Terms of Endearment: Financing Terms for Deep Technology Startups on a Crowdfunding Platform

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Public science firms generate positive outcomes, but transitions for their private startup counterparts across the so-called "Valley of Death" remain challenging. Like other new ventures, they use modern tools to raise capital, such as crowdfunding and simplified convertible debt instruments, but these strategies have been poorly studied for the economically important niche of early-stage science firms. New data from a "deep technology" equity crowdfunding (EC) platform show that those investors make different decisions than their offline counterparts. Debt and a related instrument, the Simple Agreement for Future Equity (SAFE), are used successfully in both channels as early-stage vehicles, but selection and funding outcomes differ. Relative to life sciences and data sciences, engineering or hardware firms experience a significant penalty if they elect to offer convertible debt instruments. Equity crowdfunding investors strongly prefer the SAFE to a traditional debt instrument, but are relatively insensitive to the specific terms. These findings impact the understanding of entrepreneurial finance and the policy associated with science-based ventures.

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1. Introduction.

Many public initiatives, including research subsidies, education policy and tax incentives, revolve around optimism that good science leads to strong economic outcomes. This has indeed been observed in public companies (Hirshleifer et al. (2018), Mama (2018)), and extensive scholarship describes the promise and pitfalls of translating scientific knowledge into economic value (Gittelman and Kogut (2003), Helmers and Rogers (2011), Veugelers and Wang (2019), Belenzon and Patacconi (2014), Trajtenberg (1990)). However, less is known about how these companies form and evolve as startups. The growing field of entrepreneurship research reflects recognition of the role of startups in generating economic growth and job creation (Haltiwanger et al. (2013)) and the concern over the decline in new firm formation (Decker et al. (2016)). This observation is counter-intuitive because the proliferation of computing facilities and internet services have led to a dramatic decrease in the cost of launching a new software product (Shane and Nicolaou (2018)); these same factors contribute to a collapse in previously costly corporate activities, such as legal and accounting services, human resource management, and others. Simply put, it is easier than ever to launch a new company, and yet the declining rate of new venture formation remains resistant.

A potential remaining issue is the search for startup capital, which is difficult for new firms to obtain (Gompers and Lerner (2001)) and its access is linked to exogenous factors, such as the business cycle and exit conditions (Chaplinsky and Gupta-Mukherjee (2016), Nanda and Rhodes-Kropf (2013, 2017)). Venture capital is well known as a financing source and important because it has been linked to faster commercialization and firm growth (Dutta and Folta (2016), Bertoni et al. (2011), Davila et al. (2003)), but the number of venture capital firms has decreased substantially while the angel marketplace has expanded (Shane and Nicolaou (2018)). In parallel, the venture capital market has grown extensively, but has migrated to software from hardware or "deep technology" startups (Belz and Zapatero (2019)), suggesting a consolidation of venture capital in fewer, larger firms moving away from hardware. These factors conspire to create strong challenges for new science-based ventures to launch and raise funds.

This may be partly due to difficulties in assessing and valuing science accurately (Gu (2005), Cohen et al. (2013)), making the perceived risk high relative to software, and particularly in the so-called "Valley of Death" bridging science and application (Bonvillian (2014), Auerswald and Branscomb (2003), Beard et al. (2009), Frank et al. (1996), Islam (2017), Belz et al. (2019)). Other factors contributing to this capital allocation include limitations on scalability by capital expenditures, the longer lead times associated with manufacturing, difficulties in identifying talent, and other issues. As a result, government programs support these firms in many countries (González and Pazó (2008), Zúñiga-Vicente et al. (2014), Cumming and Li (2013), Galope (2016), Howell (2017), Lerner (1999), Qian and Haynes (2014), Toole and Czarnitzki (2007), Toole and Turvey (2009), Siegel and Wessner (2012), Smith et al. (2018)).

In addition to accessing public funds, firms may seek private capital and utilize risk pricing directly in its financing strategy. Convertible securities - those that may transform from one class to another upon triggering events - potentially limit risk-taking, reduce moral hazard, serve as quality signals to early-stage investors (Gompers (1997), Zambelli (2014)) and may be more widely used by both experienced venture capitalists (Hartmann-Wendels et al. (2011)) and high-tech firms (Cumming (2005)). Another approach to lowering the barrier to capital is to exploit the information distribution advantages of crowdfunding, which offers the added benefit of efficiency in identifying investors with higher affinity for a specific type of opportunity. While crowdfunding has generated exciting research in general entrepreneurship (Belleflamme et al. (2014), Zhou et al. (2018), Belleflamme et al. (2015), Ahlers et al. (2015)), less is known about its capability and use in growing deep technology ventures.

In this work, I examine financing activities and choices on a relatively new crowdfunding platform dedicated to financing deep technology startups. Because the platform enables the firm to offer standardized terms to offline and online investors alike, it is possible to extract their preferences separately and link them to outcomes. This study integrates research streams in corporate finance, entrepreneurship and the Valley of Death, and crowdfunding. In addition to illuminating a specific private capital marketplace, this work adds to the discussion of the nature of the market failures addressed by subsidies to small scientific firms.

2. Background.

2.1. Funding technology development across the Valley of Death.

The commercialization and exploitation of the products of basic research has long served as a focus of economic attention. Fundamental science has been viewed as an important engine of economic development (Nelson and Romer (1996), Mansfield (1991), Hohberger (2016)), enabling the emergence of new sources of industrial and national competitiveness. However, funding at the earliest stages is difficult to obtain in the Valley of Death (VOD), the range of technology development between discovery and validated application (Bonvillian (2014)), especially for smaller firms without the resources to pursue riskier R&D projects (Ughetto (2008)). Funding VOD development is now more critical for small companies because science-led innovation in large companies has declined sharply (Arora et al. (2018)). While publicly traded companies' stock value may be positively linked to science, even beyond simple invention or research and development (R&D) metrics, this effect may be uneven across industries (Simeth and Cincera (2016)). Science may be associated with firm growth and economic value (Mama (2018), Helmers and Rogers (2011), Trajtenberg (1990)), particularly in environments of high valuation uncertainty (Hirshleifer et al. (2018)). Extremely novel science may generate both more and broader technological impact (Veugelers and Wang (2019)), but its commercialization by the private sector varies with firm size.

