Anti-Corruption Reforms and Microfinancing: Evidence from Households' Fintech Borrowing

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Abstract

Despite a surging literature in investigating different impacts of corruption and/or anti-corruption from firms' perspective, it is still unclear whether and how corruption and/or anti-corruption affect households' borrowing behaviour. In this paper, we focus on a Chinese online peer-to-peer lending market and analyse the impact of the recent China's anti-corruption campaign on households' borrowing costs. We employ a Difference-in-Differences (DID) estimation strategy and investigate three exogenous shocks regarding the movement: 1) the 2012 *Eight Point Policy* announcement; 2) multiple rounds of the *Central Inspection Team Campaigns* during 2013 and 2014; 3) and the anti-corruption rules for military-related personnel in early 2015. Our results show that equilibrium interest rates of borrowers pertaining to Non-SOEs dropped significantly comparing to that of SOEs and/or government agencies in the wake of the first two events. Borrowers affiliating with military-related institutions were also worsened after the military specific anti-corruption campaign. Finally, we examine the two possible economic channels. Suggestive evidences show that both a rise of interest risk premium for SOEs borrowers and a better outlook of Non-SOEs after the anti-corruption reform could account for the observed favour of the borrowing costs towards Non-SOEs borrowers. These findings are consistent with previous studies regarding the effects of anti-corruptions from firms' aspects such as Lin et al., (2016) and Griffin et al., (2016). This study also complements the P2P literature by demonstrating the importance of online borrowers' occupations / job affiliations.

Keywords: Peer-to-Peer Crowdfunding; Corruption; Household Debt;
JEL Classification Codes: D14, D73, G51.

I. Introduction

It has been widely recognized that corruption is pernicious for various economic activities. Macroeconomic growth is found to be retarded and economic resources could also be misallocated (Shleifer & Vishny 1993, Mauro 1995). At the corporate level, firms' growth is also negatively affected (Fisman & Svensson, 2007). Corruption not only increases the cost of credit and credit risks (Butler et al., 2009), but also jeopardizes firms' leverage and liquidity holdings (Kong et al., 2017; Smith, 2016). Firms' credits would be reallocated more inefficiently, and even corporate innovation activities could be suppressed (Ellis et al., 2017; Giannetti et al., 2017; Li et al., 2017). Corruption is also destructive for households, partly due to a higher direct bureaucratic and bribery costs, or even opportunity cost from imprisonment (Hunt & Laszlo, 2005; Olken, 2006; Reinikka & Svensson, 2004). Households' risky investment activities could also be damped due to the corrupted institutions (Bu et al., 2019).

One potential identification challenge in establishing the casual relationship between corruption and other economic variables is the endogeneity, which boosts a growing literature utilizing the recent China's anti-corruption movement as a quasi-natural experiment. For instances, Griffin et al. (2016) shows the anticorruption campaign initiated in December 2012 was effective in reducing the corruptions in China. Ke et al. (2016) and Lin et al. (2016) studied the market reaction around the announcement of the *Eight-Point Policy* and the heterogeneous reactions made by state-owned enterprises (SOEs) and non-state-owned enterprises (Non-SOEs). In terms of

real effects, a more positive information release by Non-SOEs was found relative to that of SOEs (Cao et al., 2018) and Non-SOEs' innovation activities were also promoted (Gan & Xu, 2019). Moreover, the campaign also increases the labour intensity adopted by firms, as argued by Qian (2019). Despite the huge literature relating the China's anti-corruption movement and resulting *firms*' performance, there is very few studies focusing on the impact from *households*' perspective, except the very recent work by Agarwal et al. (2018) and Bu et al. (2019).

This article aims to contribute this literature by exploring the impact of the anti-corruption campaign on *households*' Fintech financing activities. Specifically, we pay particular interests in the impacts on the equilibrium loan interest rate, one of the key variables that proxies the borrowing cost. We analyze a transaction-level data recorded by one of the largest online Peer-to-Peer (P2P) lending market in China. Our analysis also includes some important borrowers' attributes such as occupations and job affiliations. Our Difference-in-Differences (DID) identification strategy relies on three exogenous shocks regarding the campaign: the 2012 *Eight Point Policy* announcement, multiple rounds of the Central Inspection Team Campaigns during 2013 and 2014 and the anti-corruption rules for military-related personnel in early 2015. Besides the timing differences, these shocks also take the advantage of variations at both regional and occupation/job affiliation level. In particular, we investigate the relative change in borrowing costs of employees from Non-SOEs or military related institutions after the shocks.

Our results show that equilibrium interest rates of borrowers pertaining to Non-SOEs dropped significantly comparing to that of SOEs and/or government agencies in the wake of both the *Eight-Point Policy* announcement and *the Central Inspection Team Campaigns*. In addition, it is found that borrowing costs for people working for military-related institutions were also worsened relative to their SOEs counterparties after the military specific anti-corruption campaign. Interestingly, their costs were mostly deteriorated when they intend to finance relatively risky projects.

We then explore the potential mechanisms regarding our baseline results. The observed reduction of Non-SOEs borrowers' loan interest rates could possibly be explained by two economic channels. The first reason relates a flourishing prospectus of the Non-SOEs. It is found that Non-SOEs benefited more from the campaign and the effects were stronger in provinces with more established market institutions (Lin et al., 2018). Therefore, the reduction of borrowing costs could because of the perceived advance of Non-SOEs' total factor productivities (TFPs) or future profitability. Employees from the Non-SOEs could thus gain advantages in the P2P lending market. The second explanation concerns with the risk premium due to the anti-corruption movement, especially for borrowers from the SOEs or government agencies that the policies target on. The escalating risk could therefore translate to a higher equilibrium interest.

We empirically test these hypotheses using a Triple Difference-in-Differences (Triple DID) estimation. For the first explanation, we follow Lin et al. (2018) and incorporate the province-level marketization index prepared by National Economic

Research Institution (NERI), which measures provincial differences of their market liberalization progresses (Fan et al., 2011). Borrowing costs of individuals from Non-SOEs locating in more liberalized provinces were abated saliently after both the *Eight Point policy* event and the *the Central Inspection Team Campaigns* event. For the second reasoning, we use borrowers' age and salary level as proxy variables for their job seniorities. Consistent with the hypothesis, our results suggest that aging or higher salary level borrowers from the SOEs and/or government agencies were at significant disadvantage following the two aforementioned events. Thus, we both identify and confirm the two possible hypotheses through these testable implications. It should be worth noted that the previous finding regarding the exacerbated interest rates for individuals at military-related institutions after the third military specific anti-corruption campaign could be largely attributed to the elevated risk premium, as we intentionally excludes the Non-SOEs' employees from our DID analysis.

Furthermore, corruption might also influence households through direct or indirect channels (Hunt & Laszlo, 2005; Olken, 2006; Reinikka & Svensson, 2004; Bu et al, 2019). As a result, the anti-corruption campaign could incline to those financially constrained households facing larger direct corruption costs. Indeed, we found consistent evidence that Non-SOEs peers with mortgage enjoyed a more favored curtail in their borrowing interest rates.

Though we employ a shock-based analysis to account for the potential endogeneity, further comments regarding the repeated cross-sectional nature of the P2P lending data is still valid, as we still suffer from the omitted variable bias (OVB) by not controlling all the possible unobserved personal characteristics. To further alleviate this endogeneity concern, we carry a serious of robustness checking estimations by adding borrower's fixed effect. By focus on the same person who participated in the Fintech

lending market *both before and after*, our baseline conclusions remain unchanged for all the three events. This suggest that our previous results are not driven by the unobserved time-invariant personal characteristics.

