# Bring the shadow to the light: Market uncertainties and too-big-to-fail perception

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Peer-to-peer (P2P) registration requirements in mid-2018 reminded market participants about the challenges in distinguishing between genuine and fraudulent fintech firms and sparked a market meltdown. The difference-in-difference results based on this unexpected industry meltdown suggest that the TBTF perception can effectively halve investor outflows and borrower outflows during uncertain times. The subsequent dynamic analysis further validates the parallel-trend assumption and shows that the impact of TBTF perception can persist in the long-run. More importantly, empirical results suggest that market participants become unresponsive to all other certification mechanisms, including venture capital participation, custodian banks and third-party guarantees, during the market meltdown.

Keywords: Peer-to-peer; Fintech regulations; Too-big-to-fail perception; Certification effect

JEL classification: D81; G23; G28

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An earlier version of the manuscript was circulated under the title "Fintech regulation and too-big-to-fail perception: Evidence from the registration requirements on Chinese peer-to-peer platforms"

## 1. Introduction

With relatively lenient regulations, the fintech sector is notorious for corporate fraud and is dominated by a few large enterprises. For instance, the former CEO of FTX was accused of misappropriating customer funds, which led to the collapse of the once-leading crypto exchange FTX in late 2022. During the first half of 2023, several ex-employees of Coinbase pleaded guilty to charges of insider trading. In the meantime, Coinbase consistently accounted for around 50% of the US market share. Despite the existence of widespread fraud and financial misconduct, regulatory bodies have yet to achieve a consensus about fintech regulations, not to mention undertake an evaluation of the market response to fintech regulations.

The present state of the fintech sector is similar to that of the Chinese peer-to-peer (P2P) lending industry in the late 2010s. Between mid-2015 and 2017, regulatory bodies gradually introduced a series of stepwise P2P regulations aimed at formalizing business operations and mitigating corporate frauds, which led to the closure of 60% of P2P platforms by early 2018. Despite the phased regulatory measures and the cleaning-up process, regulations governing Chinse P2P firms remained less stringent than their counterparts in other economies (Nemoto et al., 2019), whereas the size of Chinese P2P lending market exceeded that of the entire rest of the world combined in early 2018 (Hasan et al., 2020). By the close of 2017, regulatory bodies resolved to bring this shadow banking sector into the light by mandating all P2P platforms to complete archival-filing and registration procedures prior to the end of June 2018. However, this registration process unexpectedly revealed that over 10% of operating platforms were still problematic around the registration deadline and led to “run type” behavior among market participants.

This unexpected market meltdown in mid-2018 offers a natural experiment to investigate whether and how different certification mechanisms influence market behavior during the period of uncertainty. On one hand, investors are motivated to curtail investments when facing

difficulties in distinguishing between genuine and fraudulent assets (Li, et al., 2012) and regulatory uncertainties (Bonaime et al., 2018). On the other hand, investors in large platforms are expected to exhibit greater resilience to uncertainties, because the collapse of a large firm can pose a threat to social stability, promoting government intervention (He and Li, 2021).

Even though the existence of TBTF perception has been well-documented in the banking literature (e.g., Gorton and Tallman, 2016; Iyer et al., 2019; Gormley et al., 2015), we cannot automatically extrapolate insights from the banking sector to the fintech domain, especially considering that one of the primary objectives of financial innovations is to bypass regulations. For example, Tuandai.com held the rank of the 15th largest P2P platforms based on outstanding loans at the end of 2018, but the platform was collapsed in 2019 and its managers pleaded guilty to charges of illicit fundraising through fake high-return projects and manipulating the stock market.[1] Furthermore, existing studies offer mixed empirical evidence about the linkage between platform size and the probability of default (e.g., He and Li, 2021; Wang, et al., 2021).

Our paper is naturally connected to the growing literature on bank run (Foley-Fisher, et al., 2020; Madies, 2006), the default risk of P2P platforms (He and Li, 2021; Jiang, et al. 2021; Li, et al. 2020) and the behavioral biases of fintech market participants (Chen et al., 2022; Han, et al., 2018; Jiang et al., 2020). However, existing studies have rarely employed natural experiments to filter out key factors influencing the behavior of fintech market participants, probability because fintech regulations are unclear and discrepant over time. We mitigate this concern by exploiting the impact of unexpected P2P market meltdown in mid-2018, and focus on the period between December 17, 2017, and December 16, 2018, to avoid the confounding impact of stepwise regulatory changes before December 2017 and exit policies for winding

[1] See "Founder of P2P lender Tuandai.com sentenced to 20 years in jail for illegal deposit taking"by South China Morning Post (https://www.scmp.com/tech/big-tech/article/3204436/founder-p2p-lender-tuandaicom-sentenced-20-years-jail-illegal-deposit-taking)

down the P2P industry after December 2018. Additionally, to counter look ahead bias, we calculate platform size based on weekly transaction volumes during the quarter before the event window (between September 1, 2017, and November 30, 2017), and define the largest 30 platforms (constituting 5% of the platforms with publicly available weekly data) as the dominator players.

Our results indicate that the TBTF perception can effectively halve investor outflows and borrower outflows during uncertain times. Specifically, the market meltdown in mid-2018, on average, leads to a 73.13% (46.23%) decrease in the number of investors (number of borrowers) for smaller P2P platforms, while a 47.47% (21.26%) reduction for the top 30 platforms. The dynamic analysis further validates the parallel-trend assumption and shows that the difference between TBTF platforms and other platforms persists in the long run.

Upon classifying investors into old and new investors, we observe that relatively more sophisticated old investors hold a stronger TBTF perception than their new counterparts, which suggests that the TBTF perception is likely to be strengthened through a learning by doing process. The empirical results also show that the impact of TBTF perception diminishes rapidly with the platform size (i.e., the impact is statistically significant for the top 30 platforms, at most marginal significant for platforms ranked 31 to 60, and insignificant for those ranked 61 to 90). The correlation between size and investor outflow can even become negative when P2P platforms are fairly small.

More interestingly, all other certification mechanisms, including custodian banks (He and Li, 2021), venture capital participation (Li, et al., 2020) and third-party guarantees (Allen et al., 2023), become dysfunctional during the market meltdown. Similarly, the influence of top managers' background in related fields (Gong, et al., 2020; Morse et al., 2016) amounts to at best one half of the impact of TBTF perception, and only affect either investors or borrowers rather than both.

Our paper provides an essential extension to the limited yet growing literature on fintech market behavior, especially in the context of responses to uncertainties. Our contributions are twofold. First, we confirm the existence of TBTF perception among fintech market participants, which serves to alleviate market sentiment and reduce the pressure of investor and borrower outflows during uncertain times. Large fintech firms, therefore, possess incentives to abuse investor trust by engaging in excessive risk-raking and exploiting personal benefits, just like Ezubao in 2015, Wirecard in 2020, and FTC in 2022. Second, our paper indicates that all the alternative certification mechanisms for fintech firms become dysfunctional during uncertain times. The difference in market behavior between normal times and uncertain times also extends the literature on behavior bias of fintech market participants (Chen et al., 2022; Han, et al., 2018; Jiang et al., 2020) and on default risk of fintech firms (He and Li, 2021; Jiang, et al. 2021; Li, et al. 2020). Besides, the ongoing challenges faced by recent fintech sector, such as widespread corporate fraud, opaque business, and weak regulations, mirror those encountered by the Chinese P2P industry in late 2010s. This study, therefore, also provides insights into other under-regulated fintech industries, such as cryptocurrency and mobile payments.

The rest of the paper is organized as follows. Section 2 describes institutional background and reviews related literature. Section 3 presents data and empirical methodologies. Section 4 provides empirical results, and Section 5 concludes.

## 2. Institutional background and literature review

### 2.1 Institutional background

Between mid-2015 and 2017, regulatory bodies gradually set up P2P guidelines and regulations in piecemeal fashion to mitigate instances of corporate fraud and misconduct.[2] These stepwise P2P regulations helped in cleaning up problem platforms. By the end of February 28, 2018, more than 60% of P2P platforms had ceased operations. Among the collapsed platforms, 40% were shut down due to fraud and 18% were liquidated due to poor performance (Jiang et al., 2021). Meanwhile, this cleaning up process stimulated the growth of the P2P industry. As illustrated in Fig. 1, the outstanding loans of P2P industry surged from 0.24 trillion RMB (approximately $32 billion USD) to 1.04 trillion RMB ($156 billion USD) during the same period. Eventually, by early 2018, the size of Chinese P2P lending market was larger than that of the rest of the world combined (Hasan et al., 2020).