The natural knowledge domain differences between finance and science lead to disconnects in valuing scientific firms, and thus corporate transparency, finance, and innovation are inextricably linked. Attracting funding can be difficult because investors may not assess the benefits of science accurately (Gu (2005), Cohen et al. (2013)). This effect potentially leads to undervaluation, raising the importance of mechanisms to reduce information asymmetries. Pathways to transparency are even more critical in financing of new private firms presenting acute information asymmetries and subsequent difficulties in raising capital (Gompers and Lerner (2001)). Corporate transparency may facilitate innovation by lowering information asymmetries for arm's length financing (Brown and Martinsson (2019)), and those firms using arm's length financing, such as public debt and equity, innovate more and better than those using existing relationships as financing sources (Atanassov (2016)).

2.2. Crowdfunding of deep technology ventures.

One potential avenue to address information asymmetries is crowdfunding, a mechanism offering cash flow for entrepreneurial operations or finance through a broad online solicitation. More precisely, crowdfunding transactions may offer no reward (donation); early product or other offering of value (reward); a well-defined rate of return (debt); or an undefined rate of return (equity) (Belleflamme et al. (2014), Zhou et al. (2018), Belleflamme et al. (2015)). The last form, equity crowdfunding (EC), is of great interest from the perspective of entrepreneurial strategy (Ahlers et al. (2015)); for larger capital requirements, EC would likely be preferred to reward (pre-orders) by entrepreneurs (Belleflamme et al. (2014)). Crowdfunding may substitute for venture capital in seed stages (D'Ambrosio and Gianfrate (2016)), although adverse selection could force firms to EC as a last resort, when they have fewer resources (Walthoff-Borm et al. (2018)). These platforms may help support the venture in reducing information asymmetries by facilitating communication (Löher (2017)), used to mitigate risks (Estrin et al. (2018)).

Furthermore, crowdfunding both exploits and generates new signals. Even though the investors on EC sites are not professional, signals of quality are linked to success (Mollick (2014)). Some signals, such as those regarding customers or the interest of other investors, have higher value (Bapna (2017)). In addition, crowdfunding may offer the potential long-term benefit of influencing future venture capital screening decisions through a certification effect (Drover et al. (2017)).

Little is known about deep technology startups specifically on crowdfunding sites. Scientific research projects presented on dedicated platforms have a higher success rate, particularly with lower funding targets and higher levels of interaction between researchers and donors (Schäfer et al. (2016)). Longer-term projects (more than five years to exit) are as likely to raise funds but with fewer investors (Vismara (2016)).

2.3. Early stage financing and convertible securities.

In the earliest stages, a firm may offer debt collateralized by the entrepreneur's personal assets (Robb and Robinson (2014)), but it may rapidly move to private sources, using debt, equity, or convertible securities as financing vehicles. This last instrument may be preferable because it differentiates low and high quality entrepreneurs and limits risk-taking (Gompers (1997)); in addition, it offers better moral hazard protection via alignment of entrepreneur and investor interests, improved control provisions, and signal opportunities (Zambelli (2014)). More experienced venture capitalists use securities with higher upside potential (Hartmann-Wendels et al. (2011)).

Convertible instruments comprise both equity and debt. Convertible preferred equity describes shares with special privileges in both liquidation and/or control that later convert into common stock; it represents the most popular financing instrument in U.S. venture capital by a wide margin (Burchardt et al. (2016)). High-tech firms are more likely to use convertible equity than are generic seed-stage companies (Cumming (2005)). On the other hand, debt can help investors and entrepreneurs alike avoid dilution of their stakes, improve the internal rate of return, and provide monitoring opportunities (Ibrahim (2010)). Convertible debt or promissory notes can be used to mitigate adverse selection, particularly if the conversion triggers (i.e., call provisions) are attractive (Stein (1992)). Previously used primarily for bridge financing, convertible notes have enjoyed new popularity as startup launch costs have collapsed and simplified versions have become available (Coyle and Green (2014)).

In other words, science contributes to industrial competitiveness, but funding its transition across the Valley of Death has challenges, particularly as the private venture capital market has consolidated and moved away from hardware. By its nature, science presents valuation challenges to many investors, a barrier to funding that is potentially exacerbated by the information asymmetries typical of small firms. Equity crowdfunding represents a useful channel for addressing information asymmetries, potentially substituting for venture capital. Convertible instruments serve to align interests and are commonly used in high-tech firms. It is thus interesting to study how these different tools - EC as a financing channel, and convertible instrument terms as a risk pricing mechanism - combine to provide sorely needed capital to young science-based ventures.

Because of their potentially important role in the economy, it is desirable to study how science-based new ventures are financed at their earliest stages. Many of these firms develop solutions in industries that may be less attractive to venture capital in light of current investment trends. How do the terms of convertible securities reflect perceived risk associated with newness, industry, or other factors?

3. Debt-like instruments and research design.

3.1. Debt-like instruments.

Convertible debt and the Simple Agreement for Future Equity (SAFE) represent two important convertible securities termed “debt-like instruments” (DLI) in this work. By United States law, when a firm sells shares (equity), it must offer them at a common price to all prospective investors. In principle, this may not apply in a debt round because each creditor creates an independent loan to the company, but it is inefficient to negotiate separate term sheets with all possible investors. As a result, startup debt typically operates similarly to equity fundraising, with identical terms offered to all investors. Debt may be attractive to both the entrepreneur and the investor because it circumvents the need to value a company with minimal hard assets and an embryonic business model. These factors conspire to create a potentially long, protracted process for a nascent venture.

Often both parties benefit from a financial instrument that operates like debt, sidestepping the valuation negotiation. This grants an opportunity to convert the principal (and possibly accrued interest) into shares at a time when the company is more mature and can attract other investors or generate sales. Typically, the conversion is triggered at a major corporate financial event, such as a future financing round with a pre-determined minimum valuation, attaining a revenue threshold, or a similar activity with an easily valued financial impact. Debt is senior to equity in liquidation preferences, which means that in the event of a corporate transaction ranging from an acquisition to bankruptcy, the creditor is paid before the shareholders. In addition, the debt may be collateralized by company assets, typically intellectual property in the case of new deep technology startups, thus conferring downside protection.

