

THE EFFECT OF EARLY-STAGE AMERICAN INVESTMENT ON CHINA-BASED
HEALTHCARE AND TECH FIRMS

By

Adanna C. Mogbo

An Undergraduate Thesis submitted as part of the

WHARTON RESEARCH SCHOLARS

Faculty Advisor:

Dr. Natalie A. Carlson

Assistant Professor, Management

THE WHARTON SCHOOL, UNIVERSITY OF PENNSYLVANIA

MAY 2024

I. Introduction

Venture capital over the past two decades has been central to the rapid growth and success of today's top technology firms, with the United States of America and China being the biggest beneficiaries of this boom. Talent and resources within venture capital have flowed relatively freely between the two regions, especially given that the United States and China being the homes of the most and the second-most number of “unicorn” companies (privately-held startups worth \$1B or more), respectively, and the United States has consistently been the largest source of foreign venture capital funding in China.

But recent regulatory crackdowns on both sides have signaled the end of this fruitful partnership. China has been simultaneously experiencing a series of domestic regulatory crackdowns and sanctions from the United States limiting investment into the China mainland. Since late 2020, news outlets have been following Xi Jinping and the Communist Party of China’s attempts to further control the Chinese economy, especially within the tech sector. These attempts at control have most notably included Alibaba’s investigations, forced selloffs, blocked IPO and the mysterious “disappearance” of founder and CEO Jack Ma. While the crackdowns have slowed down, this political environment has resulted in a more hostile business environment and may be responsible for a drop in private investment within China over the past year. More recently, the United States has also “cracked down” on China, the most telling signal of decaying geopolitical relations between the two superpowers. In August 2023, President Joe Biden signed an executive order restricting investment in semiconductors, quantum technology, and artificial intelligence into China, Hong Kong, and Macau. While the Biden administration stated that it took these measures to address growing national security risks, this executive order

has only fueled more venture capital firms into halting investment into China. Pitchbook data supports this, stating that this past year, venture capital deals made by American venture capital firms into China “nearly halved to 595, and the share of deals with U.S. investor participation dropped to 18.2% in 2022 after hovering above 30% for half a decade” (Liao 2023). Most notably, Sequoia Capital, arguably the most successful venture capital firm in the United States to date, spun off its China-based investing arm, now called HongShan, after facing “extensive scrutiny from the U.S. government” over its history of investments in China (Liao 2023).

This growingly hostile dealmaking environment within China and between China and the United States will prove to be the most consequential for China’s deep technology firms. Deep technology, or “Deeptech,” can be characterized as highly innovative and sought-after technology that requires large amounts of upfront capital and talent and often undergoes lengthy research and development processes with high failure rates. Deeptech includes biotechnology, semiconductors, quantum computing, agricultural technology, artificial intelligence, and more. Because of deeptech’s high market need, high risk, large amounts of capital, and high quality talent, venture capital has been the fundraising vehicle of choice, and cross-border collaboration for both talent and fundraising is critical for advancements. The United States and China are also uniquely positioned within this sector; according to the Boston Consulting Group, “The US and China landed about 81% of global private investments in deep tech companies from 2015 through 2018, with approximately \$32.8 billion and \$14.6 billion invested in each country, respectively” (de la Tour 2019). Additionally, China has experienced extensive growth within deep technology compared to the United States, “with funding increasing at an annual rate of more than 80% from 2015 through 2018” compared to the United States’ 10% growth over the same period (de la Tour 2019). Given that this unique wave of geopolitical tensions between the

two countries are a relatively recent phenomenon, there has been no rigorous research into how these recent tensions and predicted absence of American investment can affect the long-term success of China's startups, specifically within the booming sector of deep technology. This paper seeks to explore how tensions between governments can affect financial exits, and more broadly, delay necessary innovation.

II. Overview

A. Relevant institutional features in China

Key structural and cultural differences make venture capital in China distinct from that in the USA. Bruton and Ahlstrom (2003) claims that the lack of corporate governance and standardized accounting procedures in China's financial system make it more difficult for venture capital firms to invest. The source details how "accounting rules significantly deviate from international accounting standards" and thus making "timely, accurate, or useful information about firms' financial performance difficult to obtain" (Bruton and Ahlstrom 2003). In terms of contracts, the source asserts that "the Chinese do not rely so heavily on laws, regulations, and contracts... a signed contract simply provides a green light to more negotiations' and essentially "if you have to go to court, you have lost already" (Bruton and Ahlstrom 2003). These barriers impact the screening length and quality for venture capital investors, while the lack of clear-cut regulation within venture capital fails to protect Chinese VC firms. These features make it distinct from venture capital investing in the United States since the lack of regulation imposes further risk onto VC firms and prevents them from confidently investing on a startup's operations, business plan, and founder quality alone.

