Are Crowdfunding Platforms Active and Effective Intermediaries?

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Abstract

Crowdfunding platform due diligence comprises background checks, site visits, credit checks, cross-checks, account monitoring, and third party proof on funding projects. We conjecture that due diligence is associated with the busyness of platform employees, sophistication of the platform service (as indicated by fee structure), and the type or complexity of campaigns. Due diligence screens lower quality projects and mitigates information asymmetries between project issuers and funders; it is, therefore, associated with a higher percentage of successful campaigns and a larger amount of capital raised on platforms. We test these two propositions for the first time with unique platform-level data, and find strong supportive evidence.

Keywords: Crowdfunding, entrepreneurial finance, intermediaries

JEL Codes: G23, G24, L26
1. Introduction

It is widely recognized in oft-repeated media releases that crowdfunding has drastically changed the entrepreneurship and entrepreneurial finance ecosystem. Relative to the better-studied traditional forms of finance involving banks (Robb and Robinson, 2012; Ryan et al., 2014; Tykvová, 2016), venture capital (Giot and Schwienbacher, 2007; Nahata, 2008; Nahata et al., 2014; Espenlaub et al., 2015) and private equity (Nahata et al., 2014; Espenlaub et al., 2015) and initial public offerings (IPOs) (Vismara et al., 2012), crowdfunding potentially involves a more pronounced democratization of capital, with the frequency and success of capital campaigns more equitably distributed across gender and project types. This spurs the creative process, enabling innovation and entrepreneurship at new levels of vigor not previously possible through traditional forms of entrepreneurial finance (Schwienbacher et al., 2013; Belleflamme et al., 2014; Dorfleitnera et al., 2016; Vismara, 2016). In recent years, the volume of crowdfunding has at least doubled annually around the world; in 2014, the crowdfunding market was $US17.25 billion in North America, $US85.74 million in South America, $US6.84 billion in Europe, $US24.16 million in Africa, $US10.54 billion in Asia, and $US68.60 million in Oceania (Massolution, 2015).

With the growth in crowdfunding markets around the world, several questions arise for which answers are not easily transferrable from other types of entrepreneurial finance. One question hitherto unexplored is very basic: whether all types of platforms are the same, merely providing ease of connection between individual funders and those that need capital, or whether they, in fact, differ in the sense that, for example, one venture capital fund may differ from another, implying massive differences for the venture’s success and the investor’s returns (Nahata, 2008). Given the massive information asymmetries between investors with capital and entrepreneurs that need capital, attributable to the scant or non-existent disclosure requirements
when an entrepreneurial firm is not publicly listed on a stock exchange, it becomes important to understand what crowdfunding platforms actually do and whether it influences entrepreneurial outcomes and funder returns. Similarly, as many global regions wrestle with legislation pertaining to crowdfunding, it is important to know what role platforms can, should, and/or might play in the governance of crowdfunding marketplaces.

In this paper, we address these questions with a unique dataset gathered from 51 Canadian crowdfunding platforms over the years 2013-2016, in which the 2013-2015 data are based on actual transactions, and the 2016 data are estimated by each platform. The data comprise a majority of the crowdfunding marketplace, representing 71% of the total number of crowdfunding platforms in Canada in 2015, and were collected by a reputable third party (the National Crowdfunding Association of Canada, or NCFA Canada¹). The data enable direct investigation of what crowdfunding platforms do. In particular, we examine crowdfunding due diligence, meaning the screening of projects that seek listing on crowdfunding platforms. We also examine other value-added services provided by platforms that go beyond due diligence. Finally, we assess the factors that influence the application of due diligence and other services, as well as whether due diligence and other services provided by platforms are associated with the success of project campaigns.

The data examined reveal that crowdfunding platform due diligence comprises background checks, site visits, credit checks, cross-checks, account monitoring, and third party proof. The data indicate that due diligence is less prominent for crowdfunding platforms with busy employees that list too many projects, with a less-sophisticated management system, as indicated by an inflexible service-fee structure, and with less complex campaigns that do not

¹ [http://ncfakanada.org/](http://ncfakanada.org/)
involve security investment. We further find that due diligence application not only facilitates fundraising campaign success but also helps to increase the total amount of money raised on a platform. We argue that due diligence application benefits the crowdfunding process by screening lower quality or fraudulent projects and mitigating information asymmetries between project issuers and funders.

Our paper is related to a growing number of studies on reward-based crowdfunding (Agrawal et al., 2015; Belleflamme et al., 2013; 2014; Berea et al., 2016; Colombo et al., 2016) equity crowdfunding (Ahlers et al., 2015; Vismara, 2016), and crowdfunding regulation (Griffin, 2012; Hornuf and Schwienbacher, 2016a; 2016b). A common feature of these papers, however, is that the differences across platforms are not empirically studied, as the data typically come from just one platform. Our paper is distinct in exploring differences across platforms on due diligence application using unique proprietary data on platform operations. Our paper is, likewise, related to other forms of entrepreneurial finance, such as work on investor effort; most directly, our paper relates to work on the importance of due diligence (Yung, 2009), investor value added (Kanniainen and Keuschnigg, 2003; 2004; Keuschnigg, 2004; Andrieu and Groh, 2012), and venture capital and private equity reputation (Nahata, 2008). There is evidence of massive heterogeneity across private equity funds in the extent of due diligence carried out prior to investment, and a positive correlation and even a causal connection between the extent of due diligence and the investee firm’s subsequent performance (Cumming and Zambelli, 2016), consistent with theory (Yung, 2009). Inspired by these related studies, our analysis examines the presence and impact of due diligence on fundraising campaigns in the relatively new field of crowdfunding.
2. Institutional Settings and Legal Environment

Crowdfunding involves sourcing capital from many (typically) retail funders through an internet webpage known as a “platform.” Entrepreneurs post projects for which they need capital. Anyone in “the crowd” (the pool of possible funders) can see the projects on the platform, and decide whether to invest. Some platforms facilitate donation- and reward-based crowdfunding without projects offering equity shares, while others list projects offering equity shares in entrepreneurial firms. Reward-based crowdfunding is the most common worldwide (Massolution, 2015), and involves offering small rewards, such as early product access, to the crowd in exchange for capital contributions. Peer-to-peer (P2P) lending is another form of crowdfunding, allowing interest to be paid on investment (Bradford, 2012).

Crowdfunding regulations are extremely detailed in the Canadian provinces. Here, we briefly summarize the general framework of Canadian security crowdfunding regulations as it pertains to due diligence.

Security crowdfunding regulations are imposed on all parties involved in the security offering process: funders, issuers, and crowdfunding platforms. For funders, a limit is imposed on the amount an ordinary funder can contribute per issuer distribution in a 12-month period. To remove this limit, a funder needs to be accredited by either possessing a high level of net assets or meeting an annual income requirement. Investment funds are not generally permitted to participate in security crowdfunding. For issuers, their financial statements are required for fundraising; depending on project size, financial statements must be prepared by management in the least-regulated case and officially audited in the most-regulated case. In addition, biographic files for all directors and control persons related to the issuer are required. Although these
documents are not vetted by security regulators prior to fundraising campaigns, issuers must file an official security distribution report and submit copies of financial statements and the directors’ and/or control persons’ biographies to the regulators after successful crowdfunding. For platforms, they must be registered as security dealers in the province in which they are headquartered and review the documents from issuers prior to posting projects on their portal. Platforms are not allowed to solicit funders.

Under this regulatory framework, it may seem reasonable to assume that all security crowdfunding platforms apply due diligence on project selection. Nevertheless, two questions must be posed before rushing to a conclusion. First, are there specific requirements for the procedures that platforms should follow to ensure they meet due diligence expectations? Second, are platforms liable for low-quality projects? Unfortunately, no clear answers are given under current regulations. As the actual due diligence application is resource-demanding to platforms and cannot be fully overseen by regulators, we expect significant variations in due diligence application, measured by the specific approaches platforms undertake, across all types of crowdfunding platforms, including security crowdfunding. However, due to the demands of security regulators, we expect due diligence to be more extensively performed among security crowdfunding than among other types of crowdfunding.

Although not central to regulatory concerns, donation- and reward-based crowdfunding platforms have reputational incentives to assure the quality and genuineness of listed projects, as fraud cases can lead to project issuers and funders avoiding the platform in the future. In addition, traditional consumer protection, contract, tort, and business laws apply to reward- and donation-based crowdfunding. Potential lawsuits on restitution for fraud claims provides a further layer of monetary incentive for due diligence. We, therefore, expect that due diligence is also conducted
among non-security crowdfunding platforms, but that its use is less prevalent and rigorous than in security crowdfunding.

3. Hypotheses

Our analyses of due diligence focus on two questions. First, what kind of crowdfunding platforms apply due diligence? Broadly, we focus on agency costs (Hypotheses 1 and 2) and information asymmetries (Hypothesis 3). Second, what benefits do platforms receive through due diligence application? To this end, we examine the impact of mitigating agency problems and information asymmetries (Hypothesis 4) in respect of both treatment and selection effects.