Our work relates and contributes to the following two strands of literature. The existing literature on anti-corruption exclusive investigate firms' assorted behaviours (Griffin et al. 2016, Ke et al. 2016, Lin et al. 2016, Cao et al. 2018, Gan & Xu 2019, Qian 2019), with very few exceptions includes households' reactions such as Bu et al. (2019) and Agarwal et al. (2018). Our work closely relates to Bu et al. (2019), which also studies the impact of on household finance. It is worth noting that our paper differs from their work in several aspects. First, we mainly focus on borrowing costs while existing studies including Bu et al. (2019) concentrate on loan amounts. Second, our transactional level data is relatively high (daily) frequency, which could better pinpoint the announcement date while Bu et al. (2019) uses the three waves of repeated cross-section household survey data in 2011, 2013 and 2015. Third, we look at three exogenous shocks relating to the anti-corruption campaign, while they only investigate *the Central Inspection Team Campaigns* due to their constraint in term of the data frequency.

While the existing crowdfunding literature primarily focus on personal characteristics (Lin & Viswanathan, 2015), our work extends it by analysing the far-reaching anti-corruption political policy. Pioneer work establishing the relationship between public policy and P2P market is Li et. al (2018), which finds a negative causal linkage between general policy uncertainty index and P2P funding in the U.S. Instead, we shed light on the potential gains and losses for borrowers from different job affiliations through three specific policy shocks. Our study also has practical

significance in providing some empirical evidences how China's anti-corruption policies affect household credit access through a Fintech lending market.

The remainder of this paper is organized as follows. Section II introduces the institutional backgrounds of the three events relating to China's anti-corruption campaign that we investigated in the remaining sections. Section III describes the data source and reports some key summary statistics. Section IV elaborates the identification strategies and presents the corresponding empirical results. Section V shows the robustness checking results and Section VI concludes.

II. Background of research

Background and Significance of the Anti-corruption Campaign in China

Cracking down on corruptions in China has gradually become the "New Normal" ever since the conclusion of the Party's 18th National Congress on November 14, 2012. Upon taking office, President Xi Jinping launched a far-reaching anti-corruption campaign expeditiously. It is widely regarded as targeting "tigers and flies", quoted from the Guardian[1]. This is also one the largest anti-corruption movement in the history of Communist in China, targeting the rampant graft in Chinese officialdom.

This high-profile campaign first came from an official report submitted to the 18th National Congress by the Central Commission for Discipline Inspection (CCDI) on November 20, 2012. The report sets corruptions as the one of the major political risks and advocates for an immediate fighting against corruptions. Subsequently, on

[1] https://www.theguardian.com/world/2013/jan/22/xi-jinping-tigers-flies-corruption

November 30, 2012, Mr. Wang Qishan, the newly appointed Secretary of the CCDI, seek for advices on how to build a clean government[2] and fight against corruption when presiding over a symposium of experts and scholars.

The *Eight-Point Policy* (八项主义) Announcement in 2012

The Central Politburo of the Communist Party of China further pushed forward the movement by announcing the *Eight-Point Policy* on December 4, 2012, which was officially announced only nineteen days after President Xi's inauguration. The Policy, which is considered as a major anti-corruption reform, categorically underscores that leading cadres, especially those senior ones, must cut down on their extravagant work styles. In addition, corruptions including red tapes shall also be severely punished. These restrictions aim at disciplining party members and making them to be more "closer to the public". According to official propaganda, the Policy calls for party members and officials to 'do real work and say real things' and understand the practical situations "on the ground". It seeks to tackle the culture of privilege that permeates the Chinese officialdom during the rule of his predecessors. Admittedly, a policy proclaimed during a political transition period normally raises less attention from the public due to the consideration of political repression or public image (Chen et al., 2018). Yet, the *Eight-Point Policy*, proposed within an unprecedented short period of

[2] The word "clean government" is officially mentioned by the Chinese government. (See http://www.gov.cn/english/official/2010-12/29/content_1775353_2.htm)

time, is still a vital signal sent to government officers as well as to the public. It is thus a well-accepted anti-corruption policy shock in the related literature. (Ding, et al., 2017)

The Policy addressed some detailed and specific refrains to prevent transfers of hidden interests or other suspicious behaviours. It is widely considered as first official policy relating to the anti-corruption agenda. (Chen et al., 2018) The more detailed description of the Policy is briefly summarized and translated in Appendix II

Multiple Rounds of Central Inspection Team Campaigns (CITC) (中央巡查组)

To effectively implement the *Eight-Point Policy* and eliminate corruptions on a national scale, the CCDI further introduced the Central Inspection Team Campaigns (CITC) in the middle of 2013. The CITC is mainly tasked with enforcing the Policy and combating the malfeasance. It conducts investigations covering provincial-level regions on a rolling basis through multiple rounds. Targeting at "tigers" and "flies", one of the crucial mission of Central Inspection Team (CIT) was to find out whether the leading cadres in the province inspected were involved in illegal monetary transactions, or the possible misuse of power for private interests, briberies, and other violations of discipline and law. If any corruption is discovered, inspectors shall report it to the CIT. The first round of the CIT investigation, which involves a total of six provinces (Chongqing, Guizhou, Hubei, Inner Mongolia, Jiangxi), was formally announced on May 17th, 2013.

The team have been linked to innovative approaches and other breakthroughs in Party governance, by which conducted investigations at the government agencies and

some major state-owned enterprises (SOEs) one-at-a-time in those provinces. The CIT carried multiple rounds of inspection during 2013 and 2014. The announcement time of the inspection dates varied from provinces. Detailed information of announcement dates and province involved is in summarized in the literature such as Ding, et al. (2017) and Bu, et al. (2019). The relevant information is reproduced in Appendix III.

Anti-Corruption Rules for Military Related Personnel

On January 18, 2015, the People's Liberation Army Daily (解放军报)[3] directly quoted the talk of President Xi Jinping during an important army meeting, where President Xi underlined the importance of the anti-corruption campaign at the military level. According to his talk, "the income of military officials must solely depend on their salaries. There is absolutely no extra room for the so-called 'grey income' or any other forms of illegal gains. Otherwise, the officers will be investigated and punished". Official propaganda such as CPC News and People's Daily quickly republished it on January 19, 2015.[4]

This talk thus clearly sent a tenacious anti-corruption signal specifically to the military related personnel. It became even more formal and explicit soon after two months. The China PLA General Political Department (人民解放军总参谋部), on March 17, 2015, announced an official policy titled as *Several Provisions on*

[3] The People's Liberation Army Daily is the official newspaper of the Chinese People's Liberation Army (PLA).

[4] See http://cpc.people.com.cn/pinglun/n/2015/0119/c241220-26411109.html and http://ln.people.com.cn/n/2015/0118/c353958-23593695.html for details

Standardizing the Welfare and Subsidies of Military Officers (关于规范完善军队人员有关福利待遇的若干规定)[5]. According to Xinhua News, this policy set specific rules and limits for subsidies at all levels of the military officials, which aims to prevent them from the *Four Winds* problem (四风问题)[6]. According to People's Daily, a total of 33 high-ranking military officials were under investigations and fell into detentions during the first three months of 2015.[7]

III. Data and Summary Statistics

3.1 Data resource description

The empirical analysis is based on the household-level data collected from Renrendai, one of the oldest and largest online peer-to-peer (P2P) platforms in China. Renrendai covers more than 2,000 regions in 31 provinces in China since its establishment in October 2010. By the end of the second quarter of 2019, the total number of borrowers registered at Renrendai is approximately 1.17 million, and the total transaction volume exceeds 86.1 billion RMB. Besides, the average loan amount of a loan is 73,000 RMB with an average maturity period 31 months.