Convertible debt or a convertible promissory note ("convertible note") must thus define the terms, or pricing, in converting the principal (and interest) to shares, with the investor seeking to reduce the share price at the time of conversion to compensate for the increased risk associated with the investment. The two key terms in convertible debt are the *valuation cap* and the *discount*, which operate independently. First, the valuation cap ("cap") represents the investor's maximum stock price at conversion, as expressed in terms of the company's total valuation. The note converts at the minimum of the cap and the valuation. For instance, if the cap is \$3 M and the valuation at conversion is \$4 M, the investor pays only 75% (\$3 M/\$4 M) of the stock price. Therefore, a lower cap represents a better deal for the investor. Alternatively, a share purchase discount may be specified directly. For example, if the discount d is 20%, at a valuation of \$4 M, the share price would be evaluated by discounting the valuation appropriately, or converting at a share price derived from of \$4 M x $(1 - d) =$ \$3.2 M. Thus, a higher discount favors the investor. In addition, as with any debt, an interest *rate* may be defined, relating strictly to the principal and with no impact on conversion. Often, rather than being paid on a current basis and affecting the startup's cash flow, interest may accrue. Debt terms may include a cap, a discount, both, or none, in addition to an interest rate. Should the debt offer both a cap and a discount, the conversion takes place at the lowest share price.

As an alternative to convertible debt, the Simple Agreement for Future Equity (SAFE) was introduced by the incubator Y-Combinator in 2013 (Levy (2018)) and is now widely used by startups and investors. A SAFE operates similarly to a convertible note in that the firm's current share price is not incorporated as a deal term (or even necessarily defined), but with the key difference that there is no interest rate, because a loan is never executed. Its terms may include a cap, a discount, both, or none. Furthermore, it does not enjoy privileged liquidation rights nor seniority in the event of a corporate transaction. Like debt, it converts into equity upon a trigger event. However, the investor retains no rights to the assets of the company and thus the SAFE ultimately operates like an interest-free, unsecured loan with conversion rights. From the perspective of the investor's cash flow, this is particularly true when compared to debt with accruing interest.

3.2. Hypotheses.

In principle, debt-like instruments offer an advantage to equity by mitigating the need to price the security at the time of the initial transaction, making it appropriate for firms addressing the VOD and particularly attractive for science firms that may be hard to value. In addition, the standardization of terms between conventional debt and the SAFE enable highly specific risk pricing by the investor. Unlike other efforts on crowdfunding sites, EC investment decisions are driven by financial motives (Cholakova and Clarysse (2015)) and creditors communicating on a crowdfunding site generate loans that outperform those of simply mimicking peer decisions (Zhang and Liu (2012)). Thus, it is reasonable to assume that EC investors will indicate similar preferences than those operating in a more traditional fashion, leading to the first conjecture:

Hypothesis 1. *Equity crowdfunding investors will behave identically to other investors, with no differences in the selection process nor in the funding outcomes.*

Furthermore, if early-stage science firms are difficult to value, debt-like instruments (DLIs) should be preferred to equity, but with no impact on the funds raised:

Hypothesis 2. *In early-stage deep technology deals, DLI will be associated with higher probabilities of funding success and equivalent oucomes.*

Among DLI deals, an investor avoiding valuation may also seek deal simplicity, thus selecting SAFEs as an instrument, but with no impact on the outcome. Regardless, investors should select terms of a lower cap and higher discount, and a higher interest rate should impact the probability of funding and the outcome:

Hypothesis 3. *In early-stage DLI deep technology deals, a SAFE will generate higher probability of funding success but with no impact on the funds raised.*

Hypothesis 4. *In early-stage DLI deep technology deals, a lower cap and higher discount will drive selection and outcome; and for convertible debt, a higher interest rate will be linked to selection and outcome.*

4. Research design.

To study early-stage deep technology ventures as they cross the VOD, I use proprietary data from a novel crowdfunding platform, Propel(x), whose model is distinct for several reasons. Firms apply to Propel(x) and are not permitted to publish their deals on the web site until an internal team has reviewed the proposed pitch for quality and deep technology nature. These factors are evaluated manually through a questionnaire describing the science, the firm's intellectual property portfolio, the education level of the founders, and related factors. Similarly, accredited investors apply to participate on the platform and are reviewed prior to enrollment. These processes combine to create a curated marketplace dedicated to deep technologies.

4.1. Data.

The dataset consisted of candidate funding opportunities, termed “deals”, from 2014 to early 2019. Not all deals raised funds successfully. A deal was considered a candidate for analysis if it was possible to verify the location, founding date, age, operating company status (i.e., a small investment firm seeking funding was not considered a candidate), patent history (including the absence thereof), financial instrument (DLI or equity). The data set was extracted from the live site and included relatively new deals that would run into the “wall of the present”, and thus deals were required to be at least 90 days old to be evaluated.

Three hundred eight deals submitted by 270 firms were considered candidates. The difference in firm and deal numbers resulted from the tendency of some firms to publish multiple deals on the platform, returning for further funding after a successful campaign. In this dataset, a startup record includes an aggregate value for previously raised funds, but this value is updated for each campaign on the platform. That is, if a firm returns to the platform for a second fundraising round, the previously raised amount from the first raise is overwritten with a new value, and there was no information available on the previously raised funds for the first deal. For this reason, I restricted the sample to firms that published only one deal on the platform (so-called “single deals”) so that the record for previously raised funds did not suffer from this potential contamination. This conferred the added benefit of minimizing endogeneity from the investors “doubling down” on existing investments. Single deals, or firms submitting only one opportunity, constituted 241 deals; in other words, 90% of the firms submitted only one deal. Of these, 89 deals used equity instruments, with the remaining 152 using DLI. The data are summarized in Tables 1 and 2.

4.2. Variables

Control, predictor, and outcome variables are defined in Tables 3 and 4, with correlations for the single deals and DLI deals shown independently in Tables 5 and 6 and included the following:

- *Age.* Venture age is important because earlier stage deals are more appropriate for angels focusing on new technologies (Erikson and Sørheim (2005)). In addition, older ventures are more likely to have made progress (Delmar and Shane (2006)) and thus may present a different risk profile. For each firm, the founding year was extracted manually from Crunchbase, LinkedIn, and other online venues and subtracted from that of the deal to obtain the firm’s estimated age in years. Records were removed from the candidate list if the deal year preceded the founding year, as that indicated a data issue.
- *Bay Area.* Because location could potentially influence angel financing outcomes (Brush et al. (2012)), I identified the firms in the San Francisco Bay Area by comparing the firm’s location with United States Census data aggregated by the Metropolitan Transportation Commission and the

Association of Bay Area governments (http://www.bayareacensus.ca.gov/index.html). This binary variable was set to 1 if the city was in the Bay Area list and 0 otherwise.

