Disruption: US-China Venture Capital in a New Era of Strategic Competition

Adam Lysenko, Thilo Hanemann, Daniel H. Rosen

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EXECUTIVE SUMMARY

US strategic doctrine is shifting from a presumption of eventual Chinese convergence with liberal market principles to an expectation of long-term systemic rivalry. This is reflected in a continuing reassessment of US interests and policies across all channels of economic engagement, with significant ramifications for two-way capital flows between the US and China. Initially manifested through greater US regulatory attention to foreign direct investment (FDI), US policy changes have also led to greater scrutiny of other types of capital flows including venture capital (VC) financing of early-stage technology companies. However, public analysis on two-way VC dynamics has been limited.

This report reviews US-China venture capital trends from 2000 to 2019, analyzes drivers and discusses challenges for policymakers in the current environment. The key findings are:

- **Venture capital is taking center stage in policy debates on US-China technology collaboration, but there is insufficient public information and data to inform an intelligent discussion.**

- **Measuring bilateral VC activity is challenging:** The inherently private and international nature of venture capital and the complex legal structures that are commonly used complicate efforts to compile data on cross-border VC flows. Most available datasets are based on investor domicile instead of ultimate ownership or control and lack reasonable estimates for actual investor fundraising round shares.

- **We count nearly 5,000 VC transactions between the US and China worth $66 billion since 2000:** This report introduces a new venture capital dataset that addresses existing shortcomings and allows for granular analysis of trends and drivers of US-China VC investment. It is based on ultimate beneficiary ownership and control and estimates for the pro-rata share of investors in fundraising rounds. We identified nearly 5,000 two-way transactions from 2000 to 2019 worth a combined estimated $66 billion. These are conservative, low-end estimates of aggregate activity.

Figure ES-1: Venture Capital Transactions between China and the US, 1H 2010 to 2H 2019

This report introduces a new venture capital dataset that addresses existing shortcomings and allows for granular analysis of trends and drivers of US-China VC investment. It is based on ultimate beneficiary ownership and control and estimates for the pro-rata share of investors in fundraising rounds. We identified nearly 5,000 two-way transactions from 2000 to 2019 worth a combined estimated $66 billion. These are conservative, low-end estimates of aggregate activity.

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating Chinese- or US-controlled venture fund (usually determined by general partner nationality) or other entity; value reflects the estimated proportional shares of each funding round attributable to Chinese or US investors. 2019 data are preliminary only.
• American venture capital investment has been essential to China’s technology sector buildout, but the rise of Chinese competitors, a downturn in China’s technology market and growing political scrutiny have diminished the role of US venture investment in recent years.

• US funds and other investors account for almost one fifth of all venture capital raised by Chinese firms since 2000: We capture more than 2,600 unique Chinese venture funding rounds with US investor participation from 2000 to 1H 2019. These US-managed funds and corporate players contributed an estimated $47 billion over the period, accounting for 16% of the roughly $300 billion raised by all Chinese startups.

• The role of passive American venture investors is even bigger: American investors are also "passive" equity investors in China’s technology sector through limited partner participation in VC funds managed by non-US general partners. It is impossible to comprehensively count these flows, but many of China’s most prominent professional venture funds have raised billions of dollars from American limited partners, as have China-focused fund managers from other foreign jurisdictions.

• American investors are mostly professional VC firms: Most American investors in China are professional funds with global exposures and long track records. The investor landscape is relatively concentrated, with the top 10 players investing in more than 50% of all transactions with US participants.

• US venture investors seek exposure to fast growing technology segments: US funds and corporate venture players have invested across many technology areas in the Chinese market since 2000. Mobile, Software as a Service (SaaS), E-Commerce, Industrials, Manufacturing, Big Data and Artificial Intelligence (AI) have historically been top targets, while AI, Big Data and Life Sciences have seen the fastest growth in US interest in the last three years. Compared to domestic investors, American funds are less exposed to Manufacturing, Gaming and Financial Technologies (FinTech).

• Diverging US-China policy directions cloud the outlook: Chinese policy is generally trending more supportive of inbound venture capital as Beijing seeks to encourage foreign investment. US policy has not traditionally policed outbound portfolio investment, but a strategic reassessment of China-related risks has created novel restrictions for engaging with problematic firms and exporting sensitive technologies. There have also been initial discussions in the US about the need for broader financial decoupling.

Figure ES-2: A Snapshot of US Venture Capital Activity in China, 2000 to 2019
Annual Number of Transactions (left axis) and Capital Invested (USD Million, right axis)
Chinese venture capital investment in the US increased rapidly after 2014 from a very low base but has stalled since 2018, and China’s role in US technology financing remains relatively small.

- **Previous public research and commercial data providers** undercount the number of Chinese VC transactions but over-state the capital deployed: We capture more than 2,140 unique venture funding rounds for US companies with Chinese participation from 2000 to 1H 2019 – 25% more than commercial datasets based on investor domicile. These Chinese entities contributed an estimated $15 billion over the period, accounting for less than 2% of the roughly $1 trillion raised by all US startups – much lower than previously published figures not based on pro-rata estimates. Chinese VC investment in the US reached less than a third of the total value of US venture capital investment in China from 2000 to 1H 2019.

- **Chinese capital deployed passively through participation in VC funds managed by non-Chinese general partners is small compared to flows in the other direction:** Detailed estimates for these flows are not feasible, but totals are likely small compared to passive US limited partner venture investment in China given Beijing’s strict stance towards outbound portfolio investment and the resulting low deployment levels of household and institutional wealth in global markets.

- **The Chinese investor landscape is more diverse:** Most Chinese venture investors are professional venture funds, but Chinese corporate venture investors in the US account for a larger share of total investment than their US counterparts do in China. State-owned and state-affiliated entities have traditionally also accounted for a notable share of activity, but their role has been declining since 2018.

- **The technology focus of Chinese investors reflects relative strengths of the US economy and innovation system:** Chinese venture investors have focused most on technology areas like Mobile, SaaS, Life Sciences, AI, Big Data and FinTech, while Life Sciences, Blockchain, FinTech and AI have seen the most notable growth in the last three years. Compared to domestic investors, Chinese funds are less exposed to E-Commerce, Lifestyles of Health and Sustainability (LOHAS) and Clean Environment Technologies (Cleantech).
- **Chinese VC investors face pressure stemming from both domestic and US policy actions**: Capital controls, a financial deleveraging campaign and industrial policy interference in China have created uncertainty for Chinese outbound venture investors. The recent expansion of US investment screening and export control regimes present additional headwinds for future Chinese VC investment in the US. While these US regulatory shifts have long been expected, the degree of new scrutiny (ranging from more to excessive) remains to be seen.

### Figure ES-3: A Snapshot of Chinese Venture Capital Activity in the US, 2000 to 2019

**Annual Number of Transactions** (left axis) and Capital Invested (USD Million, right axis)

- Value Based on Ultimate Investor Control and Pro-Rata Shares (Rhodium Group)
- Value Based on Investor Domicile and Total Funding Round Sizes (VC Data Providers)
- Transactions Based on Ultimate Investor Control (Rhodium Group)
- Transactions Based on Investor Domicile (VC Data Providers)

### Technology Areas Targeted by Chinese Investors (Percent of Transactions*)

- Mobile: 21%
- SaaS: 18%
- Life Sciences: 17%
- AI: 13%
- Big Data: 10%
- FinTech: 9%
- Industrials: 8%
- Oncology: 8%
- HealthTech: 7%
- Manufacturing: 6%
- Blockchain: 5%
- IoT: 4%
- CleanTech: 4%
- Robotics: 4%

*Categories are not mutually exclusive so totals do not sum to 100%.

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating Chinese-controlled venture fund (usually determined by general partner nationality) or other entity, value reflects the estimated proportional shares of each funding round attributable to Chinese investors. 2019 data are preliminary only.
Activity in both directions peaked in 1H 2018 and subsided throughout 2019 due to market dynamics as well as policy and political uncertainty.

American VC investment in China reached a new record in 2Q 2018 but dropped markedly thereafter, partly reflecting a correction in the Chinese technology industry but also in response to growing political uncertainty around US firms’ exposures and activity in the Chinese tech sector. We estimate that US venture investment in China dropped to less than $4 billion in 2019, which is the lowest level since 2014.

Chinese VC in the US likewise saw steep declines over the same period: Activity dropped from a peak of almost $1.7 billion in 1Q 2018 to an estimated $2 billion for the full year 2019. Part of this downturn is explainable by technology market turbulence in China, but political tensions and regulatory changes such as the overhaul of US investment screening and export controls regimes are also important factors.

US policymakers face important decisions in 2020 that will shape future bilateral VC flows as well as the direction of the broader US-China relationship.

Policymakers must establish a framework that avoids disruption and unproductive de-coupling without purpose. Decoupling is already a partial reality, but policymakers need to define a rational, non-disruptive model that avoids doing more harm than good. Consensus on an overarching framework for future US-China relations is a prerequisite for market confidence that commercial exchange in the US will not fall victim to extreme national security risk avoidance.

The US must more narrowly articulate China-specific security and economic concerns and mitigate these concerns transparently and predictably. Expanding scrutiny of foreign participation in US early stage technology financing through legal reform has been a bumpy process, and regulators must quicken efforts to address outstanding questions and uncertainties.
• **Leaders must weigh marginal increases in national security against the economic and security costs of limiting participation in the US technology sector.** Some defensive policy tools under discussion or in implementation stages could undermine the attractiveness of the US to entrepreneurs, potentially eroding the US leadership position in global technology development. The security and economic costs of such a loss of leadership are potentially massive.

• **The US has an important global leadership role in re-drawing national security boundaries for engagement with China, but those efforts will only be effective if allies and other aligned countries follow suit.** The US must work with allied nations to ensure effective control of sensitive dual use technologies and avoid regulatory arbitrage.

• **Beijing’s policy choices are critical for the future relationship as well.** Policy in China has shaped venture investment in both directions, and Beijing’s future economic and industrial policy choices, its use of cross-border capital controls and its choice between market-innovation models and technology nativism will remain key drivers of bilateral VC flows.
INTRODUCTION

In the past three years US strategic doctrine on China has shifted from a presumption of eventual convergence with liberal market principles to expectation of long-term systemic rivalry. While the most bellicose versions of this posture are predominantly found in the defense establishment and some corners of the Trump administration, this sea change in US perspective is bipartisan, broad-based and evident even in the business, academic and civic circles that have historically been reluctant to dial-down engagement.

This shift is reflected in a reassessment of US interests and policies across all channels of economic engagement: trade, investment, innovation, people and other areas. Evolving US attitudes have set in motion (or reinforced) Chinese policies, some of which are retaliatory and tactical, and some of which are intended to demonstrate China’s commitment to openness.

Changing policies and attitudes have significantly curtailed US-China cross-border capital flows over the past three years. Foreign direct investment (FDI) has been an important channel of US-China economic engagement since the 1980s, but regulatory scrutiny and the prospect of broader economic decoupling reduced two-way flows from $60 billion in 2016 to $18 billion in 2018.¹

Political intervention is now impinging on other types of capital flows, including portfolio investment of all sorts. In contrast to direct investment, portfolio investment typically includes small equity stakes of less than 10% (historically deemed as “passive” holdings) and the purchase of bonds and other debt securities. Amid a broader debate about “financial decoupling” in the US, one type of portfolio investment has received considerable attention: venture capital (VC) financing for early stage technology companies.

Traditionally, US regulators have not heavily scrutinized venture capital flows. Until recently most foreign venture capital originated from allied nations, and venture investors were mostly making small, passive bets for financial gain. Several developments — some of them China-specific, some of them broader in nature — have called these presumptions into question.

First, the pace of technological evolution has made it more difficult to delineate dual use technology from purely civil applications. To the extent venture investment in US startups that develop cutting-edge dual use technologies is assisting foreign investors in developing technical mastery, policymakers fear that foreign VC investment in the US may be augmenting other nations’ -- including geopolitical rivals’ -- strategic capabilities. For example, mastering the latest tools in commercial autonomous navigation technologies confers the ability to deploy those same tools in military arenas, regardless of how benign the applications were in which that mastery was obtained.

Second, China is challenging the US in many technology areas with the explicit goal of defense application. Beijing has formulated campaigns for upgrading its strategic capabilities in emerging technology areas with an emphasis on military use. This is a concerning development for national security analysts given China’s size and resources. Augmenting these misgivings, China strongly promotes cooperation between its state-owned and non-state sectors in pursuit of military pursuits, making it more difficult to discern the motives of even private Chinese firms.²

¹ Hanemann et al. 2019.
² Beaumelle et al. 2019.
Third, China’s party-state embraces outbound investment as an important channel for acquiring foreign technology and know-how. Most of China’s outbound investment falls in non-sensitive sectors and is not guided by Beijing, but recent industrial policy programs clearly encourage firms to utilize outbound investment to accelerate technology catch-up and leapfrogging, including in dual use technology areas. The spike in semiconductor outbound acquisition overtures in 2015 and 2016 demonstrates that this relationship between Chinese industrial policy goals and foreign investment patterns is not just a theoretical concern.3

Fourth, China’s political and legal systems make collusion among minority investors more likely. Key features of the US regulatory regime are built on the assumption that investing firms do not collude with each other. However, Beijing has a track record of discouraging Chinese firms from competing for overseas assets and of encouraging collaboration in pursuit of China’s national interest. Just as consortiums of private and state-backed Chinese investors have made coordinated foreign acquisitions in strategic technology companies in recent years, there have also been cases of multiple minority Chinese venture investors taking coordinated stakes in strategic foreign venture targets, potentially confounding investment review ownership thresholds designed to cover such investments.