Renrendai establishes a comprehensive information disclosure system, which makes loan information available to investors on its official website. To initiate a loan request, a borrower needs to submit an application form, filling in some loan-related

[5] http://www.81.cn/jmywyl/2015-03/17/content_6401409.htm

[6] *Four Winds* problem refers to formalism, bureaucracy, hedonism and extravagance. See http://www.xinhuanet.com//mil/2015-03/18/c_127592083.html for details

[7] https://www.thepaper.cn/newsDetail_forward_1325147

information such as the amount, maturity periods and the promised interest rate. In addition, he or she could voluntarily disclose information in order to increase his or her funding probability as well as to enjoy a potential lower borrowing cost. Borrowers' soft and hard information typically includes gender, marital status, age, education level, salary level, house or car ownership, house or car mortgage, etc. Furthermore, borrowers could also choose to disclose their job-related information such as employers' names and industries, nature of corporations as well as their job titles.

Renrendai scrutinizes all loan applications and the credentials (certifications) provided by borrowers. The platform then assigns a certain credit limit to the borrowers passing Renrendai's internal eligibility tests. The platform assigns a credit grade to each deal based on the certified information provided by borrowers as well as their historical borrowing records. The credit grade ranges from AA to HR (six grades in total, AA, A, B, C, D, E, HR). Importantly, the credit grade that observed by the lenders, decides the range of the borrowing interest rate for the loan. Thus, borrowers with higher credit grades shall more likely to be funded and with a relatively lower borrowing cost. Notably, borrowers could choose a particular interest rate within the given range.

Upon approval, borrowers could initiate a loan request and set at a specific amount, maturity period and the interest rate. The minimum amount of a crowdfunding is 100 RMB and is capped by the credit amount rationed. Each loan proposal is posted online up to seven days and is closed so long as target funding amount is reached. As a result, the duration of the closure and the number of investors suggest the speed and the

attractiveness of a loan to its lenders. If borrowers fail to raise the desired amount within seven days, the loan proposal would be no longer valid. Under such scenario, it is considered as unsuccessful and the funding already raised shall be returned to lenders with certain interests to compensate the opportunity costs.

Borrowers are required to be repay their loans at a monthly basis. As it can be seen clearly, loan's status is considered as "default" if one or more instalments are overdue for more than thirty days. Conversely, "closed" and "in progress" statuses refer to the case that loans are not default.

3.2 Summary Statistics

Our sample consists of all of P2P funded loans from October 2010 to December 2015, which covers the duration of the three major anti-corruption campaign shocks. The P2P sample includes funded borrowers' borrowing interests, loan amount as well as their individual characteristics. To summarize, our sample includes 216,886 households, of which 28,362 government employees and 188,524 non-government employees. 49,049 borrowers work in both government and state-own enterprises and 167,837 otherwise.

The details of the characteristics of the P2P borrowers from the sample could be shown in Table 1. We create a *Non_Gov* dummy equalling one if a borrower works for government agencies and zero otherwise. *Non_SOE* is defined as a dummy variable, which takes the value of one if a borrower works for state-owned companies and zero otherwise. We also construct *Non-Army* as an indicator variable to measure whether the borrower works for military sectors among government agencies and SOEs, which

equals to one when a household works in military sectors. Loan is a dummy variable with one having house loan or car loan and zero otherwise. Marketization is the province-level Marketization Index produced by the National Economic Research Institute (NERI) (Fan et al., 2011), which is retrieved from official statistics and enterprise and household surveys. Ranging from zero to ten in the base year 2001, the index represents the private sector shares of output, investment and employment, price controls and trade barriers, liberalized factor of markets, and the legal environment.

To be addressed, the Non-government houseowners' average borrowing interests (12.108%) has not significant difference with the interest rate of the government houseowners (12.107%), which is the same for Non-SOE borrowers (12.106%) and SOE borrowers (12.111%), and Non-military SOE borrowers (12.111%) and military borrowers (12.106%). Meanwhile, the average loan size for borrowers who work for Non-government (60088.1RMB), Non-SOE (59808.04RMB) are significantly lower than those of controlled houseowners (66302.74 and 64639.97), respectively. While Non-military SOE household borrows significantly more (64639.97 versus 59808 RMB).

IV. Estimation Strategies and Results

To analyse the how this anti-corruption campaign affects P2P borrowing activities, we first plot the evolution of household borrowing costs in the Non-government agencies employees and the others, as well as Non-SOE employees and the others. We estimate

the common trend assumptions for one-year pre-policy trend (January-December, 2012) in the following regression to examine whether DD is an applicable approach:

$$(1) \qquad Interest_{it} = \beta_0 + \beta_1 Timetrend_t + \beta_2 Treat_i + \beta_3 Timetrend_t * Treat_i + \alpha_{irt}$$

In the regressions, i, t are borrower and month indices, correspondingly. $Interest_{it}$ indicates the P2P funded interest rate. $Timetrend_t$ indicates monthly trends during the study. $Treat_{ir}$ is a dummy variable with one working for Non-government agencies while zero otherwise, or a dummy variable with one working for Non-SOE while zero otherwise . α_{irt} represents a full set of household characteristics and city fixed effects with standard error clustered at the city level to account for the serial correlation. From Table 2, we could conclude that the common trend assumption is valid since all of the interaction terms, β_3, are insignificant. A similar trend for borrowing interests before the announcement of the 2012 Eight Point Policy in December 24, 2012 is confirmed.

4.12 DD Analysis

Based on the common trend assumption, we could further test the effect of the 2012 Eight Point Policy on the household with different types of job affiliation (office type) through the following DD model:

$$(2) \qquad Interest_{it} = \beta_0 + \beta_1 Non\_Gov_i + \beta_2 post_t + \beta_3 Non\_Gov_i * post_t + \alpha_{irt}$$

(3) $$Interest_{it} = \beta_0 + \beta_1 Non\_SOE_i + \beta_2 post_t + \beta_3 Non\_SOE_i * post_t + \alpha_{irt}$$

where Non_Gov_i is an indicator equal to one if the borrower works for Non-government agencies and zero otherwise. $Non\_SOE_{i_i}$ is an indicator equal to one if the borrower works for Non-SOEs and zero otherwise. $post_i$ is an indicator equal to 1 when house borrowing is made after the policy shock, December 24, 2012, and zero otherwise. α_{irt} represents a full set of household characteristics, city, and month times year fixed effects, with two-way standard error clustered at both city and office type level. Our coefficient of interest β_3 captures the effects of the anti-corruption policy reform on borrowers working for Non-SOE firms. The time duration of research sample in this test ranges from October 2010 to December 2013.

From DD results shown in Table 3, we could identify that the P2P borrowing interest rates for treated Non-government and Non-SOE employees drop more significantly rather than those of control groups after the announcement of the 2012 Eight Point Policy. This outcome means that treated household tends to achieve a lower borrowing costs to crowdfund in the P2P platform.

4.12 DDD Analysis

In order to identify the potential mechanism of the main result and estimate the effect of heterogeneity of the household characteristics, financially constrains, and province marketizations on the variation of household responses in the P2P lending market, DDD frameworks are further conducted as follow:

(4) $$Interest_{it} = \beta_1 \ SOE_i * post_t * Charactertics_i + \beta_2 treat_i * Charactertics_i + \beta_3 Post_t * Charactertics_i + \beta_4 \ post_t * SOE_i + \alpha_{irt}$$

(5) $$Interest_{it} = \beta_1 \ Non\_SOE_i * \ post_t * Constraint_i + \beta_2 \ Non\_SOE_i * Constraint_i + \beta_3 Constraint_i * post_t + \beta_4 \ post_t * Non\_SOE_i + \alpha_{irt}$$

(6) $$Interest_{it} = \beta_1 \ Non\_SOE_i * \ post_t * marketization_i + \beta_2 Non\_SOE_i * marketization_i + \beta_3 post_i * marketization_i + \beta_4 \ post_t * Non\_SOE_i + \alpha_{irt}$$

Where $Constraint_i$ is a dummy variable and equals to 1 if borrower i has either house mortgage and $marketization_i$ is the province-level Marketization Index produced by the National Economic Research Institute (NERI) (Fan et al., 2011). $Charactertics$ is the household characteristics like age. The definitions of other variables are the same as those stated before.