As the final step of introducing formal regulations, on 13 December 2017, the Office for Special Rectification on Online Lending Risk issued an additional notice mandating all P2P platforms to complete the procedures for archival-filing and registration before the end of June 2018.[3] Despite the cleaning-up process between 2015 and 2017, the registration process further detected a notable quantity of problem platforms (more than 10% of operating platforms) around the registration deadline, and increased the uncertainty concerning the differentiation between genuine and fraudulent platforms. This, in turn, led to "run type" behavior among both

[2] The first P2P guideline was setup in July 2015. By the end of 2017, P2P platforms were required to serve as information intermediaries and prohibited from participating in bank-like activities, and were subject to specialized information disclosure requirements, custodian requirements, and compliance supervision (see Jiang et al., 2021, and Hsu et al., 2020 for a detailed discussion).

[3] "*Notice for the assessment of the special campaign against peer-to-peer lending risks*" published by the Office for Special Rectification on Online Lending Risk. See https://www.sohu.com/a/210525969_796810 (in Chinese) for details.

P2P investors and borrowers, as depicted in Panel A of Fig. 2. After observing continued frauds and misconducts within the P2P industry, regulatory bodies finally decided to phase out the P2P industry. They gradually directed P2P platforms to either transition into small loan companies or cease operations after December 19, 2018.[4]

More interestingly, the market-wide uncertainty caused by the registration deadline in mid-2018 did not uniformly affect P2P platforms of varying sizes. Preliminary results presented in Panel B of Fig. 2 indicate that smaller deciles of the investor distribution tracked each other well on a weekly basis, while the largest decile experienced notably smaller declines compared to other deciles. Panel C suggests similar results for the borrower distribution.

## 2.2 Literature review

The Chinese P2P platforms are well-suited for a study on investor behavior, given that the investment decisions within these platforms are made by individual retail investors who are prone to behavioral biases and sentiment. For instance, P2P investors are sensitive to median sentiment (Shao and Bao, 2022) and the tone of voluntary disclosure (Han, et al., 2018), although voluntary disclosure can be manipulated by borrowers and demonstrates a negative correlation with default probabilities (Chen et al., 2022). In addition, investors within coordinated and cooperative communities tend to underestimate the credit risk associated with P2P loans (Hasan et al., 2022). Similarly, the behavior of P2P borrowers can also be affected by sentiment related factors, including positive feedback (Du et al., 2020) and failed attempts to apply for P2P loans (Caglayan et al., 2022).

[4] "*Opinions about how to conduct categorized disposal methods on online lending institutions and prevent possible risks*" published by the Office for Special Rectification on Online Lending Risk. See https://finance.ifeng.com/c/7je4lLlAV3A (in Chinese) for details.

Since the Chinese P2P industry is notorious for corporate frauds and mismanagement, investors are inclined to shy away from investing when confronted with difficulties in distinguish between genuine and fraudulent platforms.[5] However, investors of the largest platforms are expected to be less vulnerable to uncertainties, because the collapse of a large P2P platform can create a threat to social stability and leads to government intervention (He and Li, 2021). Liu, et al. (2019) also provide theoretical evidence suggesting that smaller platforms are compelled to cultivate higher risk control capabilities to compete with their larger counterparts in the presence of TBTF perception.

The existence of TBTF perception has been well-established within banking literature. Specifically, depositors generally hold the belief that the largest banks are systemically important and carry implicit government guarantees. Consequently, they are less likely to run on the largest banks during uncertain times. (e.g., Gorton and Tallman, 2016; Iyer et al., 2019; Gormley et al., 2015). However, this conclusion does not necessarily hold true for fintech firms, because the primary trigger for "run type" behavior for fintech firms is corporate fraud (e.g., the collapse of the prominent crypto exchange, FTX in 2022) rather than liquidity mismatch.

This study also relates to the ongoing debate about which factor(s) contribute to the recent collapse of the Chinese P2P industry. Existing studies suggest that the survival rate of P2P platforms is correlated with venture capital participation (Li, et al., 2020), government affiliation (Jiang, et al., 2021), social capital (Hasan, et al., 2020), and political considerations (He and Li, 2021). However, empirical findings concerning the relationship between platform size and platform failure are inclusive. While He and Li (2021) find that large platforms are less prone to bankruptcy, Wang, et al. (2021), on the contrary, cannot find significant linkage between platform size and the probability of default.

[5] Li, et al (2012) theoretically prove that investors are motivated to flight to most liquid assets, when relatively illiquid assets face the threat of fraud.

Using the unexpected P2P industry meltdown in mid-2018 as an exogeneous event, we examine the influence of different certification mechanisms on market behavior during uncertain times. As discussed in Section 2.1, the registration process in mid-2018 triggered an unexpected market meltdown and once again remained market participants about the difficulty in distinguishing between genuine and fraudulent platforms. If a certification mechanism indeed mitigates market sentiment, it would prevent investors and borrowers from hastily abandoning "certified" platforms.

## 3. Data and empirical methodology

### *3.1 Data and variables*

We manually collect weekly P2P platform data from WDZJ.com and macroeconomic data from Wind database. Our sample period spans from December 17, 2017, to December 16, 2018, because (i) the document of registration requirements was issued on December 13, 2017 and (ii) P2P platforms were gradually ordered to either transition to small loan companies or cease operations after December 19, 2018 (See a detailed discussion in Section 4.1). To avoid the concern of look ahead bias, we use the quarter before the event window (2017:09 – 2017:11) as the estimation window to calculate platform size (*Size*), and exclude platforms without valid transaction data during the estimation window. We also delete platform-week observations with missing values in any of the key variables. The final merged sample consists of 21,684 platform-week observations.

We sort our database by deleting missing observations and winsorizing the data at the 1st and 99th percentile levels to reduce the impact of outliers. Detailed variable definitions are described in the Appendix.

In our main regressions, we consider the largest 30 platforms (i.e., around the largest 5% of all the platforms tracked by WDZJ.com before) to be dominant players. These platforms

collectively account for 55.95% of weekly transaction volume in the estimation window (64.16% of weekly transaction volume in the event window).

We normalize the number of investors and borrowers by platform size (*Size*) to eliminate the effect of scale. Panel B shows that the top 30 P2P platforms have higher normalized number of investors and borrowers (i.e., *#Investors/Size* and *#Borrowers/Size*, respectively) than their counterparts, which indicate that investors and borrowers in the top 30 platforms, on average, invest and borrow smaller amount of money.

The distributions of normalized number of investors and borrowers are right-skewed, with a few platforms predominantly serving small investors and borrowers, driving the sample mean significantly above the median. Besides, the number of weekly investors and borrowers can equal zero in some cases. We, therefore, take the natural-log transformation of one plus the original number in the main regressions.

### *3.2 Empirical strategy*

We employ a difference-in-difference (DiD) design to access the responses of market participants from different-sized P2P platforms to the market meltdown stemming from the mid-2018 registration process. Specifically, we employ the following specification:

$$Y_{it} = \alpha + \beta Top30_i \times Post_{it} + u_i + v_t + \varepsilon_{it}, \quad (1)$$

where $Y_{it}$ measures characteristics, such as ln(*#Investors/Size*+1) and ln(*#Borrowers/Size*+1), for P2P platform *i* at week *t*. *#Investors* and *#Borrowers* are number of investors and borrowers, respectively. Platform size (*Size*) is computed as the average weekly transaction volume during the quarter prior to the announcement date of the registration requirements (i.e., 2017:09—2017:11). As we rely on weekly observations, we approximately use the week between June 25, 2018. and July 1, 2018, as the last week of the pre-event window, since setting the registration cutoff on June 30, 2018, is unfeasible. Therefore, the post-event window identifier,

*Post* is set to one if the date is later than July 1, 2018, and zero otherwise. The indicator variable, *Top30*, is used to identify the largest 30 P2P platforms based on platform size. The interaction term, *Top30×Post*, captures the possible impact of the TBTF perception and is the main variable of interest. Platform fixed effects and time fixed effects ($u_i$ and $v_t$, respectively) are used to capture unobserved heterogeneities and changes in macroeconomic conditions, respectively. Standard errors are adjusted for clustering at the platform level.