3.1. Agency Costs: Multitask Moral Hazard

Our first hypothesis pertains to the simple notion of agents’ time constraints, and draws from the venture capital literature on portfolio size per manager. Value-added active investors face a tradeoff in adding more investees to their portfolio, balancing the benefit of network externalities across portfolio firms against the cost of having less time to conduct proper due diligence and to add value to each investee company, by providing financial, administrative, human resource, network, and other forms of advice (Kanniainen and Keuschnigg, 2003; 2004; Keuschnigg, 2004; Cumming, 2006; Bernile et al., 2007; Fulghieri and Sevilir, 2009). The same notion applies to the time spent by crowdfunding platforms conducting due diligence on entrepreneurs seeking to list a campaign.
Platforms do not have unlimited resources, and it takes time to administer background checks, site visits, credit checks, cross-checks, account monitoring, and sourcing third party proof. Likewise, services provided to project initiators, such as strategic fundraising guidance, marketing or promotion assistance, contractual help, and financial planning, are all time-consuming. The greater the number of listed projects per employee, the lower the likelihood of having sufficient time to conduct all these activities due to multitask moral hazard. In this regard, slack of human resources should have a positive impact on platform due diligence application.

**Hypothesis 1:** *Platforms that have more employees and fewer listed projects are more likely to conduct due diligence due to slack of human resources.*

Hypothesis 1 is not obvious and is worth subjecting to empirical testing. First, there could exist a moderating effect on the human resource impact: not all employees are equally productive, and platforms that adopt advanced technology skills may carry out due diligence more efficiently with fewer employees. If there is wide variation in technology levels among platforms, we should observe weak or no correlation between due diligence and employee number, but a strong correlation between due diligence and technology.

There is a second potentially confounding effect. Crowdfunding platforms are for-profit business entities. A platform’s employment demand depends on its business strategy and operational needs. Platforms do not over-employ and then assign idle workforce members to perform due diligence tasks. If a platform is not required to do due diligence, it may not hire designated due diligence staff. Instead, workforce can be used for tasks associated with marketing, customer service, website design and maintenance, etc. As such, more abundant human resources does not necessarily translate into the application of due diligence.
3.2. Agency Costs: Compensation Structures

Crowdfunding platforms have different fee structures. Different types of fee structures may align the interests of the platform with those of the crowd that invests in projects listed on the platform. If platforms receive a fee regardless of whether a project campaign is successful, then the platform has a greater incentive to list a project regardless of its quality. Conversely, if the platform only receives a fee from successfully funded projects, then the platform has more incentive to conduct extensive due diligence and only list projects likely to come to fruition. In addition, fee structure design reflects the professionalism of platform management: sophisticated platforms adopt more flexible fee structures, provide services at different levels, carry higher reputation, and are more selective on campaign projects.

Hypothesis 2: Platforms that receive fees regardless of the success of fundraising campaigns are less likely to conduct extensive due diligence; platforms that adopt advanced fee structures and charge fees based on successful fundraising campaigns are more likely to apply due diligence.

It is not obvious that we should expect to observe Hypothesis 2 in practice. An alternative hypothesis is that the main purpose of the platform fee structure design is to maximize the number of entrepreneurs that use the platform. If a platform charges a low listing commission and obtains revenue mainly from successful fundraising of projects, it may attract more entrepreneurs to list on the platform than a competing platform that charges listing commissions regardless of fundraising success, since project initiators thus pay less in the event of an unsuccessful campaign. In this case, the fee structure design would be uncorrelated with due diligence.
3.3. Information Asymmetries

Not all entrepreneurial projects are created equal. A project campaign that involves offering security in an entrepreneurial firm, as opposed to reward- or donation-based crowdfunding, is much more complex in respect of the contractual terms and necessary monitoring of the platform (Ahlers et al., 2015; Vismara, 2016); hence, it requires more due diligence. Furthermore, the Canadian Securities Administrators’ 2016 legislative requirements directly mandate due diligence on security crowdfunding for platforms open to retail investors that are not accredited.\footnote{In 2016, despite new legislation enabling non-accredited retail investors, there were no security crowdfunding campaigns for retail investors, arguably due to the other stringent regulations imposed on those campaigns.} Consequently, security crowdfunding platforms are more likely to conduct due diligence.

**Hypothesis 3:** A platform is more likely to apply due diligence if security crowdfunding is available on the platform.

Hypothesis 3 is not obvious for the following reasons. In Canada, over the period covered by our sample, only sophisticated accredited investors could invest in equity crowdfunding campaigns. Accredited investors are legally expected to conduct their own due diligence. In addition, crowdfunding platforms have ample flexibility regarding the resources they commit to due diligence, and apply due diligence to the extent they expect an economic benefit. To date, while there are clearly costs incurred in using resources for due diligence, there is no evidence on whether there is an economic benefit to platform due diligence; moreover, due diligence may even deter some entrepreneurs from using a platform. For a platform seeking to expand the number of listed campaigns, due diligence may, in fact, be contrary to their interests.
3.4. Benefits Associated with Mitigating Agency Costs and Information Asymmetries

It is costly to apply due diligence; therefore, platforms need to obtain sufficient benefit from due diligence to justify the according expenses. To evaluate the benefit that platforms obtain from due diligence application, we introduce our measurements of platform performance.

We use three proxies to measure a platform’s operational performance: (1) the percentage of projects fully funded on a platform (higher is better); (2) the total amount of money raised through a platform (higher is better); and (3) the average fundraising duration on a platform (shorter is better).

In general, we expect due diligence to be positively associated with crowdfunding platforms’ improved performance. Effective due diligence removes the left tail of the quality distribution, preventing such low-quality entrepreneurial projects from appearing on the platform. Without the left tail, the average project quality is higher. Prior research reinforces the view that the left tail is large in crowdfunding markets (Eraker and Ready, 2015). Furthermore, platform due diligence processes encourage entrepreneurs to present a more transparent campaign to clear the due diligence hurdle, which, in turn, mitigates information asymmetries between the entrepreneur and the crowd. Entrepreneurs faced with extensive due diligence checks are more likely to take costly steps to signal their quality, such as preparing quality project descriptions, which, in turn, lowers information asymmetries faced by funders and signals quality to the crowd (Spence, 2002).
As the average quality of fundraising campaigns improves and campaign projects become more transparent to funders, we should observe a higher rate of successful fundraising on a platform. This higher rate of successful fundraising directly attracts more entrepreneurs to list future projects. Moreover, competent due diligence builds a strong reputation for the platform among funders; in turn, this reputational effect makes a platform more appealing among potential project issuers. Therefore, ceteris paribus, we expect a platform to attract more projects and channel more money flow if it conducts due diligence on listed projects. Finally, as platform due diligence raises the quality of listed projects, investment decision-making will become easier for funders; consequently, we should observe more time-efficient fundraising associated with due diligence application.

**Hypothesis 4:** *Crowdfunding platform due diligence is associated with better platform performance, in terms of a: higher percentage of fully funded projects, larger total amount of money raised through a platform, and quicker fundraising process.*

Several considerations point to alternative predictions counter to Hypothesis 4. Crowdfunding platforms scantly advertise their due diligence activities for at least three reasons. First, once publicly announced, project selection criteria imply a guarantee of the minimum quality of listed projects to funders. However, the quality of listed projects is not fully observable to a platform even after conducting due diligence, and a large proportion of projects will fail to either meet funders’ expectations or reach their campaign goal. As such, publicly announcing project selection criteria increases platforms’ litigation risk. Second, empirically, it is difficult for a platform to adopt standard and static project selection criteria beyond rudimentary listing.

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3 Fundraising is considered successful when a project is fully funded within the issuer’s expected time horizon.
4 We are not aware of any advertisements or promotions of what crowdfunding platforms do in respect of their due diligence for any of the platforms in our sample.
requirements. Platforms implement flexible selection criteria to accommodate changes in
the number and quality of projects. In addition, project quality can be evaluated in different
dimensions: for example, some evaluation criteria, such as site-visit expectations and account-
monitoring requirements, are either subjective by nature or confidential to prevent exploitation of
loopholes. Since due diligence application is flexible, platforms do not have standard guidelines.
Third, it is in platforms’ interest to encourage more projects to apply, enabling them to obtain
more comprehensive market information, on which an appropriate level of due diligence is
applied. Furthermore, detailed and rigid listing requirements could even deter some good
projects from listing on the platform, due to concerns over fundraising speed and efficiency.

