



Channel structure and funder incentive in prosocial crowdfunding

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Abstract

Prosocial crowdfunding relies on funders' altruistic contribution to sustain. The channel structure of platforms may affect funders' altruistic incentives. It is critical to understand how funders choose different channels, direct vs. intermediated, and how the co-existence of the two channels affect funders' contribution. Our study builds a theoretical framework based on theories of altruism to understand funders' incentives, including pure altruism, warm glow, and reputation. The framework helps us to explicate funders' incentives for choosing between channels and predict potential changes in funder contribution after the introduction of the direct channel. Using data from Kiva.org and the unique setup of a natural experiment, we find that funders with high level of pure altruism are more likely to select the direct channel. We also find that the introduction of the new direct channel stimulates instead of cannibalizing contribution on the intermediated channel. It suggests that the direct channel segments riskier projects and meets the needs of pure altruists, while the intermediated channel promotes contribution to less risky projects with increased publicity. The market segments have a positive impact on the total contribution. We discuss the theoretical and practical implications of our findings.

Keywords Prosocial crowdfunding · Channel choice · Intermediaries · Peer-to-peer · Altruism · Spill-over effect

1 Introduction

The past decade has witnessed the proliferation of platform businesses. From the earliest e-commerce platforms that matches sellers and buyers (e.g., eBay, Taobao) to recent sharing platforms that democratizes resource allocation (e.g., Uber, Airbnb), online platforms have been profoundly changing how businesses operate and organize. Among them, crowdfunding platforms help people to raise funds from multitudinous individuals through the Internet for their projects, ventures, or personal needs. The innovative business model makes it possible to serve financial needs that are otherwise underserved by traditional financial institutions and give more people access to financial services (e.g., [1]).

Prosocial crowdfunding platforms, where people in poverty raise funds for their self-development projects from prosocial lenders, provide an innovative channel for inclusive finance [2]. On general crowdfunding platforms, fund receivers and givers identify each other on the platform and make peer-to-peer direct transactions. From the funder's perspective, they know that the money goes directly to the people they would like to help.

However, this peer-to-peer structure is rather challenging for prosocial crowdfunding platforms. It is difficult to reach target borrowers and to accumulate a critical mass of projects to grow. The underprivileged is often lack of basic financial infrastructure, Internet access or literacy to present themselves and execute transactions online. Thus, some platforms partner with local organizations to reach target borrowers and facilitate the funding process. Local organizations play an intermediate role. Most such local organizations are microfinance institutions (MFIs), which have been handling microloans to the poor in the past several decades [3, 4]. MFIs raise money from various sources, vet borrowers and projects, disburse loans, monitor project progress, and supervise repayments. They help the platform to identify borrowers and present projects on platforms. When funders contribute to a project, the money goes to the

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sponsoring organization, which disburses and manages the loan afterwards.

While the intermediated structure helps the platform to reach more borrowers and projects and to better manage loans, there is controversy about the cost for borrowers. For instance, on the largest prosocial crowdfunding platform, Kiva.org, neither Kiva nor lenders charge interest rate, while MFIs continue to charge borrowers for interests. Due to the high risk and cost nature of poverty projects, the interest rate charge by MFIs is considerably higher than traditional banking, in the range from 20% to more than 50% [3, 4]. It seems that MFIs are taking advantage of free money from funders. From funders' perspective, there is an intermediary under the guise of a peer-to-peer platform.

Different platform structures, peer-to-peer vs. intermediated, may affect how funders and borrowers participate on the platform. Which structure would funders prefer? How would they make contributions to different channels when both choices are presented? As funder participation is critical to the sustainability of prosocial platforms, we examine the behaviors of funders under the two different platform structures in this study. We draw on the theories of altruism to describe funders' incentives to contribute. We argue that they are motivated with a mix of "pure altruism", the sole care for others' welfare, and "warm glow", the utility they derive for themselves from the altruistic action per se. We explicate funders' incentives under two channel structures and consequently their channel choices. We then explore the changes in funders' contribution when the direct channel is introduced. Using data from Kiva.org in a natural experiment setup, we find that funders with higher level of pure altruism are more likely to choose direct channel. Interestingly, we do not observe shift of contribution from the intermediated channel to direct channel. Instead, we identify a positive spillover effect that the contribution to the intermediated channel channels increases after the introduction of the new channel.

The rest of the paper is organized as follows. In Sect. 2, we discuss related literature. We then develop the theoretical arguments in Sect. 3. Section 4 describes the research context and data. The empirical analysis and results are discussed in Sect. 5. Finally, we conclude in Sect. 6 with a discussion of theoretical and practical implications.