As a response, *guanxi* or “social ties” are an essential component to the typical Chinese venture capital investment. Bruton and Ahlstrom (2003), Wang (2016), and Xu (2023) discuss how important *guanxi* are for success in venture capital in China. While social connections and reputation play an important role in venture capital investing in the USA, *guanxi* is considered even more critical than its equivalent in the USA (Bruton and Ahlstrom 2003). This is most likely due to the high level of trust required due to the aforementioned lack of legal protection and standardized financial information. This is supported in Wang (2016), where the data suggests that “startups are more likely to receive interviews from VCs with which they have ties” than compared to those who do not (Wang 2016). These conditions could suggest that venture capital investment is less meritocratic and more limited geographically than that of America, where startup fundamentals are prioritized for investment over previous relationships with founders.

The extra social vigilance also reinforces the emphasis on locality that VCs in China evaluate in investments. Historically, most venture capital firms in China emerged region by region, with provinces starting their own venture capital firms to invest in companies within the area (Bruton and Ahlstrom 2003). This history, in addition to the aforementioned hazy regulatory environment, has allowed the practice to continue to this day, as VC firms are often in close proximity to their funded ventures in order to directly oversee their investments with regular, unannounced visits (Bruton and Ahlstrom 2003). Lack of robust regulatory protections have also incentivized China’s VC firms to “seek to build relationships with local authorities in order to be able to understand and manage the local regulatory regime” (Bruton and Ahlstrom 2003). This is especially true if firms are seeking to IPO on the Chinese market, as posited by Suchard, Humphery-Jenner, and Cao (2021). Due to these features, Chinese venture capital firms favor

investments with strong *guanxi* and are nearby. This is distinct from venture capital firms in the United States, where venture capital firms often do not prioritize geography when making investment decisions.

As a consequence of these distinct institutional features within Chinese venture capital, key differences to the USA to emerge. Screening new investments takes “three to six months more on due diligence” due to these differences in regulations and customs (Bruton and Ahlstrom 2003). Venture capital firms based in China also emphasize establishing financial performance earlier and a firm’s boards are nominated by government bodies and not fellow businesspeople (Bruton and Ahlstrom 2003). Also, most state-run VC firms are more locally oriented compared to those in the USA (Xu 2023). It is clear to see how these stark differences may lead to Chinese VC firms selecting for a different set of startups across all sectors compared to those in the USA. In terms of startups within the deep technology sector, these practices may further limit the ability for the relatively small number of startups in the sector to receive the necessary funding for their ventures without foreign investment or government support.

B. Chinese-American Relations within venture capital prior to 2019

Because of the origins of Chinese venture capital and the aforementioned differing venture capital investment practices, China-based startups have consistently sought early-stage funding from both countries, yielding a historically complicated but often productive relationship. Fung, Aminian, and Tung (2015) cites that VC took hold within the 1980s with the opening of state-funded innovation parks modeled after a prominent physics professor’s visit to Silicon Valley. Representatives from the Chinese state, more specifically, those affiliated with the National Research Center of Science and Technology for Development, visited Silicon Valley

and sought to emulate its innovative environment by establishing a state-run VC firm (Xu 2023, Ahlstrom, Bruton, and Yeh 2007). This inspirational visit thus sparked several copycat venture capital firms in China. Xu (2023) and Ahlstrom, Bruton, and Yeh (2007) both state that transnational VC eventually entered China, but slowly. More specifically, Xu (2023) cites that “mainstream western VC firms...held the belief that China was not ready” by the 1990s, preventing them from confidently entering when several state-owned VC firms had already been established, while Ahlstrom asserts that international venture capital firms entered alongside China’s first foray into the industry, but due to governmental restraints, interest quickly waned afterwards (Ahlstrom, Bruton, and Yeh 2007). Both sources also concede that, despite venture capital in China being modeled after the practices of the United States, venture capital investments were initially dominated by government actors that were driven by policy rather than returns, conflicting with transnational VC firms that entered the regions. For example, while western investors sought to focus on “lower tech industries” (Ahlstrom, Bruton, and Yeh 2007), China’s central government sought investments for high tech industries like semiconductors and biotechnology, a directive that is essentially still in effect to this day (Xu 2023). However, despite wanting to invest in high tech and inherently high-risk ventures as posited by Ahlstrom, state-run VC firms were still highly risk averse and invested an excess amount of time on failing portfolio companies, wanting to avoid “the serious allegation of ‘losing state assets’” (Xu 2023). China has tried multiple strategies to replicate Western VC while also maintaining its state policy goals, which Xu (2023) breaks down into three major phrases: transplantation, variation, and conversion (Xu 2023). The transplantation phase consisted of purely state-run VC firms that had to navigate difficulties such as only focusing on startups “connected to the state” and lengthy deal processes due to lack of autonomy from supervisory agencies. However, these early efforts