On the one hand, crowdfunding platforms’ silence on due diligence application produces
insufficient funder awareness on platform due diligence. On the other hand, even if platforms
claim due diligence application, their due diligence actions are not directly verifiable by project
funders. It takes time for funders to realize the quality of listed projects and the level of platform
due diligence. As the extent of due diligence application could vary between periods, funders
cannot fully infer the level of platform due diligence application in the concurrent fundraising
period: essentially, platform due diligence cannot directly facilitate funders’ decision-making,
which brings uncertainty to the benefit of due diligence application on crowdfunding outcomes.
Taken together, due diligence may be completely unrelated to crowdfunding platform
performance. It is, therefore, worth examining the data.
4. Data

This study’s data were provided by NCFA Canada. The data contain information on 51 crowdfunding platforms, representing 71% of the total Canadian crowdfunding market. Among the 51 platforms, 21 are donation-based, 9 reward-based, 4 lending-based, 9 security-based, and 8 platforms contain more than one type of crowdfunding. The data cover the time period for each of the four years from 2013 to 2016; information about 2016 was estimated by each platform, and information for 2013, 2014, and 2015 was based on their historical data. The data are yearly based and were submitted by the platforms: each row in the data shows the operating condition of a platform in a given year. There are items of heterogeneity within the platform projects that we do not observe; it is not possible for us to observe all of the underlying data within each platform. The unit of observation is a platform-year, for a total of 204 observations for 2003-2016.

Table 1 summarizes the different categories of platform information reported in the data. The data indicate the general status of the platform, such as the registration date and status, crowdfunding type, number of employees, website address, and related details. The data indicate the type of due diligence checks conducted by the platform, such as background checks (i.e., verification of government-issued ID), personal meeting or site visit, financial or credit checks, cross-checks through social media connections (such as Facebook or LinkedIn), monitoring of account activities, and requests for third party certificates or proof. Only 49% (25 of 51) platforms acknowledged that they regularly conducted any form of due diligence. Of the six different types of due diligence checks (background checks, site visits, credit checks, cross-
checks, account monitoring, and third party proof), the average number employed was 1.2, with a median of 0 and a maximum of 6.

The data indicate the services available to subscribers, such as pre-evaluation before listing on the platform, strategic fundraising guidance, business or financial planning, facilitation in crowdfunding contract design, and marketing or promotional services. In total, 35.3% of the platforms provided regular updates to users (funders and entrepreneurs), while 29.4% offered pre-evaluation to start-ups before listing, 27.5% offered fundraising guidance to entrepreneurs, 17.7% offered marketing and promotional services, 15.7% offered business and financial planning services, and 7.8% offered contractual help to start-ups.

The data comprise information on each platform’s operating conditions: number of projects launched by year, average successful fundraising rate, average fundraising duration, total amount of money raised on a platform by year, and the industry composition of listed projects. The median platform has projects that take 7-9 weeks to achieve full-funding, and the median platform has 21-30% entrepreneurs achieving their funding goal. The median platform spends between $2,500 and $10,000 CAD on compliance annually, has 10 employees, 501-1,000 funders per year, 51-100 entrepreneurial projects listed per year, and total capital raised between $1,000,000 and $1,500,000 per year. The crowdfunding projects cover the following industries: non-profit, business and professional services, education and research, art, life science, cleantech and energy, hardware and software, manufacturing, media, real estate, and social enterprise.

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6 Employee salary is excluded from the compliance expenditure.
Fee structure/revenue models of the platform are included in the data, including whether the platform: charges a one-time platform listing fee (17.7%), periodical subscription at different levels/tiers (19.6%), fixed percentage of the total amount raised (whether funding is successful or not) (15.7%), fixed percentage of the total amount raised (only if funding is successful) (23.5%), and management fees and carry percentages (21.6%). We do not observe changes in platform fee structure over the sample period. These and other variables and detailed summary statistics (means, medians, standard deviations, minimum, and maximums) are shown in Table 1.

Table 1 about here

The comparison tests in Table 2 provide a first impression of some distinct patterns in the dataset. Although comparison tests do not show the precise relationships among variables because variables are analyzed separately and in isolation, these tests nevertheless present a general picture of relationships for some key variables of interest. The joint effect of the same variables is discussed in the next section’s consideration of regression analysis.

Table 2 about here

Table 2 Panel A shows there is a higher probability of due diligence application among platforms with a smaller number of projects: when the number of campaign projects is greater than the median across platforms, only 32.0% of platforms conduct due diligence, and when the number of campaign projects is below the median then 68.0% of platforms conduct due diligence. This is consistent with Hypothesis 1. Similarly, there is a higher probability of due diligence among platforms with a great number of employees: when the number of employees is greater than the median across platforms, 84.0% of platforms conduct due diligence, and when

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7 One platform (2% of the sample) did not provide data on the platform fee structure.
the number of employees is below the median then 16.0% of platforms conduct due diligence. Again, this is consistent with Hypothesis 1. There is a higher probability of due diligence among platforms that spend more on compliance: when compliance expenditures are greater than the median across platforms, 76.0% of platforms conduct due diligence, and when the compliance expenditures are below the median then 24.0% of platforms conduct due diligence. Due diligence is also more likely among platforms that have fee models with periodical subscription and different levels (90.0% for those with these fees, versus 39.0% for platforms without this fee structure), consistent with Hypothesis 2. However, the likelihood of due diligence is indistinguishable between platforms that charge a fixed percentage service fee only if fundraising is successful and platforms that charge this fee regardless of success. There is a higher probability of due diligence among security crowdfunding platforms (77.8% of security crowdfunding platforms conduct due diligence, compared to 42.9% of non-security crowdfunding platforms), consistent with Hypothesis 3. Each of the reported differences is statistically significant at least at the 5% level, with the exception of the difference for security crowdfunding, which is significant only at the 10% level.

Table 2 Panel B presents the possible advantages of due diligence application, partially consistent with Hypothesis 4. There is a higher level of fully funded projects and a larger amount of money raised through platforms that conduct due diligence, and these differences are significant at the 1% level. However, due diligence does not have a significant effect on fundraising duration.

Table 3 presents the correlations among variables of interest. Table 3 Panel A shows that due diligence application is positively correlated with resources devoted to compliance, employee numbers, security crowdfunding, and user subscription at different levels. Due
diligence application is negatively correlated with the number of campaign projects on a platform. Table 3 Panel B shows the correlation among due diligence application, platform performance, and different types of platform services. Consistent with the comparison test results in Table 2 Panel B, due diligence application is positively associated with a higher percentage of fully funded projects and a larger amount of money raised through a platform, and does not exhibit a strong correlation with fundraising duration. The number of due diligence types employed is positively correlated with the percentage of fully funded projects, the total amount of money raised through the platform, and several platform services. The number of projects per employee ratio is negatively correlated with the total amount of money raised through the platform, periodical updates, and strategic guidance. Further detailed correlations among platform services are also presented in Table 3.

Table 3 about here

5. Multivariate Analyses

In this section, we use detailed analysis to reveal the factors influencing platform due diligence and demonstrate how due diligence application benefits crowdfunding platforms.

5.1. Due Diligence Application

We use logit regressions to examine the factors that influence platform due diligence, controlling for platform age and industry composition8 (see Tables 4 and 5). For reasons of

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8 The 11 industries represented by the sample crowdfunding projects have different percentage composition on different platforms. The numbers of projects in each industry as a percentage of the total number of projects on a
conciseness, we do not show the regressions for all types of due diligence individually: instead, we first report regressions for overall due diligence (all types of due diligence combined), and then report regressions for the three most common due diligence subcategories: background check, site visit, and cross check. We use the panel structure of the data and apply random effects and cluster standard errors by year. In a prior version of the paper, we reported year-by-year regressions, and the statistical and economic significance of the results are very consistent (available on request).

Tables 4 and 5 and Figures 1 and 2 about here

Table 4 shows the factors influencing due diligence application in general. Due diligence is applied when at least one of the following actions is taken: background check, site visit, credit check, cross-check through social media connections, monitoring account activities, and requesting third party certificates or proof. We applied the same logit regressions on data in different years; the results are consistent over time. The data indicate that the number of projects in each year is negatively correlated with due diligence application, and this effect is statistically significant at the 5% level in each of the models. The economic significance is such that, on average, an increase by one categorical unit in the number of projects is associated with an 11.80% (Model 1) to 14.02% (Model 4) reduction in the probability of due diligence, consistent with Hypothesis 1. Figure 1 presents a graphic illustration of these findings. Similarly, the number of employees is positively and significantly (at the 5% level) correlated with due diligence: a one standard deviation increase in the number of employees results in a 3.65% (Model 4) to 5.56% (Model 6) increase in the probability of due diligence, again consistent with

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9 We do not use fixed effects since some of our platform level variables have insufficient variation.

10 The number of projects is an ordinal variable; see Table 1.
Hypothesis 1. These results remain even when controlling for resources spent on compliance, which is positively and significantly (at the 5% level) correlated with due diligence: an increase by one unit in resources spent on compliance\textsuperscript{11} leads to an 8.16% (Model 2) to 10.90% (Model 6) increase in the probability of due diligence (presented graphically in Figure 2).

Platforms with periodical subscription at different levels are more likely to conduct due diligence by 4.17% (Model 6), compared with platforms with plain one-time listing fee. This effect is consistent with Hypothesis 2, and significant at the 5% level. Furthermore, platforms that offer security crowdfunding are more likely to conduct due diligence, consistent with Hypothesis 3. On average, a platform with security crowdfunding is 15.29% (Model 6) to 18.25% (Model 5) more likely to carry out due diligence than a platform without security crowdfunding; this effect is statistically significant at the 5% level in Models 5 and 6 and at the 1% level in Model 4.