From Table 4, our results that the DDD interaction term for interest on age is significantly negative, which shows that SOE households with elder age could experience a greater increase of interest rates compared with Non-SOE households. This echoes our mechanisms the relatively higher borrowing costs for SOE households is due to their job and income security concerns since the anti-corruption campaign will jeopardize their current work status. Meanwhile, the employees with higher age in the SOE generally represents a higher rank in government or SOE since the anti-corruption campaign organically targeted on corrupted high rank government employees. Therefore, a greater increase borrowing costs for the elder age could confirm that one

possible economic mechanism for the increasing borrowing costs for SOEs would be the escalating risk premium.

DDD results from Table 4 also show that Non-SOE households located at the province with higher marketization will experience a sharper decrease of interest rates with compared to SOE households. This outcome responds to another channel of the main results that Non_SOE households benefit more due to the perceived increase of Non-SOEs' total factor productivities or future profitability, which echoes the research finding from Lin et al (2018). Another finding from DDD estimation is that Non-SOE households with more financial constraints will experience a deeper decrease of interest rates with compared to SOE households. This not only stands for the channel of the main results that Non-SOEs peers could gain benefits through reducing the direct corruption costs, so that Non-SOEs with mortgage enjoyed a more favoured curtail in their borrowing interest rates. This channel is supported by various literatures (Hunt & Laszlo, 2005; Olken, 2006; Reinikka & Svensson, 2004; Bu et al, 2019). This finding also provides evidences to the findings from Bu et al (2019) that Non-SOEs are more inclined to surge their investment in financial market and increases their financial leverage after the anti-corruption campaign.

4.2 The Impact of the Central Inspection Team Campaigns (CITC) on Household Borrowing Costs

4.21 Parallel trend tests

We conduct tests of the parallel trend to ensure that treated and control household employees did not exhibit significant differences in borrowing costs and other personal

characteristics before the anti-corruption campaign (November, 2012 to April, 2013) in the following regression, since the first the Central Inspection Team Campaigns was launched on May, 17, 2013. We select half year pre-period to avoid the time overlap with the previous shock.

$$Interest_{it} = \beta_0 + \beta_1 Timetrend_t + \beta_2 \ Treat_i + \beta_3 Timetrend_t * Treat_{ir} + \alpha_{irt} \quad (7)$$

The regression setting follows the previous parallel test from equation (7). From Table 5, we could conclude that the common trend assumption is valid, and a similar trend is shown for borrowing interests before the announcement of the Central Inspection Team Campaigns from May 2013 to July of 2014.

4.22 DD Analysis

Based on the common trend assumption, we could further test the effect of the Central Inspection Team Campaigns on the household with different types of job affiliations (office type) through the following DD model:

$$Interest_{it} = \beta_0 + \beta_1 treat_i post_t + \alpha_{irt} \quad (8)$$

Where $treatpost_{it}$ is a dummy variable and equals one when the central inspection team visited borrower *i*'s province at time *t* and zero otherwise. The timeline of the visit could be found in Appendix II. Other variables are similarly defined as those in the equation 6. The research sample from October 2010 to December 2015 is selected for the estimation.

From DD results shown in Table 6, we could further identify that the treated Non-government and Non-SOE employee P2P borrowing interest rates drop more significantly rather than those of control groups after the visit of central inspection team.

This outcome shows that Non-government and Non-SOE employee household could achieve a lower borrowing costs to crowdfund in the P2P platform.

4.23 DDD Analysis

To confirm the potential mechanism of the main result and estimate effect of heterogeneity of the household characteristics, financially constrains, and province marketizations on the variation of household responses in the P2P lending market, a similar set of DDD frameworks for the second shock are conducted as follow:

$$Interest_{it} = \beta_1 \ SOE_i * treatpost_{it} * Charactertics_i + \beta_2 treatpost_{it} * Charactertics_i + \beta_3 SOE_i * Charactertics_i + \beta_4 \ treatpost_{it} * SOE_i + \alpha_{irt} \quad (9)$$

$$Interest_{it} = \beta_1 \ Non\_SOE_i * \ treatpost_{it} * Constraint_i + \beta_2 \ Non\_SOE_i * Constraint_i + \beta_3 Constraint_i * \ treatpost_{it} + \beta_{43} \ treatpost_{it} * Non_{SOE_i} + \alpha_{irt} \quad (10)$$

$$Interest_{it} = \beta_1 \ * Non\_SOE_i * treatpost_{it} * marketization_i + \beta_2 Non\_SOE_i * marketization_i + \beta_3 \ treatpost_{it} * marketization_i + \beta_4 \ treatpost_{it} * Non\_SOE_i + \alpha_{irt} \quad (11)$$

Where $Charactertics$ is the household characteristics including age and salary. Other variables are similarly defined as those in the equation (9).

From Table 7, our finding parallels with the DDD results that SOE households with elder age could experience a greater increase of interest rates compared with Non-SOE households and Non-SOE households with more financial constraints and located at the province with higher marketization will experience a stronger decrease of interest rates

with compared to the SOE household. This result further confirms the two possible mechanisms of the main result as mentioned above. An additional finding that support the risk premium channel is that SOE households with higher salary could experience a greater increase of interest rates since SOE employees with higher salary implying their higher rank in the government or SOE which face more exposures to the job-related and income-related risks during the Central Inspection Team Campaigns.

4.3 The Impact of the Announcement of Anti-corruption Rules for Military-related personnel on Household Borrowing Costs

4.31 DD Analysis

Since the monthly data is limited for the shock of military anti- corruption campaign, we skip the common trend test and directly test the shock on the household with different types if job affiliation through the following DD model:

$$Interest_{it} = \beta_0 + \beta_1 treat_i + \beta_2 post_t + \beta_3 treat_i * post_t + \alpha_{irt} \quad (12)$$

$post_i$ is an indicator equals to one when house borrowing is made after the announcement of the military anti-corruption campaign on January 18, 2015, and zero otherwise. $treat_i$ is an indicator equals to one when household works at Non-military government agencies and SOEs while zero when household serves at military sectors. The variables are similarly defined as those in the equation (12). The research sample from January 2013 to December 2015 has been used for the estimation.

From DD results shown in Table 8, we identify that Non-military government agencies and SOEs employees' P2P borrowing interest rates drop more significantly

rather than military borrowers after the exogenous shock. This outcome confirms the previous conclusions that even for the sub sample of government and SOE households, anti-corruption campaign could let relatively unaffected group to achieve a lower borrowing costs to crowdfund in the P2P platform.