2 Literature review

Our study is related to two streams of research. First is the literature on crowdfunding. The extant literature on crowdfunding has been mainly focusing on the factors that may affect funding performance. Some studies investigate the role of borrowers' social connections in funding performance (e.g., [5–8]). For instance, Lin et al. [5] found that

a borrower's friendship status can serve as signal of credit quality. Their results show that borrowers with friends are more likely to get successful funding with lower interest rates *ex ante* and default less *ex post*. Zheng et al. [7] found that an entrepreneur's social connections have significant positive impact on crowdfunding performance and the impact is even more significant in China market. Mollick [6] demonstrated that the number of Facebook friends affects funding success. Liu et al. [8] offered a more comprehensive discussion of the role of friendship. They distinguished three ways friendship may affect lending decisions. In particular, they found that friends are more likely to lend to friends, but funding from friends may crowd out third party's contribution.

Some studies examine the impact of information disclosure on funding and repayment performance (e.g., [9–12]). For instance, Herzenstein et al. [10] found that the number of identities claimed in the borrower's narrative is associated with positive funding outcomes, but negatively with repayment performance. Burch et al. [11, 12] showed that funders concealing their identity and contribution information affect subsequent contributions. There is also discussion about how the difference between borrowers and funders affects funding performance [13–15]. Lin and Viswanathan [15] confirmed that transactions are more likely to happen between borrowers and lenders who are geographically closer to each other. Agrawal et al. [13] also provide evidence of the impact of physical distance between borrowers and funders.

Several papers investigated prosocial platforms (e.g., [14, 16, 17]). For instance, Burtch et al. [17] examined the impact of cultural and geographical distance between borrowers and funders on Kiva and found that funders prefer borrowers who share similarity with themselves in terms of location or cultural background. Galak et al. [14] demonstrated with Kiva data that funders tend to choose borrowers who socially resemble themselves, in terms of gender, occupation, or first name initial.

While the extant research on crowdfunding has provided rich insights on individual and informational features of borrowers or funders, our study extends the literature in the following aspects. First, we turn to platform structure design and examine how the channel structure of crowdfunding platforms affects funding behavior. Second, our study takes an in-depth analysis of the altruistic motives of prosocial funders, as economic returns are not present. Research has confirmed their altruistic nature to contribute (e.g., [17]) but lacks theoretical understanding of such motivations. Our study will bridge the gap with economic and sociologic theories on altruism.

The study is also related to the literature on cross-channel competition and platform provision. The extant research on cross-channel competition is mainly in the context of online

retailing. It has documented how online channel affects the sales of the traditional channel (e.g., [18–20]). Our research extends the cross-channel literature to the context of crowdfunding and has the advantage to establish causal effect of channel cannibalization or stimulation. The literature on platform provision studies channel provision as a strategic choice. An example phenomenon is that Amazon plays the role of reseller (resell products from upstream suppliers under the Amazon store name) as well as platform provider (a marketplace for suppliers to sell directly to buyers). For instance, Hagi and Wright [21] developed a theory of which channel should be selected for which type of products. For instance, if the marketing effort can create spillovers across products, the retailer should shift to reseller channel. Kwark et al. [22] showed that the retailer can use channel choice as a strategic tool to benefit from third-party information. Our study investigates the impact of provision of a platform channel on user behavior and may enrich our understanding of whether or how to introduce such channels to sustain the platform.

3 Theoretical development

3.1 Funders' altruistic incentives and channel choice

Funders contribute on prosocial crowdfunding platforms are not motivated by economic returns. They are altruistic, helping others with their own money. Thus, we draw on theories of altruism to understand their motives. The discussion of altruism started with “pure altruism”: individuals contribute to public goods or others because they have sole interest in others' welfare [23]. They simply care about the total supply of public goods [24, 25]. For example, funders may contribute because they care about borrowers' interest and the supply of funds to borrowers. From this perspective, individuals' contributions can be completely crowd-out by other sources of contributions (e.g., other funders' contributions and government funding). Later researchers (e.g., [26, 27]) put forward that empirical evidence exists that contradicts the complete crowd-out (e.g., people still make donations while there are government donations). They argued that people contribute not only because they care about others, but also derive utility from the act of giving, a feeling of “warm glow” for doing something good. Factors that affect people's feelings of “warm glow”, e.g., heart-moving stories of donation recipients, may affect their contributions. More recently, some studies propose the concept of competitive altruism or image motivation (e.g., [28, 29]). It argues that people can gain utility from the publicity of their prosocial behavior and desire to gain social approval by being prosocial (e.g., making donations and contributions).