Table 5 further analyzes three main types of due diligence application: background checks (Panel A), site visits (Panel B), and cross-checks through social media connections (Panel C). The data in Table 5 Panel A indicate the following (each of these effects is significant at the 5% level, except where otherwise stated). First, a one-unit increase in the number of campaign projects reduces the probability of background checks by 11.71% (Model 1) to 13.55% (Model 4). Second, a one-unit increase in the amount of resources spent on compliance annually increases the probability of background checks by 2.43% (Model 2) to 4.76% (Model 6); these effects are significant at the 5% level in Models 2-5, and at the 10% level in Model 6. Third, a one standard deviation increase in the number of employees increases the probability of

\textsuperscript{11} Resource is an ordinal variable; see Table 1.
background checks by 2.34% (Model 3) to 3.78% (Model 5). Fourth, security crowdfunding increases the probability of background checks by 10.29% (Model 4) to 13.00% (Model 6). Fifth, advanced fee structures increase the probability of background checks by 2.60% (Model 6).

Table 5 Panel B indicates that a one-unit increase in the number of projects reduces the probability of site visits by 10.58% (Model 5) to 13.73% (Model 3). A one-unit increase in the amount of resources spent on compliance annually increases the probability of site visits by 7.27% (Model 4) to 10.14% (Model 2); these effects are significant at the 10% level in Models 2-5, but insignificant in Model 6. A one standard deviation increase in the number of platform employees increases the probability of a site visit by 3.26% (Model 4) to 3.68% (Model 6). Security crowdfunding is associated with an increase in the probability of a site visit by 4.40% (Model 6) to 5.02% (Model 5). The fee structure has a statistically significant (at the 10% level) impact on probability of site visits where the economic significance is an increase of 3.54% (Model 6) compared with platforms adopting plain one-time listing fee.

Table 5 Panel C indicates that a one-unit increase in resources spent on compliance increases the probability of cross-checks by 8.31% (Model 5) to 10.70% (Model 3); these effects are significant at the 1% level in Model 1 and at the 5% level in Models 2-6. A one standard deviation increase in the number of employees increases the probability of cross-checks by 4.06% (Model 3) to 4.96% (Model 6); these effects are significant at the 1% level in Model 2 and at the 5% level in Models 3-6. Security crowdfunding is associated with an increase in the probability of cross-checks by 2.88% (Model 3) to 4.55% (Model 6); these effects are significant at the 5% level. Advanced fee structures increase the probability of cross-checks by 3.26% (Model 6), significant at the 5% level. Neither the number of campaign projects nor the number

\[\text{\footnotesize{12 A one standard deviation increase in the number of employees is 9.57; see Table 1. We did not round up this figure to a whole number to maintain consistency across each of the variables in reporting the economic significance.}}\]
of funders has a noticeable impact on cross-checks through social media connections (with the sole exception of Model 4, which shows a negative effect of project number on cross-checks, significant at the 10% level). Platform age also has no influence on due diligence application, likely because most platforms are very young in our sample.

5.2. Due Diligence Benefit

We use random effect ordered probit regressions to examine whether due diligence, among other factors, influences platform performance, controlling for platform services and industry composition. Random effect models control for platform type; standard errors are clustered by year.

To disentangle the impact of due diligence application from confounding factors, we restrict analyses to a subsample of matched platforms: a group that applied due diligence and a matched group that did not. Platforms are first matched based on crowdfunding type; then, within each crowdfunding type, the platforms with the closest number of listed projects in the year are selected as matching platforms. In total, 16 platforms are matched, covering all crowdfunding types in each year from 2013 to 2016. We also applied analyses to all platforms in the sample, yielding consistent results. For conciseness, full sample analyses results are not reported.

Table 6 presents the results for the impact of due diligence application on platform performance, measured by the percentage of fully funded projects, total amount of money raised annually, and average fundraising duration. While we model due diligence as an independent variable in explaining platform performance, it is not impossible for platform performance to have a feedback effect on due diligence: as platforms become more successful, they hire more
employees to apply due diligence, aiming to assure the quality of listed project and enhance platform reputation. The potential reverse causality between due diligence and platform performance could, therefore, bias our analysis.

To address the reverse causality concern, we apply two-stage least squares (2SLS) regression analysis in Table 6. Specifically, we use the fitted values of due diligence from Table 4, with instruments including the fee structure and resources spent on compliance. Fee structures and resources spent on compliance are directly connected with due diligence, but only indirectly related (if at all) with project outcomes, since fee structures and compliance expenditures are unknown to crowd funders. We note that the results without fitted values for the potentially endogenous due diligence variables are not materially different when we use the non-fitted raw variables; they are, likewise, similar with different controls in the first stage regressions.

Table 6 about here

Table 6 Panel A shows that due diligence application is associated with a higher percentage of fully funded projects, controlling for all types of services offered by the platform. Specifically, the application of due diligence increases the scale on percentage of fully funded projects by 1.18 (Model 2) to 1.43 (Model 4). This effect is statistically significant at the 5% level in each Model in Table 6. Based on the average scale on the percentage of fully funded projects in the matched sample (2.63; see Table 1), platform due diligence application leads to a significant 45% to 55% increase in fully funded projects on a platform, controlling for different types of platform services.

It should also be noted that the project/employee ratio has a negative impact on the

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13 To disentangle the influence of security crowdfunding, we tested first stage regressions both including and excluding the security crowdfunding dummy. The final regression results are not materially different.
percentage of fully funded projects in Table 6: on average, the higher the ratio, the lower the resources devoted to each project, the greater the competition across projects and the lower the success of projects. On average, an increase in one magnitude of the project/employee ratio on a platform reduces the scale on the percentage of fully funded projects on a platform by 0.39 (Model 5) to 0.68 (Model 2); this effect is significant at the 5% level in Models 1-6. Based on the average scale on the percentage of fully funded projects in the matched sample (2.63), a one magnitude increase in the project/employee ratio reduces the percentage of fully funded projects by 15% to 26%. On average, strategic fundraising guidance increases the scale on the percentage of fully funded projects on a platform by 0.83 (Model 3) to 0.95 (Model 1); this effect is significant at the 5% level in Model 1 and at the 10% level in Models 2-6. Based on the average scale on the percentage of fully funded projects in the matched sample (2.63), strategic fundraising guidance increases the percentage of fully funded projects by 32% to 36%.

Table 6 Panel B shows that due diligence application is associated with a larger amount of money raised through a platform. Specifically, the application of due diligence increases the scale of total amount of money raised by 1.09 (Model 2) to 1.29 (Model 3), each significant at the 5% level in Models 1-6, controlling for the number of projects listed on and services provided by the platform. Based on the average scale on the total amount of money raised in the matched sample (3.81), platform due diligence application leads to a significant 29% to 34% increase in the total amount of money raised on a platform, controlling for different types of platform services.

The effect of the project/employee ratio is significant at the 10% level in Models 1, 3, 4, and 5, and at the 5% level in Models 2 and 6. On average, an increase in one magnitude of project/employee ratio on a platform reduces the scale on the total amount of money raised on a
platform by 0.913 (Model 3) to 1.115 (Model 4). Based on the average scale on the total amount of money raised in the matched sample (3.81), an increase in the project/employee ratio by one point on the ordinal scale reduces the total amount of money raised by 24% to 29%.

The effect of strategic fundraising guidance is significant at the 10% level in Models 1, 2, 3, 5, and 6, and at the 5% level in Model 4. On average, strategic fundraising guidance increases the scale on the total amount of money raised on a platform by 0.73 (Model 5) to 0.93 (Model 3). Based on the average scale on the total amount of money raised in the matched sample (3.81), strategic fundraising guidance increases the total amount of money raised on a platform by 19% to 24%.

Table 6 Panel C does not present a significant negative relationship between due diligence application and fundraising duration, where fundraising duration refers to the time span between the first official listing day and the fully funded day, excluding the project listing application waiting time before the launch of the official campaign. Nevertheless, the negative coefficient for due diligence application shows that where due diligence was applied, fundraising became quicker, which is consistent with our expectation. The effect of the project/employee ratio is positive and significant at the 5% level in Models 1, 2, and 4-6, and at the 10% level in Model 3. On average, an increase in one magnitude of the project/employee ratio on a platform increases the scale on the average fundraising duration on a platform by 0.99 (Model 1) to 1.13 (Model 6). Based on the average scale on the average fundraising duration in the matched sample (2.47), a one magnitude increase in the project/employee ratio increases the average fundraising duration by 40% to 46%.

