The Entrepreneurial Finance of Fintech Firms and the Effect of Investments in Fintech Startups on the Performance of Corporate Investors

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Abstract

We analyze the effect of corporate investments in fintech startups on startup performance and on the future performance of investing firms. Corporate investment in fintech startups is associated with greater successful exit likelihood; more and higher quality innovation; and higher inflow of high-quality inventors. We establish causality using an IV analysis. A stacked difference-in-differences analysis shows that such investments enhance the product market performance and equity market valuation of corporate investors belonging to the financial services sector, but not those in the non-financial sector. We show that formation of strategic alliances between investors and fintech startups drive these performance improvements.

Keywords: FinTech startups; Corporate Investors; Synergy; Performance

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1 Introduction

Financial Technology or "fintech" is one of the fastest growing sectors of the last decade. Chemmanur, Imerman, Rajaiya, and Yu (2020) defines fintech as the use of the latest technology in solving problems in financial services, often relating to customer experience (CX) and insight.[1] In 2010, the total amount of funding raised by fintech firms was just over one billion dollars, while in 2018, total funding raised by fintech firms was around 40 billion dollars, highlighting the rapid growth in funding of this industry (Chemmanur, Imerman, Rajaiya, and Yu, 2020). In particular, we are witnessing a greater degree of investment in fintech firms by established publicly-listed firms in the US. In 2018 alone, US banks invested in 45 funding rounds of fintech firms, suggesting that banks are beginning to hedge their future by participating in such strategic deals.[2] Other than banks, non-financial services firms like Amazon and IBM have also invested in fintech firms. For example, Amazon has invested in the payment company, Bill Me Later, which was later acquired by PayPal in 2008.

The above investment activities of US firms lead to several interesting and important research questions, which we address in this paper. The first set of research questions deals with the motivation of fintech startups to accept investment from corporate investors and the effect of such investments on the future performance of these startups. The motivation of fintech startups to accept investments from corporate investors is an important question, since these fintech startups often compete with corporate investors in the product market. It is possible that large public firms may invest in startups, in order to obtain their data, learn more about their business strategies and products, and launch products competing with startups. For example, Amazon has invested in many startups and launched competing products.[3] Banks also compete directly with fintech firms in the product market, but also

[1] Thakor (2020) defines fintech as using technology to provide new and improved financial services.

[2] Please refer to the following practitioner-oriented article on CB Insights for more details: https://interactives.cbinsights.com/us-banks-fintech-investments/.

[3] Please refer to the following article on the Wall Street Journal for more details: https://www.wsj.com/articles/amazon-tech-startup-echo-bezos-alexa-investment-fund-11595520249.

provide key infrastructure to such firms.[4] It is thus important to understand why startups accept investments from their larger competitors. Further, what impact does such investment have on the future performance of fintech startups? In particular, we will analyze the effect of corporate investments in fintech startups on the likelihood of their future successful exit (controlling for the effect of traditional startup investors such as venture capitalists). We will also analyze the effect of corporate investments on the innovation output of fintech startups and on the net inflow of inventors into these fintech startups. We will address the above research questions in the first part of our empirical analyses.

The second set of research questions that we address in this paper is the mirror image of our first set of research questions: What is the main motivation of US public firms to invest in fintech startups? Does investment in fintech startups help US public firms improve their product market performance or is it an empire-building exercise by managers of such firms (Jensen, 1986)? What are the determinants of such investments? Do such investments in fintech startups help corporate investors improve their performance in the product market (e.g., sales and profitability) or in the financial market (e.g., financial market valuation)? Further, are the effects of such investments different for corporate investors in the financial services sector (which may have greater synergies with fintech startups such as Paypal) and for those outside the financial services sector (which are unlikely to have high synergies with fintech startups such as Amazon)?[5] In this context, we define corporate investors as US firms (publicly-listed or private) which make investments in fintech startups, and whose primary line of business is other than investment, i.e., they are not investors such as venture capitalists or investment funds.[6]

We focus on the effect of corporate investment in fintech startups since the economic

[4]Please refer to the following article on the Wall Street Journal for more details: https://www.wsj.com/articles/banks-and-fintech-firms-relationship-status-its-complicated-1447842603.

[5]Amazon is primarily involved in business activities like e-commerce, cloud computing, and other fields. It has invested directly in many startups including fintech firms.

[6]Given that many financial services firms such as banks or insurance companies do not have investment arms such as corporate venture capitalists (CVCs), for consistency, we choose to focus on direct investment by corporate investors in fintech startups. We also control for CVC investment in our analyses.

relationship between corporate investors and fintech startups is fundamentally different from that between corporate investors and their investee firms in other industries. In particular, fintech startups compete contemporaneously with their corporate investors (at least with those corporate investors in the financial services sector).[7] It is interesting to investigate whether fintech startups benefit from such corporate investment or whether it is only the corporate investors that gain from investing in fintech startups (or neither corporate investors nor fintech startups benefit from such investment). In summary, due to the unique economic relationship between fintech startups and their corporate investors, we restrict our focus in this paper to corporate investment in fintech startups.[8]

We obtain our data on fintech startups from Crunchbase database, which provides funding information on startups. We focus on startups in the blockchain, insurance technology, and other financial technology sectors such as business lending, consumer lending, crowdfunding, and other digital firms in the financial sector. We verify the accuracy of our dataset using Venture Scanner and later match the verified dataset with the VentureXpert dataset. We use the National Establishment Time Series (NETS) database to obtain information on sales and employment of private firms. We use PatentsView to obtain data on patents filed at USPTO and on the identity of inventors who filed the patents for their firms. We also identify the corporate investors in fintech startups from the Crunchbase database. We focus on publicly-listed corporate investors for our second set of research questions and use the Compustat dataset to analyze their performance. For some of our analyses, we categorize such corporate investors as financial services versus non-financial services firms.

The results of our empirical analyses can be summarized as follows. We first discuss the results of our analyses addressing our first set of research questions, where we focus on the

[7]Please refer to the following WSJ article that discusses the competition between fintech startups and banks: https://www.wsj.com/articles/fintech-competition-mainstream-banks-11642714528.

[8]We do not want to contaminate our analyses by including corporate investments in startups in other industries since their economic relationship may be very different. For example, established firms in the pharmaceutical and manufacturing industries often invest in startups in their respective industries. However, such established firms in these industries do not compete in the short-run with their investee firms: the investor and investee firms may become competitors only in the long-run.

effect of corporate investment on the future performance of fintech startups. First, we show that the presence of corporate investors in various investment rounds of fintech startups is significantly and positively associated with a greater probability of successful exits of such startups, as measured by IPO or acquisition. The presence of a corporate investor in at least one of the investment rounds leads to a 6.3 percentage point increase in the probability of successful exits of fintech startups. Second, we show that corporate investments have a positive and significant effect on the innovation output of fintech startups, as measured by either the quantity (count) or the quality (citations) of patents obtained by fintech startups as our proxies for innovation output. In economic terms, the presence of a corporate investor in an investment round leads to a 2.3 percentage point increase in the quantity of patents produced by firms in the third year after the investment round.

Third, we show that corporate investors help fintech startups to attract human capital (talent) in the form of inventors to their firms, and also help to attract top-tier talent (highly-cited inventors). Economically, the presence of a corporate investor in an investment round leads to a 10.6 percentage point increase in the net inflow of inventors into fintech startups in the third year after the investment round. We control for age, sales, employee count, number of investors, investment amount, industry, CVC investment, and the fraction of VC-investment in firms. Overall, our results suggest that, even after controlling for important variables such as venture capital (VC) investment and CVC investment known to affect the performance of startup firms, corporate investments in fintech startups enhance their future performance as measured by the probability of future successful exit and the future innovation output of these firms, as well as their ability to attract high-quality inventors.

Our OLS results may be driven by selection and/or value-addition by corporate investors. Given that it is useful to understand (distinguish between) whether our results are driven by selection or value addition, we control for the selection effect by using instrumental variable (IV) analyses to estimate the effect of value-addition by corporate investors. It is likely that corporate investors invest in fintech startups to learn about products and services of

fintech startups which may help the corporate investors in their businesses.[9] One channel to get such information is by recruiting top employees from such startups, which may become difficult for competing corporate investors due to non-compete laws. In that scenario such corporate investors are more likely to invest in fintech startups directly to learn more about their businesses. We use the exogenous increase in the enforceability of non-compete laws in the investment year and in the headquarter state of the fintech startup as our instrument for corporate investment. We conjecture that an increase in the enforceability of non-compete laws in fintech startups' headquarter state will make it difficult for corporate investors to recruit top employees from such startups. The corporate investors, in turn, will be more likely to directly invest in such startups to learn about their businesses. This effect of non-compete laws will be stronger especially if corporate investors are direct competitors of fintech startups or if they both are in the same product market space.

We show empirically that an increase in enforceability is strongly positively correlated with the propensity of the investment in fintech startups by corporate investors, which shows the relevance of our instrument. Prior research argues that changes in non-compete laws are exogenous, are unrelated to local macroeconomic conditions, and are not implemented to help startups, e.g., Kini, Williams, and Yin (2021) and Ewens and Marx (2018). It is thus unlikely that our instrument, increased enforceability of non-compete laws, affects the pre-investment quality of fintech startups. It is also unlikely that our instrument is correlated with unobservable measures of firm quality. Our IV analyses show that even after controlling for the selection effect, corporate investment adds value to fintech startups, thereby leading to a higher likelihood of successful exit of fintech startups, greater innovation output, and a greater inflow of inventors into fintech startups.

Next, we show that synergy plays an important role when corporate investors invest in fintech startups. Using our IV analyses, we show that the investment by corporate investors

[9]We will explore the channels through which such investments in fintech startups help to improve the performance of investing firms in the second part of the paper, where we address our second set of research questions.

in the financial services sector causally leads to greater likelihood of successful exits, greater innovation output, and greater inventor inflow into fintech startups. However, investment by corporate investors in the non-financial services sector has no effect on the above outcomes of fintech startups. These results suggest that the increase in performance of fintech startups is due to value-addition by corporate investors and further such value-addition is facilitated due to synergy between fintech startups and the corporate investors in the financial services sector.

We now summarize our empirical tests and results addressing our second set of research questions, namely, the determinants of corporate investment in fintech startups and the effect of such investments on the future performance of these corporate investors themselves. We first analyze the determinants of investments by corporate investors in fintech startups. We consider a sample of publicly-listed corporate investors (treated firms) that have made investments in fintech startups. Out of the total number of public corporate investors in our sample, roughly half are financial services firms while the remainder are non-financial services firms. For each corporate investor, we form a group of control firms in the same 3-digit SIC code based on nearest matches using propensity score matching, which have not invested in a fintech startup. We match firms based on their size, age, and R&D expenditure. We use the above sample to analyze the determinants of investments in fintech startups by corporate investors. We show that firms that experience a drop in sales tend to make investments in fintech startups in subsequent quarters.

We next investigate the effect of investment in fintech startups on the performance of corporate investors. We use a stacked difference-in-differences (DiD) framework. We conduct our analysis for corporate investors in the financial services and non-financial services sectors separately. First, we show that corporate investors in the financial services sector that made investments in fintech startups experience an increase in their profitability and market share compared to control firms in the same three-digit industry code that did not invest in fintech startups. Economically, we find that such corporate investors experience an

average increase of 50% in their profitability and an average increase of 9.1% in their market share, respectively. We, however, do not find any such effect for corporate investors in the non-financial services sector. These results suggest that corporate investors in the financial services sector are better equipped to identify and benefit from synergy opportunities generated through their investments in fintech startups.

Second, we show that corporate investors in the financial services sector that made investments in fintech startups experience an increase in their market valuation (as measured by Tobin's Q) compared to control firms in the same industry that did not invest in fintech startups. Economically, we find that such corporate investors experience an average increase of 18.3% in their market valuation. Again, we do not find such an effect for corporate investors in the non-financial services sector. This result suggests that stock market investors infer that non-financial services firms are unable to generate synergy benefits through their investments in fintech startups. The results of our analyses of product market and operating performance of corporate investors investing in fintech startups suggest that the above inference by the stock market is correct.

We provide support for the above results by conducting a dynamic DiD analysis to study the time trends of the effect of investments in fintech startups by corporate investors. We focus on corporate investors in the financial services sector, since only they experience an increase in their performance and valuation after their investments in fintech startups. We find that prior to their investment in fintech startups, corporate investors in the financial services sector and control firms do not have any differences in their performance and their market valuation. However, after making investments in fintech startups, corporate investors experience an increase in their performance and market valuation, compared to control firms. These results suggest that there is no pre-trend in terms of performance and market valuation for corporate investors (compared to control firms) in the financial services sector, which further supports a synergy channel underlying these performance and value improvement.

We now dig deeper into the potential channels underlying our findings that corporate in-

vestors in the financial services sector investing in fintech startups achieve enhanced product-market performance and equity market valuation. We conjecture that the benefits of synergies between corporate investors and fintech startups may occur through different channels. One possible channel is the formation of a strategic alliance between corporate investors and fintech startups after their investment. Another possible channel is through corporate investors launching new products after learning from fintech startups as a result of their investment. We investigate both of the above channels.

First, we consider the strategic alliance channel. We hand-collect data on whether a corporate investment has led to a strategic alliance based on media coverage. In particular, we manually check, whether subsequent to its investment in a fintech startup, a corporate investor has formed a strategic alliance with that fintech startup. We then conduct an analysis of the benefits of formation of strategic alliances between corporate investors and fintech startups: we analyze the benefits of such alliance formations for corporate investors in the financial services sector and in the non-financial services sector separately. We find that corporate investors in the financial services sector that have established strategic alliances with fintech startups experience an increase in product market performance (profitability and market share) and in equity market valuation (Tobin's Q) compared to investors in the same sector which do not form such alliances. Economically, such corporate investors experience an average increase of 60% in their profitability, an average increase of 11.8% in their market share, and an average increase of 27.9% in their market valuation, respectively. In contrast, we do not find such an improvement in product market performance or stock market valuation for corporate investors in the non-financial services sector (regardless of whether or not they have formed a strategic alliance with fintech startups in which they have invested). This evidence suggests that strategic alliance formation between fintech startups and corporate investors is an important channel through which corporate investors in the financial services sector realize the benefits of their synergies with fintech startups, thereby improving their product and financial market performance.

We also investigate the second potential channel through which investments in fintech startups benefit corporate investors. We gather information on new product introduction by corporate investors from media coverage data in Ravenpack. We also use trademark data from the USPTO database as an alternative measure of new product introduction. The results of our analysis suggest that corporate investors (whether in the financial services sector or in the non-financial services sector) that make investments in fintech startups do not launch more new products than control firms (which do not make such investments). Thus, we do not find any evidence consistent with the notion that a channel through which corporate investors benefit from their investment in fintech startups is through launching new products after learning about such products from fintech startups.

The rest of the paper is organized as follows. Section 2 discusses how our paper is related to the existing literature as well as our contribution to the literature. Section 3 describes our data and sample selection procedures. Section 4 presents our empirical analyses on the effect of corporate investments on the future performance of fintech startups. Section 5 presents our empirical analyses on the effect of corporate investment in fintech startups on the performance of corporate investors themselves. Section 6 explores two potential channels, namely, strategic alliance formation and new product-introduction, through which corporate investment in fintech startups helps to improve the performance of corporate investors themselves. Section 7 presents the results of our cross-sectional analyses. Section 8 concludes the paper.

2 Related Literature and Contribution

This study contributes to several strands in the literature. First, we contribute to the growing literature on fintech firms. A number of papers have analyzed peer-to-peer lending, e.g., Duarte, Siegel, and Young (2012); Tang (2019); Vallee and Zeng (2019); Hertzberg, Liberman, and Paravisini (2018), among others. There are also several other papers comparing fintech lenders and banks, e.g., Buchak, Matvos, Piskorski, and Seru (2018) and Fuster, Plosser, Schnabl, and Vickery (2019). Gopal and Schnabl (2022) show that fintech lenders

are a major source of credit for small businesses especially after the 2008 financial crisis. There has also been a significant strand of literature analyzing the application of blockchain technology to finance, e.g., Biais, Bisiere, Bouvard, and Casamatta (2019); Chiu and Koeppl (2019); Cong and He (2019); Foley, Karlsen, and Putniņš (2019); Griffin and Shams (2020). There are also some literature on the disruptive role of FinTech in investments and wealth management, e.g., D'Acunto, Prabhala, and Rossi (2019) and Rossi and Utkus (2020). In contrast to the existing literature, this is the first paper to analyse the role of investments by corporate investors on fintech startup firms' performance and is also the first to study the effect of investments in fintech startups on the product and financial market performance of corporate investors themselves.