attempting to balance between the two western VC style and state policy goals led to unsatisfactory results, and Chinese venture capital sought to collaborate with transnational VC firms but initially to little avail due to conflicting priorities. This sparked the limited partnership model through the Shanghai government's first VC firm in which, "it [the state] contributes capital and may provide guidelines for venture capitalists but does not concern itself with assessing the quality and potential of startups," later "converting" and repurposing some forms of this limited partnership to again focus on key emerging industries (Xu 2023).

This has led to promising startups based in China to look towards making their exits outside of China, employing the famous "Sina model" in which Chinese firms are listed on foreign stock markets through variable interest entities (Zhang 2011). Variable interest entities allow foreign investors to control and economically benefit from ventures without legally owning them. This allows Chinese companies to raise foreign capital while circumventing Chinese state policy directives, which categorizes the many business sectors within China as "restricted" or "prohibited" from foreign direct investment. By setting up a Cayman based entity for fundraising and a China-based entity for operating, as well as incorporating certain agreements into the investment contract such as a share transfer or loan repayment agreement, voting rights agreements, and an equity pledge agreement by the China-based partner, foreign investors can effectively invest and seek returns from China-based firms (de la Tour 2019). The variable interest entities of China-based firms have routinely gone public in US markets, starting with the Chinese tech giant Sina being listed on the NASDAQ in 2000. Other examples include Sohu, Netease, Shanda, Ctrip, Baidu, Youku, and Dangdang, which have all either been listed on the NASDAQ or NYSE as variable interest entities (de la Tour 2019). The legality of the variable interest entity has never been directly addressed by the Chinese government, but there

have been consistent efforts made by China to heavily restrict the practice, thus dissuading foreign investment into China. Limits to the variable interest entity have been apparent since the 2000s and 2010s in which Zhang (2011) recounts “raising of barriers to...overseas IPO,” and as made clear by current events, these barriers have only grown.

Ahlstrom, Bruton, and Yeh (2007) argues that China’s structural problems still prevent the full flourishing of VC in China, citing “opposition from many government officials that worry that the socialist system is being undermined” and “practical concerns about tolerating increased competition for state enterprises that the new enterprises could bring” (Ahlstrom, Bruton, and Yeh 2007). The historically complicated relationships between Chinese venture capital firms, caught between state policy goals and transnational partners, including the USA, could suggest that current tensions between China and the US within the realm of VC could be more of a push and pull routine between the two superpowers. Nonetheless, the growing number of restrictions and sanctions put on Sino-American venture capital investing seems ripe to lead to even greater differences in both the nature of China-based firms that receive funding and the success of these firms compared to those with an American investor.

C. Hypotheses on the effects on China-based firms

Due to the key differences between venture capital investing in China and the United States and the growing legal barriers and scrutiny being set on American investment into China-based technology firms within emerging technology, it can be expected that China-based startups will experience a greater and more distinct selection effect when seeking venture capital funding as sources for American funding become severely limited. It can then be expected that China-based firms that obtain venture capital funding within China will have different

characteristics than previous firms who could source venture capital funding from both China and the United States. This newer set of firms will most likely observe significantly different outcomes, but whether this will lead to more successful exits or not is yet to be determined. Two key potential hypotheses emerge. Firstly, it is predicted that there will be a main negative effect on the success of China-based emerging tech firms due to the lack of risk aversion and prioritization of locality and social ties when making investments, especially those of high-risk such as those within deep technology. However, this effect will most likely be moderated by the perceived political goals of the Chinese state. Most notably, China has been seeking to take on greater investment within the semiconductor industry, followed by biotechnology. Given that these specific industries are heavily prioritized on the state level, any negative effect may be superseded by China's political goals given the influence that the Chinese state has historically had on Chinese venture capital firms. More specifically, it can be predicted that the least negative effect on exits would occur on these prioritized sectors like semiconductors and biotechnology, while the most falling on lesser prioritized sectors, such as quantum computing.