Promotion and marketing services also has a significant impact on the efficiency of fundraising, significant at the 5% level in Model 2 and at the 10% level in Models 3-6. On

\[14\] Only fully funded campaigns are considered.
average, marketing or promotion services reduce the scale on the average fundraising duration on a platform by 0.57 (Model 2) to 0.69 (Model 5). Based on the average scale on the average fundraising duration in the matched sample (2.47), marketing or promotion services reduce the average fundraising duration by 23% to 28%.

6. Robustness Checks

In the multivariate analyses, we applied the same set of tests on all crowdfunding platforms. However, security crowdfunding operates under more rigid regulations and faces more complex contractual arrangements than other types of crowdfunding. In addition, security crowdfunding funders expect monetary returns from crowdfunding projects; this monetary incentive differentiates them from funders involved in other types of crowdfunding. In this sense, security crowdfunding funders could be more sensitive to platform due diligence application; security crowdfunding platforms could drive our regression results.

To disentangle our findings from the influence of security crowdfunding, we conduct robustness checks on due diligence application among platforms without security fundraising. The results show that due diligence application is still positively related with the resources spent on compliance annually, number of platform employees, and a more sophisticated fee structure, while negatively related with the number of projects listed on a platform, although the according marginal effects vary. Further details of the robustness checks are presented in the appendix.

Another concern in the multivariate analyses is whether due diligence application is associated with economies of scale: large crowdfunding platforms can invest more resources on technology to improve the efficiency and effectiveness of due diligence application; they are also
more likely to gain standardized experience through overseeing a larger number of listed projects. To test the robustness of our analysis, we applied the same tests on the sample excluding the largest four platforms, each of which listed more than 500 projects in 2015. The analysis results are not materially different. For conciseness, the according test results are not presented.

Finally, we have conducted analyses using separate regressions by year instead of panel regressions; again, the results are not materially different and, hence, they are not reported for conciseness. We examine separate regressions by year because the 2016 data are based on platform estimates; hence, we evaluate the robustness in separate years.

7. Discussion

We argue that due diligence application improves platform performance by rejecting low-quality projects and reducing information asymmetry between entrepreneurs and funders, based on the regression results in Table 6. However, we do not propose direct causal relationships for variables pertaining to due diligence application in Tables 4 and 5. For instance, neither an upgrade in fee structure nor an increase in employee number guarantees a higher likelihood or better quality of due diligence. As platforms become more sophisticated and accumulate more resources, they could invest in many areas other than due diligence: platform advertising, services to entrepreneurs, funder education, strategic partnerships with business incubators, Angels and VCs, and even lobbying for a more supportive legislative environment. What platforms do depend on what is most valuable to entrepreneurs and funders: platforms may rank their investment agendas by priorities. As due diligence protects funders and signals the quality
of crowdfunding projects, it deserves high priority on the platform investment agenda. This inference is supported by our findings in Tables 4 and 5: in general, factors relating to the slack of recourses and management sophistication are reflective of platform due diligence application.

If we treat crowdfunding due diligence as a selective process for projects seeking to be listed on a platform, then the supply and demand of crowdfunding projects will directly affect due diligence application. At first glance, more projects on the waiting list and weaker funder demand for crowdfunding projects (“Projects beg for investments”) lead to more due diligence or rigid project selection processes, and the funders’ rights will be given higher priority; conversely, fewer projects on the waiting list and stronger funder demand (“Funders beg for projects.”) lead to less due diligence or loose project selection processes, and the entrepreneurs’ fundraising needs will be given higher priority. Nevertheless, due diligence can also influence the supply and demand of crowdfunding projects through its impact on platform reputation: platforms that apply proper due diligence receive trust and popularity among funders, which, in turn, attracts more entrepreneurs for project listing, resulting in improved due diligence application. In this regard, due diligence application leads to a virtuous cycle of more funders and better crowdfunding projects; therefore, it plays an important role in assuring the healthy development of the crowdfunding industry.

An important factor we cannot omit is technology improvement. Although we do not observe significant differences in platform technology levels during the sample horizon, we do expect that as the crowdfunding industry develops, the heterogeneity of platform technologies will have a significant impact on due diligence application: computer programs may provide automatic due diligence recommendations based on account activities, documentations from

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15 If technology levels are significantly different among platforms, then project number and employee number should have no explanatory power on due diligence application.
entrepreneurs, publicly available information and credit history, etc. We expect that technology development will greatly improve the efficiency of crowdfunding due diligence and, longer-term, both influence the competitiveness of crowdfunding platforms and shape the growth pattern of the crowdfunding industry.

One interesting phenomenon we observe is that platforms are quite silent on their due diligence activities: few platforms publicly advertise how selective they are regarding listed projects or what approaches they take to assure the quality of listed projects. For security crowdfunding, this phenomenon could be related to legal risk concerns, as platforms may wish to avoid motivating regulatory investigation of whether due diligence is appropriately applied. More generally, this phenomenon could be related to platform marketing strategy: platforms may want to emphasize the innovativeness of this fundraising channel and the attractiveness of crowdfunding investment, rather than tedious details of the quality-checking on crowdfunding projects. However, it is only when funders know whether a platform conducts due diligence that they could react by funding a campaign faster. In this regard, silent due diligence application is consistent with our findings in Table 6 Panel C: fundraising duration is not noticeably affected by platform due diligence.

8. Limitations and directions for future research

Our analysis is based on data collected by NCFA Canada from crowdfunding platforms. As platforms report their data to NCFA Canada, they could overstate their actions on due diligence application to exaggerate the quality of listed projects and their prudence on funder protection. If the extent of due diligence application is overstated, then the impact of real due
diligence application on platform performance is underestimated, while the explanatory power of the factors associated with due diligence application is overestimated. In addition, platforms could have different reporting standards, creating measurement errors on variables of interest. We expect that a more detailed dataset based on direct evaluations of crowdfunding platforms will better reflect the importance of due diligence on platform performance.

Our study broaches the subject of due diligence application in the fast-growing crowdfunding industry. Future studies on the subject could focus on the following areas:

**The efficiency of due diligence application:**

What are the direct and indirect costs associated with due diligence application? When does due diligence bring the highest marginal benefit to a platform? What is the optimal level of due diligence? Given different levels of platform resource constraint, what are the best ways to apply due diligence? Which project characteristics call for more/less due diligence application?

**The platform listing barrier set up by due diligence:**

How selective is the due diligence, measured by project admission rate? Does the scale of individual projects listed on a platform become larger because of due diligence? For security crowdfunding platforms, to what extent does the due diligence barrier help to signal project quality? What are the responses of entrepreneurs to their individual projects being subject to due diligence application?

**The long-term effect of due diligence application:**

Do projects become more successful after fundraising when due diligence is applied? Does a platform have a higher proportion of funders that invest more than once on the same platform? Do entrepreneurs return to the platform to launch other projects after their first fundraising campaigns? Does more due diligence from platforms reduce funder incentives to
apply due diligence before making investments?

The above list of potential future studies on crowdfunding due diligence is not exhaustive. As the crowdfunding industry becomes increasingly popular among entrepreneurs and funders, we expect that platform due diligence will attract more attention from academics, practitioners, and policy-makers.

9. Conclusion

The decade leading up to 2016 witnessed massive growth in the popularity of crowdfunding as a viable form of entrepreneurial finance. In Canada, thousands of new projects are launched on different fundraising websites every year. Connecting donors and funders with beneficiaries, borrowers, and entrepreneurs, crowdfunding platforms help idle money realize its value. However, exactly what do crowdfunding platforms do? Do they simply provide a cheap online forum for business soliciting? Alternatively, do they apply due diligence on listed projects and help to reduce information asymmetry between projects’ issuers and subscribers? What advantages can platforms obtain through carrying out due diligence?

In this paper, we have assessed the factors influencing the application of due diligence, as well as whether due diligence by platforms is associated with project success. The scope of crowdfunding due diligence comprises background checks, site visits, credit checks, cross-checks, monitoring accounts, and third party proof. Our paper provides the first-ever examination of empirical data on this topic, made possible by the innovative data collection efforts of NCFA Canada.

The summary statistics and comparison tests present a transparent picture in the data, as
do the regression results controlling for other things being equal. The application of due diligence is associated with more affluent platform resources, either in compliance expenditure or in employee number, and a more sophisticated management structure, indicated by different levels of subscription service. Due diligence is less likely to be applied when platform employees’ expected workload is heavy, as shown by a large number of campaign projects launched on a given platform.

The data further indicate that the application of due diligence in general has a very strong positive influence on the fundraising success rate and amount raised on the platform, controlling for all the services it offers. Among all these services, only strategic fundraising guidance is significantly positively related with the fundraising success rate and the total amount raised through platforms. The strong positive association between due diligence and fundraising success shows the important value for crowdfunding platforms in limiting the number of lower quality projects they list through active due diligence.

