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Brokers and Finders in Startup Offerings

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Abstract

This study analyzes Form D filings to understand brokered startup offerings. About 60% of brokers are FINRA-registered; the rest, "finders," are not. Startups with fewer seasoned investors and more local brokers tend to use brokers. Venture capital firms rarely join brokered offerings, but non-accredited investors do, especially offerings with finders. Overall, brokers aid in raising capital. Yet, startups using finders often fail to exit successfully and close following funding. This implies finders might be directing funds from non-accredited investors to lower-quality startups. Brokers help startups raise money without VC support, but the effectiveness of this capital allocation is unclear.

I. Introduction

In 2019, startups backed by venture capital funds (VCs) accounted for more than 40% of all U.S. IPOs. However, not all startups secure VC funding; some depend on alternative intermediaries for financing. For the first time, this article explores non-VC intermediation in startup funding using a large sample of U.S. filings, with a particular emphasis on brokers. It covers the characteristics of brokers operating in this market, the factors contributing to issuer–broker matching, the profiles of investors involved in brokered and non-brokered offerings, the degree to which brokers assist issuers in raising funds, and the post-funding outcomes of issuers that use brokered offerings. Through this, it sheds light on the role

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of brokers in startup funding and how this role aligns with existing theories of financial intermediation.[1]

The results indicate that sophisticated investors such as VCs tend to directly match with high-quality issuers, leading to adverse selection in brokered offerings. Registered brokers seem to counter this adverse selection by screening issuers. For issuers that use unregistered brokers, however, the adverse selection persists. Consequently, these findings align with the idea that unregistered brokers primarily reduce search costs, whereas registered brokers reduce search costs *and* screen issuers.

The analysis uses new data on startup offerings from Form D filings with the U.S. Securities and Exchange Commission (SEC). The filings cover 28,000 first-time issuers, of which 87% were established less than 5 years prior to the offering. On average, these issuers collectively raised $10 billion annually between 2010 and 2019. Approximately 10% of these offerings were intermediated by brokers (registered or unregistered) and the broker-intermediated offerings accounted for, on average, a total of $1 billion each year. (Registered brokers are licensed with the Financial Industry Regulatory Authority (FINRA), whereas unregistered brokers are not.) The remaining 90% of offerings were sold directly to investors.

The data show that brokers intermediate 33% of all private offerings but only 10% of offerings in the startup funding market. Among the brokers engaged in startup funding, 60% are registered with FINRA, a self-regulatory organization for brokers, and the rest are unregistered. The process of issuer–broker matching is notably influenced by the absence of sophisticated investors and the prevalence of brokers in the issuer's local area. Interestingly, sophisticated investors such as VCs rarely participate in brokered offerings, but non-accredited investors, who are typically less sophisticated, frequently do, especially when the offerings involve unregistered brokers.

The data further reveal that although issuer–broker matching generally leads to more successful fundraising than direct offerings, the post-funding outcomes are related to the broker's registration status. Compared to issuers who engage registered brokers or place offerings directly, issuers using unregistered brokers have fewer successful exits, are less likely to secure follow-on funding, and are more likely to close post offering. On the other hand, relative to issuers placing offerings directly, issuers engaging registered brokers have a higher likelihood of successful exits and similar odds of raising follow-on funding (although they too are more prone to post-offering closure). While the evidence comparing the performance of issuers in direct offerings and brokered offerings is not definitive, the data support the conclusion that issuers using unregistered brokers fare the worst.

To interpret the evidence on issuer–broker matching and the variation in post-offering outcomes, I turn to search and information models of intermediation. Examining my findings through the lens of these models, I can better understand the roles of brokers and the factors that influence issuer–broker matching.

[1]This study focuses strictly on U.S.-based private operating firms raising equity. Unlike a venture capitalist that raises capital from investors and invests for her own account, a broker matches issuers with investors for a fee and does not typically invest for her own account.

Information models predict that intermediaries screen issuers, separating those with good prospects from those with poor prospects (see, e.g., Leland and Pyle (1977), Booth and Smith II (1986), and Chemmanur and Fulghieri (1994)). Empirical studies of underwriters in public markets have largely confirmed this prediction by showing that issuers that use intermediaries tend to be of high quality (using post-offering outcomes as proxies for issuer quality (see, e.g., Carter and Manaster (1990), Megginson and Weiss (1991), Carter, Dark, and Singh (1998), Fang (2005), and Fernando, Gatchev, and Spindt (2005)). According to these models, if the brokers' main role is to certify issuers (reducing information costs), then issuers that use brokers should be of high quality, as the brokers will screen them and select the ones with the best prospects.

Some of my evidence is consistent with the information models. Because registered brokers are exposed to the threat of regulatory penalties (including possible loss of license) for brokering low-quality offerings, they are more likely to certify issuer quality than unregistered brokers are. Thus, my finding that issuers in unregistered-broker offerings perform worse than issuers in registered-broker offerings is consistent with information models. However, my finding that issuers in unregistered-broker offerings also perform worse than issuers in non-brokered offerings is inconsistent with these models.

To understand this discrepancy, we turn to the search models. Search models predict that intermediaries such as brokers decrease issuers' search costs by matching issuers to investors. These models assume that search costs are not necessarily correlated with issuer quality. As a result, they predict no difference in quality between issuers that use brokers and issuers that directly match with investors (see, e.g., Rubinstein and Wolinsky (1987), Yavaş (1994), and Garmaise and Moskowitz (2003)). A simple example illustrates why search costs might indeed be unrelated to quality. In the market for startup funding, we can think of search costs as the probability that an issuer matches with an investor (a VC, for example) *before* the investor decides to screen or fund the issuer. Because there are more VCs in San Francisco than Ann Arbor, a technology company in San Francisco (Oka, Inc.) has a higher probability of matching with a VC than does a technology company of similar quality in Ann Arbor (Duo, Inc.). In this simple example, distance to a VC (one of my empirical proxies for search costs) is likely to be unrelated to issuer quality.

The inconclusive evidence on the relative performance of registered-broker and direct offerings is consistent with the search models' proposition that brokers primarily mitigate search costs. However, the finding that unregistered-broker offerings perform worse is not. To understand this finding, we turn to Bolton, Santos, and Scheinkman (2016). Their article shows that in a market with sophisticated and unsophisticated investors, sophisticated investors are better at identifying and investing in high-quality issuers ("cream-skimming," the authors call it) which in turn weakens the pool of issuers that remains for other investors. If sophisticated investors are less likely to invest in brokered offerings (as we show), then the issuers that approach brokers may be of lower quality than the issuers in non-brokered offerings. Thus, there is likely to be adverse selection in the pool of issuers that approach brokers. If brokers do not screen these issuers, the adverse selection could lead to lower-quality issuers in brokered offerings (even if the

brokers' main role is to reduce search costs). And if unregistered brokers screen issuers less rigorously than registered brokers, then their offerings will perform worse.

The data show that search costs are indeed an important driver of issuer–broker matching. Using an indicator for whether an issuer has a VC in its zip code, I show that having a VC nearby decreases the issuer's likelihood of broker use by 28%, relative to the unconditional probability of using a broker.[2] In addition, issuers tend to match with *unregistered* brokers when they (the issuers) employ fewer executives (a proxy for the issuer's network) and have fewer accredited investors in their zip code. A standard deviation increase in the number of accredited investors in an issuer's zip code decreases the likelihood that the issuer will match with an unregistered broker by 20%, relative to the unconditional probability of using an unregistered broker. Furthermore, the data make it clear that both registered and unregistered brokers provide valuable assistance in raising funding for issuers. To suggest causality in issuer–broker matching and fundraising, I use the presence of a registered or unregistered broker in an issuer's zip code as an instrumental variable.

A potential concern with my analysis is that unobserved issuer characteristics (besides quality) drive the difference I document in exit outcomes. For example, if brokered offerings mostly involve "cash cow" companies (i.e., companies that generate a steady cash flow stream for investors) and not startups aiming to exit through an IPO or acquisition, then the analysis might find a negative relationship between issuer outcomes and brokered offerings that is unrelated to issuer quality.

I employ several strategies to alleviate this concern. To approximate the effect of issuer quality on outcomes, I first include restrictive state-year-industry indicators. This ensures that the issuers compared in brokered and non-brokered offerings are as similar as possible. These fixed effects allow me to compare two issuers that are doing business in the same industry, located in the same state, and raising funding in the same year. The fixed effects thereby capture variation in local regulation over time (state-year fixed effects), aggregate changes in issuers' preference for different placement methods over time (industry-year fixed effects), and differences in industry-specific conditions across states (state-industry fixed effects). Furthermore, my findings on brokered offerings and outcomes persist even when I restrict the sample to major city zip codes within states. This helps assuage concerns that unobserved differences among issuers that correlate with zip code characteristics are driving the results.[3]

To further mitigate the concern that issuers in brokered and non-brokered offerings are not similar enough to compare, I use the presence of a registered or unregistered broker in an issuer's zip code as an instrument for whether an issuer engages a broker. The assumption is that an issuer's having a broker nearby only affects issuer outcomes through the increased use of brokers, and that issuers and brokers are not more likely to appear together in locations with specific characteristics. To support this assumption, I show that the broker's decision to operate in a specific location (determined by the year the brokerage firm was established)

[2] As I show in the Supplementary Material, these results remain consistent even when one considers other measures of proximity, such as whether an issuer has a VC or broker in its census tract.

[3] I thank an anonymous referee for this suggestion.

predates the formation of the startup (determined by the year of the offering) by an average of 10 years. This temporal gap reinforces the notion that broker location decisions are independent of the formation and characteristics of individual startups.

The debate about the relative contribution of search and information costs to issuer–broker matching (the main subject of this article) is not just of theoretical interest. Practitioners are sharply divided on whether unregistered brokers should play a more prominent role in the startup funding markets. For example, the Consumer Federation of America opposed a recent proposal (https://www.sec.gov/news/press-release/2020-248) that would have increased the unregistered brokers' role in private markets, noting that "deregulation of intermediaries that potentially enables fraud and deceit of both investors and businesses who seek capital can easily have the effect of diverting capital from productive and sustainable businesses to enrich a dishonest intermediary or other fraudulent enterprise." On the other hand, Chessiecap Securities supported the proposal, saying they "believe it is a necessary recognition of the role finders play in introducing potential investors (in our case institutional investors) to an investment opportunity without breaching the activities that licensed persons properly serve." In general, such differences in opinion come down to whether one believes unregistered brokers mainly reduce search costs or mainly certify issuers. Practitioners who support a larger role for finders implicitly assume that finders reduce search costs; practitioners who oppose the larger role assume that finders certify (but not always honestly) issuer quality.

This study contributes to two main research areas. First, it extends research on factors affecting the funding and success of young entrepreneurial firms. Petersen and Rajan (1994) show that relationships between banks and small businesses improve small businesses' access to credit. Bernstein, Korteweg, and Laws (2017) find that information about human capital causally affects startup funding. And Ewens and Townsend (2020) show that a founder's gender is associated with funding success. This study contributes to the literature by showcasing how brokers alleviate financing frictions through two mechanisms: registered and unregistered brokers reduce issuers' search costs, and registered brokers also certify issuer quality.

Second, this study extends the literature on intermediation in capital markets by providing fresh data and insights on the role of brokers in the market for early-stage funding. Much of the prior research in this area examines the effect of underwriter certification on public firms' cost of capital (Carter and Manaster (1990), Megginson and Weiss (1991), Fang (2005), and Dai, Jo, and Schatzberg (2010)) and venture capital and bank financing of private firms (Petersen and Rajan (1994), Hellmann and Puri (2002), and Sørensen (2007)). These studies primarily focus on how reputational concerns influence the moral hazard incentives of intermediaries and subsequently affect the quality of the offerings they facilitate. In this study, I build upon these findings by demonstrating that while registered brokers help certify offerings in private markets, unregistered brokers primarily mitigate search costs.

This article is closely related to Cumming, Pandes, and Robinson (2015). They analyze a 4-month sample period from 2006 that includes 226 Canadian issuer

financings (debt and equity), with a significant focus on energy-related firms. They find that brokers/agents are associated with larger offerings and expand the geographic scope for funds raised. While they too distinguish between registered and unregistered brokers, they do not examine the relationship between brokered offerings and issuer outcomes, nor do they attempt a causal interpretation. In contrast, my article is the first to focus on the U.S. context, and it uses a much larger sample size of nearly 28,000 issuers in a variety of industries. Furthermore, this article attempts to establish a causal link between brokered offerings and fundraising and employs issuer outcomes to provide insights into the characteristics of issuers involved in brokered offerings.

The rest of the article proceeds as follows: Section II discusses institutional details of Form D filings and the types of issuers that file Form D. Section III presents descriptive summary statistics, Section IV presents the empirical analysis, Section V examines the relationship between brokered offerings and issuer outcomes, and Section VI concludes.

II. Form D Institutional Details

The Securities Act of 1933 requires firms selling securities to register the sales with the SEC or rely on an exemption. In addition to often being time-consuming and expensive, registration with the SEC requires disclosures that are difficult for new firms to shoulder. Thus, most young, private firms prefer to fit their offerings into an exemption. Section 4(a)(2) of the Act describes the following characteristics that exempt private offerings from registration: investors have enough knowledge to evaluate investment risks or are wealthy enough that they can afford to lose their investment; investors can access information about the issuer that the issuer would have included in a public-offering prospectus; the issuer does not publicly advertise the offering; and the number of investors is consistent with a private offering. These requirements are vague in several areas. For example, an issuer would have to guess whether the number of investors is "consistent with" a private offering.

In addition to meeting federal guidelines, issuers relying on Section 4(a)(2) must comply with state securities laws. Thus, an issuer may have filing or reporting requirements in each state where it has investors.