These factors created a bipartisan consensus around the need to fundamentally overhaul two major regimes that regulate foreign acquisition of US technology. In mid-2018, policymakers updated the existing US mechanism for reviewing foreign investments for security implications – the Committee on Foreign Investment in the United States, or CFIUS – by enacting the Foreign Investment Risk Review Modernization Act (FIRRMA), which extends investment screening coverage to include certain VC and other minority investments involving stakes of less than 10%. In parallel, lawmakers passed the Export Controls Reform Act (ECRA), which codified the existing export controls regime into statute and established an interagency process to identify and control the export of emerging and foundational technologies important for US national security. Final implementing regulations for FIRRMA are scheduled for rollout by February 2020, while ECRA’s implementation is ongoing.

These US regulatory changes will test whether Washington can address novel concerns about investment without unnecessarily sacrificing broader economic interests. National security depends on staying open and dynamic, not just keeping harms at bay. At such a critical juncture, it is important that objective data and information serve as the basis for policymaking. However, while the advantages of past openness were proven out by decades (if not centuries) of evidence, public research on US-China venture capital investment has mostly focused on the security risks of permissiveness.4 It is understandable that the security community is focusing on these risks, but it is critical to illuminate the cost of chasing away too much foreign presence both from economic welfare and long-term national security perspectives. Several groups have made important contributions to this debate, but no in-depth dedicated analysis of venture capital-specific questions has previously been available.5

This report presents an independent analysis of US-China VC flows based on a new data framework with the goal of educating the public and contributing to sound policymaking. The first section reviews the unique nature and nuances of measuring cross-border venture capital investment. The second and third sections present in-depth analyses of the historical trajectory, enduring drivers and current state of US-China bilateral VC flows. The concluding section discusses the outlook and the most urgent challenges for policymakers.

3 VerWey 2019.
4 Brown and Singh 2018.
5 For example, see Segal et al. 2019.
1. ANALYZING CROSS-BORDER VENTURE CAPITAL

Wherewithal has sought opportunity – capital has sought ventures – for as long as enterprising people have had surplus resources and time. And yet the form of financing we call “venture capital” today is a distinctly modern phenomenon, only taking shape after World War Two. Moreover, while many varieties of financial activity took root and flourished over these years throughout advanced and emerging economies, VC investing flourished in one nation to a greater extent than in the rest of the world combined: The United States.

So prolific and impactful has VC been in the American system that it is hard to imagine the modern global commercial landscape without its fruits: Apple, Amazon, Facebook, Uber and many others. VC is not only the wellspring of marketplace success, but the foundation of US geostrategic power sitting at the heart of America’s 20th century global economic and strategic leadership. VC epitomizes aggressive, Anglo-American style capitalism: Good ideas attract money and, if they succeed, generate vast returns. Inoperable ideas are ruthlessly discarded as resources are redirected elsewhere.

While the idea of venture investing is simple, the legal structures and processes used by venture investors are complicated. Questions of ownership and control are less straightforward in the VC space than for other traditional capital flows like direct investment, making it difficult to determine which transactions entail legitimate concerns related to foreign ownership and influence. In this section we discuss these important questions and nuances, offering a brief background on modern VC investment and venture investor types before proposing a practical methodology for categorizing and tracking cross-border venture flows between China and the United States that is suitable for assessing security implications and other policy dimensions.

WHAT IS VENTURE CAPITAL?

Venture capital is a subset of private equity (PE), an alternative investment class that consists of capital that is not listed on a public exchange. Within the PE universe, venture capital refers to early-stage equity investment in nascent enterprises with high growth potential. Venture investments occur in successive funding rounds with each round often involving multiple investors. The earliest rounds generally include target companies that may lack revenues and still be refining their business models, while successive rounds typically follow the venture-backed company through business model optimization, expanding market reach, rapid scaling and maturation stages (Figure 1).

Later-stage venture fundraising rounds tend to involve larger total investment values, and it has become common in recent years for venture-backed companies to raise hundreds of millions or even billions of dollars in individual transactions. On the other hand, early-stage rounds tend to have the larger investment stake sizes. Venture transactions usually result in small stakes for individual investors (commonly below 10%), but individual investors or groups of investors often acquire interests in target firms that exceed the traditional 10% direct investment threshold in early-stage deals, especially in pre-series A and series A transactions.

The roots of the United States’ modern venture capital ecosystem trace from the late 1940s. American Research and Development Corporation (ARDC) was one of the earliest venture investment firms established, co-founded by former Harvard Business School dean Georges Doriot in 1946. ARDC saw the industry’s first major venture investment success story after realizing a massive return on its 1957 stake in Digital Equipment Corporation when it went public in 1966. Meanwhile, Draper, Gaither & Anderson was the first modern venture capital firm established on the West Coast, founded in 1959 by William H. Draper Jr. Others followed in the ensuing years, including notable VC pioneers like Davis & Rock, founded in 1961 by Arthur Rock and Thomas Davis, Jr.; Sutter Hill Ventures, established by William H. Draper, III and Paul Wythes in the 1962; and Greylock Partners, founded in 1965 by Dan Gregory and Bill Elfers.
Building on the foundation laid by these early players, growth of the US venture capital ecosystem accelerated in the 1970s as the industry matured (and notably after the invention of the microprocessor). Storied US VC investors like Kleiner Perkins Caufield & Byers and Sequoia Capital, both founded in 1972, trace their roots to this era. The National Venture Capital Association was established in 1973. The industry grew further following US regulatory changes in the late 1970s that allowed pension funds — some of the largest pools of investable capital in the country — to allocate a portion of their portfolios to venture capital investments.

**Figure 1: Typical Stages of Venture Capital Fundraising**

Stylized representation

Seed/Angel: financing is usually provided to start-ups that are still conducting initial research and development of a product or technology.

Early Stage (A+B)*: early stage capital is typically for companies that are still fine-tuning business models and bringing their product or technology to market.

Later Stage (C+)*: later stage capital is generally provided for expansion of companies that are already established in their market space.

Exit (IPO, M&A, etc.): exits occur when venture investors sell their stakes to realize profits/losses and move on to new opportunities.

Source: Authors’ compilation. *The alignment of A and B rounds into ‘early stage’ and later rounds into ‘later stage’ is common but not universal and depends on the circumstances and pace of fundraising and growth for each startup.

In the decades that followed, the personal computing, internet and mobile revolutions each in turn fueled new waves of VC industry growth in the United States, supported by abundant available institutional capital. Still reverberating from the invention of the microprocessor, information technology remains the top broad target area for global venture capital financing even today (Figure 2).

**Figure 2: Value of Global Annual Venture Capital Fundraising by Broad Sector, 2000 to 2019**

Billions of US Dollars

- Materials and Resources
- Energy
- Financial Services
- Business to Business
- Healthcare
- Business to Consumer
- Information Technology

Source: Pitchbook, Rhodium Group. 2019 data are preliminary only.
Venture investment plays a critical role in the development of new companies and technologies in the US, offering startups access to financing from investors willing to make high-risk, potentially high-reward bets on unproven business models. Many of the largest and most innovative public companies in the United States today—including firms like Amazon, Apple and Google—had their beginnings as venture-backed startups. Estimates suggest that venture-backed public companies in the United States also punch above their weight in terms of research and development (R&D), accounting for more than 40% of all R&D expenditures among public firms despite accounting for only around 10% of total revenues. As the cradle of modern venture capital, today the United States maintains its position as the world’s largest VC market even as VC has grown rapidly in other regions like Asia (Figure 3).

Figure 3: Value of Global Annual Venture Capital Fundraising by Geography, 2000 to 2019
Billions of US dollars (left); US percent of global total (right)

The modern global venture capital investor landscape includes numerous players in addition to the professional venture investment organizations and pension funds that drove initial industry growth in the United States in the 1970s. These players seek a mixture of financial returns, strategic commercial synergies and even non-market goals (such as advancing development of defense-relevant technologies) depending on the investor. Modern venture capital investors generally fall into one of three buckets: professional venture organizations, corporate venture investors, and other players. Table 1 describes each of these investor buckets in detail.

Table 1: Common Venture Capital Investor Types

<table>
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<th>Definition</th>
<th>Motives</th>
<th>Strategy and Time Horizon</th>
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<tr>
<td>Professional Venture</td>
<td>These are experienced professional VC investors that manage funds reliant on passive third-party institutional, high-net-worth and other investors like life insurers, pension funds and family offices. These funds are usually structured as limited partnerships with the venture fund managers retaining discretion over capital deployment (see next section). Professional venture fund managers generally seek to increase their portfolio companies’ value and generate financial returns for themselves and their fund investors. Professional venture firms must compete to attract third-party capital, so developing a strong track record of financial returns is one of their most important goals.</td>
<td>Professional venture investors support portfolio companies with managerial expertise and access to other resources. They make investments knowing they will eventually seek exits through initial public offerings, private sales or other means. Professional venture firms usually invest with a medium-term horizon of less than ten years.</td>
</tr>
<tr>
<td>Corporate Venture Investors</td>
<td>These are corporations and their dedicated subsidiaries that make direct venture capital investments in startups instead of investing passively through professionally managed funds. Corporate venture organizations usually make strategic investments in new technologies or businesses to bolster the competitive positions of the investors’ controlling corporations.</td>
<td>Corporate venture investors provide portfolio companies with managerial expertise and access to key corporate resources where possible. Corporate investors are sensitive to financial losses, but without third-party investors to compete for or a set timeframe for exiting investments, they generally have more flexibility to explore strategic synergies.</td>
</tr>
<tr>
<td>Other Players</td>
<td>These are angels, accelerators, and other pre-early stage investors; funds of funds; direct institutional investors; government-affiliated venture investors; etc. Investment goals vary by entity and may include a mix of financial, commercial and/or strategic aims. Some players may even pursue non-market goals like fostering development of military technologies or pursuing national industrial policy objectives.</td>
<td>Strategy and time horizon vary by entity and by investment goals. Financial investors generally seek to maximize medium-term returns, while other investors may be more concerned about commercial synergies or fostering development of certain technologies.</td>
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Source: Authors’ compilation.

THE UNIQUE CHALLENGES OF TRACKING CROSS-BORDER VC

Venture capital investments are generally more difficult to track and categorize than mergers and acquisitions involving mature companies. This is a result of the private nature and investment structures common in the VC space. These difficulties especially complicate efforts to categorize and track cross-border venture capital flows to and from the United States. We address some of the most important of these challenges below.
First, **venture capital investment in the United States is subject to limited disclosure requirements.** US regulations provide private companies with multiple routes to avoid the significant fundraising disclosures required for publicly listed firms. Some of these exemption routes — like those offered under Regulation D — allow eligible companies to forego registration with the Securities and Exchange Commission provided the fundraising firms disclose some basic information in public filings. However, this information is limited to basic fields — like the size and date of the offering and the names and addresses of the fundraising firm's executive officers — and generally does not identify investors. Other exemption routes in the US involve state-level filings or even no public disclosures at all.

Second, as a result of limited disclosure requirements, **venture capital investment data are often self-reported and thus subject to major biases.** Self-reporting introduces significant potential selection biases into available venture capital data due to a lack of reporting standards and deadlines. US venture-backed companies and their investors generally make fundraising details public in pursuit of marketing, signaling or other self-promotional goals. However, privacy, competition concerns or other considerations may lead deal parties to not report fundraising details in a timely manner, if ever. When information is disclosed, it may be with a significant lag, and the quality of information varies widely. For example, some announcements include full lists of participating investors, while others name only a few or just the largest participants. Some announcements disclose the total funding round size, but investment amounts attributable to individual investors are rarely reported. For these reasons, crowdsourced datasets (such as those from Crunchbase) as well as curated datasets (such as those from CB Insights, Preqin or Pitchbook) are often incomplete and lack comprehensive granular data breaking down venture funding rounds by investor shares.

Third, **venture investor ownership chains have become increasingly complex and transnational.** Even when an investor's participation in a venture fundraising round is known, the common use of offshore entities and multinational corporate structures make determining ultimate investor nationality difficult. For example, many foreign-controlled funds and companies have set up dedicated venture subsidiaries in the United States that are run by US employees. Likewise, many US funds and venture firms have foreign venture subsidiaries that invest globally, including back in the United States. Many global venture investment firms have also established franchises in foreign markets managed and partly owned by foreign nationals. Moreover, in line with global trends, many modern professional venture capital firms and multinational corporations are legally organized in low-tax jurisdictions like the Cayman Islands. Ultimate ownership data for these firms are often obscure and non-public, making it difficult to attribute nationality in a way that allows for useful tracking of cross-border venture investment flows.

Finally, **the limited partnership — the principal legal structure utilized by modern professional venture investors — introduces unique challenges in attributing nationality, ownership and control.** Limited partnerships usually consist of a general partner that manages a fund and multiple passive limited partners that have contributed capital (Figure 4). Each of these entities may hail from different countries, making it difficult to categorize the nationality of the investing fund. Moreover, professional venture capital organizations rarely disclose the identities of their funds' limited partners. Limited partnerships further separate concepts of ownership and control by providing the minority shareholding general partner with discretion over the disposition of the limited partners' investment capital. This is a unique asymmetry that has important implications for which members of venture capital limited partnerships are relevant for assessing control and policy implications.
A PRACTICAL APPROACH TO TRACKING CROSS-BORDER VC FLOWS

These challenges make it difficult to get a comprehensive view on cross-border VC activity between China and the United States, but they are not insurmountable. Rhodium Group has compiled a novel dataset of venture capital investments between China and the United States that addresses many of these issues and is conducive to policy analysis. Our key data compilation steps include [1] casting a wide net to overcome coverage gaps in individual datasets and identify as many potentially relevant transactions as possible; [2] identifying a sound approach to assigning mutually exclusive investor nationalities; and [3] estimating pro-rata fundraising round shares for individual investors.