However, due to limitations on data, which will be discussed at length further on in this paper, it could be more productive to build hypotheses around China-based firms that only solicit American investors and comparing these with China-based firms that solicit investment from all geographies of investors, including those native to China. This comparison is closer to how China-based firms operate to this day, and can still capture the potential effects of China-based venture capital given that one set includes this set of investors and one set does not. This analysis refines the two previously posited hypotheses, and two new ones emerge: 1) Firms with only American-based investors will experience a significant positive effect on exit outcomes due to being shielded from the negative effects of China-based, policy-influenced venture capital as

well as the outsized success and resources enjoyed by American venture capital firms, and 2) the negative effect of China-based venture capital practice will be less apparent in healthcare firms, whose sectors are considered of higher priority in Chinese policy compared to the sectors of tech firms.

III. Methods

In order to understand the future success of early-stage Chinese firms, it can be productive to look at the past successes and compare outcomes based on the presence of an American investor as well as the level of American investment in a firm. However, given that the majority of China-based tech firms have benefited from some level of American investment throughout their life cycles according to early Pitchbook analysis, it is difficult to predict the success of an emerging China-based firm wholly backed by non-American funds based on past data. This fact alone alludes to the integral role that American venture capital and angel dollars play in supporting China's venture capital ecosystem. Nevertheless, for the purposes of this discussion, we will be analyzing the outcomes of China-based firms that are only backed by investors based in the United States compared to firms that are backed by investors across geographies, including the native China. Assuming that there will be no changes to Chinese venture capital practices in the future, analyzing these firms can give notable insight into the effect that American venture dollars play have on the success of China-based firms.

A. Sample Selection

Data was sourced from PitchBook, the best available repository of information on the composition of investors and exits of China-based firms. Using Pitchbooks' screening feature,

China-based tech and healthcare firms will be screened based on an active period between 1990 (when transnational VC firms entered China) and 2019 (where the first major steps limiting venture capital investment were taken). Only companies that are headquartered in China will be included for analysis. Additionally, only companies that were formerly backed by a venture capital firm or an angel investor will be included for analysis. Companies labeled as “technology” firms were sourced from the artificial intelligence, machine learning, augmented reality, big data, cloudtech, DevOps, cybersecurity, software-as-a-service, and virtual reality sectors. This selection made sure to include the most emergent sectors of technology currently, as well as sectors that were at least thought to be emergent and innovative during some period of time during the duration of analysis. Despite semiconductors and agricultural technology being mentioned heavily throughout discussion of deep technology, there were no China-based firms in these sectors that met the criteria relative to this discussion. Companies labeled as “healthcare” firms were sourced from the healthcare devices and supplies, healthcare services, healthcare technology systems, pharmaceuticals, biotechnology, life sciences, digital health, and general health tech sectors. Again, this selection accounts for currently emerging, and previously thought to be emerging, sectors in the healthcare industry. The criteria for included healthcare sectors was also expanded due to healthcare firms’ relatively longer time span required for exit.

Given the complexities of venture capital valuation pre-exit, only companies that have exited were analyzed. Companies that underwent an IPO or acquisition were categorized as “successful” exits while those who have underwent bankruptcy, liquidation, or simply went out-of-business as an “unsuccessful exit.” The sorting companies based on whether or not they were solely backed by American investors was done manually due to limitations of the Pitchbook search functions. More specifically, Pitchbook only allows for a boolean “OR” search,

so the data was properly sorted using Excel by combining the full search results of companies that have at least an American investor and those that have at least an investor from every other geography, then marking those who were unique and belonged in the first category as “only American investors” and those that were duplicates “not only American investors.” Whether or not an investor was considered American was based on whether the headquarters of the venture capital firm or angel investor was based in America.

B. Limitations

There were many limitations encountered during the analysis of this data. Despite Pitchbook being the best resource for analyzing venture capital firms and investments, there are still many limitations to the platform. Firstly, due to the private nature of venture capital investment, there was very little information given concerning the respective valuations of the firms included in the sample, especially those that were acquired (the majority of successful exits) or gone out of business. Therefore, it was not possible to robustly account for the size of exited firms, which is a confounding factor in a firm’s success. Additionally, there was no information available to understand exactly how many American dollars were invested in each firm and how many American investors were present for each firm. By controlling for these variables, this information could have greatly served to finetune this analysis for a clearer picture as to the positive or negative effect per American dollar invested compared to the total amount of early stage investment included as a whole.

Also, there was no independent way to understand that the Pitchbook data analyzed included the entire universe of America-based venture capital investments into China-based firms. There is a chance that the number of America-based venture capital investments and

amount of VC dollars invested is much greater than what was actually analyzed, due to the even more private nature of highly consequential angel investors as well as alternative means of providing early stage investments to China as documented earlier in the paper.