Unlike Section 4(a)(2), Regulation D (Reg D) is a bright-line rule (a safe harbor exemption) on when an offering is a private placement. Any offering that follows Reg D requirements is unambiguously exempt from registration. Reg D stipulates that issuers must raise most of their funding from qualified investors (investors that earn $200,000 or more each year) and file a Form D within 15 days of fundraising.[4] In addition, Rule 506 of Reg D (used by over 95% of firms) exempts issuers from state securities laws. Given that Reg D has clear guidelines on when an offering qualifies as a private placement, the Form D data likely capture a representative cross section of private firms' fundraising activities.[5]

[4]Although the filing is not a condition for the exemption, Reg D allows a court to disqualify issuers from future use of any Reg D exemption if they do not comply with the Form D requirement (Rule 507). Nevertheless, it is possible that some firms ignore filing Form D without relying on other exemptions, because Rule 507 is rarely enforced.

[5]Issuers can use other, more restrictive offering exemptions to avoid filing Form D, including i) SEC Rule 701, provided that security sales are to the firm's officers, advisers, employees, and consultants and

TABLE 1

Who Files Form D? Evidence from PitchBook

Table 1 reports characteristics of U.S.-based issuers in the PitchBook database split by issuers I matched, by name and state where the issuer is headquartered, to at least one Form D filed between 2010 and 2018. I selected issuers that are headquartered in the U.S., have data on the date of business formation, and have raised a positive amount of venture funding. To capture VC funding rounds, I keep issuers whose deal types in PitchBook are *Early Stage VC*, *Later Stage VC*, *Seed Round*, *Accelerator/Incubator*, and *Angel (individual)*. The unit of observation is a U.S.-based private operating firm in PitchBook, formed between 2009 and 2017, that raised some funding from outside investors. #_SERVICE_PROVIDERS is a count of the number of service providers, such as lawyers, that PitchBook associates with each issuer. #_UNIQUE_INVESTOR_STATES is the number of unique states where the issuer's investors are located. FORM_D_FILING_FEES is the cost of filing a Form D notice in the state where the issuer is located. If the cost depends on proceeds from the offering, the cost equals the maximum filing fee. PE_HUB is an indicator that equals 1 for issuers headquartered in California, Massachusetts, or New York. FUNDS_RAISED ($ millions) is the total amount of funding the issuer has raised. I(ANGEL_INVESTOR) is an indicator that equals 1 if an angel investor ever participated in the issuer's funding rounds. #_EXECUTIVES is the number of senior executives and founders of the issuer, as recorded by PitchBook. #_UNIQUE_INVESTORS is the number of unique investors that have invested in the company thus far. Year founded is the year the company was formed. PITCHBOOK DEAL NUMBER is the number of unique fundraising rounds by the company. I define all other variables in the Supplementary Material. *t*-Stat reports *t*-statistics from a difference in means test with significance reported according to $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$.

	No Form D		Has Form D		
	N = 16,699		*N* = 28,820		
	Mean	Median	Mean	Median	*t*-Stat
I(ACQUISITION_OR_IPO)	0.15	0.0	0.20	0.000	14.71***
I(IPO)	0.01	0.0	0.03	0.000	19.14***
I(ACQUIRED)	0.14	0.0	0.17	0.000	8.54***
I(RAISED_FUTURE_ROUND)	0.22	0.0	0.47	0.000	56.74***
I(HAS_PATENT)	0.17	0.0	0.31	0.000	35.43***
#_SERVICE_PROVIDERS	0.38	0.0	0.72	0.0	34.15***
#_UNIQUE_INVESTOR_STATESS	2.25	2.0	3.21	3.0	45.97***
FORM_D_FILING_FEES	425.95	300.0	410.28	300.0	−4.73***
I(PE_HUB)	0.57	1.0	0.47	0.0	−20.02***
FUNDS_RAISED ($ millions)	3.23	0.4	4.73	1.22	8.01***
I(ANGEL_INVESTOR)	0.37	0.0	0.45	0.0	16.16***
I(HAS_INVESTOR_INFORMATION)	0.09	0.0	0.22	0.0	36.52***
#_EXECUTIVES	3.84	3.0	6.15	5.0	51.54***
#_UNIQUE_INVESTORS	5.23	3.0	7.72	5.0	33.68***
Year founded	2011	2013	2010	2012	−18.01***
PITCHBOOK_DEAL_NUMBER	1.65	1.0	1.90	1.0	20.30***

Using data from PitchBook, Table 1 examines the representativeness and characteristics of the types of issuers that file Form D. It shows that 60% of firms raising VC funding (according to PitchBook) also file a Form D.[6] Conversely, less than 20% of Form D filers are in PitchBook. We also see that Form D filers have investors in multiple states. (Filing Form D allows them to avoid having to comply with multiple states' security laws.) Form D filers are more likely to be located in states with low Form D notice filing fees and to have a service provider, such as a lawyer, involved in the fundraising process.[7]

Table 1 also reports that, relative to non-filers, Form D filers are more likely to have a utility patent, raise follow-on funding 3 or more years after they raise their

that the sales are for compensation purposes; ii) SEC Rule 147, SEC Rule 147A, and the 1933 Act Section 3(a)(11) (the intra-state exemption), provided that all investors are in the same state as the issuer; iii) SEC Rule 1001, provided that the firm is raising less than $5 million and located in California, and that a majority of its shareholders are located in California; and iv) SEC Reg S, provided that all investors are non-U.S. residents.

[6]Ewens and Malenko (2020) show that Form D covers about 65% of all VC funding rounds in VentureSource from 2010 to 2017. They also show that Form D filers are older than and raise more capital than non-filers, and are more likely be located outside California.

[7]Although filing a Form D with the SEC is free, several state security regulators require a Form D notice filing, which requires that the issuer also pay a fee to state regulators.

first round, and exit through an IPO or an acquisition. A deeper dive into the geographic distribution can be found in Table A3 in the Supplementary Material, which uses a chi-squared goodness of fit test to show that, while the geographic distribution of issuers filing Form D does not mirror the distribution of all U.S. small businesses, it is more representative of this distribution than is the distribution of VC-backed startups, as the chi-square test statistic for the distribution of Form D issuers is almost half as large as the test statistic for the distribution of VC-backed issuers.

Form D includes the following information about the issuer and the offering: name; names of the issuer's executives, directors, and promoters; specific exemption from registration that the issuer is claiming; date the issuer began fundraising; number and types of investors (accredited or non-accredited) participating in the offering; and names and locations of brokers participating in the offering.

In 33% of all filings, issuers hire registered or unregistered brokers to intermediate their offerings.[8] FINRA directly regulates registered brokers, but, aside from the SEC, there is no assigned regulatory authority over unregistered brokers (commonly known as private placement finders). The Securities Exchange Act of 1934 requires that any third party "engaged in the business of effecting transactions in securities for the account of others" be registered as a broker with the SEC or relevant state authorities. However, over time, through various no-action letters, the SEC created the so-called "finders' exemption," which allowed various unregistered brokers to participate in the fundraising process.[9] These finders now account for 20% of all brokered offerings.

In terms of regulation, there are two major differences between registered and unregistered brokers. First, the SEC's guidance suggests that if a broker introduces investors to issuers but does not give advice on the investment structure or the suitability of the investment, then the broker is not "effecting transactions in securities" and is exempt from broker registration. The brokers that do register are *required* by FINRA to advise investors on investment structure and suitability. FINRA's suitability rule (FINRA (2010)) requires that, before each offering, the registered broker investigate the issuer and its management, the assets held by the issuer, the business prospects of the issuer, and the intended use of the proceeds of the offering. Failure to perform this due diligence or recommend suitable investments can lead to enforcement action by FINRA and state regulators.

Second, according to the SEC guidance, unregistered brokers are considered to be not "engaged in the business" if they receive compensation for the introductions but do not link their compensation to the success of the actual fundraising. By contrast, registered brokers can tie their compensation to fundraising success and advise firms on how to structure the offering.

[8]My conversations with some of these brokers suggest that they typically approach and offer assistance to issuers in their informal network that are looking to raise funding (about 70% of cases). Sometimes the issuers reach out to the brokers, again through the broker's informal network (about 30% of cases). Only rarely is contact made through a cold call to the advisory or brokerage firm.

[9]The SEC recently proposed codifying this exemption to make it generally applicable, since no-action letters, which are correspondences between the SEC and the person asking for clarification on an existing rule, might not broadly apply to all unregistered brokers.

A. Brokered Offerings and the JOBS Act

As part of the Jumpstart Our Business Startups (JOBS) Act of Apr. 2012, the SEC removed the ban on general solicitation and advertising in Rule 506 offerings. Following the change, an issuer using Regulation D could solicit a wider audience of investors, provided that all investors participating in the offering are accredited and the issuer takes reasonable steps to verify investors' accreditation status. The change also amended Form D, allowing issuers to check a box indicating whether they used the general solicitation exemption. As of Mar. 2021, 13,500 unique issuers had used the general solicitation exemption to raise about $700 billion in funding.[10] The general solicitation exemption has an advantage over the general private placement exemption, 4(a)(2), because an issuer relying on 4(a)(2) cannot advertise.

B. The JOBS Act and the Role of Brokers in Other Offering Exemptions

The JOBS Act also introduced provisions that made it easier for issuers to use alternative offerings exemptions. This section discusses the brokers' involvement in these alternative offering types and distinguishes these types from Form D offerings.

Regulation A, an exemption from the Securities Act of 1933, enables companies to publicly sell securities without undergoing the traditional SEC registration process. To participate in a Regulation A offering, intermediaries such as investment banks, broker-dealers, and crowdfunding platforms must register with both the SEC and FINRA. This requirement both ensures investor protection and safeguards the integrity of the offering. Unregistered intermediaries are prohibited from engaging in Regulation A offerings.

Regulation Crowdfunding, another exemption introduced in 2017, allows issuers to offer securities exclusively through funding portals. These portals, which serve as intermediaries between issuers and investors, must be registered with FINRA.[11] Regulation Crowdfunding restricts security offerings to the funding portals only.

While these alternative exemptions provide avenues for issuers to raise funding outside of Regulation D, note that only Regulation D allows unregistered brokers to be involved in offerings. The other exemptions do not.

III. Data and Summary Statistics

A. Sample Construction

Given this article's focus on brokered offerings, a first step is to identify offerings that involve broker participation and then classify the broker by registration status. To this end, I begin with all brokers listed on Form D. I merge this list to the list of all current and previously registered brokers and investment advisers (the

[10]I computed these statistics from the raw unfiltered Form D data, which includes operating and investment firms.

[11]Further details about the regulatory oversight of funding portals can be found on the FINRA website at https://www.finra.org/about/firms-we-regulate/funding-portals-we-regulate.

registered representatives' data), which I collect from FINRA's BrokerCheck and the SEC's Investment Advisor Public Disclosure (IAPD) websites. In addition to the broker's name, most offerings involving a broker also list the broker's Central Registration Depository (CRD) number (a unique identifier for a broker or investment adviser) when available. To identify which brokers are registered at the time of the offering, I merge these CRD numbers with the registered representatives' data. For broker names with no CRDs, I use the broker's name and location (also listed on Form D) to match her to the registered representatives' data. I classify a broker as registered if the SEC or FINRA lists her as registered in the same year that an issuer lists her on Form D. Otherwise, I classify the broker as unregistered. Section B of the Supplementary Material further details this classification process.

To learn about the extent to which search costs and information costs drive issuer–broker matching, it is useful to focus on a homogeneous set of issuers in brokered and non-brokered offerings. As such, I focus on issuers raising equity and filing their first Form D. Focusing on equity offerings eliminates any effect of security choice on broker–issuer matching. Keeping only the first offerings reduces the selection effect, on issuer–broker matching, of the success or failure of previous fundraising attempts. To isolate an issuer's first set of filings, I link all amended filings to the original using the original's accession number, a unique identifier for each filing. Offering proceeds is the amount reported on the last amended filing of an issuer's first set of filings. See Section A of the Supplementary Material for a specific example of how I calculate the funding raised. My test sample comprises issuers raising early-stage funding and filing Form D from 2010 to 2019.[12]

Another advantage of focusing on early-stage offerings is that, by combining the data with other sources, I can observe post-funding outcomes and the types of participating investors, such as VCs. I collect data on IPOs and acquisitions from PitchBook, Crunchbase, and Securities Data Company (SDC) Platinum. After deduplicating the outcome data, I merge firms with IPOs or acquisitions from these databases to Form D issuers by name and the state where the issuer is located.[13] I also collect data on issuer closures. For each issuer, I instructed research assistants to search the corporate registry in whichever state the issuer reports as its principal place of business on Form D. I classify an issuer as inactive if its registration in that state is not active.[14] To identify offerings with VC participation, I merge funding rounds involving venture capital groups in PitchBook to Form D. A round is venture backed if a deal involving a VC in PitchBook matches a sample offering's

[12]See Table A4 in the Supplementary Material for details on various sample filters. One caveat to restricting the sample to first-time issuers is the possibility that an issuer raised capital prior to the availability of electronic filings in 2008–2009 or through alternative mechanisms, especially if it is an older entity. To address this potential bias in my analysis, I conduct additional analyses to examine the consistency of the results. Specifically, to minimize the impact of issuers with different funding experiences or longer operational histories, I restrict the sample to younger firms that were established no more than 5 years before the offering. My results remain similar, providing assurance that my conclusions are robust and applicable within the context of first-time issuers.

[13]I use the python package *fuzzywuzzy* and require at least a 97% match rate of the name after first matching on state.

[14]To filter out inactive registrations driven by acquisitions, I rely on data from Crunchbase, PitchBook, and SDC Platinum.

issuer name, fundraising quarter, and state of operation. I also use PitchBook's data to identify zip codes where VCs are located.

