

# Technology, China, and the New U.S. Industrial Policy

A Bay Area View of Economic Relations with  
China in 2023

February 2023

## Introduction

In the 2000s, from China's entry into the WTO in 2001 to 2016, San Francisco Bay Area companies were at the heart of an expanding technological web linking the United States with China through trade but particularly through investment. China at that time was the core of a global model of offshore production targeting worldwide markets. As its economy and capacity to innovate grew, inbound investment shifted to include production for Chinese markets. Bay Area companies increased their investment in R&D and venture investment from the region flowed to Chinese startups. Returning the favor, in the mid-2000s large Chinese companies such as Tencent, Baidu and Alibaba established technology offices in the region and Chinese venture firms opened Bay Area offices to invest in local startups – often with the goal of bringing their technologies or production back to China.

The accelerating deterioration of US-China relations that visibly began in 2016 has dramatically altered this pattern, though key elements of partnership remain.

## Investment

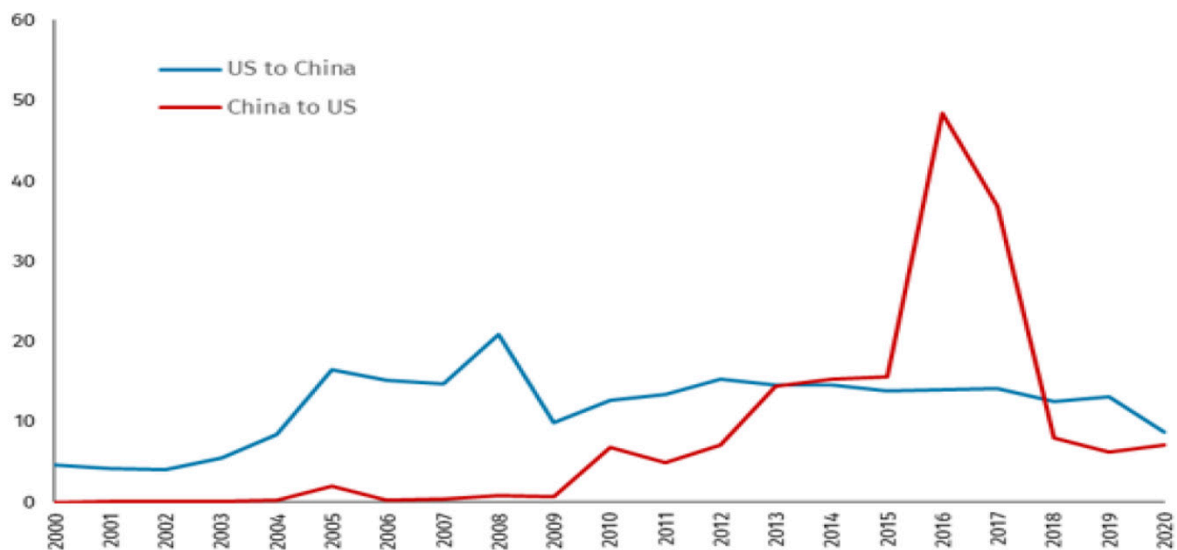
Since peaking in 2017 investment, a key to economic integration, has declined sharply. 2020 was a significant turning point. With pandemic-related disruptions and rising tension in the relationship, two-way US-China foreign direct investment (FDI) fell to \$15.9 billion, its lowest level since 2009. U.S. investment in China fell to \$8.7 billion, a drop of one-third from the year before and the lowest level since 2004. Acquisitions saw a steep drop and greenfield projects were flat.

Two-way venture capital investment also declined, measure by both deals and value. Chinese venture investment in the U.S. increased slightly, but US venture investment in China dropped to its lowest level in five years. There were 247 unique funding rounds, down from the previous year's total of 306; the value of that investment dropped even more sharply to \$2.5 billion, just half of 2019's total and a fraction of the almost \$20 billion recorded in 2018.

