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How Does Policy Uncertainty Affect Venture Capital?

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This paper examines the effect of policy uncertainty on venture capital (VC) investment. Relying on plausibly exogenous variation in policy uncertainty caused by closely contested U.S. gubernatorial elections, we find that policy uncertainty negatively affects VC investment. The effect is more pronounced if VC investment is subject to higher illiquidity. However, some distinctive features of VCs (strategic motives, intensive post-investment monitoring, and preferences for early-stage and high-tech ventures) mitigate the effect of policy uncertainty, distinguishing the effect of policy uncertainty on VC investments (in private markets) from that in public markets. Our findings shed new light on the real effects of policy uncertainty in private markets. (*JEL* G24, D81, M13)

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Policy uncertainty is widely recognized as an economically important factor that can shrink investment activities due to the irreversibility inherent in various types of investments (Bernanke 1983). Specifically, while firms

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possess the capacity to adapt to policy changes, they tend to hesitate to make investment decisions until such changes are clarified. This cautiousness stems from the fact that investing when future policies are highly uncertain often leads to excessive adjustment costs when unexpected policy changes occur. These costs can be effectively minimized by adopting or implementing a strategy of awaiting policy announcements, rather than speculating on future policies. As Rodrik (1991) points out, even moderate levels of policy uncertainty can impose "a hefty tax on investment." Thus, in the face of policy uncertainty, firms typically opt for a "wait-and-see" strategy until policies are clearly communicated; that is, policy uncertainty enhances the value of waiting options. Existing literature has documented the negative effects of policy uncertainty on investment, both in real businesses (e.g., Gulen and Ion 2016; Julio and Yook 2012) and in public equity markets (Pastor and Veronesi 2012).

Investing in private markets, however, is different, especially for venture capital (VC) investment. Venture capitalists typically allocate a sizable proportion of their assets under management to a limited number of portfolio companies. Consequently, VC investment— compared with corporate investment in real businesses—is more often subject to illiquidity and poor diversification (Cochrane 2005), which contribute to its susceptibility to policy uncertainty. On the other hand, the effect of policy uncertainty could vary across several distinct characteristics of VC markets. First, the VC market comprises different types of investors, including not only participants whose motives are purely financial but also those driven by strategic or long-term objectives, such as corporate venture capital (CVC) firms and government-affiliated VCs. In cases in which investments are strategically motivated, policy uncertainty may not pose a significant deterrent to potential investors. Second, VCs engage in rigorous post-investment monitoring practices, enabling them to actively mitigate or hedge against various risks, including policy uncertainty. This proactive approach to risk management strengthens their ability to navigate uncertain policy environments.

Third, VCs often possess distinct investment preferences, with some focusing specifically on early-stage startups and high-tech industries characterized by high levels of informational asymmetry and idiosyncratic risk. In these investments, the negative effect of policy uncertainty is likely to be minimal. This is because VCs that prefer early-stage startups and high-tech industries tend to exhibit "risk-seeking" rather than "risk-averse" behavior, and the monitoring function assumes an even greater significance due to the relative influence and control that VCs possess within these startup ventures.

VC investment possesses distinctive attributes and its importance is reflected in the fact that capital formation starts with the private market and—since 1999—about 60% of initial public offerings (IPOs) have been VC-backed. This paper attempts to address how policy uncertainty affects

VC investment and whether (and how) the effect is different from that in other markets; this topic is largely underexplored in the existing literature.

One major challenge to identifying the effects of policy uncertainty on VC investment empirically is that policy uncertainty could be endogenous due to two factors: omitted variables and reverse causality. These unobservable macroeconomic shocks, which affect both policy uncertainty and VC investment, could bias our estimation. Further, expected changes in VC's investment propensity could lead to more frequent policy changes that increase policy uncertainty. To address the endogeneity concern, we use the plausibly exogenous variation in policy uncertainty generated by U.S. state-level gubernatorial elections.[1] Gubernatorial elections are staggered across business and economic cycles. In particular, close elections significantly increase policy uncertainty until the election results are announced, as has been documented by previous studies (Baker et al. 2020; Baker, Davis, and Levy 2022). Moreover, the variations generated by gubernatorial elections represent multiple shocks that affect different states (and hence VCs) at exogenously different times. This feature makes it possible to avoid a common identification difficulty faced by studies using a single shock, that is, VC investment could be directly affected by the existence of potentially omitted variables coinciding with the shock.

One concern is that not all gubernatorial elections have the potential to induce significant policy uncertainty. For example, in states in which an incumbent governor of the dominant party runs for reelection, the election is likely to grant the incumbent another term, thus providing foreseeable outcomes with limited uncertainty. On the other hand, close gubernatorial elections can raise policy uncertainty much more than less-competitive elections, by as much as 35% at the state level (Baker, Davis, and Levy 2022). Hence, following Jens (2017), we merely rely on those close-margin elections as the source of sizable policy uncertainty. We control for the timing of elections (both close and nonclose elections) in general, which naturally makes our empirical framework a staggered triple-difference setting. We also control for VC(-state) fixed effects, year fixed effects, and quarter fixed effects to rule out the possibility that our results are driven by confounding factors that are unrelated to policy uncertainty.[2]

To implement our empirical strategy, we collect information on U.S. startups (i.e., portfolio companies) and VC firms from the VentureXpert database. Starting with a sample of 88,362 startup companies that received VC

[1] It is worth noting that policy uncertainty is more subtle in the United States than in many other countries, such as Zimbabwe or Iraq, given that U.S. market participants are confident that broad institutions (e.g., private property rights and functioning public markets) can remain stable and intact against political cycles. Nevertheless, this fact does not deny the economic magnitude of the effect of policy uncertainty in the United States because, as pointed out by Rodrik (1991), even moderate policy uncertainty can stress "a hefty tax on investment."

[2] Note that, since we assign one most preferred state to each VC in the main analysis of this paper, VC(-state) fixed effects are actually analogous to VC fixed effects.

financing during the years 1980 through 2022, we aggregated the information and calculated the number of deals, the number of first-time funded startups, and the total amount of investment to the VC(-state)-year-quarter level to measure VC investment. The baseline results show that, as policy uncertainty increases, the number of VC investments exhibit decreases of 13.5%, 15.3%, 25.7%, and 9.9% in one, two, three, and four quarters before close gubernatorial elections, respectively. Likewise, estimates for the number of first-time funded startups and on the total amount of investment show similar patterns, suggesting that VCs reduce their investments in the face of policy uncertainty. This finding is consistent with our observations in aggregate at the month and state-month levels: a 35% increase in aggregate-level policy uncertainty measured by the BBD index (Baker, Bloom, and Davis 2016; Baker, Davis, and Levy 2022) is associated with a drop of about 21.5% in VC investment.[3]

Our findings continue to hold in a number of robustness checks: first, we use alternative thresholds of vote differential in identifying close gubernatorial elections; second, we use the timing of close gubernatorial elections only (i.e., we do not control for the timing of every election) and we estimate a staggered difference-in-differences model; third, to address the concern that our results are driven by elections that coincide with presidential elections, we remove the years of presidential elections from the sample; fourth, we return the observations from nonpreferred states back into our sample.

To further establish causal links between policy uncertainty and VC investment, we conduct four sets of tests to address various identification concerns. First, we examine the dynamic effects of close gubernatorial elections on VC investment. We find that VC investments drop significantly and sizably before close gubernatorial elections, while the estimated effects disappear immediately after the elections. This finding assures that our baseline results are not driven by reverse causality or unobservable investment opportunity cycles that are unlikely to change suddenly or sizably within a quarter. Second, we include VC (-state)-year fixed effects to account for the influence of economic cycles and to address concerns regarding omitted variables and reverse causality. Our results remain intact in these two sets of tests, suggesting that our baseline findings are not likely driven by the cycles of local economic conditions and economic uncertainty.

Third, we conduct a heterogeneity test based on industry-level dependence on government spending. We find that if a VC often invests in an industry that is heavily dependent on government spending, then that VC's investments are more likely to decrease before close gubernatorial elections, suggesting that our identification tests are likely to capture the effect of policy uncertainty instead of that of economic uncertainty.

[3] Note that the BBD policy uncertainty index indicates that close elections can cause an average increase of about 35% (Baker, Davis, and Levy 2022).

Fourth, to further strengthen the causation interpretation, we follow Jens (2017) and use an instrumental variable approach based on the absence of incumbent governors due to term limits. Specifically, in the United States, incumbent governors who seek a second term are more likely to win gubernatorial elections; put another way, incumbent-absent elections are more likely to be hotly contested because none of the candidates has a proven track record as a governor. In addition, term limits for governors are set by law; thus, the absence of an incumbent due to term limits is not caused by any confounding factor (e.g., an economic downturn) that would frustrate an incumbent governor trying to seek a second term. Because the absence of an incumbent governor only affects VC investments through the closeness of an election, this instrument is likely to satisfy both the relevance conditions and the exclusion restrictions. Based on this reasoning, we use incumbent-absent elections that resulted from term limits as the instrument for close elections (the key variable of interest), and estimate two-stage least square regressions. The results are qualitatively consistent with the baseline findings (although the significance is weakened with the IV-triple-difference estimation), further suggesting that the negative relation between policy uncertainty and VC investments is likely causal. Put together, while each individual piece of evidence might be subject to various criticisms, collectively they point to a negative, causal link that runs from policy uncertainty to VC investment.

Next, we try to determine how policy uncertainty affects VC investment in private markets. We conduct a series of heterogeneity tests based on the distinctive features of VC investment discussed above. First, we use the natural logarithm of a VC's investment amount per deal (round) over its lifetime to measure the level of illiquidity (and poor diversification) of the VC's investment. We find that VCs with higher illiquidity and worse diversification per deal are more likely to reduce their investments before close gubernatorial elections, suggesting that illiquidity and poor diversification make VC investments more susceptible to the negative influence of policy uncertainty.

We then test on the role of strategic motives. We find that CVCs, the VC investors that are affiliated with corporations and invest mainly for strategic reasons instead of purely for financial returns, are more likely than independent VCs to minimize or hedge against the negative effect of policy uncertainty. Likewise, we find that the negative effect of policy uncertainty on VC investment also can be largely hedged if VCs play active post-investment monitoring roles with their portfolio companies (i.e., if they charge monitoring fees). Finally, we find that VCs that prefer startups in early stages or high-tech industries are affected by policy uncertainty to a lesser degree.

Collectively, the above evidence is consistent with our conjecture regarding the distinctive attributes of VC investments. Notably, factors such as strategic motives, active post-investment monitoring, and preferences for early-stage or high-tech ventures, among others, contribute to VCs' ability to mitigate the

adverse impact of policy uncertainty. This finding further delineates the exceptional characteristics of VC investment in private markets in the context of policy uncertainty.

One remaining concern regarding the interpretation of our findings pertains to the possibility that our results could be driven by the following mechanism: in the presence of high policy uncertainty, VCs could deliberately focus more on "high-quality" startups while reducing their investments in other startup companies, creating the appearance that policy uncertainty reduces VC investment. If this is true, the results would imply that policy uncertainty serves as a positive yet inconspicuous force that incentivizes VCs to improve their performance by allocating more resources toward those "high-quality" startups. To rule out this alternative interpretation of our main findings, in the final part of this paper we examine a "bottom-line" question along the intensive margin, that is, how policy uncertainty affects VC investment outcomes. We use the startup-level data and examine startups' quality within the framework of gubernatorial elections. To assess startup quality, we construct metrics based on various exit pathways: IPO, merger and acquisition (M&A), and closure (defunct). We find that the effect of close gubernatorial elections on startup quality is largely close to zero and statistically insignificant, which contradicts the alternative interpretation that policy uncertainty motivates VCs to gravitate toward superior startups. Instead, this finding suggests that our main results reflect an indiscriminate effect of policy uncertainty on VC investment in private markets.