Finally, I collect characteristics on the number of high-income investors by zip code, which I use as a proxy for accreditation from the IRS summary of income (SOI) data. I also gather data on whether an issuer obtained a patent from the U.S. Patent and Trademark Office (US PTO) as of Dec. 2019. I do so by merging the list of Form D issuers with patent assignees in the patent grant data from the US PTO. Table A2 in the Supplementary Material presents all data sources and defines all variables used in this study.

B. Descriptive Statistics

In this subsection, I first describe general fundraising patterns and compare the characteristics of brokers that are and brokers that are not involved in private offerings. I then turn to the issuers in my test sample, describing their fundraising patterns, geographic and industry dispersion, and offering characteristics. In describing these characteristics, I highlight differences between issuers in brokered and issuers in non-brokered offerings.

1. Fundraising by All Form D Filers

The unfiltered Form D data consist of approximately 400,000 filings by 160,000 unique issuers spanning the period from 2010 to 2019. Panel A of Table 2 provides an overview of the sample period, including the number of original and amended filings per year, the count of unique issuers, the total amount of funding raised (in billions), and the mean and median amounts raised (in millions) for operating startups (the focus of my analysis). Over time, there has been a notable increase in the total funding raised, from around $91 billion in 2010 to approximately $143 billion in 2019, representing a growth rate of approximately 60% during the sample period.[15] Note that the distribution of funding raised is highly skewed, with the mean amount being approximately 13 times greater than the median. As indicated in column 4 of Panel A, the median amount of funds is less than $1 million. Additionally, the number of unique issuers has shown consistent growth year after year. The increasing trends in funding raised and number of issuers emphasize the significance of private placements as a funding source for startups. Furthermore, on a size-weighted basis (column 5), we see that approximately two in five offerings involve broker participation. This level remains relatively steady throughout the sample period, highlighting the continued relevance of brokers in startup fundraising.

2. Which Brokers Participate in Form D Offerings?

Registered Brokers in Form D Offerings. To characterize the brokers participating in Form D offerings, I merge the universe of brokers in all offerings to the registered representatives' data described in Section III.A. FORM_D_BROKERAGE_FIRMS

[15]That the yearly proceeds reported in Table 2 are lower than those in Bauguess, Gullapalli, and Ivanov (2015) may be due to the winsorization procedure I applied to the funds raised at the 1% and 99% levels. This procedure ensures the robustness of my results to potential misreporting or outliers.

TABLE 2

Capital Raised Using Regulation D

Table 2 presents summary statistics for issuers that raised private capital and filed a Form D between 2010 and 2019. Each panel presents yearly statistics on the number of unique issuers, the total amount raised (in billions of dollars), the mean and median amounts raised (in millions of dollars), the percentage of filings that record using a broker, and the percentage of all funding raised that involved a broker. Panel A presents statistics for all operating issuers filing Form D, while Panel B presents statistics only for issuers in my final sample (operating issuers filing their first Form D). I describe how I collect the data and compute funding flows in the Supplementary Material. I winsorize proceeds at the 1st and 99th percentiles to minimize the influence of misreporting.

Panel A. Form D Filings by Year (All Issuers)

	Unique Issuers	Total Raise ($ Billions)	Mean Raise ($ Millions)	Median Raise ($ Millions)	Used Broker (%) (by Filings)	Used Broker (%) (by Amount)
	1	2	3	4	5	6
2010	10,440	91.83	6.52	0.52	18.61	21.98
2011	11,190	86.3	5.84	0.54	16.67	25.36
2012	11,316	85.2	5.86	0.51	15.58	25.71
2013	12,054	84.07	5.37	0.50	14.57	21.99
2014	13,570	108.58	6.23	0.50	14.19	18.50
2015	14,037	123.49	7.00	0.60	13.77	18.69
2016	14,103	105.57	5.98	0.61	13.54	16.95
2017	14,585	116.07	6.38	0.75	13.82	17.58
2018	15,549	145.25	7.48	0.77	13.39	18.08
2019	15,790	142.8	7.25	0.80	13.97	18.36
Panel B. Form D Filings by Year (Sample Issuers)						
2010	3,358	13.14	3.91	1.00	7.95	9.74
2011	2,667	8.75	3.28	0.60	6.00	9.23
2012	2,424	7.02	2.90	0.52	6.44	11.63
2013	2,520	6.77	2.69	0.50	7.34	13.49
2014	2,885	7.89	2.74	0.50	6.24	12.13
2015	2,921	9.0	3.08	0.60	6.40	7.84
2016	2,806	8.16	2.91	0.55	5.74	5.82
2017	2,763	8.41	3.05	0.65	5.47	6.45
2018	2,993	9.2	3.07	0.64	5.21	7.39
2019	2,750	9.32	3.39	0.73	6.91	5.90

is an indicator that equals 1 for brokerage firms in Form D offerings that have been matched to the registered representatives' data.

Table 3 presents that, in addition to selling private shares, registered brokers are involved in several business lines, which Form D offerings capture.[16] These include sales of over-the-counter equity, debt securities, and mutual funds (implying that selling private shares is only one source of their revenue). The brokerage firms involved in Form D offerings employ more brokers and are more likely to have current and past employee disclosures, which I define using the 23 categories of disclosures in Egan, Matvos, and Seru (2019). On average, the registered brokers in Form D offerings have been in business for about 15 years, where age is defined as the difference between the year of the offering and the year the brokerage firm was formed.

Unregistered Brokers in Form D Offerings. Within my sample, I identified a total of 486 unregistered brokers. Among them, 55% were individuals (as indicated by the presence of first and last names in the Form D filings) and 45% were firms. To gain further insights into the characteristics of these unregistered brokers, I tracked

[16] Although one might presume that every firm in the Form D sample would have an indicator of 1 for selling private shares (*Sells private shares*), this is not the case. Some firms selling private shares instead categorize their involvement in private placements more broadly under "investment advisory services."

TABLE 3

Characteristics of Brokerage Firms Listed on Form D Filings

Table 3 reports summary statistics of my panel of brokerage firms split by whether the firm is active in the private placement market. The data are from FINRA's BrokerCheck from 2005 to 2018. FORM_D_BROKERAGE_FIRMS is an indicator that equals 1 for brokerage firms whose CRD we identified on a Form D filing and matched to merge FINRA's BrokerCheck. *N* is the number of broker-years. Diff is *Cohen's d*, the normalized difference in means of the characteristic in column 1 to facilitate comparison across rows. *t*-Stat reports the *t*-statistic from a regression of each variable in column 1 on the Reg D dummy, with standard errors clustered by brokerage firm (Firm CRD).

	OTHER_BROKERAGE_FIRMS		FORM_D_BROKERAGE_FIRMS			
	N = 40,284		*N* = 15,927		Tests	
	Mean	Std. Dev.	Mean	Std. Dev.	Diff	*t*-Stat
SELLS_EQUITY_OTC	0.40	0.49	0.52	0.50	0.24	7.88***
SELLS_DEBT_OTC	0.34	0.48	0.48	0.50	0.28	9.01***
SELLS_MUTUAL_FUND	0.42	0.49	0.52	0.50	0.21	6.75***
SELLS_PRIVATE_SHARES	0.47	0.50	0.87	0.34	0.87	34.07***
UNDERWRITER	0.19	0.39	0.40	0.49	0.50	14.73***
#_BROKERS_EMPLOYED	47.54	275.80	377.27	2044.22	0.30	6.11***
FLOW_MISCONDUCT	0.76	5.52	1.08	4.52	0.06	4.75***
STOCK_MISCONDUCT	3.15	10.83	5.17	10.30	0.19	8.44***
AGE	15.28	12.70	15.79	13.88	0.04	1.27

down a random sample of 50 out of the 216 unique firms. This sample revealed a diverse range of broker types.

Within the sampled firms were instances of platform-based brokers (such as Fundable in Powell, Ohio (website: https://www.fundable.com/raise-capital)), debt collectors (like AmeriFinancial in Houston, Texas), and small investment banking shops (like Esfeld Capital & Investments in Mercer Island, Washington). There were also previously registered brokers, such as Felix Investments LLC in New York City. Lastly, the sample contained private firms for which limited additional information was available, such as GENII Inc. in Saint Paul, Minnesota, and All Party System in Pacific Grove, California. Seventy percent of all finders were former brokers, defined as an individual or firm that is no longer registered with FINRA at the time of the Form D filing.

3. Fundraising by Sample Issuers

My test sample comprises 28,000 private operating firms that filed a first Form D between 2010 and 2019. Panel B of Table 2 reports yearly fundraising patterns for the issuers in my sample. The issuers raise about $7 billion to $13 billion a year in total, with a yearly per-issuer average of approximately $3 million and a yearly per-issuer median of roughly $0.5 million. According to PitchBook and Crunchbase, the average seed round from 2010 to 2019 was about $1 million. Thus, the $0.5 million median amount suggests that more than half of Form D filings are made by firms raising seed capital. Registered and unregistered brokers participate in about 4% and 3% of these offerings, respectively. Brokers raise between 6% and 14% of all funding. Issuers that do not use brokers raise funding by selling their shares directly to investors.

4. Geography and Industry of Sample Issuers

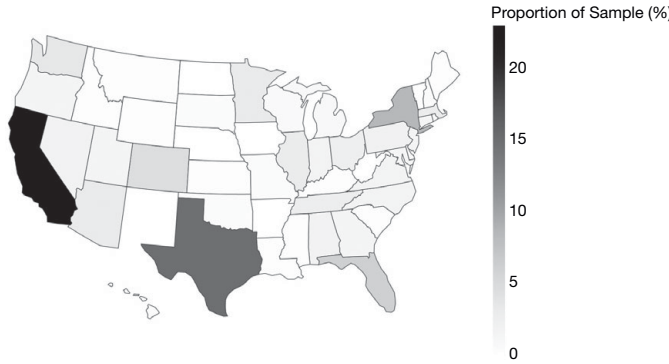
To compare outcomes of issuers within the same regulatory, legal, and economic environment, all tests focus on issuers within the same state-industry-year.

FIGURE 1

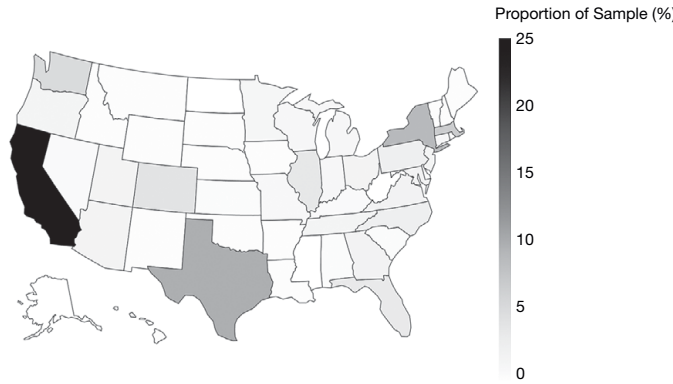
Location of Issuers in Direct Offerings

Graph A of Figure 1 shows the proportion of sample issuers in brokered offering by state, while Graph B of Figure 1 shows the proportion of sample issuers in non-brokered offerings. PROPORTION_OF_SAMPLE (%) is the number of issuers in the sample located in that state divided by the total number of issuers in the sample times 100. In Graph B, for example, about 10% of all issuers are located in Texas, 24% in California, and 0.54% in Kentucky. All states have at least one issuer. Alaska and West Virginia have the lowest number of issuers, two, representing about 0.007% of the sample.

Graph A. Location of Issuers in Brokered Offerings



Graph B. Location of Issuers Non-Brokered Offerings



This implies that my tests involve only state-industry-years with at least two issuers. Figure 1 shows the location of issuers in brokered and non-brokered offerings by state. Most issuers in brokered and direct offerings are located in California, Texas, New York, and Florida.

Figure 2 shows the proportion of issuers within each industry. About 50% are in the technology category, and the distribution of brokered and direct offerings is roughly even across the various industries. My sample's high proportion of technology issuers, which typically lack collateral to pledge for a bank loan, implies that most of my issuers are unlikely to qualify for bank financing.