The evidence herein strongly suggests that policymakers should require, whether through imposition of standards or otherwise, greater stringency of crowdfunding platforms in conducting due diligence. The evidence also suggests that further research on crowdfunding should pay careful attention to differences across platforms, as there appears to be massive heterogeneity in respect of what platforms actually do.
References


Fig. 1. Probability of Due Diligence and Number of Listed Projects

This figure shows the predicted probability of due diligence application as the number of listed projects changes from scale 1 to scale 6. The figure is based on Model 6 in Table 4. Other explanatory variables are held constant at their respective means. The total numbers of projects/financings/loans launched in each year from 2013 to 2016 are measured in ordinal scales: level 1 is less than 20, level 2 is 21-50, level 3 is 51-100, level 4 is 101-250, level 5 is 251-500, and level 6 is more than 500.

Fig. 2. Probability of Due Diligence and Resources Spent on Compliance

This figure shows the predicted probability of due diligence application as the resources spent on compliance changes from scale 1 to scale 5. The figure is based on Model 6 in Table 4. Other explanatory variables are held constant at their respective means. The total numbers of projects/financings/loans launched in each year from 2013 to 2016 are measured in ordinal scales: level 1 is less than 20, level 2 is 21-50, level 3 is 51-100, level 4 is 101-250, level 5 is 251-500, and level 6 is more than 500.
Table 1. Definitions and Summary Statistics.

This table provides definitions of the main variables, as well as summary statistics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Obs</th>
<th>Mean</th>
<th>Median</th>
<th>Std. Dev</th>
<th>Min</th>
<th>Max</th>
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<td>Any Due Diligence is applied? (Yes=1)</td>
<td>Dummy Variable: Is Any of the Following Due Diligence Regularly Applied: Background Check, Site Visit, Credit Check, Cross-check through Social Media Connections, Monitoring Account Activities, and Requesting Third Party Certificates or Proof? (Yes=1, No=0)</td>
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<td>Total Number of types of Due Diligence applied</td>
<td>Total Number of Types of Due Diligence Applied by a Platform. Types of Due Diligence refer to: Background Check, Site Visit, Credit Check, Cross-check through Social Media Connections, Monitoring Account Activities, and Requesting Third Party Certificates or Proof</td>
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<td>1.1961</td>
<td>0</td>
<td>1.6495</td>
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<td>Number of Employees Working for a Crowdfunding Platform</td>
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<td>Dummy Variable: Does a Platform Handle Security Crowdfunding? (Yes=1, No=0)</td>
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<td>Platform Age in Months</td>
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<td>Dummy Variable: Is the Main Service Charge a One-time Listing Fee? (Yes=1, No=0)</td>
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<td>Fee Structure: Periodical Subscription at Different Levels/Tiers</td>
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<td>Fee Structure: Fixed percentage of total amount raised, whether funding is successful or not</td>
<td>Dummy Variable: Is the Main Service Charge based on a Fixed Percentage of Total Amount Raised, regardless of whether Funding is Successful? (Yes=1, No=0)</td>
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<td>0</td>
<td>0.4154</td>
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<tr>
<td>Fee Structure: Fixed percentage of total amount raised, only if funding is successful</td>
<td>Dummy Variable: Is the Main Service Charge based on a Fixed Percentage of Total Amount Raised, only if Funding is Successful? (Yes=1, No=0)</td>
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<td>Ordinal Variable: Average Fundraising Duration—Level 1: 1-3 Weeks; Level 2: 4-6 Weeks; Level 3: 7-9 Weeks; Level 4: 10-12 Weeks; Level 5: More than 12 Weeks</td>
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<td>Value 2</td>
<td>Value 3</td>
<td>Value 4</td>
<td>Value 5</td>
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<tr>
<td>Resources Spent on Compliance Annually</td>
<td>Ordinal Variable: Total Resources Spent on Compliance Annually—Level 1: less than $2500; Level 2: $2501-10000; Level 3: $10001-30000; Level 4: $30001-50000; Level 5: more than $50000</td>
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<td>Percentage Composition of Fully Funded Projects</td>
<td>Ordinal Variable: fully funded projects as a percentage of all projects launched on the platform—Level 1: 0-10%; Level 2: 11-20%; Level 3: 21-30%; Level 4: 31-40%; Level 5: 41-50%; Level 6: more than 50%</td>
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<td>Platform Provides Periodical Updated Information to Users</td>
<td>Dummy Variable: Does a Platform Provide Periodical (weekly, bi-weekly, monthly) Platform Updates and Activities to Users (Funders and Startups)? (Yes=1, No=0)</td>
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<td>Dummy Variable: Does a Platform Offer Pre-evaluation to Startups before their Listing? (Yes=1, No=0)</td>
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<td>Platform offers strategic fundraising guidance</td>
<td>Dummy Variable: Does a Platform Offer Strategic Fundraising Guidance to Startups? (Yes=1, No=0)</td>
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<td>1</td>
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<td>Platform helps with business and financial planning</td>
<td>Dummy Variable: Does Platform Help Startups with Business and Financial Planning? (Yes=1, No=0)</td>
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<td>Platform offers contractual help to Startups</td>
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<td>Platform offers marketing or promotion service</td>
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<td>Number of Funders</td>
<td>Ordinal Variable: Total Number of Funders in Each Year from 2013 to 2016 (estimated)—Level 1: fewer than 100; Level 2: 101-500; Level 3: 501-1000; Level 4: 1001-2500; Level 5: 2501-5000; Level 6: 5001-10000; Level 7: 10001-20000; Level 8: 20001-50000; Level 9: more than 50000</td>
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<td>2.4608</td>
<td>1.6524</td>
<td>1</td>
<td>8</td>
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<td>Number of Projects</td>
<td>Ordinal Variable: Total Number of Projects/Financings/Loans Launched in Each Year from 2013 to 2016 (estimated)—Level 1: fewer than 20; Level 2: 21-50; Level 3: 51-100; Level 4: 101-250; Level 5: 251-500; Level 6: more than 500</td>
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<td>3.3922</td>
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<td>Project/Employee Ratio</td>
<td>Ordinal Variable: Total Number of Projects Launched in Each Year from 2013 to 2016 (estimated) divided by Number of Employees for Each Platform—Level 1: fewer than 10 projects per employee; Level 2: 11-20 projects per employee; Level 3: 21-50 projects per employee; Level 4: 51-100 projects per employee; Level 5: more than 100 projects per employee.</td>
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<td>Total Amount of Money Raised (CAD)</td>
<td>Ordinal Variable: Total Amount of Money Raised in Each Year from 2013 to 2016 (estimated)—Level 1: Less than 300 K; Level 2: 300 K-500 K; Level 3: 500 K-1 M; Level 4: 1M-1.5 M; Level 5: 1.5M-3 M; Level 6: 3 M-5 M; Level 7: 5 M-10 M; Level 8: more than 10 M</td>
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<td>4.1569</td>
<td>2.1147</td>
<td>1</td>
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</table>
Table 2. Comparison Tests
This table shows the impact of different platform characteristics on due diligence application (Panel A) and the impact of due diligence application on platform performance (Panel B) using comparison tests. The table is based on platform activities in 2013–2016. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Factors Affecting Due Diligence Application

<table>
<thead>
<tr>
<th>Probability of Due Diligence Application</th>
<th>Project Number (Below Median)</th>
<th>Project Number (Above Median)</th>
<th>Z Value</th>
<th>Compliance Expenditure (Below Median)</th>
<th>Compliance Expenditure (Above Median)</th>
<th>Z Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability of Due Diligence Application</td>
<td>0.5098</td>
<td>0.3235</td>
<td>2.70***</td>
<td>0.2157</td>
<td>0.6176</td>
<td>-5.82***</td>
</tr>
<tr>
<td>Employee Number (Below Median)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee Number (Above Median)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Impact of Due Diligence Application on Platform Performance

<table>
<thead>
<tr>
<th>Probability of Due Diligence Application</th>
<th>Fee Structure: Periodical Subscription at Different Levels/Tiers (No)</th>
<th>Fee Structure: Periodical Subscription at Different Levels/Tiers (Yes)</th>
<th>Fee Structure: Fixed percentage of total amount raised, only if funding is successful (No)</th>
<th>Fee Structure: Fixed percentage of total amount raised, only if funding is successful (Yes)</th>
<th>Z Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability of Due Diligence Application</td>
<td>0.1765</td>
<td>0.6569</td>
<td>-6.96***</td>
<td>0.3810</td>
<td>0.5833</td>
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<tr>
<td>Fee Structure: Periodical Subscription at Different Levels/Tiers (No)</td>
<td>Fee Structure: Periodical Subscription at Different Levels/Tiers (Yes)</td>
<td>Fee Structure: Fixed percentage of total amount raised, only if funding is successful (No)</td>
<td>Fee Structure: Fixed percentage of total amount raised, only if funding is successful (Yes)</td>
<td>Z Value</td>
<td></td>
</tr>
<tr>
<td>Probability of Due Diligence Application</td>
<td>0.3537</td>
<td>0.6750</td>
<td>-3.70***</td>
<td>0.3846</td>
<td>0.5208</td>
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Panel B: Impact of Due Diligence Application on Platform Performance