Our paper contributes to two strands of literature. First, it adds to the growing literature on the effect of policy uncertainty on both real investment decisions and stock market performance of firms. Regarding real investment decisions, Bloom, Bond, and Van Reenen (2007) show that a firm's response to stimulus is weaker when uncertainty is higher and leads to reduced investment as supported by simulated data. Further, along this line of inquiry, subsequent studies find that policy uncertainty has a negative effect on firm-level capital investment (Gulen and Ion 2016; Julio and Yook 2012), on M&A activities (Bonaime, Gulen, and Ion 2018), and on innovation activities (Bhattacharya et al. 2017). On the capital market front, Pastor and Veronesi (2012) show that while a policy change might increase potential cash flows, it also increases discount rates; hence, announcements of new policy can depress stock returns. Although existing literature appears to converge on the notion that policy uncertainty curtails investment among public firms, it is unclear how policy uncertainty affects investment in private markets. Our paper contributes to this literature by examining the effect of policy uncertainty on investment by VC investors, an important group of private market players. To the best of our knowledge, this paper is the first study that shows VC investment to be negatively affected by policy uncertainty. More importantly, we show how unique features of VC investment modify the negative effect of policy uncertainty on VC investment, which differs

substantially from the effect documented in public markets by the existing literature.

Second, our paper contributes to the VC literature. This literature focuses mainly on how VC characteristics (e.g., monitoring, reputation, expertise, network, syndication, and staging) affect their investments in private markets. This literature also examines the investment outcomes of VC financing to assess the effectiveness of various VC investment mechanisms and tools, and concludes that VCs generally are able to create value for their portfolio firms (see, e.g., Da Rin, Hellmann, and Puri [2013] for a literature review). While a large strand of literature has examined a variety of VC characteristics that affect their investment decisions and outcomes (e.g., Brander, Amit, and Antweiler 2002; Chemmanur, Krishnan, and Nandy 2011; Fulghieri and Sevilir 2009; Gompers, Mukharlyamov, and Xuan 2016; Gu et al. 2022; Tian, Udell, and Yu 2016), the role of policy uncertainty in shaping VC investment and exit outcomes remains relatively underinvestigated. Our paper attempts to fill in this gap by providing evidence that links policy uncertainty and VC investment.

1. Conceptual Framework and Hypothesis Development

Bernanke (1983) shows that, since investment is not fully reversible in most cases, risks of any type can give rise to the discount rate and thereby reduce the net value of projects, all else equal. As a systemic risk that is difficult to diversify, policy uncertainty has been shown to be economically significant (Brogaard and Detzel 2015). As a result, when policy uncertainty increases, investors opt to exercise the "wait-and-see" option, because a clearer investment scenario will enable them to make informed decisions and avoid significant losses. In other words, policy uncertainty can temporally impede investment by augmenting the value of the waiting option (Chen and Funke 2003). Moreover, the subsequent increase in investment levels after the uncertainty diminishes cannot fully compensate for the initial crowding-out effect, as the waiting period may cause investors to lose out on potential projects. Consistent with this rationale, studies have shown that policy uncertainty negatively affects various forms of investment, including corporate investment (Gulen and Ion 2016; Julio and Yook 2012), M&As (Bonaime, Gulen, and Ion 2018) and innovation activities (Bhattacharya et al. 2017), suggesting the universality of the negative effect of policy uncertainty.

However, while the link between policy uncertainty and investment is evident in firm operations and public markets, it differs significantly in the context of VC investment in private markets. As pointed out by Cochrane (2005), VC investments can be distinct at least in two aspects. First, VC investment is subject to illiquidity and poor diversification. Private market investment inherently involves illiquidity, and this challenge is even more

pronounced for VC firms. This is because, in each deal, venture capitalists typically allocate a sizable proportion of their assets under management. Since VCs have limited capacity to diversify or hedge against various risks—including systemic risks, such as policy uncertainty—they often require a higher risk premium than investors in public markets. Consequently, policy uncertainty could exert an even more detrimental effect on VC investment in private markets, given VCs' illiquidity and poor diversification.[4]

Second, VC investors in private markets are diverse. The motives of many VC investors extend beyond purely financial considerations and they exhibit strategic intentions. For instance, corporate venture capital (CVC) investments are more likely to be driven by strategic concerns (Gompers and Lerner 2000), and therefore can possess a higher tolerance for failure compared to independent VCs, which helps spur technological innovation (Chemmanur, Loustina, and Tian 2014). Third, many VCs assume intensive monitoring (or "mentoring") roles in relation to their portfolio companies, thereby mitigating the influence of various risks through post-investment management (Gompers 1995). Bernstein, Giroud, and Townsend (2016) find that intensive post-investment monitoring contributes to the successful exit of portfolio companies. The investments of these types of venture capitalists are unlikely to be significantly affected by policy uncertainty due to the mitigation of VCs' intensive monitoring and mentoring activities that serve as a hedge against the adverse effects of policy uncertainty.

Finally, many VCs prefer to invest in early-stage startups and high-tech industries in which informational asymmetry is prominent (Gompers and Lerner 2001). VCs inclined toward early-stage and/or high-tech startups are more likely to be "risk-seekers." This is because, while investments in these fields are more prone to failure, the higher risk also presents the possibility of substantial returns in the event of a "home-run" investment, thereby offsetting losses from numerous unsuccessful cases. In such deals, investors prioritize entrepreneurial teams, technological advantages, and business prospects over economic or political uncertainty. Hence, the VCs that prefer early-stage and high-tech startups are less sensitive to policy uncertainty.

To summarize with regard to private markets, we posit that VC investors could be crowded out by policy uncertainty stemming from illiquidity or poor diversification, but those that possess strategic motives, engage in rigorous

[4] One might question how policy uncertainty, which typically is not long term, could affect very illiquid VC investments. Even if the term of uncertainty cycles seems (more or less) shorter than the typical VC holding period, policy uncertainty can still affect investment for three reasons. First, following the existing literature, our empirical tests are on the "entering decisions" of VC investment, including first-time investing and follow-on/staging investing but no "disinvesting." Therefore, our results should be interpreted as that VCs usually decide whether to "enter" an investment before the policy intention is clear. Second, the term of office of a state governor is typically 4 years or, if reelected, 8 years; this is comparable to the typical period of five to seven years for which VCs hold their portfolio companies. Third, even short-run policy uncertainty can affect VC investment due to irreversibility, because it is still possible for drastic policy changes to cause the bankruptcy of startups, leaving nothing for VCs as equity holders. Therefore, waiting for a shorter period until the policy intention is clear is even more appealing.

post-investment monitoring, and exhibit investment preferences toward early-stage or high-tech startups are able to mitigate or hedge against the negative effect of policy uncertainty. Building upon the aforementioned arguments, we formulate two hypotheses:

H1: Policy uncertainty negatively affects VC investments, and the effect is more pronounced for deals with higher levels of illiquidity.[5]

H2: Policy uncertainty affects VC investments to a lesser degree if the VCs possess strategic motives, engage in intensive post-investment monitoring activities, and demonstrate preferences for early-stage and high-tech startups.

2. Data, Sample, and Empirical Strategy

2.1 VC investment

Our sample construction process begins with 88,362 U.S. entrepreneurial firms, which received VC financing during the years 1980 through 2022, as retrieved from the VentureXpert database. The data set contains detailed information about investment rounds: round date, estimated amount invested, names and other basic information about each investor in a round, the number of investing VCs, etcetera. The VentureXpert database also indicates whether a portfolio company's exit status was IPO, M&A, defunct, or whether it is still an active investment. We complement the information on IPO exits and M&A exits with data obtained from the Securities Data Company (SDC) Global New Issues database and the SDC's Mergers and Acquisitions database.

Because we are interested in the investment decisions of VCs, we aggregate the information to the VC-firm level. Specifically, for each quarter and state (where a portfolio company is located), we count the total number of startup companies (rounds) in which a VC firm invests as the *Number of deals*, and the total number of first-time funded startup companies (in our data set) the *Number of first-time funded startups*. We also calculate the total dollar amount of investment for each VC firm in each state-quarter. Since VentureXpert only reports the total investment amount (instead of each VC's investment amount) in each round, we apply two alternative definitions: *ln(Total amount of investment)*, that is, the logarithm of the aggregated round amount for each VC firm

[5] Under an irreversibility-induced risk-return framework, we consider a broader context of uncertainty extending beyond economic policy. While economic policy is likely more closely related to VC investment, other types of uncertainty can affect the operation of startups and thereby the outcomes of VC investment as well. For example, the overturning of *Roe v. Wade* caused mass protests in 2022 and could have affected startups from many industries; likewise, the swing of the COVID-19 policy in the United States during the 2020 presidential election campaign vastly affected the economy. These uncertainties are not directly related to economic policies, but they can substantially influence VC investments. Therefore, in this paper we focus on a broader context of policy uncertainty rather than distinguishing between the uncertainty of economic policy and other types of uncertainty because economic cycles are almost universally related to every change in policy.

in each state-quarter, and *ln(Total amount of investment)*$_{avg}$ as the logarithm of the aggregated value of round amount scaled by the number of investors for each VC firm in each state-quarter.[6] We use these four variables as our main dependent variables to reflect VC investment at the VC-state (-year)-quarter level. We then assign zeros to these four dependent variables when a VC does not have any deal in the focal state-quarter. All continuous variables are winsorized at the 1st and 99th percentiles. We also exclude non-VC investors—such as angels, pension funds, investment management firms, nonprivate equities, SBIC investments, university programs—from our sample.

VC investments are largely local or concentrated in several nearby states (Chen et al. 2010; Tian 2011). Thus, to avoid including many unrealistic VC-state links that could result in unreasonable inflation in statistical power, we identify one preferred state for each VC. We define a VC's most preferred state as the state where the number of deals invested by the VC is larger than that in any other state in the past; if there is a tie, the preferred state would be the state (among all states) where the VC had the largest aggregate amount of investments; if there is still a tie, we choose the state where the VC has the longest investment history. To further avoid spurious significance, we exclude those relatively inactive VCs with track records of fewer than five investment deals, even in their preferred states. After dropping firms with missing data, we are left with 2,953 VCs and the unique states they preferred for the years 1980 through 2022. We merge this sample with the gubernatorial election data (described below) to construct the final sample. Table 1 presents summary statistics of the main variables at the VC (-state-year)-quarter level. On average, a VC in our sample has 0.22 deals and 0.07 first-time funded deals, and invests 1.07 million dollars in each state-quarter.

2.2 Empirical strategy: Gubernatorial elections

To identify the effect of policy uncertainty, we rely on plausibly exogenous variation generated by gubernatorial elections. The campaigns before gubernatorial elections trigger political uncertainty by causing possible changes in political leadership and in government policies (Colak, Durnev, and Qian 2017). The timing of gubernatorial elections, however, is determined by legislation and is staggered across business and economic cycles. This feature avoids a common identification difficulty faced by studies using a single shock, namely, the existence of potential omitted variables coinciding with the shock that directly affects VC investment.