Second, we also contribute to the broader entrepreneurial finance literature. Most of these papers study the impact of VCs (either independent venture capital (IVCs) or corporate venture capital (CVCs) or both) investment on startups' performance, e.g., Kortum and Lerner (2001); Tian and Wang (2014); Chemmanur, Loutskina, and Tian (2014); Ewens, Nanda, and Rhodes-Kropf (2018); Ma (2020), among others. In particular, Chemmanur, Loutskina, and Tian (2014) show that CVC-backed firms are more innovative, riskier, and generates less profit than IVC-backed firms, while Ma (2020) show that corporations set up their CVC programs when they experience a decline in their innovation output, and terminate their CVC programs once their (parent firms') innovation output improves. In contrast to this literature, we focus on the effect of direct investments by corporate investors in fintech startups on the performance of these startups.[10] In addition, we also control for CVC investment and show that direct corporate investment benefits fintech startups

[10]Corporate investments we study here are different from CVC investments since our focus is on direct investments in startups and not on investments made through their investment arms. CVCs are usually standalone subsidiaries of corporations and constitute the investment arms of corporations: e.g., Intel Capital. Thus, even though CVCs are subsidiaries of corporations, they may still exercise a degree of independence in their investment decision, and parent firms may not exercise total control, which they do in the case of their direct investment. Please refer to this article on the GeekWire website which suggests that Microsoft's Venture Capital arm, M12, shows a degree of independence in its investment decisions: https://www.geekwire.com/2019/microsofts-m12-lays-investment-strategy-aims-make-corporate-vc-community-founder-friendly/.

over and above the benefits of VC and CVC investments. We also show that corporate investment in fintech startups is associated with a higher probability of successful exit of these fintech startups, more and higher quality innovation output, and a greater net-inflow of inventors into these startups. Further, we also show that their investments in fintech startups benefit corporate investors in the financial services sector themselves, but only if they have established strategic alliances with such startups.

Our paper is also related, albeit distantly, to the literature on minority acquisitions. For example, Ouimet (2013) studies the motivation for minority acquisitions (less than 50% acquisition of target shares) and show that minority acquisitions are more likely when acquirers do not want to dilute the incentives of target's management team. Nain and Wang (2018) show that minority acquisitions lead to lower product market competition. In contrast to the above papers, the focus of our paper is on the motivation of corporate investors to invest directly in fintech startups and the effect of such investment on the performance of both corporate investors and fintech startups.[11]

3 Data and Variables

3.1 Data Sources and Sample Selection

3.1.1 FinTech Startups

Chemmanur, Imerman, Rajaiya, and Yu (2020) defines fintech as the use of the latest technology in solving problems in financial services, often relating to customer experience (CX) and insight. Thakor (2020) defines fintech as using technology to provide new and improved financial services. However, it may be argued that traditional intermediaries like banks may also use latest technology to improve their financial products and services, thereby enhancing consumer experience. In this paper, we define fintech startups as those which are non-traditional intermediaries, and which provide financial services and products like

[11]Both the M&A literature and the literature on minority acquisitions do not typically focus on startups. Thus, an important contribution of this paper is to study the effect of direct corporate investment on the future success of fintech startups.

peer-to-peer lending, robo-advisory, insurance technology, and others to their customers.

Our data on fintech startups come from various sources. The primary data source for our paper is Crunchbase, a leading open-source database collecting profiles of start-ups and information on their financing.[12] We identify startups from Crunchbase which are in the fintech sector such as blockchain technology, insurance, business lending, digital assets, peer to peer lending and other categories of fintech sector following Thakor (2020). We also verify the coverage of this dataset with Venture Scanner, which also contains data on such fintech startups. Similar to Crunchbase, Venture Scanner also sourced information from a wide variety of application programming interfaces (APIs) (including the API of AngelList), web scraping of media articles, among others (Chemmanur, Imerman, Rajaiya, and Yu, 2020). In this paper, we focus on startup firms in the fintech sector from 2000 to 2017. Specifically, for each fintech startup, we obtain information on its founding date, location, the dates of investments across funding rounds, names of investors involved in the funding rounds, and the aggregate amount of investments across all investors per funding round. The initial sample consists of around 1300 fintech startups. We obtain information on VC investments in fintech startups from VentureXpert.

We obtain data on employment and sales for entrepreneurial firms from the National Establishment Time-Series (NETS), which is a longitudinal database provided by Dun & Bradstreet and is widely used in research on private firms.[13] After matching firms covered in CrunchBase, VentureXpert, and the NETS databases, we are left with a final sample of 728 fintech startups.

We use patent-based metrics to measure the innovation output of fintech startups and obtain patent information from the PatentsView database. PatentsView contains detailed information on patents filed by (and eventually granted to) firms, including application dates, grant dates, technology classes, citations received by a patent, as well as the name,

[12]Several studies have used data from CrunchBase: some recent examples include Xu (2019) and Yu (2020).

[13]See Neumark, Wall, and Zhang (2010) for a more detailed description of the NETS dataset.

unique identification number, and the location of the firms filing patents. Following Bernstein, Giroud, and Townsend (2016), we use a fuzzy name matching algorithm to merge the PatentsView dataset to our matchec Crunchbase dataset. Information on inventors also comes from the PatentView database. Specifically, we retrieve information on inventors who have filed patents on the behalf of their firms and track the movement of investors across firms, making use of the name and unique identification number of each inventor provided in the PatentView database.

3.1.2 Corporate Investors

We obtain the names of investors who make investment in the fintech startups from the Crunchbase database. We manually identify the category of investors by searching their websites as well as news articles pertaining to such investors, and collect their investor-category classifications from Crunchbase. We define corporate investors as US firms (either public or private) that make direct investments in startups (and not through their investment arm) and that do not have investment as their primary line of business. For example, Amazon is categorized as a corporate investor, because it has made direct investments in fintech startup such as Bill Me Later and its primary businesses include e-commerce, cloud computing, and other fields (but not investment). On the contrary, venture capitalists (VCs) like Andreessen Horowitz or Bessemer Venture Partners are are not considered as corporate investors, because identifying and making investment in startups is their core business.

Note that corporate investors are also different from corporate venture capitalists (CVCs), which are the venture arms of corporations (e.g., Google Ventures and Intel Capital). CVCs are typically standalone subsidiaries of corporations and often maintain a certain degree of freedom when making investment decisions, in which case the parent corporation may not exercise total control of the investment. Corporate investors, however, make direct investments in startups (i.e., not through CVCs) and exercise total control of the investment.[14]

[14]For example, American Express has made a direct investment in Stripe, which is fast-growing payment company. Therefore, American Express is a considered as a corporate investor. Note, however, American Express also has a CVC arm named "American Express Ventures." In this case, the investments made

In our study, we focus on the role of corporate investors in investments in fintech startups. We merge investor names on the Crunchbase dataset to Compustat using the name matching technique employed in Bernstein, Giroud, and Townsend (2016). We are able to identify 66 publicly-listed corporate investors that have made an investment in a fintech startup by 2017, out of which 32 firms are in the financial services sector (i.e., with a 4-digit SIC code between 6000 to 6999). We use Compustat to obtain accounting information of publicly-listed fintech investors from 1995 to 2020 at the quarterly frequency. We track information on corporate investors stating from 1995 so as to have a five year period prior to their investment in fintech startups, given that our fintech startup sample is from 2000 onwards.

3.2 Measures of Innovation Output

We measure the extent of the innovation output by fintech startups using the quantity and quality of successful patents filed by them in the years after the first round of financing. We measure the quantity of innovation using the natural logarithm of one plus the total number of technology class-adjusted patents applied by (and eventually granted to) a firm within one year, two years, and three years after a round of financing. To measure the quality of innovation, we calculate the natural logarithm of one plus the total number of technology class-adjusted forward citations of the patents which were applied by a firm within one year, two years, and three years after a round of financing.

Patent data are subject to two types of truncation problems. First, patents are included in the dataset only after they were granted, and on average, there is a two to three year lag between patent application and patent grant. Following Seru (2014), we address this problem by dividing each patent of a firm in a filing year by the mean number of patents in the same 3-digit technology class filed by all firms in the same year. The second type of truncation problem pertains to the citation count. For a given patent, we count the total number of forward citations received from the grant year until 2019. Patents tend to receive

directly by American Express are considered as corporate investments, while those made through American Express Ventures are not.

citations over a long period of time, but not much during the initial years after their grant. As a result, citation counts of patents toward the end of our sample period may be downward biased. We address this bias by scaling the citations of a given patent by the total number of citations received by all patents filed in the same 3-digit technology class in that year (Seru (2014)). Thus, we use class-adjusted (i.e., cohort-adjusted) measures of patents and citations as our measures of innovation output.

3.3 Measures of Inventor Mobility

Following Marx, Strumsky, and Fleming (2009), we define mobile inventors as those who have filed successive patents for at least two different firms. For the above purpose, we restrict our focus to inventors who have filed at least two patents in the PatentsView database, which provides information on inventors filing patents for firms and offers a unique identification number to track each inventor. We compute the inventor mobility at the annual frequency for fintech startups.

We construct our inventor mobility measures following Chemmanur, Kong, Krishnan, and Yu (2019). For a given firm, an inventor's move-in year is the year when she filed her first patent in this firm (or when she files her first patent at the firm after moving our from a different firm); her move-out year is the year when she filed her first patent in a different firm. In case if the last patent filed by the inventor is for the same firm, we assume that she remains in the firm till the end of our sample period. Once we identify each mobile inventor's move-in and move-out year, we aggregate the number of mobile inventors that move in and move out at the firm-year level to obtain the total inflows and outflows of mobile inventors for a given firm in a year. We measure the net-inflow of inventors by computing the difference between the natural logarithm of one plus the inflow and the natural logarithm of one plus the outflow of inventors per year at fintech startups. We also create additional measures of net-inflow of inventors over the two-year and three-year period.

We also categorize inventors into different groups based on their track record of patent citations so as to analyze the mobility of high-performing inventors. We classify inventors as

"superstar inventors", if they are in the top 10 percent based on the number of class-adjusted citations received over the patents filed by them. Note that this is a cumulative measure, which takes into account the class-adjusted citations on patents filed by inventors over time. For fintech startups, the net-inflow of inventors are measured at the yearly level. Specifically, we compute the net-inflow as the difference between the natural logarithm of one plus the inflow and the natural logarithm of one plus the outflow of superstar inventors for a fintech firm in a given year. We also create additional measures of net-inflow of superstar inventors over the two-year and three-year period.

3.4 Other variables

Following the existing literature, we control for the characteristics of both fintech startups and corporate investors. We control for age, sales, employment, investment amount, number of investors, CVC investment indicator, and the fraction of VC-investment in fintech startups. We obtain corporate inventors' financial information from Compustat and control for a number of firm characteristics that could affect firms' performance measures, including firm size (the natural logarithm of the book value of assets), age of the firm, and R&D expenditure (the ratio of R&D expenses over the book value of assets). We construct standard measures of firm performance, including profitability or ROA (the ratio of operating expenses over the book value of assets) and market share (the ratio of sales made by a firm in a quarter scaled by the sum of sales made by all firms with the same 3-digit SIC code in the same quarter).

3.5 Summary Statistics

Panel A of Table 1 reports the summary statistics of US-based fintech startups in our sample. We find that 2% of firms had a successful exit via an IPO and about 16% of firms had a successful exit via an acquisition. The mean fraction of VC investment in our sample firms is 37%, while 28% of firms receive at least one round of investment from corporate investors. 27% of firms receive at least one round of investment from a CVC. Our control variables are winsorized at the 1st and 99th percentiles in the regressions. Panel B of Table 1 reports the

break-down of firms across various categories in the fintech sector.

Table 2 presents the summary statistics for publicly-listed corporate investors in the financial sector in the US that have invested in fintech startups. We determine financial sector firms as firms whose SIC codes are between 6000 to 6999. We also show summary statistics for a group of control firms in the financial services sector that did not invest in fintech startups. We obtain three control firms for a treated firm (corporate investor) from the same three-digit SIC code using a propensity score matching based on size, age, and R&D expenditure of firms. Our panel data is obtained at quarterly frequency from Compustat. For each treated and control firm, we consider 12 quarters pre- and post- investment by the treated firm in the fintech startup. We have a final sample of 32 corporate investors (treated firms) and 71 control firms in the financial services sector. We present summary statistics for corporate investors in the financial services sectors and respective control firms in Panel A and Panel B, respectively. We present profitability, investment levels, market share, asset size, age, and R&D expenditures of both sets of firms.

4 The Effect of Investments by Corporate Investors on the Future Outcomes of Fintech Startups

In this section, we analyze the effect of investments by corporate investors on the future performance of fintech startups. As discussed earlier, we complied a sample of 728 fintech startups with information on their sales, employment, and industry classification. In the following subsections, we investigate the impact of corporate investment on the successful exit of fintech startups (IPO or acquisition), innovation output, and net inventor inflow.

4.1 The Effect of Investments by Corporate Investors on the Successful Exit of Fintech Startups

One of the most important measures of success of a startup is whether it eventually achieved a successful exit either via going public (i.e.,IPO) or via being acquired by another firm (acquisition). We therefore test the impact of investments by corporate investors on successful

exit using the following empirical specification:

$$Exit_i = \alpha_0 + \alpha_1 Corporate_i + X_i + \phi_j + \gamma_t + \epsilon_i, \quad (1)$$

where i indexes firm, j indexes industry, and t indexes time. *Successful Exit*$_i$ represents the three measures of successful exit: *IPO only*, or *Acquisition only*, or *IPO or Acquisition*. All these variables are defined in Table 1. The independent variable of interest, *Corporate*$_i$, is an indicator variable equal to one if a fintech firm receives its first ever round of investment with participation from at least one corporate investor. X_i represents a vector of control variables, which includes the fraction of venture capital investments out of the total investments in a fintech firm firm, an indicator variable capturing investment by CVCs, firm age, sales and employment one year prior to the investment year, aggregate investment across all investment rounds in a firm, and the number of investors investing in the investment round. We also include two-digit SIC code industry fixed effects and the investment year fixed effects in our regressions. We define investment year as the year in which any corporate investor has made a first investment in a fintech startup or is the year of last investment round for the fintech startup in case it has not received any investment from a corporate investor.[15]

Table 3 reports our results of the above regressions. In Columns (1), (2), and (3), the coefficients of the indicator variable for corporate investors are positive and significant at the 5%, 10%, and 1% levels, respectively. Our results are also economically significant. For example, the presence of a corporate investor in at least one of the investment rounds leads to a 6.3 percentage point increase in the probability of successful exits of fintech startups.[16] In summary, our results suggest that the presence of corporate investors is associated with a greater probability of successful exit for a fintech firm. Overall, our results suggest that, even after controlling for traditional variables such as venture capital (VC) investment or CVC investments, which are known to affect the performance of startup firms, corporate

[15]Our results are robust to not using investment year fixed effects.

[16]In unreported tests, we find that our results are robust to using a probit model instead of a linear regression model.

investments in fintech startups enhance their future performance as measured by probability of successful exit.

4.2 The Effect of Investments by Corporate Investors on the Innovation Output of Fintech Startups

In this section, we analyze the effect of investments by corporate investors on the innovation output of fintech startups. We have the same empirical specification as in equation (1) with the same set of independent variable, controls, and fixed effects.

Table 4 reports the results of the above test. We find that the presence of corporate investor is associated with a higher quantity and quality of patents subsequent to receiving the investment. As shown in Columns (1) to (6), we find that the coefficients of the corporate investment indicator variable are positive and significant. Our results are also economically significant. The presence of a corporate investor in an investment round leads to a 2.3 percentage point increase in the quantity of patents produced by firms in the third year after the investment round.

4.3 The Effect of Investments by Corporate Investors on the Net-Inflows of Inventors to Fintech Startups

We now examine the effect of investments by corporate investors on the net inflows of inventors into fintech startups. Again, we have the same empirical specification as in equation (1) with the same set of independent variable, controls, and fixed effects.

We report our results of the above test in Table 5. In Columns (1) to (3), the dependent variable is the net-inflow of inventors. We find that the presence of corporate investors is associated with a greater net inflow of inventors into fintech startups. Our results are also economically significant: for example, the presence of a corporate investor in an investment round leads to a 10.6 percentage point increase in the net inflow of inventors into fintech startups in the third year after the investment round. In Columns (4) to (6), the dependent variable is the net-inflow of superstar inventors, i.e., inventors in the top 10 percentile based

on their cumulative aggregate of patent citations. Again, we find that the coefficients of the corporate investor indicator variable are positive and significant. These results suggest that corporate investors help fintech startups to attract high-quality talent (scientists and engineers) to their firms.

4.4 Instrumental Variable Analyses

We wish to distinguish between selection versus value-addition by corporate investors in terms of their effect on fintech startups. On the one hand, it is possible that corporate investors select high-quality fintech startups to invest in. On the other hand, it is also quite possible that corporate investors may provide other value-adding services (such as strategic guidance) to fintech startups to enhance their performance and help them to succeed. We distinguish between these two effects through IV analyses. Given that it is useful to understand whether our results are driven by selection or value addition, we control for the selection effect by using IV analyses.