While researchers are yet to settle on which type of motive should be the true motive (e.g., [30–32]), we intend to consider that all three types of motives could present. Depending on the context, one motive may play a larger role than the others. For instance, Ottoni-Wilhelm et al. [33] found that when the level of others' contribution is relatively low, prosocial contributions are motivated more by pure altruism while warm glow may dominate when the level of others' contribution is relatively high. If prestige/reputation is one of the dominant sources of motives, publicity of their prosocial (e.g., publicly announcing award of blood donation) can motivate people to contribute more to prosocial causes. In contrast, if pure altruism or warm glow is the dominant motive, publicity of people's prosocial contribution may not change their contributions [34].

In the context of prosocial crowdfunding, we expect all three motives to exhibit. First, there are many other crowdfunding platforms for people to support various projects for financial returns. Choosing to making contributions on prosocial crowdfunding platforms with no monetary rewards, altruism, no matter pure or warm glow, must be an important motive. Second, we may observe factors that prime different levels of warm glow. For instance, projects/loans with different features (e.g., types, locations) or presented in different styles may affect how people feel about giving help. For example, rhetorical content is more likely to encourage the support for borrowers [35] and individual borrowers are more likely to evoke a stronger emotional response compared to group borrowers [14]. Third, the platform develops various publicity mechanisms to encourage competitive altruism. Each member's contribution records are observable on their page and the page of every loan that they support. There is a leaderboard to show top donor teams of the week. Therefore, funders are likely to contribute for all the three reasons: they have an interest in the welfare of borrowers, feel the “warm glow” of doing something good and are in pursuit of reputation.

The strength of the motives may vary under two different platform structures. We first explain the differences between the two structures using the development on Kiva.org as an example. Kiva is the largest prosocial crowdfunding platform (e.g., [14, 16, 17]). Over the years, Kiva has helped more than 4.5 million borrowers in 77 countries, raising \$1.8 billion of loans from more than 2.1 million funders worldwide (as of October 2022). Kiva has been relying on local MFI organizations and using the intermediated structure since its start in 2005. In 2012, under the pressure from the criticism of the high interest rate charged by MFIs, Kiva launched a new channel, Kiva Zip, offering true interest-free funding for borrowers directly from funders. Kiva Zip bypasses MFIs and funds are transferred between funders and borrowers via the Internet or mobile phones. Kiva Zip only supports borrowers from the US or Kenya because they

have easy access to financial transactions. Kenya's mobile money M-Pesa allows anyone with a Kenya ID and a mobile phone to deposit, withdraw, and transfer money, making direct disbursement from the platform possible.¹ There is no MFIs, and a borrower only needs an endorsement from a Kiva-recognized third party, which nevertheless is not obligated to any responsibility for the loan.

From funders' point-of-view, both channels appear as project-based crowdfunding. However, they are different in several aspects (hereafter we will refer them as Kiva and Zip, respectively). First, borrowers pay for interests, an average rate of 34.65% on Kiva vs. zero on Zip. Second, Zip borrowers are supposed to take full responsibility for their loans, managing the whole process of fundraising and repayment, while Kiva MFI intermediaries take on the job. Third, intermediaries may mitigate risk and take responsibility for loans and thus have better performance of loan repayment. As we observed, Kiva loans have a repayment rate higher than 99%, while Zip's repayment rate was 87.9% when we collected our data.²

The differences may affect funders' altruistic incentive and thus their channel choice. First, zero interest rate on Zip makes significant difference from 20–50% interest rate on Kiva for the poor. Zip increases the welfare of borrowers and thus the utility funders gain from pure altruism. In addition, the total supply to Zip is significantly lower than Kiva. Funders with pure altruism have the incentive to increase the supply to Zip borrowers. Second, the higher risk of Zip indicates a lower repayment rate. Less money to lend would decrease a funder's capability to continuously fund new projects. While this may have some small impacts on the total supply of funds, it directly affects the warm glow a funder can derive from giving. Third, Zip is a much smaller new platform and there is no reputation publicity design as on Kiva, the reputation effect is smaller than the intermediated Kiva. In summary, Zip may give less incentive for funders who are motivated with warm glow and publicity competition, but more incentive for funders with pure altruism. Therefore, funders who are strongly motivated with pure altruism would choose Zip over Kiva.