However, in reality, not all gubernatorial elections lead to increases in policy uncertainty. For example, in the 2022 gubernatorial elections, no one would have doubted that Sarah Huckabee Sanders, the former White House

[6] We are aware that these two measures overestimate or underestimate the round amount at the VC level. Because of data limitations, however, we have to rely on the balance of these two measures to probe the effect on the dollar amount of VC investments.

Table 1.
Summary statistics

	Mean	SD	Min	Median	Max
Number of deals	0.222	0.642	0	0	6
Number of first-time funded startups	0.074	0.322	0	0	3
ln(Total amount of investment)	1.161	3.083	0	0	12.543
$ln(Total\ amount\ of\ investment)_{avg}$	1.017	2.702	0	0	11.577
Close election	0.028	0.166	0	0	1
Election	0.079	0.269	0	0	1
High gov. spending	0.985	0.120	0	1	1
ln(Amount of investment per deal)	9.207	1.050	3.664	9.218	12.301
CVC	0.149	0.356	0	0	1
Prefers early stage	0.439	0.496	0	0	1
Prefers high tech	0.308	0.462	0	0	1
Charge monitoring fees	0.152	0.359	0	0	1

This table presents the summary statistics of the 275,863 VC(-state)-year-quarter level observations in our sample. The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. *Number of deals* is a VC firm's number of investment deals in the preferred state in quarter *t*. *Number of first-time funded startups* is the number of first-time funded startups backed by a VC firm in the preferred state in quarter *t*. *ln(Total amount of investment)* is the log of a VC firm's total amount of investment (measured by the sum of round amount) in the preferred state in quarter *t*. $ln(Total\ amount\ of\ investment)_{avg}$ is the log of a VC firm's total amount of investment (measured by the sum of round amount scaled by the number of investors of each round) in the preferred state in quarter *t*. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in quarter *t*, and zero otherwise. *High gov. spending* equals one if the industry a VC firm mostly invest in is heavily (above median) dependent on government spending, and zero otherwise. *ln(Amount of investment per deal)* is the log of a VC firm's total amount of investment over the lifetime divided by the total number of all its deal records. *CVC* denotes whether the VC firm is a corporate venture defined by the VentureXpert. *Prefers early stage* equals one if a VC firm prefer early-stage financing, and zero otherwise. *Prefers high tech* equals one if a VC firm prefers high-tech startups, and zero otherwise. *Charge monitoring fees* equals one if a VC firm charge monitoring fees to its portfolio companies, and zero otherwise. All continuous variables are winsorized at the 1st and 99th percentiles.

press secretary in the Trump administration, would take Arkansas in succession to the incumbent Republican governor, Asa Hutchinson, who had reached his term limit; likewise, the reelection of Democratic governor Gavin Newsom in California was also widely expected. In these cases, election-induced policy uncertainty, if any, is limited; instead, these almost-assured elections could potentially reduce policy uncertainty, because once the candidate of a dominant party is determined, an election can ensure that the candidate is elected to office and will be inaugurated. Hence, following Jens (2017), the key events in which we are interested are close gubernatorial elections where the outcome (the winning party) is largely unclear ex ante until the results are announced. As noted previously, close gubernatorial elections can raise policy uncertainty by about 35%, which is much more than the uncertainty raised by nonclose elections (Baker, Davis, and Levy 2022).

To employ our identification strategy that relies on election closeness, we obtain gubernatorial election information from Wikipedia. Our data contain detailed information for 580 gubernatorial elections held from 1980 through 2022 in the United States. For each election, we obtain the election date, the

name of the winning candidate and party, whether the candidate was an incumbent or a challenger, the reason the incumbent was not a candidate, media predictions of the election results, and the voting margin. We then follow Jens (2017) and use the ex post vote differential (i.e., the difference in the percentage of the vote received by the first-place and second-place candidates) as the proxy for the ex ante closeness of the elections. Specifically, we define an election as close if the vote differential is less than 10%.[7] As a cross check, we manually collect the election predictions published by various media, institutes, and websites, including Cook, IE, Sabato, Politico, RCP, Fox, 538, Rasmussen, and CQ.[8] We find that our definition of close gubernatorial elections is reasonable: when the vote differential is less than 10%, the predictions (although not available for all the elections) are likely to be Tossup, Tilt, or Lean; otherwise, when the vote differential is no less than 10%, the predictions are likely to be Solid or Safe.

Based on the staggered shocks of gubernatorial elections and of close elections, our empirical strategy naturally constructs a staggered triple difference-in-differences empirical setting as consistent with Jens (2017); that is, we compare extra changes in VC investments occurring around close gubernatorial elections with those occurring around nonclose gubernatorial elections.

3. Empirical Results

3.1 Motivating results

Before the baseline analysis, we begin with some motivating evidence at the aggregate level. Policy uncertainty is a macro factor, and therefore its effects should be first observed in the aggregate. To this end, we use the BBD index, an aggregate index developed by Baker, Bloom, and Davis (2016), as the proxy for policy uncertainty. The BBD index is a weighted average of three types of underlying components and includes the news-based component, the tax component, and the forecaster-disagreement component; these are weighted one-half, one-sixth, and one-third, respectively. Besides the aggregate-level policy uncertainty index, we use a similar state-level index developed by Baker, Davis, and Levy (2022) that allows us to examine the effects at the state level.[9]

[7] Our baseline results remain robust if we alternatively use narrower margins, such as 5% or even 1%, or if we follow Jens (2017) to define close elections as those where the vote differentials are in the bottom decile.

[8] Cook (The Cook Political Report with Amy Walter), IE (The Rothenberg Political Report, now known as Inside Elections), Sabato (Sabato's Crystal Ball by Larry Sabato), Politico (The Politico by Axel Springer SE), RCP (RealClearPolitics), Fox (Fox News Channel), 538 (the FiveThirtyEight website), Rasmussen (Rasmussen Reports), and CQ (Congressional Quarterly) are the most widely cited origins of U.S. election predictions.

[9] These indices are available at http://www.policyuncertainty.com/ on a monthly basis. We take the logarithm for the BBD indices to avoid extreme values and a skewed distribution, but this execution does not materially change our results.

We then aggregate the VC investment information retrieved from VentureXpert to the month and state-month levels. Specifically, for each month (or state-month), we count the total number of VC investment deals (*# of deals*) and the total number of first-time funded startups (*# of first-time funded startups*). We then calculate the logarithm of the total amount of VC investments (*ln($ of deals)*) within the United States (or a state). Table 2, panel A, reports the summary statistics.[10]

We regress these three dependent variables on the aggregate- or state-level BBD index. For month-level regressions, we control for year- and month fixed effects, while for state-month regressions we control for state-year- and state-month fixed effects. As expected, the results of these naïve regressions shown in Table 2, panels B and C, suggest that the relation between policy uncertainty and VC investments is negative in the aggregate. In terms of the economic magnitude of the effect, an increase of one standard deviation in the BBD index at the month level can be associated with a drop of 4.0% (= 36.615/270.143 × 0.306) in the number of VC investment deals, of 4.4% (= 16.816/115.775 × 0.306) in the number of first-time funded startups, and of 5.6% (= 0.184 × 0.306) in the total amount of investments; similarly, at the state-month level, a one-standard-deviation increase in the state-level BBD index can be associated with drops of 1.3% in the number of VC investment deals, 2.3% in the number of first-time funded startups, and 7.8% in the total amount of investments. Our estimates (on average 4%), which imply a drop of about 21.5% (= 4% × 35% × 4.692/0.306) in VC investments resulting from close elections, are comparable to the findings of Baker, Davis, and Levy (2022) that, on average, close elections can lead to a 35% increase in policy uncertainty,

3.2 Baseline model

While the motivating results suggest a negative relation between policy uncertainty and VC investment, by no means are they causal. To identify the effect of policy uncertainty on VC investment, we execute our empirical strategy by estimating the following baseline model:

$$VC\ Inv_{i,s,\ t-N} = \alpha + \beta_1 \cdot Close\ election_{s,t} + \beta_1 \cdot Election_{s,t} + FEs + \varepsilon_{i,s,t}, \quad (1)$$

where *i* indexes VC firm, *s* indexes VC's unique preferred state, and *t* indexes (year-)quarter. *VC Inv* represents the four dependent variables described in Section 2.1: *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and $ln(Total\ amount\ of\ investment)_{avg}$. Since close gubernatorial elections induce policy uncertainty before elections, we measure

[10] The sample period of motivating tests covers the years 1985–2022, because the BBD index data start and end in the corresponding months. In addition, the results would not change if, alternatively, we use the logarithm of the number of deals and the number of first-time funded startups.

Table 2.
Policy uncertainty index and VC investment in aggregate

A. Summary statistics

	Mean	SD	Min	Median	Max
Month level:					
# of deals	270.143	140.098	46	284	602
# of first-time funded startups	115.775	63.437	18	114	286
$ of deals (in thousand)	2,971,800	2,841,400	136,840	2,435,435	14,000,000
ln($ of deals)	14.344	1.212	11.827	14.706	16.456
BBD index	4.692	0.306	4.113	4.672	5.518
State-month level:					
# of deals	5.872	12.592	0	2	84
# of first-time funded startups	2.512	4.860	0	1	30
$ of deals (in thousand)	57,588	146,903	0	4,284	897,548
ln($ of deals)	6.232	5.057	0	8.363	13.707
BBD index	4.072	0.795	1.865	4.093	6.159

B. Month-level regression results with national BBD index

Variables	(1) *# of deals*	(2) *# of first-time funded startups*	(3) *ln($ of deals)*
BBD index	−35.615**	−16.816**	−0.184**
	(13.70)	(6.88)	(0.07)
Year FEs	Yes	Yes	Yes
Month FEs	Yes	Yes	Yes
Observations	454	454	454
R-squared	.879	.854	.950

C. State-month-level regression results with state-level BBD index

Variables	(1) *# of deals*	(2) *# of first-time funded startups*	(3) *ln($ of deals)*
BBD index	−0.096**	−0.074***	−0.099**
	(0.04)	(0.02)	(0.04)
State-year FEs	Yes	Yes	Yes
State-month FEs	Yes	Yes	Yes
Observations	18,513	18,513	18,513
R-squared	.955	.896	.641

The month-level sample contains all the 454 months since January 1985 through October 2022; the state-month-level sample contains all the U.S. states that have VentureXpert records in the 454 months since January 1985 through October 2022. The VC investment data are obtained from the VentureXpert. *# of deals* is the total number of VC investment deals in the United States in the focal month (or state-month). *# of first-time funded startups* is the total number of first-time funded startups in the United States in the focal month (or state-month). *ln($ of deals)* is the log of the total amount of VC investment deals in the United States in the focal month (or state-month). Policy uncertainty is measured by the natural logarithm of the national or state BBD index. Standard errors reported in parentheses are clustered by year in panel B and by state in panel C.
*$p < .1$;
**$p < .05$;
***$p < .01$.

the dependent variables in quarter $t - N$ ($N = 1$, 2, 3, or 4). To account for time-invariant differences between VCs and year and seasonal effects, all the regressions include VC (-state) fixed effects, year fixed effects and quarter fixed effects. We cluster standard errors by VC firm.