## 4. Empirical results

### 4.1 The existence of TBTF perception

Columns 1 and 4 of Table 2 report the baseline results of Equation (1). In the first column, the positive coefficient of *Top30×Post* (0.6704) indicates that the top 30 P2P platforms have experienced less investor outflows than their smaller counterparts during the market meltdown. As *Size* remains constant over time, changes in the ratio of # *Investors*/*Size* are driven by changes in the denominator (i.e., number of investors). The estimated coefficients, therefore, bear the following economic interpretation: The market meltdown in mid-2018 leads to a 73.13% decrease (=Exp(−1.3142)−1) in the number of investors for smaller P2P platforms, whereas a 47.47% decline (=Exp(−1.3142+0.6704)−1) for the top 30 platforms.

The regression results in the fourth column shows that a similar conclusion holds for the number of borrowers. That is, the market meltdown leads to a 46.23% reduction (=Exp(−0.6204)−1) in the number of borrowers for smaller P2P platforms, while a 21.26% drop (=Exp(−0.6204+0.3814)−1) for the top 30 platforms.

As robustness checks, we follow Jiang, et al., (2021) and include platform size (*Size*), platform age (*Age*) and the average term of loans (*Term*) as control variables to capture heterogeneities across P2P platforms and report the results in Columns 2 and 5. Moreover, we further take into account the impact of local economic conditions (Hasan, et al., 2020) by

replacing time fixed effects with province-time fixed effects, and present the results in Columns 3 and 6. The signs and magnitudes of the coefficients are consistent with those in the baseline regressions.

## 4.2 Dynamic differences between TBTF and non-TBTF platforms

Since the registration deadline was announced six months beforehand, the lag between the initial announcement date and the official registration deadline may lead to concerns regarding our identification strategies. Specifically, P2P market participants may anticipate the impact of registration process, and flight to large platforms before the registration deadline. To rule out this possibility and check for the parallel trend assumption, we investigate the dynamic differences between large and small platforms.

$$Y_{it} = \alpha + \sum_{k=1}^{T} \beta_k Top30_i \times D_{tk} + u_i + v_t + \varepsilon_{it}, \quad (2)$$

where $D_{tk}$ are time dummies denoting different weeks, and $\beta_k$ captures the difference between the top 30 and other platforms at the week $k$. To facilitate comparisons, we follow the literature (e.g., Miller, 2023) and set the $\beta_k$ for the last week of the pre-event window (the week between June 25, 2018. and July 1, 2018) to zero.

The results are portrayed in Fig. 3. Notably, all of coefficients in the pre-event window are found to be statistically insignificant and revolve around the horizontal axis. On the contrary, the dynamic coefficients take an upward trajectory shortly after the registration deadline and persist at a stable level in the post-event window. These results provide evidence that P2P market participants have not anticipated the impact of registration deadline, and the impact of TBTF perception can persist in the long run.

## 4.3 TBTF perception or size effect

Hughes and Mester (2013) argue that, even when excluding the impact of TBTF guarantees, larger banks are still more efficient than smaller ones because of scale economies. We then ask whether the "run type" behavior during the market meltdown can be tempered by the general size effect. To test this hypothesis, we include two additional group indicators, *Top31-60*, and *Top61-90*, to capture whether the platform is one of the top 31 to 60, and top 61 to 90 platforms based on platform size, respectively.

The results in Table 3 show that the coefficients of post-event interaction terms decrease with the platform size (The coefficients of *Top30×Post*, *Top31-60×Post*, and *Top61-90×Post* are 0.6704, 0.3912, and −0.1977, respectively, for number of investors; and 0.3814, 0.1927, and −0.2219, respectively, for number of borrowers) and are statistically significant at 1% level only for the top 30 platforms. Similarly, Panel B shows that the coefficient of $Size^2 \times Post$ is positively significant and the coefficient of *Size×Post* is insignificant but negative. This indicates that only the largest platforms benefit the TBTF perception, and the size effect can barely affect market behavior during the meltdown period.

## 4.4 Different groups of market participants

Investors tend to gradually learn their inherent investment ability (Seru et al., 2010) and correct their behavioral biases (Feng and Seashole, 2005) over time. We, therefore, conduct separate analyses for new and old investors using our baseline model, and report the results in columns 1 and 2 of Table 4. The coefficients of *Post* exhibit a comparable magnitude for both new and old investors (−1.1857 and −0.9502, respectively). That is, among non-top P2P platforms, the number of new and old investors have decreased by 69.47% (=Exp(−1.1857)−1) and 61.33% (=Exp(−0.9502)−1), respectively, in response to the market meltdown. On the contrary, the Wald test shows that the market meltdown has larger impact on old investors than on new investors among top P2P platforms. That is, among top P2P platforms, the number of

new and old investors have decreased by 54.37% (=Exp(−0.7846)−1) and 31.46% (=Exp(−0.3778)−1), respectively. This result implies that old investors hold a stronger TBTF perception than new investors.

On may posit that investors (borrowers) may invest in (borrower from) several P2P platforms, thus our main results are due to fund reallocation. In other words, investors (borrowers) may redirect their investments (loans) to larger platforms during uncertain times. To address this potential concern, we further examine the impact of the market meltdown on the average invested amount (*Avg. Inv. Amt.*) and average borrowed amount (*Avg. Brr. Amt.*). As anticipated, investors tend to make less investments and borrowers tend to borrow less from the P2P platform during the market meltdown (the coefficients of *Post* are −0.2255 and −0.5286 for ln(*Avg. Inv. Amt*) and ln(*Avg. Brr. Amt*), respectively). However, the coefficients of *Top30×Post* are consistently statistically insignificant and have substantially smaller magnitude than that of *Post* (the coefficients of *Top30×Post* are −0.0624 and −0.0199 for ln(*Avg. Inv. Amt*) and ln(*Avg. Brr. Amt*), respectively). This finding indicates that market participants in the largest P2P platforms will make a similar reduction on risk exposures as their counterparts in the smaller P2P platforms.

### 4.5 Alternative certification mechanisms and manager experience

Table 5 reports the results on the impact assessment of alternative certification mechanisms. *Custodian*, *VC Participation*, *Secondary Mkt*, *Local Association*, and *Guarantee* are used to capture the certification effect of custodian banks (He and Li, 2021), venture capital participation (Li, et al., 2020), liquidity enhancement due to secondary market, endowment from regional internet finance associations, and third-party guarantees (Allen et al., 2023). The results show that adding the above-mentioned alternative certification mechanisms has minimal impact on the coefficients of *Top30×Post*, which suggests that our main results are

not driven by these alternative channels. Furthermore, none of the effects resulting from the alternative certification mechanisms are comparable to that of TBTF perception. Specifically, for P2P borrowers, none of the above-mentioned alternative certification mechanisms work. For P2P investors, the impact of custodian banks and regional internet finance associations is less than half of that of TBTF perception.

We also check whether our main results are driven by past work experience of top managers (i.e., CEO or board chairperson). To assess this, we use *Manager Bank Exp*, *Manager Fin Exp*, and *Manager Law Exp* as indicator variables for firms led by CEO and/or board chairperson with banking (Gong, et al., 2020), financial (Custodio, and Metzger 2014) and legal (Morse et al., 2016) backgrounds, respectively. Once again, Table 6 confirms that the coefficients of *Top30×Post* remain largely unaffected by the past experience of top managers. Top career background of top managers in the banking industry can moderately mitigate the concern of borrowers but has limited impact on investors, while top managers' career background in the financial industry can mitigate the concern of investors but lacks an effect on borrowers.

### 4.6 Other robustness

We perform several additional robustness checks on our main results. First, to further verify the parallel-trend assumption, we repeat the dynamic treatment effect model, Equation (2), on the average interest rate of P2P bonds (*Yield*). Echoing our main results, Fig. 4 shows that all of coefficients in the pre-event window are insignificant. Additionally, the top 30 P2P platforms response to the market meltdown by swiftly increasing their interest rate on loans, which is also consistent with our main results that largest P2P platforms have experienced more pronounced investor outflows than borrower outflows (i.e., the sum of coefficients of *Post* and *Top30×Post* for the number of investors are consistently more negative than those for the

number of borrowers in Tables 2 and 3). In the second half of post-event window, the coefficient for *Yield* gradually returns to the pre-event level when the P2P market gradually stabilizes, indicating that investors gradually lose their bargaining power over time.