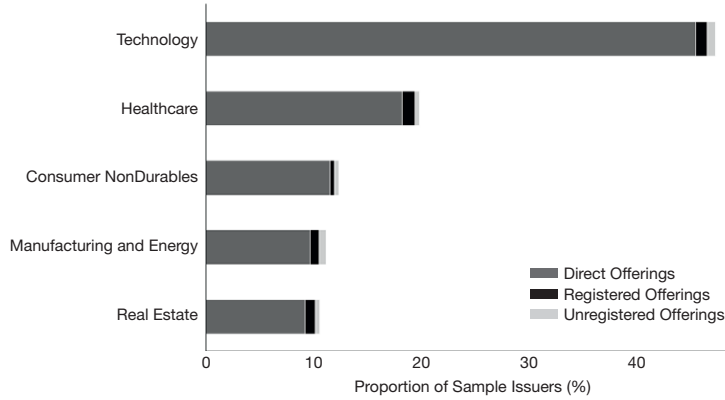
5. Issuer and Offering Characteristics by Placement Method

Table 4 reports descriptive statistics, by offering type, for issuers that filed a first Form D between 2010 and 2019. About 23% of issuers in direct (non-brokered)

FIGURE 2

Industry Distribution of Sample Issuers

Figure 2 shows the proportion of all the issuers in my sample that belong to each industry. Within each industry, the figure also shows the proportion of issuers that place their offerings directly as well as the proportion that use registered or unregistered brokers. In the *technology* category, I group all firms that report their industry classification on Form D as other technology and computers. I group firms that report their industry as lodging and conventions and residential in the *real estate* category. The *manufacturing and energy* category comprises firms that report their industry as manufacturing, agriculture, construction, other energy, oil and gas, energy, conservation, environmental services, electric utilities, coal mining, and energy conservation; *healthcare* comprises other health care, biotechnology, pharmaceuticals, hospitals and physicians, and health insurance; and *consumer nondurables* comprises restaurants, retailing, business services, telecommunications, other travel, tourism and travel services, and airlines and airports.



offerings exit (as of the third quarter of 2021) via an acquisition or an IPO. In comparison, 17% of issuers in brokered offerings, 21% in registered-broker offerings, and 11% in unregistered-broker offerings exit in a similar manner. Furthermore, 17% of issuers in direct offerings raise a future round of funding 3 or more years after the current round, compared with 13% in registered-broker offerings and 9% in unregistered-broker offerings. In direct offerings, 12% of issuers apply for and hold at least one utility patent before the offering, which is similar to issuers in registered-broker offerings but higher than the 10% for unregistered-broker offerings. Additionally, 26% of issuers likely close or go bankrupt, as of the third quarter of 2021, following the offering. In contrast, 28% of issuers in registered-broker offerings and 23% in unregistered-broker offerings likely close or go bankrupt post-offering.[17]

Issuers in direct offerings are more likely to be geographically closer to VCs: 54% have at least one VC in their zip code I(VC_ZIP), versus 49% and 39% of issuers in registered-broker and unregistered-broker offerings, respectively. Conversely, issuers in unregistered-broker offerings are more likely than issuers in direct offerings to have an unregistered broker in their zip code, I(UNRG._BROKER_ZIP), and issuers in registered-broker offerings are more likely than issuers in direct offerings to have a registered broker in their zip code I(RG._BROKER_ZIP). In addition, the percentage of potentially accredited investors is higher in the zip codes of issuers in direct offerings (12%) than in the zip codes of issuers in registered-broker (11%) and unregistered-broker (9%) offerings. Together, these

[17]Note that there is no statistical difference in the unconditional likelihood of holding a patent by placement method.

TABLE 4

Summary Statistics of Issuers by Placement Method

Table 4 reports summary statistics for a cross section of operating issuers that raised private capital and filed a first Form D between 2010 and 2019. I define all variables in the Supplementary Material. I winsorize all continuous variables at the 1% and 99% levels to minimize the influence of outliers. BROKER is an indicator that equals 1 for issuers that report using a broker for fundraising on their Form D. R.BR is an indicator that equals 1 for issuers that use a registered broker, and UR.BR is an indicator that equals 1 for issuers that use an unregistered broker.

	DIRECT	BROKER	UR. BR	R. BR				
% Sample (Number of Issuers)	92.75 (26,051)	7.25 (2,036)	2.87 (806)	4.38 (1,230)				
	Mean A	Mean B	Mean C	Mean D	B – A	C – A	D – A	D – C
I(ACQUISITION_OR_IPO)	0.23	0.17	0.11	0.21	−6.79***	−10.48***	−1.70*	−6.15***
I(IPO)	0.01	0.03	0.02	0.04	4.95***	0.86	5.19***	−3.57***
I(ACQUIRED)	0.21	0.14	0.09	0.16	−9.90***	−11.67***	−4.68***	−4.89***
I(INACTIVE)	0.26	0.26	0.22	0.28	−0.55	−2.66***	1.29	−2.91***
I(RAISED_FUTURE_ROUND)	0.21	0.15	0.13	0.17	−6.89***	−6.82***	−3.79***	−2.55**
PROCEEDS_RAISED ($ millions)	3.04	4.28	2.03	5.75	5.67***	−4.62***	8.44***	−9.69***
#_STATE_NOTICES	1.27	1.53	1.19	1.76	5.44***	−2.40**	6.60***	−7.02***
I(NON-PE_HUB)	0.60	0.66	0.69	0.65	6.19***	5.56***	3.67***	1.93*
I(RAISED_FUNDING)	0.87	0.69	0.64	0.73	−16.88***	−13.40***	−11.04***	−4.08***
I(HAS_PATENT)	0.12	0.11	0.10	0.12	−0.89	−1.59	0.06	−1.26
I(RG._BROKER_ZIP)	0.41	0.48	0.41	0.53	6.31***	−0.07	8.30***	−5.44***
I(UNRG._BROKER_ZIP)	0.15	0.21	0.23	0.20	6.76***	5.31***	4.50***	1.45
I(VC_ZIP)	0.54	0.45	0.39	0.49	−7.74***	−8.58***	−3.33***	−4.54***
#_INVESTORS	9.10	14.28	10.12	17.00	9.31***	1.57	9.86***	−6.70***
I(FUTURE_VC_INVESTMENT)	0.19	0.08	0.05	0.11	−15.89***	−17.12***	−9.13***	−4.75***
I(NON_ACCREDITED_INVESTOR)	0.11	0.15	0.23	0.09	5.13***	8.33***	−1.50	8.07***
#_EXECUTIVES	3.34	3.45	2.64	3.97	1.92*	−9.27***	8.33***	−12.65***
I(OLDER_THAN_5)	0.13	0.19	0.16	0.21	6.39***	1.97**	6.58***	−3.00***
I(PROMOTER)	0.04	0.11	0.08	0.13	10.68***	4.87***	9.71***	−3.33***
%_HIGH_INCOME	0.12	0.11	0.09	0.11	−8.11***	−10.54***	−2.86***	−5.80***

facts suggest a geographic element to issuer–broker matching (a point we investigate in subsequent sections).

Turning to fundraising outcomes, Table 4 also reports that, unconditionally, issuers in direct offerings raise more funding ($3 million), on average, than issuers in unregistered-broker offerings ($2 million), but less than issuers in registered-broker offerings ($4 million). On average, issuers pay about 5% of the offering amount in fees to the broker. As Figure 3 shows, the fee percentage is typically higher for unregistered-broker offerings, as these offerings tend to be smaller.

I next consider the investors that participate in these offerings. I find that unregistered-broker offerings are likely to attract non-accredited investors (I(NON_ACCREDITED_INVESTOR)), while non-brokered offerings are more likely to attract VC investors (I(VC_INVESTMENT)).

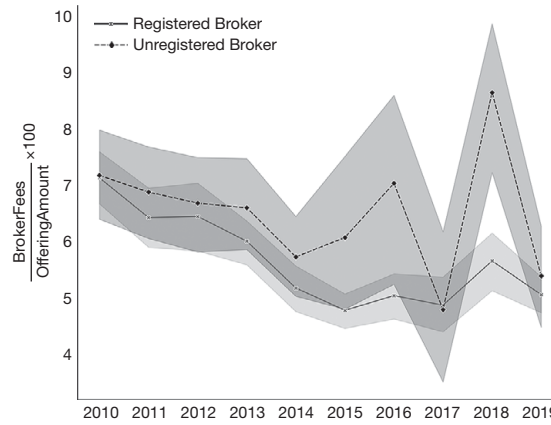
Finally, I consider how the size of the issuer's network relates to the type of offering. To capture an issuer's network, I take advantage of the Form D requirement that issuers list their executives. I hypothesize that issuers with more executives (whose contacts can be tapped for funding) have larger networks. On average, the number of executives listed on Form D (#_EXECUTIVES) is larger for issuers in registered-broker offerings (about 3 executives) than for issuers in direct or unregistered-broker offerings (about 3 executives each).[18]

[18]I also show that #_EXECUTIVES is a reasonable proxy for firm size, as larger issuers need (and list) more executives. Figure A1 in the Supplementary Material shows that the number of executives

FIGURE 3

Broker Fees by Registration Status

Figure 3 shows the percentage of the offering amount that is paid to the broker. The figure splits brokers by registration status, where UNREGISTERED_BROKER is an indicator that equals 1 if the broker participating in the offering is not FINRA registered at the time of the offering. The shaded area around each line shows 95% confidence intervals.



IV. Results

A. Broker-Firm Matching

In this section, I explore why issuers use brokers. Existing theory suggests two main reasons: search-cost reduction and certification. As proxies for search costs, I use several measures that capture an issuer's distance to, and network of, potential investors. The first is an indicator for whether an issuer has a VC in its zip code, I(VC_ZIP). The second is the fraction of investors in the issuer's zip code that are accredited (make over $200,000 a year), %_HIGH_INCOME. The third is the number of executives the issuer employs, ln(#_EXECUTIVES). The intuition behind the first two measures is that issuers that are closer to potential investors have lower search costs because they are more likely to directly match with investors. The intuition for the third is that issuers with more executives have a larger network of potential investors (discussed previously), which also lowers search costs. To the extent that search costs drive issuer–broker matching, I expect higher values of these measures to be negatively associated with matching.

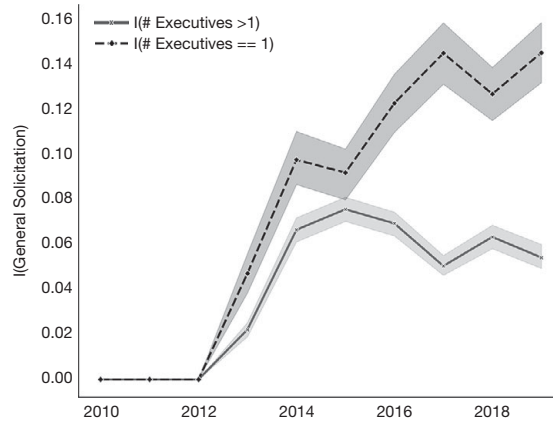
If certification drives issuer–broker matching, we would expect that when investors can easily judge issuers to be of high quality, the issuers are less likely to match with brokers. As a proxy for issuer quality, I use I(HAS_PATENT), an indicator variable that equals 1 if an issuer has at least one utility patent according to the US PTO, and 0 otherwise.

correlates positively (0.60) with firm assets for a sample of public issuers that filed Form D (following a PIPE offering) but are not part of this study. This result suggests that the number of executives is also a suitable proxy for size. Using data from PitchBook, Table A5 in the Supplementary Material presents that issuers primarily list founders and senior executives on Form D.

FIGURE 4

Issuers Using General Solicitation

Figure 4 shows the proportion of issuers in my sample that used general solicitation following the repeal of the ban in Sept. 2013. The figure splits issuers by the number of executives listed on their Form D, a proxy for the issuer's size. I(#_EXECUTIVES==1) is an indicator that equals 1 if only one executive is listed on the issuer's Form D filing, and 0 otherwise. The shaded area around each line shows 95% confidence intervals.



I also include measures of the distance between issuers and brokers to test the extent to which geography drives issuer–broker matching. Specifically, I define indicators for whether an issuer's zip code is home to an unregistered broker, I(UNRG._BROKER_ZIP), or a registered broker, I(RG._BROKER_ZIP).

The final association I examine is the relationship between general solicitation and issuer–broker matching. I(GENERAL_SOLICITATION) is an indicator that equals 1 for issuers relying on general solicitation following the JOBS Act. The effect of general solicitation on issuer–broker matching is ambiguous. On one hand, we might expect issuer–broker matching to decline following the act because the issuers' search for investors is no longer confined to the issuers' network. Consistent with this argument, Figure 4 suggests that issuers with a small network (which I proxy for using an indicator that equals 1 if a firm has only one executive listed on Form D) are more likely to respond to the change by soliciting investors, suggesting that the change relaxed search costs. On the other hand, brokers, who might be more knowledgeable than issuers about which investors to target, can also participate in offerings that use general solicitation. Since general solicitation increases the broker's set of potential investors, it might also increase the likelihood of issuer–broker matching.

To estimate the association between these variables and the likelihood of issuer–broker matching, I use the following pooled OLS regression:

$$
\begin{aligned}
(1)\quad \mathrm{I(USED\_BROKER)}_{fjst} = {} & \beta_1 \mathrm{I(UNRG.\_BROKER\_ZIP)}_{fjst} \\
& + \beta_2 \mathrm{I(RG.\_BROKER\_ZIP)}_{fjst} \\
& + \beta_3 \mathrm{I(VC\_ZIP)}_{fjst} + \beta_4 \ln(\mathrm{\#\_EXECUTIVES})_{fjst} \\
& + \beta_5 \mathrm{I(HAS\_PATENT)}_{fjst} + \beta_6 \%\mathrm{\_HIGH\_INCOME}_{fjst} \\
& + \beta_7 \mathrm{I(GENERAL\_SOLICITATION)}_{fjst} \\
& + \Gamma X_{fjst} + \lambda_{stj} + \epsilon_{fjst}.
\end{aligned}
$$

I vary the definition of the main independent variable, USED_BROKER, to compare different groups. In column 1 of Table 5, USED_BROKER is an indicator that equals 1 if the issuer uses a broker, and 0 otherwise. In column 2, it is an indicator that equals 1 if the issuer matches with an unregistered broker, and 0 if the issuer does a direct offering. In column 3, it is an indicator that equals 1 if the issuer matches with a registered broker, and 0 if the issuer does a direct offering.[19] And in column 4, it is an indicator that equals 1 if the issuer matches with an unregistered broker, and 0 if the issuer matches with a registered broker.[20]

Table 5 presents results from estimating equation (1). I standardize %_HIGH_INCOME and ln(#_EXECUTIVES) to have a mean of 0 and a standard deviation of 1. Column 1 shows that issuers located close to brokers and far from VCs are more likely to match with brokers; an issuer with both an unregistered broker and a registered broker in its zip code is 5% more likely to match with a broker. Given the 7% unconditional probability of issuer–broker matching, this represents a 71% increase in the probability of matching with a broker. However, having a VC in the issuer's zip code reduces the probability of issuer–broker matching by 2%, a 28% decrease in the probability of issuer–broker matching relative to the unconditional mean.