The key variable of Interest, *Close election*, equals one if a close gubernatorial election (vote differential < 10%) is held in state *s* and (year-)quarter *t*, and zero otherwise. To account for the effect of the timing of gubernatorial elections, we follow Jens (2017) to control for *Election*, which equals one if an election is held in state *s* and (year-)quarter *t*, and zero otherwise.

We present the baseline results in Table 3; the dependent variables are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and $ln(Total\ amount\ of\ investment)_{avg}$, respectively. In panels A–D, the coefficient estimates for *Close election* are all negative and significant at the 1% and 5% levels. The economic magnitude is sizable. The number of VC investment deals in the VC's preferred state decrease 13.5% (= 0.030/0.222) more around close gubernatorial elections in quarter $t-1$, 15.3% (= 0.034/0.222) in quarter $t-2$, 25.7% (= 0.057/0.222) in quarter $t-3$, and 9.9% (= 0.022/0.222) in quarter $t-4$. Likewise, the number of first-time funded startups backed by a VC decreases more around close gubernatorial elections by 13.5%, 17.6%, 17.6%, and 13.5% in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively.

The results for the total dollar amount of VC investments exhibit dynamic effects that are largely consistent with the above evidence. The sizes of the estimated effects in quarters $t-1$, $t-2$, $t-3$, and $t-4$ for *ln(Total amount of investment)* are 13.0%, 15.3%, 26.5%, and 15.9%, and for $ln(Total\ amount\ of\ investment)_{avg}$ are 10.7%, 12.5%, 22.9%, and 13.6%, respectively,

Collectively, the baseline results reported in Table 3 suggest that policy uncertainty is likely to have a negative effect on VC investment, both in the number of deals and in the amount invested. Along the time-series dimension, the results consistently suggest that policy uncertainty is likely to peak around the third quarter prior to gubernatorial elections where the vote differential is small.

3.3 Robustness checks

We conduct four sets of robustness checks to ensure that our main findings regarding gubernatorial elections are not simply coincidences. For brevity, we tabulate only the results estimated in quarter $t-1$ reported in Table 4, but the untabulated results for quarters $t-2$, $t-3$, and $t-4$ are similar.

First, while defining our key variable of interest, *Close election*, as the 10% threshold of vote differential can make the classification of close versus non-close gubernatorial elections more consistent with various ex ante predictions, doing so seems arbitrary. Thus, to check the robustness of our results to the threshold choice, we alternatively set the threshold more aggressively at the 5% and 1% levels, and reestimate the baseline model. While this execution significantly reduces both the number of close-election observations (i.e., *Close election* = 1) and the statistical significance, our results remain largely

Table 3:
Policy uncertainty and VC investment

A. Number of deals

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.030***	−0.034***	−0.057***	−0.022***
	(0.01)	(0.01)	(0.01)	(0.01)
Election	0.001	0.031***	0.047***	0.018***
	(0.01)	(0.01)	(0.01)	(0.01)
VC-State FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Quarter FEs	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.283	.283	.282	.282

B. Number of first-time funded startups

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.010**	−0.013***	−0.013***	−0.010**
	(0.00)	(0.00)	(0.00)	(0.00)
Election	0.005	0.010***	0.012***	0.006**
	(0.00)	(0.00)	(0.00)	(0.00)
VC-state FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Quarter FEs	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.180	.180	.180	.179

C. ln(Total amount of investment)

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.130***	−0.153***	−0.265***	−0.159***
	(0.04)	(0.04)	(0.04)	(0.04)
Election	0.015	0.171***	0.185***	0.110***
	(0.03)	(0.03)	(0.03)	(0.03)
VC-State FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Quarter FEs	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.210	.209	.208	.207

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.107***	−0.125***	−0.229***	−0.136***
	(0.04)	(0.04)	(0.04)	(0.04)

(continued)

Table 3:
Continued

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Election	0.013	0.145***	0.161***	0.095***
	(0.03)	(0.03)	(0.03)	(0.03)
VC-State FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Quarter FEs	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.208	.208	.207	.206

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables in panels A–D are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. In each panel, the dependent variable is measured in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

intact.[11] In addition, we follow Jens (2017) and alternatively define close elections as those where the vote differentials are in the bottom decile; our results do not change.

Second, there might be a concern that the inclusion of both *Close election* and *Election* could lead to econometric issues, such as multicollinearity or spurious significance. To address this concern, we alter the specification of our baseline model to include *Close election* only, but do not control for *Election*. Our results remain qualitatively unchanged.[12]

Third, existing literature (e.g., Baker, Davis, and Levy 2022) indicates that presidential elections may generate even higher level of policy uncertainty than gubernatorial elections in the aggregate. Although, in this paper, we cannot rely on presidential elections to address identification concerns since these elections are common shocks to all the U.S. investors and thus the effects are completely absorbed by year fixed effects, one concern is that the effects of presidential elections could drive our results. To address this concern, we exclude the years of presidential elections from the sample and rerun the baseline estimation; the results remain unchanged.

Fourth, while our execution—identifying one preferred state for each VC—may limit spurious statistical power, it might induce sample selection biases.

[11] The only exception is the test when *Number of first-time funded startup* is the dependent variable and the results with narrowed-down thresholds become marginally (in)significant.

[12] Particularly in Table 4, panels A, C, and D, the coefficient estimates for *Election* are significant to a much smaller degree and are economically closer to zero. This finding further supports our argument that the baseline results are not driven by multicollinearity or spurious significance.

Table 4:
Robustness checks with alternative specifications

A. Alternative definitions of Close election

	Number of deals		Number of first-time funded startups		*ln(Total amount of investment)*		*ln(Total amount of investment)$_{avg}$*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	5%	1%	5%	1%	5%	1%	5%	1%
Close election	−0.026***	−0.026***	−0.008*	−0.007	−0.156***	−0.154***	−0.132***	−0.130***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.04)	(0.04)	(0.04)	(0.04)
Election	−0.003	−0.004	0.003	0.003	0.006	0.003	0.006	0.004
	(0.01)	(0.01)	(0.00)	(0.00)	(0.03)	(0.03)	(0.02)	(0.02)
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	272,910	272,910	272,910	272,910	272,910	272,910	272,910	272,910
R-squared	.283	.283	.180	.180	.210	.210	.208	.208

A2. Alternative definition of Close election *using bottom decile of vote differential*

Variables	(1) Number of deals	(2) Number of first-time funded startups	(3) *ln(Total amount of investment)*	(4) *ln(Total amount of investment)$_{avg}$*
Close election	−0.031***	−0.011***	−0.137***	−0.120***
	(0.01)	(0.00)	(0.04)	(0.04)
Election	0.003	0.006*	0.023	0.022
	(0.01)	(0.00)	(0.03)	(0.03)
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	272,910	272,910	272,910
R-squared	.283	.180	.210	.208

B. Alternative model specification

Variables	(1) Number of deals	(2) Number of first-time funded startups	(3) *ln(Total amount of investment)*	(4) *ln(Total amount of investment)$_{avg}$*
Close election	−0.029***	−0.006*	−0.119***	−0.098***
	(0.01)	(0.00)	(0.03)	(0.03)
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	272,910	272,910	272,910
R-squared	.283	.180	.210	.208

C. Excluding presidential election years

Variables	(1) Number of deals	(2) Number of first-time funded startups	(3) *ln(Total amount of investment)*	(4) *ln(Total amount of investment)$_{avg}$*
Close election	−0.032***	−0.012***	−0.135***	−0.112***
	(0.01)	(0.00)	(0.04)	(0.04)
Election	0.004	0.007*	0.029	0.027
	(0.01)	(0.00)	(0.03)	(0.03)
Fixed effects	Yes	Yes	Yes	Yes
Observations	205,868	205,868	205,868	205,868
R-squared	.285	.182	.214	.212

D. Including nonpreferred states

Variables	(1) Number of deals	(2) Number of first-time funded startups	(3) *ln(Total amount of investment)*	(4) *ln(Total amount of investment)$_{avg}$*
Close election	−0.001***	−0.001**	−0.006**	−0.006**
	(0.00)	(0.00)	(0.00)	(0.00)
Election	0.001*	0.001**	0.003	0.003
	(0.00)	(0.00)	(0.00)	(0.00)
Fixed effects	Yes	Yes	Yes	Yes
Observations	3,610,836	3,610,836	3,610,836	3,610,836
R-squared	.084	.040	.093	.093

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. In panel A1, *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 5% or 1%, and zero otherwise. In panel A2, *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential lies in bottom decile, and zero otherwise. In panels B–D, *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. In panel C, years with presidential elections are excluded. In Panel D, the sample extra includes all the observations of a VC's nonpreferred states. All the regressions include VC(-State) fixed effects, Year fixed effects, and Quarter fixed effects. For brevity, we only tabulate the results of which all the dependent variable is measured in quarter $t - 1$. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

Thus, we return to our sample those observations in a VC's nonpreferred states. The inclusion of many nonpreferred states yields a much larger sample size of 3,610,836 observations while our results remain statistically significant at the 1% and 5% levels, suggesting that the baseline findings are not driven by this sample selection procedure.[13]

3.4 Addressing identification concerns

3.4.1 Addressing omitted variable and reverse causality concerns. One important concern regarding the internal validity of our empirical strategy and the interpretation of our findings is that our results could be driven by the demand side, that is, by poor local economic fundamentals or by investment opportunities. Either could negatively affect the investment decisions of VCs and could contribute to closer gubernatorial elections because incumbent governors are often blamed for deteriorating economic conditions (Atkeson and Partin 1995; Van Dunk 1997).

To address this concern, we examine a dynamic model of VC investment around gubernatorial elections. Specifically, we follow Bertrand and

[13] It is worth noting that the economic magnitude of the coefficient estimates for *Close election* becomes smaller, likely because VCs invest less frequently outside of their preferred states.

Mullainathan (2003) and decompose *Close election* (as well as *Election*) into a bundle of dummy variables denoting the quarters before, of, and after corresponding gubernatorial elections. *After (Before) n* denotes *n* quarter(s) after (before) a (close) gubernatorial election; *Quarter 0* denotes the quarter when a (close) gubernatorial election happens in the VC's preferred state. We then alter *Close election* (and *Election*) with those dynamic indicators, reestimate the baseline model, and report the results in Table 5. If the above concern drives our baseline findings, we expect that VC investments still will be affected by local investment opportunities, even after gubernatorial elections with less political uncertainty.

As shown in Table 5, however, the effect of close gubernatorial elections on VC investment is negative and significant at the 1% or 5% level only before and within the quarters of close gubernatorial elections. With the policy uncertainty diminishing after close gubernatorial elections, the estimated effect of a close election immediately approaches zero and is largely insignificant. This evidence suggests that our baseline findings are unlikely driven by the cycles of economic conditions or investment opportunities that, by nature, are unlikely to exhibit such sudden changes (and thereby to cause sudden changes in VC investments) independently within a short time period (e.g., a quarter).

Further, this evidence helps to address the concern that VC investments might catch up symmetrically after close gubernatorial elections and thus, as we have argued, there is no material hindrance effect. Given that the above dynamic tests show close-to-zero coefficient estimates for *After*s, the symmetrical-shifting-across-time argument is unlikely to drive our results.[14]

To further rule out the influence of any time-varying and VC-state specific factors, we include VC-state-year fixed effects in our baseline model. We then rerun the baseline estimation and report the results in Table 6. Panels A–D of Table 6 show that, while the inclusion of VC-state-year fixed effects reduces the significance of the estimated effects to some extent, the coefficient estimates for the key variable of interest are still negative and most are significant. This finding provides reassurance that our results are unlikely driven by omitted variables, such as local fundamentals or investment opportunities.