4.33 DDD Analysis

As the military anti-graft campaign in 2015 particularly target on the investment and business activities from military employees, a DDD frameworks are further conducted as follow to test the related heterogenous effect.

$$Interest_{it} = \beta_1 post_t * Non\_SOE_i * riskness_i + \beta_2 Non\_SOE_i * riskness_i + \beta_3 post_t * riskness_i + \beta_4 Non\_SOE_i * post_t + \alpha_{irt} \quad (13)$$

Where $riskness_i$ indicates the purpose of the household borrowing for investment or entrepreneur activities. $post_i$ is an indicator equal to one when house borrowing is made after the policy shock, January 18, 2015, and zero otherwise. Other variables are similarly defined as those in the equation (13). From Table 8, we find that investment or entrepreneur activities for Non-military government agencies and SOEs employees after the shock is more supported in P2P market which echoes the previous finding that non affected peers could gain benefits through reducing the direct corruption costs and are more inclined to surge their investment in financial market and increases their financial leverage after the anti-corruption campaign, as they could enjoy a more favoured curtail in their borrowing interest rates.

6. Robustness Test

Although we apply DID estimation based on three exogenous shocks to account for the potential endogeneity, a concern that is related to the repeated cross-sectional nature of the P2P lending data is still valid, since we still suffer from the omitted variable bias from various possible unobserved personal characteristics. Therefore, we carry a serious of robustness checking estimations by adding borrower's fixed effect to alleviate the endogeneity consideration, as shown in the following regression model. The borrower's fixed effect targets on the same person who participated in the P2P lending market both before and after the shocks.

$$Interest_{it} = \beta_0 + \beta_1 treat_t + \beta_2 post_t + \beta_3 treat_i * post_t + \alpha_{irt} \quad (14)$$

$$Interest_{it} = \beta_0 + \beta_1 treat_i post_t + \alpha_{irt} \quad (15)$$

$$Interest_{it} = \beta_0 + \beta_1 Non\_Army_t + \beta_2 post_t + \beta_3 Non\_Army_t * post_t + \alpha_{irt} \quad (16)$$

For the equation (16), $Interest_{it}$ is P2P funded interest. $treat_i$ is an indicator equal to one if the borrower works for Non-government agencies or Non-SOEs and zero otherwise. $post_i$ is an indicator equal to one when house borrowing is made after the policy shock, December 24, 2012, and zero otherwise. α_{irt} represents borrower and month times year fixed effects, with two-way standard error clustered at both borrower and office type level. For the equation (16), $treatpost_{it}$ is a dummy variable and equals one when the central inspection team visited borrower *i*'s province at time *t* and zero otherwise. Other variables and sets are similarly defined as those in the equation (16). For the equation (16), $post_i$ is an indicator equal to one when house borrowing is made after the announcement of the military anti-corruption campaign on January 18, 2015, and zero otherwise. Non_Army_t is an indicator equal to 0 for non-military

government agencies and SOEs employees and one for employees who serve in the military sector. Other variables and sets follow those in the equation (16).

The robustness test result from Table 9 confirms that our main conclusions remain unchanged for all the three events. This suggest that our previous results are not driven by the unobserved time-invariant personal characteristics.

6. Conclusion

Our research analyzes the effect of three exogenous events from China anti-corruption campaigns on household borrowers from one of the largest online Peer-to-Peer (P2P) lending market in China. Our analysis also includes some important borrowers' attributes including occupations and job affiliations. The three exogenous shocks that our DID identification strategy relies on include the 2012 *Eight Point Policy* announcement, multiple rounds of the Central Inspection Team Campaigns during 2013 and 2014 and the anti-corruption rules for military-related personnel in early 2015. Through the investigation of the relative changes in borrowing costs of employees from Non-SOEs or military related institutions after the shocks, our findings show that equilibrium borrowing costs pertaining to Non-SOEs dropped significantly comparing to that of SOEs and/or government agencies in the wake of both the *Eight-Point Policy* announcement and *the Central Inspection Team Campaigns*. Furthermore, borrowing costs for household who works for military-related institutions were also worsened relative to their government and SOEs counterparties after the military specific anti-corruption campaign. Their costs were mostly deteriorated when they intend to finance relatively risky projects.

Based on the research finding, we explore two potential mechanisms to explain the reduction of Non-SOEs and Non-Government borrowers' loan interest rates. These two explained channels include a thriving prospectus of the Non-SOEs and the growing risk premium of SOE and government borrowers due to the anti-corruption movement. Our triple DID estimation findings support these two channels. In the first channel, Non-SOEs benefited more from the campaign with more perceived value from its total factor productivity or future profitability since the effects were stronger in provinces with more established market institutions. As a result, Non-SOEs could thus gain advantages in the P2P lending market. The second explanation focuses on the risk premium due to the anti-corruption movement, especially for borrowers from the SOEs or government agencies that the policies target on. The rising job and income risk could therefore translate to a higher borrowing cost. Borrowers' age and salary level are applied as proxy variables for their job ranks. Consistent with the hypothesis, our results suggest that higher ranked borrowers from the SOEs and/or government agencies were at significant disadvantage following the first two events as these households have to take a higher risk premium. At last, a number of robustness checking estimations by adding borrower's fixed effect in to the DID estimations are launched to alleviate the endogeneity consideration. The robustness test results echo our main research findings based on the three events.

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Table 1 Summary Statistics

This table presents summary the number of samples, the mean and standard deviations for characteristics of funded loans, borrowers and cities of our sample (10 Oct 2010 and 31 Dec 2015). Data on loans, borrowers is from Renrendai P2P platform. Marketization Index produced by the National Economic Research Institute (NERI) (Fan et al., 2011). are in brackets. For The definition of the variables refers to Appendix table.

	Army			Non_Army			Gov			Non_Gov			SOE			Non_SOE		
	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd	N
loan amount	64639.97	44197.54	49049	59808.04	48686.86	167837	66302.74	46590.45	28362	60088.1	47870.89	188524	64639.97	44177.54	49049	59808.04	48686.86	167837
interest rate	12.111	1.226	49049	12.106	1.277	167837	12.107	1.29	28362	12.108	1.262	188524	12.111	1.226	49049	12.106	1.277	167837
gender	.243	.429	49049	.273	.446	167837	.27	.444	28362	.266	.442	188524	.243	.429	49049	.273	.446	167837
age	36.903	8.863	49049	35.473	8.276	167837	37.698	8.952	28362	35.51	8.315	188524	36.903	8.863	49049	35.473	8.276	167837
graduation	1.378	.732	49049	.909	.711	167829	1.493	.703	28362	.943	.721	188516	1.378	.732	49049	.909	.711	167829
married	.946	.562	49049	.906	.531	167837	.977	.546	28362	.906	.537	188524	.946	.562	49049	.906	.531	167837
office type	1.422	.494	49049	5.788	1	157814	1	0	28362	5.349	1.534	178501	1.422	.494	49049	5.788	1	157814
house loan	.304	.46	49049	.373	.484	167837	.304	.46	28362	.366	.482	188524	.304	.46	49049	.373	.484	167837
work year	1.734	1.205	49049	1.598	.946	167617	1.792	1.244	28362	1.604	.97	188304	1.734	1.205	49049	1.598	.946	167617
salary	2.775	.824	49049	3.601	1.263	167829	2.681	.782	28362	3.524	1.245	188516	2.775	.824	49049	3.601	1.263	167829
mkt index	8.286	1.853	49010	8.759	1.696	167259	8.143	1.782	28344	8.729	1.725	187925	8.286	1.853	49010	8.759	1.696	167259

Table 2 Test common trend prior to policy intervention

The table reports common trend before the 2012 Eight Point Policy restriction policy shock. Column 1 and 2 show the common trend assumption of DD estimation for P2P household who works at Non-government agencies and government agencies, as well as Non-SOEs and SOEs, respectively. Non_Gov dummy is one if a borrower works for government agencies and zero otherwise. Non_SOE is a dummy variable, which takes the value of one if a borrower works for state-owned companies and zero otherwise. A full set of household characteristics (age office_type age gender salary graduation) and city fixed effects are controlled in all estimations. Standard errors are clustered at city level. The definition of variables refers to Appendix table. ***, ** and * stand for significant at the 1%, 5% and 10% levels, respectively.