The results in columns 2 and 3 of Table 5 show that the distance to a VC has a similar effect on issuer–broker matching for both broker types, with the effect being somewhat stronger for unregistered brokers. Column 2 also shows that, compared with issuers doing direct offerings, issuers doing unregistered-broker offerings are more likely to be located in zip codes with few high-income investors. A standard deviation increase in the fraction of high-income investors in the issuer's zip code reduces the probability of an issuer-unregistered broker match by 0.6%, a 15% decrease relative to the unconditional probability of unregistered-broker use. Similarly, the coefficient on ln(#_EXECUTIVES) suggests that search costs drive issuer-unregistered broker matching more than other match types. My estimates in column 2 imply that, compared with issuers in direct offerings, issuers in unregistered-broker offerings employ fewer executives (i.e., have smaller networks). In addition, the column 3 results show that issuers with more executives are more likely to use registered brokers than unregistered brokers. These findings support the conclusion that search costs are an important driver of issuer–broker matching and especially of issuer–unregistered broker matching.

Turning to the certification channel, I do not find a significant relationship between my proxy for ex ante issuer quality, I(HAS_PATENT), and placement method. The results in columns 1–3 of Table 5 also show that general solicitation likely increased issuer–broker matching, as issuers using general

[19]If an issuer matches with a registered and an unregistered broker, which is rare, I classify the issue as a registered broker offering.

[20]My estimates, which are available upon request, are similar if I use a multinomial logit to predict intermediary type, in place of restricting the sample by intermediary type. I use OLS regressions throughout to facilitate the interpretation of coefficients and for consistency. I present results for all brokered offerings to highlight how combining registered and unregistered brokers can yield misleading results, which is apparent when I show the estimates by intermediary type.

TABLE 5

Association Between Issuer Distance to Brokers and VCs and Broker Use: OLS Regression Estimates

Table 5 presents coefficients from cross-sectional OLS regressions, with standard errors in parentheses. A unit of observation is an issuer filing its first Form D between Jan. 2010 and Dec. 2019. The dependent variable, I(USED_BROKER), is an indicator that equals 1 for offerings that involve any broker (registered or unregistered) and 0 for non-brokered offerings. In columns 2 and 4, the outcome variable equals 1 for offerings that involve an unregistered broker and 0 for non-brokered offerings. In column 3, it equals 1 for offerings that involve a registered broker and 0 for non-brokered offerings. The key independent variables in columns 1–4 are I(UNRG._BROKER_ZIP), an indicator that equals 1 if an issuer has an unregistered broker in its zip code; I(RG._BROKER_ZIP), an indicator that equals 1 if an issuer has a registered broker in its zip code; and I(VC_ZIP), an indicator that equals 1 if an issuer has a VC in its zip code. The number of observations varies across columns depending on the two placement methods I am comparing. For example, the number of observations in column 2 is lower because registered-broker offerings are excluded. One might expect that the sum of the difference between columns 1 and 2 and columns 1 and 3 would equal the number of observations in column 4. However, because state-year-industry cells with fewer than two observations are not part of the estimation, the number of observations in column 4 is lower than one would expect. I cluster standard errors, shown in parentheses, by issuer and represent significance according to $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$.

	Dependent Variable: I(USED_BROKER)			
Used Broker = 1 Used Broker = 0	Any Broker Direct	Unregistered Direct	Registered Direct	Unregistered Registered
	1	2	3	4
I(UNRG._BROKER_ZIP)	0.030*** (0.005)	0.022*** (0.004)	0.011** (0.004)	0.125*** (0.040)
I(RG._BROKER_ZIP)	0.018*** (0.004)	0.002 (0.003)	0.017*** (0.003)	−0.114*** (0.036)
I(VC_ZIP)	−0.018*** (0.004)	−0.012*** (0.003)	−0.007** (0.003)	−0.039 (0.036)
ln(#_EXECUTIVES)	0.006*** (0.002)	−0.009*** (0.001)	0.014*** (0.002)	−0.127*** (0.015)
I(HAS_PATENT)	−0.004 (0.005)	−0.002 (0.003)	−0.003 (0.004)	−0.070 (0.058)
I(OLDER_THAN_5)	0.032*** (0.005)	0.013*** (0.003)	0.023*** (0.005)	−0.022 (0.041)
I(PROMOTER)	0.108*** (0.012)	0.025*** (0.008)	0.096*** (0.011)	−0.038 (0.054)
%_HIGH_INCOME	−0.007*** (0.002)	−0.005*** (0.001)	−0.003* (0.002)	−0.012 (0.020)
I(USED_ADVERTISING)	0.157*** (0.012)	0.098*** (0.010)	0.084*** (0.010)	0.041 (0.049)
State ×year × industry FE?	Yes	Yes	Yes	Yes
Adj. R^2	0.13	0.10	0.12	0.28
# Issuers	28,087	26,774	27,230	1,460
No. of obs.	28,087	26,774	27,230	1,460

solicitation are 10% and 8% more likely to use unregistered and registered brokers, respectively.[21]

Robustness

Alternative Measures of Distance to Brokers and VCs. It is not clear that zip code is the right way to think about having a "close" VC or broker. I chose zip code for its convenience, since it is reported on Form D. To investigate whether my results are sensitive to this choice, I reproduced the analysis using census tracts instead of zip codes. This was done by geocoding the addresses of each issuer and broker to obtain their respective census tracts. I report the results in Table A6 in the

[21]This finding is consistent with Agrawal and Lim (2021), who also show that offerings relying on general solicitation are more likely to involve brokers.

Supplementary Material. The table reports that results were quite similar, suggesting that my findings are not sensitive to the use of zip code as the measure of proximity.

Alternative Interpretation of Search Costs Proxies. My proxies for search costs could instead be indicators of the quality or sophistication of the founding team. For example, inexperienced founders might primarily use unregistered brokers because the founders are not fully aware of alternative funding options. To gain further insights into the relationship between search costs, founder characteristics, and broker involvement, I conduct several additional tests. Specifically, I examine how the issuers' post-funding outcomes vary depending on whether their offerings are intermediated by brokers. This will allow me to assess whether my search-cost proxies accurately capture the essence of search costs or instead reflect the founders' level of sophistication or quality.

Including Only Young Firms. As discussed previously, an issuer may have raised capital prior to the availability of electronic filings in 2008–2009 or through alternative mechanisms, especially if it is an older entity. To address this potential bias, I reran the analysis after restricting the sample to younger firms that were established no more than 5 years before the offering. Table A7 in the Supplementary Material reports that the results remain similar even when I focus on this subset of firms, providing assurance that my conclusions are robust.

Overall, the results in this section are consistent with the hypothesis that search costs drive issuer–broker matching, especially issuer-unregistered broker matching. To further understand the brokers' role, I turn to the characteristics of investors in brokered offerings in Section IV.B.

B. Broker-Investor Matching

The characteristics of investors participating in brokered offerings could also shed light on the brokers' role in the market for early-stage funding. If brokers both reduce search costs and certify issuers, we would expect that investors with low search costs and investors with a high ability to investigate issuer quality would be less likely to use brokers.

I consider two investor characteristics: an indicator that equals 1 if a VC firm invested in the offering, and 0 otherwise (I(VC_INVESTMENT)); and an indicator that equals 1 if any non-accredited investors participated in the offering, and 0 otherwise (I(NON_ACCREDITED_INVESTOR)). Non-accredited investors are retail investors that make less than $200,000 if single and less than $300,000 if married.[22] Recall that I(VC_INVESTMENT) is an indicator that equals 1 for venture-backed deals in PitchBook that match to a Form D filing on issuer name, fundraising quarter, and the state where the issuer is located. To the extent that brokers reduce search costs and certify issuers, I expect participation by VCs (which likely have low search costs and a high ability to investigate issuer quality) in brokered offerings to be low and participation by non-accredited investors (which likely have high search costs and a low ability to investigate issuer quality) to be high.

[22]Note that non-accredited investors also have a net worth of under $1 million.

To test this hypothesis, I estimate the following reduced-form model using OLS:

$$\text{INVESTOR\_CHARACTERISTICS}_{fjst} = \beta_1 \text{I(USED\_BROKER)}_{fjst} + \Gamma X_{fjst} + \lambda_{jst} + \varepsilon_{fjst}, \quad (2)$$

where INVESTOR_CHARACTERISTICS is either I(VC_INVESTMENT) or I(NON_ACCREDITED_INVESTOR) and the control variables are the same as in Section IV.A. Panel A of Table 6 reports the results for the association between issuer–broker matching and the likelihood of VC participation, while Panel B shows the results for the association between issuer–broker matching and the likelihood of non-accredited investor participation.

As hypothesized, the results in Panel A of Table 6 show that VCs are more likely to directly invest instead of investing through brokers. From column 1, we see that brokered offerings are 4% less likely to include VCs. Given the unconditional likelihood of VC participation of 20%, this implies that VCs are 20% less likely to be involved in brokered offerings than in non-brokered offerings. When we directly compare registered to unregistered broker offerings in column 4, we see that VCs are 5% less likely to participate in unregistered-broker offerings than in registered-broker offerings, a 25% decrease relative to the unconditional mean.

Panel B of Table 6 shows estimates for the likelihood of non-accredited investor participation in brokered and direct offerings. Column 1 shows that non-accredited investors are equally likely to invest in brokered and direct offerings. A more nuanced story emerges in columns 2–4. Column 2 indicates that, compared with issuers raising funding directly, issuers matching with unregistered brokers are 8% more likely to sell shares to non-accredited investors. Given that non-accredited investors participate in about 10% of all offerings, their participation level increases by 80% when unregistered brokers are involved. In column 3, we see that direct offerings are about 4% more likely to have a non-accredited investor compared to offerings that involve registered brokers. When, in column 4, we restrict the sample to brokered offerings, the results show that non-accredited investors are about 12% more likely to participate in offerings involving unregistered brokers than in offerings involving registered brokers.

In Section II, we noted that FINRA's due-diligence requirements for registered brokers in private offerings create an environment where investors have greater legal recourse. They can file lawsuits, engage in arbitration, or join class action lawsuits against registered brokers if they believe that adequate due diligence was not conducted on the issuer. If this increased risk prompts registered brokers to proactively restrict non-accredited investors from participating in the deals they facilitate,[23] it could explain the lower participation of non-accredited investors in offerings involving registered brokers (a main finding in this section).

In conclusion, the findings in this section show the dynamics of investor participation in brokered offerings and support the conclusion that brokers serve a dual role of reducing search costs and certifying issuers. Sophisticated investors,

[23]For more on the increased risk, see this example of a law firm soliciting investors for a class action lawsuit against a registered broker.

TABLE 6

Association Between Broker Use and the Type of Investors Participating in Offering: OLS Regression Estimates

Table 6 presents coefficients from cross-sectional OLS regressions. The unit of observation is an issuer filing its first Form D between Jan. 2010 and Dec. 2019. The dependent variable in Panel A, I(VC_INVESTMENT), is an indicator that equals 1 if an issuer received institutional venture capital funding, and 0 otherwise. The dependent variable in Panel B, I(NON_ACCREDITED_INVESTOR), is an indicator that equals 1 if a non-accredited investor participated in the offering, and 0 otherwise. The key independent variables in columns 1–4 are indicators for how the offering was placed. In column 1, I(USED_BROKER) is an indicator for offerings that involve any broker. In columns 2 and 4, the same indicator variable equals 1 only for offerings that involve an unregistered broker. In column 3, the indicator equals 1 for offerings that involve a registered broker. See the Supplementary Material for a discussion of how I identify broker registration status and define other variables. The number of observations varies across columns depending on the two placement methods I am comparing. For example, the number of observations in column 2 is lower because it excludes registered-broker offerings. One might expect that the sum of the difference between columns 1 and 2 and columns 1 and 3 would equal the number of observations in column 4. However, because state-year-industry cells with fewer than two observations are not part of the estimation, the number of observations in column 4 is lower than one would expect. I cluster standard errors, shown in parentheses, by issuer and represent significance according to $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$.

Panel A. VC Participation

	Dependent Variable: I(VC_INVESTMENT)			
Used Broker = 1 Used Broker = 0	Any Broker Direct	Unregistered Direct	Registered Direct	Unregistered Registered
	1	2	3	4
I(USED_BROKER)	−0.036*** (0.008)	−0.062*** (0.010)	−0.028*** (0.010)	−0.048** (0.023)
ln(#_EXECUTIVES)	0.059*** (0.003)	0.059*** (0.003)	0.060*** (0.003)	0.034*** (0.011)
I(HAS_PATENT)	0.064*** (0.010)	0.062*** (0.010)	0.065*** (0.010)	0.132** (0.053)
I(OLDER_THAN_5)	−0.047*** (0.008)	−0.052*** (0.008)	−0.047*** (0.008)	0.028 (0.030)
I(PROMOTER)	−0.016* (0.009)	−0.014 (0.010)	−0.018* (0.010)	−0.035 (0.025)
%_HIGH_INCOME	0.006** (0.003)	0.006** (0.003)	0.005** (0.003)	−0.010 (0.012)
State × year × industry FE?	Yes	Yes	Yes	Yes
Adj. R^2	0.12	0.12	0.12	0.22
# Issuers	28,087	26,774	27,230	1460
No. of obs.	28,087	26,774	27,230	1460

Panel B. Non-Accredited Investor Participation

	Dependent Variable: I(Non Accredited Investor)			
Used Broker = 1 Used Broker = 0	Any Broker Direct	Unregistered Direct	Registered Direct	Unregistered Registered
	1	2	3	4
I(USED_BROKER)	0.009 (0.009)	0.076*** (0.016)	−0.038*** (0.009)	0.119*** (0.027)
ln(#_EXECUTIVES)	−0.017*** (0.002)	−0.015*** (0.002)	−0.016*** (0.002)	−0.011 (0.016)
I(HAS_PATENT)	−0.026*** (0.005)	−0.025*** (0.005)	−0.023*** (0.005)	−0.025 (0.032)
I(OLDER_THAN_5)	−0.010* (0.005)	−0.011** (0.005)	−0.009 (0.005)	−0.056 (0.035)
I(PROMOTER)	−0.009 (0.011)	0.004 (0.012)	−0.012 (0.011)	−0.069* (0.042)
%_HIGH_INCOME	−0.019*** (0.002)	−0.019*** (0.002)	−0.017*** (0.002)	−0.008 (0.015)
State × year × industry FE?	Yes	Yes	Yes	Yes
Adj. R^2	0.15	0.16	0.16	0.21
# Issuers	28,087	26,774	27,230	1,460
No. of obs.	28,087	26,774	27,230	1,460

who likely have lower search costs and greater expertise in evaluating issuers, are less likely to participate in brokered offerings than unsophisticated investors, who likely have higher search costs and lower expertise in evaluating issuers. These findings underscore the distinct needs and preferences of different investor groups and shed light on the importance of brokers in facilitating participation by various investors in the startup funding market.