The San Francisco Bay Area drove this trend, as Bay Area firms led the surge of venture capital into China,

**Figure ES-1: Annual Value of FDI Transactions between the US and China, 2000-2020**

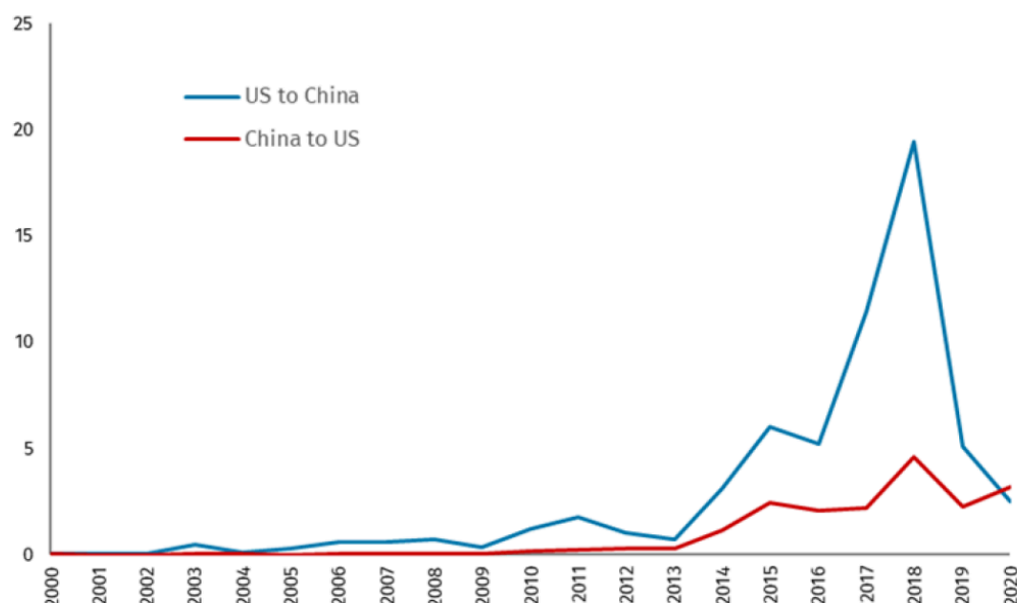
USD billion



Source: Rhodium Group.

**Figure ES-2: Annual Pro-Rata Value of VC Transactions between the US and China, 2000-2020\***

USD billion



Source: Rhodium Group based on Bloomberg, Pitchbook and other databases. \*Pro-rata value determined as proportional share of each funding round's value: Chinese or US investors based on the number of participating investors. See Appendix for data description.

and China's foreign direct investment in the United States was concentrated in just three places: New York, Los Angeles and San Francisco.

The drop in inbound investment from China had two major causes. The first – in real estate development and traditional acquisitions – was the imposition of capital controls by China's government, which wasn't overtly political. The second – in venture investment and technology acquisitions – was clearly political, based on growing U.S. government concern with the leakage of critical technologies.

What happens next will depend on several factors, including the duration and severity of Beijing's COVID restrictions and perceptions by U.S. companies of their long-term viability under Beijing's "dual circulation" policy of domestic self-reliance and industrial policies in Beijing designed to supplant overseas companies with domestic champions. As 2023 begins the outlook is less than promising.

## Pieces of the Puzzle

Several dynamic elements are in play:

**Trade:** In 2021 China was the San Francisco-Oakland MSA's (Metropolitan Statistical Area) second largest export market at \$3.8 billion, behind Korea (\$4 billion) and ahead of Japan (\$2.7 billion). China was the San Jose-Sunnyvale-Santa Clara MSA's largest export market at \$2.43 billion, ahead of Mexico (\$2.1 billion) and Canada (\$1.9 billion). The region's global exports are dominated by technology, computers and electronic equipment, and machinery. Last year, despite a second-half drop in imports caused by lockdown-induced disruptions in China, U.S. exports grew slightly (1.6%) from \$151 billion to \$154 billion, and imports grew faster (6.3%) from \$505 billion to \$537 billion. Total trade exceeded \$690 billion.<sup>1</sup>

Absent a major recession, bilateral trade is likely to grow again in 2023 as pandemic restrictions and supply chain issues in China recede. Trade will





continue to present a conundrum, however. China's 3% growth rate in 2022 was the slowest in decades with 5.2% expected this year. The IMF expects the economy to grow at an annual rate of 3.8% over the next five years – far from the 8-10% that until recently fueled its markets. With the bilateral trade gap persistently high, the trade war with China launched by former President Trump has failed but the tariffs imposed in that era remain in place and there is no indication that the Biden administration plans to reduce them or renew negotiations for market access.