IDENTIFYING RELEVANT TRANSACTIONS

With limited disclosure requirements, biases relating to self-reporting and considerable nuance around questions of nationality, there is no single third-party source available for comprehensively identifying all cross-border venture investments between China and the United States. To mitigate against this challenge, we source data on relevant transactions from numerous English, Chinese and other sources to ensure as widespread and as timely coverage as possible. Using proprietary algorithms and other search methods, we search for transactions in company filings and disclosures, private and government business registration databases, commercial datasets, media reports and other sources. We augment these tools with qualitative research including conversations with industry practitioners and other players. By collecting data from these myriad channels, we can produce data on US-China venture transactions that are more complete and timely than any of the individual sources we rely on.

ASSIGNING VENTURE INVESTOR NATIONALITIES

Existing data providers have generally not focused on fully teasing out the ownership and control questions relevant for policymaking, only considering venture investors’ immediate domiciles when assigning nationality and investment directionality. In order to optimize our data for policy analysis, we instead follow a methodology for assigning venture investor nationalities that is based on the nationality of the party or parties exercising ultimate
Table 2: Determinants for Venture Investor Nationality

<table>
<thead>
<tr>
<th>Investor Type</th>
<th>Nationality Determinant(s)</th>
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</thead>
<tbody>
<tr>
<td>Angels and Other Individual Investors</td>
<td>Citizenship</td>
</tr>
<tr>
<td>Limited Partnerships</td>
<td>Nationality of the fund’s ultimate controlling individuals or parties</td>
</tr>
<tr>
<td>Other Corporate Entities</td>
<td>Nationality of the corporate entity’s ultimate owners</td>
</tr>
</tbody>
</table>

Source: Authors' compilation.

**ANGELS AND OTHER INDIVIDUAL INVESTORS**

Assigning nationalities to people is straightforward in principle – we determine it based on citizenship. However, in practice individuals do not always publicize their citizenship status and may even have multiple citizenships, requiring a degree of discretion in assigning each person a single nationality. Where exact citizenship statuses are unknown, we rely on other publicly available clues like place of birth, place of residence, educational background and career trajectory to make best-efforts nationality determinations on a case-by-case basis. We also follow this approach when determining the nationality of any limited partnerships or other corporate entities controlled or owned by individuals.

**LIMITED PARTNERSHIPS**

There are multiple approaches for tracking cross-border investment flows involving limited partnerships. One conceptually straightforward approach is to track investment by the location of the legal owners of the invested capital in proportion to their venture fund stakes (i.e. strictly by domicile of fund partners, with most weight given to limited partners). However, this approach ignores the control considerations previously addressed that are critical for policy and security analysis. In practice, this approach is also not consistently feasible – it is common for fund managers (including many from the United States and China) to raise capital from limited partners from across the world, and as previously noted there are no disclosure requirements or comprehensive data sources on venture fund limited partners or their fund stake sizes.

A second approach to assigning fund nationality involves tracking venture capital flows by the nationality of the entities responsible for making decisions on fund capital deployment and managing relationships with portfolio companies (i.e. usually by nationality of general partners or their owners). This approach is more practically feasible – it has the benefit of requiring only one nationality designation per venture investment fund, and the relevant data are more comprehensively available. This approach is also flexible, allowing nationality designations to align with whichever fund party exercises the most control over investment decisions, and it more closely aligns with the control considerations relevant for policymakers.

For these reasons, we track cross-border venture capital investment activity based on the control-based approach, assigning each venture fund a single nationality corresponding to the nationality of the entities or persons in control of the business decisions of each venture investor. This approach is roughly compatible with the US regulatory approach to screening foreign investment, which asserts jurisdiction in cases where any entity controlled or heavily influenced (not simply owned) by a non-US national or entity invests in the United States.7 Table 2 summarizes this approach by broad investor organizational structure.

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7 For example, CFIUS defines “control” expansively as “the power, direct or indirect, whether exercised or not exercised, to determine, direct, or decide important matters affecting an entity.”
of the venture funds’ investment decisions. Most often this approach leads us to identify general partners (or their owners) as the key entities for determining fund nationality, but in some cases a singularly influential limited partner or other fund party may also be considered.8

In many cases, assigning nationality to an investment fund under this approach is straightforward, especially when the legal and operational domiciles of a fund’s general partner, the nationality of the individuals managing the general partner and the domiciles of any participating limited partners all align. In cases where these various determining factors do not so neatly agree, we make nationality designations on a case-by-case basis based on available public data and our best judgment as to where the party or parties most in control of investment fund decision making are from. Our nationality assignments are mutually exclusive, which is important for constructing apples-to-apples comparisons of cross-border venture investment flows between nations.

OTHER CORPORATE ENTITIES

Outside of limited partnerships, there is usually little difference between concepts of control over and ownership in corporate entities. Therefore, we assign nationalities to these other corporate entities based on the nationalities of the parties that ultimately possess the largest ownership stakes, which is also our approach for tracking cross-border direct investment flows. The key challenge for making these determinations is often disentangling complex (and non-public) investor ownership chains. To the extent this is possible, assigning investor nationality is usually straightforward.

ESTIMATING INVESTMENT AMOUNTS

Finally, we fill in critical transaction information gaps with reasonable estimates, creating a more accurate assessment of the actual scope of cross-border venture investment. Commercial data providers and other sources usually only provide information on the total value of each funding round (when figures are available at all) and do not reveal the contribution sizes of individual investors. When measuring Chinese VC investment in the United States, this has led some researchers and journalists to overstate the magnitude of Chinese investment by reporting the total combined value of fundraising rounds with at least one Chinese participant, even though Chinese pro-rata shares generally constitute only a fraction of total funds invested. To mitigate against this bias, our data include figures on actual capital deployed based on disclosed funding round breakdowns. Where no such disclosures are available, we produce in-house estimates of the portion of each fundraising transaction attributable to cross-border investors, for example according to the pro-rata share attributable to participants from each nation based on the total number of funding round investors.

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8 A fund’s primary place of registration or business, the composition of its general partner or management team and its limited partners and limited partner rights are all potential determinants of foreign person status for purposes of CFIUS reviews.
Our resulting dataset covers venture equity investments from the angel and seed stages through later-stage, pre-initial public offering (IPO) funding rounds. Investments are recorded at the closing date of each fundraising round, with each fundraising round comprising a single transaction with potentially multiple investors. Transactions for which reasonable estimates of investment totals are not possible are included in our dataset at zero value. While venture investments sometimes entail investment stakes of more than 10 percent and may therefore technically qualify as direct investments, to avoid double counting we include all venture capital investments in this dataset regardless of stake size.

The following sections utilize Rhodium’s dataset to offer a more comprehensive and granular look at cross-border venture investment between the United States and China than has previously been available.
2. US VENTURE CAPITAL IN CHINA

Venture capital has a shorter history in China than it does in the United States and in other advanced economies. Before the 2000s China lacked the policy environment and financial development needed to foster a thriving private venture capital ecosystem, and foreign portfolio investment inflows were tightly restricted. Several regulatory changes - such as legalizing the limited partnership structure commonly used by venture capital investors – paved the way for a more mature Chinese venture capital ecosystem and the rapid increase of US venture investment in China from 2013 to 2018. Since then, frothiness in Chinese venture and technology markets and changing policy variables in China and the US have steered activity to lower levels, and political uncertainty clouds the outlook in 2020 and beyond.

AGGREGATE VOLUME AND VALUE

Our dataset captures more than 2,610 unique Chinese venture funding rounds with participation from at least one US investor from 2000 to 1H 2019 (Figure 5).9 These US venture investors contributed an estimated $47 billion to Chinese startups over the period while participating in fundraising rounds worth a combined $122 billion. Activity grew rapidly both by number of transactions and by total estimated investment value from 2010 through 1H 2018, coinciding with rapid growth of the broader Chinese venture capital ecosystem.

In 2018, US-owned venture investors participated in almost 320 unique venture funding rounds for Chinese startups, investing a record estimated $17.4 billion (roughly double the previous record of $8.4 billion in 2017). This elevated total was driven by US participation in massive later-stage venture fundraising rounds for Chinese technology firms like Ant Financial ($14 billion Series C round), Pinduoduo ($3 Billion Series C round) and TikTok owner Bytedance ($3 Billion Series D round). Notably, this slew of sizeable 2018 VC transactions pushed estimated total annual US venture investment in China above annual total direct investment for the first time.

After setting records 1H 2018, total estimated US venture investment in China fell to $3.5 billion in 2H 2018 and to just $1.3 billion in 1H 2019 based on preliminary numbers, in conjunction with a broader slowdown in China's technology and venture capital markets [transaction totals likewise declined, but not as dramatically]. According to Pitchbook, total venture funds raised by Chinese-headquartered startups fell from a record $61 billion in 1H 2018 to $37 billion in 2H 2018 and to just $17 billion in 1H 2019. Investors became more selective in the face of increasing economic uncertainty and the growing perception that parts of China's tech ecosystem (for example in areas like artificial intelligence and the shared economy) had become overheated after years of rapid growth. A string of disappointing Chinese IPOs and venture capital “down rounds” (fundraising rounds with company valuations below those from previous fundraising rounds) further weighed on private equity investor sentiment.

Overall, US venture investors have played an outsized role in the development of China's technology sector. Most of China's leading technology firms today including Alibaba, Tencent, Baidu and others received financing from US venture investors. We estimate that US players invested in nearly a third of all Chinese companies that received venture backing from 2000 to 1H 2019. Moreover, the estimated $47 billion contributed by these US investors accounts for nearly 16% of the roughly $300 billion total raised by all Chinese startups through venture fundraising over the period.

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9 For the analyses in Section 2 and Section 3, we only use data through 1H 2019 in order to avoid the worst of the time lag and other reporting biases inherent in venture capital data (see Section 1). Full-year 2019 numbers cited in the Executive Summary and Outlook sections are based on our estimates of total transaction counts and values for the full year 2019.
Importantly, these totals only include the value of investment in Chinese startups attributable to funds controlled by US fund managers in accordance with the data methodology described in Section 1. Considerably more venture capital dollars have flowed from the United States to China through US limited partner participation in funds managed by Chinese venture capital general partners like Hillhouse Capital, Primavera Capital and Hony Capital have attracted massive investments from US limited partners like San Francisco Employees’ Retirement System, University of Texas Investment Management Company and Metropolitan Life Insurance Company. Through this means, US limited partners have historically been responsible for a significant portion of total venture dollars deployed in China, even outside of funds managed by US general partners.

**Figure 5: US Venture Capital Investment in China, 1H 2010 to 1H 2019**

Number of transactions (left); value in USD millions (right)

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating US-controlled venture fund (usually determined by general partner nationality) or other entity; value reflects the estimated proportional shares of each funding round attributable to US investors. 2019 data are preliminary only. *Excludes 376 transactions with unknown dates.

**INVESTOR CHARACTERISTICS**

US venture capital investors in China covered in our dataset include professional venture funds managed by US general partners, US corporations and their venture subsidiaries making investments on behalf of their parent firms, banks and other financial institutions, accelerators, individual angel investors and others. Unlike their Chinese counterparts investing in the United States, US venture investors in China are composed exclusively of non-government owned entities [Table 3]. Government-owned or affiliated funds have long been a part of the US venture capital ecosystem – for example the Department of Defense's Defense Innovation Unit (DIU), InQTel, DARPA or OnPoint Technologies – but these firms have traditionally focused on the US market.
Table 3: Sample Types of US Venture Capital Investors in China

<table>
<thead>
<tr>
<th>Private Entities</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venture Fund Controlling Parties</td>
<td>Sequoia Capital – a storied US-based professional venture capital investment fund manager</td>
</tr>
<tr>
<td>Corporations</td>
<td>Alphabet Inc. – an American multinational conglomerate created through the corporate restructuring of Google in 2015</td>
</tr>
<tr>
<td>Corporate Venture Arms</td>
<td>Intel Capital – the venture subsidiary of US chipmaker Intel</td>
</tr>
<tr>
<td>Banks and Other Financial Institutions</td>
<td>JPMorgan Chase – a New York-based investment bank</td>
</tr>
<tr>
<td>Accelerators, Angel Investors and Others</td>
<td>Microsoft ScaleUp – the global accelerator arm of tech giant Microsoft</td>
</tr>
</tbody>
</table>

Source: Rhodium Group.

The mix of US venture investors in China has historically been dominated by professionally managed venture funds. In 2018, these organizations participated in 90% of all Chinese startup fundraising rounds involving US investors (Figure 6). As these professional venture funds rely on institutional, high-net-worth and other investors for capital, they are principally motivated by financial returns. More strategically motivated US corporate VC investors are the second-most common investor type: These entities took part in just over 10% of Chinese fundraisings with US participants in 2018 (there is some overlap between each group’s investments). Other US venture investor types including banks, other financial institutions and angel investors have generally played only a marginal role in China.

Figure 6: US VC Investment in China by Investor Type, 1H 2010 to 1H 2019

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating US-controlled venture fund (usually determined by general partner nationality) or other entity. 2019 data are preliminary only.