Second, to ease the concern of measurement error, we adopt the outstanding balance as an alternative measure of platform size to distinguish between TBTF and non-TBTF platforms. Specifically, we define platform size as the average outstanding balance of each platform (*Balance*) during the quarter before the event window and use *Top30_Balance* to identify the largest 30 P2P platforms based on outstanding balance. The signs and magnitudes are largely consistent with our main results in Table 2 and Table 3. This reinforces the robustness of our main results.

## 5. Conclusion

Although regulatory bodies had implemented a series of regulations and guidelines between 2015 and 2017 to mitigate corporate fraud and misconduct in the P2P industry, the registration process in mid-2018 unexpectedly unveiled a significant number of problem platforms, triggering "run type" behavior among both P2P investors and borrowers. We utilize this unexpected market meltdown as an exogeneous event to investigate the impact of different certification mechanisms on market behavior during uncertain times.

Overall, the empirical results support the existence of TBTF perception in the P2P market, even in the absence of explicit government guarantees. First, for the largest 30 P2P platforms, the TBTF perception can effectively slashes the investor and borrower outflows by half during the market meltdown in mid-2018. The dynamic analysis further validates the parallel-trend assumption and demonstrates that the impact of TBTF perception can persist in the long run. Second, P2P market participants only consider the top few platforms as TBTF, and do not react to the general size effect during uncertain times. Third, alternative certification mechanisms,

such as custodian banks (He and Li, 2021), venture capital participation (Li, et al., 2020), or financial background of top managers (Custodio, and Metzger 2014) are mostly dysfunctional during the market meltdown.

Despite repeated calls for fintech regulations, regulatory bodies still cannot reach a consensus about fintech regulations, not to mention to evaluate market response to fintech regulations. We contribute by showing that market participants contain the perception of TBTF when they face difficulties in distinguishing between genuine and fraudulent assets. Furthermore, the empirical evidence underscores that fintech investors become skepticism toward all the certification mechanisms, except the TBTF perception, during a market meltdown. The situation face by the Chinese P2P industry in the late 2010s mirrors that of recent fintech industries. On the one side, lenient regulations facilitated the growth of fintech firms. On the other side, these lenient regulations also enable fintech firms to hide fraud and other scandals, which makes market participants unable to distinguish between genuine and fraudulent firms. With the ever-expanding fintech industry, the impact of government regulations and business scandals on fintech market participants deserves further investigation in future studies.

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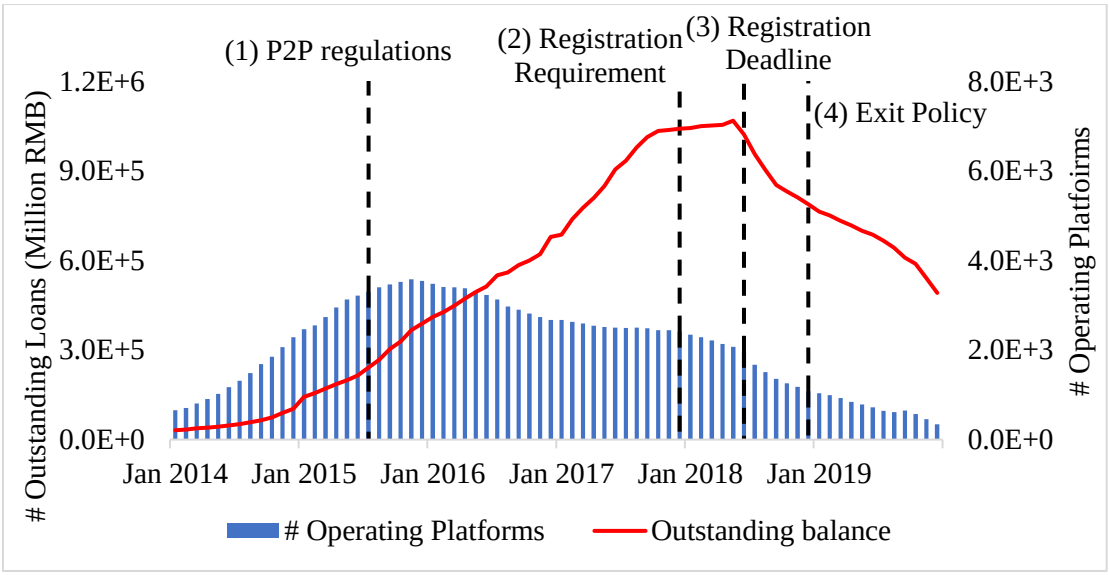
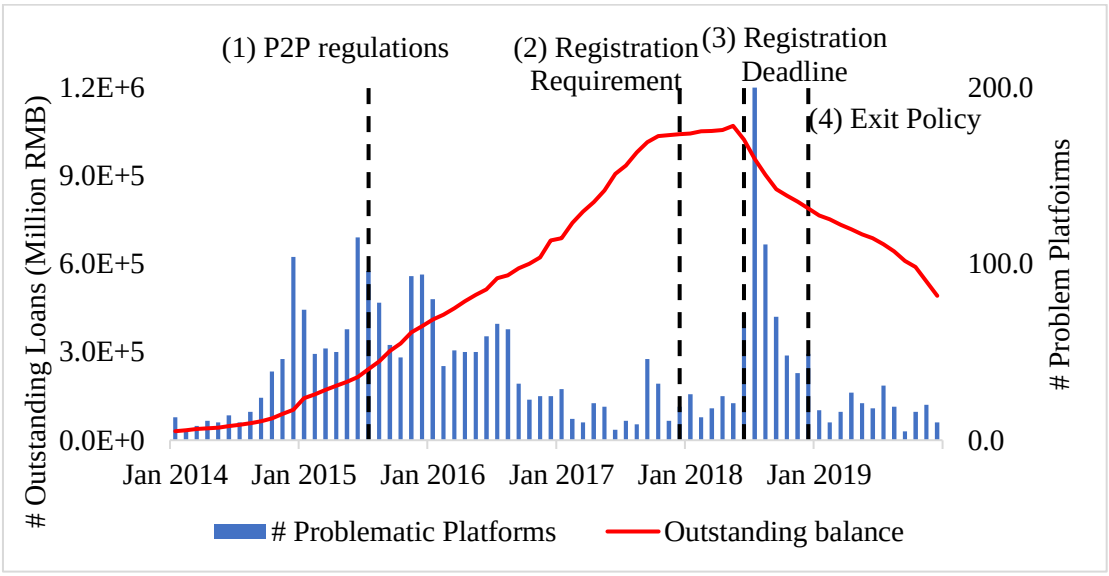