We use a two stage least squares (2SLS) specification. One possible reason corporate investors invest in fintech startups is to learn about latest technologies, products, and services of fintech startups. One channel to accomplish such learning is to recruit top executives or employee of such fintech startups. However, if such fintech startups are located in states with stronger non-compete laws, it will become more difficult for corporate investors to recruit their top talent (top executives). In that scenario such corporate investors are more likely to invest in fintech startups directly to learn more about their business. This effect of non-compete laws will be stronger especially if corporate investors are direct competitors of fintech startups or of they are in the same industry or product market space. Thus, we expect changes in enforceability of non-compete laws to directly affect the likelihood of corporate investment in fintech startups. We create the measure of change in the enforceability of non-compete laws across US states following Ewens and Marx (2018) and Kini et al. (2021). Following the above two papers, our sample include startups located in 21 US states that experienced changes in the enforceability of non-compete laws between 1985 to 2016. We

show the changes in enforceability across states in Table A7 in the Internet Appendix. We use the following 2SLS estimation method:

$$Corporate\ Investment_{it} = \alpha_1 Increased\ Enforceability_{it} + \alpha_2 X_{it} + \epsilon_{it}, \tag{2}$$

$$Outcome_{it} = \beta_1 \hat{Corporate\ Dummy_{it}} + \beta_2 X_{it} + \epsilon_{it}, \tag{3}$$

where *Corporate Investment* takes the value equal to one if a fintech startup received its first-ever investment from a corporate investor in any investment round of a fintech startup. *Increased Enforceability* is the instrumental variable, which is equal to 1 if there is an increase in the enforceability of non-compete laws in the investment year at the state where a fintech startup's headquarter is located. It is equal to -1 if there is a decrease in the enforceability of non-compete laws at the fintech startup's headquarter state in the investment year, or is equal to 0 otherwise. We follow Ewens and Marx (2018) to define the above variable. We define investment year as the year in which a fintech startup received its first-ever investment from a corporate investor or is the year of last investment round in case no corporate investor has invested in the fintech startup. We include all control variables (X_i) used in our baseline analyses. We also include fixed effects for industry and for the state where a fintech startup's headquarter is located. Given that we use a cross-sectional data on fintech startups and employ variation in the enforceability of non-compete laws across investment years, we do not include investment year fixed effects in our specification.

We show the results of our instrumental variable analyses in Table 6. In Panel A, B, and C, our dependent variables are successful exit, innovation output, and inventor inflow, respectively. In the first stage, we show that increased enforceability is positively correlated at 1% significance with the propensity to become corporate investor. The first stage F-statistic is 10.263, which is above the Stock and Yogo (2002) criterion of 10. The Column (1) in Panels A, B, and C show the first stage results. The first stage results are in line with our intuition and suggests that our instrument is relevant. Prior research argues that changes in non-compete laws are exogenous, are unrelated to local macroeconomic conditions, and

are not implemented to help startups, e.g., Kini et al. (2021), Jeffers (2019), and Ewens and Marx (2018). It is thus unlikely that our instrument, increased enforceability of non-compete laws, affects the pre-investment quality of fintech startups. It is also unlikely that our instrument is correlated with unobservable measures of firm quality. It may be argued that increase in enforceability of non-compete laws will affect fintech startups through other channel such as VC-induced replacement of founders. However, greater enforceability of non-compete laws will lead to lower likelihood of replacement of founders, in turn leading to lower likelihood of success of startups, which will go against our findings. Nevertheless, we also control for the fraction of VC investment across all rounds, thereby controlling for the bargaining power of VCs, which affect the likelihood of VC-induced founder replacement. We also control for CVC investment using an indicator variable as in our baseline analyses.[17] Thus, our instrument is also likely to satisfy the exclusion restriction as well.

We show our second stage results from Column (2) onwards. In Panel A, our dependent variables are the three exit measures: IPO, acquisition, and IPO or acquisition. We show that corporate investment causally leads to a higher likelihood of IPO (significant at 5%) and a higher likelihood of IPO or acquisition (significant at 1%) in Columns (2) and (4), respectively. Next, in Panel B, our dependent variables are measures of innovation output. We show that corporate investment causally leads to greater quantity of patents and greater quality of patents (citations) produced by fintech startups. Finally, in Panel C, our dependent variables are measures of net inflow of inventors. We show that corporate investment causally leads to greater inflow of inventors and greater inflow of high-quality inventors into fintech startups. We also find that our results are robust and quantitatively similar when we exclude the use of control variables in our IV analyses. For example, we show in Table A1 in the Internet Appendix that our IV analyses on exit are robust to excluding control variables.

In sum, the above results show that direct investment by corporate investors causally add

[17] In unreported tests, we do not find any effect of increased enforceability of non-compete laws on growth in employment in fintech startups in our IV sample, which is similar to findings of Starr, Balasubramanian, and Sakakibara (2018). The above evidence rules out a potential concern that an increase in enforceability of non-compete laws affect the success of startups through the employee acquisition or turnover channel.

value to fintech startups even after accounting for the selection effects arising from corporate investors investing in higher quality startups. This may explain why fintech startups take investment from corporate investors, who are their competitors in the product market.

4.5 Presence of Synergy

Next, we investigate whether synergy plays a role in driving the performance of fintech startups. Specifically, we check whether the results are driven primarily by corporate investors in the financial services sector, since they are likely to have greater synergy with fintech startups. We conduct separate IV analyses to analyze the effect of corporate investment by firms in the financial and non-financial services, respectively, on the future outcomes of fintech startups. In Table 7, we show our results for successful exit. In Panel A and B, our dependent variables are successful exit, and our main variables of interest are corporate investment by firms in financial and non-financial services, respectively. In our IV analyses in Panel A, we show that an increase in enforceability of non-compete laws leads to a higher likelihood of investment by corporate investors. The first stage F-statistic is 17.376. This makes sense given that fintech startups are direct competitors of firms in the financial services sector such as banks. We present our second stage 2SLS results in the following columns. We show that corporate investment by financial services companies leads to a higher likelihood of success exit through IPO (Column 2) or through IPO or acquisition (Column 4). Next, in Panel B, we show that an increase in enforceability of non-compete laws does not affect the likelihood of investment by corporate investors in the non-financial services sector. The first stage coefficient is negative and insignificant, and the F-statistic is small. Again, this makes sense given that fintech startups are not competitors of non-financial services companies, which may be in automobile, software, retail, or hardware sector among others. This is because non-compete laws may not be applicable in case of recruitment by firms that are not directly competing with these fintech startups. We also show that the second stage results are also insignificant. Similarly, in Table A2 in the Internet Appendix, we also show that while investment by corporate investors in the financial services sector causally improve

the innovation output and net inventor inflow into fintech startups, investment by corporate investors in non-financial services sector has no effect on innovation and inventor inflow into fintech startups.

Thus, our IV analyses results show that corporate investors in the financial services sector add value to fintech startups. However, corporate investors in the non-financial services sector do not add value to fintech startups. These results suggests that synergy play an important role in value-addition by corporate investors to fintech startups.[18]

5 Investments in Fintech Startups by Corporate Investors

Our results thus far have shown that fintech startups benefit from the investments made by corporate investors. However, two important questions to ask would be what factors drive corporate investment in fintech startups and whether corporate investors benefit from such investment. We investigate these questions empirically in following sections.

5.1 What Firm-specific Factors Determine Investments by Corporate Investors in Fintech Startups?

We have identified 66 publicly-listed corporate investors which have invested in fintech startups. Out of these 66 firms, 32 firms are in the financial services sector. In contrast to the previous part of the paper, where we consider investments by either public or private corporate investors, we only focus on publicly listed corporate investors in this section due to data availability considerations. We first investigate the firm-specific factors that drive the investment of corporate investors in fintech startups. We build a sample consisting of these corporate investors (treated firms) which have made investments in fintech startups and a matched sample of control firms in the same 3-digit SIC code industry which did not invest in fintech startups. For each treated firm, we find three control firms in the same industry based on nearest matches using propensity score matching. We match firms based on their

[18] In unreported analyses, we break up corporate investors in the non-financial service sector into various sub sector, e.g., high-tech sector (software, hardware, automobile). We find that investment by corporate investors in high-tech sector does not affect the future outcomes of fintech startups.

size, age, and R&D expenditures. Our group of control firms consists of 156 firms, out of which 71 firms are in the financial services sector. We analyze the firms at the quarterly frequency from 1995 to 2017. We use the following empirical specification:

$$\begin{aligned} \textit{(Investment=1)}_{i,t} = \alpha_0 + \alpha_1 \Delta \textit{Sales}_{i,t-1} + \alpha_2 \Delta \textit{ROA}_{i,t-1} + \alpha_3 \Delta \textit{Tobin's Q}_{i,t-1} + \\ \alpha_4 \Delta \textit{Market Share}_{i,t-1} + X_{i,t-1} + \theta_i + \gamma_t + \epsilon_{i,t}, \end{aligned} \tag{4}$$

where i indexes firm and t indexes time of fiscal-quarters. The dependent variable takes the value equal to 1 if a firm makes an investment in a fintech startup in a quarter. Our main variables of interest are the lagged values of change in sales, change in ROA (profitability), change in Tobin's Q, and change in market share of firms. We define these changes over a period of six quarters. Our results are also robust to re-defining these changes over 8 or 4 quarters. We also include a set of control variables such as institutional investor holdings, size, and age of firms. We include firm and year by quarter fixed effects in our regressions.

We report our results of this test in Table 8. In Columns (1), (2), and (3), we report results using the full sample of firms, financial services firms, and non-financial services firms, respectively. We find that firms that experience a drop in sales tend to make an investment in fintech startups. This result holds for the full sample as well as for the sample of financial service firms. The above results are significant at the 5% level. Our results suggest that financial service firms invest in fintech startups after experiencing a drop in sales. However, we do not find clear evidence on what factors drive the investment by non-financial services firms. In the next subsection, we move on to investigating the effect of investments on the performance of corporate investors in the financial services and non-financial services sectors.

5.2 The Effect of Investments in Fintech Startups on the Performance of Corporate Investors: Empirical Strategy and Results

We first discuss in detail our empirical strategy analyzing the relation between investment in fintech startups and subsequent performance of the corporate investors and then describe our

results in the following subsections. We examine the impact of investments in fintech startups on the future performance of corporate investors using a stacked difference-in-differences (DiD) framework following Gormley and Matsa (2011). Although certain corporate investors in our sample have invested in multiple fintech startups, we focus on the impact of their very first investment in a fintech startup on their product market performance and innovation output. In other words, we are interested in assessing the effect of investment in fintech startups on the performance of corporate investors on the extensive margin.

For this analysis, we use a firm-quarter unbalanced panel from 1997 to the first quarter of 2020. We construct a cohort of corporate investors (i.e., treated firms) and control firms using firm-quarter observations for twelve quarters before and after the time of the corporate investor's first investment in a fintech startup. We only include treated firms that have made their first investment in fintech startups by 2017 so that we can track their performance over a three-year window subsequent to the investment in a fintech startup.[19] A cohort is formed in a calendar year-quarter in which investments in fintech startups were made by corporate investors (i.e., treated firms). For each treated firm, we find three control firms in the same 3-digit SIC code industry based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. We then use the following empirical specification to examine the impact of investments in fintech startups on the performance of corporate innovators:

$$Perf_{i,c,t} = \alpha_0 + \alpha_1 Post_{c,t} \times Corporate\ Investment_{i,c} + \phi_{i,c} + \gamma_{c,t} + \epsilon_{i,c,t}, \tag{5}$$

where i indexes firm, c indexes cohort, and t indexes time of fiscal-quarters which takes a value between -12 to 12, with t=0 being the quarter in which the firm made its first investment in a fintech startup. Thus we include observations for 12 quarters pre- and post-investment for corporate investors and their respective control firms. $Perf_{i,c,t}$ represents fol-

[19]Similar to Gormley and Matsa (2011), firms may not be present in the sample for the full 24 quarters around the investment events. Also note that our results are similar if we consider 16 or 20 quarters around the investment events instead of 12.

lowing measures for a corporate investor: sales, profitability, market share, and Tobin's Q. $Post_{i,c,t}$ is an indicator variable equal to one for a quarter in which the corporate investor made its first investment in a fintech startup as well as for all the quarters subsequently, and zero otherwise. *Corporate Investment*$_i$ is an indicator variable that takes the value of 1 for corporate investors (i.e., treated firms) and 0 for control firms. Following Gormley and Matsa (2011), we include firm by cohort fixed effects and the calendar year by quarter by cohort fixed effects in our regressions, which is a standard practice in a stacked DiD framework. Specifically, a cohort is a particular calendar year-quarter, where a group of corporate investors made their first investment in fintech startups. Thus, each cohort comprises corporate investors that made investments in fintech startups as well as their respective control firms. In line with the existing literature, we do not include controls in our stacked DiD specification. However, our results are robust to using controls such as firm size, age, and institutional investor shareholding in the firms.[20] We cluster our standard errors at the firm level.

5.2.1 The Effect of Investments in Fintech Startups on the Operating Performance of Corporate Investors

First, we analyze the impact of investments in Fintech startups on the operating performance of corporate investors. We measure the operating performance using sales, profitability, and market share as our proxies and report our test results in Table 9. Our dependent variables in Columns (1), (2), and (3) are *Ln(Sales)*, *Profitability*, and *Market Share*, respectively. Panel A shows our analyses for corporate investors (and control firms) in the financial services sector, whereas Panel B shows our analyses for the non-financial services sector (and control firms).

We now discuss our results as presented in Panel A of Table 9. Our sample comprises 32 corporate investors in the financial services sector and a group of 71 control firms in the same 3-digit SIC code industries. In Column (1), we find that the coefficient of *Post*×*Corporate*

[20] We present our results with control variables in Table A3 in the Internet Appendix.

Investment is positive, but insignificant. This result suggests that, on average, investments in fintech startups do not seem to have a significant effect on corporate investors' revenue. In Column (2) and Column (3), we find that the coefficients of *Post*×*Corporate Investment* are positive and significant at the 5% level. This means that the investments in fintech startups improve the profitability and market share of corporate investors on average, compared to the control firms who did not make investments in fintech startups. The above results are also economically significant. Corporate investors in the financial services sector that have invested in fintech startups experience an average increase of 50% in their profitability and an average increase of 9.1% in their market share, respectively. Note that in our regressions, we have included firm by cohort fixed effects and calendar year by quarter by cohort fixed effects, which is standard practice in using stacked DiD regressions. We account for fixed differences between treated and control firms in a cohort by using firm by cohort fixed effects. Further, we account for any time trends through the use of calendar by quarter by cohort fixed effects in our empirical specification.

Next, we discuss our results as presented in Panel B of Table 9. Our sample comprises 34 corporate investors in the non-financial services sector and a group of 85 control firms in the same 3-digit SIC code. We have the same dependent variables as in our Panel A. We find that the coefficients of *Post*×*Corporate Investment* are insignificant in all three columns. Thus, we show that there is no difference in performance of treated and control firms after the investment by treated firms.

Therefore, our results suggest that the investment in fintech startups are indeed beneficial to corporate investors in the financial services sector, since they experience improvement in their profitability and market share after their investment. In contrast, non-financial services firms do not seem to benefit from their investments in fintech startups.

5.2.2 The Effect of Investments in Fintech Firm on the Market Valuation of Corporate Investors

In this subsection, we analyze the impact of investments in FinTech startups on the market valuation of corporate investors and report our results in Table 10. Our dependent variable is *Tobin's Q*, which is the ratio of market value of assets over the book value of assets of a firm. In Column (1) and (2), we show the impact of investments in fintech startups on the market valuation of corporate investors in the financial services and non-financial services sector, respectively. We see that the coefficient of *Post*×*Corporate Investment* is positive and significant (at the 10% level) for the financial services sector sample, but is positive and insignificant for the non-financial services sector. Corporate investors in the financial services sector that have invested in fintech startups experience an average increase of 18.3% in their market valuation.

In sum, our results suggest that investments in fintech startups enhances the market valuation of corporate investors in financial services sector compared to the control firms in the same sector. In contrast, the investment in fintech startups does not improve the market valuation of corporate investors in the non-financial services sector compared to the control firms. In other words, the market believes that corporate investors in the financial services sector may benefit from their investments in fintech startups, but corporate investors in the non-financial services sector may not derive any benefit from such investments.