- *Patents.* Patents represent important controls in attracting funding for small firms (Hottenrott et al. (2016)) and venture capital (Conti et al. (2013)). However, they generate diminishing impact as a signaling mechanism in later funding rounds when more information is available (Ardito et al. (2016), Hoenen et al. (2014)). Venture-backed startups have an average of six patents or applications, unlike those without venture capital, who typically had none (Graham et al. (2009)). Using proprietary software (Belz and Zapatero (2019)), I extracted patent information from the United States Patent and Trademark Office database for all patents identifying the firm as the assignee in the five years preceding the deal; this window was created so that the fundraising success was more likely to be linked to the innovation represented by the patent. To resolve potential ambiguities in firm identification, I extracted the assignee's last known location and compared it with the firm location as recorded in the EC database, although in some cases the location was different because the firm may have moved (e.g., moving from Palo Alto to San Francisco). Therefore, the location was used primarily as a verification tool. The total number of patents issued in the five-year window preceding the deal was identified for each deal as a continuous integer.

- *Amount previously raised.* Investors in technologies may invest more in early stages relative to other informal investors (Erikson and Sørheim (2005)), and thus the amount previously raised is an important control. In the EC database, firms report the funds that they have raised previously and in the current round. These numbers were presumed to be accurate to align with United States securities laws.

- *Round size.* Simiarly, each deal was characterized by the maximum amount of funding sought in the current deal to evaluate the round size.

- *Industry.* Angels show preference for industries that they like and are more likely to invest in them (Maxwell et al. (2011)). On the platform, firms self-select into various non-exclusive industrial categories, such as "green technology," "manufacturing," "medical devices", "biopharma," etc. I consolidated the firms into three general disciplines of Life Sciences, Data Sciences, and Engineering (Table 4). This was not a categorical variable because of trends in converging sciences; for instance, a health care analytics firm may be both Life and Data Sciences, and thus the data show high overlap.

- *DLI.* The financial instrument selected by the firm appeared as one of four mutually exclusive options: Common equity, preferred equity, convertible debt, or SAFE. A deal was classified as DLI=1 if it used either convertible debt or a SAFE as a financing instrument. The alternative (DLI = 0) deals used common or preferred equity as the instrument.

- *SAFE (DLI deals only).* The DLI deals (DLI = 1) were further segmented and identified with a binary variable set to 1 if a SAFE was used, and 0 if convertible debt.
- *Cap (DLI deals only).* The valuation cap averaged \$9.5 M and \$7.0 M for SAFE and convertible debt, respectively. This is surprising because a typical firm offering the SAFE is one year younger than that offering debt (2.7 vs. 3.6 years old). In a framework where the firm's value monotonically increases over time, one would expect the younger firms to have a lower valuation cap, suggesting complex dynamics.
- *Discount (DLI deals only).* The discount was recorded for each DLI deal and averaged 15.4% for SAFE and 18.0 % for convertible debt.
- *Rate (DLI deals only).* The interest rate was recorded for convertible debt deals.
- *Funding success.* Each deal included the amount raised in offline channels as "amount offline", and the EC funding was recorded as "amount committed". The funding success for each of these ("offline" or "EC") was set to 1 if any funding was obtained.
- *Funding outcome.* The total raised in each channel was recorded as a continuous variable.

5. Analysis and Results.

This analysis focuses on financing outcomes of two types: Funding selection decisions and fundraising totals independently for offline and EC fundraising. Of 241 single deals, 167 (70%) raised offline funding, and 66 (27%) raised EC; and in the subset of 152 DLI deals, 111 (74%) raised offline funds, with 47 (31%) raising EC. This study is naturally subject to concerns about endogeneity - namely, that the factors influencing selection - attracting funding- are related to those driving the amount raised as an outcome. If the two were independent, then a simple two-part model (TPM) would be unbiased (Bushway et al. (2007)); however, this is unlikely to be true in the private fundraising context (an example would be random assignment of funding decisions). The Propel(x) data set is censored as it includes unfunded firms. Such a set is appropriately modeled with a two-stage Heckman analysis (Sartori (2003), Certo et al. (2016), Bertoni et al. (2011)), or a probit estimate of the selection process, followed by a tobit model including a new regressor derived from the probit fit.

I conducted two analyses: first, on the use of DLI; and second, and on the actual DLI terms. For each analysis, I initially modeled selection with a logistic regression. In the case of offline deals with sufficient statistics, I followed this with an ordinary least squares (OLS) regression, but this was not possible for the subset of EC deals. This initial combination was used to explore the data, and a two-step Heckman process followed.

5.1. Use of DLI.

In Table 7, I estimate the impact of using a DLI on the probability of raising funding through each channel, using logistic regressions of the likelihood of generating offline funding in models 1 and 2 and EC funding in models 3 and 4. Models 1 and 3 represent baseline probabilities, and models 2 and 4 indicate that use of a DLI does not impact the likelihood of funding. In models 1 and 2, I find that the location is an important control, and life sciences deals are positively linked to the increased probability of offline funding. In the offline channel, investors generally are more likely to participate if the round is larger, but not the EC investor. If these offline investors have institutional limited partners, they may need larger rounds in order to make "the view worth the climb". An individual investor on an EC platform may not be driven by the same pressure to invest larger quantities.

In Table 8, I study the funding outcomes for offline deals conditional on receiving funding with OLS models, with model 1 serving as a baseline. In model 2, I find that use of a DLI is linked to roughly \$800 k less in funding, with an average marginal effect (AME) of -\$730 ± 285 k ($p < 0.01$). Models 3-5 examine interaction effects with industry and indicate that while there is no interaction with life or data sciences, firms with engineering technologies raise almost \$1.6 M less - equivalent to a 2x penalty - if they use a DLI as the financing instrument.

However, this TPM does not include the impact of effect of the DLI decision on the actual funding outcome, and thus it is desirable to use the Heckman model, which also permits the estimation of funding outcomes for EC deals where the statistics do not allow for a simple OLS model. This is described in Tables 9 and 10 indicating the selection and outcome equations, respectively, where the selection is modeled with a probit fit using several of the controls as exclusion restrictions (Bushway et al. (2007)) and the outcome is described by a tobit model. In model 1 of both Tables, the baseline selection indicates that the impact of using a DLI is estimated as \$1.1 M in the offline channel. Model 2 includes both DLI and engineering in the selection specification. This combination indicates that the negative impact of using a DLI as the financing instrument increases to \$1.9 M, consistent with the 2x penalty seen earlier. In models 3 and 4, this analysis is repeated only for EC outcomes, and the DLI is associated with roughly \$100 k loss in the fundraising outcome. Engineering is modestly linked to a higher probability of selection, in agreement with the mission of the platform, and no penalty is assessed.