<table>
<thead>
<tr>
<th>Probability of Due Diligence Application</th>
<th>Due Diligence (Not Applied)</th>
<th>Due Diligence (Applied)</th>
<th>T Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability of Due Diligence Application</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Percentage of Fully Funded Projects (in Levels/Ordinal Scale)</td>
<td>2.4622</td>
<td>3.0824</td>
<td>-4.30***</td>
</tr>
<tr>
<td>Average Amount of Money Raised (in Levels/Ordinal Scale)</td>
<td>3.7563</td>
<td>4.7176</td>
<td>-4.23***</td>
</tr>
<tr>
<td>Average Fund-raising Duration (in Levels/Ordinal Scale)</td>
<td>2.5042</td>
<td>2.5882</td>
<td>-0.66</td>
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</table>
Table 3. Correlation Matrix for Key Variables.
This table shows the correlations among different variables used in the regressions in Tables 4 and 6. The correlation matrix shown below is based on platform activities in 2013–2016. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Factors Affecting Due Diligence Application

<table>
<thead>
<tr>
<th>Due Diligence Dummy</th>
<th>Project Number</th>
<th>Resources on Compliance</th>
<th>Employee Number</th>
<th>Security Crowdfunding Dummy</th>
<th>Subscription at Different Levels</th>
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<td></td>
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<tr>
<td>Project Number</td>
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<td>Resources on Compliance</td>
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<tr>
<td>Employee Number</td>
<td>0.390***</td>
<td>0.255*</td>
<td>0.406***</td>
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<tr>
<td>Security Crowdfunding Dummy</td>
<td>0.357***</td>
<td>0.112</td>
<td>0.336**</td>
<td>0.0529</td>
<td>1</td>
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<tr>
<td>Subscription at Different Levels</td>
<td>0.186**</td>
<td>0.0588</td>
<td>0.219</td>
<td>0.117</td>
<td>-0.0893</td>
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Panel B: The Influence of Due Diligence Application on Platform Performance

<table>
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<tr>
<th>Percentage of Fully Funded Projects</th>
<th>Total Amount of Money Raised</th>
<th>Average Fundraising Duration</th>
<th>Due Diligence Dummy</th>
<th>Periodical Update</th>
<th>Pre-listing Evaluation</th>
<th>Strategic Guidance</th>
<th>Business Planning</th>
<th>Contract Help</th>
<th>Promotion Service</th>
<th>Number of Types of Applied Due Diligence</th>
</tr>
</thead>
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<tr>
<td>Percentage of Fully Funded Projects</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Total Amount of Money Raised</td>
<td>0.685***</td>
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<tr>
<td>Average Fundraising Duration</td>
<td>0.377</td>
<td>0.315</td>
<td>1</td>
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<td></td>
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<tr>
<td>Due Diligence Dummy</td>
<td>0.382***</td>
<td>0.296***</td>
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<tr>
<td>Periodical Update</td>
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<td>0.492**</td>
<td>0.353*</td>
<td>0.519***</td>
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<td></td>
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<tr>
<td>Pre-listing Evaluation</td>
<td>0.176*</td>
<td>0.0605</td>
<td>0.378**</td>
<td>0.424***</td>
<td>0.345***</td>
<td>1</td>
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<tr>
<td>Strategic Guidance</td>
<td>0.403***</td>
<td>0.449***</td>
<td>0.254</td>
<td>0.217***</td>
<td>0.584***</td>
<td>0.435***</td>
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<tr>
<td>Business Planning</td>
<td>-0.0421</td>
<td>-0.0528</td>
<td>0.239</td>
<td>0.385**</td>
<td>0.223</td>
<td>0.0584</td>
<td>0.0826</td>
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</tr>
<tr>
<td>Contract Help</td>
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<td>-0.0792</td>
<td>0.316*</td>
<td>0.185</td>
<td>0.278*</td>
<td>0.193*</td>
<td>0.289*</td>
<td>0.324*</td>
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<td>Promotion Service</td>
<td>0.325***</td>
<td>0.381***</td>
<td>-0.360**</td>
<td>0.123</td>
<td>0.374*</td>
<td>0.286**</td>
<td>0.643***</td>
<td>-0.0723</td>
<td>0.184</td>
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<tr>
<td>Number of Types of Applied Due Diligence</td>
<td>0.252</td>
<td>0.276</td>
<td>-0.177</td>
<td>0.712***</td>
<td>0.338***</td>
<td>0.435***</td>
<td>0.329*</td>
<td>0.304</td>
<td>0.195</td>
<td>0.266</td>
</tr>
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</table>
| Number of Projects/ Number of Employees | 0.267                     | -0.358**                      | 0.329              | 0.168            | -0.281*                | -0.0851           | -0.294           | 0.140        | -0.139*           | 0.154                                  | -0.0849
Table 4 Factors Affecting Platform’s Due Diligence Application.

This table shows the factors affecting a crowd-funding platform’s due diligence application. Random effect logit regression models controlling for crowdfunding types are applied to evaluate the influence of different platform characters and activities. Regressions cluster for year. Due diligence is applied when at least one of the following actions is taken: background check, site visit, credit check, cross-check through social media connections, monitoring account activities, and requesting third party certificates or proof. Dependent variables equal 1 if due diligence is applied; 0 otherwise. Model specification and goodness of fit tests are applied. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Investors per Year</th>
<th>Number of Projects per Year</th>
<th>Resources Spent on Compliance Annually</th>
<th>Number of Employees</th>
<th>Security Crowdfunding on the Platform? (Yes=1)</th>
<th>Platform Age</th>
<th>Fee Structure: Periodical Subscription at Different Levels/Tiers</th>
<th>Fee Structure: Fixed percentage of total amount raised, whether funding is successful or not</th>
<th>Fee Structure: Fixed percentage of total amount raised, only if funding is successful</th>
<th>Fee Structure: Management fee and carry percentage</th>
<th>Industry Composition Controls?</th>
<th>Cluster for Year?</th>
</tr>
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<tr>
<td></td>
<td>-0.0850</td>
<td>-0.118***</td>
<td>0.0816**</td>
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<td>(4.23)</td>
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<td>0.0886**</td>
<td>0.0365**</td>
<td>0.0170</td>
<td>1.065***</td>
<td>(3.49)</td>
<td>0.0024</td>
<td>0.3422</td>
<td>0.0442</td>
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<td>Yes</td>
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<td>(2.47)</td>
<td>(2.74)</td>
<td>(3.49)</td>
<td>(2.16)</td>
<td>(0.74)</td>
<td>(1.22)</td>
<td>0.0442</td>
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<td>Yes</td>
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<td>-0.0639</td>
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<td>0.161***</td>
<td>3.147**</td>
<td>(2.26)</td>
<td>0.0024</td>
<td>0.3422</td>
<td>0.0194**</td>
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<td>Yes</td>
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<td>(2.36)</td>
<td>0.183**</td>
<td>(3.63)</td>
<td>(2.74)</td>
<td>(0.74)</td>
<td>(1.22)</td>
<td>0.0194**</td>
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<td>Yes</td>
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<td>-0.0720</td>
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<td>0.161***</td>
<td>2.770***</td>
<td>(2.74)</td>
<td>0.0024</td>
<td>0.3422</td>
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<td>Yes</td>
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<td>(-0.91)</td>
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<td>(2.41)</td>
<td>(2.36)</td>
<td>0.183**</td>
<td>(3.63)</td>
<td>(2.74)</td>
<td>(0.74)</td>
<td>(1.22)</td>
<td>0.0194**</td>
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<td>Yes</td>
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<td></td>
<td>-0.101</td>
<td>-0.128**</td>
<td>0.109**</td>
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<td>0.161***</td>
<td>2.825***</td>
<td>(2.74)</td>
<td>0.0024</td>
<td>0.3422</td>
<td>0.0194**</td>
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<td>Yes</td>
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<td>(2.39)</td>
<td>(2.36)</td>
<td>0.183**</td>
<td>(3.63)</td>
<td>(2.74)</td>
<td>(0.74)</td>
<td>(1.22)</td>
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<td>0.0556**</td>
<td>0.161***</td>
<td>1.346***</td>
<td>(2.74)</td>
<td>0.0024</td>
<td>0.3422</td>
<td>0.0194**</td>
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<td>Yes</td>
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<td>Yes</td>
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</table>

Number of Observations: 204
LR chi2: 30.46
Prob > chi2: 0.0024
Pseudo R2: 0.3422
Tests on Model Specification and Goodness of Fit:
- P Value for Link Test: Linear Predicted Value
- P Value for Link Test: Linear Predicted Value Squared
- P Value for Pearson chi2 Test
- P Value for Hosmer-Lemeshow chi2 Test
### Table 5 Application of Main Types of Due Diligence.