5.3 The Dynamic Effect of Investment in a Fintech Startup on Corporate Investors in the Financial Services Sector

In this section, we conduct a dynamic analysis of the effect of investments by corporate investors in fintech startups on the performance and market valuation of such corporate investors. Our sample comprises corporate investors in the financial services sector and a group of control firms in the same 3-digit sic code. We use the following empirical specification:

$$Perf_{i,c,t} = \alpha_0 + \alpha_1 \sum T \times Corporate\ Investment_i + \sum T + \phi_{i,c} + \gamma_{c,t} + \epsilon_{i,c,t}, \qquad (6)$$

where T captures the different event times. *T=0* is an indicator variable that takes the value equal to 1 for all treated and control firms between day 0 and day 91 after the dates in which treated firms made investments in fintech startups; otherwise the indicator variable is equal to 0. $T = -1$, $T = -2$, $T = -3$, and $T = -4$ are indicator variables that takes the value equal to 1 for all treated and control firms between day 1 and day 90, day 91 and day 181, day 182 and day 273, and day 274 and day 364 prior to the investment date; otherwise the indicator variable is equal to 0. $T = +1$, $T = +2$, and $T = +3$ are indicator variables that takes the value equal to 1 for all treated and control firms between day 92 and day 182, day 183 and day 273, and day 274 and day 364 after the investment date; otherwise the indicator variable is equal to 0. $T = 4+$ is an indicator variable that takes the value equal to 1 for all firms in a cohort for all days or quarters after 365 days post the investment date of that cohort; otherwise it is equal to 0. $T = before - 4$ is an indicator variable that takes the value equal to 1 for all firms in a cohort for all days or quarters before the 365 days prior to the investment calendar-year quarter of that cohort; otherwise it is equal to 0. $T = before - 4$ is omitted due to multicollinearity. Thus, we include all possible time indicators in our regression.

Our dependent variables are profitability, market share, and Tobin's Q. We present the results of the above regressions in Table 11. We show that the coefficients of the interaction of time and corporate investment are insignificant prior to the investment, i.e., before $T = 0$. Further, we show that the coefficients of the interaction of time and corporate investment are positive and significant post the investment for all three dependent variables for several time periods. In fact, we see that in case of profitability and market share, there is a long-term benefit of investments for corporate investors compared to their control firms. However, in case of market valuation, we do not see any long-term effect. It is possible that the market investors are able to factor the long-term benefits of investments in the valuations of corporate investors within two-three quarters.

We also plot the coefficients on the interactions each event-time dummy and the corporate

investment indicator variable in Figure 1 in the Internet Appendix for easy visualization. Figure 1 visually shows the coefficients of interests. Thus, the above results confirm that there is no pre-trend in terms of performance and market valuation for corporate investors (compared to control firms) and supports our findings.

6 Channels through which Investments in Fintech Startups Affect Corporate Investors

In this section, we investigate the potential channels through which the investment in fintech startups may affect corporate investors. Our results earlier show that financial services firms benefit from investments in fintech startups and experience an increase in profitability, market share, and market valuation after their investments. In contrast, non-financial services firms do not seem to derive such benefits from their investments in fintech startups. In unreported tests, we also find that corporate investors in high-tech sectors too do not benefit from direct investment in fintech startups. In this section, we discuss some potential channels through which such performance improvements take place.

6.1 Synergy

Our results are consistent with the conjecture that financial services firms are able to realize synergies from their investments in fintech startups, while non-financial services firms are less able to do so due to the lack of proximity with fintech startups in their respective businesses. For example, financial services firms may be better at identifying fintech startups with greater potential for synergies to invest in and also may be able to learn more effectively from these fintech startups about new ideas, technologies, or promising opportunities on market due to their proximity in businesses. In contrast, non-financial services firms may be less able to identify such beneficial synergy opportunities, and less able to implement the ideas and knowledge that they learn from such investments in their primary businesses. These synergy benefits may help corporate investors in the financial services sector to launch new products or may help them in the product market through strategic alliances. We analyze the above

two potential channels in the following two subsections.

6.1.1 Synergy: Strategic Alliances

The synergy between corporate investors and fintech startups may lead to strategic alliances. For example, Visa Inc. made an investment in Square, which was a startup then, on January 10th, 2011. On April 27th, 2011, there was a news article mentioning the partnership between Visa Inc. and Square.[21] We obtain data on whether an investment leads to a strategic alliance based on media coverage. We manually check media coverage of fintech startup-corporate investor pairs on the internet to find news on the formation of strategic alliances after the investment in the fintech startup by corporate investors. We classify an investment as leading to a strategic alliance if there is a news on strategic alliance between the corporate investor and the fintech startup subsequent to the investment by the corporate investor in the fintech startup. We show the list of the presence and absence of strategic alliances for our sample corporate investors in Table A4 in the Internet Appendix.

We split our sample into two parts: corporate investors who have created strategic alliances with fintech startups and corporate investors which did not create such alliances. We analyse the effect of investments in fintech startups on the profitability, market share, and market valuation of the two subsamples using stacked DiD analyses. We show our results in Table 12. Panel A and Panel B shows the results for corporate investors in the financial and non-financial services sectors, respectively. Panel A shows that investments in fintech startups benefits corporate investors in financial services sector if there is a strategic alliance between the investors and fintech startups. In Columns (1), (2), and (3) of Panel A, we show that corporate investors in the financial services sector that have invested in fintech startups and that have formed a strategic alliance with them experience an increase in their profitability, in their market share, and in their market valuation, respectively. The above results are significant at 5%, 5%, and 10% levels, respectively. Further, the above results are

[21] Please refer to the following link, which mentions how the partnership between Visa Inc. and Square will be beneficial for them: https://techcrunch.com/2011/04/27/visa-makes-a-strategic-investment-in-disruptive-mobile-payments-startup-square/.

also economically significant. Corporate investors in the financial services sector that have invested in fintech startups and have formed a strategic alliance with them experience an average increase of 60% in their profitability, an average increase of 11.8% in their market share, and an average increase of 27.9% in their market valuation, respectively. However, we find that such investment does not lead to better performance of corporate investors if there is no strategic alliance formed between investors and investees.

Panel B shows that corporate investors in the non-financial services sector do not benefit from investment in a fintech startup, whether they have created a strategic alliance with their investees or not. The above results suggest that corporate investors in the financial service sector are better equipped to identify and implement beneficial strategic alliances with fintech startups and that their performance improvement after investments in fintech startups are at least partly due to the formation of strategic alliances with such startups (investee firms).

6.1.2 Synergy: New Product Introduction

The synergy between corporate investors and fintech startups may benefit the corporate investors by enabling them to launch new products. We test this channel by creating multiple measures of new product introduction. First, we use the monthly media coverage information from the Ravenpack Analytics database to create our measure of new products following Ertugrul, Krishnan, Xu, and Yu (2023). We count the firm-specific news articles to create our measure. We count a news article if it satisfies the following criteria: first, it is firm-specific news (rather than macro news); second, the relevance score of the news given in RavenPack is above 90 (i.e., the news is very related to the company); third, the type of news specified in RavenPack is "Product Release." Our measure is similar to that used by Mukherjee, Singh, and Žaldokas (2017), who measure new product introductions using the number of news announcements by searching key words related to new products in the Lexis-Nexis News database. We create our measure of new products at the firm-quarter level. We use the natural logarithm of the number of new products and the raw number of

new products over asset size as our first two measures of new product introduction. Second, we use the trademarks data from the USPTO website to create two additional measures of new product introduction. We use the natural logarithm of the number of new trademarks and the raw number of new trademarks over asset size as our two additional measures of new product introduction.

We conduct stacked DiD analyses using the above four measures of new product introduction. We present our results in Table 13. Panel A and Panel B shows the results for corporate investors in the financial and non-financial services sectors, respectively. We see that for corporate investors in both the financial services sector and the non-financial services sector, there is no effect of investment in a fintech startup on the launch of new products. This result is consistent across different measures of new products introduction. Thus, our analyses suggest that investment in a fintech startup does not help the corporate investors through the new product introduction channel.

7 Cross-sectional Analyses and Alternative Explanations

In this section, we present the results of some cross-sectional analyses. This allows us to explore alternative reasons for why corporate investors may invest in fintech startups and the effect of such investment on the performance of corporate investors.

7.1 Agency Costs

The existing literature suggests that managers may engage in empire building (Jensen, 1986) and destroy shareholder value. It is possible that managers of corporate investors in the non-financial services sector make investments in fintech startups for empire building reasons.

One approach to measure potential agency concerns in firms is by observing the presence of institutional investors in such firms. Given that institutional investors play an important role in monitoring managers, managers of firms with a smaller presence of institutional investors are more likely to engage in empire building activities. In Table 8, we investigate the factors that determine the propensity of potential corporate investors to make investments in

fintech startups and find that institutional investor shareholdings are insignificantly related to the propensity of corporate investors to make investments in fintech startups. The above findings apply to corporate investors in both the financial and non-financial services sectors. This result shows that corporate investors are not making their investments because they are loosely monitored, which suggests that agency costs are unlikely to be a major driver of corporate investment in fintech startups.

We also conduct our DiD analyses about the effects of corporate investment in fintech startups on the performance of these investors after including control variables such as institutional investor shareholdings in firms. As we show in Table A3 in the Internet Appendix, our results are robust to including the above controls. We also find that the coefficients of institutional investor shareholdings are insignificant for both the samples of corporate investors in the financial services and non-financial services sectors. These results also suggest that agency costs are not an important driver of the effects of corporate investment in fintech startups on the performance of these investors.

7.2 Competition

In this subsection, we present our cross-sectional analysis results of the effect of competition on the performance of corporate investors in fintech startups. We split the cohort of corporate investors and control firms to high and low-competition groups. We create groups based on the level of competition faced by firms a quarter prior to the quarter of the investment. We measure competition using the Herfindahl–Hirschman Index and classify industries into above the median (high competition) or below the median (low competition) in the quarter immediately prior to the quarter of investment.

We report these results in Table A5 in the Internet Appendix. Our dependent variables are profitability and market share. We show the results for corporate investors in the financial services and non-financial services sectors in Panel A and Panel B, respectively. In Panel A, for the financial services sector, we show that corporate investors in both high- and low-competition groups experience an increase in their profitability compared to con-

trol firms after their investment in fintech startups. However, we find that only corporate investors facing a high level of competition experience an increase in their market share compared to control firms. This result suggests that investments in fintech startups is especially beneficial for corporate investors facing greater competition. In Panel B, there is no difference in performance (profitability or market share) between corporate investors in the non-financial services sector and their respective control firms. Overall, our results suggest that competition plays a role in affecting the performance of corporate investors in the financial services sector. Note that this result is consistent with our earlier channel analysis showing that investment in fintech startups benefit the performance of corporate investors due to the formation of strategic alliances between corporate investors and fintech startups. The results of our analysis in this subsection suggest that such strategic alliances may be more beneficial for firms facing greater competition.

7.3 Firm Size

In this subsection, we present our cross-sectional analyses results on the effect of size of corporate investors investing in fintech startups on their performance. We split the cohort of corporate investors and control firms into two groups, namely, smaller and larger firms. We present our results in Table A6 in the Internet Appendix. We show the results for corporate investors in the financial services and non-financial services sectors in Panel A and Panel B, respectively. In Panel A, we find that only smaller-sized corporate investors in the financial services sector experience an increase in their profitability compared to control firms after their investment in fintech startups. We, however, do not find any significant increase in market share for either smaller or larger firms as a result of their investments in fintech startups. In Panel B, we show that there is no difference in performance (profitability or market share), irrespective of firm size, between corporate investors in the non-financial services sector and their respective control firms. The above results suggest that firm size may be a driver of the performance improvements of corporate investors in the financial services sector after their investment in fintech startups. Note that this result on firm size is consistent with

our earlier channel analysis showing that investment in fintech startups benefit the performance of corporate investors due to the formation of strategic alliances between corporate investors and fintech startups. The results of our analysis in this subsection suggest that such strategic alliances may be more beneficial for smaller firms.

8 Conclusion

Fintech is one of the rapidly growing sectors in terms of funding and consumer-reach. In this paper, we analyze the role of direct investment by corporate investors on the success of fintech startups in the US. We empirically analyze the effect of such investments in fintech startups on the future performance of these fintech startups and also on the future performance of corporate investors themselves.

We find that the investment by corporate investors is associated with a greater likelihood of successful exit (IPO or acquisition) of fintech startups. We also show that such investment by corporate investors is associated with greater innovation output (quantity and quality) and a greater net-inflow of inventors into fintech startups. We also conduct IV analyses showing that corporate investors add value to fintech startups. Overall, our evidence demonstrates that fintech startups experience significant benefits from investments made by corporate investors. The above benefits for fintech startups are driven only by investments made by corporate investors in the financial services sector; there is no significant effect of investment in fintech startups by corporate investors in the non-financial services sector on the performance of these startups.

We also investigate the effect of such investments in fintech startups on the subsequent performance of publicly-listed corporate investors themselves. Using a stacked DiD framework, we show that investments in fintech startups leads to greater profitability, greater market share, and greater market valuation for corporate investors in the financial service sector. However, corporate investors in the non-financial service sector do not benefit from such investments in fintech startups. Consistent with the above, in our channel analyses, we

show that the above performance improvement of corporate investors in the financial services sector arises from synergies in the product market between corporate investors in the financial services sector and fintech startups. In particular, we show that an important channel through which corporate investors in the financial services sector benefit from such synergies is through the formation of strategic alliances between them and the fintech startups that they invest in.

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Table 1: Summary Statistics of Fintech Startups in US

This table reports summary statistics for the sample of U.S. fintech start-up firms obtained from the Crunchbase database and matched with the National Establishment Time Series (NETS) database and VentureXpert database. Panel A reports summary statistics of fintech startups. Panel B reports break-up of fintech startups under various categories. *IPO only* is a dummy variable that either takes the value equal to one if the fintech firm goes public by having an initial public offerings (IPO), otherwise it is equal to zero. *Acquisition only* is a dummy variable that either takes the value equal to one if the fintech firm is acquired by another firm, otherwise it is equal to zero. *Exit (IPO or Acquisition)* is a dummy variable that either takes the value equal to one if the fintech firm goes public by having an initial public offerings (IPO) or is acquired by another firm, otherwise it is equal to zero. *Corporate Investment* is an indicator variable that takes the value equal to one if a fintech startup received its first-ever investment from a corporate investor in any investment round of a fintech startup. *Corporate Investment (Financial Services)* is an indicator variable that takes the value equal to one if a fintech startup received its first-ever investment from a corporate investor in the financial services sector in any investment round of a fintech startup. *Corporate Investment (Non-Financial Services* is an indicator variable that takes the value equal to one if a fintech startup received its first-ever investment from a corporate investor, which is not in the financial services sector, in any investment round of a fintech startup. *Corporate Investment (Tech)* is an indicator variable that takes the value equal to one if a public or private firm (corporate investor) in the high-technology sector makes an investment in the fintech startup in an investment round. *VC Investment Fraction* is the fraction of venture capital investments out of the total investments in a fintech firm. *CVC Investment* is an indicator variable that takes the value equal to one if a CVC investors has invested in at least one of the investment rounds of a fintech startup. *Age* is the natural logarithm of the number of years between the founding year of a fintech startup and the last investment round of the startup. *Sales* is the aggregate sales made by all the establishments of a fintech startup one year prior to the year in which any corporate investor invested in the fintech firm for the first time or one year prior to its last investment round in case there is no investment from any corporate investors. *Employment* is the aggregate employment across all the establishments of a fintech firm one year prior to the year in which any corporate investor invested in the fintech startup for the first time or one year prior to its last investment round in case there is no investment from any corporate investors. *Investment* is the aggregate investment raised by a fintech startup across all investment rounds. *No. of Investors* is the number of investors that have invested in a fintech startup in an investment round in which a corporate investor has participated or in the last investment round in case no corporate investor has invested in the fintech startup.