3.2 Changes in funders' contribution

In addition to individual choice, we examine how funders' contribution changes on the platform level when the direct channel is introduced. The new channel changes the market

structure of the platform. It creates market segments for borrowers. Intermediaries could bear risks for borrowers by pre-disbursing loans and for funders by paying back defaulted loans from its own reserve. They would be selective with projects to avoid high risks; low-quality projects may not have the chance to go on Kiva through intermediaries. Zip, on the other hand, has no screening and funders have much less access to information about borrowers or loans than local intermediaries. Low-quality projects may be attracted to this channel. Zip is a riskier market than Kiva.

With the new market segments, funders' contribution on the intermediated Kiva channel may change. We may make the analogy of manufacturer direct sale channel, e.g., Nike online store vs. online retailers such as Amazon or Walmart. The literature has documented both positive and negative spillover impacts of a new channel. Some empirical evidence shows that sales in online channel may cause negative impact on the traditional channel sales because the new channel cannibalizes demand from the traditional channel (e.g., [19, 20]). There are also studies suggesting positive spillover impact of a new channel (e.g., [18]) in the movie or music industry because of the spreading of word-of-mouth from online to offline.

Zip may cannibalize or stimulate contribution on Kiva. On one hand, contributing on Zip gains different utility from contributing on Kiva. Zip meets the need of people who care most about borrower's welfare. They believe that making contribution on Zip can directly benefit the poor more than through intermediaries because they do not need to pay for the high interest rate. When their pure altruism exceeds the need for warm glow or publicity, they would shift contribution from Kiva to Zip. On the other hand, the expected risk of Kiva projects decreases as low-quality projects may have been segmented to Zip. There is higher chance to get repayments and to help more people. The utility of warm glow is likely to increase. Also, the introduction of Zip increases the awareness of US and Kenya loans and increases publicity of funders to more people. The utility from publicity increases. Therefore, when the utility of warm glow and publicity exceeds the disutility from higher interest rate, funders may still contribute on the intermediated channel or even stimulate more contribution. In summary, depending on funders' pure altruism level, we may see either cannibalization or stimulation in their contribution on Kiva.

4 Empirical methodology

4.1 Research context and data

We leverage the natural experiment setup on Kiva.org to empirically test our projections. Kiva has used the intermediated structure since 2015. In September of 2012, Kiva

¹ The Zip Kenya program was shut down in 2015. It might be interesting to investigate whether the channel was not sustainable.

² Zip soon stopped announcing this repayment rate and never disclosed repayment information of individual loans as Kiva. When we contacted them for details, they mentioned that it was their policy not to disclose the information.

officially launched Kiva Zip and entirely opened access to all funders. In contrast to Kiva, Zip works as a direct channel that is dedicated to funding zero-interest loans. The introduction of Zip is an exogenous event thus provides natural experiments to examine the impact of the direct channel.

We obtained data from both Kiva and Zip websites. Kiva data contains all the loans on Kiva since its launch in 2005 until 1st June 2014. There are a total of 670,865 loans during this period. For each loan, we have information about target funding amount, country, loan term, group or individual borrower, category, and the list of funders, etc. The information of funders is limited—we know registered name, date of joining, and funding activities that can be derived from loan data. For each field partner, i.e., the intermediary organization, we have the information about total number of loans, average interest rate, risk rating, and average loan term, etc. Zip data contains all Zip loans from September 2012 until 1st June 2014. There are a total of 3,021 loans during the period. Information of loans and members is similar to those of Kiva. As Zip only provides the US and Kenya loans, when only includes loans from the US and Kenya on Kiva to make funder behaviors comparable.

We then constructed two datasets from the original data. First, to examine funders' channel choice, we created a funder-level dataset that contains all funders that have made contributions on Kiva. There are a total of 253,331 Kiva funders in our sample. Among them, there are funders who choose to join Zip (Zip funder) (8963 funders, 3.5%) and funders who do not join Zip (non-Zip funder) (244,368 funders, 96.5%). We generate a portfolio for each funder based on their funding activities. The second dataset is a panel dataset recording each funder's contribution over the months. By comparing their contributions before and after Zip, we can track the changes in contributions after the introduction of Zip.