Additionally, it is inevitable that the number of companies that only solicit America-based venture capital investments yield a much lower sample size than companies that solicit the entire universe of venture capital investments. Therefore, this lower sample size can skew results greatly and lead to inaccurate conclusions.

There are also three key risks to the validity of the analysis. Firstly, there may be a fundamental difference between China-based firms with only an American investor and those that do not only solicit investments from American investors. Due to limited access to data, it was difficult to control for variables that could correct this selection bias, such as size of the firm. Additionally, exactly when America-based investors decided to invest in these companies remains unknown and could also be a source of selection bias and further skew results. Finally, China-based firms have always looked for other geographies outside of the United States for funding, and this funding could very well mimic the style of America-based venture capital investing. This practice could therefore only become more commonplace in the event that there is a total halt on soliciting early-stage funding from America-based firms in the future, violating the assumption previously posited and potentially rendering the results of the analysis as irrelevant. Nonetheless, these risks were monitored and mitigated as much as possible throughout the duration of the analysis.

C. Procedure

Once data was collected, two generalized binomial linear regressions were done using R to compare the outcomes of China-based firms with only American investors and ones that did not only include investment from American investors, which were the binary independent variables. Success of exit will be the binary dependent variable that will be observed.

Given the limited amount of data, the analysis did not include the control of other variables other than an implied control on sector given that these analyses were separated. Ultimately, the analysis was carried out using this set of coded instructions below.

Image 1. R Code detailing GLMs for China-based healthcare and tech firms.

```

1 # Thesis
2 # Adanna Mogbo
3 # May 1
4
5 # Load libraries
6 library(tidyverse)
7 library(car)
8 library(emmeans)
9 library(DHARMA)
10
11 # Set contrasts
12 options(contrasts=c("contr.sum", "contr.poly"))
13
14 # Import chinatech
15
16 # Will fit model, ANOVA, plots
17
18 # Fitting model
19 mod.chinatech <- glm(SuccessfulExit ~ American.Investor.Only, data=chinatech,
20                    family="binomial")
21
22 # Test significance
23 Anova(mod.chinatech, type=2)
24
25 # Summary
26 summary(mod.chinatech)
27
28 # Scatterplot
29 plot(x = chinatech$American.Investor.Only,
30      y = chinatech$SuccessfulExit,
31      xlab = "American Investor Only",
32      ylab = "Successful Exit",
33      main = "Exit Outcomes of China-headquartered Software Firms"
34 )
35
36 # Set contrasts
37 options(contrasts=c("contr.sum", "contr.poly"))
38
39 # Import chinahealth
40
41 # Will fit model, ANOVA, plots
42
43 # Fitting model
44 mod.chinahealth <- glm(SuccessfulExit ~ American.Investor.Only, data=chinahealth,
45                      family="binomial")
46
47 # Test significance
48 Anova(mod.chinahealth, type=2)
49
50 # Summary
51 summary(mod.chinahealth)
52
53 # Scatterplot
54 plot(x = chinahealth$American.Investor.Only,
55      y = chinahealth$SuccessfulExit,
56      xlab = "American Investor Only",
57      ylab = "Successful Exit",
58      main = "Exit Outcomes of China-Headquartered Healthcare Firms"
59 )
60
61

```


IV. Analysis

A. Tech Firms Analysis

The associated ANOVA table, data summary table, and plot for the analysis on China-based tech firms are shown below.

Table 1. ANOVA Table detailing outcomes on China-based tech firms.

Analysis of Deviance Table (Type II tests)

Response: SuccessfulExit

	LR	Chisq	Df	Pr(>Chisq)
American.Investor.Only	3.7165	1	0.05388	.

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 2. Data Summary Table detailing outcomes on China-based tech firms.

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.1445	-1.1445	-0.7981	1.2107	1.6120

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.5294	0.2461	-2.152	0.0314 *
American.Investor.Only1	0.4514	0.2461	1.835	0.0666 .