Panel A: Summary Statistics of Fintech Startups

Variable	**N**	**Mean**	**S.D.**	**Min**	**Max**
IPO Only	728	0.02	0.15	0.00	1.00
Acquisition Only	728	0.16	0.36	0.00	1.00
Exit (IPO or Acquisition)	728	0.18	0.38	0.00	1.00
Corporate Investment	728	0.28	0.45	0.00	1.00
Corporate Investment (Financial Services)	728	0.16	0.37	0.00	1.00
Corporate Investment (Non-Financial Services)	728	0.12	0.33	0.00	1.00
Corporate Investment (Tech)	728	0.05	0.21	0.00	1.00
VC Investment Fraction	728	0.37	0.37	0.00	1.00
CVC Investment	728	0.27	0.44	0.00	1.00
Age	728	1.50	0.63	0.00	2.89
Sales	728	4.3	42.0	0.0	1100.0
Employment	728	34.11	243.31	0.00	6377.00
Investment	728	15.48	4.65	0.00	20.75
No. of Investors	728	3.71	3.05	1.00	14.00

Panel B: Categories of Fintech Startups

Category	Freq.	Percent	Cum.
Auto Insurance	9	1.24	1.24
Banking Infrastructure	24	3.30	4.53
Blockchain Innovations	36	4.95	9.48
Business Lending	41	5.63	15.11
Consumer Insurance Management Platforms	4	0.55	15.66
Consumer Lending	69	9.48	25.14
Consumer Payments	9	1.24	26.37
Consumer and Commercial Banking	10	1.37	27.75
Crowdfunding	16	2.20	29.95
Digital Asset Business Services	1	0.14	30.08
Digital Asset Exchanges	9	1.24	31.32
Digital Asset Financial Services	7	0.96	32.28
Digital Asset Gambling	1	0.14	32.42
Digital Asset Infrastructure	3	0.41	32.83
Digital Asset Payments	4	0.55	33.38
Digital Asset Trust & Verification Services	3	0.41	33.79
Digital Asset Wallets	6	0.82	34.62
Employee Benefits Platforms	8	1.10	35.71
Enterprise/Commercial Insurance	10	1.37	37.09
Equity Financing	20	2.75	39.84
Financial Research and Data	16	2.20	42.03
Financial Transaction Security	32	4.40	46.43
Health/Travel Insurance	27	3.71	50.14
Institutional Investing	56	7.69	57.83
Insurance Comparison/Marketplace	15	2.06	59.89
Insurance Data/Intelligence	15	2.06	61.95
Insurance Infrastructure/Backend	31	4.26	66.21
Insurance User Acquisition	7	0.96	67.17
International Money Transfer	7	0.96	68.13
Life, Home, Property & Casualty Insurance	10	1.37	69.51
Payments Backend and Infrastructure	45	6.18	75.69
Personal Finance	52	7.14	82.83
Point of Sale Payments	24	3.30	86.13
Product Insurance	4	0.55	86.68
Retail Investing	29	3.98	90.66
Small and Medium Business Tools	68	9.34	100.00
Total	728	100.00	

Table 2: Summary Statistics of Corporate Investors and Control Firms in the Financial Services Sector

This table reports summary statistics for the sample of U.S. public firms in the financial service sector that have invested in fintech start-ups and a group of control U.S. public firms in the financial service sector that have not invested in fintech startups. We obtain three control firms for a treated firm (corporate investor) from the same three-digit SIC code using a propensity score matching based on size, age, and R&D expenditure of firms. Our panel data is obtained at quarterly frequency from Compustat. For each treated and control firm, we consider 12 quarters pre- and post- investment by the treated firm in the fintech startup. *Profitability* is the ratio of operating income before depreciation and the book value of total assets of a firm. *Market Share* of a firm is the ratio of sales made by a firm in a quarter scaled by the sum of sales made by all firms in the same 3-digit SIC code in the same quarter. *Ln(Sales)* is the natural logarithm of the quarterly sales of a firm. *Tobin's Q* is the ratio of market value of assets over the book value of assets. The market value of assets is obtained by deducting the book value of equity from the book value of assets and adding the market value of equity, which is equal to the product of shares outstanding and share price at the end of fiscal quarter. *Ln(Assets)* is the natural logarithm of the book value of total assets of a firm. *Alliance* is an indicator variable that takes the value equal to one if there is a media coverage of strategic alliance between corporate investor and investee (fintech startup). *Ln(Age)* is defined as the natural logarithm of one plus the number of years a firm has return data available from CRSP database. *R&D Expenditure* is the ratio of R&D investment made by firms in a quarter scaled by the book value of assets of the firm.

Panel A: Summary Stats for financial service firms that invested in fintech startups

Variable	N	Mean	S.D.	Min	1st Quartile	Median	3rd Quartile	Max
Profitability	719	0.01	0.02	-0.11	0	0	0.01	0.09
Market Share	697	0.11	0.13	0	0.01	0.04	0.21	0.36
Ln (Sales)	735	7.11	2.09	1.77	5.59	7.3	8.65	10.53
Tobin's Q	707	1.53	1.25	0.9	1.01	1.07	1.29	7.85
Ln (Assets)	720	10.5	2.4	4.94	8.5	10.37	12.42	14.02
Alliance	743	0.65	0.48	0	0	1	1	1
Age	743	2.99	0.95	0	2.4	3.22	3.89	4.2
R&D Expenditure	743	0	0	0	0	0	0	0.06

Panel B: Summary Stats for financial service firms that did not invest in fintech startups

Variable	N	Mean	S.D.	Min	1st Quartile	Median	3rd Quartile	Max
Profitability	2064	0	0.01	-0.11	0	0	0.01	0.09
Market Share	1779	0.04	0.05	0	0	0.02	0.04	0.36
Ln (Sales)	2094	6.26	1.91	1.77	4.51	6.44	7.84	10.3
Tobin's Q	1808	1.34	0.96	0.87	1.02	1.06	1.16	9.81
Ln (Assets)	2068	9.79	2.46	3.99	7.96	10.08	12.06	13.91
Age	2144	2.97	0.89	0	2.3	3.14	3.78	4.2
R&D Expenditure	2144	0	0.01	0	0	0	0	0.12

Table 3: The Effect of Corporate Investment on the Probability of Fintech Startups' Successful Exits

This table reports the linear probability regression results of the effect of corporate investment on the probability of successful exit of fintech startups. *IPO only* is a dummy variable that takes the value 1 if the fintech firm goes public by having an initial public offerings (IPO). *Acquisition only* is a dummy variable that takes the value 1 if the fintech firm is acquired by another firm. *IPO or Acquisition* is a dummy variable that takes the value 1 if the fintech firm either goes public by having an initial public offerings (IPO) or is acquired by another firm. *Corporate Investment* is an indicator variable that takes the value equal to one if a fintech startup received its first-ever investment from a corporate investor in any investment round of a fintech startup. All other independent variables are defined in Table 1. Constant (suppressed), year of first investment by a corporate investor (year of the last round of investment in case there is no investment by any corporate investor) fixed effects, and two-digit SIC code industry fixed effects are included in all regressions. All standard errors are clustered at the industry level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)	(3)
Variables	IPO only	Acquisition only	IPO or Acquisition
Corporate Investment	0.025**	0.038*	0.063***
	(0.010)	(0.020)	(0.019)
VC Investment Fraction	-0.017	0.091***	0.075***
	(0.011)	(0.020)	(0.024)
CVC Investment	-0.012	0.010	-0.002
	(0.014)	(0.032)	(0.026)
Age	0.035***	0.014	0.049**
	(0.005)	(0.022)	(0.020)
Sales	-0.000	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
Employment	0.000*	0.000**	0.001**
	(0.000)	(0.000)	(0.000)
Investment	0.002**	0.001	0.003
	(0.001)	(0.002)	(0.002)
No. of Investors	0.006**	-0.000	0.006**
	(0.002)	(0.002)	(0.002)
Observations	719	719	719
Adjusted R-squared	0.082	0.168	0.196
Investment Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes

Table 4: The Effect of Corporate Investment on the Innovation Output of Fintech Startups

This table reports the OLS regression results of the effect of corporate investment on the innovation output of fintech startups. *Ln Patents (Year 1, Year 2, and Year 3)* are the normalized number of patents filed and eventually granted to fintech startups in one, two, and three years, respectively, after the year of first investment by a corporate investor (year of the last round of investment otherwise). *Ln Citations (Year 1, Year 2, and Year 3)* are the normalized forward citations received on the number of patents filed and eventually granted to fintech startups in one, two, and three years, respectively, after the year of first investment by a corporate investor (year of the last round of investment otherwise). *Corporate Investment* is an indicator variable that takes the value equal to one if a fintech startup received its first-ever investment from a corporate investor in any investment round of a fintech startup. All other independent variables are defined in Table 1. Constant (suppressed), year of first investment by a corporate investor (year of the last round of investment in case there is no investment by any corporate investor) fixed effects, and two-digit SIC code industry fixed effects are included in all regressions. All standard errors are clustered at the industry level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	ln(Patents) 1 year	ln(Patents) 2 years	ln(Patents) 3 years	Ln(citations) 1 year	Ln(citations) 2 years	Ln(citations) 3 years
Corporate Investment	0.0148**	0.0225***	0.0231**	0.0002*	0.0005**	0.0008**
	(0.0055)	(0.0080)	(0.0089)	(0.0001)	(0.0003)	(0.0004)
VC Investment Fraction	0.0080**	0.0083*	0.0041	0.0001***	0.0002**	0.0002*
	(0.0031)	(0.0043)	(0.0053)	(0.0000)	(0.0001)	(0.0001)
CVC Investment	-0.0001	0.0025	0.0029	0.0002	0.0006*	0.0008*
	(0.0012)	(0.0037)	(0.0042)	(0.0001)	(0.0003)	(0.0005)
Age	0.0040**	0.0073***	0.0069***	0.0002***	0.0003***	0.0003***
	(0.0018)	(0.0024)	(0.0021)	(0.0000)	(0.0001)	(0.0001)
Sales	-0.0000***	-0.0000***	-0.0000***	-0.0000**	-0.0000***	-0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Employment	0.0000***	0.0001***	0.0001***	0.0000***	0.0000***	0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Investment	0.0001	0.0003	0.0006*	-0.0000	0.0000	0.0000*
	(0.0001)	(0.0002)	(0.0004)	(0.0000)	(0.0000)	(0.0000)
No. of Investors	0.0003***	0.0007***	0.0009***	0.0000***	0.0001***	0.0001***
	(0.0001)	(0.0001)	(0.0002)	(0.0000)	(0.0000)	(0.0000)
Observations	719	719	719	719	719	719
Adjusted R-squared	-0.0113	-0.0157	-0.0243	0.0449	-0.0240	-0.0412
Investment Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 5: The Effect of Corporate Investment on the Net-Inflow of Inventors into Fintech Startups

This table reports the OLS regression results of the effect of corporate investment on the net inflow of inventors into fintech startups. *Net Inflow of Inventors (Year 1, Year 2, and Year 3)* is the difference between the natural logarithm of inventor inflow and the natural logarithm of inventor outflow in one, two, and three years, respectively, after the year of first investment by a corporate investor (year of the last round of investment otherwise). *Net Inflow of Superstar Inventors (Year 1, Year 2, and Year 3)* is the difference between the natural logarithm of the inflow of superstar inventors and the natural logarithm of the outflow of superstar inventors in one, two, and three years, respectively, after the year of first investment by a corporate investor (year of the last round of investment otherwise. *Corporate Investment* is an indicator variable that takes the value equal to one if a fintech startup received its first-ever investment from a corporate investor in any investment round of a fintech startup. All other independent variables are defined in Table 1. Constant (suppressed), year of first investment by a corporate investor (year of the last round of investment in case there is no investment by any corporate investor) fixed effects, and two-digit SIC code industry fixed effects are included in all regressions. All standard errors are clustered at the industry level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Net Inflow of Inventors (1 year)	Net Inflow of Inventors (2 years)	Net Inflow of Inventors (3 years)	Net Inflow of Superstar Inventors (1 year)	Net Inflow of Superstar Inventors (2 years)	Net Inflow of Superstar Inventors (3 years)
Corporate Investment	0.070**	0.079*	0.106**	0.013**	0.013	0.019**
	(0.030)	(0.041)	(0.044)	(0.005)	(0.009)	(0.008)
VC Investment Fraction	0.028***	0.022*	0.028	0.004***	0.006	0.014***
	(0.007)	(0.013)	(0.022)	(0.001)	(0.005)	(0.005)
CVC Investment	0.060**	0.042**	0.037	-0.001	0.007*	0.006
	(0.022)	(0.019)	(0.022)	(0.001)	(0.004)	(0.005)
Age	0.028***	0.054***	0.056***	-0.000	0.007	0.006
	(0.009)	(0.014)	(0.016)	(0.001)	(0.006)	(0.006)
Sales	-0.000***	-0.000***	-0.000***	-0.000*	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employment	0.000***	0.000***	0.000***	0.000**	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Investment	0.000	0.002	0.001	-0.001**	-0.001*	-0.001**
	(0.001)	(0.002)	(0.002)	(0.000)	(0.001)	(0.001)
No. of Investors	0.003**	0.007***	0.006***	0.001***	0.002*	0.001
	(0.001)	(0.002)	(0.002)	(0.000)	(0.001)	(0.001)
Observations	719	719	719	719	719	719
Adjusted R-squared	0.025	0.034	0.057	-0.041	0.035	0.035
Investment Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 6: The Effect of Corporate Investment on the Probability of Successful Exit, Innovation Output, and the Net Inventor Inflow into Fintech Startups: Instrumental Variable Analyses

This table reports the instrumental variable (IV) regression results of the effect of corporate investment on the probability of successful exit; innovation output; and net inventor inflow into fintech startups. The sample only includes fintech startups whose headquarters are located in states, which experienced changes in non-compete laws. In Panel A, we show the IV analyses of exit. In Panel B, we show the IV analyses of innovation output. In Panel C, we show the IV analyses of net-inventor inflow. All the dependent variables are defined in earlier baseline analyses. *Increased Enforceability* is the instrumental variable, which is equal to 1 if there is an increase in the enforceability of non-compete laws in the investment year at the state where a fintech startup's headquarter is located. It is equal to -1 if there is a decrease in the enforceability of non-compete laws at the fintech startup's headquarter state in the investment year, or is equal to 0 otherwise. We define investment year as the year in which a fintech startup received its first-ever investment from a corporate investor or is the year of last investment round in case no corporate investor has invested in the fintech startup. *Corporate Investment* is an indicator variable that takes the value equal to one if a fintech startup received its first-ever investment from a corporate investor in any investment round of a fintech startup. All other independent variables are defined in Table 1. Constant (suppressed), fintech startup's headquarter state, and two-digit SIC code industry fixed effects are included in all regressions. We show Kleibergen-paap F statistic. All standard errors are clustered at the fintech startup's headquarter state level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: IV analyses of Exit

	(1)	(2)	(3)	(4)
	First Stage	Second Stage		
Variables	Corporate Investment	IPO only	Acquisition only	IPO or Acquisition
Increased Enforceability	0.072***			
	(0.022)			
Corporate Investment		1.273**	0.788	2.061***
		(0.492)	(0.799)	(0.562)
VC Investment Fraction	-0.212*	0.272	0.462***	0.733***
	(0.103)	(0.201)	(0.120)	(0.195)
CVC Investment	0.104*	-0.155	-0.048	-0.203
	(0.052)	(0.105)	(0.114)	(0.147)
Age	0.160***	-0.160	-0.166*	-0.326***
	(0.035)	(0.113)	(0.088)	(0.078)
Sales	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Employment	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.001)
Investment	0.029***	-0.034*	-0.030	-0.064***
	(0.005)	(0.017)	(0.027)	(0.017)
No. of Investors	0.016***	-0.017	-0.020*	-0.037**
	(0.004)	(0.010)	(0.011)	(0.015)
Observations	241	241	241	241
F Statistics	10.263			
Adjusted R-squared	0.237			
State FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes