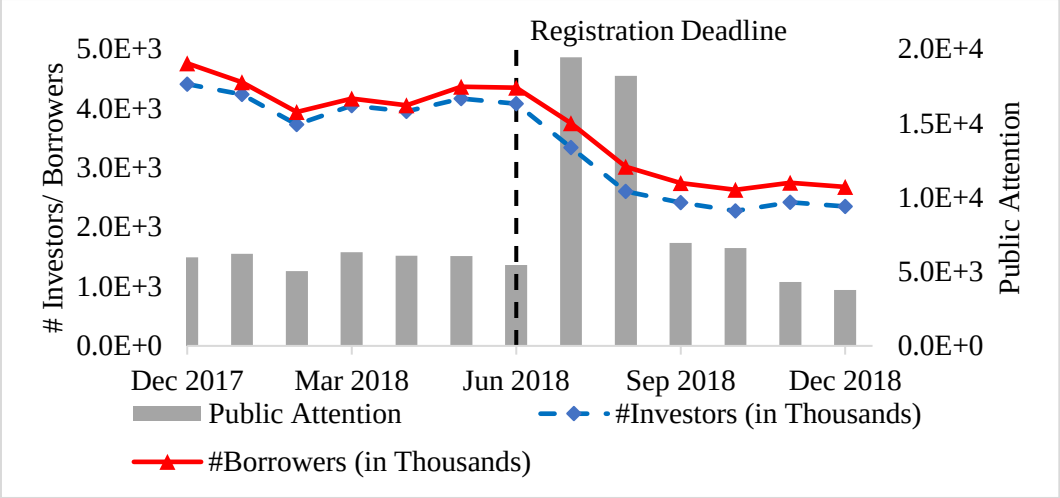

Panel A: Number of operating platforms and outstanding loans



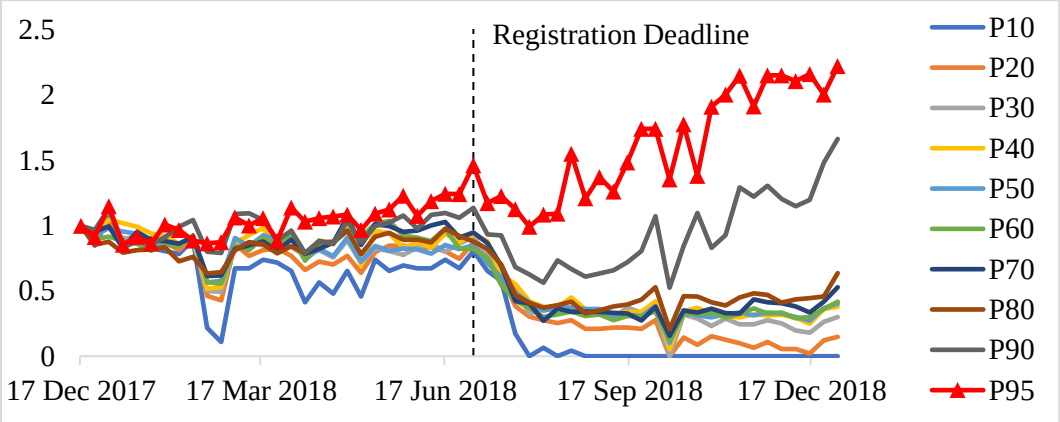

Panel B: Number of problematic platforms and outstanding balance

Fig. 1 Number of platforms and outstanding balance.

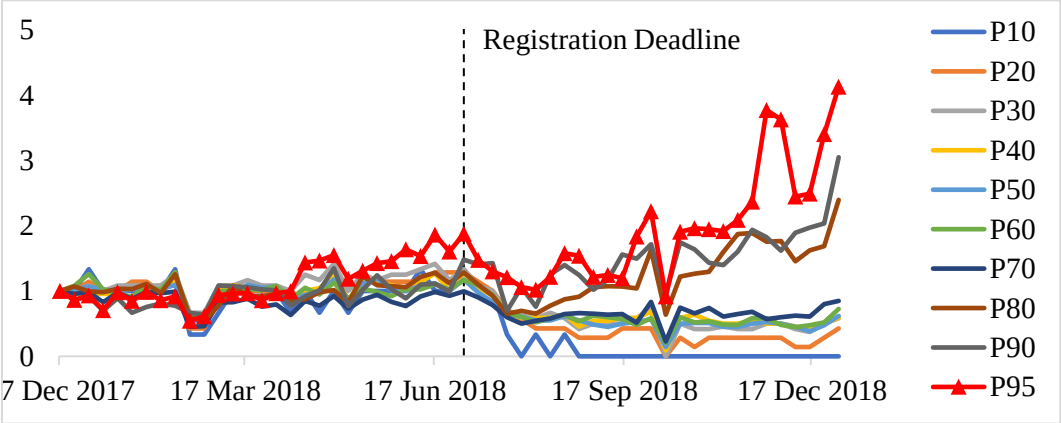
*Notes*: The monthly platform data is obtained from WDZJ.com. In both Panels A and B, four vertical lines depict (1) the starting point of P2P regulations in July 2015, (2) the issuance date of registration requirements in December 2017, (3) the registration deadline in June 2018, and (4) the issuance date of existing policy in December 2018, respectively.




Panel A: Number of market participants and public attention



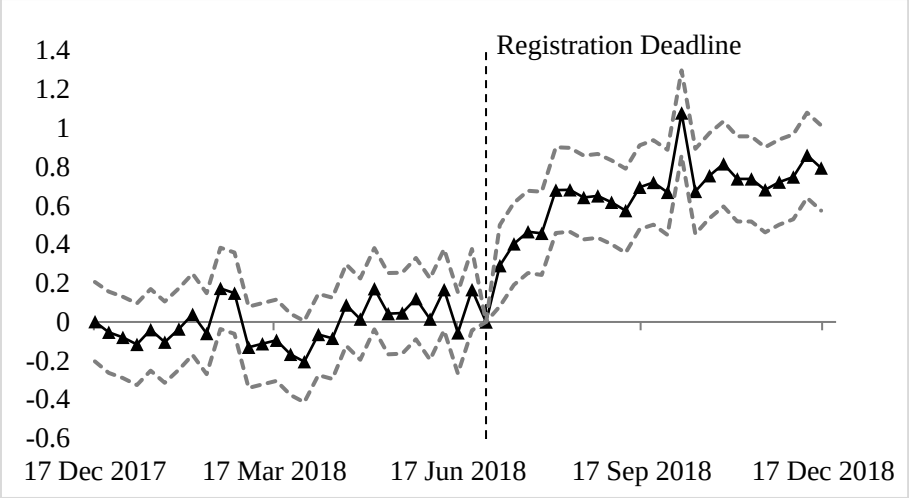

Panel B: Changes in distribution of *#Investors*



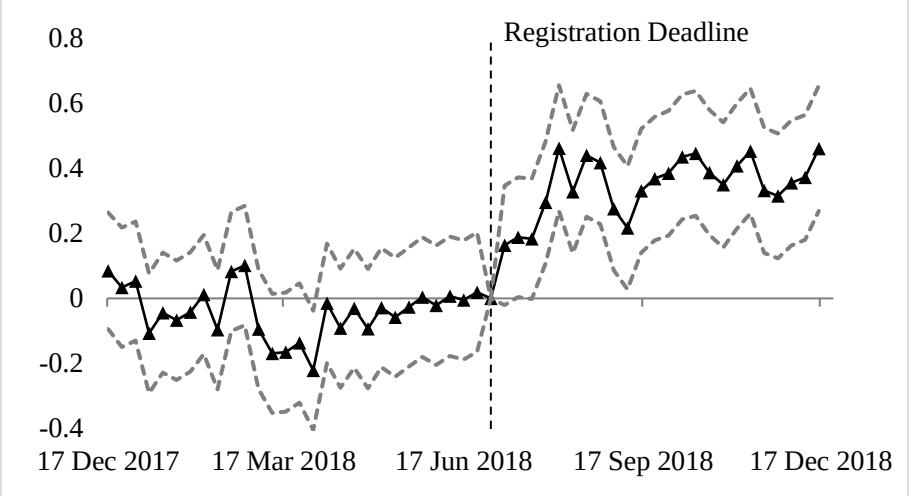

Panel C: Changes in distribution of *#Borrowers*

Fig. 2 "Run type" behavior among market participants after the registration deadline.

*Notes*: Public attention is measured by Baidu search index (Chinese equivalent of Google research index) with a search keyword of "P2P". In Panels B and C, P10, P20, P30, P40, P50, P60, P70, P80, P90, and P95 denote 10, 20, 30, 40, 50, 60, 70, 80, 90, and 95 percentiles and all values are normalized to one at the beginning of the period (i.e., 17 December 2017).




Panel A: Dynamic treatment effect on ln(#*Investors/Size*+1)




Panel B: Dynamic treatment effect on ln(#*Borrowers/Size*+1)

Fig. 3 Dynamic treatment effect.

*Note*: The coefficient is normalized to zero in the week prior to the registration deadline (i.e., the week between June 25, 2018, and July 1, 2018), so all the point estimates can be interpreted as changes relative to the week before the registration deadline.

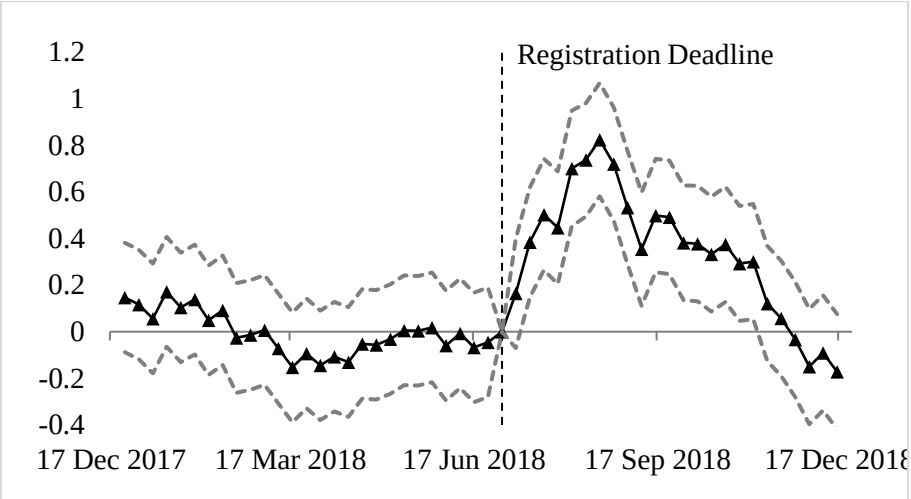



Fig. 4 Dynamic treatment effect on loan yield

*Note*: The coefficient is normalized to zero in the week prior to the registration deadline (i.e., the week between June 25, 2018, and July 1, 2018), so all the point estimates can be interpreted as changes relative to the week before the registration deadline.