	(1)	(2)
	Non_Gov	Non_SOE
VARIABLES	interest_rate	interest_rate
Non_Gov×2012 July	0.181	
	(0.29)	
Non_Gov ×2012 August	-0.768	
	(-0.73)	
Non_Gov ×2012 September	-0.010	
	(-0.02)	
Non_Gov ×2012 October	-0.675	
	(-0.91)	
Non_Gov ×2012 November	-1.045	
	(-1.37)	
Non_Gov ×2012 December	1.147	
	(1.31)	
Non_SOE×2012 July		-0.500
		(-0.82)
Non_SOE×2012 August		-0.748
		(-0.76)
Non_SOE×2012 September		0.024
		(0.05)
Non_SOE×2012 October		-0.725
		(-1.04)
Non_SOE×2012 November		-0.838
		(-1.32)
Non_SOE×2012 December		0.690
		(0.89)
Constant	10.328***	10.494***
	(22.96)	(24.86)
City Fixed Effect	Yes	Yes
Individual Characteristics Fixed Effect	Yes	Yes
Observations	723	723
R-squared	0.958	0.958

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3. DD estimation results of the effect of the 2012 Eight Point Policy restriction policy on P2P household borrowing costs

The table reports the DD estimation results of the effect of the 2012 Eight Point Policy restriction policy on the borrowing costs from P2P household who works at Non-government agencies and government agencies, as well as Non-SOEs and SOEs, respectively. Non_Gov dummy is one if a borrower works for government agencies and zero otherwise. Non_SOE is a dummy variable, which takes the value of one if a borrower works for state-owned companies and zero otherwise. post is an indicator equal to 1 when house borrowing is made after the policy shock, December 24, 2012, and zero otherwise. A full set of household characteristics (age office_type age gender salary graduation), Month*Year, and city fixed effects are controlled in all estimations. Standard errors, clustered at city and office_type level, are shown in brackets. The definition of variables refers to Appendix table. ***, ** and * stand for significant at the 1%, 5% and 10% levels, respectively.

	(1)	(2)
	Non_Gov	Non_SOE
VARIABLES	interest_rate	interest_rate
post	0.585**	0.599**
	(2.60)	(2.70)
Non_Gov×post	-0.362***	
	(-4.28)	
Non_SOE×post		-0.409***
		(-7.51)
Constant	12.987***	12.986***
	(107.66)	(89.50)
City Fixed Effect	Yes	Yes
Month×Year Fixed Effect	Yes	Yes
Individual Characteristics Fixed Effect	Yes	Yes
Observations	40,215	40,215
R-squared	0.236	0.237

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4 DDD estimation results of the effect of the 2012 Eight Point Policy restriction policy on P2P household borrowing costs based on heterogeneity

The table reports the DDD estimation the effect of heterogeneity of the household characteristics, financially constrains, and province marketizations on the variation of household responses in the P2P lending market. Non_Gov dummy is one if a borrower works for government agencies and zero otherwise. Non_SOE is a dummy variable, which takes the value of one if a borrower works for state-owned companies and zero otherwise. post is an indicator equal to 1 when house borrowing is made after the policy shock, December 24, 2012, and zero otherwise. Age is he number of years that a borrower has born. House_loan is a dummy variable equals to 1 if the household has house loan and 0 otherwise. mkt_index is the province-level Marketization Index produced by the National Economic Research Institute (NERI). A full set of household characteristics (age office_type age gender salary graduation), Month*Year, and city fixed effects are controlled in all estimations. Standard errors, clustered at city and office_type level, are shown in brackets. The definition of the variables refers to Appendix table. ***, ** and * stand for significant at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Non_Gov	Non_Gov	Gov	Non_SOE	Non_SOE	SOE
VARIABLES	interest_rate	interest_rate	interest_rate	interest_rate	interest_rate	interest_rate
post	-2.148**	0.485	0.294	0.391	-1.508	0.254
	(-2.55)	(1.68)	(0.97)	(1.51)	(-1.47)	(0.77)
Non_Gov×post	1.949***	0.651***				
	(5.84)	(11.76)				
mkt_index	-0.243*				-0.157	
	(-1.92)				(-1.50)	
Non_Gov×mkt_index	0.311***					
	(10.42)					
post×mkt_index	0.311**				0.241*	
	(3.29)				(2.21)	
Non_Gov×post×mkt_index	-0.265***					
	(-6.70)					
Non_SOE×post				0.780***	1.252**	
				(4.96)	(3.05)	
Non_SOE×mkt_index					0.235***	
					(5.58)	
Non_SOE×post×mkt_index					-0.192***	
					(-6.79)	
house_loan		-2.094***		-1.772***		
		(-8.42)		(-5.46)		
Non_Gov×house_loan		2.903***				
		(10.56)				

post×house_loan		2.020***		1.696***		
		(8.19)		(4.85)		
Non_Gov×post×house_loan		-2.512***				
		(-11.15)				
Non_SOE×house_loan				2.635***		
				(10.50)		
Non_SOE×post×house_loan				-2.222***		
				(-9.08)		
Gov×post			-0.855**			
			(-2.37)			
age			-0.005			-0.006
			(-1.11)			(-1.12)
Gov×age			-0.028*			
			(-2.30)			
post×age			-0.002			-0.002
			(-0.37)			(-0.33)
Gov×post×age			0.037**			
			(2.84)			
SOE×post						-0.305
						(-0.50)
SOE×age						-0.013
						(-0.78)
SOE×post×age						0.021
						(1.15)
Constant	12.607***	12.068***	13.239***	12.087***	12.616***	13.258***
	(13.54)	(64.95)	(54.93)	(74.05)	(14.83)	(45.86)
City Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Month×Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Individual Characteristics Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	40,211	40,215	40,215	40,215	40,211	40,215
R-squared	0.236	0.377	0.234	0.379	0.236	0.235

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 Test common trend prior to policy intervention

The table reports common trend before the first visit of central inspection team on borrower i's province. Column 1 and 2 show the common trend assumption of DD estimation for P2P household who works at Non-government agencies and government agencies, as well as Non-SOEs and SOEs, respectively. Non_Gov dummy is one if a borrower works for government agencies and zero otherwise. Non_SOE is a dummy variable, which takes the value of one if a borrower works for state-owned companies and zero otherwise. A full set of household characteristics (age office_type age gender salary graduation) and city fixed effects are controlled in all estimations. Standard errors are clustered at city level. The definition of variables refers to Appendix table. ***, ** and * stand for significant at the 1%, 5% and 10% levels, respectively.