Panel B: IV analyses of Innovation Output

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	First Stage	Second Stage					
Variables	Corporate Investment	ln(Patents) 1 year	ln(Patents) 2 years	ln(Patents) 3 years	Ln(citations) 1 year	Ln(citations) 2 years	Ln(citations) 3 years
Increased Enforceability	0.072***						
	(0.022)						
Corporate Investment		0.423**	1.099**	1.477**	0.012***	0.059**	0.095**
		(0.155)	(0.451)	(0.574)	(0.004)	(0.024)	(0.039)
VC Investment Fraction	-0.212*	0.097	0.237	0.312	0.003	0.013	0.020
	(0.103)	(0.066)	(0.182)	(0.241)	(0.002)	(0.010)	(0.016)
CVC Investment	0.104*	-0.035	-0.099	-0.137	-0.001	-0.005	-0.008
	(0.052)	(0.031)	(0.084)	(0.113)	(0.001)	(0.004)	(0.007)
Age	0.160***	-0.062	-0.164	-0.221	-0.002*	-0.009	-0.014
	(0.035)	(0.037)	(0.104)	(0.134)	(0.001)	(0.006)	(0.009)
Sales	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employment	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Investment	0.029***	-0.012**	-0.031*	-0.042*	-0.000**	-0.002*	-0.003*
	(0.005)	(0.005)	(0.016)	(0.020)	(0.000)	(0.001)	(0.001)
No. of Investors	0.016***	-0.006**	-0.016**	-0.022**	-0.000**	-0.001**	-0.001**
	(0.004)	(0.003)	(0.007)	(0.009)	(0.000)	(0.000)	(0.001)
Observations	241	241	241	241	241	241	241
F Statistics	10.263						
Adjusted R-squared	0.237						
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: IV analyses of Net Inflow of Inventors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	First Stage	Second Stage					
Variables	Corporate Investment	Net Inflow of Inventors (1 year)	Net Inflow of Inventors (2 years)	Net Inflow of Inventors (3 years)	Net Inflow of Superstar Inventors (1 year)	Net Inflow of Superstar Inventors (2 years)	Net Inflow of Superstar Inventors (3 years)
Increased Enforceability	0.072***						
	(0.022)						
Corporate Investment		1.929**	3.982**	4.881***	0.398**	0.623**	0.601**
		(0.706)	(1.773)	(1.411)	(0.159)	(0.217)	(0.198)
VC Investment Fraction	-0.212*	0.483	0.930	1.143	0.081	0.145	0.175
	(0.103)	(0.338)	(0.736)	(0.774)	(0.062)	(0.099)	(0.107)
CVC Investment	0.104*	-0.066	-0.367	-0.485	-0.042	-0.047	-0.054
	(0.052)	(0.212)	(0.394)	(0.405)	(0.031)	(0.043)	(0.042)
Age	0.160***	-0.249	-0.497	-0.655*	-0.058	-0.077	-0.083*
	(0.035)	(0.149)	(0.355)	(0.308)	(0.034)	(0.046)	(0.045)
Sales	-0.000	-0.000	-0.000	-0.000	-0.000	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employment	0.000	0.000	-0.000	-0.000	0.000	-0.001***	-0.001***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Investment	0.029***	-0.060**	-0.116	-0.139**	-0.014**	-0.021**	-0.021**
	(0.005)	(0.027)	(0.065)	(0.057)	(0.006)	(0.009)	(0.008)
No. of Investors	0.016***	-0.034**	-0.061**	-0.075***	-0.005*	-0.007*	-0.009**
	(0.004)	(0.012)	(0.024)	(0.023)	(0.003)	(0.004)	(0.003)
Observations	241	241	241	241	241	241	241
F Statistics	10.263						
Adjusted R-squared	0.237						
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: The Effect of Corporate Investment Synergy on the Probability of Successful Exit of Fintech Startups: IV Analyses

This table reports the IV regression results of the effect of corporate investment synergy on the probability of successful exit of fintech startups. The sample only includes fintech startups whose headquarters are located in states, which experienced changes in non-compete laws. In Panel A, we show the IV analyses of exit. In Panel A, we show IV analyses of exit for the case of investment by corporate investors in financial services sector. In Panel B, we show IV analyses of exit for the case of investment by corporate investors in the non-financial services sector. All dependent variables are defined in Table 1. *Increased Enforceability* is the instrumental variable, which is equal to 1 if there is an increase in the enforceability of non-compete laws in the investment year at the state where a fintech startup's headquarter is located. It is equal to -1 if there is a decrease in the enforceability of non-compete laws at the fintech startup's headquarter state in the investment year, or is equal to 0 otherwise. We define investment year as the year in which a fintech startup received its first-ever investment from a corporate investor or is the year of last investment round in case no corporate investor has invested in the fintech startup. All independent variables are defined in Table 1. Constant (suppressed), fintech startup's headquarter state, and two-digit SIC code industry fixed effects are included in all regressions. We show Kleibergen-paap F statistic. All standard errors are clustered at the fintech startup's headquarter state level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Synergy analyses of exit (investment by corporate investors in financial services sector)

	(1)	(2)	(3)	(4)
	First Stage	Second Stage		
Variables	Corporate Investment (Financial Services)	IPO only	Acquisition only	IPO or Acquisition
Increased Enforceability	0.096***			
	(0.023)			
Corporate Investment (Financial Services)		0.953***	0.590	1.543**
		(0.145)	(0.728)	(0.665)
VC Investment Fraction	-0.256***	0.245***	0.445**	0.690***
	(0.039)	(0.047)	(0.171)	(0.165)
CVC Investment	0.036	-0.056**	0.014	-0.043
	(0.037)	(0.023)	(0.072)	(0.087)
Age	0.132***	-0.083*	-0.118	-0.200***
	(0.039)	(0.040)	(0.067)	(0.051)
Sales	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Employment	0.001	-0.000	-0.000	-0.000
	(0.001)	(0.000)	(0.001)	(0.001)
Investment	0.018***	-0.014***	-0.018	-0.031
	(0.003)	(0.004)	(0.019)	(0.020)
No. of Investors	0.016**	-0.011	-0.016	-0.027*
	(0.005)	(0.008)	(0.009)	(0.014)
Observations	241	241	241	241
F Statistic	17.376			
Adjusted R-squared	0.145			
State FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes

Panel B: Synergy analyses of exit (investment by corporate investors in the non-financial services sector)

	(1)	(2)	(3)	(4)
	First Stage	Second Stage		
Variables	Corporate Investment (Non-financial Services)	IPO only	Acquisition only	IPO or Acquisition
Increased Enforceability	-0.024			
	(0.024)			
Corporate Investment (Non-Financial Services)		-3.794	-2.347	-6.140
		(3.082)	(4.701)	(7.595)
VC Investment Fraction	0.043	0.165	0.396	0.561
	(0.096)	(0.447)	(0.376)	(0.818)
CVC Investment	0.069	0.238	0.196	0.434
	(0.069)	(0.216)	(0.216)	(0.367)
Age	0.028*	0.148	0.025	0.174
	(0.014)	(0.095)	(0.148)	(0.229)
Sales	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Employment	-0.000	-0.002	-0.001	-0.002
	(0.000)	(0.002)	(0.003)	(0.005)
Investment	0.011**	0.046	0.019	0.065
	(0.004)	(0.033)	(0.045)	(0.074)
No. of Investors	0.001	0.007	-0.005	0.001
	(0.003)	(0.012)	(0.007)	(0.012)
Observations	241	241	241	241
F Statistics	1.051			
Adjusted R-squared	-0.0129			
State FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes

Table 8: Determinants of Corporate Investment in Fintech Startups

This table reports the OLS regression results of the factors that drive the investment by public firms in fintech startups. This sample comprises firms that made investment in fintech startups and control firms in the same three-digit SIC code that did not invest in fintech startups. For each treated firm, we find three control firms in the same 3-digit SIC code based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. We analyze the firms at quarterly frequency. Our sample starts from 1995 and ends at 2017. In Column (1), we present our results including the full sample, while in Columns (2) and (3), we present our results using subsamples comprising financial services and non-financial services firms, respectively. The dependent variable (*Corporate Investment in Fintech Startup=1*) is an indicator variable that takes the value equal to 1 in the quarter in which a public firm makes an investment in a fintech startup; otherwise it is equal to 0. For a corporate investor, we include all observations available up to the quarter in which the investment is made and omit all quarters post the investment. For non-corporate investors we include all available observations. *Change in Sales* is the difference in sales over the past six quarters, i.e., between quarter -1 and quarter -7, with respect to the current quarter (quarter 0). *ROA* is the ratio of operating income before depreciation and the book value of total assets of a firm. *Change in ROA* is the difference in *ROA* over the past six quarters, i.e., between quarter -1 and quarter -7, with respect to the current quarter (quarter 0). *Tobin's q* is the ratio of market value of assets and the book value of assets. *Change in Tobin's q* is the difference in *Tobin's q* over the past six quarters, i.e., between quarter -1 and quarter -7, with respect to the current quarter (quarter 0). *Market Share* is the ratio of sales of a firm over the sales of all firms in the same 3-digit sic code as the concerned firm. *Change in Market Share* is the difference in *Market Share* over the past six quarters, i.e., between quarter -1 and quarter -7, with respect to the current quarter (quarter 0). *Institutional Investor Holding %* is the ratio of shares held by institutional investors over the total number of shares outstanding. *Ln(Assets)* is the natural logarithm of the book value of total assets of a firm. *Ln(Age)* is defined as the natural logarithm of one plus the number of years a firm has return data available from CRSP database. Constant (suppressed), year by quarter fixed effects, and firm fixed effects are included in all regressions. All standard errors are clustered at the firm level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1) Full Sample	(2) Financial Services	(3) Non-Financial Services
Variables	Corporate Investment in Fintech Startup=1		
Change in Sales	-0.004**	-0.005**	-0.003
	(0.002)	(0.002)	(0.002)
Change in ROA	-0.002	-0.009	-0.002
	(0.006)	(0.015)	(0.006)
Change in Tobin's q	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)
Change in Market Share	-0.001	0.017	-0.020
	(0.019)	(0.022)	(0.029)
Institutional Investor Holding %	0.001	0.000	0.001
	(0.004)	(0.006)	(0.005)
Ln(Assets)	0.002	0.003	0.001
	(0.002)	(0.003)	(0.002)
Ln(Age)	-0.005	-0.011	-0.002
	(0.005)	(0.009)	(0.006)
Observations	12,082	5,389	6,693
Adjusted R-squared	0.033	0.037	0.024
Year X Qtr FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

Table 9: The Effect of Investment by Corporate Investors in Fintech Startups on the Performance of Corporate Investors

This table reports the results of the effect of the investment in fintech startups by corporate investors on the performance of corporate investors themselves using a stacked difference-in-differences empirical specification. We construct a cohort of treated firms (corporate investors) and control firms using firm-quarter observations for twelve quarters before and after investments in fintech startups by treated firms in a particular calendar year-quarter. A cohort is formed in a calendar year-quarter in which investments in fintech startups were made. For each treated firm, we find three control firms in the same 3-digit SIC code based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. Panel A comprises firms in the financial services industries that made investment in fintech startups and control firms in the same three-digit SIC code that did not invest in fintech startups. Panel B comprises firms in the non-financial services industries that made investment in fintech startups and control firms in the same three-digit SIC code that did not invest in fintech startups. We consider all investments made in fintech startups between 2000 and 2017. *Ln(Sales)* is the natural logarithm of quarterly sales of sample firms. *Profitability* is the ratio of operating income before depreciation and the book value of total assets of a firm. *Market Share* is the ratio of sales of a firm over the sales of all firms in the same 3-digit sic code as the concerned firm. *Post* is an indicator variable that takes the value equal to one for the treated firm and respective control firms for 12 quarters (1095 days or 3 years) after the investment date in a fintech startup by the corporate investor (treated firm), and takes the value equal to zero for 12 quarters (1095 days) prior to the investment date. *Corporate Investment* is an indicator variable that takes the value 1 for corporate investors (treated firms) and 0 for control firms. Constant (suppressed), cohort by year by quarter fixed effects, and cohort by firm fixed effects are included in all regressions. All standard errors are clustered at the firm level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: The Effect of Investment on Corporate Investors in Financial Services Industries

	(1)	(2)	(3)
Variables	Ln(Sales)	Profitability	Market Share
Post x Corporate Investment	0.034	0.005**	0.010**
	(0.081)	(0.002)	(0.005)
Observations	2,828	2,782	2,476
Adjusted R-squared	0.979	0.486	0.972
Cohort x Year x Qtr FE	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes

Panel B: The Impact of Investment on Corporate Investors in Non-Financial Services Industries

	(1)	(2)	(3)
Variables	Ln(Sales)	Profitability	Market Share
Post x Corporate Investment	0.091	0.001	-0.002
	(0.087)	(0.003)	(0.010)
Observations	2,987	2,956	2,830
Adjusted R-squared	0.969	0.392	0.947
Cohort x Year x Qtr FE	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes

Table 10: The Effect of Investment by Corporate Investors in Fintech Startups on the Market Valuation of Corporate Investors

This table reports the results of the effect of the investment in fintech startups by corporate investors on the market valuation of corporate investors using a stacked difference-in-differences empirical specification. We construct a cohort of treated firms (corporate investors) and control firms using firm-quarter observations for twelve quarters before and after investments in fintech startups by treated firms in a particular calendar year-quarter. A cohort is formed in a calendar year-quarter in which investments in fintech startups were made. For each treated firm, we find three control firms in the same 3-digit SIC code based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. In Column (1), our sample comprises firms in the financial services industries that made investment in fintech startups and control firms in the same three-digit SIC code that did not invest in fintech startups. In Column (2), our sample comprises firms in the non-financial services industries that made investment in fintech startups and control firms in the same three-digit SIC code that did not invest in fintech startups. We consider all investments made in fintech startups between 2000 and 2017. *Tobin's q* is the ratio of market value of assets and the book value of assets. *Post* is an indicator variable that takes the value equal to one for the treated firm and respective control firms for 12 quarters (1095 days or 3 years) after the investment date in a fintech startup by the corporate investor (treated firm), and takes the value equal to zero for 12 quarters (1095 days) prior to the investment date. *Corporate Investment* is an indicator variable that takes the value 1 for corporate investors (treated firms) and 0 for control firms. Constant (suppressed), cohort by year by quarter fixed effects, and cohort by firm fixed effects are included in all regressions. All standard errors are clustered at the firm level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)
	Financial Services	Non-Financial Services
Variables	Tobin's Q	Tobin's Q
Post x Corporate Investment	0.280*	0.070
	(0.166)	(0.173)
Observations	2,514	2,865
Adjusted R-squared	0.818	0.796
Cohort x Year x Qtr FE	Yes	Yes
Cohort x Firm FE	Yes	Yes

Table 11: The Dynamic Effect of Investment by Corporate Investors in Fintech Startups on the Performance and Market Valuation of Corporate Investors in Financial Services Industries

This table reports the results of the dynamic effect of the investment in fintech startups by corporate investors on the performance and market valuation of corporate investors in the financial services industries using a dynamic stacked difference-in-differences empirical specification. We construct a cohort of treated firms (corporate investors) and control firms using firm-quarter observations for twelve quarters before and after investments in fintech startups by treated firms in a particular calendar year-quarter. A cohort is formed in a calendar year-quarter in which investments in fintech startups were made. For each treated firm, we find three control firms in the same 3-digit SIC code based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. We only consider firms in the financial services industries. We consider all investments made in fintech startups between 2000 and 2017. *Profitability* is the ratio of operating income before depreciation and the book value of total assets of a firm. *Market Share* is the ratio of sales of a firm over the sales of all firms in the same 3-digit sic code as the concerned firm. *Tobin's q* is the ratio of market value of assets and the book value of assets. *T=0* is an indicator variable that takes the value equal to 1 for all treated and control firms between day 0 and day 91 after the dates in which treated firms made investments in fintech startups; otherwise the indicator variable is equal to 0. *T=-1, T=-2, T=-3, and T=-4* are indicator variables that takes the value equal to 1 for all treated and control firms between day 1 and day 90, day 91 and day 181, day 182 and day 273, and day 274 and day 364 prior to the investment date; otherwise the indicator variable is equal to 0. *T=+1, T=+2, and T=+3* are indicator variables that takes the value equal to 1 for all treated and control firms between day 92 and day 182, day 183 and day 273, and day 274 and day 364 after the investment date; otherwise the indicator variable is equal to 0. *T=4+* is an indicator variable that takes the value equal to 1 for all firms in a cohort for all days or quarters after 365 days post the investment date of that cohort; otherwise it is equal to 0. *T=before -4* is an indicator variable that takes the value equal to 1 for all firms in a cohort for all days or quarters before the 365 days prior to the investment calendar-year quarter of that cohort; otherwise it is equal to 0. *T=before-4* is omitted due to multicollinearity. *Corporate Investment* is an indicator variable that takes the value 1 for corporate investors (treated firms) and 0 for control firms. Constant (suppressed), cohort by year by quarter fixed effects, and cohort by firm fixed effects are included in all regressions. All standard errors are clustered at the firm level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Variables	(1) Profitability	(2) Market Share	(3) Tobin's Q
T=-4 x Corporate Investment	0.004	-0.004	0.122
	(0.003)	(0.002)	(0.088)
T=-3 x Corporate Investment	0.004	0.002	0.031
	(0.002)	(0.003)	(0.083)
T=-2 x Corporate Investment	0.001	0.011	0.062
	(0.001)	(0.008)	(0.077)
T=-1 x Corporate Investment	-0.000	0.005	0.009
	(0.003)	(0.005)	(0.094)
T=0 x Corporate Investment	0.004	0.006	0.119
	(0.003)	(0.005)	(0.095)
T=+1 x Corporate Investment	0.006*	0.012*	0.208*
	(0.003)	(0.006)	(0.120)
T=+2 x Corporate Investment	0.004	0.011**	0.239
	(0.004)	(0.005)	(0.144)
T=+3 x Corporate Investment	0.006**	0.019**	0.270*
	(0.003)	(0.009)	(0.156)
T= 4+ x Corporate Investment	0.005*	0.011*	0.352
	(0.003)	(0.006)	(0.216)
T=-4	-0.005	0.012*	-0.170**
	(0.003)	(0.007)	(0.065)
T=-3	-0.011**	0.022	-0.127
	(0.004)	(0.014)	(0.138)
T=-2	-0.014*	0.031	-0.143
	(0.008)	(0.020)	(0.310)
T=-1	-0.016	0.043*	-0.195
	(0.011)	(0.025)	(0.520)
T=0	-0.006	0.046	-0.214
	(0.021)	(0.032)	(0.788)
T=+1	-0.006	0.014	-0.458
	(0.026)	(0.055)	(0.932)
T=+2	0.003	0.011	-0.270
	(0.035)	(0.060)	(1.157)
T=+3	0.009	0.004	-0.067
	(0.041)	(0.065)	(1.613)
T=4+	0.008	0.005	0.458
	(0.046)	(0.061)	(2.102)
Observations	2,782	2,476	2,514
Adjusted R-squared	0.486	0.973	0.818
Cohort x Year x Qtr FE	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes

Table 12: The Effect of Investment by Corporate Investors in Fintech Startups on the Performance and Market Valuation of Corporate Investors: Strategic Alliance Channel

This table reports the subsample results of the effect of the investment in fintech startups by corporate investors on the performance and market valuation of corporate investors using a stacked difference-in-differences empirical specification. The subsamples are created based on the announcement of strategic alliance formation between corporate investors and fintech startups after the investment. Panel A and Panel B shows the results for corporate investors and control firms in financial services and non-financial services industries, respectively. We construct a cohort of treated firms (corporate investors) and control firms using firm-quarter observations for twelve quarters before and after investments in fintech startups by treated firms in a particular calendar year-quarter. A cohort is formed in a calendar year-quarter in which investments in fintech startups were made. For each treated firm, we find three control firms in the same 3-digit SIC code based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. We consider all investments made in fintech startups between 2000 and 2017. We split the firms (corporate investors) based on whether they have any strategic alliance with the fintech startups. We classify an investment strategy as "*strategic alliance*" if there is a news on strategic alliance formation between the corporate investor and the fintech startup, otherwise it is classified as "*no strategic alliance*". *Profitability* is the ratio of operating income before depreciation and the book value of total assets of a firm. *Market Share* is the ratio of sales of a firm over the sales of all firms in the same 3-digit sic code as the concerned firm. *Tobin's q* is the ratio of market value of assets and the book value of assets. *Post* is an indicator variable that takes the value equal to one for the treated firm and respective control firms for 12 quarters (1095 days or 3 years) after the investment date in a fintech startup by the corporate investor (treated firm), and takes the value equal to zero for 12 quarters (1095 days) prior to the investment date. *Corporate Investment* is an indicator variable that takes the value 1 for corporate investors (treated firms) and 0 for control firms. Constant (suppressed), cohort by year by quarter fixed effects, and cohort by firm fixed effects are included in all regressions. All standard errors are clustered at the firm level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: The effect of strategic alliance on the performance of corporate investors in the financial services industry.