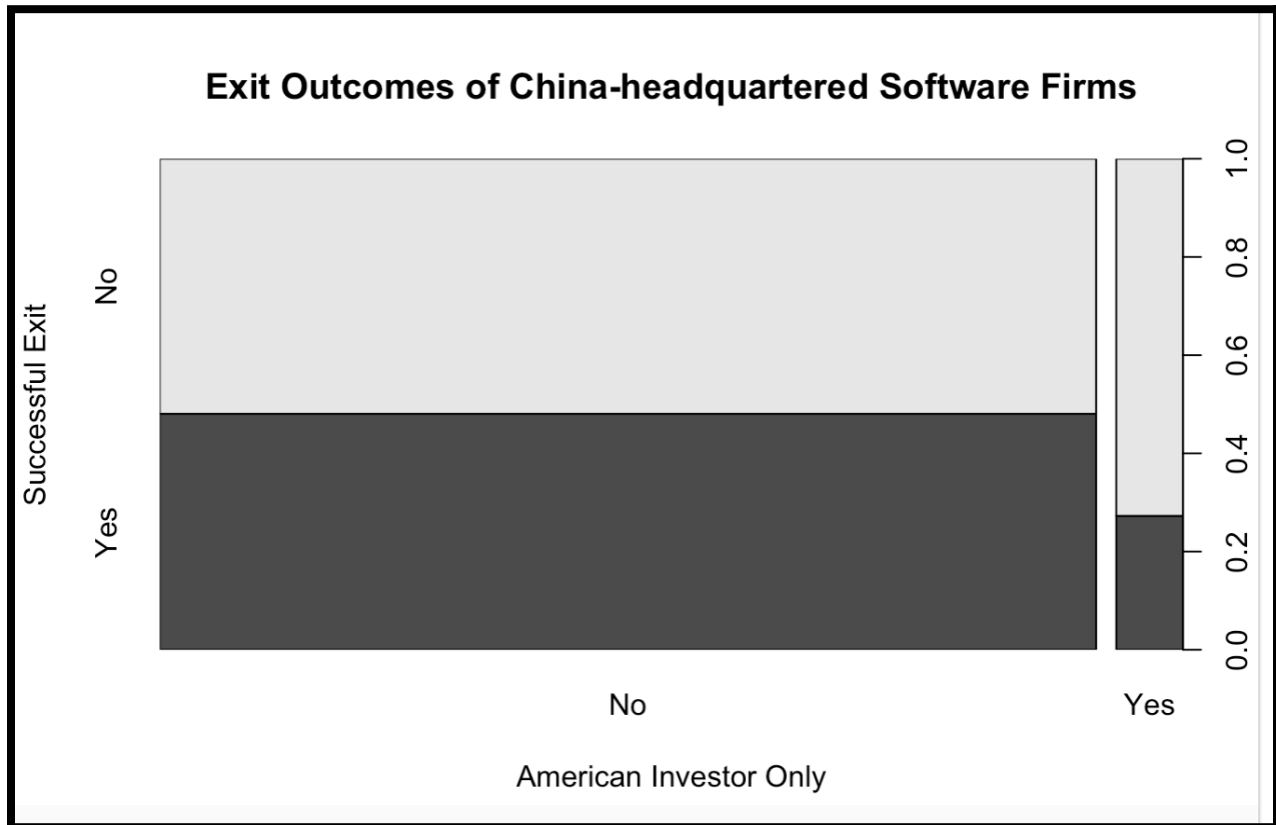
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 456.01 on 329 degrees of freedom
 Residual deviance: 452.29 on 328 degrees of freedom
 AIC: 456.29

Number of Fisher Scoring iterations: 4

Image 2. Plot detailing outcomes on China-based tech firms.



B. Healthcare Analysis

The associated ANOVA table, data summary table, and plot for the analysis on China-based healthcare firms are shown below.

Table 3. ANOVA Table detailing outcomes on China-based healthcare firms.

Analysis of Deviance Table (Type II tests)