4.2 Funders' channel choice

We propose that the level of pure altruism affect funders' channel choice. As pure altruism is something difficult to measure, we discuss indicators that may suggest their level of altruism to derive testable results. We infer their level of altruism from their loan portfolio before Zip was introduced. First, we consider the average interest rate of a funder's loan portfolio. MFI literature has suggested interest rate as an important factor that affects borrowers' welfare [36, 37]. More altruistic funders would have a portfolio with lower average interest rate. With funder and field partner data, we construct the variable *Average Interest Rate*. Since the interest rate charged by field partners for each loan is unobservable, we used the average interest rate of the field partner who posted the loan and calculated the weighted average of loans' interest rate of each funder. Second, a funder is

Table 1 Summary statistics of variables

Variables	Obs	Mean	Std. Dev	Min	Max
Joined Zip or Not	253,331	0.0354	0.1847	0	1
Average interest rate	253,331	0.3599	0.1090	0.0330	1.0900
Average loan amount	253,331	1384	192	50	27,550
Percentage of Group Loan	253,331	0.0848	0.1873	0	1
Kenya/US or Not	253,331	0.5867	0.4924	0	1
Home bias	253,331	0.0182	0.1064	0	1

more altruistic if she cares more about supporting poorer people than avoiding risks. We use two risk indicators: loan amount—the larger the amount, the higher the risk; and whether it is a group loan, which is considered less risky than individual loans [3, 38]. The loan portfolio of a more altruistic funder should contain more risky loans, i.e., individual loans and loans with larger amount.

Table 1 presents the summary statistics of variables used in our analysis and Table 2 provides the correlation matrix. Around 3 percent of funders chose to join Zip. The average interest rate of their portfolio ranges from 3.3 to 109%, with a mean of 36%. The percentage of group loans in their portfolio is in general not high (8.48% on average) but covers a wide range (0 to 100%). We also develop several control variables. The variable, '*Kenya/US or Not*' indicates whether the funder ever contributed to Kenya or US loans before Zip introduction. If they did, they might be paying more attention to Zip than others. It shows that more than 50% (58.67%) of funders have contributed to Kenya or US loans on Kiva. The *Home bias* variable is to control the tendency that funders are more likely to contribute to borrowers who are geographically closer to them (e.g., in the same country) [15]. We calculate the percentage of funders' contributions to borrowers in the same country as themselves. On average, around 2 percent of funders' contributions are made for borrowers from their own country.

4.3 Empirical model and results

We use the following empirical model to estimate how altruistic indicators affect a funder's likelihood to adopt Zip channel (Eq. 1). Control variables include whether the funder has made loans to US or Kenya before and home bias.

$$\log \frac{\Pr(\text{OnZip})}{1 - \Pr(\text{OnZip})} = \beta_0 + \beta_1 \text{InterestRate}_i + \beta_2 \text{Amount}_i + \beta_3 \text{GroupLoan}_i + \text{ControlVar}_i + \varepsilon_i \tag{1}$$

where *i* indicates funder *i*. *InterestRate_i* is the *Average Interest Rate* variable, *Amount_i* and *GroupLoan_i* are *Average Loan*

Table 2 Correlation Matrix

	Average interest rate	Ln(Average Loan Amount)	Percentage of group loan	Kenya/US or not	Home bias
Average interest rate	1.0	–	–	–	–
Ln(Average loan amount)	0.0424	1.0	–	–	–
Percentage of group loan	0.1575	0.3026	1.0	–	–
Kenya/US or not	0.0168	0.0549	-0.0197	1.0	–
Home bias	-0.1701	0.2719	-0.0399	0.1162	1.0

Amount and Average Loan Amount (natural log of) of funder i 's portfolio. $ControlVar_i$ are control variables and ϵ_i is an error term.

The results are presented in Table 2. Column 1 in Table 2 presents the result without control variables. Columns 2 and 3 in Table 3 report the results with the indicator of experience of US/Kenya loans as control variable and with all control variables, respectively. As shown, funder with a loan portfolio of lower average interest rate, larger loan amount, and lower percentage of group loans are more likely to join Zip. The results confirm our expectation that funders who care more about borrowers' welfare and make less calculated funding decisions based on risks are more likely to become Zip funders.

4.4 Changes in funders' contribution on Kiva

As an exogenous shock, the behavior change of funders can be viewed as the causal results of the introduction of Zip channel. We can compare the contribution of funders before and after the introduction to identify the changes. Zip was launched in September 2012. To make the before-after contribution comparable and give funders time to adjust to the new channel, we choose a six-month period, March 2012 to August 2012 as the before period, which is followed by a 6-month transition period, and March 2013 to August 2013 as the after period. Figure 1 provides a graphical depiction of the timeline. A binary variable is created to indicate whether the period is before or after the event.