	(1)	(2)	(3)	(4)	(5)	(6)
	Strategic Alliance			No Strategic Alliance		
Variables	Profitability	Market Share	Tobin's Q	Profitability	Market Share	Tobin's Q
Post x Corporate Investment	0.006**	0.013**	0.427*	0.000	0.001	0.033
	(0.003)	(0.006)	(0.252)	(0.000)	(0.007)	(0.027)
Observations	1,734	1,556	1,536	1,045	911	892
Adjusted R-squared	0.489	0.972	0.792	0.530	0.973	0.919
Cohort x Year x Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: The effect of strategic alliance on the performance of corporate investors in the non-financial services industry.

	(1)	(2)	(3)	(4)	(5)	(6)
	Strategic Alliance			No Strategic Alliance		
Variables	Profitability	Market Share	Tobin's Q	Profitability	Market Share	Tobin's Q
Post x Corporate Investment	0.007	-0.003	-0.016	-0.006	0.210	0.033
	(0.004)	(0.006)	(0.188)	(0.005)	(0.308)	(0.027)
Observations	1,582	1,552	1,557	1,374	1,308	892
Adjusted R-squared	0.339	0.958	0.863	0.422	0.724	0.919
Cohort x Year x Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 13: The Effect of Investment by Corporate Investors in Fintech Startups on New Product Introduction

This table reports the effect of the investment in fintech startups by corporate investors on the new product introduction using a stacked difference-in-differences empirical specification. Panel A and Panel B show the results for corporate investors and control firms in financial services and non-financial services industries, respectively. We construct a cohort of treated firms (corporate investors) and control firms using firm-quarter observations for twelve quarters before and after investments in fintech startups by treated firms in a particular calendar year-quarter. A cohort is formed in a calendar year-quarter in which investments in fintech startups were made. For each treated firm, we find three control firms in the same 3-digit SIC code based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. We only consider firms in the financial services industries. We consider all investments made in fintech startups between 2000 and 2017. *Ln(New Products)* is the natural logarithm of one plus the total number of new products introduced in a quarter by a firm. *New Products/Asset* is the ratio of the total number of new products introduced in a quarter by a firm over the total assets of the firm. New product information is obtained from the Ravenpack database. *Ln(Trademarks)* is the natural logarithm of one plus the total number of new trademarks filed in a quarter by a firm. *Trademarks/Asset* is the ratio of the total number of new trademarks filed in a quarter by a firm over the total assets of the firm. Trademarks data in obtained from the USPTO website. *Post* is an indicator variable that takes the value equal to one for the treated firm and respective control firms for 12 quarters (1095 days or 3 years) after the investment date in a fintech startup by the corporate investor (treated firm), and takes the value equal to zero for 12 quarters (1095 days) prior to the investment date. *Corporate Investment* is an indicator variable that takes the value 1 for corporate investors (treated firms) and 0 for control firms. Constant (suppressed), cohort by year by quarter fixed effects, and cohort by firm fixed effects are included in all regressions. All standard errors are clustered at the firm level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: The effect of corporate investment on the new product introduction in the financial services industry.

	(1)	(2)	(3)	(4)
	Financial Services Firms			
Variables	Ln(New Products)	New Products/Asset	Ln(Trademarks)	Trademarks/Asset
Post x Corporate Investment	-0.017	-0.000	-0.074*	0.000
	(0.053)	(0.000)	(0.042)	(0.000)
Observations	2,795	2,702	2,886	2,787
Adjusted R-squared	0.721	0.454	0.613	0.137
Cohort x Year x Qtr FE	Yes	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes	Yes

Panel B: The effect of corporate investment on the new product introduction in the non-financial services industry.

	(1)	(2)	(3)	(4)
	Non-Financial Services Firms			
Variables	Ln(New Products)	New Products/Asset	Ln(Trademarks)	Trademarks/Asset
Post x Corporate Investment	0.043	0.000	-0.077	-0.000
	(0.112)	(0.000)	(0.053)	(0.000)
Observations	2,847	2,784	3,032	2,961
Adjusted R-squared	0.819	0.542	0.585	0.165
Cohort x Year x Qtr FE	Yes	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes	Yes

Internet Appendix (Not to be published)

Table A1: The Effect of Corporate Investment on the Probability of Successful Exit: Instrumental Variable Analyses (without Controls)

This table reports the instrumental variable (IV) regression results of the effect of corporate investment on the probability of successful exit without using control variables in a robustness test. The sample only includes fintech startups whose headquarters are located in states, which experienced changes in non-compete laws. *Increased Enforceability* is the instrumental variable, which is equal to 1 if there is an increase in the enforceability of non-compete laws in the investment year at the state where a fintech startup's headquarter is located. It is equal to -1 if there is a decrease in the enforceability of non-compete laws at the fintech startup's headquarter state in the investment year, or is equal to 0 otherwise. We define investment year as the year in which a fintech startup received its first-ever investment from a corporate investor or is the year of last investment round in case no corporate investor has invested in the fintech startup. *Corporate Investment* is an indicator variable that takes the value equal to one if a public or private firm (corporate investor) makes an investment in the fintech startup in an investment round. Constant (suppressed), fintech startup's headquarter state, and two-digit SIC code industry fixed effects are included in all regressions. We show Kleibergen-paap F statistic. All standard errors are clustered at the fintech startup's headquarter state level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)	(3)
		Second Stage	
Variables	IPO only	Acquisition only	IPO or Acquisition
Corporate Investment	1.123**	0.955	2.079***
	(0.387)	(0.588)	(0.417)
Observations	241	241	241
F Statistics	12.223	12.223	12.223
State FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes

Table A2: The Effect of Corporate Investment Synergy on the Innovation Output and the Net Inventor Inflow into Fintech Startup

This table reports the IV regression results of the effect of corporate investment synergy on the innovation output and the net inventor inflow into fintech startups. In Panel A, we show IV analyses of innovation output for the case of investment by corporate investors in financial services sector. In Panel B, we show IV analyses of innovation output for the case of investment by corporate investors in the non-financial services sector. In Panel C, we show IV analyses of inventor inflow for the case of investment by corporate investors in financial services sector. In Panel D, we show IV analyses of inventor inflow for the case of investment by corporate investors in the non-financial services sector. All dependent variables are defined in Table 1. *Increased Enforceability* is the instrumental variable, which is equal to 1 if there is an increase in the enforceability of non-compete laws in the investment year at the state where a fintech startup's headquarter is located. It is equal to -1 if there is a decrease in the enforceability of non-compete laws at the fintech startup's headquarter state in the investment year, or is equal to 0 otherwise. We define investment year as the year in which a fintech startup received its first-ever investment from a corporate investor or is the year of last investment round in case no corporate investor has invested in the fintech startup. All other independent variables are defined in Table 1. Constant (suppressed), fintech startup's headquarter state, and two-digit SIC code industry fixed effects are included in all regressions. We show Kleibergen-paap F statistic. All standard errors are clustered at the fintech startup's headquarter state level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Synergy analyses of Innovation (investment by corporate investors in financial services sector)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	First Stage	Second Stage					
Variables	Corporate Investment (Financial Services)	ln(Patents) 1 year	ln(Patents) 2 years	ln(Patents) 3 years	Ln(citations) 1 year	Ln(citations) 2 years	Ln(citations) 3 years
Increased Enforceability	0.096***						
	(0.023)						
Corporate Investment (Financial Services)		0.317***	0.822***	1.106***	0.009***	0.044***	0.071***
		(0.058)	(0.184)	(0.240)	(0.001)	(0.010)	(0.016)
VC Investment Fraction	-0.256***	0.088***	0.214***	0.281***	0.003***	0.012***	0.018***
	(0.039)	(0.017)	(0.055)	(0.073)	(0.000)	(0.003)	(0.005)
CVC Investment	0.036	-0.002	-0.013	-0.022	0.000	0.000	-0.000
	(0.037)	(0.013)	(0.030)	(0.038)	(0.001)	(0.002)	(0.003)
Age	0.132***	-0.037**	-0.097*	-0.131**	-0.001**	-0.005**	-0.009*
	(0.039)	(0.015)	(0.045)	(0.058)	(0.000)	(0.002)	(0.004)
Sales	-0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employment	0.001	-0.000	-0.000	-0.001	-0.000	-0.000	-0.000
	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Investment	0.018***	-0.005***	-0.014***	-0.019***	-0.000***	-0.001***	-0.001***
	(0.003)	(0.001)	(0.004)	(0.005)	(0.000)	(0.000)	(0.000)
No. of Investors	0.016**	-0.004**	-0.011**	-0.015**	-0.000**	-0.001**	-0.001**
	(0.005)	(0.002)	(0.004)	(0.006)	(0.000)	(0.000)	(0.000)
Observations	241	241	241	241	241	241	241
F Statistic	17.376						
Adjusted R-squared	0.145						
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Synergy analyses of Innovation (investment by corporate investors in the non-financial services sector)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	First Stage	Second Stage					
Variables	Corporate Investment (Non-Financial Services)	ln(Patents) 1 year	ln(Patents) 2 years	ln(Patents) 3 years	Ln(citations) 1 year	Ln(citations) 2 years	Ln(citations) 3 years
Increased Enforceability	-0.024						
	(0.024)						
Corporate Investment (Non-Financial Services)		-1.260	-3.273	-4.399	-0.036	-0.176	-0.283
		(1.090)	(2.754)	(3.812)	(0.034)	(0.150)	(0.239)
VC Investment Fraction	0.043	0.061	0.146	0.189	0.002	0.008	0.012
	(0.096)	(0.149)	(0.383)	(0.516)	(0.004)	(0.021)	(0.033)
CVC Investment	0.069	0.096	0.241	0.320	0.003	0.014	0.022
	(0.069)	(0.079)	(0.208)	(0.280)	(0.002)	(0.011)	(0.018)
Age	0.028*	0.040	0.103	0.137	0.001	0.005	0.009
	(0.014)	(0.031)	(0.078)	(0.107)	(0.001)	(0.004)	(0.007)
Sales	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employment	-0.000	-0.001	-0.001	-0.002	-0.000	-0.000	-0.000
	(0.000)	(0.001)	(0.002)	(0.003)	(0.000)	(0.000)	(0.000)
Investment	0.011**	0.014	0.037	0.050	0.000	0.002	0.003
	(0.004)	(0.012)	(0.031)	(0.043)	(0.000)	(0.002)	(0.003)
No. of Investors	0.001	0.002	0.004	0.005	0.000	0.000	0.000
	(0.003)	(0.004)	(0.009)	(0.012)	(0.000)	(0.000)	(0.001)
Observations	241	241	241	241	241	241	241
F Statistics	1.051						
Adjusted R-squared	-0.0129						
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: Synergy analyses of Inventor Inflow (investment by corporate investors in the financial services sector)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	First Stage	Second Stage					
Variables	Corporate Investment (Financial Services)	Net Inflow of Inventors (1 year)	Net Inflow of Inventors (2 years)	Net Inflow of Inventors (3 years)	Net Inflow of Superstar Inventors (1 year)	Net Inflow of Superstar Inventors (2 years)	Net Inflow of Superstar Inventors (3 years)
Increased Enforceability	0.096***						
	(0.023)						
Corporate Investment (Financial Services)		1.444***	2.981***	3.654***	0.298***	0.466***	0.450***
		(0.339)	(0.848)	(0.970)	(0.060)	(0.088)	(0.085)
VC Investment Fraction	-0.256***	0.443***	0.846***	1.041***	0.073***	0.132***	0.163***
	(0.039)	(0.113)	(0.257)	(0.261)	(0.016)	(0.028)	(0.035)
CVC Investment	0.036	0.084	-0.058	-0.106	-0.011	0.001	-0.007
	(0.037)	(0.067)	(0.086)	(0.109)	(0.011)	(0.020)	(0.018)
Age	0.132***	-0.131**	-0.255*	-0.358**	-0.034**	-0.039**	-0.047**
	(0.039)	(0.059)	(0.140)	(0.150)	(0.012)	(0.015)	(0.017)
Sales	-0.000	0.000	0.000	0.000	0.000	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employment	0.001	-0.001	-0.001*	-0.002	-0.000	-0.001***	-0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Investment	0.018***	-0.030***	-0.053**	-0.063***	-0.008***	-0.012***	-0.011***
	(0.003)	(0.008)	(0.017)	(0.018)	(0.002)	(0.003)	(0.002)
No. of Investors	0.016**	-0.025	-0.042**	-0.052*	-0.003	-0.004	-0.006**
	(0.005)	(0.014)	(0.018)	(0.026)	(0.002)	(0.003)	(0.002)
Observations	241	241	241	241	241	241	241
F Statistic	17.376						
Adjusted R-squared	0.145						
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D: Synergy analyses of Inventor Inflow (investment by corporate investors in the non-financial services sector)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	First Stage	Second Stage					
Variables	Corporate Investment (Non-Financial Services)	Net Inflow of Inventors (1 year)	Net Inflow of Inventors (2 years)	Net Inflow of Inventors (3 years)	Net Inflow of Superstar Inventors (1 year)	Net Inflow of Superstar Inventors (2 years)	Net Inflow of Superstar Inventors (3 years)
Increased Enforceability	-0.024						
	(0.024)						
Corporate Investment (Non-Financial Services)		-5.747	-11.862	-14.542	-1.186	-1.855	-1.789
		(5.246)	(10.232)	(14.862)	(0.994)	(1.651)	(1.632)
VC Investment Fraction	0.043	0.322	0.597	0.735	0.048	0.093	0.125
	(0.096)	(0.652)	(1.334)	(1.694)	(0.141)	(0.217)	(0.198)
CVC Investment	0.069	0.531	0.863	1.024	0.081	0.145	0.132
	(0.069)	(0.343)	(0.772)	(0.976)	(0.072)	(0.118)	(0.113)
Age	0.028*	0.219	0.468	0.528	0.039	0.074*	0.062
	(0.014)	(0.128)	(0.263)	(0.367)	(0.028)	(0.041)	(0.042)
Sales	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employment	-0.000	-0.002	-0.005	-0.006	-0.001	-0.002	-0.001
	(0.000)	(0.004)	(0.007)	(0.010)	(0.001)	(0.001)	(0.001)
Investment	0.011**	0.060	0.132	0.165	0.011	0.017	0.017
	(0.004)	(0.060)	(0.120)	(0.167)	(0.011)	(0.018)	(0.018)
No. of Investors	0.001	0.002	0.013	0.016	0.002	0.004	0.002
	(0.003)	(0.022)	(0.039)	(0.043)	(0.003)	(0.005)	(0.004)
Observations	241	241	241	241	241	241	241
F Statistics	1.051						
Adjusted R-squared	-0.0129						
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A3: The Effect of Investment by Corporate Investors in Fintech Startups on the Performance of Corporate Investors (with control variables)