A handful of players have powerfully shaped overall US venture capital trends in China due to the sheer number of transactions these players have been party to. Our dataset includes several firms that have participated in at least
We break down our venture investment transactions data by separate industry and technology schemes. For industries, we assign mutually exclusive sector classifications to each investment target based on which of fourteen Rhodium Group industry categories the company primarily services or operates in. These industries are generally assigned based on the use case of a startup’s product or technology, not simply by the product or technology itself. For example, a firm developing a software tool for managing human resources processes is coded with Financial and Business Services as the primary industry instead of Information and Communications Technology, which might be suggested by the firm’s activities in software development.

Based on this approach to industry classification, the most important sector for US venture investment in China has been Financial and Business Services, which saw more than 90 unique funding rounds in 2018 alone [Figure 7]. Entertainment, Media and Education; Consumer Products and Services; and Healthcare, Pharmaceuticals and Biotechnology have also drawn considerable interest from US venture investors. Information and Communications Technology (ICT) is also a notable sector by number of transactions and would rank even higher counting all software-related investments bucketed elsewhere – as noted above, we code industries based on the use and purpose of a firm’s technology instead of the technology’s medium. Activity in each of these sectors is summarized below.

Figure 7: US Venture Capital Investment in China by Target Sector, 1H 2010 to 1H 2019

Number of transactions

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating US-controlled venture fund (usually determined by general partner nationality) or other entity; value reflects the estimated proportional shares of each funding round. 2019 data are preliminary only.

Accelerators often take stakes in the early stage firms they work with, but Microsoft ScaleUp does not. Despite the lack of any equity stake, we still include transactions involving Microsoft ScaleUp and similar accelerators in our dataset at zero value to account for the significant influence these accelerators may have over startups’ development paths and decision making.
Financial and Business Services: More than three quarters of US venture investments in this sector have targeted business services, with an emphasis on software as a service (SaaS) applications ranging from logistics and supply chain optimization to human resources streamlining, digital sales and marketing, catering and others. Meanwhile, financial technology (FinTech) software and blockchain technologies have been among the most popular targets in the financial services segment. Other than the top US investors previously mentioned, WI Harper Group, Warburg Pincus and Tiger Global Management have also been active players in this sector.

Entertainment, Media and Education: US venture investment in this sector has fallen into three major buckets: media and publishing (e.g. social media and dating apps, news and content curation); entertainment (e.g. sports and games broadcasting, digital games production) and education (e.g. English and math teaching platforms and apps, child tutoring). Other than the top US investors previously mentioned, Qualcomm Ventures, Disney subsidiary Steamboat Ventures and e.ventures have also been active players in this sector.

Consumer Products and Services: US venture investment in this sector has likewise fallen into three major buckets: consumer retail (e.g. e-commerce platforms, tech-enabled convenience stores), consumer products (e.g. consumer internet of things devices, pet supplies) and consumer services (e.g. on-demand delivery services, personal fitness applications). Other than the top US investors previously mentioned, Warburg Pincus, Matrix Partners and Lightspeed Venture Partners have also been active players in this sector.

Health, Pharmaceuticals and Biotechnology: This is the only top sector with several top investors that are different from the handful of major US players driving overall US venture investment activity in China. These sectoral players include healthcare-focused investors like Fidelity Investments subsidiary F-Prime Capital Partners, Vivo Capital, OrbiMed and Arch Venture Partners. Around 40% of total investments in the sector have targeted the healthcare segment, while another 40% have targeted the pharmaceuticals and biotechnology segment. The rest have targeted Chinese medical device makers.

Information and Communication Technology: Only about 30% of US venture investment in this sector has targeted Chinese startups developing semiconductors or IT equipment hardware. The rest has involved Chinese startups developing software and IT services offerings in areas like cloud data and computing, data storage, cybersecurity, machine learning and others. Other than the top US investors previously mentioned, Walden International, Qualcomm Ventures and WI Harper Group have also been active players in this sector.

ACTIVITY BY TECHNOLOGIES

In addition to mutually exclusive industry categories, we also code for around 50 unique technologies in connection with each transaction. These technologies are based on the specific methods and tools powering a firm’s products and services. Unlike industries that depend on mutually exclusive use cases, these technologies are not mutually exclusive, and firms may employ multiple technologies simultaneously. For example, a startup developing autonomous driving technology may be coded both as a developer of Autonomous Vehicles as well as Artificial Intelligence technologies. Moreover, individual technologies commonly span multiple industries. For example, Artificial Intelligence has broad applications in sectors like automotive (e.g. self-driving technology), pharmaceuticals (e.g. drug discovery) and logistics (e.g. logistics network and route management), to name just a few.

This coding offers unique views into which trans-industry technology areas US venture investors in China are disproportionately targeting or avoiding. Figure 8 shows some of the top technology areas for US venture investment in China as measured by the percent of total transactions involving each technology.
Chinese startups using Mobile (mobile apps and mobile communication technologies) and Software as a Service ("SaaS," or subscription-based cloud software services) technologies have been among the most popular venture targets for US investors. Other top technology areas have included E-Commerce (online commerce-related technologies), Industrials (industrial and commercial supplies and services), Manufacturing (production of physical products), Big Data (technologies utilizing massive datasets) and Artificial Intelligence (machine learning and other AI-related software technologies), to name a few.

Normalizing US investor technology concentrations against broader rates of investment within the Chinese start-up fundraising universe shows which technology areas US venture investors disproportionately favor compared to investors from other regions. Based on data from 2016 to 2018, in descending order US investors have tended to overweight Mobile, Industrials, E-Commerce, Big Data and SaaS compared to non-US venture players (Figure 9). Many of these technologies are also top historical target areas for US venture investment in China since 2000 (only Artificial Intelligence is missing), showing that technology preference areas for US venture investors in China are strongly driven by top investor preferences, not just by the universe of available technologies among Chinese startups.
Based on the technology areas most overweighed by US venture investors in China in recent years, a few themes emerge:

First, US venture investors have focused on Mobile technologies at significantly higher rates than investors from other jurisdictions. This focus may partly be a result of US investors' restricted access to these technologies through traditional investment channels due to Chinese inbound investment controls as well as the unique opportunities and business models enabled by China's high consumer mobile adoption and connectivity rates. Top US investors in this space have included accelerator Microsoft ScaleUp, Intel Capital and Qualcomm Ventures on the corporate side and professional venture investors like Sequoia Capital, SOSV, SIG China and DCM Ventures.

Second, US venture investors have also targeted Chinese startups in Industrials-related areas at elevated rates. Top US investors in this space have included professional venture firms like Sequoia Capital, DCM Ventures, Lanchi Ventures and SOSV along with Warburg Pincus and Kleiner Perkins. On the corporate side players like Microsoft ScaleUp, Qualcomm Ventures and Intel Capital have also been strong supporters of Chinese Industrials startups.
Third, **US venture investors have maintained an outsized presence in E-Commerce compared to other investors.** This has owed mainly to several professional venture investment organizations like SIG China, DCM Ventures, Sequoia Capital, SOS, Lanchi Ventures, Tiger Global Management, Kleiner Perkins and Warburg Pincus.

Fourth, **US venture investors have also been outsized supporters of Chinese software startups in areas like Big Data and SaaS.** Microsoft ScaleUp has led activity among US investors in each of these technology areas with support from Intel Capital on the corporate side as well as from professional venture players like DCM Ventures, SIG Asia and Lanchi Ventures.

In contrast, US venture investors have lagged broader venture investment activity in China in technology areas like Manufacturing and Advanced Manufacturing (manufacturing utilizing innovative technologies like 3D printing, automation and robotics), in which Walden International has been a notable US investor; Gaming (video games), in which Disney’s Steamboat Ventures has been an important player; and FinTech (financial services technologies). The laggard position in FinTech is notable given outsized US interest in Chinese blockchain-related startups, which are also often classified as FinTech firms. This means US investors are very narrowly interested in blockchain within the FinTech space in China.

Figure 10 shows the technology areas that saw the greatest change in targeted frequency by US venture capital investors in China from 2014 and 2015 to 2018 and 1H 2019. Most of the technologies that saw significant growth in US venture investor interest over the period also witnessed growth in the number of Chinese startups embracing those technologies. But US growth outpaced this broad growth in technology areas like Artificial Intelligence, Big Data, Life Sciences (technologies involving living organisms and life processes), Blockchain, Oncology (cancer treatment-related technologies), LOHAS (consumer-focused businesses emphasizing “lifestyles of health and sustainability”) and Real Estate Tech (commercial and residential real estate purchase and management tools), among others.

**Figure 10: Change in Technology Focus Areas for US VC Investment in China, 2014 and 2015 to 2018 and 1H 2019**

<table>
<thead>
<tr>
<th>Technology</th>
<th>Funding Rounds for Chinese Startups with US Participants</th>
<th>All Funding Rounds for Chinese Startups</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI</td>
<td>5%</td>
<td>-12%</td>
</tr>
<tr>
<td>Big Data</td>
<td>7%</td>
<td>-5%</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>4%</td>
<td>-4%</td>
</tr>
<tr>
<td>Blockchain</td>
<td>4%</td>
<td>-5%</td>
</tr>
<tr>
<td>Oncology</td>
<td>3%</td>
<td>-3%</td>
</tr>
<tr>
<td>LOHAS</td>
<td>2%</td>
<td>-2%</td>
</tr>
<tr>
<td>Robotics</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>RE Tech</td>
<td></td>
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<tr>
<td>EdTech</td>
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<tr>
<td>FinTech</td>
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<tr>
<td>Industrials</td>
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<tr>
<td>SaaS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating US-controlled venture fund (usually determined by general partner nationality) or other entity. 2019 data are preliminary only.
On the other hand, American VC investors in Chinese startups have moved decidedly away from Mobile technologies over the last three years, in tandem with a general slowdown in broader venture investment in related Chinese startups. US investor interest in SaaS business models also fell, marking a second historically top technology focus area that US venture investors have recently pivoted away from. Other technology areas that saw declining US investor interest over the period include Industrials, FinTech and EdTech (technology improving learning outcomes).

**COMMERCIAL DRIVERS AND POLICY DIMENSIONS**

The growth of US venture capital in China during the last decade was primarily driven by commercial motives — a once-in-a-lifetime opportunity to financially benefit from the creation of a Chinese technology industry — made possible by Chinese policy reforms that aided in the development of China’s domestic technology and venture capital ecosystems. Turbulence in China’s technology markets over the last 18 months and anxiety over the sustainability of Chinese economic growth have dampened some of this commercial enthusiasm, but many US venture investors continue to see China as a key target market with unique opportunities and diversification benefits. However, growing US-China tensions have created an environment where policy will have a larger effect on the trajectory of US venture investment in China going forward.

**COMMERCIAL DRIVERS**

One important factor for understanding growth of US venture capital in China is the growth of venture capital as a global asset class in the past decade. Worldwide venture capital investment activity has accelerated in the last ten years, increasing from a baseline of less than $60 billion per year before 2010 to more than $100 billion in 2014 and nearly $300 billion in 2018.11 Non-China specific forces behind this global rush into venture capital have included historically low interest rates pushing yield-hungry investors into riskier asset classes and the increasing popularity of later-stage venture capital mega rounds in lieu of IPOs or other earlier exit strategies. These global trends partly account for the growth in US venture capital investment in China over the last decade.

China-specific market drivers are also behind the surge in US venture investment in China that began around 2013. As previously shown in Figure 6 this acceleration was largely driven by professional venture capital investment organizations — the incidence of US corporate venture investment in China remained consistent from 2011 to 2018, while the number of venture transactions involving financially-motivated professional investors tripled. These US professional venture investors have sought financial opportunities within China’s burgeoning technology startup ecosystem tied to China’s web-connected population of more than 800 million (as of 2018).12 The enviable financial performances of several of China’s first- and second-wave tech startups like Alibaba, JD.com and Xiaomi have further served as a powerful draw for more recent US venture investors seeking to replicate early successes. For example, the Japanese telecom giant SoftBank’s $20 million investment in Alibaba in 2000 was worth in excess of $60 billion at the time of Alibaba’s IPO in 2014.13 Moreover, venture capital investment in China has emerged as an important diversifying tool for US and other global venture players seeking the benefits of imperfect correlation with other asset classes and markets.

The downward pressure on startup valuations in China since mid-2018 has slowed enthusiasm among both domes-

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11 Source: Pitchbook.
tic and foreign investors. Fears about Chinese economic health and a growing consensus that many startups were seeking unsustainable top line growth without viable routes to profitability led to a sharp contraction of venture investment in Chinese startups beginning in the second half of 2018. At the same time, IPO valuations have come under pressure since 2018, and many notable Chinese startups like Xiaomi have seen their market values fall markedly since becoming public companies.

These China-specific market headwinds are impacting US venture capital investor activity in China. As previously shown in Figure 5, fundraising totals and investment counts for US venture investors in China fell both in 2H 2018 and 1H 2019 back to levels typical in 2014 and 2015. However, China remains one of the world’s fastest-growing economies with a notably vibrant technology sector, and as broader venture capital activity in China stabilizes, the commercial drivers behind US investor interest is Chinese startups are likely to support continued US venture investor interest. Activity in 4Q 2019 already saw an uptick, driven by Morgan Stanley’s investment in Chinese data center operator Tenglong Holdings.