Therefore, use of a debt-like instrument does not impact the selection decision itself, but it is associated with roughly \$1 M less in offline funding and \$100 k less funding for EC investors, on the same order of magnitude as the measured averages. This is consistent with two different conditions in which the company would seek not to value the company: 1) Presuming that the firm engages in a series of financing rounds with monotonically increasing valuation and capital raises, DLI is useful as an early-stage tool, before the entrepreneur is prepared to value the firm; and 2) If the firm has a lower valuation than a previous financing, known as a "down round", a DLI would help prevent the dilution of the positions of the existing investors.

I also report the first evidence of interactions between convertible debt terms and the industry in which the firm operates. Engineering independently is not linked to lower funding levels; the interaction with the financing instrument is associated with lower fundraising. The two-stage model indicates generally that the industry effect, in which engineering firms using a DLI experience raise roughly $2 M less than their life sciences and data sciences counterparts, is not corroborated by the EC investors. Because I control for the round size, it is not true that the engineering firm requires less capital, and controlling for the number of patents accounts somewhat for the level of technical innovation as a proxy for firm quality. Therefore, it appears that the combination of DLI and engineering represents a specific type of risk for which the offline investor extracts a rich premium. This observation alone has significant impact for the national innovation ecosystem and strongly motivates the use of subsidies to support firms in spaces less favored by investors.

In 2012, the Jumpstart Our Business Startups Act (JOBS) called for a new mechanism for startups to raise funds through crowdfunding without requiring that investors are accredited. However, this new method, known as Regulation Crowdfunding, limits total investment to $1.07 M and individual investment limits can be as low at $2,200. This is unlikely to be an important fundraising mechanism for deep technology startups as they simply require much more. Therefore, the simplistic view that unaccredited investors can contribute to advancing deep technologies via crowdfunding does not reflect that the EC marketplace assigns different risks to these firms. It points to the ongoing need for subsidies to support the development of these ventures, because the market's attempt to address the risks via both a new financial instrument (SAFE) and a new investor recruitment mechanism (crowdfunding) may still be inadequate to raise sufficient capital. This also addresses the question of whether subsidies "crowd-out" or displace private investment (Wallsten (2000)), although other evidence suggests that instead these projects would be discontinued (Belz and Giga (2018)) and thus the funding is critical (Feldman and Kelley (2006)). The results described here clearly articulate the market failures addressed by subsidies.

5.2. DLI terms.

Beyond estimating the impact of the use of a DLI relative to equity instruments, it is possible to examine the deal terms directly. In Table 11, I conduct logistic regressions on the probability of raising any funds for the subset of deals offering a DLI. Model 1 indicates the baseline estimate. In models 2-5, I estimate the impact of using a SAFE specifically and then the effect of the cap, discount, and interest rate, respectively, finding that use of the SAFE itself is not linked with the probability of raising funds. Although it appears that the terms each generate comparable effects, combining all of them in model 6 suggests that the cap and interest rates serves as a substitute for the discount. The discount is estimated to have an average marginal effect (AME) of 0.009 ± 0.004 ($p < 0.011$) for each percentage point.

In Table 12 I repeat the analysis strictly for EC funding, and in the completely specified model 6, the SAFE shows a significant positive impact, showing an AME of 40.1 ± 9.2 % ($p < 10^{-5}$) in the probability of funding. In addition, a 1% increase in the interest rate leads to an AME of 5.8 ± 1.4 % ($p < 10^{-5}$). Furthermore, unlike the offline funding, the modest effect of the discount (model 4) is mediated by the SAFE selection and interest rate, showing no significant effect in the full model 6. Here the EC investors operate quite differently than the general investors.

I estimate the drivers of funding outcomes for all single deals in model 7 of Table 11 and find no effect. To correct for the possible selection effect, I again construct four Heckman models with several instrumental variables: a baseline model without DLI terms included in the selection equation and one with DLI terms, separately for offline and EC funding. Tables 13 and 14 show the selection and outcome equations, respectively, and suggest that when the discount is included in the selection process, each basis point of discount reduces the funds raised by $20 k. This is counter-intuitive because the investor benefits from a higher conversion discount, suggesting that higher discount could operate as a signal of higher risk. On the other hand, the level of investment by the EC investor is relatively insensitive to any of the DLI terms.

Compared to the offline investor, the EC participant strongly prefers the SAFE as a financing instrument, despite the loss of protections afforded to the creditor. It is not clear if this is a signaling effect or the benefit of the instrument's simplicity. The newness of the SAFE may identify a firm as sophisticated, consistent with the observation that although younger, these firms have higher caps - indicating that they expect higher valuations at the next funding round. On the other hand, the absence of collateral and/or liquidation seniority provisions may confer a benefit to the investor if it is costly to either comprehend or execute the debt's liquidation terms. On the other hand, each basis point in the interest rate increases the probability of EC funding by 6% - a term unavailable to the SAFE. Therefore, the EC marketplace is heterogeneous, with some investors selecting the SAFE and others enjoying the protection of the higher interest rate.

5.3. Discussion.

It is now possible to synthesize these results in terms of the hypotheses originally articulated. First, as opposed to Hypothesis 1, I find distinct differences between the offline investor and the equity crowdfunding participant. They select deals differently and the EC investment is a factor of ten smaller than that of the offline investor, whose selection decision is linked to the firm's location in the Bay Area. It is also linked to round size, potentially associated with institutional investors driving a need to allocate more capital.

Hypothesis 2, suggesting that the use of DLI will be preferred because it reduces the need to value the firm in conditions of high uncertainty, is disproven with respect to selection, but it is associated with a lower fundraising outcome, aligned with its use in the firm's earliest stages. As a surprise, I find that the DLI is particularly linked to lower funding outcomes for firms with engineering technologies; because I control for the capital sought by the firm, it is not simply a result of those firms needing less, but more likely reflects an additional risk premium assessed for early-stage engineering firms. This industrial selection effect has not previously been seen in the context of science-based ventures and has important implications.

Hypothesis 3 indicated that the SAFE would generate a higher likelihood of success but not an impact on the fundraising outcome. The results are consistent with this model and the idea that the individual investor strongly prefers a SAFE because of its simplicity, despite the lack of protection. And finally, while the cap, discount, and rate all individually affect fundraising success offline, in combination the discount mediates the impact of the cap and rate. In contrast, totals raised on the EC platform are not associated with the instrument's deal terms. Hypothesis 4, suggesting that outcomes are driven only by the financial impact of the terms, is thus not validated.