Response: SuccessfulExit

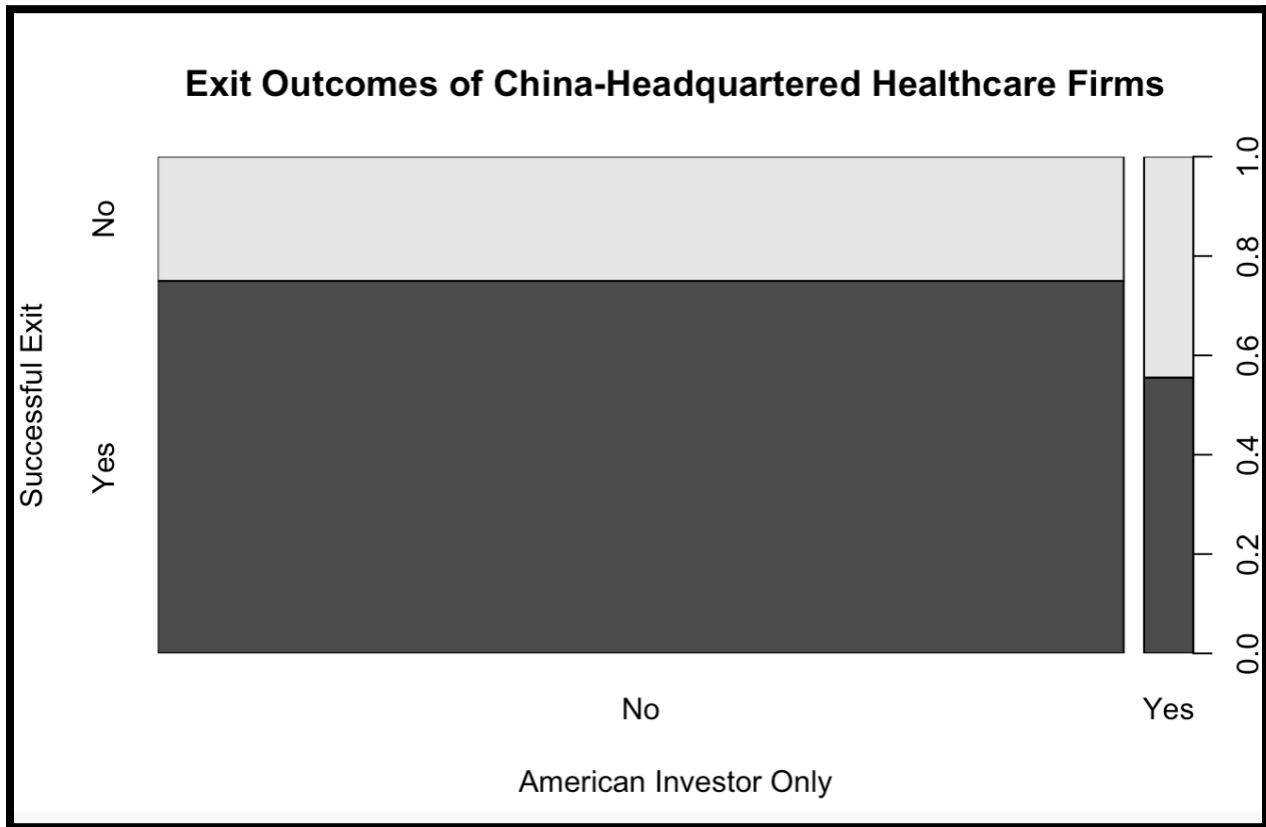
	LR	Chisq	Df	Pr(>Chisq)
American.Investor.Only	1.5143	1	1	0.2185

Table 4. Data Summary table detailing outcomes on China-based healthcare firms.

Deviance Residuals:				
Min	1Q	Median	3Q	Max
-1.6651	-1.2735	0.7585	0.7585	1.0842
Coefficients:				
	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.6609	0.3465	1.907	0.0565 .
American.Investor.Only1	0.4377	0.3465	1.263	0.2065

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
(Dispersion parameter for binomial family taken to be 1)				
Null deviance: 211.82 on 184 degrees of freedom				
Residual deviance: 210.31 on 183 degrees of freedom				
AIC: 214.31				
Number of Fisher Scoring iterations: 4				

Image 3. Plot detailing outcomes on China-based healthcare firms.



V. Brief Discussion of Findings

A. On Tech Firms

The analysis results yield a p-value of 0.0666. Setting our alpha level to 0.05, we fail to reject the null hypothesis that having only an American investor as a China-based tech firm does not have a significant effect on exits compared to those open to soliciting investments from all geographies. Ultimately, it seems like this model was a poor fit given the null deviance metric and the significant difference between the fitted values and the observed values.

B. On Healthcare Firms

The analysis results yielded a p-value of 0.2065. Setting our alpha level to 0.05, we fail to reject the null hypothesis that having only an American investor as a China-based healthcare firm does not have a significant effect on exits compared to those open to soliciting investments from all geographies. Again, it seems like this model was a poor fit given the null deviance metric and the significant difference between the fitted values and the observed values.

VI. Conclusions

A. Implications of Analysis

While the model itself was a poor fit to the given data, the data suggests that there is no significant difference between China-based firms, both in the emerging tech industries and healthcare industries, that are only backed by American investors and those that are backed by investors from across geographies. One likely explanation for this is that many other geographies have similar resources as American venture capital investors. Given that China-based firms could likely remain open to these other geographies in addition to native China investments, in the event of a slowdown of American venture capital investment in China, there would be little effect on the outcomes of China-based firms. Additionally, it could also be the case that the success of a firm is more focused on its operations rather than how it is capitalized (other than the fact that it is capitalized). This aligns with the fact that many venture capital firms' main benefit is their provided funds, and have little involvement in solving problems with hiring, product development, and more despite often being granted board seats. Therefore, receiving investment from any geography is more important than for which geography it hails from.