In the final dataset, we have each month's funding activities of funders who joined Zip (Zip funders) in the before and after periods on Kiva. Figure 2 shows the trend of contribution made by Zip funders on Kiva before and after the introduction of Zip. After the introduction of Zip, Zip funders' contribution on Kiva (for both US and Kenya loans) presents an increasing trend. Table 4 gives more details in descriptive statistics for Zip funders' contribution before and after Zip. The results of the t-test show consistent results: Zip funders contribute more on Kiva after Zip. Table 5 presents the summary statistics of variables used in the funder contribution's analysis.

Table 3 Choice of Zip Channel

	Dependent variable (Join Zip = 1)		
Average interest rate	-0.6105*** (0.0936)	-0.6672*** (0.1019)	-0.7375*** (0.1139)
Ln(Average loan amount)	0.4379*** (0.0164)	0.3856*** (0.0165)	0.4053*** (0.0196)
Percentage of group loan	-0.5360*** (0.0602)	-0.4588*** (0.0659)	-0.5080*** (0.0719)
Kenya/US or Not		1.2694*** (0.0267)	1.2332*** (0.0285)
Home bias			-0.1234 (0.0834)
Constant	-6.3831*** (0.1254)	-6.8673*** (0.1295)	-6.8410*** (0.1469)
No. of Observation	253,331	253,331	253,331

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, standard errors in parentheses

To formally establish the impact and to rule out alternative explanations, we use the natural experiment setup and the following regression framework (e.g., Zhang and Zhu 2011):

$$Contribution_{it} = \beta_0 + \beta_1 AfterZip_t + ControlVar_{it} + \mu_i + \epsilon_{it} \tag{2}$$

where i indicates funder i and t indicates the month. $Contribution_{it}$ is the number of loans contributed by funder i in month t . For independent variables, $AfterZip_t$ is the dummy variable represents whether the month is before or after Zip, which equals to 1 if it is after. μ_i represents individual fixed effects to control for unobserved heterogeneity of funders, such as demographics, occupation, or education. For $ControlVar_{it}$, we include membership tenure, measured as the number of months since the member joined Kiva, and the square of tenure to control for possible nonlinear effects. We also control for platform trend and its quadratic effect. β_1 captures the impact of Zip introduction.

Table 6 reports the regression results. Columns 1 is for contribution to US loans and Column 2 for Kenya loans. The results are consistent with our descriptive analysis that contribution on Kiva by Zip funders increases even after we