6. Limitations and future research

There are many limitations to this study. First, the study lacks visibility into other terms that may be important, such as representation on a board of directors, information rights, and other privileges typical in a startup financing event. These unobservable investor rights may impact results differentially between the two investor populations. For instance, the offline investor may have the opportunity for an independent deal to serve on the board, thus conferring control privileges not captured in the financial deal terms. In addition, the individual involved may then experience agency concerns that are simply not part of the EC investor's engagement.

In addition, the deal terms for competing equity deals would be important to understand. This could give new insight into the relative importance of the deal size and proportion of ownership on the investment decision and outcome. Furthermore, it would provide additional information on risk pricing as equity and debt terms could be compared directly.

Because of the platform's novelty, it is not possible to examine more long-term outcomes, such as future or forward patent development, hiring, and revenue generation. The outcome variables are still relatively short-term metrics, and thus while deal terms speak to the funding success, it is not clear if these terms enable more successful firms. These economic outcomes motivate further study, but the immediate findings with respect to industry must be taken seriously in the public policy realm. Equity crowdfunding provides an opportunity for the private sector to address the Valley of Death, but the average investment size is unlikely to be sufficient to supplant the need for ongoing subsidies. Furthermore, the evidence that it is more costly for engineering firms to raise funds in this venue is significant and motivates even more attention from the public sector. Turning to another important policy question, this sample only touches on the ability of crowdfunding to redistribute capital geographically (Sorenson et al. (2015)); it would be interesting to link the investor's location with that of the firm to determine if EC adds to regional activity or reorganizes it. This could be linked to the firm's industry to study how industries are transformed regionally and nationally.

One rich field of study would be to extend these studies into another phase of the economic cycle. Year-fixed effects are included in this study but the time frame (2014-2019) covers a relatively narrow range of fundraising environments. The SAFE is an attractive instrument during a strong economy because of the expectation that the valuation increases monotonically, but it remains to be seen how the instrument survives without strong protection provisions. Indeed, in a recessionary context, the SAFE's popularity may decrease, even for the EC investor. This may have affect the ability of these firms to grow.

7. Conclusion

Through a new crowdfunding platform engaged in financing deep technology startups, I find that EC investors do not make decisions identically to their offline counterparts. Debt-like instruments successfully serve as a financing vehicle, but with lower fundraising outcomes, due to use for either early-stage ventures or others that might not wish to engage in valuation discussions. Outcomes of engineering firms using debt-like instruments are significantly lower than those in life sciences or data sciences, suggesting that the engineering firm is perceived as posing additional costly risk. Unlike the offline investor for whom a higher funding propensity is linked to the instrument's discount, the EC marketplace shows heterogeneity, strongly selects deals offering the SAFE instrument, or seeking protection in and a higher interest rate. These findings have important implications for the policy and practice associated with deep technology ventures.

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Appendix. Tables

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Table 1 Data summary

Data	Number
Candidate deals	308
Verified operating firms in candidate deals	270
Single[1] deals	241
Single DLI deals	152

[1] Single deals are defined as deals that represent the firm's only offering on the platform

Table 2 Instrument and industry distribution

Instrument	N	Fraction in Bay Area	Fraction in each discipline[2]		
			Life Science	Data Science	Engineering
Equity	89	0.24	0.56	0.42	0.70
Convertible debt	121	0.45	0.56	0.60	0.61
SAFE	31	0.45	0.48	0.68	0.77
Total	241				

[2] Disciplines are not mutually exclusive, and thus rows do not sum to 100 %

Table 3 Variable names and definitions

Name	Definition
	Single deals (N = 241)
Bay Area	In the San Francisco Bay Area (1 = yes)
Year	Year of deal
Age (yr)	Age of firm at time of the deal
Amt.prev ($M)	Amount previously raised
Patents	Patents issued in 5-year window preceding deal
Round size ($M)	Maximum amount sought as financing
Offline raised ($k)	Total raised in this financing round
CF raised ($k)	Committed crowdfunding
DLI	Debt-like instrument (convertible debt or SAFE) (1 = yes; 0 = equity)
SAFE	SAFE instrument (only for DLI deals; 1 = yes; 0 = convertible debt)
Life Sci.	Life sciences discipline (1 = yes)
Data Sci.	Data sciences discipline (1 = yes)
Eng.	Engineering discipline (1 = yes)
	Single DLI deals (N = 152)
Cap ($M)	Valuation cap on DLI instrument
Discount (%)	Discount upon conversion for DLI
Rate (%)	Interest rate (only for convertible debt)

Table 4 Descriptive statistics

	N	min	max	mean	median
		Single deals			
Bay Area	0	1	0.37		
Year of deal	241	2014	2019		
Age (yr)	241	0.50	23.5	3.84	3.50
Amt.prev ($M)	241	0.00	45.00	1.00	0.08
Patents	241	0	11	0.39	0
Round size ($M)	241	0	750	4.67	1
Offline raised ($M) (if any)	167	0	14.4	1.01	0.48
CF funding raised ($k) (if any)	66	0	1,214	104	25
		Single DLI deals			
Cap ($M)	152	0.0	50.0	4.14	0
Discount (%)	152	0.0	35.0	8.24	0
Rate (%)	152	0.0	13.0	1.78	0

Table 5 Correlations for all single deals

	Bay.Area	Age	Amt.prev	Size.Round	Patents	DLI	LifeSci	DataSci
Bay Area								
Age	-0.10							
Amt. prev.	0.00	0.38***						
Round size	-0.05	-0.04	-0.01					
Patents	-0.07	0.35***	0.37***	-0.01				
DLI	0.22***	-0.14*	0.00	0.04	-0.17**			
Life sci.	-0.03	0.07	0.09	-0.07	-0.01	-0.02		
Data sci.	0.10	-0.16*	0.01	0.05	-0.05	0.20**	-0.11	
Eng.	-0.01	0.11	0.10	-0.09	0.10	-0.05	-0.18**	-0.21***

Table 6 Correlations for all single DLI deals

	Bay.Area	Age	Amt.prev	Size.Round	Patents	SAFE	Cap	Discount	Rate.int	LifeSci	DataSci
Bay Area											
Age	-0.05										
Amt. prev.	-0.02	0.43***									
Round size	-0.07	-0.05	-0.02								
Patents	-0.04	0.37***	0.71***	-0.02							
SAFE	0.00	0.08	0.11	-0.04	0.08						
Cap	0.07	0.09	-0.06	-0.03	-0.04	0.18*					
Discount	0.12	-0.04	-0.10	-0.10	-0.11	0.04	0.35***				
Rate	0.06	0.06	0.03	-0.06	-0.09	-0.40***	0.11	0.56***			
Life sci.	-0.02	-0.04	0.10	-0.09	0.06	-0.06	-0.05	0.10	0.14		
Data sci.	0.06	-0.14	0.02	0.06	0.05	0.06	-0.01	-0.09	-0.16*	-0.09	
Eng.	-0.07	0.15	0.14	-0.11	0.09	0.14	0.00	-0.03	-0.12	-0.15	-0.24**