**The Committee of Foreign Investment in the United States (CFIUS)** reviews inbound foreign investment for security concerns. Since 2018 its staffing and authority have increased, driven by concerns regarding China's strategic intentions. In a change from past practice, CFIUS now reviews not only acquisitions of U.S. firms but also

minority investments that would give a foreign investorexposure to critical technology or personal data, or a role in a company's decision-making process.

CFIUS doesn't explicitly bar investment from China, and it doesn't review greenfield investments (so a Chinese company can open a wholly-owned research or manufacturing facility in the U.S. without seeking CFIUS approval). But its expanded powers can serve as a deterrent to potential applicants who could face an extended approval process and possible denial. In 2021 CFIUS reviewed a record number of transactions, with "declarations" (filed by companies for simpler transactions) up 30% over 2020, and "notices" (filed by companies with more complex transactions) up 45%. In the same period the number of CFIUS investigations doubled. That year saw the highest number of notices withdrawn (many were

refiled later to address identified national security concerns). Nine applications were fully withdrawn. Transactions involving U.S. financial and technology companies accounted for the highest number of filings, and Chinese investors triggered the largest number of notices (more than doubling from 17 in 2020 to 44 in 2021). Ten Chinese applications were approved.<sup>3</sup>

**U.S. and foreign business views** are shifting with the changing perception of risk. The latest survey by the American Chamber of Commerce in Shanghai shows that while US companies in China on the whole are still profitable, many are reconsidering their long-term presence as political pressures grow, the role of state-owned enterprises (SOEs) expands, and COVID restrictions impact their operations: Most respondents (75%) report being profitable in 2021.

- 47% projected year-on-year growth in 2022, a 29% drop from 2021 and the lowest level of expectation in 10 years.
- 52% reported that their confidence in China's economic management had worsened, and only 18% ranked China as #1 in their global investment plan, down from 27% in 2021.
- The number of companies describing themselves as optimistic about their 5-year business outlook fell to 55%, a 23% drop and the lowest in the survey's history.
- While most report no change, 19% are reducing their investment, with zero-COVID the main reason.
- Most are keeping their existing operations in China with a focus on localization, but many are looking to other markets.
- While 30% are increasing their investment, one-third have redirected planned investments in China to other destinations in the past year, double the number the previous year.
- Only 17% said government policies and regulations toward foreign companies had improved in the past year, down 19% from 2021, while those reporting worse conditions rose 14 points to 36%.

- Only 37% described the regulatory environment as transparent (a drop), while more than half (56%) reported government favoritism toward local companies (an increase).

Much of the Foreign Direct Investment now taking place in China represents reinvestment of revenues generated there, not greenfield investment. Equity investors are also increasing their focus on opportunities outside China.<sup>4</sup>

## **Reshoring, Nearshoring and Friendshoring**

Federal policies designed to limit Chinese access to cutting edge technologies, and internal business assessments of long-term risk, are driving the diversification of global supply chains - with the goal of reducing dependence on any one country for critical products or components. Smaller companies in particular are leaving China due to supply chain and COVID concerns, intellectual property issues, and the complexity of operating in China's current political environment.

As U.S. companies reconsider their options, Vietnam, India and Mexico are positioned to be the leading beneficiaries. As one example, Apple's new generation iPhones have historically been produced by contract manufacturer Foxconn in Southern China, but in 2022 the company began producing its latest model – the iPhone 14 - in India and is expected to expand production there further in 2023. While Apple had produced older models in India, manufacturing its top-end product marks a significant shift in strategy.