V. Brokered Offerings and Issuer Outcomes

A. Empirical Strategy

In Sections III and IV, I examined the extent to which different characteristics of the issuers and investors participating in brokered offerings are consistent with brokers reducing search and information costs.

One could further infer the brokers' role and the most relevant financing constraints driving issuer–broker matching by assessing variation in the issuers' outcomes. If search costs are the dominant friction and the brokers' primary role is to reduce them, then issuers in brokered offerings should have similar outcomes to issuers in direct offerings, provided that search costs (which are likely to be very high for all of the first-time issuers in my sample) are not strongly correlated with issuer quality. However, if information about issuer quality is the dominant friction and the brokers' primary role is to certify issuer quality to investors, then issuers in brokered offerings should have better outcomes than issuers in direct offerings (especially when VC deals are excluded). The exclusion of VC deals is important because the VCs themselves screen deals and may certify quality in a manner similar to brokers. To truly assess the broker's role in certifying issuer quality, one should exclude offerings involving VCs or at least account for their influence.

To test whether issuer outcomes vary by placement method, I estimate the following cross-sectional regression via pooled OLS:

$$Y_{fjst} = \beta_1 \text{USED\_BROKER}_{fjst} + \Gamma X_{fjst} + \lambda_{stj} + \epsilon_{fjst}. \tag{3}$$

The unit of observation is a first-time Form D filer. Y is an outcome (funding raised, an IPO, an acquisition, another round of financing raised 3 years after the first, or firm closure) for firm (f) in industry (j) located in state (s) raising funding in year (t). Other control variables, X_{fjst}, fix other issuer characteristics that might be simultaneously related to outcomes and broker use. X_{fjst} includes firm age, size, whether an issuer filed for at least one utility patent with the US PTO before the offering, whether the issuer lists a promoter on Form D, and the fraction of investors in the issuer's zip code that are potentially accredited. I define all variables in Table A2 in the Supplementary Material. λ_{stj} are state-year-industry indicators.

For each outcome variable, I vary the definition of the main independent variable, USED_BROKER, as in Sections III and IV.[24]

[24]My estimates are similar if I use hazard, logit, or probit models. I use OLS regressions throughout to facilitate the interpretation of coefficients and for consistency. I present the results for all brokered

The results in Sections III and IV suggest that issuer–broker matching is not random even when I condition on restrictive state-year-industry fixed effects. Recall that these fixed effects allow me to compare two issuers doing business in the same industry, located in the same state, and raising funding in the same year. The fixed effects capture variation in local regulation over time (state-year fixed effects), aggregate changes in issuers' preference for different placement methods over time (industry-year fixed effects), and differences in industry-specific conditions across states (state-industry fixed effects).

Given the non-randomness of issuer–broker matching, OLS coefficients of the effect of issuer–broker matching on outcomes are likely to be biased. The magnitude and direction of the bias depends on whether the outcome variable is funding raised or post funding outcomes.

If brokers reduce search costs or certify issuer quality to investors, this should cause issuers to raise more funding. To identify the causal effect of issuer–broker matching on offering proceeds in the ideal experiment, I would twice observe the offering proceeds for each issuer that matched with a broker: once following broker use (which we do observe) and once if the issuer had never matched with a broker (the counterfactual we do not observe). Given that the issuers that use brokers are likely to be the ones that anticipate fundraising difficulties, I expect the OLS estimate from a regression of offering proceeds on an indicator for issuer–broker matching to underestimate the true effect of broker use on offering proceeds (a negative selection effect). To approximate the causal effect of issuer–broker matching on offering proceeds, I use the presence of brokers in the issuer's zip code as an instrument for whether the issuer matches with a broker.

Turning to post-funding outcomes, my hypothesis is that the treatment effect of broker use mainly comes from the caliber of investors to which brokers match issuers and the additional funding that brokers help issuers raise. So, after controlling for the type of investors participating in the offering and the amount of funding raised, I do not expect brokers to cause issuers to have better post-funding outcomes. Underlying this hypothesis is the notion that brokers, unlike VCs, do not independently raise money from investors before identifying investments and thus are unlikely to monitor issuers post funding. Consequently, most of the difference in outcomes between brokered and direct offerings (controlling for funding raised and investor quality) should result from issuer quality at the time of the offering (selection) and not from an independent effect of broker use on issuer outcomes (treatment). To test this hypothesis, I again use the presence of brokers in the issuer's zip code as an instrument for whether the issuer matches with a broker. If my hypothesis is true, then my use of the instrument should remove any association between issuer–broker matching and post-funding outcomes.

While Section IV highlighted the correlation between hiring a broker and the instrument, it is important to note that the validity of distance to broker as an

offerings to highlight how combining registered and unregistered brokers can yield misleading results, which is apparent when I show the estimates by intermediary type.

instrument relies on the assumption that proximity to a broker impacts offering proceeds and other outcomes solely through increased broker use.

Is Proximity to a Broker a Valid Instrument? Although I cannot test the exclusion restriction, I provide several arguments to support its validity. A violation of the exclusion restriction could occur if issuers choose to start their businesses in the same zip codes as brokers because they anticipate that the brokers might assist them with future fundraising. However, existing research on the location choices of entrepreneurs is inconsistent with this argument. Notably, Dahl and Sorenson (2009) show that entrepreneurs tend to start their businesses where they have family and friends.

Another threat to the exclusion restriction is that a common factor (related to issuer outcomes) drives issuers and brokers to similar locations. One such factor, in this setting, could be the presence of venture capitalists. Issuers might locate themselves near VCs in anticipation of future funding needs and post-investment advice, while brokers might locate themselves near VCs in hopes of providing support services such as underwriting and M&A advice. We directly control for this possibility by including an indicator that equals 1 for zip codes where a VC is located. Table 7 supports the exclusion restriction by showing that, after controlling for distance to VCs, the presence of an unregistered or registered broker near an issuer is unrelated to fundraising or exits via an IPO or acquisition. From Table 7, we also see that controlling for the presence of VCs in the issuer's zip code removes the correlation between the distance to brokers and issuer outcomes.

In sum, the evidence in this section suggests that, conditional on the presence of a VC in the issuer's zip code, the issuers' distance to registered or unregistered brokers is uncorrelated to issuer outcomes.

B. Results on the Association Between Brokered Offerings and Outcomes

1. Brokered Offerings and Fundraising

If brokers mitigate search costs or information costs for issuers, I expect issuers to raise more funding with the help of a broker than without it. As discussed in Section V.A, I cannot observe the counterfactual of no broker use for issuers in brokered offerings. To approximate the causal effect of broker use on fundraising outcomes, I use the local availability of brokers as an instrument for issuer–broker matching by running the following 2 stage least squares regression:

$$\begin{aligned}\text{I(USED\_BROKER)}_{fjst} = {} & \beta_1 \text{I(UNRG.\_BROKER\_ZIP)}_{fjst} \\ & + \beta_2 \text{I(RG.\_BROKER\_ZIP)}_{fjst} \\ & + \beta_3 \text{I(VC\_ZIP)}_{fjst} + \Gamma X_{fjst} + \lambda_{jst} + \epsilon_{fjst},\end{aligned}$$

$$\text{(4)}\quad \ln(\text{PROCEEDS\_RAISED})_{fjst} = \beta_1 \widehat{\text{I(USED\_BROKER)}}_{fjst} + \Gamma X_{fjst} + \lambda_{jst} + \epsilon_{fjst}.$$

$\ln(\text{PROCEEDS\_RAISED})$ is the log amount of funding the issuer raised, and $\widehat{\text{I(USED\_BROKER)}}$ is the predicted probability of broker use using the local

TABLE 7

Association Between Issuer Outcomes and Distance to Brokers: OLS Regression Estimates

Table 7 presents coefficients from cross-sectional OLS regressions. A unit of observation is an issuer filing its first Form D between Jan. 2010 and Dec. 2017. The dependent variables are I(RAISED_FUTURE_ROUND), an indicator that equals 1 if the issuer files another Form D 3 or more years following its first filing, and 0 otherwise, and I(ACQUISITION_OR_IPO), an indicator that equals 1 if the issuer exited via an IPO or an acquisition in the years following the offering. The key independent variables in columns 1–4 are indicators for how the offering was placed. In column 1, I(USED_BROKER) is an indicator for offerings that involve any broker. In columns 2 and 4, the same indicator variable equals 1 only for offerings that involve an unregistered broker. In column 3, the indicator equals 1 for offerings that involve a registered broker. See the Supplementary Material for a discussion of how I identify broker registration status and define other variables. The number of observations varies across columns depending on the two placement methods I am comparing. For example, the number of observations in column 2 is lower because it excludes registered-broker offerings. One might expect that the sum of the difference between columns 1 and 2 and columns 1 and 3 would equal the number of observations in column 4. However, because state-year-industry cells with fewer than two observations are not part of the estimation, the number of observations in column 4 is lower than one would expect. I cluster standard errors, shown in parentheses, by issuer and represent significance according to $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$.

Dependent Variable:	I(ACQUISITION_OR_IPO)		I(RAISED_FUTURE_ROUND)	
	1	2	3	4
I(UNRG._BROKER_ZIP)	0.002	−0.007	0.004	0.003
	(0.008)	(0.008)	(0.006)	(0.006)
I(RG._BROKER_ZIP)	0.020***	−0.000	0.001	−0.003
	(0.006)	(0.006)	(0.004)	(0.005)
I(VC_ZIP)		0.047***		0.008*
		(0.006)		(0.005)
ln(#_EXECUTIVES)		0.058***		0.016***
		(0.003)		(0.002)
I(HAS_PATENT)		0.070***		0.045***
		(0.010)		(0.009)
I(OLDER_THAN_5)		0.036***		−0.006
		(0.008)		(0.007)
I(PROMOTER)		−0.019*		−0.019**
		(0.010)		(0.008)
I(VC_INVESTMENT)		0.211***		0.068***
		(0.009)		(0.007)
%_HIGH_INCOME		0.000		−0.001
		(0.003)		(0.002)
State × year × industry FE?	Yes	Yes	Yes	Yes
Adj. R^2	0.14	0.20	0.13	0.13
# Firms	28,087	28,087	28,087	28,087
No. of obs.	28,087	28,087	28,087	28,087

availability of brokers as an instrument. Note that the instrument does not condition on whether the issuer hires a broker that is nearby, because that decision could be subject to the same endogeneity issues as the decision to hire a broker. Table 8 reports the results from estimating equation (4). In column 1, where the independent variable is broker use irrespective of type, the instrument is an indicator that equals 1 if an issuer has an unregistered or a registered broker in its zip code. In columns 2 and 4, where the independent variable is an indicator for unregistered broker use, the instrument is an indicator that equals 1 if the issuer has an unregistered broker in its zip code. In column 3, where the independent variable is an indicator for registered broker use, the instrument is an indicator that equals 1 if the issuer has a registered broker in its zip code.[25]

[25]I get the same results when I use an indicator for whether an issuer has a broker in its census tract as my measure of proximity.

TABLE 8

Causal Effect of Brokered Offerings on Offering Proceeds: OLS Regression Estimates

Table 8 presents coefficients from 2-stage least squares regressions (2SLS) with standard errors in parentheses. A unit of observation is an issuer filing its first Form D between Jan. 2010 and Dec. 2019. The dependent variable, ln(FUNDING_RAISED), is the log amount of funding an issuer raised. The key independent variables in columns 1–4 are indicators for how the offering was placed. In column 1, I(USED_BROKER) is an indicator for offerings that involve any broker. In columns 2 and 4, the same indicator variable equals 1 only for offerings that involve an unregistered broker. In column 3, the indicator equals 1 for offerings that involve a registered broker. The instrument in column 1 is an indicator that equals 1 if an issuer has an unregistered or a registered broker in its zip code. In columns 2 and 4, it is an indicator that equals 1 if the issuer has an unregistered broker in its zip code. In column 3, the instrument is an indicator that equals 1 if the issuer has a registered broker in its zip code. See the Supplementary Material for a discussion of how I identify broker registration status and define other variables. The number of observations varies across columns depending on the two placement methods I am comparing. For example, the number of observations in column 2 is lower because it excludes registered-broker offerings. One might expect that the sum of the difference between columns 1 and 2 and columns 1 and 3 would equal the number of observations in column 4. However, because state-year-industry cells with fewer than two observations are not part of the estimation, the number of observations in column 4 is lower than one would expect. I cluster standard errors, shown in parentheses, by issuer and represent significance according to $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$.