Fig. 1 “Before” and “After” Period

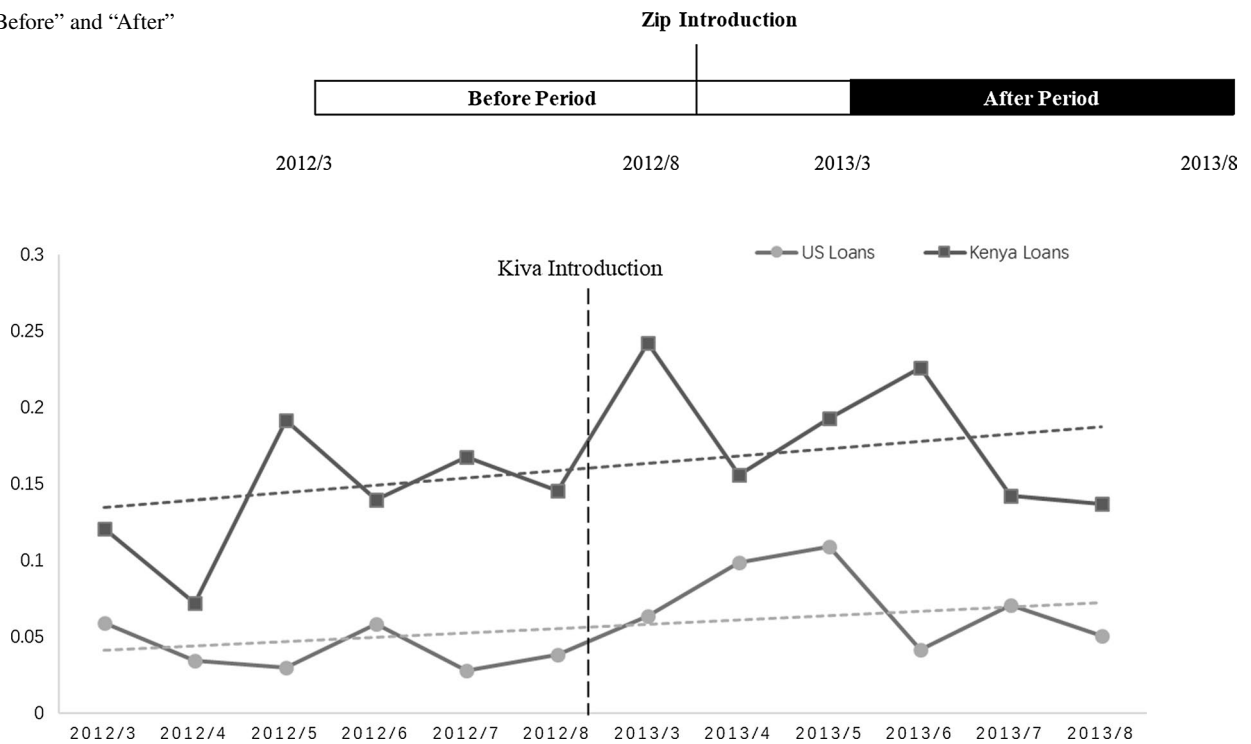


Fig. 2 Zip funders’ US and Kenya contributions on Kiva before and after Zip

Table 4 Descriptive statistics for Zip funders’ contributions before and after Zip

	Before Zip	After Zip	Mean diff	t-statistics
	Mean	Mean		
Number of US Loans	0.0411	0.0722	0.0567	12.3616***
Number of Kenya loans	0.1393	0.1823	0.0431	5.1419***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table 5 Summary statistics of variables

Variables	Obs	Mean	Std. Dev	Min	Max
Number of US Loans	98,028	0.0567	0.3941	0	27
Number of Kenya Loans	98,028	0.1608	1.3127	0	123
After Zip	98,028	0.5000	0.5000	0	1
Tenure	98,028	46.083	17.557	6	91

control for individual differences and platform trends. There is a positive spill-over impact of the introduction of Zip. It suggests that Zip stimulates contribution on Kiva.

To further investigate how Zip funder’s contributions dynamically change after Zip’s introduction, we focus on the after-period and conduct analysis of time effect on Zip

Table 6 The change in Zip funders’ contribution on Kiva

Variables	Number of US loans	Number of Kenya loans
After Zip	0.0843*** (0.0079)	0.0731** (0.0223)
Tenure	0.0001 (0.0015)	0.0305*** (0.0036)
Tenure ²	0.0000 (0.0000)	0.0000 (0.0000)
Constant	0.0395 (0.0555)	-1.0035*** (0.1152)
Individual Fixed Effects	Yes	Yes
Platform Trend Controlled	Yes	Yes
No. of Observations	98,028	98,028
R ²	0.0032	0.0014

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, robust standard errors in parentheses

funders’ contributions to both Kiva and Zip. We first plot a graph depicting funders’ contributions of US and Kenya loans on Kiva and Zip over the “after-period”. Figure 3 shows the trend of Zip funders’ contribution to Kiva US loans, Kiva Kenya loans, Zip US loans, and Zip Kenya loans, respectively. We further run a set of regressions to affirm the relationship between Zip funders’ contributions trend and time. Table 7

Fig. 3 Zip funders' US and Kenya contributions on Zip and Kiva over time after Zip

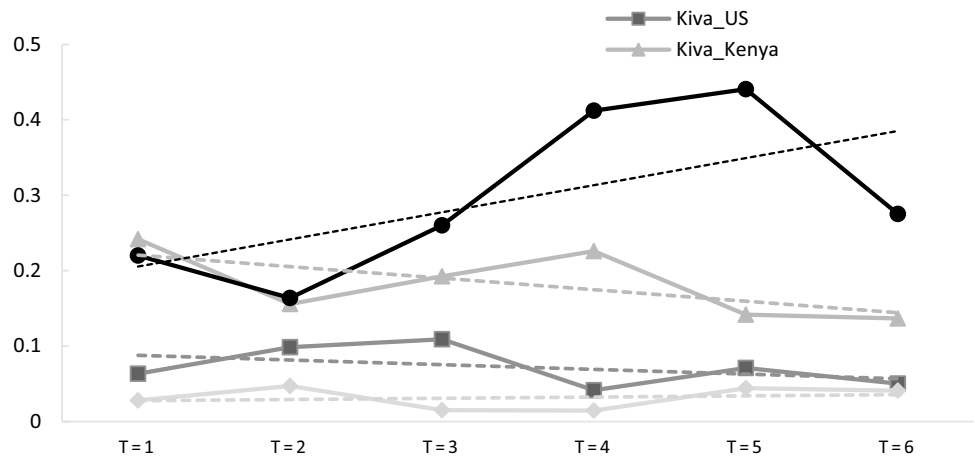


Table 7 Time effect on Zip funder's contribution on Kiva and Zip

Variables	Kiva		Zip	
	Number of US loans	Number of Kenya loans	Number of US loans	Number of Kenya loans
Time	-0.0062*** (0.0010)	-0.0153*** (0.0023)	0.0360*** (0.0022)	0.0016 (0.0012)
Constant	0.0938*** (0.0037)	0.2358*** (0.0089)	0.1694*** (0.0087)	0.0261*** (0.0048)
Individual fixed effects	Yes	Yes	Yes	Yes
Observations	49,014	49,014	49,014	49,014
R ²	0.0010	0.0011	0.0063	0.0000