This table reports the results of the effect of the investment in FinTech startups by corporate investors on the performance of corporate investors themselves using a stacked difference-in-differences empirical specification. In this specification, we also include some control variables. We construct a cohort of treated firms (corporate investors) and control firms using firm-quarter observations for twelve quarters before and after investments in FinTech startups by treated firms in a particular calendar year-quarter. A cohort is formed in a calendar year-quarter in which investments in FinTech startups were made. For each treated firm, we find three control firms in the same 3-digit SIC code based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. Panel A comprises firms in the financial services industries that made investment in Fintech startups and the control group of firms in the same three-digit SIC code that did not invest in Fintech startups. Panel B comprises firms in the non-financial services industries that made investment in Fintech startups and the control group of firms in the same three-digit SIC code that did not invest in Fintech startups. We consider all investments made in FinTech startups between 2000 and 2017. *Ln(Sales)* is the natural logarithm of quarterly sales of sample firms. *Profitability* is the ratio of operating income before depreciation and the book value of total assets of a firm. *Market Share* is the ratio of sales of a firm over the sales of all firms in the same 3-digit sic code as the concerned firm. *Post* is an indicator variable that takes the value equal to one for the treated firm and respective control firms for 12 quarters (1095 days or 3 years) after the investment date in a Fintech startup by the corporate investor (treated firm), and takes the value equal to zero for 12 quarters (1095 days) prior to the investment date. *Corporate Investment* is an indicator variable that takes the value 1 for corporate investors (treated firms) and 0 for control firms. *Institutional Investor Holding %* is the ratio of shares held by institutional investors over the total number of shares outstanding. *Ln(Assets)* is the natural logarithm of the book value of total assets of a firm. *Ln(Age)* is defined as the natural logarithm of one plus the number of years a firm has return data available from CRSP database. Constant (suppressed), cohort by year by quarter fixed effects, and cohort by firm fixed effects are included in all regressions. All standard errors are clustered at the firm level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: The Effect of Corporate Investment on Corporate Investors in Financial Services Industries

	(1)	(2)	(3)
Variables	Ln(Sales)	Profitability	Market Share
Post x Corporate Investment	0.048	0.005**	0.011**
	(0.068)	(0.002)	(0.005)
Ln(Assets)	0.502***	-0.002	0.011**
	(0.078)	(0.002)	(0.005)
Ln(Age)	-0.109	-0.004	0.027**
	(0.172)	(0.005)	(0.012)
Institutional Investor Holding %	0.087	0.002	0.007
	(0.082)	(0.003)	(0.006)
Observations	2,781	2,782	2,476
Adjusted R-squared	0.983	0.487	0.974
Cohort x Year x Qtr FE	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes

Panel B: The Effect of Corporate Investment on Corporate Investors in non-Financial Services Industries

	(1)	(2)	(3)
Variables	Ln(Sales)	Profitability	Market Share
Post x Corporate Investment	0.001	0.000	-0.005
	(0.046)	(0.004)	(0.009)
Ln(Assets)	0.703***	0.003	0.025***
	(0.050)	(0.005)	(0.006)
Ln(Age)	0.113	0.008	0.026***
	(0.166)	(0.010)	(0.009)
Institutional Investor Holding %	-0.054	0.006	-0.007
	(0.089)	(0.007)	(0.013)
Observations	2,939	2,956	2,830
Adjusted R-squared	0.985	0.396	0.952
Cohort x Year x Qtr FE	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes

Table A4: List of Corporate Investors and Their First Investment in FinTech Startups

This table reports the identity and the investment date of the first investment made by publicly-listed companies (corporate investors) in financial and non-financial services sector. We classify whether an investment leads to a strategic alliance formation based on media coverage. We manually check media coverage of fintech startup-corporate investor pairs on the internet to find news on strategic alliance after the investment in the fintech startup by corporate investors. We classify an investment as leading to a strategic alliance if there is a news on strategic alliance between the corporate investor and the fintech startup subsequent to the investment by the corporate investor in the fintech startup. There is one case where this strategic alliance was cancelled.

Fintech Startup	Corporate Investor	Investment Date	Strategy
LearnVest	American Express	7/26/2013	strategic alliance
Zubie	Best Buy	5/1/2012	strategic alliance
Wipit	H&R Block	11/23/2011	strategic alliance
Airware	Caterpillar%Inc	2/2/2017	
AlphaCare Holdings	Magellan Health Services	8/14/2013	
Square	JP Morgan Chase & Co.	4/7/2014	
Revolution Money	Citigroup	9/1/2007	strategic alliance
Bill.com	Fifth Third Bancorp	11/12/2013	
AutoFi	Ford Motor Company	8/24/2017	strategic alliance
Quirky	General Electric (Ge)	11/13/2013	strategic alliance
Digital Asset	IBM	2/2/2016	
Second Measure	Leucadia National	4/5/2016	
Cybereason	Lockheed Martin	5/5/2015	strategic alliance
Kensho	S&P Global	2/28/2017	strategic alliance
Yodlee	Bank Of America	6/4/2008	strategic alliance
Enigma	The New York Times	8/30/2013	
R3	Northern Trust	5/23/2017	strategic alliance
FastPay	Wells Fargo	6/25/2012	
Digital Asset	PNC Financial Services Group	2/2/2016	
Advizr	Sei	6/22/2017	strategic alliance
OnDeck	Keybank	9/16/2013	strategic alliance
blooom	UMBBanks	10/15/2015	
EyeVerify	Sprint	8/20/2014	strategic alliance
Revolution Money	Morgan Stanley	9/1/2007	
Next Insurance	Markel Corporation	5/3/2017	strategic alliance
Matic Insurance	Mr. Cooper	11/7/2017	strategic alliance
Weather Analytics	W. R. Berkley Corporation	3/15/2017	strategic alliance
Tidemark	Workday	6/16/2015	strategic alliance
DailyPay, Inc.	First Financial	10/31/2015	
College Ave Student Loans	Moelis & Company	8/1/2014	
Paxata	Cisco	10/24/2016	strategic alliance
Boost Insurance	State National Companies	9/26/2017	strategic alliance
Indiegogo	Virgin America	1/28/2014	
Mosaic	Green Bank	4/27/2016	strategic alliance
Zibby	Curo Financial Technologies	5/24/2017	strategic alliance
PayPal	Vertex	4/5/2000	
Dashlane	Transunion	5/25/2016	strategic alliance
Lightspeed	Synopsys	6/16/2000	
MineralTree	First Data Corporation	2/11/2015	strategic alliance

Square	Starbucks	9/17/2012	cancelled
Emailage	Square	4/13/2016	strategic alliance
Clinkle	Intuit	6/27/2013	
Globality	Sandisk	9/22/2015	
Flock (helloflock.com)	The Hartford	9/20/2017	strategic alliance
blooom	DST Systems	10/15/2015	
Wipit	Euronet Worldwide	8/18/2011	strategic alliance
Bill Me Later	Amazon	12/11/2007	strategic alliance
StreetShares	Eagle Bancorp	3/11/2015	strategic alliance
PayPal	Goldman Sachs	1/20/2000	strategic alliance
ALICE	Expedia	1/19/2016	
Finagraph	Moody'S Investors Service	11/29/2016	strategic alliance
InforcePRO	Prudential Financial	9/1/2015	
IdentityMind	Overstock	12/11/2014	
CommonBond	Nelnet	9/4/2013	strategic alliance
Authy	Salesforce	9/8/2014	strategic alliance
SoFi	The Bancorp	6/10/2013	strategic alliance
Mozido	Mastercard	10/22/2014	strategic alliance
Vittana	Google	1/1/2010	
PitchBook Data	Morningstar	9/25/2009	strategic alliance
Leaf	Heartland Payment Systems	9/30/2013	strategic alliance
Digital Currency Group	Western Union	4/28/2016	strategic alliance
Digital Asset	Broadridge	2/2/2016	strategic alliance
Square	Visa	1/10/2011	strategic alliance
Centrify	Fortinet	5/20/2014	strategic alliance
iCapital Network	Intralinks	6/1/2014	strategic alliance
Endurance Lending Network	Endurance Companies	5/1/2012	

Table A5: The Effect of Investment by Corporate Investors in Fintech Startups on the Performance of Corporate Investors: Effect of Competition

This table reports the subsample results of the effect of the investment in FinTech startups by corporate investors on the performance of corporate investors in the financial services industries using a stacked difference-in-differences empirical specification. The subsamples are created based on the level of competition faced by firms a quarter prior to the quarter of the investment. Panel A and Panel B shows the results for corporate investors and control firms in financial services and non-financial services industries, respectively. We construct a cohort of treated firms (corporate investors) and control firms using firm-quarter observations for twelve quarters before and after investments in FinTech startups by treated firms in a particular calendar year-quarter. A cohort is formed in a calendar year-quarter in which investments in FinTech startups were made. For each treated firm, we find three control firms in the same 3-digit SIC code based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. We only consider firms in the financial services industries. We consider all investments made in Fintech startups between 2000 and 2017. We split the industries by comparing the competition faced by them. We measure competition using Herfindahl–Hirschman Index and classify industries into above the median (*high competition*) or below the median (*low competition*) in the quarter immediately prior to the quarter of investment. *Profitability* is the ratio of operating income before depreciation and the book value of total assets of a firm. *Market Share* is the ratio of sales of a firm over the sales of all firms in the same 3-digit sic code as the concerned firm. *Post* is an indicator variable that takes the value equal to one for the treated firm and respective control firms for 12 quarters (1095 days or 3 years) after the investment date in a Fintech startup by the corporate investor (treated firm), and takes the value equal to zero for 12 quarters (1095 days) prior to the investment date. *Corporate Investment* is an indicator variable that takes the value 1 for corporate investors (treated firms) and 0 for control firms. Constant (suppressed), cohort by year by quarter fixed effects, and cohort by firm fixed effects are included in all regressions. All standard errors are clustered at the firm level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: The effect of competition on the performance of corporate investors in financial services industry.

	(1)	(2)	(3)	(4)
	Low Competition		High Competition	
Variables	Profitability	Market Share	Profitability	Market Share
Post x Corporate Investment	0.007*	0.012	0.002**	0.007**
	(0.004)	(0.009)	(0.001)	(0.003)
Observations	1,412	1,340	1,368	1,134
Adjusted R-squared	0.431	0.957	0.799	0.991
Cohort x Year x Qtr FE	Yes	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes	Yes

Panel B: The effect of competition on the performance of corporate investors in non-financial services industry.

	(1)	(2)	(3)	(4)
	Low Competition		High Competition	
Variables	Profitability	Market Share	Profitability	Market Share
Post x Corporate Investment	0.003	-0.002	-0.000	0.001
	(0.005)	(0.009)	(0.005)	(0.007)
Observations	1,189	1,149	1,767	1,681
Adjusted R-squared	0.244	0.977	0.464	0.893
Cohort x Year x Qtr FE	Yes	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes	Yes

Table A6: The Effect of Investment by Corporate Investors in Fintech Startups on the Performance of Corporate Investors: Effect of Size

This table reports the subsample results of the effect of the investment in FinTech startups by corporate investors on the performance of corporate investors using a stacked difference-in-differences empirical specification. The subsamples are created based on the size of firms a quarter immediately prior to the quarter of investment. Panel A and Panel B shows the results for corporate investors and control firms in financial services and non-financial services industries, respectively. We construct a cohort of treated firms (corporate investors) and control firms using firm-quarter observations for twelve quarters before and after investments in FinTech startups by treated firms in a particular calendar year-quarter. A cohort is formed in a calendar year-quarter in which investments in FinTech startups were made. For each treated firm, we find three control firms in the same 3-digit SIC code based on nearest matches using propensity score matching. We match firms based on their size, age, and R&D expenditure. We consider all investments made in Fintech startups between 2000 and 2017. We split the industries by comparing their size. We split the firms into above the median (*Larger Sized Firms*) or below the median (*Smaller Sized Firms*) in the quarter immediately prior to the quarter of investment. *Profitability* is the ratio of operating income before depreciation and the book value of total assets of a firm. *Market Share* is the ratio of sales of a firm over the sales of all firms in the same 3-digit sic code as the concerned firm. *Post* is an indicator variable that takes the value equal to one for the treated firm and respective control firms for 12 quarters (1095 days or 3 years) after the investment date in a Fintech startup by the corporate investor (treated firm), and takes the value equal to zero for 12 quarters (1095 days) prior to the investment date. *Corporate Investment* is an indicator variable that takes the value 1 for corporate investors (treated firms) and 0 for control firms. Constant (suppressed), cohort by year by quarter fixed effects, and cohort by firm fixed effects are included in all regressions. All standard errors are clustered at the firm level and are reported in parentheses below the coefficient estimates. ***, **, and * represent statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: The effect of size on the performance of corporate investors in the financial services industry.

	(1)	(2)	(3)	(4)
	Smaller Sized Firms		Larger Sized Firms	
Variables	Profitability	Market Share	Profitability	Market Share
Post x Corporate Investment	0.009**	0.018	0.002	0.006
	(0.004)	(0.013)	(0.001)	(0.006)
Observations	1,041	945	1,526	1,319
Adjusted R-squared	0.573	0.825	0.606	0.984
Cohort x Year x Qtr FE	Yes	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes	Yes

Panel B: The effect of size on the performance of corporate investors in non-financial services industry.

	(1)	(2)	(3)	(4)
	Smaller Sized Firms		Larger Sized Firms	
Variables	Profitability	Market Share	Profitability	Market Share
Post x Corporate Investment	0.001	-0.000	-0.001	0.001
	(0.007)	(0.025)	(0.004)	(0.011)
Observations	1,728	1,679	1,049	971
Adjusted R-squared	0.343	0.928	0.515	0.946
Cohort x Year x Qtr FE	Yes	Yes	Yes	Yes
Cohort x Firm FE	Yes	Yes	Yes	Yes

Table A7: Changes in Enforceability of Non-compete Laws (1985-2016)

This table reports the changes in enforceability of non-compete laws based on the changes mentioned in Ewens and Marx (2018) and Kini et al. (2021). *Enforceability Change* is the variable tracking changes in the enforceability of non-compete laws over the years across different states in US. It takes the value equal to 1 if there is a legislature or court case that increases the enforceability of non-compete laws and takes the value equal to -1 if there is a legislature or court case that decreases the enforceability of non-compete laws. Please refer to in Ewens and Marx (2018) and Kin et al. (2021) for more details.

State	Year	Enforceability Change
AL	2016	1
AR	2016	1
FL	1996	1
GA	2011	1
ID	2008	1
MI	1985	1
OH	2004	1
VT	2005	1
VA	2013	1
MT	2009	-1
NH	2011	-1
NV	2016	-1
OR	2008	-1
SC	2010	-1
UT	2016	-1
CO	2011	1
CO	2013	-1
IL	2011	1
IL	2013	-1
KY	2006	1
KY	2014	-1
LA	2001	-1
LA	2003	1
TX	1994	-1
TX	2006	1
TX	2009	1
TX	2012	1
WI	2009	1
WI	2015	-1

Figure 1: Time Trends of Corporate Investor's Performance and Market Valuation

We plot the time trends comparing the performance of corporate investors in financial service sectors and control firms in the same 3-digit SIC code. The corresponding empirical specification is equation (8) from the paper. *T=-1, T=-2, T=-3, and T=-4* are indicator variables that takes the value equal to 1 for all treated and control firms between day 1 and day 90, day 91 and day 181, day 182 and day 273, and day 274 and day 364 prior to the investment date; otherwise the indicator variable is equal to 0. *T=+1, T=+2, and T=+3* are indicator variables that takes the value equal to 1 for all treated and control firms between day 92 and day 182, day 183 and day 273, and day 274 and day 364 after the investment date; otherwise the indicator variable is equal to 0. *T=4+* is an indicator variable that takes the value equal to 1 for all firms in a cohort for all days or quarters after 365 days post the investment date of that cohort; otherwise it is equal to 0. *T=before -4* is an indicator variable that takes the value equal to 1 for all firms in a cohort for all days or quarters before the 365 days prior to the investment calendar-year quarter of that cohort; otherwise it is equal to 0. *T=before-4* is omitted due to multicollinearity. The confidence interval is 10%. Panel A and Panel B shows the plots for the following dependent variables: profitability and market valuation, respectively.

Panel A: Time Trends of Profitability

Panel B: Time Trends of Market Valuation