CHINESE POLICY

The Chinese policy environment initially presented major hurdles for foreign participation in China’s technology ecosystem, but structural reforms paved the way for the foreign VC boom in China during the last decade. More recent policies have had mixed impacts. On the one hand, continued steps to create efficient legal structures allowing foreign venture investment participation in onshore startups as well as efforts to foster technology-focused exit channels through onshore IPOs and other means have supported foreign VC interest, as have efforts to level the playing field for foreign investors. However, capital controls, new rules indirectly hampering foreign investment and other measures to limit systemic risks have created new headwinds for the growth of US and other foreign venture investment in China.

FINANCIAL AND INNOVATION SYSTEM FUNDAMENTALS

Initially, China’s underdeveloped financial system made foreign venture investor participation difficult. Early foreign VC investments in Chinese firms were usually carried out through offshore limited partnerships that invested directly in offshore holding companies of Chinese operations, wholly circumventing onshore regulatory structures. Beijing only started to formulate the basic regulatory frameworks for onshore venture capital investments in the early 2000s. In 2003, new rules formally established guidelines for foreign VC investors operating in China for the first time [Administrative Regulations on Foreign-Invested Venture Capital Enterprises, or the “FIVCE Regulation”], allowing foreign venture players to establish a Chinese FIVCE.14 FIVCE investments were largely limited to certain technology sectors and were subject to other restrictions such as approval by the Ministry of Commerce.

Further progress came in 2005, when China passed a rule formally recognizing limited partnerships for domestic venture capital organizations, followed by a similar rule allowing the partnership structure for foreign VCs in 2009 [Administrative Measures for the Establishment of Partnership Enterprises by Foreign Entities or Individuals in China, or the “FIP Regulation”].15 These regulations were major steps forward in permitting foreign venture players

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to establish foreign-invested partnerships (FIPs), the predominant structure for most international and offshore funds. China also began implementing pilots of Qualified Foreign Limited Partners (QFLP) programs in 2010, providing additional ease in fund partnership establishment, operation and exit. Finally, in 2013 China clarified that VC investment (both foreign and domestic) would be regulated by the China Securities Regulatory Commission (CSRC) with overarching guidelines determined by the National Development and Reform Commission (NDRC). While the detailed regulation rollout under this regime that began in 2014 is still ongoing and many aspects pertaining to venture investment in China have still yet to be clarified, efforts to date have been sufficient to broadly open the Chinese venture capital market to foreign participation.

**POLICIES FOSTERING VENTURE EXIT ROUTES**

Another structural impediment resulting from China’s underdeveloped financial system for much of the last two decades has been limited public offering exit options for VC investors in Chinese firms. Even today, the process of listing on Chinese stock markets remains long and unpredictable. For example, there is still a hard requirement for company profitability expectations in order to issue A shares [onshore shares on the Shanghai and Shenzhen stock exchanges]. As a result, Chinese tech firms that have yet to post consistent profits have often been forced to seek other exit channels for early private investors, for example via listing in the US or Hong Kong. In 2004 the Shenzhen small and medium enterprise (SME) board was launched, providing a potential onshore exit option for venture investors in Chinese startups for the first time. In 2009, the launch of the Shenzhen Growth Enterprise Market (GEM) board offered another potential avenue, although a pause in IPO approvals in 2013 shook confidence in that option and disrupted exits for some venture investors. The launch of the National Equities Exchange and Quotations (NEEQ) at the end of 2013 provided another alternative.

Chinese efforts to improve access to public offerings for domestic tech firms continued throughout 2019. July saw the launch of the Shanghai Stock Exchange’s Science and Technology Innovation Board (STAR Market), a new board meant to serve as a counterpart to NASADQ in the United States. However, performance and volumes on the exchange have been low, and many Chinese tech firms continue to prefer offshore listings in the US or Hong Kong. Recognizing this, Chinese regulators were reportedly pursuing plans for further reform in November 2019 that could allow foreign companies and Chinese businesses incorporated abroad to list on the STAR Market under simplified conditions, including with more investor-friendly rules surrounding repatriation of proceeds and limitations on existing shareholders’ ability to sell shares. These reforms could provide a boost to global venture investor interest in China, although the timeline and effectiveness of any changes remain uncertain.

**INWARD FOREIGN INVESTMENT RESTRICTIONS**

Another important policy factor is broader Chinese restrictiveness toward foreign investment in certain industries and technologies. Under current regulations, foreign venture investors organized under each of the FIVCE, FIP, and QFLP frameworks remain foreign-invested entities subject to China’s foreign investment law, which includes substantial formal equity caps. Foreign investors also face a host of informal restrictions and discrimination. This unlevel playing field limits potential ownership for foreign venture investors in certain firms and restricts the pool of potential future buyers, impeding another important exit option for VC players. The only form of foreign VC investment not subject to these regulations are investments that occur completely outside of China [offshore limited partnership investing in offshore holding companies of Chinese operations]. While this form of investment was popular in earlier years, foreign investors have increasingly switched to onshore platforms or “RMB funds” through FIP and QFLP regimes to access growing pools of available onshore capital.

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Recent Chinese reforms involving controls over foreign investment have had mixed results. On the positive side, Beijing has accelerated portfolio investment liberalization by establishing stock connect schemes, abolishing Qualified Foreign Institutional Investor (QFII) quotas and seeking the inclusion of Chinese A shares in MSCI and other global stock indices. China has further simplified currency exchange systems for foreign investment within special zones and has made progress towards lifting existing restrictions on foreign investment by reducing the list of restricted sectors on China’s Negative List and committing to provide a more level playing field through a new FDI law. However, other steps have been potentially discouraging for foreign participation in certain technology areas. New restrictions have been introduced through the implementation of China’s new cyber security regime and through the establishment of a national technological security management list. Beijing is also introducing new mechanisms such as national security reviews for foreign investment and an entities list of key companies, which could be used to retaliate against measures taken by the United States vis-à-vis Chinese investors through investment screening and other channels.

**CAPITAL CONTROLS**

Chinese authorities still rely heavily on direct intervention in financial markets to contain systemic risks. These interventions can have notable impacts on the Chinese venture capital ecosystem and on the ability of foreign investors to easily participate. For example, fears of over-exposure to short-term capital flows and related volatility have led Chinese regulators to maintain tight restrictions on the inflow and outflow of foreign portfolio investment, making it difficult for some foreign venture investors to freely move capital as they enter and exit venture investment positions. Under the early FIVCE structure, all currency conversions between the U.S. dollar (USD) and renminbi (RMB) are subject to State Administration of Foreign Exchange (SAFE) rules and approvals. Under the FIP structure, investors may convert non-RMB currency to RMB to make investments with certain restrictions. Under the latest QLFP programs, investors can directly engage in foreign exchange transactions at the bank level, the least burdensome approach of the three systems (although QLFP remains a pilot program only available in certain cities). Overall, these Chinese capital controls create headwinds for additional foreign venture investment in Chinese startups and demonstrate the uncertainty and possible spillovers in connection with Beijing’s efforts to control systemic risks.

**INDUSTRIAL POLICY**

China’s heavy use of state-directed venture capital investment funds as key tools to achieve industrial policy goals since 2010 also undoubtedly continues to impact the Chinese venture capital ecosystem and its domestic and foreign participants. Nominally, Chinese venture investment government guidance funds have raised astronomical sums to invest in Chinese technology startups — figures from Zero2IPO Research suggest China hosted more than 1,600 such funds at the end of 2018 with 4.05 trillion RMB [$585 billion] in reported capital secured. Although actual fund deployment has likely been only a fraction of this total, upward pressure on technology startup valuations and the existence of potential government buyers as possible exit counterparties have likely encouraged foreign participation in China’s venture capital ecosystem. However, studies have so far have found Chinese state-backed venture fund investments to have mixed impact on the performance of targeted companies and on the broad venture performance of sectors targeted by industrial policy, so the net impact on US and other foreign venture investment in China is difficult to ascertain.

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US POLICY

For the past decades, outbound venture capital investment by American firms has mostly remained off US policymakers’ radar. With a few exceptions limited to behaviors such as sanctions violations, money laundering or tax evasion, the federal government has had limited jurisdiction to interfere with outbound financial investment decisions by US citizens and corporations. However, growing concerns about China have triggered discussions on whether this long-standing approach needs an overhaul, and some policymakers are advocating for greater scrutiny over outbound capital flows to China, including venture capital and other financial flows.

TECHNOLOGY LEAKAGE

Policymaker interest in regulating outbound US capital flows to China surfaced in 2017, driven by concerns that overseas joint ventures and other direct investments were leading to the leakage of sensitive US technologies to China and other foreign parties. This thinking was captured in early drafts of the FIRRMA legislation, which included a provision that would have expanded the jurisdiction of CFIUS to review certain outbound transfers of intellectual property through joint ventures and other means. That provision was later dropped in favor of measures strengthening US export controls that eventually became the Export Control Reform Act (ECRA), which passed simultaneously with FIRRMA in August 2018. ECRA's impacts on outbound investment will likely be smaller in the venture capital space than in the direct investment space where long-term strategic investments in China often entail the contribution of intellectual property and knowhow to joint ventures with Chinese firms. In contrast, venture investors bring capital and sometimes management and other expertise to their relationships with portfolio firms, which usually do not fall under ECRA jurisdiction. Moreover, US corporate venture investors — those most likely to face ECRA restrictions in connection with their venture capital investments in China — account for only a fraction of total US venture investment in Chinese startups.

HUMAN RIGHTS AND OTHER FOREIGN POLICY INTERESTS

In 2019, policymakers and human rights activists began calling for greater scrutiny of US financing of Chinese firms enabling mass surveillance of the Uighur population in Xinjiang. In response to this pressure, in October the US government placed 20 Chinese government bodies and eight Chinese technology firms on the Commerce Department’s “Entity List,” effectively cutting them off from US suppliers and investors. Several of these Chinese companies are engaged in video surveillance and AI technologies including facial recognition, evidence extraction from digital media devices, speech recognition and video analysis, among others. In its decision, the US government argued that these entities are “enabling activities contrary to the foreign policy interests of the United States. Specifically, these entities have been implicated in human rights violations and abuses in the implementation of China’s campaign of repression, mass arbitrary detention, and high-technology surveillance against Uighurs, Kazakhs, and other members of Muslim minority groups in the Xinjiang Uighur Autonomous Region (XUAR).” Several of the added

firms – including SenseTime, Megvii and iFlyTek – have previously received venture financing from American investors. The action will make US VC players reevaluate future venture investments in similar Chinese firms.

**BROADER FINANCIAL DECOUPLING**

Finally, escalating US-China frictions have fueled a broader discussion in the United States about the need to unwind or restrict further financial integration with China on national security grounds. Proponents of such a broader “financial decoupling” argue that the United States should not allow its main strategic competitor to access its financial markets, nor should it allow US investors to support Chinese firms that have the potential to undermine US interests in the long run.23 For example, in September 2019 the White House was reported to be considering restricting Chinese companies from listing on US exchanges, concerned that Chinese firms with unclear government links are taking advantage of US financial rules to solicit American investment without proper disclosure.24 Such a step would eliminate a popular venture exit route for Chinese startups, potentially decreasing the attractiveness of Chinese venture targets to US investors. Discussions have also extended to the wider implications of allowing any US institutional investors to take stakes in Chinese startups that may be developing dual-use technologies that can be used to augment China’s strategic capabilities.

This thinking has not gained wide traction in Washington, and the White House denied that it has plans to pursue such policies. But while no formal regulatory steps have been taken in either of these areas, the very existence of debate is likely already making US limited partners and fund managers think twice about how they invest in China.25 And any formal regulatory action that results from these policy discussions will almost certainly act to curb future US venture investor activity in China.

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3. CHINESE VENTURE CAPITAL IN THE UNITED STATES

Chinese venture investment abroad was limited until the late 2000s by the same structural issues hampering the development of China’s domestic venture capital ecosystem. There was a paucity of experienced homegrown Chinese venture capital investors, and initially overall outbound investment was largely restricted. Beijing gradually relaxed administrative approvals for outbound investment in the 2010s, and Chinese venture investment in the United States has increased by orders of magnitude since then — albeit from a very low base.

As one of the most open and developed markets for VC investment, the United States plays an outsized role in global venture capital. North America accounted for more than 50% of all global venture fundraising each year through 2015 and has remained the most popular target each year since. Not surprisingly, the US has been the principal recipient of growing Chinese outbound venture investment flows – around two-thirds of all Chinese foreign venture transactions since 2000 have targeted American-headquartered companies. However, tight domestic Chinese fundraising conditions and new US policies intended to vet Chinese venture investment for national security threats have led to a decline in Chinese VC activity in the United States and are creating significant headwinds for future investments.

AGGREGATE VOLUME AND VALUE

Our dataset captures more than 2,140 unique venture funding rounds for US companies with participation from at least one Chinese investor from 2000 to 1H 2019 (Figure 11) – 25% more than commercial datasets based on investor domicile. Together, these Chinese entities invested $15 billion in US startups as part of funding rounds worth a combined $69 billion. This total is much lower than previously published figures not based on pro-rata estimates. Most of this activity focuses in just the last few years – three quarters of all venture transactions in the United States with Chinese investor participation took place between 2015 and 1H 2019.

Even while Chinese FDI in the US slowed sharply in 2018, VC investment continued to flourish. Chinese venture investors participated in more than 360 unique funding rounds for US startups in 2018 – the most of any year to date – contributing a record $4.1 billion (based on the latest available data). This outpaced the previous single-year record of $2.6 billion set in 2015. In line with broader US venture capital trends, Chinese VC investors gravitated towards larger, later-stage investments in 2018 compared to 2017 and earlier.