**Table 1: Summary statistics**

Panel A shows the descriptive statistics of our sample. Panel B summarizes differences between the top 30 P2P platforms and other non-top platforms. Variables are defined in the Appendix.

Panel A: Summary statistics of full sample

| | Obs. | Mean | Std. Dev. | P5 | P25 | P50 | P75 | P95 |
|---|---|---|---|---|---|---|---|---|
| *Size* | 21,684 | 90.27 | 254.77 | 1.04 | 5.47 | 14.90 | 59.43 | 382.45 |
| *#Investors* | 21,659 | 6,914.16 | 39,935.82 | 0 | 8 | 37 | 289 | 19,729 |
| *#Borrowers* | 21,659 | 5,855.38 | 30,709.06 | 0 | 74 | 308 | 1,553 | 19,268 |
| *#New Investors* | 20,989 | 1,942.05 | 7,735.35 | 0 | 43 | 185 | 889 | 7,160 |
| *#Old Investors* | 20,989 | 3,823.65 | 24,346.26 | 0 | 23 | 109 | 557 | 11,371 |
| *#Investors/Size* | 21,659 | 28.90 | 97.82 | 0 | 1.05 | 3.37 | 10.63 | 128.97 |
| *#Borrowers/Size* | 21,659 | 40.93 | 60.25 | 0 | 11.02 | 24.63 | 45.45 | 131.86 |
| *#New Investors/Size* | 20,989 | 21.32 | 27.68 | 0 | 6.06 | 13.84 | 25.69 | 68.25 |
| *#Old Investors/Size* | 20,989 | 18.35 | 34.45 | 0 | 3.18 | 8.79 | 17.76 | 72.29 |
| *Term* (Month) | 21,057 | 7.05 | 7.23 | 0.26 | 2.88 | 4.93 | 8.34 | 23.78 |
| *Age* (Month) | 21,684 | 44.01 | 14.89 | 23.54 | 35.18 | 42.64 | 50.56 | 69.11 |

Panel B: Top platforms versus other platforms

| | Top30 platforms | | | non-Top30 platforms | | |
|---|---|---|---|---|---|---|
| | Mean | Median | Std. Dev. | Mean | Median | Std. Dev. |
| Pre-Event (Dec 17, 2017 -- Jul 1, 2018) | | | | | | |
| *Size* | 814.45 | 560.71 | 566.26 | 36.76 | 13.55 | 51.99 |
| *#Investors* | 67,907.68 | 13,186 | 113,129.00 | 1,749.62 | 43 | 11,595.30 |
| *#Borrowers* | 63,748.99 | 37,100 | 94,458.30 | 1,642.75 | 385 | 4,432.35 |
| *#New Investors* | 20,435.23 | 10,604 | 24,757.20 | 858.23 | 242 | 1,614.69 |
| *#Old Investors* | 41,245.87 | 18,617 | 74,394.06 | 800.28 | 139 | 3,503.08 |
| *#Investors/Size* | 86.23 | 24.44 | 137.49 | 23.38 | 3.85 | 87.22 |
| *#Borrowers/Size* | 77.45 | 49.50 | 84.88 | 44.49 | 30.66 | 56.55 |
| *#New Investors/Size* | 25.87 | 20.38 | 25.51 | 25.68 | 18.17 | 28.99 |
| *#Old Investors/Size* | 47.73 | 20.52 | 61.26 | 17.86 | 11.08 | 28.60 |
| Post-Event (Jul 1, 2018 -- Dec 19, 2018) | | | | | | |
| *Size* | 870.78 | 579.30 | 574.12 | 35.28 | 12.23 | 52.55 |
| *#Investors* | 91,737.49 | 17,104 | 145,501.40 | 1,814.96 | 18 | 10,901.16 |
| *#Borrowers* | 70,894.82 | 35,897 | 104,137.80 | 1,155.56 | 137 | 4,444.76 |
| *#New Investors* | 17,242.40 | 9,543 | 21,001.30 | 499.35 | 82 | 1,749.63 |
| *#Old Investors* | 54,130.68 | 25,540 | 90,572.14 | 650.65 | 46 | 3,153.81 |
| *#Investors/Size* | 114.50 | 29.55 | 176.68 | 24.68 | 1.96 | 94.59 |
| *#Borrowers/Size* | 80.88 | 47.45 | 94.75 | 28.41 | 13.85 | 55.33 |
| *#New Investors/Size* | 20.41 | 15.17 | 23.83 | 14.45 | 8.10 | 24.60 |
| *#Old Investors/Size* | 56.53 | 23.35 | 68.23 | 13.17 | 4.80 | 31.34 |

**Table 2 Market response to the registration deadline**

Table 2 reports baseline regression results. # *Investors* and # *Borrowers* are the number of borrowers and investors of P2P platforms, respectively. *Size* equals the average weekly transaction volume during the quarter before the event window (2017:09 – 2017:11), and *Top30* identifies the largest 30 P2P platforms based on platform size (*Size*). *Post* is an indicator variable that equals one if the date is later than the registration deadline of July 1, 2018, and zero otherwise. All control variables are defined in the Appendix. Standard errors are clustered by platform, and *t*-statistics are reported in parentheses. The Wald test examines the joint statistical significance of *Post* and *Top30×Post*. *P*-values based on Wald tests are reported in square brackets. *, **, *** indicate statistical significance at 10%, 5%, and 1%, respectively.

| | ln(# *Investors*/*Size*+1) | | | ln(# *Borrowers*/*Size*+1) | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Top30×Post* | 0.6704*** | 0.4775*** | 0.4362*** | 0.3814*** | 0.3387*** | 0.3364** |
| | (5.4182) | (4.0865) | (3.4172) | (3.1226) | (2.8784) | (2.5307) |
| *Post* | -1.3142*** | -1.1895*** | -1.1825*** | -0.6204*** | -0.7389*** | -0.8147*** |
| | (-15.5314) | (-8.8889) | (-2.6240) | (-7.7571) | (-4.1966) | (-4.9561) |
| ln(*Age*) | | 1.3237*** | 1.2714*** | | 1.3000** | 1.2524** |
| | | (3.8696) | (3.7270) | | (2.5224) | (2.3270) |
| ln(*Term*) | | 0.0470 | 0.0403 | | -0.0038 | 0.0040 |
| | | (1.1276) | (0.9897) | | (-0.0733) | (0.0851) |
| ln(*Size*) | | -0.2022* | -0.2214 | | 0.7177*** | 0.7070*** |
| | | (-1.7220) | (-1.4434) | | (4.1390) | (4.3747) |
| Constant | 5.2449*** | 0.1699 | 0.4534 | 6.4044*** | -3.6363*** | -3.3379** |
| | (87.7234) | (0.1870) | (0.3750) | (102.0553) | (-2.6396) | (-2.0801) |
| Wald Test: Coef. of *Post* + Coef. of *Top30×Post* | | | | | | |
| | -0.6438*** | -0.7120*** | -0.7463 | -0.2390* | -0.4002** | -0.4783** |
| | [0.0000] | [0.0000] | [0.1110] | [0.0531] | [0.0246] | [0.0181] |
| Platform FE | Y | Y | Y | Y | Y | Y |
| Time FE | Y | Y | - | Y | Y | - |
| Province-Time FE | - | - | Y | - | - | Y |
| Observations | 21,659 | 19,781 | 19,781 | 21,659 | 19,781 | 19,781 |
| Adjusted R-squared | 0.6180 | 0.6727 | 0.6788 | 0.7726 | 0.8075 | 0.8085 |

**Table 3 TBTF perception or size effect**

Table 3 report regression results on general size effect. # *Investors* and # *Borrowers* are the number of borrowers and investors of P2P platforms, respectively. Platform size (*Size*) equals the average weekly transaction volume during the quarter before the event window (2017:09 – 2017:11). *Top30*, *Top31-60*, and *Top61-90* are indicator variables that equal one if the platform is one of the top 30, top 31 to 60, and top 61 to 91 by platform size, respectively, and zero otherwise. *Post* is an indicator variable that equals one if the date is later than the registration deadline of July 1, 2018, and zero otherwise. Standard errors are clustered by platform, and *t*-statistics are reported in parentheses. *, **, *** indicate statistical significance at 10%, 5%, and 1%, respectively.