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Table 7 Probability of raising funds in any single deals: DLI use (logistic)

	Offline		EC	
	(1)	(2)	(3)	(4)
Age	-0.02	-0.01	-0.04	-0.03
	(0.05)	(0.05)	(0.06)	(0.06)
Amt. prev.	-0.03	-0.03	0.01	0.005
	(0.06)	(0.06)	(0.05)	(0.05)
Bay Area	0.77^{**}	0.67^{*}	0.48	0.41
	(0.34)	(0.34)	(0.31)	(0.32)
Patents	-0.19	-0.17	-0.11	-0.08
	(0.13)	(0.14)	(0.14)	(0.14)
Round size	0.37^{***}	0.40^{***}	-0.002	-0.002
	(0.14)	(0.14)	(0.01)	(0.01)
Life sci.	0.63^{**}	0.64^{**}	0.15	0.14
	(0.32)	(0.32)	(0.31)	(0.31)
Data sci.	0.40	0.34	-0.26	-0.34
	(0.33)	(0.34)	(0.31)	(0.32)
Eng.	0.56	0.54	0.58	0.59^{*}
	(0.35)	(0.35)	(0.35)	(0.36)
DLI		0.50		0.47
		(0.33)		(0.34)
Constant	-1.38	-1.63	-0.05	-0.23
	(1.57)	(1.63)	(1.47)	(1.49)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	241	241	241	241
Log Likelihood	-131.02	-129.87	-135.77	-134.76
Akaike Inf. Crit.	290.04	289.74	299.53	299.52

Note: *p<0.1; **p<0.05; ***p<0.01

Table 8 Offline funds raised in any single deals: DLI use (OLS)

	Offline funds raised (millions)				
	(1)	(2)	(3)	(4)	(5)
Age	−0.06	−0.08	−0.06	−0.07	−0.07
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Amt. prev.	0.22***	0.23***	0.22***	0.23***	0.24***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Bay Area	0.001	0.12	0.12	0.14	0.03
	(0.27)	(0.27)	(0.27)	(0.27)	(0.27)
Patents	0.51***	0.45***	0.44***	0.45***	0.42***
	(0.12)	(0.12)	(0.12)	(0.12)	(0.11)
Round size	0.001	0.001	0.001	0.001	0.0004
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Life sci.	−0.01	−0.001	−0.33	−0.01	0.03
	(0.28)	(0.27)	(0.48)	(0.27)	(0.27)
Data sci.	−0.21	−0.10	−0.10	−0.61	−0.08
	(0.28)	(0.28)	(0.28)	(0.46)	(0.28)
Eng.	0.46	0.42	0.42	0.43	1.51***
	(0.30)	(0.29)	(0.29)	(0.29)	(0.52)
Life sci.x DLI			0.47		
			(0.57)		
Data sci.x DLI				0.78	
				(0.56)	
DLI		−0.81***	−1.08**	−1.19***	0.33
		(0.29)	(0.44)	(0.40)	(0.54)
Eng.x DLI					−1.55**
					(0.62)
Constant	1.30	1.91	2.02	2.00	0.80
	(1.75)	(1.73)	(1.73)	(1.72)	(1.75)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	167	167	167	167	167
R^2	0.22	0.25	0.26	0.26	0.28

Note: *p<0.1; **p<0.05; ***p<0.01

Table 9 First-stage selection for single deals (probit)

	Offline		EC	
	(1)	(2)	(3)	(4)
Age	-0.001 (0.03)	0.002 (0.03)	-0.02 (0.03)	-0.02 (0.03)
Amt. prev.	-0.02 (0.03)	-0.02 (0.03)	0.01 (0.03)	0.003 (0.03)
Bay Area	0.50^{**} (0.19)	0.45^{**} (0.20)	0.26 (0.18)	0.22 (0.19)
Patents	-0.09 (0.07)	-0.08 (0.07)	-0.06 (0.08)	-0.05 (0.08)
Round size	0.10^{***} (0.04)	0.11^{***} (0.04)	-0.001 (0.003)	-0.001 (0.003)
Eng.		0.22 (0.19)		0.37^{*} (0.20)
DLI		0.32 (0.19)		0.24 (0.19)
Constant	-0.40 (0.94)	-0.56 (0.96)	-0.07 (0.93)	-0.18 (0.95)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	241	241	241	241
ρ	-1.29	-1.36	-0.88	-0.60
Inverse Mills Ratio	-4.34^{***} (1.44)	-5.37^{***} (1.51)	-225.26 (228.47)	-118.11 (151.44)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 10 Second-stage funding outcome: DLI use (tobit)

	Offline (millions)		EC (thousands)	
	(1)	(2)	(3)	(4)
DLI	-1.18^{***} (0.30)	-1.88^{***} (0.58)	-98.39^{**} (48.77)	-106.95^{*} (59.29)
Constant	5.10^{*} (2.68)	6.13^{**} (3.06)	355.46 (291.66)	282.26 (233.32)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	241	241	241	241
ρ	-1.29	-1.36	-0.88	-0.60
Inverse Mills Ratio	-4.34^{***} (1.44)	-5.37^{***} (1.51)	-225.26 (228.47)	-118.11 (151.44)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 11 Probability of offline funding in DLI single deals: Terms