However, preliminary data from 2019 suggest a decline in total Chinese venture capital activity in the US, with total investment falling from $2.5 billion in 1H 2018 to around $1.1 billion in 1H 2019. This contraction extends across fundraising stages, target industries and investor types and has impacted state-owned investors most acutely. These broad impacts suggest systemic headwinds to Chinese venture activity, likely related to tightening investment screening as FIRRMA’s implementation continues, to deteriorating sentiment as US-China tensions have escalated and to fundraising challenges for some Chinese venture investors. This drop is also distinctively Chinese – overall venture fundraising in the United States remained close to peak 2018 levels in 1H 2019.

Despite the rapid growth of Chinese venture investment, Chinese VC investors remain marginal players in the broader US venture capital ecosystem. We estimate that Chinese parties invested in only about 2% of US companies that received venture backing from 2000 to 1H 2019, and the $15 billion these Chinese entities contributed accounts for only 1.5% of the roughly $1 trillion raised in all US venture fundraising rounds over the period. US venture investors – which account for around a fifth of all VC raised in China – have been much more important contributors to the development of China’s technology sector than Chinese venture investors have been to the development of US technology firms.
As with venture flows in the other direction, in the professional VC space these totals only include the value of investment in US startups attributable to funds controlled by Chinese fund managers in accordance with the data methodology described in Section 1. Venture capital dollars have also flowed from China to the United States through passive Chinese limited partner participation in funds managed by general partners from the US and other foreign jurisdictions. For example, Pitchbook reports Chinese investors like Tencent (DCM Fund VIII) and Ping An Insurance (StartUp Health Transformer Fund II) have been limited partners in US-focused venture capital funds managed by non-Chinese general partners. However, cases like these have been less common compared to US limited partner investments in Chinese startups through funds managed by non-US general partners.

**Figure 11: Chinese Venture Capital Investment in the United States, 1H 2010 to 1H 2019***

*Number of transactions (left); value in USD millions (right)*

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating Chinese-controlled venture fund (usually determined by general partner nationality) or other entity; value reflects the estimated proportional shares of each funding round attributable to Chinese investors. 2019 data are preliminary only. *Excludes 152 transactions with unknown dates.

**INVESTOR CHARACTERISTICS**

Private Chinese venture capital investors in the US include the same types that make up the body of US venture investors in China. These include professional venture fund investors, corporate venture investors, financial institutions, accelerators, angel investors and others (Table 4). However, private Chinese venture investors are often driven by a more complex set of commercial, financial and government policy motives, reflecting the stronger government role in the Chinese economy and innovation system regardless of formal government ownership ties. The Chinese venture investor landscape also includes formally state-owned entities (Table 5). These have no direct analogues among US venture investors in China.
Table 4: Sample Types of Private Chinese Venture Capital Investors in the United States

<table>
<thead>
<tr>
<th>Private Entities</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venture Fund Controlling Parties</td>
<td>ZhenFund - a seed stage focused venture fund manager founded in 2011 by Bob Xu and Victor Wang</td>
</tr>
<tr>
<td>Corporations</td>
<td>Tencent Holdings - A Chinese multinational conglomerate specializing in Internet-related services and products</td>
</tr>
<tr>
<td>Corporate Venture Arms</td>
<td>6 Dimensions Capital (formerly Wuxi Healthcare Ventures) - the Cambridge-based venture subsidiary of biopharma firm WuXi AppTec</td>
</tr>
<tr>
<td>Banks and Other Financial Institutions</td>
<td>Ping An Insurance - a Chinese conglomerate with interests in insurance, banking and other financial services</td>
</tr>
<tr>
<td>Accelerators, Angel Investors and Others</td>
<td>TechCode – A Beijing-based startup incubator</td>
</tr>
</tbody>
</table>

Source: Rhodium Group.

Table 5: Sample Types of State-Owned Chinese Venture Capital Investors in the United States

<table>
<thead>
<tr>
<th>State-Owned Entities</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venture Fund Controlling Parties</td>
<td>Sino IC Capital – The state-owned investment manager of China’s National Integrated Circuit Industry Development Fund</td>
</tr>
<tr>
<td>Corporations</td>
<td>Kaistar Lighting – a provincial state-owned enterprise based in Xiamen</td>
</tr>
<tr>
<td>Corporate Venture Arms</td>
<td>SAIC Capital – A Michigan-based venture subsidiary of state-owned Shanghai Automobile Industry Corporation</td>
</tr>
<tr>
<td>Banks and Other Financial Institutions</td>
<td>China Construction Bank – one of China’s “big four” state-owned banks</td>
</tr>
<tr>
<td>Accelerators, Non-Corporate Entities and Others</td>
<td>Tsing Capital - A Beijing-based venture arm of Tsinghua Holdings, which is ultimately owned by Tsinghua University</td>
</tr>
</tbody>
</table>

Source: Rhodium Group.

Private Chinese venture investors have historically accounted for most activity in the United States, while state-owned venture investors have played a more limited role. From 2000 to 1H 2019, 87% of US startups’ venture funding rounds with Chinese participation included exclusively private investors. In contrast, state-owned players participated in only 13% of all transactions over the same period (we define state-owned Chinese investors as those at least 20% owned by Chinese state-owned enterprises, ministries or other state entities).
In line with historical averages, Chinese state-owned venture participation rates in the United States remained stable (with some modest variance) between a range of 11% and 18% of all transactions from 2014 to 2018 (Figure 12). However, preliminary data from 1H 2019 suggest a drop-off in Chinese state-owned venture investment, likely in response to tightening US regulatory oversight following the pilot implementation of new investment screening policies in November 2018. We record just seven state-owned transactions in 1H 2019 involving investors like ChemChina-owned Syngenta Ventures, Shanghai International Group-owned Sailing Capital and subsidiaries of China Merchants Bank.

The mix of Chinese venture investors in the US is also dominated by professional venture funds, but not to the same extent as for US venture investors in China (Figure 13). In 2018, professional Chinese venture funds took part in 84% of all US startups' venture fundraising rounds involving Chinese investors, while more strategically motivated Chinese corporate players participated in more than 30% of these fundraisings (there is some overlap between these two groups' investments). This is a considerably higher rate compared to US corporate counterparts, demonstrating the greater role corporate venture players have in outbound Chinese venture investment. The investor mix from 1H 2019 remained close to these 2018 ratios as well. Outside of professional and corporate venture investors, other Chinese players have had comparatively marginal roles in the US.
As previously noted, investor concentration is lower among Chinese venture investors in the United States compared to US venture investors in China — the top ten Chinese VC players in the US have participated in only about 30% of all US venture transactions involving Chinese investors, while the top ten US VC players in China have participated in more than 50% of all Chinese venture transactions involving US investors since 2000. Top Chinese venture investors in the United States by transaction count include CSC UpShot Ventures, ZhenFund, Tencent, the US subsidiaries of Chinese incubator platform Hanhai Holdings (Hanhai Studio, Hanhai Investment and others), Sinovation Ventures, Oriza Ventures, Northern Light Venture Capital and others.

**ACTIVITY BY INDUSTRIES**

As described in Section 2, we assign mutually exclusive industry classifications to each investment target based on which of the fourteen Rhodium Group industry categories the company primarily services or operates in. Based on this classification scheme, Information and Communications Technology was the top target for Chinese venture capital in the US by number of venture capital transactions early in the Chinese VC boom [Figure 14]. And while the Health, Pharmaceuticals and Biotechnology and Financial and Business Services sectors have surpassed ICT in recent years, much of the activity in non-ICT sectors continues to feature target firms developing software- and app-based services. Outside of these three sectors, the other most notable targets in recent years have included Consumer Products and Services and Entertainment, Media and Education. Activity in each of these sectors is summarized below.
Figure 14: Chinese Venture Capital Investment in the US by Target Sector, 1H 2010 to 1H 2019

Number of transactions

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating Chinese-controlled venture fund (usually determined by general partner nationality) or other entity. 2019 data are preliminary only.

**Health, Pharmaceuticals and Biotechnology:** There are more health- and biotechnology-focused Chinese venture capital investors active in the United States than there are similar US venture investors active in China. Notable Chinese players include Lilly Asia Ventures (spun out from its former US parent Eli Lilly in 2009); WuXi AppTec and its US-based subsidiary 6 Dimensions Capital (formerly Wuxi Healthcare Ventures); Decheng Capital; and Shanghai ChemPartner’s US subsidiary ShangPharma Innovation. Tencent and Baidu have also been active investors in the sector. Around half of Chinese venture stakes in US Health, Pharmaceuticals and Biotechnology targets have involved cutting-edge biotechnologies, while the rest have been split between medical devices and healthcare.

**Financial and Business Services:** Top Chinese players in this sector include US-based early stage investor CSC Upshot Ventures (co-managed by CSC Group subsidiary Hone Capital); blockchain-focused Fenbushi Capital; ZhenFund; and Suzhou-based Oriza Holdings’ US venture affiliate Oriza Ventures. Several Chinese corporate venture investors have also been active, with CreditEase, Tencent and Renren notable examples. About 60% of Chinese investments in the sector have targeted business services providers, with customer relationship management, digital sales and marketing, business management and other SaaS offerings among the most common models. The financial services segment has accounted for most other Chinese activity, with financial technology (FinTech) software and blockchain technologies among the most popular targets.

**Information and Communication Technology (ICT):** Chinese venture investment in this sector has focused in software and IT services areas like cloud data and computing, data storage, cybersecurity, machine learning and autonomous vehicle software, among others. Chinese VC investors have also taken numerous stakes in semiconductors and IT equipment startups, but these segments have traditionally accounted for only a quarter to a third of total Chinese venture activity in ICT. Top players include CSC UpShot Ventures, Northern Light Venture Capital, Tencent, WestSummit Capital, ZhenFund and Sinovation Ventures. Baidu and Lenovo have also been active on the corporate venture side.
Entertainment, Media and Education: Tencent is the top Chinese VC player in this sector, with most of the firm’s related investments targeting gaming, eSports and mobile. Aside from other common top investors like CSC UpShot Ventures, ZhenFund and Sinovation Ventures, Chinese players like TAL Education Group, Ceyuan Ventures, NetEase and US-based Hanhai Studio (a joint venture between Hanhai Holdings, Xinhua Mobile Television and Tsinghua University) have also been active in the sector. Gaming, social media apps, educational apps and services, media streaming and news curation are among the most popular segments.

Consumer Products and Services: Chinese venture investment in this sector splits between US startups developing consumer devices and other manufactured products (60%), firms with mostly online consumer retail presences (22%) and startups offering consumer services, often through dedicated mobile apps (18%). Top investors include Sinovation Ventures, Oriza Ventures, Hanhai Studio, Tencent, Hone Capital and Yunqi Partners.

ACTIVITY BY TECHNOLOGIES

As with US venture investment in China, we track Chinese venture capital investment activity in the United States across more than 50 non-mutually exclusive technology areas. This coding offers unique views into which trans-industry technology areas Chinese venture investors in the US are disproportionately targeting or avoiding. Figure 15 shows the top technologies for Chinese venture investment in the United States as measured by the percent of total transactions involving each technology.

Like venture flows in the other direction, the top technology areas for Chinese VC investment in the United States have been Mobile (mobile apps and mobile communication technologies) and SaaS (“software as a service”, or subscription-based cloud software services). Other top technologies have included Life Sciences (technologies involving living organisms and life processes), Artificial Intelligence (machine learning and other AI-related software technologies), Big Data (technologies utilizing massive datasets) and FinTech (financial services technologies), to name a few.

Figure 15: Select Top Technology Areas for Chinese VC Investment in the US, 2000 to 1H 2019
Percent of total US VC transactions with Chinese investors involving each technology*
Normalizing Chinese investor technology concentrations against broader rates of investment within the US startup fundraising universe shows which technology areas Chinese venture investors in US startups disproportionately favor or avoid compared to investors from other regions. Based on transaction data from the three most recent full years (2016 to 2018), in descending order Chinese investors have tended to overweight Life Sciences, Artificial Intelligence, Oncology (cancer treatment-related technologies), FinTech, Blockchain (cryptocurrency and other blockchain related technologies), Big Data, Robotics (automated or remote controlled mechanical devices, including drones) and Autonomous Vehicles (technologies allowing vehicles to sense environments and navigate without human direction), among others (Figure 16). Notably, Chinese venture investors in the United States are significantly overweight in nearly twice as many niche technology areas than their US venture investor counterparts are in China.

Figure 16: Technology Focus Areas of Chinese and Broader VC Investment in the US, 2016 to 2018

Percent of total funding rounds for US startups involving each technology

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating Chinese-controlled venture fund (usually determined by general partner nationality) or other entity. Includes all technology areas with a 1.5% or greater difference between Chinese venture investment rates and rates among other venture investors in the US.
Based on the technology areas most overweighed by Chinese venture investors in the US in recent years, a few themes emerge: in China.

First, Chinese venture investors have maintained an outsized presence in biotechnology-and healthcare-related areas like Life Sciences, Oncology and HealthTech (healthcare-improving technologies). This has principally been driven by a cohort of health-focused Chinese VC players like WuXi AppTec and its US-domiciled venture subsidiary 6 Dimensions Capital (formerly Wuxi Healthcare Ventures), Eli Lilly spinout Lilly Asia Ventures, life science and healthcare investor Decheng Capital and healthcare-focused 3E Bioventures Capital. However, participation in this technology area has also been widespread, with more than 180 unique Chinese venture capital investors taking stakes in Life Sciences-related US startups since 2000.