	Dependent Variable: ln(PROCEEDS_RAISED)			
Used Broker = 1 Used Broker = 0	Any Broker Direct	Unregistered Direct	Registered Direct	Unregistered Registered
	1	2	3	4
I(USED_BROKER)	1.610***	2.250***	2.564***	−0.507
	(0.430)	(0.805)	(0.738)	(0.819)
ln(#_EXECUTIVES)	0.272***	0.299***	0.246***	0.242**
	(0.007)	(0.010)	(0.013)	(0.107)
I(HAS_PATENT)	0.212***	0.209***	0.208***	0.313**
	(0.020)	(0.020)	(0.021)	(0.131)
I(OLDER_THAN_5)	0.015	0.027	0.012	0.084
	(0.023)	(0.022)	(0.026)	(0.091)
I(PROMOTER)	−0.196***	−0.016	−0.278***	−0.367***
	(0.058)	(0.039)	(0.081)	(0.134)
I(VC_INVESTMENT)	0.585***	0.576***	0.577***	0.700***
	(0.017)	(0.017)	(0.018)	(0.161)
%_HIGH_INCOME	0.034***	0.030***	0.029***	0.082*
	(0.007)	(0.008)	(0.007)	(0.045)
I(VC_ZIP)	0.174***	0.190***	0.164***	0.012
	(0.013)	(0.014)	(0.013)	(0.087)
State × year × industry FE?	Yes	Yes	Yes	Yes
Adj. R^2	−0.10	−0.11	−0.21	−0.13
# Issuers	28,087	26,774	27,230	1,460
No. of obs.	28,087	26,774	27,230	1,460
Cragg–Donald Wald F	71.04	51.24	41.41	8.28

Instrumental Variable Estimates of Broker Use on Fundraising. In column 1 of Table 8, we see that using a broker causes firms to raise about 161% more funding. For a median issuer that raises $500,000, this estimate implies an $805,000 increase in offering proceeds. We see even larger effects in columns 2 and 3 when we compare issuers in unregistered and registered broker offerings to issuers in direct offerings. For the median issuer, the estimates imply a treatment effect of $1.125 million and $1.282 million for matching with an unregistered broker and a registered broker, respectively. In column 4, where we compare unregistered to registered brokers, the treatment effect does not appear to depend on broker type, although the instrument in this specification is weak.

Columns 1–4 of Table 8 show a Cragg–Donald Wald F Statistic (a weak-instrument test (Stock and Yogo (2002)) of 71.04, 51.24, 41.41, and 8.28, respectively. A 10% Stock–Yogo critical value of 16 implies that, except for column 4, the instrument is not weak under very reasonable assumptions of IV bias relative to

OLS. The IV estimates are also larger than simple OLS estimates, consistent with a negative selection bias, as the issuers that match with brokers are those that expect positive benefits from broker involvement (corrective endogeneity in Jiang (2017)).[26]

In sum, the results of this section suggest that brokered offerings improve fundraising outcomes for issuers. The natural next question, which I turn to in Section V.B.2, is how brokered and non-brokered offerings perform post funding. Recall that if search costs are the dominant friction and the brokers' primary role is to reduce them, then issuers in brokered offerings should have similar outcomes to issuers in direct offerings, provided that search costs (which are likely to be high for all the first-time issuers I study) are not strongly related to issuer quality. On the other hand, if information costs are the dominant friction and brokers' primary role is to certify issuer quality to investors, then issuers in brokered offerings should have better outcomes than issuers in direct offerings.

I address other selection concerns that might violate the exclusion restriction. This assumption could be compromised if, for instance, certain types of issuers (those close to or far from brokers) possess characteristics that influence their access to funding. Issuers in large cities, for example, might be closer to brokers and other investors like venture capital firms. To address this potential bias, I re-ran my analyses incorporating city by industry by year fixed effects for the 20 most populated U.S. cities as of 2010. These findings can be viewed in Table A13 in the Supplementary Material. Another concern stems from issuers that secure funding from VCs. The initial round for these issuers might be smaller due to how these investments are staged. To account for this, I exclude such issuers from my study and present the results in Table A14 in the Supplementary Material. The outcomes from these supplementary analyses are similar to the main results in Table 8.

2. Brokered Offerings and Post-Funding Outcomes

This section presents OLS empirical estimates of equation (3), in which the dependent variable is an indicator that equals 1 for issuers that go public (IPO) or are acquired (Acquisition) by the fourth quarter of 2020, I(ACQUISITION_OR_IPO). To allow time for an exit, for the next few tests I limit the sample to issuers that filed their first Form D between 2010 and 2017.

Table 9 reports the results. Column 1 shows no difference in outcomes between brokered and direct offerings. However, sharp differences emerge when

[26]There is a substantial implied increase in offering proceeds from the causal estimates compared with the unconditional mean estimates from Table 4. Recall from Table 4 that, unconditionally, issuers in unregistered-broker offerings raise less funding ($2 million vs. $3 million) than issuers in direct offerings, a relationship that flips when we quasi-randomly assign unregistered brokers to issuers using the instrument. The IV estimates of the effects of brokered offerings using distance capture the effects of brokered offerings on issuers that used a broker because one was close (but would not otherwise have used one), i.e., the compliers. This result is a local average treatment effect (LATE). Given the context, I believe the compliers are likely to be issuers whose offerings are brokered only because proximity allows the broker to thoroughly scrutinize the issuer's business practices. Without the close proximity, these (marginal) issuers might never have found brokers willing to assist them. Consequently, these types of issuers are likely to be the ones that benefit the most from the use of a broker, leading to significantly increased offering proceeds from broker use and the larger estimated effects.

brokered offerings are split by broker registration status in columns 2 and 3: issuers in unregistered broker offerings are 4% less likely to exit (column 2), and issuers in registered-broker offerings are 4% more likely to exit (column 3), than issuers in direct offerings. Column 4, which directly compares issuers using registered brokers to issuers using unregistered brokers, shows that the latter are about 7% less likely to exit.

If issuers in unregistered-broker offerings do not aim to exit via an IPO or acquisition but instead intend to provide a stable flow of cash for their investors, we might observe similar empirical estimates; however, these estimates would not be related to issuer quality or the treatment effect of broker use. To address this concern, Panels B and C of Table 9 estimate equation (3) by changing the outcome variable to an indicator. In Panel B, I(RAISED_FUTURE_ROUND) equals 1 if an issuer raises a round of funding 3 or more years after its current round, and 0 otherwise; and in Panel C, I(INACTIVE) equals 1 if an issuer is no longer registered with state securities regulators in the state where it operates as of the third quarter of 2021, and 0 otherwise. Note that issuers raising a future round of funding are also more likely to exit and less likely to close (the correlation between I(RAISED_FUTURE_ROUND) and I(ACQUISITION_OR_IPO) is 0.28, and the correlation between I(RAISED_FUTURE_ROUND) and I(INACTIVE) is −0.07).

Panel B of Table 9 reports that issuers in brokered offerings are less likely to raise a future round of funding and that this difference is entirely driven by issuers in unregistered-broker offerings. Similarly, Panel C shows that issuers in brokered offerings are more likely to be inactive post funding, and the difference is again largely driven by issuers in unregistered-broker offerings. The coefficients on other control variables are consistent with intuition: issuers that raise more funding, issuers that employ more executives, older issuers, issuers in VC-backed offerings, and issuers with a patent are all more likely to have a positive exit and to raise a future round of funding and less likely to close.

A problem I cannot solve is whether the propensity to file Form D varies among the different groups of offerings (direct, registered broker, and unregistered broker) in a way that is correlated with outcomes. My finding that outcomes are worse for offerings involving unregistered brokers than for non-brokered offerings applies only to issuers that have filed Form D. It is not conclusive that failures are more common in unregistered broker offerings than for typical issuers that raise outside capital but do not file a Form D. To the extent that the startups that raise capital directly but do not file Form D are of lower quality, my estimates of the relative effects of unregistered broker offerings on outcomes are likely an upper bound.

3. Heterogeneity in Outcomes by Investor and Industry

Outcomes by Non-Accredited Investor Participation. In Section IV.B, we saw that non-accredited investors were more likely to participate in offerings involving finders. Figure 5 shows that this participation increased in the last 3 years of the sample. This raises the question of whether the probability of firm failure or success is increasing in the proportion of non-accredited investors, and whether this varies by the type of broker. Table A8 in the Supplementary Material reports the result for

TABLE 9

Association Between Brokered Offerings and Outcomes: OLS Regression Estimates

Table 9 presents coefficients from cross-sectional OLS regressions. The unit of observation is an issuer filing its first Form D between Jan. 2010 and Dec. 2017. In Panel A, the dependent variable, I(ACQUISITION_OR_IPO), is an indicator that equals 1 if the issuer exits via an IPO or an acquisition in the years following the offering, and 0 otherwise. In Panel B, the dependent variable, I(RAISED_FUTURE_ROUND), is an indicator that equals 1 if the issuer files another Form D 3 or more years following its first filing, and 0 otherwise. In Panel C, the dependent variable, I(INACTIVE), is an indicator that equals 1 if an issuer is no longer registered with state securities regulators where it operates and 0 otherwise. The key independent variables in columns 1–4 are indicators for how the offering was placed. In column 1, I(USED_BROKER) is an indicator for offerings that involve any broker. In columns 2 and 4, the same indicator variable equals 1 only for offerings that involve an unregistered broker. In column 3, the indicator equals 1 for offerings that involve a registered broker. See the Supplementary Material for a discussion of how I identify broker registration status and define other variables. The number of observations varies across columns depending on the two placement methods I am comparing. For example, the number of observations in column 2 is lower because it excludes registered-broker offerings. One might expect that the sum of the difference between columns 1 and 2 and columns 1 and 3 would equal the number of observations in column 4. However, because state-year-industry cells with fewer than two observations are not part of the estimation, the number of observations in column 4 is lower than one would expect. I cluster standard errors, shown in parentheses, by issuer and represent significance according to $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$.

Panel A. IPO/Acquisition

	Dependent Variable: I(ACQUISITION_OR_IPO)			
Used Broker = 1 Used Broker = 0	Any Broker Direct	Unregistered Direct	Registered Direct	Unregistered Registered
	1	2	3	4
I(USED_BROKER)	0.009 (0.010)	−0.040*** (0.014)	0.043*** (0.014)	−0.072*** (0.027)
ln(PROCEEDS_RAISED)	0.050*** (0.003)	0.051*** (0.003)	0.050*** (0.003)	0.032*** (0.009)
ln(#_EXECUTIVES)	0.059*** (0.003)	0.058*** (0.003)	0.059*** (0.003)	0.066*** (0.014)
I(HAS_PATENT)	0.060*** (0.010)	0.055*** (0.010)	0.059*** (0.010)	0.147*** (0.054)
I(OLDER_THAN_5)	0.044*** (0.009)	0.047*** (0.010)	0.047*** (0.010)	−0.033 (0.036)
I(PROMOTER)	−0.019 (0.012)	−0.013 (0.013)	−0.022* (0.013)	−0.074*** (0.027)
I(VC_INVESTMENT)	0.214*** (0.010)	0.214*** (0.010)	0.213*** (0.010)	0.268*** (0.059)
%_HIGH_INCOME	0.005 (0.003)	0.006* (0.004)	0.005 (0.004)	−0.013 (0.016)
State × year × industry FE?	Yes	Yes	Yes	Yes
Adj. R^2	0.20	0.19	0.20	0.36
# Issuers	22,344	21,288	21,626	1,182
No. of obs.	22,344	21,288	21,626	1,182

Panel B. Raised New Funding

	Dependent Variable: I (RAISED_FUTURE_ROUND)			
Used Broker = 1 Used Broker = 0	Any Broker Direct	Unregistered Direct	Registered Direct	Unregistered Registered
	1	2	3	4
I(USED_BROKER)	−0.027*** (0.009)	−0.041*** (0.013)	−0.018 (0.012)	−0.009 (0.023)
ln(PROCEEDS_RAISED)	0.023*** (0.002)	0.024*** (0.003)	0.023*** (0.003)	0.011 (0.008)
ln(#_EXECUTIVES)	0.017*** (0.003)	0.016*** (0.003)	0.016*** (0.003)	0.023* (0.012)
I(HAS_PATENT)	0.042*** (0.010)	0.043*** (0.010)	0.043*** (0.010)	−0.034 (0.045)
I(OLDER_THAN_5)	−0.007 (0.009)	−0.011 (0.009)	−0.009 (0.009)	0.101*** (0.038)
I(PROMOTER)	−0.020* (0.011)	−0.020* (0.012)	−0.019* (0.012)	−0.021 (0.030)
I(VC_INVESTMENT)	0.071*** (0.009)	0.070*** (0.009)	0.071*** (0.009)	0.031 (0.056)
%_HIGH_INCOME	−0.001 (0.003)	−0.002 (0.003)	−0.002 (0.003)	−0.003 (0.015)
State × year × industry FE?	Yes	Yes	Yes	Yes
Adj. R^2	0.10	0.10	0.10	0.19
# Issuers	22,344	21,288	21,626	1,182
No. of obs.	22,344	21,288	21,626	1,182

(continued on next page)

TABLE 9 (continued)