B. Opportunities for Further Research

There is still a great deal of research to be done into this topic. Given limits on information from Pitchbook alone, better conclusions can be reached by sourcing gaps in data from non-traditional sources, such as founder or expert interviews offering estimates on the degree of America-based investment (and conversely the decrease of China-based VC investment) for firms across healthcare and technology verticals so that these metrics can be controlled for or even analyzed as another continuous independent variable. Also, investigating into potential biases that bring about cases in which American investors are more likely to invest, like for instance, if the cofounder pursued higher education in the United States as implied by Wang (2016) or at what stage did the American investor enter, and controlling for these biases will also help clear up selection bias in the dataset.

Ultimately, the best way to understand the effect of American venture dollars on early-stage investments would be to conduct case studies on counterfactual-like China-based firms; for instance, a healthcare or tech firm that spun out into two separate entities, with one allowing for American investment and the other entity excluding American investments (or even only sourcing investment from China-based VC firms). This allows us to control for almost every potential external factor that could influence the likelihood of successful exit.

As tensions between the United States and China grow, it's important to understand the potential economic losses from barriers to innovation that can result. While these developments are recent and the effects remain unclear, looking to the past could potentially illuminate who will come out on top in this global feud – and with potential delays in innovation, if we will all lose out.

References

Ahlstrom, D., G. D. Bruton, and K. S. Yeh. 2007. Venture capital in China: Past, present, and future. *Asia Pacific Journal of Management* 24 (3): 247-268. Available at:

<https://doi.org/10.1007/s10490-006-9032-1>.

Bruton, G. D., and D. Ahlstrom. 2003. An Institutional View of China's Venture Capital Industry. *Journal of Business Venturing*, 18 (2): 233-259. Available at:

[https://doi.org/10.1016/s0883-9026\(02\)00079-4](https://doi.org/10.1016/s0883-9026(02)00079-4).

Cheng, Y.W., S.Y. Hsu, and C.P. Lo. 2017. Innovation and Imitation. *Journal of Chinese Economic and Foreign Trade Studies* 10 (3): 252 – 258. Available at:

<https://doi.org/10.1108/jcefts-05-2017-0012>.

de la Tour, A, Massimo Portincaso, Kyle Blank, Nicolas Goeldel. 2019. The Dawn of the Deep Tech Ecosystem. The Boston Consulting Group. Available at:

<https://media-publications.bcg.com/BCG-The-Dawn-of-the-Deep-Tech-Ecosystem-Mar-2019.pdf>.

Fung, K. C., N. Aminian, and C. Y. Tung. 2015. Some Characteristics of Innovation Activities: Silicon Valley, California, China and Taiwan. *Economic Change and Restructuring* 49 (2-3):

221-240. Available at: <https://doi.org/10.1007/s10644-015-9162-x>.

Liao, R. 2023. Fate of US venture capital in China teeters on uncertainty. *TechCrunch*. Available at: <https://techcrunch.com/2023/11/25/fate-of-us-venture-capital-in-china/>.

Madi, M. A. C. 2020. Private Equity and Venture Capital in China in the Aftermath of the Sino-American Trade Disputes. *Global Journal of Emerging Market Economies* 12 (1): 69-79. Available at: <https://doi.org/10.1177/0974910119896643>.

Suchard, J.A., M. Humphery-Jenner, and X. Cao. 2021. Government ownership and Venture Capital in China. *Journal of Banking & Finance*, 129. Available at: <https://doi-org.proxy.library.upenn.edu/10.1016/j.jbankfin.2021.106164/>

Wang, Y. 2016. Bringing the Stages Back In: Social Network Ties and Start-up firms' Access to Venture Capital in China. *Strategic Entrepreneurship Journal*, 10 (3): 300-317. Available at: <https://doi.org/10.1002/sej.1229>.

Wu, J, and Ma, Z. 2019. Misfit or xenophilia: The impact of overseas work experiences on returnee entrepreneurs' venture capital funding in China. *Nankai Business Review International*, 9 (1): 19 – 32. Available at: <https://doi.org/10.1108/NBRI-06-2015-0016>.

Xu, Y. 2023. Harnessing Venture Capital in China. *Socio-Economic Review*. Available at: <https://doi.org/10.1093/ser/mwad037>.

Zhang, J. 2011. The Spatial Dynamics of Globalizing Venture Capital in China. *Environment and Planning A: Economy and Space* 43 (7): 1562-1580. Available at:

<https://doi.org/10.1068/a43562>.