3.4.2 Addressing coincidence concern. While gubernatorial elections generate staggered shocks across states, there is still a concern that the timing of elections could coincide with other factors (e.g., non-policy-related economic uncertainty cycles) that drive our main results. To address this concern, we explore heterogeneity in our baseline results based on industry-level dependence on government spending, because government spending uncertainty is a

[14] One possible concern is that, while a high level of policy uncertainty can decrease VC investments, the investments could easily catch up after the policy is made clear. Unlike our conjecture, this argument (i.e., the shifting of VC investments across time) means that there is actually no real effect of policy uncertainty on VC investments in the long run. However, it is worth noting that this argument cannot explain away our conjecture.

Table 5:
Policy uncertainty and VC investment dynamics

Variables	(1) *Number of deals*	(2) *Number of first-time funded startups*	(3) *ln(Total amount of investment)*	(4) *ln(Total amount of investment)$_{avg}$*
After$^{close\ election}$ 2	−0.003	0.005	−0.034	−0.035
	(0.01)	(0.00)	(0.05)	(0.04)
After$^{close\ election}$ 1	−0.001	−0.001	−0.006	−0.009
	(0.01)	(0.00)	(0.04)	(0.04)
Quarter$^{close\ election}$ 0	−0.028***	−0.013**	−0.176***	−0.145***
	(0.01)	(0.01)	(0.05)	(0.04)
Before$^{close\ election}$ 1	−0.041***	−0.013**	−0.183***	−0.148***
	(0.01)	(0.01)	(0.05)	(0.04)
Before$^{close\ election}$ 2	−0.032***	−0.017***	−0.114**	−0.094**
	(0.01)	(0.01)	(0.05)	(0.04)
Before$^{close\ election}$ 3	−0.030***	−0.010**	−0.104**	−0.093**
	(0.01)	(0.00)	(0.05)	(0.04)
After^{election} 2	0.013*	−0.003	0.036	0.029
	(0.01)	(0.00)	(0.04)	(0.03)
After^{election} 1	−0.004	−0.004	0.004	0.003
	(0.01)	(0.00)	(0.03)	(0.03)
Quarter^{election} 0	0.061***	0.018***	0.273***	0.231***
	(0.01)	(0.01)	(0.05)	(0.04)
Before^{election} 1	0.052***	0.017***	0.253***	0.212***
	(0.01)	(0.00)	(0.05)	(0.04)
Before^{election} 2	0.073***	0.021***	0.348***	0.299***
	(0.01)	(0.01)	(0.05)	(0.04)
Before^{election} 3	0.056***	0.017***	0.233***	0.203***
	(0.01)	(0.00)	(0.05)	(0.04)
VC-State FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Quarter FEs	Yes	Yes	Yes	Yes
Observations	258,145	258,145	258,145	258,145
R-squared	.294	.186	.218	.217

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. *After n* equals one if the quarter *t* is *n* quarter(s) after a gubernatorial election (or close election) in the focal state. *Before n* equals one if the quarter *t* is *n* quarter(s) before a gubernatorial election (or close election) in the focal state. *Quarter 0* equals one if the quarter *t* is the quarter of the gubernatorial election (or close election) in the focal state. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

main component of policy-related uncertainty. If our staggered shocks coincide with other factors that are unrelated to political elections and government turnover, our baseline results should exhibit similar patterns between industries that rely heavily on government spending and those that do not.[15]

[15] One possible concern is that VCs are typically unlikely to invest in startups that are likely to depend on government contracts. This concern is valid in traditional industries, but it doesn't undermine our results for two reasons. First, our dummy for government spending dependence is based on a yearly median; thus, this variable does not exclusively identify startups that are heavily reliant on the government but merely those that are more dependent. Second, the existing literature finds that the U.S. government is a major sponsor of innovation, especially cutting-edge technological breakthroughs (Lerner 2000; Howell 2017); therefore,

Table 6:
Tests on omitted variables

A. Number of deals

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.017**	−0.022***	−0.050***	−0.012
	(0.01)	(0.01)	(0.01)	(0.01)
Election	−0.013**	0.019***	0.039***	0.011**
	(0.01)	(0.01)	(0.01)	(0.01)
VC-State-Year FEs	Yes	Yes	Yes	Yes
Quarter FEs	Yes	Yes	Yes	Yes
Observations	272,768	269,794	264,498	263,909
R-squared	.592	.594	.590	.589

B. Number of first-time funded startups

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.005	−0.010**	−0.010**	−0.007*
	(0.00)	(0.00)	(0.00)	(0.00)
Election	0.001	0.007**	0.010***	0.004
	(0.00)	(0.00)	(0.00)	(0.00)
VC-State-Year FEs	Yes	Yes	Yes	Yes
Quarter FEs	Yes	Yes	Yes	Yes
Observations	272,768	269,794	264,498	263,909
R-squared	.475	.474	.470	.471

C. ln(Total amount of investment)

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.076*	−0.098**	−0.235***	−0.126***
	(0.04)	(0.04)	(0.04)	(0.04)
Election	−0.051	0.111***	0.143***	0.080***
	(0.03)	(0.03)	(0.03)	(0.03)
VC-State-Year FEs	Yes	Yes	Yes	Yes
Quarter FEs	Yes	Yes	Yes	Yes
Observations	272,768	269,794	264,498	263,909
R-squared	.500	.499	.496	.495

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.061*	−0.077**	−0.204***	−0.108***
	(0.04)	(0.04)	(0.04)	(0.04)
Election	−0.044	0.093***	0.124***	0.069***
	(0.03)	(0.03)	(0.03)	(0.03)
VC-State-Year FEs	Yes	Yes	Yes	Yes

(continued)

Table 6:
Continued

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Quarter FEs	Yes	Yes	Yes	Yes
Observations	272,768	269,794	264,498	263,909
R-squared	.497	.497	.494	.493

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables in panels A–D are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. In each panel, the dependent variable is measured in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

To this end, we first follow Belo, Gala, and Li (2013) to construct an industry-level measure of government spending dependence. Specifically, we use Benchmark Input-Output (I-O) data from the Bureau of Economic Analysis (BEA) to calculate the proportion of an industry's total output represented by government spending (for detailed descriptions, see the appendix). We define *High gov. spending* as a dummy variable that equals one if an industry's dependence on government spending is above the median in a year, and zero otherwise. For every VC firm, we identify one preferred industry in which the VC has invested the most deals (or has invested the largest amount in total, or—in the case of a tie—has the longest investment history. We then merge *High gov. spending* with our final sample by the three-digit SIC codes of VCs' unique preferred industries.[16]

Table 7 reports the results of the heterogeneity tests in which we interact *High gov. spending* with both key variables of interest (*Close election*) and *Election*. The results show that most of the coefficient estimates for *Close election* × *High gov. spending* are negative. Especially for quarter $t-2$, the coefficient estimates are negative, sizable, and significant. While the heterogeneous effect is not significant in all quarters before close gubernatorial elections, this evidence can hardly reconcile with the coincidence concern,

considering the intense interests VCs have in innovation, they still may be interested in government-dependent startups, especially those in nascent and innovative industries.

[16] The VentureXpert database provides SIC codes for every portfolio company prior to 2016, the year for which we first obtain data. However, these codes are now unretrievable (although they still may be found in the search menu). Thus, we map the previously available SIC codes to those portfolio firms that appear in the VentureXpert database after 2016 and use the VentureXpert industry class, major group, and minor group, which are permanently available. Specifically, for those more recent portfolio companies whose SIC code is not retrievable, we assign an SIC code that appears most often (in our pre-2016 data) within the same industry class, major group, and minor group.

Table 7:
Heterogeneity tests based on government spending dependence

A. Number of deals

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *High gov. spending*	−0.005	−0.242***	−0.121***	−0.025
	(0.07)	(0.05)	(0.04)	(0.05)
Close election	−0.039	0.187***	0.064	0.016
	(0.07)	(0.05)	(0.04)	(0.05)
High gov. spending	−0.036**	−0.028*	−0.009	−0.014
	(0.02)	(0.01)	(0.01)	(0.01)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	239,944	237,214	234,480	231,754
R-squared	.283	.283	.284	.285

B. Number of first-time funded startups

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *High gov. spending*	0.048	−0.044*	−0.060*	0.037
	(0.05)	(0.02)	(0.03)	(0.04)
Close election	−0.056	0.026	0.048	−0.044
	(0.05)	(0.02)	(0.03)	(0.04)
High gov. spending	−0.013	−0.012	−0.001	−0.005
	(0.01)	(0.01)	(0.01)	(0.01)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	239,944	237,214	234,480	231,754
R-squared	.183	.184	.185	.186

C. ln(Total amount of investment)

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election ×*High gov. spending*	−0.081	−1.143***	−0.146	−0.096
	(0.38)	(0.26)	(0.25)	(0.34)
Close election	−0.131	0.892***	−0.112	−0.008
	(0.38)	(0.26)	(0.25)	(0.34)
High gov. spending	−0.228***	−0.191**	−0.096	−0.091
	(0.09)	(0.08)	(0.07)	(0.07)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	239,944	237,214	234,480	231,754
R-squared	.207	.205	.204	.205

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *High gov. spending*	−0.029	−0.969***	−0.078	−0.053
	(0.36)	(0.24)	(0.23)	(0.31)
Close election	−0.143	0.760***	−0.149	−0.033

(continued)

Table 7:
Continued

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
	(0.35)	(0.24)	(0.23)	(0.31)
High gov. spending	−0.206***	−0.176**	−0.098	−0.094
	(0.08)	(0.07)	(0.07)	(0.07)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	239,944	237,214	234,480	231,754
R-squared	.206	.204	.203	.204

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables in panels A–D are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. In each panel, the dependent variable is measured in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. For each year, *High gov. spending* equals one if the ratio of final government purchases to total industry output of an industry is above the median, and zero otherwise. All the regressions include VC(-state) fixed effects, year fixed effects, and quarter fixed effects, as well as *Election* and its interaction with the newly added variable, but they are not tabulated. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

suggesting that our empirical strategy is likely to capture the effects of policy uncertainty induced by close gubernatorial elections rather than by unrelated but coinciding factors, such as significant changes in economic or business conditions.

3.4.3 Further identification attempt: instrumental variable approach. While we have conducted a series of additional tests to show that our baseline tests make use of plausibly exogenous variation to demonstrate that policy uncertainty caused by close gubernatorial elections is likely causal, each aspect of the evidence is vulnerable to criticism. To further strengthen our causal link, we follow Jens (2017) and use an instrumental variable approach. Specifically, we construct *Term limit*, an instrument that equals one if, in the focal quarter, a state has a gubernatorial election in which the incumbent governor is not a candidate due to term limits, and zero otherwise.