Association Between Brokered Offerings and Outcomes: OLS Regression Estimates

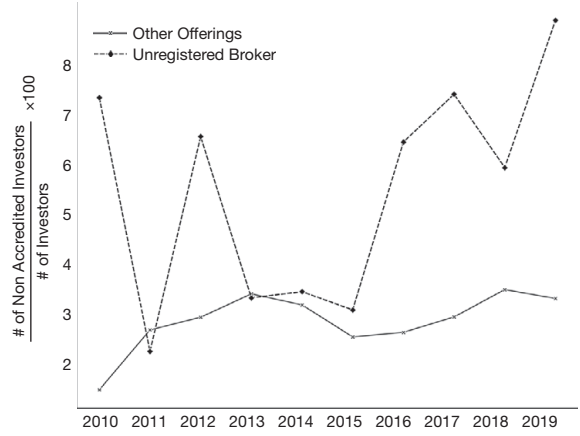
Panel C. Closed/Inactive

	Dependent Variable: I(INACTIVE)			
	1	2	3	4
I(USED_BROKER)	0.050***	0.068***	0.039***	−0.014
	(0.009)	(0.013)	(0.012)	(0.025)
ln(PROCEEDS_RAISED)	−0.017***	−0.016***	−0.017***	−0.022**
	(0.002)	(0.002)	(0.002)	(0.010)
ln(#_EXECUTIVES)	−0.013***	−0.012***	−0.013***	−0.025**
	(0.002)	(0.002)	(0.002)	(0.012)
I(HAS_PATENT)	−0.016**	−0.014**	−0.017***	−0.003
	(0.006)	(0.006)	(0.006)	(0.037)
I(OLDER_THAN_5)	−0.009	−0.009	−0.007	−0.056**
	(0.006)	(0.006)	(0.006)	(0.028)
I(PROMOTER)	−0.001	0.004	0.004	−0.084***
	(0.010)	(0.011)	(0.011)	(0.028)
I(VC_INVESTMENT)	−0.054***	−0.055***	−0.054***	−0.100**
	(0.006)	(0.006)	(0.006)	(0.047)
%_HIGH_INCOME	0.000	−0.000	−0.000	0.015
	(0.002)	(0.002)	(0.002)	(0.015)
State × year × industry FE?	Yes	Yes	Yes	Yes
Adj. R^2	0.50	0.51	0.50	0.43
# Issuers	22,344	21,288	21,626	1,182
No. of obs.	22,344	21,288	21,626	1,182

FIGURE 5

Annual Trends in the Percentage of Non-Accredited Investors to Total Investors

Figure 5 shows the yearly percentage of non-accredited investors out of all investors in first-time offerings by startups that filed a Form D between 2010 and 2019. The percentage is split into two groups: *other offerings* and *unregistered broker* offerings. Each year is marked on the *x*-axis. The *y*-axis shows the percentage of non-accredited investors. The line for other offerings is marked with X, and the line for unregistered broker is in marked with diamonds.



failure, while Table A9 in the Supplementary Material reports the result for success. Note that the probability of firm failure does not increase with the proportion of non-accredited investors in finder deals. However, there is an observable decrease in the probability of success in registered-broker offerings involving non-accredited investors.

Comparing Technology to Non-Technology Issuers. To compare issuers that are as similar as possible, all my tests have rich fixed effects, so one cannot tell the extent to which the effects vary by industry. Given that close to 40% of all issuers are in the technology sector, I explore to what extent the results for tech issuers vary from those for other issuers. Panels A and B of Table A11 in the Supplementary Material split the sample into tech firms (Panel A) and other startups (Panel B). Interestingly, registered brokers appear less effective in screening technology firms than firms in other sectors. This could be because the uncertainties and complexities inherent in technology startups make screening these startups more challenging.

4. Robustness

Of course, a chief concern throughout is that, given my crude controls, issuers might not be similar enough to compare. Since the specifications include state by year by industry fixed effects, identification comes from zip code differences within a state-year-industry. Still, certain types of firms and intermediaries may be more likely or less likely to appear in locations with various characteristics. In the next two subsections, I test whether there are no appreciable differences in estimated coefficients between major city zip codes and other areas (split by population) and whether removing the venture-backed firms from the sample to check results among non-venture funded firms only (as a control for the presence of VCs in a linear specification) is a viable approach.

Removing Venture-Backed Issuers. Table A10 in the Supplementary Material reports the results excluding venture-backed startups. Even after removing all venture-backed startups from the sample, the relationship between the type of intermediation and firm outcomes remains consistent.

Excluding Startups in Rural Areas. Panels A and B of Table A12 in the Supplementary Material report that my conclusions about the relationship between the type of intermediation and firm outcomes remain consistent even when considering only urban startups. To exclude rural startups, I downloaded the 2010 UR1US file from the Census Bureau at the zip code tabulation area level to calculate the fraction of people in each area residing in a rural region. I then excluded all offerings from areas with non-zero rural population fractions using a zip code tabulation area to postal service zip code crosswalk (https://udsmapper.org/zip-code-to-zcta-crosswalk/). This outcome should alleviate concerns about the influence of zip code-specific characteristics on my findings.

5. Does the Association Between Issuer–Broker Matching and Post-Funding-Outcomes Reflect Selection or Treatment?

Recall from the discussion in Section V.A that, after controlling for offering proceeds and the type of investor participating in the offering (treatment), I do not expect brokers to have a significant causal effect on issuer outcomes (i.e., conditional on offering proceeds and investor type); most of the correlation between issuer–broker matching and outcomes should be driven by selection. To empirically verify the validity of this assumption, I use the presence of brokers in the issuer's zip code as an instrument for whether the issuer matches with a broker and employ I(ACQUISITION_OR_IPO), I(RAISED_FUTURE_ROUND), and

TABLE 10

Causal Effect of Brokered Offerings on Exits: IV Regression Estimates

Table 10 presents coefficients from 2-stage least squares regressions (2SLS). In Panel A, the dependent variable, I(ACQUISITION_OR_IPO), is an indicator that equals 1 if the issuer exits via an IPO or an Acquisition in the years following the offering, and 0 otherwise. In Panel B, the dependent variable, I(RAISED_FUTURE_ROUND), is an indicator that equals 1 if the issuer files another Form D 3 or more years following its first filing, and 0 otherwise. In Panel C, the dependent variable, I(INACTIVE), is an indicator that equals 1 if an issuer is no longer registered with state securities regulators where it operates, and 0 otherwise. The key independent variables in columns 1–4 are indicators for how the offering was placed. In column 1, I(USED_BROKER) is an indicator for offerings that involve any broker. In columns 2 and 4, the same indicator variable equals 1 only for offerings that involve an unregistered broker. In column 3, the indicator equals 1 for offerings that involve a registered broker. The instrument in column 1 is an indicator that equals 1 if an issuer has an unregistered or a registered broker in its zip code. In columns 2 and 4, the instrument is an indicator that equals 1 if the issuer has an unregistered broker in its zip code. In column 3, the instrument is an indicator that equals 1 if the issuer has a registered broker in its zip code. The number of observations varies across columns depending on the two placement methods I am comparing. For example, the number of observations in column 2 is lower because it excludes registered-broker offerings. I cluster standard errors, shown in parentheses, by issuer and represent significance according to $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$.

Panel A. Exit via IPO/Acquisition

	Dependent Variable: I(ACQUISITION_OR_IPO)		
Used Broker = 1 Used Broker = 0	Any Broker Direct	Unregistered Direct	Registered Direct
	1	2	3
I(USED_BROKER)	−0.250 (0.237)	−0.629 (0.482)	−0.046 (0.376)
ln(PROCEEDS_RAISED)	0.045*** (0.005)	0.041*** (0.007)	0.049*** (0.003)
ln(#_EXECUTIVES)	0.060*** (0.004)	0.053*** (0.005)	0.059*** (0.006)
I(HAS_PATENT)	0.061*** (0.010)	0.056*** (0.011)	0.060*** (0.010)
I(OLDER_THAN_5)	0.053*** (0.012)	0.056*** (0.012)	0.049*** (0.012)
I(PROMOTER)	−0.001 (0.022)	−0.003 (0.016)	−0.017 (0.030)
I(VC_INVESTMENT)	0.208*** (0.010)	0.209*** (0.010)	0.208*** (0.010)
%_HIGH_INCOME	−0.004 (0.004)	−0.003 (0.004)	−0.003 (0.004)
I(VC_ZIP)	0.044*** (0.007)	0.041*** (0.008)	0.047*** (0.007)
State × year × industry FE?	Yes	Yes	Yes
Adj. R^2	−0.04	−0.07	−0.01
# Issuers	22,344	21,288	21,626
No. of obs.	22,344	21,288	21,626
Cragg–Donald Wald *F*	49.90	29.20	30.81

Panel B. Raised New Funding

	Dependent Variable: I(RAISED_FUTURE_ROUND)		
Used Broker = 1 Used Broker = 0	Any Broker Direct	Unregistered Direct	Registered Direct
	1	2	3
I(USED_BROKER)	−0.114 (0.209)	−0.034 (0.420)	−0.206 (0.337)
ln(PROCEEDS_RAISED)	0.022*** (0.004)	0.024*** (0.006)	0.022*** (0.003)
ln(#_EXECUTIVES)	0.017*** (0.003)	0.016*** (0.004)	0.019*** (0.005)
I(HAS_PATENT)	0.042*** (0.010)	0.043*** (0.010)	0.043*** (0.010)
I(OLDER_THAN_5)	−0.004 (0.011)	−0.011 (0.011)	−0.005 (0.011)
I(PROMOTER)	−0.014 (0.019)	−0.020 (0.014)	−0.006 (0.027)
I(VC_INVESTMENT)	0.070*** (0.009)	0.069*** (0.009)	0.069*** (0.009)
%_HIGH_INCOME	−0.003 (0.003)	−0.004 (0.004)	−0.004 (0.003)
I(VC_ZIP)	0.007 (0.006)	0.008 (0.007)	0.008 (0.006)
State × year × industry FE?	Yes	Yes	Yes
Adj. R^2	−0.10	−0.09	−0.11
# Issuers	22,344	21,288	21,626
No. of obs.	22,344	21,288	21,626
Cragg–Donald Wald *F*	49.90	29.20	30.81

(continued on next page)

TABLE 10 (continued)

Causal Effect of Brokered Offerings on Exits: IV Regression Estimates

Panel C. Closed/Inactive

	Dependent Variable: I(INACTIVE)		
	1	2	3
I(USED_BROKER)	0.156	0.410	−0.029
	(0.160)	(0.332)	(0.261)
ln(PROCEEDS_RAISED)	−0.015***	−0.012***	−0.017***
	(0.003)	(0.004)	(0.003)
ln(#_EXECUTIVES)	−0.013***	−0.010***	−0.012***
	(0.003)	(0.003)	(0.004)
I(HAS_PATENT)	−0.016**	−0.014**	−0.017***
	(0.006)	(0.007)	(0.006)
I(OLDER_THAN_5)	−0.012	−0.014*	−0.005
	(0.008)	(0.008)	(0.008)
I(PROMOTER)	−0.009	−0.002	0.009
	(0.016)	(0.013)	(0.022)
I(VC_INVESTMENT)	−0.052***	−0.053***	−0.053***
	(0.007)	(0.007)	(0.007)
%_HIGH_INCOME	0.003	0.002	0.001
	(0.003)	(0.003)	(0.003)
I(VC_ZIP)	−0.010**	−0.007	−0.011**
	(0.005)	(0.005)	(0.005)
State × year × industry FE?	Yes	Yes	Yes
Adj. R^2	−0.10	−0.14	−0.10
# Issuers	22,344	21,288	21,626
No. of obs.	22,344	21,288	21,626
Cragg–Donald Wald *F*	50.39	30.62	29.60

I(INACTIVE) as outcomes to re-estimate equation (4). If the selection effect drives the association, then the use of the instrument, which isolates the treatment effect, should remove any association.

Panels A–C of Table 10 present IV estimates for the treatment effect of issuer–broker matching on I(ACQUISITION_OR_IPO), I(RAISED_FUTURE_ROUND), and I(INACTIVE), respectively. In contrast to the positive treatment effect of broker use on fundraising, we see no effect of broker use on outcomes when we instrument for issuer–broker matching. This is consistent with my hypothesis that issuer quality at the time of the offering largely drives the effects in Panels A–C of Table 9.

Overall, the results in this section suggest that selection effects at the time of the offering largely drive the differences in outcomes between brokered and direct offerings. As we see from Table 9, offerings involving VCs are significantly more likely to exit. Thus, we expect the pool of issuers approaching brokers to be of lower quality, as these issuers are likely to have been rejected by VCs.[27] The evidence in this section is consistent with registered brokers (but not unregistered brokers) partly undoing the selection effect of a VC-skimmed issuer pool, leading to worse post-funding outcomes for issuers in unregistered-broker offerings.

[27]Recall that VCs seldom invest in brokered offerings and that issuers likely prefer VC investment given the VCs' track record of helping issuers successfully exit.

VI. Conclusion

This study characterizes the types of issuers, investors, and brokers that participate in brokered early-stage offerings and explores which factors drive issuer–broker matching. I show that, while one in three offerings in the private funding market involves a broker, brokers on a size-weighted basis intermediate about 1 in 10 transactions for first-time issuers in the market for early-stage funding. About 60% of these brokers are registered with FINRA or the SEC, while 40% are unregistered. Of the unregistered brokers, 70% were formerly registered.

Consistent with search costs driving issuer–broker matching, I find that the likelihood of matching is higher when issuers are far from investors, when the issuer's network is smaller, and when the issuer is close to the broker. These findings hold irrespective of the broker's registration status. I also show that VCs seldom participate in brokered offerings and that unregistered-broker offerings are more likely to place with non-accredited investors. A possible explanation for the latter finding is that registered brokers try to avoid the costs of investor complaints post offering. Using the local presence of brokers as an instrument, I show that brokers cause issuers to raise more funding and that selection effects at the time of the offering drive the association between issuer–broker matching and issuer outcomes. Overall, my findings are consistent with a model in which unregistered brokers mainly reduce search costs, but registered brokers reduce search costs *and* screen issuers.

My results have policy implications, given the recent changes and contemplated future changes to startup fundraising in private markets. The SEC recently proposed expanding the role of unregistered brokers by eliminating ambiguity about when these brokers are allowed to intermediate private offerings (https://www.sec.gov/news/press-release/2020-248). Regulators might consider carefully enforcing rules on the types of investors participating in unregistered-broker offerings, as investors in these offerings might not understand the brokers' role or the adverse selection that is inherent in these offerings.

Supplementary Material

To view supplementary material for this article, please visit http://doi.org/10.1017/S0022109023001412.

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