This table shows the application of three main types of due diligence: background check, site visit, and cross check through social media connections. Random effect logit regression models controlling for crowdfunding types are applied to evaluate the influence of different platform characteristics and activities. Regressions cluster for year. Panel A shows the application of a background check; Panel B, a site visit; and Panel C, a cross check. The models are based on platform characteristics and activities in 2013–2016. Dependent variables equal 1 if the type of due diligence is applied; 0 otherwise. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

#### Panel A. Dependent Variable: Background Check in Each Year

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
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</thead>
<tbody>
<tr>
<td>Number of Investors per Year</td>
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<td>-0.0276</td>
<td>-0.0306</td>
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<td>(0.58)</td>
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<tr>
<td>Number of Projects per Year</td>
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<td>-0.118**</td>
<td>-0.123**</td>
<td>-0.136**</td>
<td>-0.123**</td>
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<td>Resources Spent on Compliance Annually</td>
<td>0.0243**</td>
<td>0.0411**</td>
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<td>0.0430**</td>
<td>0.0476*</td>
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<td>(2.19)</td>
<td>(1.98)</td>
<td>(2.23)</td>
<td>(1.94)</td>
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<tr>
<td>Number of Employees</td>
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<td>(2.13)</td>
<td>(2.25)</td>
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<tr>
<td>Security Crowdfunding on the Platform? (Yes=1)</td>
<td>0.103**</td>
<td>0.118**</td>
<td>0.130**</td>
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<td>(2.39)</td>
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<tr>
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<td>(1.54)</td>
<td>(0.92)</td>
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</tr>
<tr>
<td>Fee Structure: Periodical Subscription at Different Levels/Tiers</td>
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<td></td>
<td></td>
<td>0.0260**</td>
<td>(2.17)</td>
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<tr>
<td>Fee Structure: Fixed percentage of total amount raised, whether funding is successful or not</td>
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<td>0.0445</td>
<td>(1.35)</td>
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<tr>
<td>Fee Structure: Fixed percentage of total amount raised, only if funding is successful</td>
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<td>0.00662</td>
<td>(1.14)</td>
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<tr>
<td>Fee Structure: Management fee and carry percentage</td>
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<td>0.0148</td>
<td>(1.02)</td>
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<tr>
<td>Industry Composition Controls?</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cluster for Year?</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>(4.06)</td>
<td>(2.63)</td>
<td>(2.75)</td>
<td>(2.68)</td>
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<td>204</td>
<td>204</td>
<td>204</td>
<td>204</td>
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<td>34.67</td>
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Panel B. Dependent Variable: Site Visit in Each Year

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<th>Model 6</th>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>0.3263</td>
<td>0.4151</td>
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</table>
### Panel C. Dependent Variable: Cross Check from Social Media Connections in Each Year

| Model   | Number of Investors per Year | Number of Projects per Year | Resources Spent on Compliance Annually | Number of Employees | Security Crowdfunding on the Platform? (Yes=1) | Platform Age | Fee Structure: Periodical Subscription at Different Levels/Tiers | Fee Structure: Fixed percentage of total amount raised, whether funding is successful or not | Fee Structure: Fixed percentage of total amount raised, only if funding is successful | Fee Structure: Management fee and carry percentage | Industry Composition Controls? | Cluster for Year? | Constant | Number of Observations | LR chi² | Prob > chi² | Pseudo R² |
|---------|------------------------------|-----------------------------|----------------------------------------|---------------------|-------------------------------------------------|--------------|---------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------|-------------|-----------------|-------|-----------|--------|
| Model 1 | -0.522                       | -0.241                      | 0.0979***                             | 0.0406**            | 0.0288**                                        | 0.0487       | 0.0326**                                                      | 0.00293                                                      | 0.0535                                                           | 0.0139                                                           | Yes                  | Yes         | 0.672***       | 204     | 0.0049    | 0.3030 |
| Model 2 | -0.545                       | -0.229                      | 0.107**                               | 0.0454**            | 0.0401**                                        | 0.0646       | (2.73)                                                        | (2.28)                                                       | (2.41)                                                             | (2.24)                                                           | Yes                  | Yes         | 0.378***       | 204     | 0.0036    | 0.3268 |
| Model 3 | -0.654                       | -0.398                      | 0.104**                               | 0.0415**            | 0.0455**                                        | 0.0646       | (2.28)                                                        | (2.30)                                                       | (2.41)                                                             | (2.24)                                                           | Yes                  | Yes         | 0.416***       | 204     | 0.0030    | 0.3588 |
| Model 4 | -0.595                       | -0.189*                     | 0.0831**                              | 0.0415**            | 0.0455**                                        |             |                                                               |                                                              |                                                                    |                                                                | Yes                  | Yes         | 0.521***       | 204     | 0.0034    | 0.3632 |
| Model 5 | -0.492                       | -1.189*                     | 0.101**                               | 0.0415**            | 0.0455**                                        |             |                                                               |                                                              |                                                                    |                                                                | Yes                  | Yes         | 0.109***       | 204     | 0.0024    | 0.4105 |
| Model 6 | -0.432                       | -1.225                      | 0.101**                               | 0.0415**            | 0.0455**                                        |             |                                                               |                                                              |                                                                    |                                                                | Yes                  | Yes         | 0.876***       | 204     | 0.0045    | 0.4423 |
Table 6 Impact of Due Diligence Application on Platform Performance.

This table shows the impact of due diligence application on the percentage composition of fully funded projects, total amount of money raised through a platform, and average crowdfunding duration on a platform. Due diligence is applied when at least one of the following actions is taken: background check, site visit, credit check, cross-check through social media connections, monitoring account activities, and requesting third party certificates or proof. The due diligence variable is based on fitted values from Table 4. Random effect ordered probit regressions controlling for crowdfunding types are used to evaluate the influence of due diligence application on platform performance in 2013--2016. Regressions cluster for year. Sixteen pairs of matched platforms based on crowdfunding type and number of listed projects are examined. Different services offered by crowd-funding platforms are used as controls. Cutpoints and constants are not reported for conciseness. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Dependent Variable: Percentage of Fully Funded Projects in Each Year

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<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
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<td>Predicted Due Diligence Application? (Yes=1)</td>
<td>1.219**</td>
<td>1.182**</td>
<td>1.375**</td>
<td>1.433**</td>
<td>1.228**</td>
<td>1.265**</td>
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<td>(2.39)</td>
<td>(2.35)</td>
<td>(2.26)</td>
<td>(2.29)</td>
<td>(2.37)</td>
<td>(2.10)</td>
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<td>Project/Employee Ratio</td>
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<td>-0.683**</td>
<td>-0.564**</td>
<td>-0.458**</td>
<td>-0.392**</td>
<td>-0.525**</td>
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<td>(-2.25)</td>
<td>(-2.11)</td>
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<td>Platform offers strategic fundraising guidance</td>
<td>0.953**</td>
<td>0.915*</td>
<td>0.834*</td>
<td>0.883*</td>
<td>0.904*</td>
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<td>(1.77)</td>
<td>(1.82)</td>
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<td>Platform Provides Periodical Updated Platform Information to Startups</td>
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<td>-0.0915</td>
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<td>Platform offers pre-evaluation before listing Startups</td>
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<td>(-0.26)</td>
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<td>Platform helps with business and financial planning</td>
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<td>(-0.51)</td>
<td>(-0.64)</td>
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<td>Platform offers contractual help to Startups</td>
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<td>Platform offers marketing or promotion services</td>
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<td>(1.60)</td>
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<td>Industry Composition Controls?</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Cluster for Year?</td>
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Panel B. Dependent Variable: Total Amount of Money Raised in Each Year

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<th>Model 4</th>
<th>Model 5</th>
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<td>Predicted Due Diligence Application? (Yes=1)</td>
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<td>1.087**</td>
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<td>(2.28)</td>
<td>(2.37)</td>
<td>(2.41)</td>
<td>(2.29)</td>
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<td>Project/Employee Ratio</td>
<td>-0.954*</td>
<td>-1.059**</td>
<td>-0.913*</td>
<td>-1.115*</td>
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<td>Platform offers strategic fundraising guidance</td>
<td>0.752*</td>
<td>0.831*</td>
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<td>0.901**</td>
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<td>(1.94)</td>
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Panel C. Dependent Variable: Average Fundraising Duration over 2013-2016

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<th>Project/Employee Ratio</th>
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<th>Total Number of types of Due Diligence applied</th>
<th>Platform offers marketing or promotion services</th>
<th>Platform offers pre-evaluation before listing Startups</th>
<th>Platform offers strategic fundraising guidance</th>
<th>Platform helps with business and financial planning</th>
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<td>1.058* (1.75)</td>
<td>-0.0840 (-1.22)</td>
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<td>1.106 (1.55)</td>
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<td>1.084** (2.43)</td>
<td>1.049 (1.59)</td>
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<td>-1.322 (-1.47)</td>
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<td>1.114* (1.72)</td>
<td>-0.141 (-1.53)</td>
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</table>

Industry Composition Controls? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
Cluster for Year? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
Number of Observations | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
Wald chi² | 31.64 | 32.48 | 34.29 | 35.14 | 36.45 | 36.77 |
Prob > chi² | 0.0045 | 0.0052 | 0.0050 | 0.0060 | 0.0062 | 0.0085 |