	(1)	(2)
	Non_Gov	Non_SOE
VARIABLES	interest_rate	interest_rate
2012 February	0.009	0.139
	(0.02)	(0.31)
2013 January	-0.178	0.002
	(-0.33)	(0.01)
2013 February	-0.197	-0.049
	(-0.40)	(-0.11)
2013 March	-0.179	0.019
	(-0.31)	(0.04)
2013 April	-0.206	0.087
	(-0.37)	(0.19)
Non_Gov×2012 December	0.166	
	(0.30)	
Non_ Gov ×2013 January	0.225	
	(0.41)	
Non_ Gov ×2013 February	0.090	
	(0.17)	
Non_ Gov ×2013 March	0.154	
	(0.26)	
Non_ Gov ×2013 April	0.461	
	(0.79)	
Non_SOE×2012 December		0.027
		(0.06)
Non_ SOE ×2013 January		0.032
		(0.07)
Non_ SOE ×2013 February		-0.080
		(-0.18)
Non_ SOE ×2013 March		-0.071
		(-0.16)
Non_ SOE ×2013 April		0.157
		(0.33)
Constant	12.970***	12.972***
	(114.60)	(109.07)
City Fixed Effect	Yes	Yes
Individual Characteristics Fixed Effect	Yes	Yes
Observations	7,101	7,101
R-squared	0.338	0.337

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6. DD estimation results of the effect of the Central Inspection Team Campaigns (CITC) on P2P household borrowing costs

The table reports the DD estimation results of the effect of the Central Inspection Team Campaigns (CITC) on the borrowing costs from P2P household who works at Non-government agencies and government agencies, as well as Non-SOEs and SOEs, respectively. treatpost is a dummy variable and equals one when the central inspection team visited borrower *i*'s province at time *t* and zero otherwise. Non_Gov dummy is one if a borrower works for government agencies and zero otherwise. Non_SOE is a dummy variable, which takes the value of one if a borrower works for state-owned companies and zero otherwise.A full set of household characteristics (age office_type age gender salary graduation), Month*Year, and city fixed effects are controlled in all estimations. Standard errors, clustered at city and office_type level, are shown in brackets. The definition of variables refers to Appendix table. ***, ** and * stand for significant at the 1%, 5% and 10% levels, respectively.

	(1)	(2)
	Non_Gov	Non_SOE
VARIABLES	interest_rate	interest_rate
treatpost	0.070***	0.030
	(6.59)	(1.53)
treatpost×Non_Gov	-0.120***	
	(-9.76)	
treatpost×Non_SOE		-0.082***
		(-12.31)
Constant	12.177***	12.177***
	(686.89)	(651.70)
City Fixed Effect	Yes	Yes
Month×Year Fixed Effect	Yes	Yes
Individual Characteristics Fixed Effect	Yes	Yes
Observations	206,453	206,453
R-squared	0.452	0.452

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7 DDD estimation results of the effect of the Central Inspection Team Campaigns (CITC) on P2P household borrowing costs based on heterogeneity

The table reports the DDD estimation the effect of heterogeneity of the household characteristics, financially constrains, and province marketizations on the variation of household responses in the P2P lending market. treatpost is a dummy variable and equals one when the central inspection team visited borrower *i*'s province at time *t* and zero otherwise. Non_Gov dummy is one if a borrower works for government agencies and zero otherwise. Non_SOE is a dummy variable, which takes the value of one if a borrower works for state-owned companies and zero otherwise. post is an indicator equal to one when house borrowing is made after the policy shock, December 24, 2012, and zero otherwise. Age is he number of years that a borrower has born. house_loan is a dummy variable equals to 1 if the household has house loan and 0 otherwise. mkt_index is the province-level Marketization Index produced by the National Economic Research Institute (NERI). Salary is a variable indicating a borrower's monthly income level A full set of household characteristics (age office_type age gender salary graduation), Month*Year, and city fixed effects are controlled in all estimations. Standard errors, clustered at city and office_type level, are shown in brackets. The definition of the variables refers to Appendix table. ***, ** and * stand for significant at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Non_Gov	Non_Gov	Gov	Gov	Non_SOE	Non_SOE	SOE	SOE
VARIABLES	interest_rate	interest_rate	interest_rate	interest_rate	interest_rate	interest_rate	interest_rate	interest_rate
SOE×age							0.006***	
							(16.32)	
SOE×salary								0.011
								(0.43)
treatpost	-0.870***	-0.007	0.362**	0.124	-1.805***	0.015	-0.000	0.439***
	(-4.55)	(-0.08)	(2.59)	(1.59)	(-3.59)	(0.20)	(-0.00)	(4.72)
treatpost×Non_Gov	1.184***	-0.148						
	(6.63)	(-1.76)						
house_loan		-0.821***				-0.628***		
		(-37.11)				(-3.75)		
treatpost×house_loan		0.918***				0.758***		
		(34.03)				(5.48)		
Non_Gov×house_loan		1.139***						
		(7.28)						
treatpost×Non_Gov×house_loan		-0.611***						
		(-8.71)						
mkt_index	-0.070**				0.017			
	(-2.39)				(0.37)			
treatpost×mkt_index	0.110***				0.046			
	(4.65)				(0.79)			
Non_Gov×mkt_index	0.137***							
	(5.85)							
treatpost×Non_Gov×mkt_index	-0.151***							
	(-6.40)							

treatpost×Gov			-0.465**	-0.186*				
			(-3.30)	(-2.01)				
treatpost×salary			-0.110**					-0.128***
			(-3.34)					(-6.02)
Gov×salary			-0.006					
			(-0.25)					
treatpost×Gov×salary			0.128**					
			(3.40)					
treatpost×age				-0.005**			-0.001	
				(-2.46)			(-1.06)	
Gov×age				0.001				
				(1.04)				
treatpost×Gov×age				0.005**				
				(2.98)				
treatpost×Non_SOE					1.155**	-0.197***		
					(2.54)	(-4.23)		
Non_SOE×mkt_index					0.102*			
					(2.11)			
treatpost×Non_SOE×mkt_index					-0.116*			
					(-2.36)			
Non_SOE×house_loan						0.994***		
						(4.87)		
treatpost×Non_SOE×house_loan						-0.434**		
						(-2.69)		
treatpost×SOE							-0.045**	-0.623***
							(-2.75)	(-5.55)
treatpost×SOE×age							0.003***	
							(7.71)	
treatpost×SOE×salary								0.164***
								(4.50)
Constant	11.752***	12.059***	12.122***	12.131***	12.384***	12.053***	12.127***	12.116***
	(27.47)	(190.14)	(518.01)	(374.44)	(25.21)	(210.23)	(664.70)	(489.92)
Observations	206,449	206,453	206,453	206,453	206,449	206,453	206,453	206,453
R-squared	0.453	0.494	0.537	0.534	0.293	0.497	0.453	0.539

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8. DD and DDD estimation results of the effect of the Announcement of Anti-corruption Rules for Military-related personnel on P2P household borrowing costs

The table reports the DD and DDD estimation results of the effect of the Announcement of Anti-corruption Rules for Military-related personnel on the borrowing costs from P2P household who works at Non-military government agencies and SOEs, as well military sectors. Non_army is an indicator variable with one working for non-military government agencies and SOEs while zero is the household who works in military sectors. post is an indicator equals to one when house borrowing is made after the announcement of the military anti-corruption campaign on January 18, 2015, and zero otherwise. A full set of household characteristics (age office_type age gender salary graduation), Month*Year, and city fixed effects are controlled in all estimations. Standard errors, clustered at city and office_type level, are shown in brackets. post is an indicator equals to one when house borrowing is made after the announcement of the military anti-corruption campaign on January 18, 2015, and zero otherwise. treat is an indicator equals to one when household works at Non-military government agencies and SOEs while zero when household serves at military. riskness is an indicator variable set to one if the borrowing purpose indicated by an individual is for investment; zero otherwise. The definition of variables refers to Appendix table. ***, ** and * stand for significant at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)
	Non_army	Non_army	Non_army
VARIABLES	interest_rate	interest_rate	interest_rate
Non_army	0.054***		0.054***
	(3.70)		(3.61)
post	0.070**	0.017	0.067**
	(2.44)	(0.06)	(2.29)
Non_army×post	-0.065***	-0.400**	-0.061**
	(-2.64)	(-13.89)	(-2.45)
riskiness			-0.007
			(-0.08)
Non_army×riskiness			-0.010
			(-0.11)
post×riskiness			0.195*
			(1.75)
Non_army2×post×riskiness			-0.223*
			(-1.80)
Constant	11.928***	12.324***	11.928***
	(679.98)	(105.04)	(651.78)
City Fixed Effect	Yes	Yes	Yes
Month×Year Fixed Effect	Yes	Yes	Yes
Individual Characteristics Fixed Effect	Yes	Yes	Yes
Observations	47,742	2,851	47,742
R-squared	0.774	0.747	0.774