Panel A: Different size groups on number of investors

| | ln(#*Investors*/*Size* +1) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *Top30*×*Post* | 0.6704*** | | | 0.6949*** | |
| | (5.4182) | | | (5.5509) | |
| *Top31-60*×*Post* | | 0.3912* | | 0.4378** | |
| | | (1.9112) | | (2.1271) | |
| *Top61-90*×*Post* | | | -0.1977 | -0.1162 | |
| | | | (-0.9333) | (-0.5456) | |
| *Size*×*Post* | | | | | -0.0417 |
| | | | | | (-0.5411) |
| $Size^2$×*Post* | | | | | 0.0204** |
| | | | | | (1.9786) |
| *Post* | -1.3142*** | -1.2903*** | -1.2529*** | -1.3412*** | -1.3806*** |
| | (-15.5314) | (-15.2156) | (-14.9446) | (-15.4683) | (-9.3109) |
| Constant | 5.2449*** | 5.5384*** | 5.5222*** | 5.2449*** | 5.3865*** |
| | (87.7234) | (155.1979) | (155.2396) | (87.7101) | (115.6100) |
| Platform FE | Y | Y | Y | Y | Y |
| Time FE | Y | Y | Y | Y | Y |
| Observations | 21,659 | 21,659 | 21,659 | 21,659 | 21,659 |
| Adjusted R-squared | 0.6180 | 0.6152 | 0.6142 | 0.6197 | 0.6184 |

Panel B: Different size groups on number of borrowers

| | ln(*#Borrowers*/*Size* +1) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *Top30×Post* | 0.3814*** | | | 0.3866*** | |
| | (3.1226) | | | (3.1607) | |
| *Top31-60×Post* | | 0.1927 | | 0.2124 | |
| | | (0.7287) | | (0.8014) | |
| *Top61-90×Post* | | | -0.2219 | -0.1786 | |
| | | | (-1.2906) | (-1.0369) | |
| *Size×Post* | | | | | 0.0286 |
| | | | | | (0.4797) |
| *$Size^2$×Post* | | | | | 0.0049 |
| | | | | | (0.6103) |
| *Post* | -0.6204*** | -0.6047*** | -0.5801*** | -0.6269*** | -0.7296*** |
| | (-7.7571) | (-7.9658) | (-7.4416) | (-8.0196) | (-5.9685) |
| Constant | 6.4044*** | 6.5705*** | 6.5597*** | 6.4044*** | 6.4813*** |
| | (102.0553) | (160.4527) | (157.6427) | (102.0534) | (118.7845) |
| Platform FE | Y | Y | Y | Y | Y |
| Time FE | Y | Y | Y | Y | Y |
| Observations | 21,659 | 21,659 | 21,659 | 21,659 | 21,659 |
| Adjusted R-squared | 0.7726 | 0.7718 | 0.7718 | 0.7730 | 0.7728 |

## Table 4 Impact of different group of market participants

Table 4 represents detailed regression results on different groups of market participants. # *New Investors* and # *Old Investors* are the number of new and old investors, respectively. *Avg. Inv. Amt.* and *Avg. Brr. Amt.* are average invested amount and average borrowed amount on P2P platform, respectively. *Size* equals the average weekly transaction volume during the quarter before the event window (2017:09 – 2017:11), and *Top30* identifies the largest 30 P2P platforms based on platform size (*Size*). *Post* is an indicator variable that equals one if the date is later than the registration deadline of July 1, 2018, and zero otherwise. Standard errors are clustered by platform, and *t*-statistics are reported in parentheses. The Wald test examines the joint statistical significance of *Post* and *Top30×Post*. *P*-values based on Wald tests are reported in square brackets. *, **, *** indicate statistical significance at 10%, 5%, and 1%, respectively.

| | ln(*#New Investors/ Size*+1) (1) | ln(*#Old Investors/ Size*+1) (2) | ln(*Avg. Inv. Amt.)* (3) | ln(*Avg. Brr Amt.*) (4) |
|---|---|---|---|---|
| *Top30×Post* | 0.4011*** | 0.5724*** | -0.0624 | 0.0199 |
| | (3.8154) | (4.7406) | (-0.6470) | (0.1566) |
| *Post* | -1.1857*** | -0.9502*** | -0.2255*** | -0.5286*** |
| | (-16.2074) | (-13.0218) | (-4.5713) | (-6.5003) |
| Constant | 2.8371*** | 5.0740*** | -5.3388*** | -6.5684*** |
| | (53.8965) | (85.8877) | (-113.3390) | (-95.8884) |
| Wald Test: Coef. of *Post* + Coef. of *Top30×Post* | | | | |
| | -0.7846*** | -0.3778*** | -0.2879*** | -0.5087*** |
| | [0.0000] | [0.0024] | [0.0063] | [0.0001] |
| Platform FE | Y | Y | Y | Y |
| Time FE | Y | Y | Y | Y |
| Observations | 20,989 | 20,989 | 20,329 | 20,343 |
| Adjusted R-squared | 0.6105 | 0.6553 | 0.7101 | 0.8233 |

## Table 5 Alternative certification mechanisms

Table 5 reports the regression results on the impact of alternative certification mechanisms. # *Investors* and # *Borrowers* are the number of borrowers and investors of P2P platforms, respectively. *Size* equals the average weekly transaction volume during the quarter before the event window (2017:09 – 2017:11), and *Top30* identifies the largest 30 P2P platforms based on platform size (*Size*). *Post* is an indicator variable that equals one if the date is later than the registration deadline of July 1, 2018, and zero otherwise. *Custodian*, *VC participation*, *Secondary Mkt*, *Local Association*, and *guarantee* are indicator variables for platforms with a custodian bank, venture capital participation, a secondary market, membership in regional internet finance associations, and principal guarantee, respectively. Standard errors are clustered by platform, and *t*-statistics are reported in parentheses. The Wald test examines the joint statistical significance of *Post* and *X*×*Post*, and *X* denotes alternative certification variables (e.g., *X* denotes *Custodian* in the first column). *P*-values based on Wald tests are reported in square brackets. *, **, *** indicate statistical significance at 10%, 5%, and 1%, respectively.

Panel A: Alternative certification mechanisms on number of investors

| | ln(#*Investors*/*Size* +1) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *Top30*×*Post* | 0.6360*** | 0.6612*** | 0.6331*** | 0.5636*** | 0.6903*** |
| | (5.3556) | (4.9891) | (4.9809) | (4.2481) | (5.3369) |
| *Post* | -1.5349*** | -1.3191*** | -1.4196*** | -1.4007*** | -1.3511*** |
| | (-11.4924) | (-15.3193) | (-12.0191) | (-14.2228) | (-12.9407) |
| *Custodian*×*Post* | 0.2850** | | | | |
| | (2.2570) | | | | |
| *VC Participation*×*Post* | | 0.0243 | | | |
| | | (0.1994) | | | |
| *Secondary Mkt*×*Post* | | | 0.1548 | | |
| | | | (1.3753) | | |
| *Local Association*×*Post* | | | | 0.2108** | |
| | | | | (2.1098) | |
| *Guarantee*×*Post* | | | | | 0.0633 |
| | | | | | (0.6297) |
| Constant | 5.2304*** | 5.2403*** | 5.2314*** | 5.2363*** | 5.2525*** |
| | (90.0074) | (80.9807) | (86.9427) | (86.3204) | (85.4410) |
| Wald Test: Coef. of *Post* + Coef. of *X*×*Post* | | | | | |
| | -1.2499*** | -1.2948*** | -1.2648*** | -1.1899*** | -1.2878*** |
| | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] |
| Platform FE | Y | Y | Y | Y | Y |
| Time FE | Y | Y | Y | Y | Y |
| Observations | 21,659 | 21,659 | 20,768 | 21,659 | 21,659 |
| Adjusted R-squared | 0.6200 | 0.6180 | 0.6194 | 0.6194 | 0.6181 |