Second, Chinese venture investors have demonstrated elevated interest in cutting-edge software-enabled technologies like Artificial Intelligence and Big Data. These technologies have been widely targeted by Chinese VC players in the United States, with more than 160 unique investors participating in Artificial Intelligence transactions and more than 100 investors participating in Big Data transactions since 2000. Among the most frequent investors in these technology areas have been Chinese tech giants Tencent and Baidu as well as professional venture organizations like ZhenFund and Sinovation Ventures.

Third, Chinese venture investors have emphasized FinTech, Blockchain and related financial technologies more than investors from other jurisdictions. Investors have included a mix of corporate players like CreditEase, Renren and Tencent as well as professional venture investment organizations like blockchain-focused Fenbushi Capital, blockchain and digital assets investor Digital Finance Group and digital asset management investor FBG Capital.

Fourth, Chinese venture investors have also supported US startups utilizing hardware technologies like Robotics and Autonomous Vehicles at elevated rates. Each of these technology areas has fewer standout Chinese players compared to the technologies mentioned above, but lead participants have included corporate investors DJI, SAIC, Tencent and Baidu as well as professional VC firms like Sinovation Ventures and TMT-focused Gaorong Capital.

In contrast, Chinese investor interest has lagged broader venture investment activity in the US in areas like E-Commerce (online commerce-related technologies), LOHAS (consumer-focused businesses emphasizing “lifestyles of health and sustainability”) and CleanTech (technologies minimizing human environmental impacts) and EdTech (technologies that increase teaching and learning outcomes). China’s domestic economy has thriving innovation ecosystems in areas like E-Commerce and EdTech, each of which account for a greater portion of total Chinese start-up fundraising rounds than they do in the United States. This may act to draw Chinese venture investor interest away from foreign markets like the United States where opportunities may not be perceived as attractive.

Figure 17 shows the technology areas that saw the greatest change in targeted frequency by Chinese venture capital investors in the United States from 2014 and 2015 to 2018 and 1H 2019. Among the technologies that witnessed growth in Chinese VC investor interest, relative to broad VC activity in the US there was a notable focus shift away from Artificial Intelligence and Big Data (which both saw Chinese venture investor interest growth lag overall growth in related US startup fundraising activity) towards health-related areas like Life Sciences and Oncology as well as financial areas like FinTech and Blockchain (which saw Chinese venture investor interest growth significantly outpace overall US growth). Technologies that Chinese venture investors in the United States pivoted away from most drastically over the period include Mobile, SaaS, Industrials, Wearables (consumer-tracking wearable devices) and E-Commerce.
COMMERCIAL DRIVERS AND POLICY DIMENSIONS

For a long time, the US VC market was off limits to Chinese investors due to Beijing's own policy stances, most importantly due to restrictions on Chinese outbound investment. Beijing lifted some of these restrictions and started to promote outbound investment to acquire overseas technology during the last decade, and these steps were important drivers of the post-2014 growth of Chinese VC in the US. But Chinese policy impacts have recently been more mixed, with a financial deleveraging campaign and capital controls creating headwinds. On the American side, government policy regarding foreign venture capital inflows has traditionally been hands-off, but the emergence of China as a significant foreign player has catalyzed a major shift culminating in legislation that brought certain foreign venture capital investments under the jurisdiction of US national security screening for the first time. While the commercial rationale for continued Chinese venture investment in the United States remains sound, policy factors in both nations are clouding the outlook in 2020 and beyond.

COMMERCIAL DRIVERS

Historically there was not a huge commercial appetite in China for outbound venture capital investment – domestic opportunities were abundant and promised high returns, Chinese investors had limited experience in emerging technology investments and operating in foreign markets and raising capital for offshore investments was difficult. But developments from 2000 to 2010 changed this dynamic. As China's growth continued and its traditional industry sectors matured, a growing body of Chinese high net worth individuals gained appetite for global investment in order to reduce their exposures to domestic assets and diversify risks. Asset prices in China also rose considerably (especially in technology areas), making foreign alternatives more attractive given the more reasonable valuations and perceived better opportunities for long-term investors. Finally, an increasing
number of Chinese tech firms like Baidu, Alibaba and Tencent established themselves on the frontiers of the global technology innovation system and became interested in nurturing overseas startups to bolster their own strategic capabilities.

The United States proved a natural destination for these emerging outbound Chinese venture investors. As shown in Figure 3, even today the United States accounts for 40% to 50% of global venture investment by value (the ratio is similar by count of unique venture fundraising rounds). Chinese VC investors have rushed to the United States partly because it hosts such a significant portion of all global venture investment opportunities. And Chinese players still have room to run in this regard — in 2018 Chinese venture capital investments in the US accounted for only about 16% of total Chinese venture transactions globally (including those in China). Moving closer to a market-weight presence in the United States would require Chinese venture investment in America to increase three-fold from current levels.

The vibrant and mature US venture capital ecosystem has also proved uniquely attractive to Chinese venture investors from both financial and strategic investment perspectives. US-focused venture funds have consistently performed as well as or better than those focusing on other global markets across multiple measures of performance during the last decade. Strategically-motivated corporate venture investment is also an important component of overall Chinese VC activity in the United States (Figure 14), and China’s top corporate venture investors in the US — firms like Tencent, Baidu, WuXi AppTec and CreditEase — operate in technology areas in which the United States has cutting-edge clusters offering attractive investment opportunities. And both cohorts have benefited from the vast network of US-trained Chinese academics, scientists and entrepreneurs that has grown in the last decades.

Together these commercial realities have created strong incentives for increased Chinese VC investment in the United States, and the sustained secular nature of these drivers means this commercial logic will remain powerful through the foreseeable future. Short-term perturbations like the recent Chinese tech sector downturn or an eventual recession in the US economy may temporarily dampen commercial appetites, but in the absence of other more powerful forces we expect market-driven Chinese venture investment interest in the United States to continue to grow in the long-run.

CHINESE POLICY

For most of the past 40 years, Chinese outbound VC has been limited by Chinese structural policy impediments, but legal and regulatory reforms catalyzed the emergence of a thriving local venture capital industry that in turn fueled outbound VC investment. But today, Chinese outbound venture investors contend with a mix of Chinese policies that impact outbound VC flows. Some of these policies encourage greater activity, while others are stifling.

FINANCIAL AND LEGAL SYSTEM

Venture capital did not play a major role in China's financial and innovation systems until recently due to a lack of key enabling elements. This stifled the development of competent domestic VC players possessing the means and aspirations to invest abroad. As noted, Beijing only started to refine the regulatory frameworks for onshore venture capital in the early 2000s. Other key steps followed. In 2005 China formally recognized limited partnerships for domestic venture capital organizations, and in 2013 officials clarified that venture investment would be regulated by the CSRC with overarching guidelines determined by NDRC. Parallel to this, China took steps to nurture a more competitive financial system and a booming technology industry. As China's technology startup ecosystem evolved in the 2000s and early 2010s, a wave of competent Chinese venture capital investors and mature multinational corporate venture players emerged with the experience and resources necessary to invest abroad. This process

continues today, with new outbound venture investors joining the fray each year.

**INDUSTRIAL POLICY**

Beijing’s increasing focus on outbound investment as an industrial policy tool has also been an important factor in outbound venture capital growth in the 2010s. At the most abstract level, Beijing has explicitly endorsed outbound investment as a tool to access foreign technology and know-how. This endorsement has been important signaling for Chinese investors and has also allowed them to access capital from domestic banks to finance transactions in specific industries and technologies.

Beyond high-level support, Beijing has also directly set up and financed entities that engage in overseas investment, including venture capital. For example, in 2014 China established the National Integrated Circuit Industry Development Fund [National IC Fund] tasked with investing in domestic and foreign semiconductor targets to boost China’s capabilities. With initial reported funding of $21.8 billion, the Fund has made investments in foreign semiconductor firms both directly and through a host of Chinese intermediaries.27 For example, the Fund took a stake in US-based carbon nanotube memory chipmaker Nantero in 2018.28 The National IC Fund has also been involved in acquisitions of US firms that previously received Chinese venture backing, rewarding those investors with attractive returns and incentivizing other Chinese venture players to seek similar opportunities. For example, California-based mixed-signal chipmaker Analogix Semiconductor was acquired by a consortium including the National IC Fund in 2017 following venture investments in the firm by Keytone Ventures. In July 2019 Beijing reportedly completed fundraising for a second, larger National IC Fund.29

China’s party-state is also increasingly pulling nominally private Chinese firms into the pursuit of industrial policy objectives. In 2017 China made Baidu, Alibaba, Tencent and other major technology firms members of an AI “national team” to accelerate Chinese technology leadership in artificial intelligence, assigning each company an AI technology niche area to focus on.30 Party committees have become common within tech companies like Sina and Baidu.31

While this industrial policy push has generally been a boost for outbound Chinese VC activity, it is also in no small part responsible for backlash in the US and other host countries as policymakers are concerned about politically motivated transactions and leakage of technology with military applications. This backlash has already soured the investment opportunity set for state-related firms as well as the broader set of commercially motivated private Chinese firms.

**CAPITAL CONTROLS**

For a long time, Beijing enforced tight administrative controls on outbound capital flows to foster domestic capital...
deepening and prevent balance of payments crises. These controls were a major impediment for outbound investors as only firms with special status (like China International Trust Investment Corporation, or CITIC) and those awarded explicit mandates were permitted to invest abroad. But as domestic industrial capacity mushroomed and foreign reserves piled up, global interests expanded, and policymaker priorities changed as Beijing sought higher returns on its international investment position than those afforded by holding US Treasuries. This permitted Chinese venture and other investors to access foreign markets at scale for the first time beginning in the late 2000s. However, this Chinese regulatory loosening has not been inexorable: worried by net capital outflows and risky overseas investments by some firms, Beijing re-tightened numerous outbound controls beginning in 2016, making it more difficult (but not impossible) for Chinese venture players to invest abroad.

Notably, many Chinese venture investors have grown more sophisticated in offshore fundraising, which allows them to shake off the leash of Chinese capital controls. For example, Alibaba has completed at least $88 billion in US dollar denominated fundraising activity since 2000, including $31 billion from dollar-denominated corporate bond issuances, $32 billion from dollar-denominated loans and credit lines and $25 billion raised via direct US stock offerings. These offshore financing activities have provided the firm with ample means to engage in foreign venture investment without having to take money out of China. Chinese venture fund managers now also regularly raise funds from US and other limited partners in foreign currencies and domicile their investment fund limited partnerships in tax havens like the Cayman Islands, allowing them to avoid the need to wrestle with Chinese outbound controls. As a result, Chinese capital controls have become less singularly important for venture capital flows, but they remain an important impediment to venture investors that rely on onshore funds.

**LIQUIDITY AND FINANCIAL DELEVERAGING**

Chinese monetary and financial policies have been important drivers for the trajectory of China's venture capital industry and outbound VC flows. China's financial system expanded rapidly after the global financial crisis thanks to massive stimulus and credit growth – total assets in the banking sector more than quadrupled from 2007 to over 230 trillion yuan by the end of 2016. This rapid liquidity expansion was in part responsible for fueling the sky-high Chinese valuations that pushed many Chinese VC investors to look overseas in the early 2010s. However, since the end of 2016 Beijing has reversed course and tightened the pace of monetary expansion to address heavy debt burdens and other systemic risks, leading to bank asset growth rates of just 8.4% in 2017 and a multi-year low of 6.8% in 2018 (with a modest recovery so far in 2019).

This process of financial deleveraging and especially efforts to reign in shadow banking activity have impacted the formation of new Chinese venture investment funds and reduced the availability of new venture capital dry powder in China in the last two years. For example, Beijing’s deleveraging crackdown on shadow banking activity has included policies meant to discourage investment vehicles called wealth management products (WMPs). This action has removed an important funding source for many smaller Chinese VC funds, as Chinese financial institutions have often used proceeds from the sale of high-yield WMPs to invest in venture capital funds. As broader assets held by Chinese non-bank financial institutions have contracted over the last few years, the formation rate of new China-domiciled venture capital funds has fallen in tandem from a peak of more than 1,300 in 2015 to less than 300 in 2018. This worsening fundraising environment is partly responsible for the Chinese technology market deceleration that began in 2018, and it continues to limit the scope of Chinese venture capital dry powder available to invest abroad.

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32 Source: Bloomberg.
34 Huang and Tian 2019 (38).
Openness to foreign participation has been a key feature of the liberal US innovation system, and the inflow of foreign capital has traditionally been considered a positive net contributor to US innovation lacking any significant security implications. However, China's rise as a VC investor and technological change have combined to change this long-held risk perception, culminating in the passage of new legislation in the United States (FIRRMA and ECRA) and presenting headwinds for future Chinese venture capital investment in the US.

RE-THINKING TECHNOLOGY LEAKAGE RISKS

The potential leakage of sensitive technology through foreign investment has been a significant US concern for decades and was a key driver behind setting up CFIUS in 1975 to scrutinize foreign acquisitions. However, investment security reviews were historically limited to transactions resulting in significant ownership and control of established US companies (which in practice came to mean stakes of at least 10%). Venture capital investments often stay below that threshold and were thus commonly exempted from US investment screening reviews. But two major factors led to reevaluation and reform of this long-standing system and ultimately to policy reform in 2018:

For one, policymakers recognized that technological change has made it increasingly difficult to distinguish strictly civil from potentially strategic emerging technologies. This is not a China-specific concern. To the extent venture investments in US startups developing cutting-edge dual use technologies are assisting foreign investors in developing technical mastery, these investments may also be augmenting other nations’ strategic capabilities, including those of geopolitical rivals. For example, mastering the latest tools in commercial autonomous navigation technologies confers the ability to deploy those same tools in military arenas, regardless of how benign the applications were in which that mastery was originally obtained. As startup venture capital financing has become the nexus of development for many potentially sensitive strategic technologies, policymakers saw a need to extend regulatory oversight to venture transactions falling outside the traditional screening scope.