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9. Robustness check on the effect of the three anticorruption campaigns on P2P household borrowing costs

The table reports the DD estimation results of the effect of the three anticorruption campaigns on P2P household borrowing costs. treatpost is a dummy variable and equals one when the central inspection team visited borrower *i*'s province at time *t* and zero otherwise. post1 is an indicator equal to 1 when house borrowing is made after the policy shock, December 24, 2012, and zero otherwise. post3 is an indicator equals to one when house borrowing is made after the announcement of the military anti-corruption campaign on January 18, 2015, and zero otherwise. Non_Gov dummy is one if a borrower works for government agencies and zero otherwise. Non_SOE is a dummy variable, which takes the value of one if a borrower works for state-owned companies and zero otherwise. Non_army is an indicator variable with one working for non-military government agencies and SOEs while zero is the household who works in military sectors. Borrowers(user_id) and month*year fixed effects are controlled in all estimations. Standard errors, clustered at borrowers(user_id) and office_type level, are shown in brackets. The definition of variables refers to Appendix table. ***, ** and * stand for significant at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	Non_Gov (Eight-Point)	Non_SOE (Eight-Point)	Non_Gov (CITIC)	Non_SOE (CITIC)	Non_Army
VARIABLES	interest_rate	interest_rate	interest_rate	interest_rate	interest_rate
post1	0.523*	0.275			
	(2.35)	(0.92)			
Non_Gov×post1	-0.641***				
	(-27.31)				
post1×Non_SOE		-0.506**			
		(-2.51)			
treatpost			0.026	0.025	
			(0.36)	(0.38)	
treatpost×Non_Gov			-0.085*		
			(-1.98)		
treatpost×Non_SOE				-0.090*	
				(-2.17)	
post					0.017
					(0.06)
Non_army×post3					-0.400**
					(-13.89)
Constant	12.916***	13.714***	12.369***	12.368***	12.324***
	(183.86)	(172.67)	(458.11)	(454.41)	(105.04)
Month×Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
User ID Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	6,521	6,521	16,726	16,726	2,851
R-squared	0.848	0.728	0.822	0.822	0.747

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix I Details of Variables Description

Variable Name	Descriptions	Data Source
Interest Rate	The percentage of interest rate charged to a borrower	
Loan Amount	The amount of money a borrower posts a listing	
Funding Probability	An indicator variable set to one if the loan request of a borrower succeeds; zero otherwise	
Gender	A dummy variable set to one if the borrower is a female, zero otherwise	
Age	The number of years that a borrower has born	
Marriage	Series of dummy variables indicating the marital status of the borrowers, where n=0 (if the borrower is unmarried), 1 (if the borrower is married), 2 (if the borrower is divorced),3 (If the borrower is widowed).	
Salary	Series of dummy variables indicating the borrower's monthly income level, where n=0 (less than1000 RMB, the baseline and not included in the regressions), 1(monthly income is between 1000-2000 RMB), 2(monthly income is between 2000-5000 RMB); 3 (monthly income is between 5000-10000RMB); 4 (monthly income is between 10000-20000RMB); 5(monthly income is between 20000-50000 RMB); 6 (monthly income is above 50000 RMB	
Graduation	Series of dummy variables indicating the education level of borrowers, where n=0 (if the borrower is high school and below), 1 (if the borrower is with college degree), 2 (if the borrower is with university degree), 3(if the borrower is with postgraduate degree and above).	
Work years	Series of dummy variables showing the working experience of borrowers, where n=0 (if the working experience is less than 1 year), 1(if the working experience is 1-3 years), 2 (if the working experience is 3-5 years), 3 (if the working experience is more than 5 years.	
Office Type	A series of dummy variables showing the office type: 0 if the office belongs to self-employer(个体经营者); 1 (if the office belongs to government agency); 2 (if the office belongs to state-owned enterprises companies including subordinate departments); 3 (if the office belongs to Fortune Global 500 companies, including joint ventures and subsidiaries); 4 (if the office belongs to general listed companies with foreign listed companies); 5 (if the office belongs to private companies); 6 (if the office belongs to foreign companies including joint ventures); 7 (if the office belongs to public institution); 8 (if the office belongs to enterprises directly under the local state-	

	owned assets supervision and administration commission(地方国资委直属企业))
House Loan	Indicator variable set to one if the borrower has house loans; 0 otherwise
Non_Gov	Indicator variable with one working for non-government agencies and zero otherwise.
Non_SOE	Indicator variable with one working for non-state-owned companies, and zero otherwise.
Gov	Indicator variable set to one if the company for the government and 0 otherwise
SOE	Indicator variable set to one if the company for which a borrower working for the company ultimately controlled by the state, and 0 otherwise
Non-Army	Indicator variable with one working for non-military government agencies and SOEs while zero is the household who works in military sectors.
Riskiness	Indicator variable set to one if the borrowing purpose indicated by an individual is for investment; zero otherwise.
Marketization Index	A summary index measuring progress in implementing market reforms for each of China' province-level jurisdictions (32 provinces, province-level cities, and autonomous regions).

Appendix II Details of the *Eight-Point Policy*

1.	Leaders must maintain close relationship with the public. They ought to understand real situations facing by the society through in-depth visits at grassroots level. Inspection visits must be carried out more thoroughly but with no mere formality. Leaders should listen to the public and talk with lower level cadres. Attentions must be drawn to the places where difficulties and contradictions are concentrated, and where public opinion is abundant. No welcome banner, red carpet, floral arrangement or grand receptions are allowed for these officials' visits.
2.	Meetings and major events should be strictly regulated, with efficiency improving. Politburo members are not allowed to attend ribbon-cutting or cornerstone-laying ceremonies, or celebrations and seminars, unless they get approval from the Central Committee. Official meetings should be shortened, be specific and to-the-point, and no empty-talk or blather.
3.	Issuance of official documents should be reduced, especially for unnecessary or optional ones.
4.	Officials' visits to foreign countries should only be arranged when necessary, with the number of entourage restricted; Chinese expatriates, institutions or students will not be organized for a reception at the airport under most circumstances.
5.	The work of security guards relating to leaders should be improved. For instances, in order to avoid unnecessary inconvenience to the public, fewer traffic controls should be implemented when leaders travel.
6.	The number and length of reports are suggested to be curtailed based on the actual needs or value of the news.
7.	Leaders should not publish works by themselves or issue any congratulatory letters under their name unless authorized by the Central authorities. Official documents or publications without meaningful content or of no importance should be withheld.
8.	Government officials must strictly abide by the relevant regulations, practice a more thrift lifestyle and follow the rules regarding accommodations and cars.

Appendix III Inspection Scheme of CITIC Provinces

Round of CITC	Province Names	No. of Provinces	Announcement Date
1st	Jiangxi, Hubei, Inner Mongolia, Guizhou, Chongqing	5	May 17, 2013
2nd	Anhui, Hunan, Jilin, Yunnan, Shanxi, Guangdong	6	October 23, 2013
3rd	Xinjiang, Liaoning, Beijing, Ningxia, Shandong, Tianjin, Henan, Gansu, Hainan, Fujian	10	March 15, 2014
4th	Guangxi, Shanghai, Qinghai, Tibet, Zhejiang, Hebei, Shanxi, Heilongjiang, Sichuan, Jiangsu	10	July 15, 2014