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, robust standard errors in parentheses. Time represents a linear time trend for the after-period

reports the regression results. As shown, there is a general decreasing trend in funders' contributions of both US and Kenya loans on Kiva (columns 1 and 2). On Zip, there is an increasing trend in funders' contribution of US loans while there is no significant change in contributions of Kenya loans. These results suggest that the positive spill-over impact of Zip introduction may fade over time. Funders may first increase their contributions on Kiva right after the introduction of Zip, and then start to decrease their contributions on Kiva and increase contributions on Zip.

5 Discussion and conclusion

Prosocial crowdfunding relies on funders' altruistic contribution to sustain. The channel structure of platforms may affect funders' altruistic incentives. It is critical to understand how funders choose different channels, direct vs. intermediated, and how the co-existence of the two channels affect funders' contribution. Our study builds a theoretical framework based on theories of altruism to

understand funders' incentives, including pure altruism, warm glow, and reputation. The framework helps to explicate funders' incentive for choosing between channels and predict potential changes in funder contribution after the introduction of the direct channel. Using data from Kiva and the unique setup of natural experiment, we find that funders with high level of pure altruism are more likely to join the direct channel. We also find that the introduction of the new direct channel stimulates instead of cannibalizing contribution on the intermediated channel. It suggests that the direct channel segments riskier projects and meets the needs of pure altruists, while the intermediated channel promotes contribution to less risky segments with increased publicity. The market segments have a positive impact on crowdfunding contribution.

Our study has interesting theoretical and practical implications. First, we contribute to crowdfunding literature. While the extant literature on crowdfunding focuses on individual or informational features of borrowers or funders, our study examines how the market structure of crowdfunding platforms affects funder behavior. Theoretically, we develop

a framework to understand altruistic funders, articulate the structural difference of the two channels, and derive funders' channel choice. Our perspective on platform structure introduces a fresh angle to investigate behavior of crowdfunding participants. Practically, our study shows that channel structure impacts significantly funders' contribution. In addition to appealing to people's individual features or strengthen information exchange, a platform with well-designed channels that enhance funders' incentive may be an innovative way to sustain prosocial crowdfunding.

Second, we contribute to the discussion on altruistic incentive on prosocial platforms. There was a debate on whether people contribute due to pure altruism, or because they also derive utility, "warm glow", or the mix. Our research may provide evidence that people are motivated with both motives and differentiate in how much weight they put on each incentive. These findings also have practical implications for the mechanism design of prosocial crowdfunding platforms. The significance of "warm glow" incentive suggests that the platform cannot only rely on people's pure care for others or social recognition, but also needs to control project risk to sustain funders' contribution.

Third, our study extends the literature on cross-channel competition to the context of crowdfunding. Previous research documented positive or negative spillover impact of the online channel on traditional channels in retailing. Our study may demonstrate that the market segmentation caused by the direct channel satisfies different altruistic needs of funders and stimulates funders' contribution cross direct and intermediated channels. The results may also provide managerial insights on how to design and promote different channels. For instance, better risk control mechanisms on the direct channel may appeal to a larger pool of funders.

The study has its limitations. First, our measurement of altruism is based on funders' loan portfolio. We do not have personal background information about funders to infer their altruism features. Future research may consider collect more detailed information about funders and give a more complete description of their altruistic incentives. Second, our analysis in contribution changes may need to be fine-tuned to examine different types of funders. If more information about funders can be collected, future search should divide funders into different groups and investigate their behavior separately. Third, we assume that the direct channel is viable with the support of funders with high level of pure altruism. However, that Kiva later had to shut down the direct channel for Kenya loans (not US loans) suggested that the direct channel may not be sustainable. We hope future research can clarify the market conditions under which the direct channel is viable to provide important insights on how crowdfunding platforms can design their channels and maximize the social welfare of the system.

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Declarations

Conflicts of Interest The authors certify that they have no conflicts of interest with the journal and its editorial board or any organization or entity in the subject matter or materials discussed in this manuscript.

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