An election without an incumbent is more likely to be hotly contested (Jens 2017), simply because none of the candidates has proven their capability as a governor. In the United States, incumbent governors have a significant advantage when pursuing a second term (more than 80% of incumbents are re-elected), suggesting that retirement of incumbent governors due to term limits is relevant to election closeness. Hence, the instrument satisfies the

relevance condition of the instrumental variable approach. Moreover, since we only consider the incumbent's absence due to term limits (as set by law), it is unlikely that incumbents do not choose to run for election because they believe their chances of winning are low due to poor domestic economic conditions or poor investment opportunities for VCs.[17] Putting these factors together, it is reasonable to believe that our instrument for election closeness, *Term limit*, satisfies the exclusion restriction.[18]

Based on this term-limit instrument, we undertake two-stage least squares regressions to estimate the baseline model and report the results in Table 8. In panel A, the first-stage results show that the instrumental variable is positively and significantly related to election closeness. Panel A also shows large *F*-statistics (over 900) for the first stage, which indicates that our instrument is not a weak IV, thereby assuring the satisfaction of the relevance condition. Moreover, panels B–E show a similar pattern consistent with the baseline results—all the coefficient estimates of the instrumented *Close election* are negative (although the statistical power in some regressions is weakened).

In summary, our results—which rely on plausibly exogenous variation in policy uncertainty generated by close gubernatorial elections—support the conjecture that policy uncertainty has a negative effect on VC investment, and the relation appears likely to be causal. This finding at the VC level is consistent with our earlier aggregate-level result reported in Section 3.1. Additional tests further show that this finding is robust to alternative variable definitions and model specifications and is unlikely to be driven by various concerns, such as omitted variables, reverse causality, and unobservable factor coincidences.

4. Further Analyses

Thus far, we have provided evidence of the negative effects of policy uncertainty on VC investment and have shown that the link is likely causal. However, the way in which policy uncertainty negatively affects VC investment and the ways in which these effects differ from those in public markets is still a "black box." In this section, we take a step further to open that "black box" by investigating cross-sectional heterogeneity based on the distinctive features of VC investment in the private markets discussed in Section 1. These features include illiquidity, motives that are not purely financial, informational

[17] Occasionally incumbent candidates withdraw from re-election for special reasons (e.g., Mike Pence's withdraw from the 2016 Indiana gubernatorial election to run for U.S. Vice President). We also count these cases into *Term limit*, because the incumbents' quitting is largely due to exogenous reasons. The results would remain unchanged if we did not do so.

[18] We are aware that it is possible for incumbent governors, when faced with term limits, to manipulate the market and thereby to affect VC investments. However, as pointed out by Jens (2017), even this manipulation argument cannot breach the exclusion condition because the manipulation is largely aimed at influencing the results of the upcoming election.

Table 8:
Instrumental variable approach

A. First stage

	Dependent variable: *Close election*			
Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Term limit	0.145***	0.145***	0.146***	0.150***
	(0.005)	(0.005)	(0.005)	(0.005)
Election	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Weak IV test (*F*-statistics)	963.0***	965.2***	967.1***	1,014.4***
Under identification test (*F*-statistics)	647.5***	648.4***	649.5***	670.6***
Observations	272,910	269,957	267,004	264,051

B. Number of deals

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.100**	−0.056	−0.268***	−0.108**
	(0.05)	(0.06)	(0.06)	(0.05)
Election	0.027	0.039*	0.124***	0.049**
	(0.02)	(0.02)	(0.02)	(0.02)
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051

C. Number of first-time funded startups

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.071**	-0.056*	-0.058*	−0.027
	(0.03)	(0.03)	(0.03)	(0.03)
Election	0.027**	0.026**	0.029**	0.013
	(0.01)	(0.01)	(0.01)	(0.01)
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051

D. ln(Total amount of investment)

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.529*	−0.074	−1.695***	−0.377
	(0.27)	(0.30)	(0.29)	(0.28)
Election	0.160	0.142	0.707***	0.189*
	(0.11)	(0.11)	(0.11)	(0.11)
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051

E. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election	−0.480**	−0.015	−1.467***	−0.226
	(0.24)	(0.26)	(0.25)	(0.25)
Election	0.149	0.105	0.612***	0.128

(continued)

Table 8:
Continued

E. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
	(0.09)	(0.10)	(0.10)	(0.10)
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables in panels A–E are *Close election*, *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. In panels B–E, the dependent variable is measured in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. *Term limit* equals one if a state has a gubernatorial election in the focal quarter and the incumbent governor does not participate in the election, and zero otherwise. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

asymmetry, and intensive post-investment monitoring. Specifically, while illiquidity (and poor diversification) can make VC investment more sensitive to policy uncertainty, those VC investments with strategic motives, intensive post-investment management, and early-stage/high-tech preferences can be more resilient to the influence of policy uncertainty; this distinguishes VCs in private markets from other investors in public markets.

Along this line of inquiry, our empirical setting of heterogeneity tests is the same as that in Section 3.4.2, that is, we interact various variables to reflect VCs' investment illiquidity, strategic motives, intensive post-investment monitoring, and early-stage/high-tech preferences with both *Close election* (the key variable of interest) and *Election*. For brevity, we tabulate only the coefficient estimates for the newly included variables (if applicable), on *Close election*, and on their interaction terms.

4.1 Illiquidity

VC investments in private markets are much more illiquid than investments in public markets (Cochrane 2005). Since each deal typically takes a sizable portion of a VC's assets under management, it is difficult for VCs to diversify various types of risks, causing VC investments to be more sensitive to the negative effect of policy uncertainty.

To test this conjecture, we use *ln(Amount of investment per deal)*, the logarithm of a VC firm's total amount of investment over the firm's lifetime divided by the total number of all its deal records, as a proxy for investment illiquidity (and poor diversification), because large deals are by nature harder

Table 9:
Heterogeneity tests based on VC investment illiquidity

A. Number of deals

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *ln(Amount of investment per deal)*	−0.066***	−0.075***	−0.085***	−0.067***
	(0.01)	(0.01)	(0.01)	(0.01)
Close election	0.585***	0.660***	0.729***	0.598***
	(0.06)	(0.07)	(0.07)	(0.07)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	270,038	267,136	264,234	261,332
R-squared	.284	.283	.283	.283

B. Number of first-time funded startups

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *ln(Amount of investment per deal)*	−0.019***	−0.024***	−0.018***	−0.017***
	(0.00)	(0.00)	(0.00)	(0.00)
Close election	0.171***	0.205***	0.156***	0.144***
	(0.03)	(0.04)	(0.04)	(0.03)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	270,038	267,136	264,234	261,332
R-squared	.181	.181	.180	.180

C. ln(Total amount of investment)

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *ln(Amount of investment per deal)*	−0.300***	−0.346***	−0.427***	−0.330***
	(0.04)	(0.04)	(0.04)	(0.04)
Close election	2.651***	3.049***	3.687***	2.905***
	(0.32)	(0.33)	(0.33)	(0.34)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	270,038	267,136	264,234	261,332
R-squared	.210	.209	.208	.207

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *ln(Amount of investment per deal)*	−0.260***	−0.299***	−0.371***	−0.290***
	(0.03)	(0.03)	(0.03)	(0.03)
Close election	2.301***	2.643***	3.200***	2.551***
	(0.28)	(0.29)	(0.30)	(0.30)
Election & interactions	Yes	Yes	Yes	Yes

(continued)

Table 9:
Continued

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Fixed effects	Yes	Yes	Yes	Yes
Observations	270,038	267,136	264,234	261,332
R-squared	.208	.208	.207	.206

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables in panels A–D are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. In each panel, the dependent variable is measured in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. *ln(Amount of investment per deal)* is the log of a VC firm's total amount of investment over the lifetime divided by the total number of all its deal records. All the regressions include VC(-state) fixed effects, year fixed effects, and quarter fixed effects, as well as *Election* and its interaction with the newly added variable, but they are not tabulated. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

to liquidate or sell. We then interact this proxy with the variables in our baseline model and report the results in Table 9.

The coefficient estimates for *Close election* × *ln(Amount of investment per deal)* reported in Table 9, panels A–D, are negative and significant at the 1% level. Moreover, consistent with the baseline results, the heterogeneity effects in Table 9 are most sizable around quarter $t-3$. These findings suggest that the negative effect of policy uncertainty on VC investments is more pronounced if a VC firm's deals are subject to illiquidity and poor diversification to a larger degree.

4.2 Strategic motives

Next, we move to the second dimension that distinguishes VC investments from investment in public markets: strategic (or nonpurely financial) motives. While illiquidity can make VC investments more sensitive to policy uncertainty, the types of VC investors in private markets are mixed, with a considerable number of VCs investing because of various nonfinancial motives and concerns. VCs with strategic motives can minimize or hedge the influence of policy uncertainty because their principal objective is beyond a purely risk-return framework, and therefore they can be more patient and resilient regarding political cycles. Hence, we expect investments by VCs that have strategic motives to be less affected by policy uncertainty.

To explore heterogeneity effects based on the types of VC investments, we explore CVCs. As a program set by industrial firms, CVCs invest from

strategic (more than from financial) motives (Gompers and Lerner 2000). Compared to independent VCs (IVCs), CVCs are shown to be more patient and tolerant of failure (Chemmanur, Loustina, and Tian 2014). Thus, we expect policy uncertainty to have no effect on CVC investments.

We create a CVC dummy that equals one if a VC's firm type is identified by the VentureXpert as "Corporate PE/Venture," and zero otherwise. We report the results testing the above conjecture in Table 10. All the coefficient estimates for *Close election* × *CVC* are statistically insignificant and economically close to zero, suggesting that CVC investments are likely to be less affected by policy uncertainty. Meanwhile, the coefficient estimates for *Close election*, representing the sensitivity of IVC investment to policy uncertainty, are all negative and significant at the 1% and 5% levels. The clear-cut difference between the results of CVCs and IVCs suggests that our baseline results are largely driven by IVCs, while strategic investors, such as CVCs, are not adversely affected by policy uncertainty.

4.3 Intensive post-investment monitoring

A prominent feature of VC investments is that VCs not only take risks but also manage risks, via their intensive post-investment monitoring. VCs often have seats on the boards of their portfolio companies, require veto rights, and/or serve as experienced mentors to guide the entrepreneurs. Some VCs charge monitoring fees to their portfolio companies (Metrick and Yasuda 2010). Bernstein, Giroud, and Townsend (2016) show that monitoring plays an important role in enhancing the probability of success for portfolio companies. Therefore, with intensive post-investment monitoring, VCs can actively guide their portfolio companies to deal with policy changes and thereby hedge against policy uncertainty to a large degree.

To test how this distinctive feature of VC investments can mitigate or hedge the influence of policy uncertainty, we use *Charge monitoring fees* (a binary variable that equals one if VentureXpert documents a VC as charging fees to portfolio companies, and zero otherwise) as a proxy for VCs' intensive post-investment monitoring. We report the results in Table 11.

Table 11, panels A–D, shows that the coefficient estimates for *Close election* × *Charge monitoring fees* are all positive and statistically insignificant, suggesting that policy uncertainty is unlikely to crowd out investments by VCs with intensive post-investment monitoring; on the contrary, most coefficient estimates for *Close election* are negative and significant, suggesting that VCs without intensive post-investment monitoring are subject to negative effects of policy uncertainty. This finding is consistent with our conjecture in Section 1.