	Probability						Total raised (millions)
	logistic						*OLS*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	−0.08	−0.09	−0.05	−0.04	−0.09	−0.06	−3.04
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)	(4.62)
Amt. prev.	0.20	0.18	0.16	0.09	0.15	0.10	−1.09
	(0.23)	(0.19)	(0.22)	(0.32)	(0.27)	(0.21)	(3.74)
Rond size	2.54^{***}	2.43^{***}	1.83^{***}	1.53^{***}	2.09^{***}	1.06^{*}	0.01
	(0.55)	(0.55)	(0.58)	(0.53)	(0.55)	(0.60)	(0.12)
Bay Area	0.85	0.96^{*}	0.72	0.96	0.76	0.92	11.63
	(0.53)	(0.54)	(0.54)	(0.60)	(0.55)	(0.63)	(16.61)
Patents	-1.43^{**}	-1.32^{**}	-1.23^{**}	−1.14	-1.24^{*}	−0.95	6.73
	(0.63)	(0.61)	(0.60)	(0.74)	(0.69)	(0.66)	(17.69)
SAFE	0.70	0.80	1.02^{*}	0.69	0.65	0.94	−5.99
	(0.53)	(0.55)	(0.58)	(0.59)	(0.53)	(0.64)	(16.74)
Life sci.	0.20	0.26	0.57	0.44	0.26	0.66	−29.42
	(0.58)	(0.59)	(0.64)	(0.65)	(0.61)	(0.70)	(18.47)
Data sci.	0.57	0.60	0.89	0.80	0.76	0.99	−4.17
	(0.55)	(0.56)	(0.60)	(0.62)	(0.58)	(0.66)	(18.58)
Eng.		1.16				1.52	4.56
		(0.77)				(0.93)	(25.79)
SAFE			0.19^{**}			0.09	−0.09
			(0.08)			(0.08)	(1.21)
Cap				0.13^{***}		0.10^{**}	0.67
				(0.04)		(0.04)	(1.15)
Discount					0.24^{**}	0.12	2.32
					(0.11)	(0.15)	(3.55)
Rate	14.40	14.25	13.16	12.30	13.52	11.68	102.67
	(6,522.64)	(6,522.64)	(6,522.64)	(6,522.64)	(6,522.64)	(6,522.64)	(93.36)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	152	152	152	152	152	152	111
R^2							0.17
Log Likelihood	−54.90	−53.65	−51.73	−45.92	−52.40	−43.85	
Akaike Inf. Crit.	137.80	137.30	133.45	121.85	134.79	123.70	

Note: *p<0.1; **p<0.05; ***p<0.01

Table 12 Probability of EC funding in DLI single deals: Terms

	Probability (logistic)					
	(1)	(2)	(3)	(4)	(5)	(6)
Age	−0.01	−0.02	−0.03	−0.02	−0.03	−0.06
	(0.06)	(0.06)	(0.07)	(0.08)	(0.07)	(0.08)
Amt. prev.	−0.003	0.02	0.004	−0.002	−0.06	−0.06
	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)	(0.11)
Round size	−0.004	−0.003	−0.004	−0.003	−0.003	−0.003
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Bay Area	0.41	0.35	0.41	0.33	0.42	0.31
	(0.38)	(0.39)	(0.39)	(0.39)	(0.40)	(0.42)
Patents	−0.55	−0.51	−0.69	−0.53	−0.37	−0.20
	(0.48)	(0.47)	(0.54)	(0.51)	(0.45)	(0.50)
SAFE	−0.17	−0.14	−0.17	−0.25	−0.24	−0.21
	(0.39)	(0.39)	(0.39)	(0.41)	(0.40)	(0.43)
Life sci.	−0.34	−0.42	−0.40	−0.19	−0.07	−0.01
	(0.41)	(0.42)	(0.41)	(0.42)	(0.43)	(0.47)
Data sci.	0.44	0.29	0.43	0.55	0.77*	0.72
	(0.43)	(0.44)	(0.43)	(0.45)	(0.46)	(0.49)
Eng.		1.06**				2.50***
		(0.46)				(0.70)
SAFE			0.05*			0.02
			(0.03)			(0.03)
Cap				0.08***		0.02
				(0.02)		(0.03)
Discount					0.21***	0.37***
					(0.06)	(0.10)
Rate	14.67	14.81	14.43	14.09	13.22	12.90
	(882.74)	(882.74)	(882.74)	(1,455.40)	(882.74)	(1,455.40)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	152	152	152	152	152	152
Log Likelihood	−88.29	−85.66	−86.48	−81.05	−81.92	−71.37
Akaike Inf. Crit.	204.59	201.32	202.96	192.09	193.83	178.73

Note: *p<0.1; **p<0.05; ***p<0.01

Table 13 First-stage selection for any DLI deals (probit)

	Offline		EC	
	(1)	(2)	(3)	(4)
Age	−0.05	−0.05	−0.01	−0.03
	(0.04)	(0.05)	(0.04)	(0.05)
Amt. prev.	0.11	0.05	−0.002	−0.04
	(0.11)	(0.10)	(0.05)	(0.07)
Bay Area	0.51^{*}	0.50	0.25	0.21
	(0.30)	(0.34)	(0.23)	(0.25)
Patents	-0.78^{**}	−0.48	−0.33	−0.08
	(0.32)	(0.34)	(0.28)	(0.27)
Round size	1.28^{***}	0.56^{*}	−0.002	−0.001
	(0.25)	(0.31)	(0.01)	(0.01)
Life sci.	0.50^{*}	0.55	−0.09	−0.11
	(0.30)	(0.36)	(0.23)	(0.25)
Data sci.	0.31	0.54	−0.20	0.02
	(0.33)	(0.39)	(0.24)	(0.28)
Eng.	0.55^{*}	0.68^{*}	0.27	0.41
	(0.31)	(0.37)	(0.25)	(0.28)
SAFE		0.92^{*}		1.48^{***}
		(0.54)		(0.40)
Cap		0.06		0.01
		(0.04)		(0.02)
Discount		0.06^{***}		0.01
		(0.02)		(0.02)
Rate		0.05		0.22^{***}
		(0.08)		(0.06)
Constant	2.85	1.29	5.02	3.37
	(929.92)	(919.19)	(338.89)	(338.89)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	152	152	152	152
ρ	−1.26	−1.18	−0.52	0.50
Inverse Mills Ratio	-1.08^{***} (0.23)	-0.94^{***} (0.27)	−60.31 (113.82)	57.21 (117.49)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 14 **Second-stage funding outcome: Terms of single DLI deals (tobit)**

	Offline		EC	
	(1)	(2)	(3)	(4)
SAFE	0.13	0.05	−57.15	4.55
	(0.20)	(0.24)	(56.91)	(127.45)
Cap	0.003	0.01	−0.22	−0.69
	(0.01)	(0.01)	(3.56)	(3.54)
Discount	−0.01	-0.02^{**}	3.89	4.15
	(0.01)	(0.01)	(2.70)	(2.83)
Rate	0.01	0.02	−5.72	1.75
	(0.03)	(0.03)	(7.37)	(16.39)
Constant	1.06	1.35	58.09	11.29
	(0.88)	(0.84)	(130.24)	(161.84)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	152	152	152	152
ρ	−1.26	−1.18	−0.52	0.50
Inverse Mills Ratio	-1.08^{***} (0.23)	-0.94^{***} (0.27)	−60.31 (113.82)	57.21 (117.49)

Note: *p<0.1; **p<0.05; ***p<0.01