>
<tr>
<td>1 Team</td>
<td>J o i n i n g</td>
</tr>
<tr>
<td>2 Teams</td>
<td>T e a m s</td>
</tr>
<tr>
<td>Constant</td>
<td>0.64***</td>
</tr>
<tr>
<td># Obs.</td>
<td>100240</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Significant at the: *** 1%, ** 5%, or * 10% level
Insights from Regression Analysis

• **Gift card doesn’t work**
  – lenders motivated by external reasons (e.g., a Kiva gift card) make fewer loans

• **Religious identity is salient**
  – lenders motivated by religious duty makes 0.27 more loans per month

• **Joining team helps**
  – lenders belonging to any team(s) make 0.78 more loans per month.
  – What is the team effect? Selection bias?
  – Why?
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Research Questions

Observation: many Kiva lending teams are identity-based teams

- Does joining a team increase lending?
  - Empirical analysis
- If so, why? What makes a team effective?
  - Empirical analysis
  - Field experiment
**Kiva Data**

- **API**: public Kiva data
- **Categorization**: coders hired to code gender/group type, occupation, motivation for lending
- **Locations**: country from API, city and state/province from free text
- **Team forums**: we join 2000 randomly selected open teams to access forums
Homophily: Location Similarity Measure

- Hierarchical Network Model (Watts et al. 2002)
- Lender-lender similarity is the level of the closest common parent node
- Lender-team similarity is the average of the lender-lender similarities in a team
Location Similarity vs. Team Ranking

- Nonparametric analysis
- Lenders are (locationally and motivationally) more similar to ingroup than to outgroup members (p < 0.01, two-sided signed-rank tests)
- Lenders more often join teams with higher lending ranks than higher similarity ranks (p < 0.01, two-sided signed-rank tests)
Does joining a team increase lending?
Econometric Model: 2SLS IV Regression

- Econometric model:

\[ \text{average loans}_i = \beta_0 \cdot \text{constant} + \beta_1 \cdot \text{joined team}_i + B \cdot \text{Demographics}_i + \epsilon_i \]

- \text{joined team}_i is endogenous (correlated with } \epsilon_i. \text{ Level of engagement on Kiva is correlated with both } \text{joined team}_i \text{ and } \text{average loans}_i\)

- Use instrumental variable: Lender-team location similarity to most similar team (regardless of whether lender has joined that team)
Instrumental Variables Regressions

Joining a team increases the number of loans given per day by 0.06, or 1.8 loans (at least $45) per month.

<table>
<thead>
<tr>
<th></th>
<th>First Stage: Joined Team</th>
<th>Second Stage: Average Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(1)</strong></td>
<td><strong>(2)</strong></td>
<td><strong>(3)</strong></td>
</tr>
<tr>
<td><strong>Joined Team</strong></td>
<td></td>
<td>0.0598***</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.013)</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>0.0548***</td>
<td>0.0329***</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.002)</td>
</tr>
<tr>
<td><strong>Similarity</strong></td>
<td></td>
<td>0.1101***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.012)</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>-0.0365***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Entertainment</strong></td>
<td>-0.0110*</td>
<td>-0.0027**</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.001)</td>
</tr>
</tbody>
</table>
Why does joining a team lead to more lending?

- **Forums**: we explore various aspects of team forums and how they relate to lending
  - Engagement
  - Coordination
  - Group language
- **Leaderboard**: we explore whether teams whose rankings are threatened lend more
Forums: 2,000 randomly selected open teams

- Engagement: proportion of lenders who post and the number of posts per lender
- Coordination: number of links to loans that users post in the forums
- Group language: number of instances of plural pronouns (we, us, they, them, our, their) vs. singular pronouns (I, me, she, her, he, him, it, my)
Coordination: Forums (OLS)

Each additional link is correlated with an increase of 0.006 loans per day, 0.2 loans per month per lender.
Competition: Team Rank (Fixed-Effects)

Table 5: Fixed-Effects Regression: Team Loans

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable: Number of Loans per Month</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Loans (Lagged)</td>
<td>0.8139***</td>
<td>0.8016***</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Rank Change</td>
<td>0.0004***</td>
<td>0.1848**</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.087)</td>
</tr>
<tr>
<td>Loan Difference Change (Above)</td>
<td>-0.0027***</td>
<td>-0.0009</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Loan Difference Change (Below)</td>
<td>-0.0138***</td>
<td>-0.0130***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Rank Change × Loan Difference Change (Above)</td>
<td>0.0032***</td>
<td>-0.0005</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Rank Change × Loan Difference Change (Below)</td>
<td>0.0004***</td>
<td>0.0184***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Constant</td>
<td>2.7840***</td>
<td>79.3030***</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(5.005)</td>
</tr>
<tr>
<td>Observations</td>
<td>892,880</td>
<td>3,080</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.638</td>
<td>0.679</td>
</tr>
</tbody>
</table>

Note: Significant at the * 10%, ** 5%, and *** 1% levels.

Teams care about both maintaining and improving rank; Top teams (2) respond more strongly to rank changes. 31
Team Selection

- Randomly selected 2,000 open teams
- Drop teams with less than 5 members: 550 teams
- Randomly assign the 550 teams to treatments and control
  - Average team size: 46.7
# Experimental Design: 2*2 Factorial

## Coordination

<table>
<thead>
<tr>
<th>Competition</th>
<th>No Link</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No Goal</strong></td>
<td>new lender introduction (110 teams)</td>
<td>new lender introduction + url to a loan (110 teams)</td>
</tr>
<tr>
<td><strong>Goal</strong></td>
<td>new lender introduction + goal setting (110 teams)</td>
<td>new lender introduction + url to a loan + goal setting (110 teams)</td>
</tr>
</tbody>
</table>

**Control:** new lender joins a team, make a loan and credit it to team, no comments
New Lender Identities

• Created 50 new lenders
  – Names: top 25 most popular male and female first names, top 50 most popular last names based on 1990 census
  – Location: capital city of each state
  – No occupation information or pictures
  – Randomly match names and locations
• Each lender joins 10 teams
• Each will make a loan assigned to each team
• Informed Kiva about experimental lenders
Experimental Conditions

- **Control:**
  join a team, make a $25 loan, credit to team, but leave no forum message

- **NoGoal-NoLink:**
  control actions + an introduction
  “Hi, I am [FirstName], and I am new to the team. I just credited my first loan to the team.”
Experimental Conditions

- **Link-NoGoal**: introduction +
  “I loaned to Hranush from Armenia. She requested a loan of $3,000 to help her purchase wheat to feed the livestock. Here is the link to her request: [http://www.kiva.org/lend/470174](http://www.kiva.org/lend/470174).”

- **Goal-NoLink**: introduction +
  “If each of us make a $25 loan in the next month, we will improve our rank.”

- **Goal-Link**
Result: Forum messages induce significantly higher lending activities than the control.
Result: Coordination and competition together significantly increases lending compared to the control

- Goal alone and link alone are never significant at the 5% level.
- **Goal + Link:** significant at the 1% level.
  - 0.4045 extra loans per day for the average team
  - 12 extra loans per month for the average team (46.7 members).
- Panel regression or diff-in-diff
Summary

- Team competition increases lending:
  Lenders who join teams lend substantially more: 1.8 loans (at least $45) per month

- How?
  - Forum messages significantly increases lending
  - Coordination and goal setting together increases team lending levels