Table 10.
Heterogeneity tests based on VC's type

A. Number of deals

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *CVC*	−0.009	−0.005	0.018	−0.001
	(0.02)	(0.02)	(0.02)	(0.02)
Close election	−0.028***	−0.034***	−0.060***	−0.022**
	(0.01)	(0.01)	(0.01)	(0.01)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.283	.283	.282	.282

B. Number of first-time funded startups

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *CVC*	0.009	0.011	0.018**	−0.003
	(0.01)	(0.01)	(0.01)	(0.01)
Close election	−0.011**	−0.014***	−0.015***	−0.009**
	(0.00)	(0.01)	(0.00)	(0.00)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.180	.180	.180	.179

C. ln(Total amount of investment)

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *CVC*	−0.177	−0.154	0.034	0.071
	(0.11)	(0.11)	(0.12)	(0.11)
Close election	−0.103**	−0.131***	−0.269***	−0.171***
	(0.04)	(0.04)	(0.04)	(0.05)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.210	.209	.208	.207

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *CVC*	−0.138	−0.139	0.026	0.058
	(0.10)	(0.10)	(0.10)	(0.10)
Close election	−0.086**	−0.105***	−0.232***	−0.146***
	(0.04)	(0.04)	(0.04)	(0.04)

(continued)

Table 10.
Continued

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.208	.208	.207	.206

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables in panels A–D are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. In each panel, the dependent variable is measured in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. *CVC* equals one if a VC is a corporate VC firm, and zero otherwise. All the regressions include VC(-state) fixed effects, year fixed effects, and quarter fixed effects, as well as *Election* and its interaction with the newly added variable, but they are not tabulated. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

4.4 Preferences for early-stage and high-tech

VCs have their own expertise and preferences for the development stage and industry of portfolio companies. Many concentrate their investments on early-stage and high-tech investments (Gompers and Lerner 2001). Compared to VCs that focus their investment in later stages and in other industries, those that prefer early-stage/high-tech are more likely to be "risk-seekers" and less likely to be concerned about policy uncertainty. That is because they treat policy uncertainty as short term and as a controllable disturbance that may be resolved in the long run. Hence, risk-seekers are unlikely to be subject to the adverse effect of policy uncertainty.

To test this conjecture, we begin with VCs that concentrate their investment on early-stage startups. VentureXpert provides information about the stages of startup development that VCs prefer; we use this to define whether a VC investor prefers early-stage investment. Specifically, *Prefers early stage* is a binary variable that equals one if a VC's preferred stage of investment is classified by VentureXpert as "seed stage," "early stage," "startup," "research and development," or "first-round financing" and zero otherwise. We then conduct heterogeneity tests based on *Prefers early stage* and report the results in Table 12.

Table 12 shows that almost all of the coefficient estimates for *Close election* × *Prefers early stage* are close to zero and statistically insignificant, while *Close election*, denoting VCs that prefer later-stage investments are more likely to be negative and significant, especially close to gubernatorial elections. This is consistent with our conjecture.

Table 11.
Heterogeneity tests based on VC's monitoring fees

A. Number of deals

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Charge monitoring fees*	0.021	0.008	0.004	0.023
	(0.02)	(0.02)	(0.02)	(0.02)
Close election	−0.059***	−0.049**	−0.071***	−0.052**
	(0.02)	(0.02)	(0.02)	(0.02)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.283	.283	.282	.282

B. Number of first-time funded startups

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Charge monitoring fees*	0.008	0.003	0.001	0.002
	(0.01)	(0.01)	(0.01)	(0.01)
Close election	−0.021*	−0.018	−0.016	−0.014
	(0.01)	(0.01)	(0.01)	(0.01)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.180	.180	.180	.179

C. ln(Total amount of investment)

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Charge monitoring fees*	0.214**	0.074	0.034	0.123
	(0.09)	(0.09)	(0.10)	(0.10)
Close election	−0.404***	−0.265***	−0.350***	−0.328***
	(0.10)	(0.10)	(0.11)	(0.11)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.210	.209	.208	.207

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Charge monitoring fees*	0.191**	0.067	0.029	0.106
	(0.08)	(0.08)	(0.08)	(0.09)
Close election	−0.349***	−0.224**	−0.303***	−0.281***
	(0.09)	(0.09)	(0.09)	(0.10)
Election & interactions	Yes	Yes	Yes	Yes

(continued)

Table 11.
Continued

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.209	.208	.207	.206

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables in panels A–D are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. In each panel, the dependent variable is measured in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. *Charge monitoring fees* equals one if a VC firm charges monitoring fees to their portfolio companies, and zero otherwise. All the regressions include VC(-state) fixed effects, year fixed effects, and quarter fixed effects, as well as *Election* and its interaction with the newly added variable, but they are not tabulated. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

Likewise, we test the heterogeneous effect based on VCs' preferences for high-tech startups. To identify VCs' high-tech preferences, we determine whether a VC's preferred industry (as reported by the VentureXpert database) includes any of the following key words: "high tech," "biotechnology," "biotech," "electronics," "information technology," "life science," "pharmaceuticals," "semiconductor," or "robotics"" Then, we define *Prefers high tech* as a dummy variable that equals one if a VC prefers high-tech startups and zero otherwise. We then interact this variable with *Close election* and *Election* and report the results in Table 13.

We find that the coefficient estimates for *Close election*, which represent the effect of policy uncertainty on VCs that do not show preference for high-tech companies, are all negative and statistically significant. On the other hand, none of the coefficient estimates for *Close election* × *Prefers high tech* is negative and significant; in fact, some of them are even positive and significant at the 1% or 10% level. This finding is consistent with our conjecture.

4.5 Policy uncertainty and VC investment outcomes

While we have examined the effect of policy uncertainty on VC investments from various dimensions, one remaining concern is that all of our results reflect a screening effect by VCs in the sense that VCs stop investing in low-quality startups but shift their investment to high-quality ones. If this is the case, one cannot claim an economy-wise negative effect of policy

Table 12.
Heterogeneity tests based on VC's early-stage preference

A. Number of deals

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Prefers early stage*	−0.017	−0.013	−0.004	−0.014
	(0.02)	(0.02)	(0.02)	(0.02)
Close election	−0.022**	−0.028***	−0.055***	−0.015
	(0.01)	(0.01)	(0.01)	(0.01)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.283	.283	.282	.282

B. Number of first-time funded startups

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Prefers early stage*	−0.004	0.004	0.004	−0.006
	(0.01)	(0.01)	(0.01)	(0.01)
Close election	−0.008	−0.014***	−0.015***	−0.007
	(0.01)	(0.01)	(0.01)	(0.01)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.180	.180	.180	.179

C. ln(Total amount of investment)

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Prefers early stage*	−0.076	−0.038	−0.015	−0.209**
	(0.09)	(0.09)	(0.09)	(0.09)
Close election	−0.090*	−0.130***	−0.254***	−0.062
	(0.05)	(0.05)	(0.05)	(0.05)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.210	.209	.208	.207

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Prefers early stage*	−0.062	−0.009	−0.017	−0.168**
	(0.08)	(0.08)	(0.08)	(0.08)
Close election	−0.074*	−0.115***	−0.218***	−0.058
	(0.04)	(0.04)	(0.05)	(0.05)
Election & interactions	Yes	Yes	Yes	Yes

(continued)

Table 12.
Continued

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.209	.208	.207	.206

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables in panels A–D are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. In each panel, the dependent variable is measured in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. *Prefers early stage* equals one if a VC firm prefers early-stage financing, and zero otherwise. All the regressions include VC(-state) fixed effects, year fixed effects, and quarter fixed effects, as well as *Election* and its interaction with the newly added variable, but they are not tabulated. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

uncertainty on private markets, because VCs are still able to maintain their returns by being more focused on high-quality startups.

To rule out this alternative interpretation of our results, we explore a "bottom-line" question. We use three measures to capture the quality of VC-backed startups: *IPO*, *M&A*, and *Defunct*. A VC can exit an investment in a startup company via one of three pathways: going public (IPO), being acquired (M&A), and liquidation. Among these three pathways, IPOs and M&As are regarded as successful exits for startups (e.g., Bottazzi, Rin, and Hellmann 2008; Tian and Wang 2014, Bayar, Chemmanur, and Tian, 2014), while a startup company that becomes defunct or is written off is obviously a failure. Thus, our three measures of startup quality capture both high-quality and low-quality startups. We obtain information on the exit pathways of startups by using VentureXpert, which we supplement with the SDC Global New Issues database and the SDC Mergers and Acquisitions database.

We then apply our empirical strategy at the startup-company level. Specifically, we compare startups that get their first round of VC investments under policy uncertainty with those that are not under policy uncertainty. Hence, we examine startups receiving VC financing to explore whether the quality of those that receive investment when policy uncertainty level is high differs from the quality of those receiving investment when policy uncertainty is low.

Table 14 reports the results based on a sample of 56,282 startups with no missing data in VentureXpert, for the years 1980–2022. The coefficient

Table 13.
Heterogeneity tests based on VC's high-tech preference

A. Number of deals

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Prefers high tech*	−0.003	0.041*	0.005	0.051***
	(0.02)	(0.02)	(0.02)	(0.02)
Close election	−0.029***	−0.047***	−0.059***	−0.037***
	(0.01)	(0.01)	(0.01)	(0.01)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.283	.283	.282	.282

B. Number of first-time funded startups

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Prefers high tech*	−0.003	0.005	0.004	0.007
	(0.01)	(0.01)	(0.01)	(0.01)
Close election	−0.009*	−0.014***	−0.014***	−0.012**
	(0.01)	(0.01)	(0.00)	(0.00)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.180	.180	.180	.179

C. ln(Total amount of investment)

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Prefers high tech*	−0.020	0.168*	0.067	0.278***
	(0.10)	(0.10)	(0.10)	(0.10)
Close election	−0.125***	−0.205***	−0.285***	−0.244***
	(0.05)	(0.05)	(0.05)	(0.05)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.210	.209	.208	.207

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
Close election × *Prefers high tech*	−0.026	0.137	0.039	0.240***
	(0.08)	(0.09)	(0.09)	(0.09)
Close election	−0.100**	−0.167***	−0.241***	−0.209***

(continued)

Table 13.
Continued

D. ln(Total amount of investment)$_{avg}$

Variables	(1) *t*-1	(2) *t*-2	(3) *t*-3	(4) *t*-4
	(0.04)	(0.04)	(0.04)	(0.04)
Election & interactions	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Observations	272,910	269,957	267,004	264,051
R-squared	.208	.208	.207	.206

The sample contains all the VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The dependent variables in panels A–D are *Number of deals*, *Number of first-time funded startups*, *ln(Total amount of investment)*, and *ln(Total amount of investment)$_{avg}$*, respectively, defined in the caption of Table 1. In each panel, the dependent variable is measured in quarters $t-1$, $t-2$, $t-3$, and $t-4$, respectively. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. *Prefers high tech* equals one if a VC firm prefer high-tech startups, and zero otherwise. All the regressions include VC(-state) fixed effects, year fixed effects, and quarter fixed effects, as well as *Election* and its interaction with the newly added variable, but they are not tabulated. Standard errors are clustered at the VC(-state) level and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

Table 14.
Policy uncertainty and investment outcomes

Variables	(1) IPO	(2) M&A	(3) Defunct	(4) IPO	(5) M&A	(6) Defunct
Close election	0.004	0.009	0.005	0.004	0.002	0.003
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.00)
Election	−0.010*	−0.016**	−0.004	−0.010*	−0.013	−0.003
	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects				Yes	Yes	Yes
Primary customer fixed effects				Yes	Yes	Yes
Observations	56,282	56,282	56,282	48,979	48,979	48,979
R-squared	.125	.052	.190	.161	.047	.138

The sample contains all the U.S. portfolio companies in the VentureXpert backed by VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The unit of observation is a portfolio company. The dependent variables *IPO*, *M&A*, and *Defunct*, are dummy variables that denote the exit pathway of each portfolio company and are measured in quarter *t*. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. Standard errors are clustered by state and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

estimates for the key explanatory variable, *Close election*, are all close to zero and largely insignificant for both successful exits (*IPO* and *M&A*) and for failure cases (*Defunct*), suggesting that startups that received first-round

financing during times of high policy uncertainty are unlikely different from other startup companies in terms of their quality as captured by their eventual exit outcomes. The results remain unchanged if we further include industry fixed effects and customer-type fixed effects (Table 14, columns 4–6), or if we use the Probit model instead of the linear liability model (Table A1 in the appendix). Therefore, our findings are likely to indicate an indiscriminative negative effect of policy uncertainty on VC investments, instead of a reflection of VCs' screening and refocusing on high-quality startup companies under policy uncertainty.