Panel B: Alternative certification mechanisms on number of borrowers

| | ln(*#Borrowers/Size*+1) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *Top30×Post* | 0.3636*** | 0.4084*** | 0.3605*** | 0.3323*** | 0.3938*** |
| | (3.0231) | (3.2314) | (2.8648) | (2.6102) | (3.1725) |
| *Post* | -0.7348*** | -0.6059*** | -0.6990*** | -0.6602*** | -0.6434*** |
| | (-6.5436) | (-7.3350) | (-6.9750) | (-7.1392) | (-6.7546) |
| *Custodian×Post* | 0.1476 | | | | |
| | (1.4069) | | | | |
| *VC Participation×Post* | | -0.0708 | | | |
| | | (-0.6544) | | | |
| *Secondary Mkt×Post* | | | 0.0991 | | |
| | | | (1.0790) | | |
| *Local Association×Post* | | | | 0.0970 | |
| | | | | (1.1271) | |
| *Guarantee×Post* | | | | | 0.0394 |
| | | | | | (0.4594) |
| Constant | 6.3969*** | 6.4178*** | 6.4029*** | 6.4005*** | 6.4092*** |
| | (102.0608) | (93.4501) | (101.3707) | (101.2960) | (99.7190) |
| Wald Test: Coef. of *Post* + Coef. of *X×Post* | | | | | |
| | -0.5872*** | -0.6767*** | -0.5999*** | -0.5632*** | -0.6040*** |
| | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] |
| Platform FE | Y | Y | Y | Y | Y |
| Time FE | Y | Y | Y | Y | Y |
| Observations | 21,659 | 21,659 | 20,768 | 21,659 | 21,659 |
| Adjusted R-squared | 0.7730 | 0.7727 | 0.7722 | 0.7728 | 0.7726 |

## Table 6 Alternative Channels: CEO experience

Table 6 reports the regression results on the impact of CEO experience. # *Investors* and # *Borrowers* are the number of borrowers and investors of P2P platforms, respectively. *Size* equals average weekly transaction volume during the quarter before the event window (2017:09 – 2017:11), and *Top30* identifies the largest 30 P2P platforms based on platform size (*Size*). *Post* is an indicator variable that equals one if the date is later than the registration deadline of July 1, 2018, and zero otherwise. *Manager Bank Exp*, *Manager Fin Exp*, *Manager Law Exp* equal one if CEO or board chairperson has/ have working experience in the banking industry, financial industry, and law industry, respectively, and zero otherwise. Standard errors are clustered by platform, and *t*-statistics are reported in parentheses. The Wald test examines the joint statistical significance of *Post* and *X*×*Post*, and *X* denotes CEO experience variable in each regression (e.g., *X* denotes *Manager Bank Exp* in the first column). *P*-values based on Wald tests are reported in square brackets. *, **, *** indicate statistical significance at 10%, 5%, and 1%, respectively.

| | ln(#*Investors*/*Size* +1) | | | ln(#*Borrowers*/*Size* +1) | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Top30*×*Post* | 0.6734*** | 0.7020*** | 0.7034*** | 0.3631*** | 0.4000*** | 0.4004*** |
| | (5.1319) | (5.4473) | (5.4442) | (2.6991) | (2.9579) | (2.9429) |
| *Post* | -1.3766*** | -1.4498*** | -1.3299*** | -0.6684*** | -0.6725*** | -0.6083*** |
| | (-14.3178) | (-13.0758) | (-14.8732) | (-7.2108) | (-6.0646) | (-7.0321) |
| *Manager Bank Exp*×*Post* | 0.1743 | | | 0.2134** | | |
| | (1.6183) | | | (2.2766) | | |
| *Manager Fin Exp*×*Post* | | 0.2085** | | | 0.1153 | |
| | | (1.9834) | | | (1.1999) | |
| *Manager Law Exp*×*Post* | | | 0.1019 | | | 0.0837 |
| | | | (0.5434) | | | (0.6619) |
| Constant | 5.2700*** | 5.2898*** | 5.2355*** | 6.4344*** | 6.4194*** | 6.3905*** |
| | (78.1036) | (75.7267) | (84.1392) | (92.5907) | (89.5335) | (93.1163) |
| Wald Test: Coef. of *Post* + Coef. of *X*×*Post* | | | | | | |
| | -1.2023*** | -1.2413*** | -1.2280*** | -0.4550*** | -0.5572*** | -0.5246*** |
| | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0001] |
| Platform FE | Y | Y | Y | Y | Y | Y |
| Time FE | Y | Y | Y | Y | Y | Y |
| Observations | 19,453 | 19,453 | 19,453 | 19,453 | 19,453 | 19,453 |
| Adjusted R-squared | 0.6268 | 0.6273 | 0.6259 | 0.7684 | 0.7677 | 0.7674 |

## Table 7 Robustness: Alternative size measures

Table 7 reports the regression results of robustness checks. We alternatively define platform size as the average outstanding balance of each platform (*Balance*) during the quarter before the event window (2017:09 – 2017:11) and use *Top30_Balance* to identify the largest 30 P2P platforms based on outstanding balance. *Post* is an indicator variable that equals one if the date is later than the registration deadline of July 1, 2018, and zero otherwise. Standard errors are clustered by platform, and *t*-statistics are reported in parentheses. The Wald test examines the joint statistical significance of *Post* and *Top30×Post*. *P*-values based on Wald tests are reported in square brackets. *, **, *** indicate statistical significance at 10%, 5%, and 1%, respectively.

| | ln(*#Investors/Size*) | | ln(*#Borrowers/Size*) | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Top30_Balance×Post* | 0.4640*** | | 0.2747** | |
| | (2.9357) | | (2.0568) | |
| ln(*Balance*)×*Post* | | -0.0702 | | -0.0280 |
| | | (-0.6900) | | (-0.3697) |
| ln(*Balance*)$^2$×*Post* | | 0.0129* | | 0.0074 |
| | | (1.6547) | | (1.2536) |
| *Post* | -1.2984*** | -1.3207*** | -0.6123*** | -0.6929*** |
| | (-15.2553) | (-4.0289) | (-7.6574) | (-2.8915) |
| Constant | 5.5419*** | 5.3929*** | 6.5737*** | 6.4710*** |
| | (156.0293) | (113.7611) | (155.6530) | (123.9695) |
| Wald Test: Coef. of *Post* + Coef. of *Top30×Post* | | | | |
| | -0.8344*** | | -0.3376** | |
| | [0.0000] | | [0.0120] | |
| Platform FE | Y | Y | Y | Y |
| Time FE | Y | Y | Y | Y |
| Observations | 21,659 | 21,659 | 21,659 | 21,659 |
| Adjusted R-squared | 0.6159 | 0.6177 | 0.7721 | 0.7730 |

## Appendix: Variable definitions

| Variable | Definition |
|---|---|
| **Key variables** | |
| *Size* | Average weekly transaction volume (million CNY) during the quarter before the event window (2017:M9 and 2017:M11) |
| *# Investors*/*Size* | Number of investors scaled by *Size* |
| *# Borrowers*/*Size* | Number of borrowers scaled by *Size* |
| *Top30* | Dummy variable that equals 1 if the platform is one of the top 30 platforms based on *Size*, and 0 otherwise |
| *Post* | Dummy variable that equals 1 if the date is later than July 1, 2018 and 0 otherwise |
| **Other variables** | |
| *# New Investors*/*Size* | Number of new investors scaled by *Size* |
| *# Old Investors*/*Size* | Number of existing investors scaled by *Size* |
| *Balance* | Average outstanding balance (million CNY) during the quarter before the event window (2017:M9 and 2017:M11) |
| *Yield* | Average loan interest rate (in %) for borrowers |
| *Term* | Average loan term (in months) |
| *Age* | Number of years since inception (in months) |
| *Custodian* | Dummy variable that equals 1 if the platform has a custodian bank and 0 otherwise |
| *VC Participation* | Dummy variable that equals 1 if the platform has venture capital participation and 0 otherwise |
| *Secondary Mkt* | Dummy variable that equals 1 if the platform has a secondary market for investors and 0 otherwise |
| *Local Association* | Dummy variable that equals 1 if the platform is a member of regional internet finance associations and 0 otherwise |
| *Guarantee* | Dummy variable that equals 1 if the platform has principal guaranty and 0 otherwise |
| *Manager Bank Exp* | Dummy variable that equals 1 if CEO or board chairperson has/ have working experience in the banking industry and 0 otherwise |
| *Manager Fin Exp* | Dummy variable that equals 1 if CEO or board chairperson has/ have working experience in the financial industry and 0 otherwise |
| *Manager Law Exp* | Dummy variable that equals 1 if CEO or board chairperson has/ have working experience in the law industry and 0 otherwise |