China’s rise as a significant VC investor in the United States was the second major force behind the shift in US attitudes. Chinese venture investors have rapidly expanded their VC footprints in the United States, focusing on potentially sensitive technologies including artificial intelligence, autonomous vehicles, robotics, augmented and virtual reality and gene editing on a growing scale. Moreover, policymakers came to believe that Beijing can leverage venture capital investment for strategic purposes in ways that are harmful to US national security. Beijing's ambitious programs to bolster strategic technological capabilities through foreign venture investment (e.g. in the semiconductor space35) fueled these views, as did Chinese government cooperation with private firms (e.g. through programs enlisting private companies to help develop Chinese superiority in certain technology areas).36

Against this backdrop, US lawmakers and the security community perceived several specific ways Chinese entities could utilize venture capital investment to access valuable technology and information in the US while side-stepping the existing investment review regime. Some of these potential regulatory holes included:

- **Electing not to notify CFIUS of sensitive transactions**: The previous CFIUS regime involved voluntary filings, and some feared that Chinese investors could acquire stakes in US firms with sensitive assets without filing for

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35 VerWey 2019.
CFIUS approval and that these transactions would not be detectable by government officials (which still had the authority to initiate reviews of undisclosed transactions) due to their low profile and private nature.

- **Obfuscating ultimate investor ownership through complex investment structures:** Observers worried that complex ownership structures — including those utilizing the limited partnership structures described in Section 1 — could help certain Chinese investors to obfuscate questions of ownership and control, helping them to complete transactions that would not otherwise have been granted clearance.

- **Avoiding reviews through collusion and gaming of ownership thresholds:** Some also made the argument that China’s reach into the business decisions of both state-owned and private investors created an avenue for cooperation among Chinese parties that could allow them to exert combined influence over investment targets even where individual stakes did not trigger investment review thresholds.

**EVIDENCE**

These concerns may appear alarmist at first glance, and the US government has not produced any “smoking gun” evidence showing that Chinese venture capital investments have led to the direct leakage of sensitive US technology to China in ways that have harmed US security. However, the national security agencies within the US government are tasked with identifying threats before they materialize (i.e. whether somebody is pointing a gun at the United States), and there are cases that illustrate how some of the general concerns about Chinese behavior are valid.

First, concerns about the lack of voluntary disclosure partly stem from many Chinese technology firms deciding not to file for CFIUS clearance in connection with their earlier investments in US firms. For example, in the last two years CFIUS has publicly initiated retroactive reviews of acquisitions involving acquired US companies like dating app provider Grindr, social media app TikTok and patient health data technology firm PatientsLikeMe. Policymakers assumed that the incidence of Chinese firms investing in sensitive technologies and assets through high-profile M&A without notifying CFIUS was indication that Chinese parties were also likely targeting sensitive US assets through venture capital and other private equity transactions without regulators noticing.

Second, concerns about state-affiliated actors using limited partnership structures as cover to hide the origin of investments became acute following the failed attempt by Canyon Bridge Capital to acquire US-based Lattice Semiconductor in 2016. Canyon Bridge used a limited partner fund structure with a US-based general partner leveraging capital from state-owned China Venture Capital Fund Corporation as a limited partner. Canyon Bridge was accused of not being forthcoming about these ties, and US lawmakers criticized the structure as attempting to "obfuscate the involvement of numerous PRC state-owned enterprises during the Committee on Foreign Investment in the United States review process."37 Several venture capital firms that operate in the United States have state-owned firms or similar funds as limited partners (reported examples include DHVC, Amino Capital and WI Harper Group, among others). State-owned limited partner investor participation does not automatically mean a transaction is problematic, but the potential non-market orientation of these players raises flags.

Finally, certain past transactions underscore the risk of collusion. Our dataset includes many transactions with two or more Chinese investors. In some cases, these investors are bound together by industrial policy or other designations that could make collusion more likely than for foreign investors from countries without such industrial policies and a legal system that offers protections against government interference. For example, Alibaba and Tencent — both declared national champions in developing certain technologies in China — have coinvested in multiple US venture-backed startups since 2000. There are also transactions in our dataset that suggest more active collusion by Chinese entities that are tied to the same government funds. For example, in 2017 a US-based semiconductor

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technology startup reportedly received separate investments from two Chinese semiconductor funds backed by China’s National IC Fund. Together these transactions culminated in a significant minority ownership stake and an observer seat on the US firm’s board of directors. These transactions were never publicized.

FIRRMA AND ECRA

A bipartisan consensus around the importance of these potential threats to leakage of US technology led to the passage of FIRRMA and ECRA in August 2018. FIRRMA closed existing regulatory gaps by making several changes to the CFIUS process and CFIUS jurisdiction. Among these changes, the law introduced required notifications for transactions involving targets in sensitive sectors as well as significant financial penalties for failing to make required disclosures; created the ability for regulators to request detailed information on all covered investors’ fund structures and beneficiary owners under threat of perjury; and gave CFIUS authority to review transactions in sensitive targets involving stakes below 10%, including those granting investors board seats and other avenues of influence. Meanwhile, ECRA gave regulators new tools to control the transfer of US technologies to foreign entities, creating additional safeguards for controlling US-developed technology and disincentivizing Chinese investors with strategic policy motives and ultimate intent to transfer technology back to China from targeting US firms.

FIRRMA and ECRA helped resolve US concerns about Chinese venture capital investment in ways that allow the United States to remain largely open to Chinese and other foreign VC investor participation. However, newly imposed regulatory burdens like mandatory filings for certain transactions and the decreased attractiveness of US technology start-ups under the strengthened export controls regime complicate the math for future Chinese venture investment in the United States. Aside from the additional regulatory burden, investors are also impacted by the uncertainty of not having clarity on major cornerstones of the new regimes (such as a finalized list of “emerging technologies” covered both by export controls and CFIUS) and the broader tensions between the US and China. The slowdown in Chinese VC investment in the US since late 2018 partially reflects these complications, and anecdotal reports suggest that many (especially smaller) Chinese players are now rethinking their US strategies. And while passive Chinese investment in US start-ups through limited partner contributions to US-managed funds should in theory not be heavily impacted by FIRRMA, in practice many funds are re-thinking their strategies and have become much more cautious about inviting limited partners with Chinese citizenship. Given these realities, FIRRMA and ECRA are likely to discourage many Chinese investors previously active in the United States from investing there in the future.

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39 Based on authors’ discussions with industry practitioners.
4. OUTLOOK: CHALLENGES FOR POLICYMAKERS

The US-China relationship has shifted dramatically since 2017, moving from engagement to strategic competition. This sea change is affecting trade, cross-border capital flows and all other facets of the economic relationship. As illustrated in this report, two-way venture capital investment between China and the United States has not escaped impacts.

After peaking in 2018, bilateral VC investment subsided in both directions in the first half of 2019. We estimate American VC investment in China dropped to less than $4 billion in 2019 from more than $11 billion in 2018 alone, reflecting a correction in the Chinese technology industry and growing political scrutiny of US firms’ exposure and activity in the Chinese tech sector. Meanwhile, Chinese VC in the US likewise saw steep declines to an estimated $2 billion for the full year 2019 after peaking at more than $1.7 billion in 1Q 2018. Part of this downturn is explainable by technology market turbulence in China, but political tensions and regulatory changes such as the passage of FIRRMA and ECRA are also important factors.

![Figure 18: US-China Venture Capital, 1Q 2015 to 4Q 2019](image)

Number of transactions (left); value in USD millions (right)

Source: Rhodium Group based on Pitchbook, Crunchbase, Bloomberg and proprietary research. Transactions count includes all funding rounds with at least one participating Chinese- or US-controlled venture fund (usually determined by general partner nationality) or other entity; value reflects the estimated proportional shares of each funding round attributable to Chinese or US investors. 2019 data are preliminary only.

US policymakers must make important decisions in 2020 that will serve as an important test case for the ability to deal with the changing political relationship with China in a responsible way that does not undermine economic welfare and the principles of our market-based and open innovation system. At this watershed moment US policymakers face the following challenges:

First, leaders must agree on a broader framework that avoids disruption and unproductive de-coupling without purpose. It is now apparent that some degree of de-coupling is unavoidable given diverging economic models and geopolitical competition. This process is already happening regardless of tenuous trade deals that may or may not stick. However, potential outcomes range between selective measures focused on core national security and more severe actions that gratuitously disrupt commercial interaction. Not only would the latter outcome diminish economic welfare unnecessarily, it would also be detrimental to national security interests by raising costs for
non-strategic, non-sensitive inputs [diverting scarce resources]. This heavy-handed approach would further alienate allies and innovators from third party nations who would otherwise operate in the US. It is possible to sort out necessary and unnecessary areas for partial separation, and policymakers need to work on defining what a rational and non-disruptive dis-engagement model looks like and how to get there. Consensus on a broader framework for future US-China relations is a prerequisite for market confidence that collaboration and commercial exchange will not fall victim to extreme national security risk avoidance.

Second, for engagement to remain in our playbook, policymakers must articulate China-specific security and economic concerns more narrowly and create transparent and predictable regimes to that mitigate concerns. The expansion of US scrutiny of foreign participation in early stage technology financing through FIRRM and ECRA has been a bumpy process, and many important questions remain unresolved. Three concerns stick out: that government has not yet adequately defined theories of harm related to venture capital; that regulatory processes are overly complicated, cumbersome and lengthy; and that investors remain in the dark about key concepts of the new regime and its implementation, most importantly how “emerging” and “foundational” technology lists will be defined and applied going forward. As we approach the February 2020 deadline for FIRRMA implementation rules, regulators and lawmakers must quicken efforts to address these problems and create a new regime that is targeted, transparent and coherent.

Third, leaders must carefully weigh marginal increases in national security from defensive tools against the economic and security costs of limiting foreign participation in the US technology sector. In addition to the design of specific regimes like CFIUS, US leaders must also consider what the totality of these new defensive tools will mean for the structure and long-term competitiveness of the US technology sector. Research has highlighted that the combination of lower public funding for research and more restrictive trade, investment, export control and immigration policies could erode long-term US innovation system fundamentals. Think tanks have put it more bluntly: “The administration is over-weaponizing trade and investment policy, with costs to U.S. innovation.” (CFR 2019, 52). This is an ongoing discussion within US government, especially in defense and intelligence circles.

Figure 19: Share of Foreign Nationals in US Engineering Students, 1981-2017

Percent share of total

Source: National Science Foundation.
This perspective is especially important for the early stage technology funding space. Startups are powered by entrepreneurs, scientists and engineers. These people usually have high mobility and a large share of US startups depend on foreign talent: The majority of American “unicorns” [private startup companies valued at $1 billion or more] over the past two decades were founded by immigrants, and more than 80% of these companies had immigrants in key management or product development functions. The importance of foreign-born entrepreneurs and technology workers is unlikely to decline: Latest data shows that more than half of graduate students and two thirds of postdoctoral researchers in engineering are foreigners (Figure 19), and the percentage is even higher for subjects like computer science. Some of the new defensive policy tools currently under discussion or in implementation stage could seriously undermine the long-term attractiveness of the US as a location for entrepreneurs. The marginal national security gains from expanding the range of defensive tools must be weighed against the harm from a relative decline of the US position as a global innovation leader.

Finally, the US has an important global leadership role in re-drawing national security boundaries for engagement with China, but those efforts will only be effective if allies and other aligned countries follow suit. As US policymakers are overhauling regulatory regimes, they must not forget the international environment. Thus far the United States has not done an ideal job coordinating with its allies on a coherent China strategy in response to security and economic concerns. This is especially clear in early-stage technology funding. With the US being the dominant global VC market for decades, Washington has not spent much time thinking about how restrictive US policies could divert Chinese capital to other countries. Already we are recording strong growth in Chinese VC activity in allied economies (such as Israel and the UK) as well as emerging economies with attractive startup markets (for example India or Southeast Asia) in response to higher US investment screening hurdles. Likewise, tougher export control rules are driving Chinese firms to establish R&D operations in Canada and Europe instead of the United States. This beginning trend of regulatory arbitrage not only undermines the effectiveness of US policy to control the leakage of sensitive dual use technologies to China, but it also further erodes the position of the US as a global innovation hub.

While all eyes are on Washington, policy decisions in China also continue to shape flows in both directions. Beijing’s economic and industrial policy choices have triggered overseas anxiety about Chinese capital, and these policies will remain central to the perception of Chinese investment abroad. Other structural issues — such as cross-border capital controls — also influence the level and composition of flows in the VC space. Finally, Beijing is grappling with the basic question of openness vs nativism for developing its technology ecosystem. Our research has shown how critical American venture capital has been for the development of China’s technology sector and how tightly connected the success of Chinese technology firms remains to engagement with US companies [as suppliers] and markets [including the financial system]. A growing trend toward technology nativism is a worrisome development that will diminish China’s access to these resources, with implications for global innovation and economic welfare.

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REFERENCES