Viewed as a whole, the evidence in this section supports our conjecture that, while VC investments can be crowded out by policy uncertainty due to illiquidity and poor diversification, some distinct VC features—such as strategic motives, intensive monitoring, and early-stage/high-tech preferences—can mitigate the negative effect of policy uncertainty on VC investment.

5. Conclusion

In this study, we rely on exogenous variation of policy uncertainty induced by close gubernatorial elections in the United States to examine how economic policy uncertainty affects VC investment in private markets. We find that policy uncertainty has a negative effect on VC investment. We further show that illiquidity (and poor diversification) makes VC investment more sensitive to policy uncertainty, while those VCs with strategic motives, intensive post-investment monitoring, and early-stage/high-tech industry preferences are likely to minimize or hedge against policy uncertainty. In addition, we show that the above findings do not reflect VCs as refocusing on high-quality startups, but indicate an indiscriminant decrease in VC investments in the face of policy uncertainty. Our paper complements the existing literature by shedding new light on the effect of policy uncertainty on the VC market, especially on its differences compared to the well-studied effects in public markets, and thereby delineates the uniqueness of VC and private markets when facing policy uncertainty.

References

Atkeson, L., and R. Partin. 1995. Economic and referendum voting: A comparison of gubernatorial and senatorial elections. *American Political Science Review* 89:99–107.

Baker, S., A. Baksy, N. Bloom, S. Davis, and J. Rodden. 2020. Elections, political polarization, and economic uncertainty. Working Paper, University of Chicago.

Baker, S., N. Bloom, and S. Davis. 2016. Measuring economic policy uncertainty. *Quarterly Journal of Economics* 131:1593–636.

Baker, S., S. Davis, and J. Levy. 2022. State-level economic policy uncertainty. *Journal of Monetary Economics* 132:81–99.

Bayar, O., T. Chemmanur, and X. Tian. 2020. Peer monitoring, syndication, and the dynamics of venture capital interactions: Theory and evidence. *Journal of Financial and Quantitative Analysis* 55:1875–914

Belo, F., V. Gala, and J. Li. 2013. Government spending, political cycles, and the cross section of stock returns. *Journal of Financial Economics* 107:305–24.

Bernanke, B. 1983. Irreversibility, uncertainty, and cyclical investment. *Quarterly Journal of Economics* 98:85–106.

Bernstein, S., X. Giroud, and R. Townsend. 2016. The impact of venture capital monitoring. *Journal of Finance* 71(4), 1591–1622.

Bertrand, M., and S. Mullainathan. 2003. Enjoying the quiet life? Corporate governance and managerial preferences. *Journal of Political Economy* 111:1043–75.

Bhattacharya, U., P. Hsu, X. Tian, and Y. Xu. 2017. What affects innovation more: Policy or policy uncertainty? *Journal of Financial and Quantitative Analysis* 52:1869–901.

Bloom, N., S. Bond, and J. Van Reenen. 2007. Uncertainty and investment dynamics. *Review of Economic Studies* 74:391–415.

Bonaime, A., H. Gulen, and M. Ion. 2018. Does policy uncertainty affect mergers and acquisitions? *Journal of Financial Economics* 129:531–58.

Bottazzi, L., M. Rin, and T. Hellmann. 2008. Who are the active investors? Evidence from venture capital. *Journal of Financial Economics* 89:488–512.

Brander, J. A., R. Amit, and W. Antweiler. 2002. Venture–capital syndication: Improved venture selection vs. the value–added hypothesis. *Journal of Economics & Management Strategy* 11:423–52.

Brogaard, J., and A. Detzel. 2015. The asset–pricing implications of government economic policy uncertainty. *Management Science* 61:3–18.

Chemmanur, T., K. Krishnan, and D. Nandy. 2011. How does venture capital financing improve efficiency in private firms? A look beneath the surface. *Review of Financial Studies* 27:2434–73.

Chemmanur, T., E. Loustina, and X. Tian. 2014. Corporate venture capital, value creation, and innovation. *Review of Financial Studies* 24:4037–90.

Chen, Y.-F., and M. Funke. 2003. Option value, policy uncertainty, and the foreign direct investment decision. Working Paper, University of Dundee.

Chen, H., P. Gompers, A. Kovner, and J. Lerner. 2010. Buy local? The geography of venture capital. *Journal of Urban Economics* 67:90–102.

Cochrane, J. 2005. The risk and return of venture capital. *Journal of Financial Economics* 75:3–52.

Colak, G., A. Durnev, and Y. Qian. 2017. Political uncertainty and IPO activity: Evidence from U.S. gubernatorial elections. *Journal of Financial and Quantitative Analysis* 52:2523–64.

Da Rin, M., T. Hellmann, and M. Puri. 2013. A survey of venture capital research. *Handbook of the Economics of Finance* 2:573–648.

Fulghieri, P., and M. Sevilir. 2009. Size and focus of a venture capitalist's portfolio. *Review of Financial Studies* 22:4643–80.

Gompers, P. 1995. Optimal investment, monitoring, and the staging of venture capital. *Journal of Finance* 50:1461–89.

Gompers, P., and J. Lerner. 2000. The determinants of corporate venture capital success: Organizational structure, incentives, and complementarities. In *Concentrated ownership*, ed. R. Morck. Chicago: University of Chicago Press.

———. 2001. The venture capital revolution. *Journal of Economic Perspectives* 15:145–68.

Gompers, P., V. Mukharlyamov, and Y. Xuan. 2016. The cost of friendship. *Journal of Financial Economics* 119:626–44.

Gu, L., R. Huang, Y. Mao, and X. Tian. 2022. How does human capital matter? Evidence from venture capital. *Journal of Financial and Quantitative Analysis* 57:2063–94.

Gulen, H., and M. Ion. 2016. Policy uncertainty and corporate investment. *Review of Financial Studies* 29:523–64.

Howell, S. 2017. Financing innovation: Evidence from R&D grants. *American Economic Review* 107:1136–64.

Jens, C. 2017. Political uncertainty and investment: Causal evidence from U.S. gubernatorial elections. *Journal of Financial Economics* 124:563–79.

Julio, B., and Y. Yook. 2012. Policy uncertainty and corporate investment cycles. *Journal of Finance* 67:45–83.

Lerner, J. 2000. The government as venture capitalist: The long-run impact of the SBIR program. *Journal of Private Equity* 3:55–78.

Metrick, A., and A. Yasuda. 2010. The economics of private equity funds. *Review of Financial Studies* 23:2303–41.

Pastor, L., and P. Veronesi. 2012. Uncertainty about government policy and stock prices. *Journal of Finance* 64:1219–64.

Rodrik, D. 1991. Policy uncertainty and private investment in developing countries. *Journal of Development Economics* 36:229–42.

Tian, X. 2011. The causes and consequences of venture capital stage financing. *Journal of Financial Economics* 101:132–59.

Tian, X., G. Udell, and X. Yu. 2016. Disciplining delegated monitors: When venture capitalists fail to prevent fraud by their IPO firms. *Journal of Accounting Economics* 61:526–44.

Tian, X., and T. Y. Wang. 2014. Tolerance for failure and corporate innovation. *Review of Financial Studies* 27:211–55.

Van Dunk, E. 1997. Challenger quality in state legislative elections. *Political Research Quarterly* 50:793–807.

Table A1.
Policy uncertainty and investment outcomes: Probit regressions

Variables	(1) IPO	(2) M&A	(3) Defunct	(4) IPO	(5) M&A	(6) Defunct
Close election	0.009	0.028	0.022	−0.014	0.006	−0.014
	(0.08)	(0.04)	(0.07)	(0.09)	(0.05)	(0.10)
Election	−0.064	−0.052**	−0.008	−0.066	−0.038	0.012
	(0.05)	(0.02)	(0.05)	(0.06)	(0.03)	(0.10)
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects				Yes	Yes	Yes
Primary customer fixed effects				Yes	Yes	Yes
Observations	56,208	56,269	40,208	48,851	48,973	32,721

The sample contains all the U.S. portfolio companies in the VentureXpert backed by VC firms that have more than five track records of investment deals in their preferred states for the years 1980–2022. The unit of observation is a portfolio company. The dependent variables *IPO*, *M&A*, and *Defunct* are dummy variables that denote the exit pathway of each portfolio company. *Close election* equals one if a state has a gubernatorial election in the focal quarter and the poll vote differential in percentage is smaller than 10%, and zero otherwise. *Election* equals one if a state has a gubernatorial election in the focal quarter, and zero otherwise. Standard errors are clustered by state and reported in parentheses.
*$p < .1$;
**$p < .05$;
***$p < .01$.

Appendix. Construction of the Government Spending Dependence Measure

The first table we use is the "Use" table, which contains information about dollar amount of goods and services that are consumed by final users. For industry j, we construct government purchase g_j in dollars as the sum of federal, state, and local government consumption and gross investment. From the Supplementary Industry-by-Commodity Total Requirements table, we obtain the information on the dollar amount of input from industry i that is required to produce one dollar of output of industry j, and we donate it as c_{ij}. Suppose there are J industries in the economy, the percentage of dollar amount of commodities produced by industry i that is finally attributed to government purchases is then. The ratio of government purchases to total output for industry i is measured by f_i/o_i, where o_i is the total output of industry i obtained from the "Use" table.

$$f_i = \sum_{j=1}^{J} c_{ij} \times g_j$$

BEA has published a set of I-O data files every 5 years since 1982, and every year since 1997. To construct the annual ratio between 1982 and 2022, we apply the ratio in 1982 as the proxy for the ratio from 1982 to 1984, and the ratio in 1987 as the proxy for the ratio from 1985 to 1989, the one in 1992 for the ratio between 1990 and 1994, and the one in 1997 for the ratio in 1995 and 1996, and we use the annual ratio between 1997 and 2022. BEA uses I-O industry codes (1987, 1992) and NAICS codes (after 1997) to identify industries. We map these two industry codes with the SIC industry code and construct annual ratio with the three-digit SIC industry level. If multiple I-O industry codes or NAICS codes are concordant with the same three-digit SIC code, we take the arithmetic average.

Next, we construct the government spending dependence dummy, *High gov. spending*, that equals one if an industry's ratio is above the median of all three-digit SIC industries in a year and zero otherwise.