Mexico benefits from short supply lines, talented engineers, and the regulatory stability provided by the US-Mexico-Canada Agreement (USMCA). U.S. and other global companies are showing new interest in Mexican tech centers such as Guadalajara. While their supplier networks are less deep and their operating environments are more expensive than China's, India and Mexico both benefit from more transparent market and legal systems and geopolitical alignment with the United States.

Some reshoring is also taking place. Due to its high costs the Bay Area isn't a major destination for

returning companies, but proximity to R&D provides one advantage. Apple suppliers, for example, are also moving closer. Of Apple's 180 suppliers, 48 had manufacturing in U.S. as of September 2021, up from 25 one year earlier. More than 30 of those 48 production sites were in California. While Apple remains dependent on Asian production, U.S. and California facilities are becoming more important.

While supply chain diversification is clearly underway, it will be difficult for many companies to replicate or separate themselves from China's production system, with its competitive costs and vast and efficient base of suppliers. This suggests that Bay Area and other U.S. companies will continue to rely on China's production capacity, even as pieces of the supply chain are redistributed.

**Semiconductors** are a part of the supply chain equation. The CHIPS Act passed by Congress in 2022 aims to increase semiconductor manufacturing in the United States, even as U.S. policy looks to diversify global supply chains by concentrating the production of advanced chips in friendly or aligned countries (the United States accounted for 37% of global production in the 1990s, a number that has fallen to 12% today). Part of the impetus for the CHIPS Act stems from U.S. and global dependence on semiconductor production in Taiwan, where TSMC is the world's leading supplier of advanced chips, and the vulnerability of that highly critical source of supply to a potential Taiwan-China conflict. The CHIPS Act represents a significant turn in the United States toward industrial policy – an economic strategy where the government chooses to underwrite specific industries.

Separate from the CHIPS Act, which at its heart is an investment in U.S. competitiveness and capacity, U.S. policy aims to restrict China's access to advanced chips and chipmaking equipment. This is happening through export controls that require licenses for

the transfer or sale of a growing range of products, particularly to government or military-affiliated firms. Approximately 600 Chinese firms, including a growing number in the semiconductor sector, are on the Entities List, which requires a license for the sale of products or services. U.S. as well as Chinese companies are affected. Due to restrictions imposed

in October 2022 Bay Area semiconductor companies KLA and Lam Research froze their engagement with China's advanced memory chipmaker Yangtze Memory Technologies, including support that had been provided for already installed equipment. Advanced chip makers in China are also restricted from buying semiconductor manufacturing equipment or parts from U.S. companies. In response Applied Materials, which generates 27% of its global sales in China, cut its sales projections for the last quarter of 2022 by \$400 million, and Lam Research reported that it expected to lose as much as \$2.5 million in sales in 2023.<sup>5</sup> U.S. semiconductor companies have also expressed concern that losses in China's market, the world's largest, may in the end impact their capacity to innovate as profits from Chinese sales won't be available to invest in R&D.

While U.S. restrictions on the export of semiconductors and other technologies to China will limit Chinese capabilities in the short-medium term, they are already accelerating China's focus on self-reliance and the development of its domestic technology ecosystem. With U.S. vendors increasingly considered unreliable due to U.S. policy restrictions, American technology companies may over time be seen in China as suppliers of last resort.

U.S. trade restrictions also bring compliance risks for U.S. exporters. The Uyghur Forced Labor Prevention Act signed into law in December 2021, for example, creates a rebuttable presumption that any manufactured goods produced wholly or in part in the Xinjiang Uyghur Autonomous Region are produced with forced labor and are therefore prohibited.<sup>6</sup> Providing the level of documentation required to prove that forced labor was not used poses a particular challenge for smaller companies. There are risks from China as well, as Chinese law penalizes compliance with U.S. sanctions; though rarely enforced that could change.

It should be noted that although restrictions on the export of semiconductors have intensified, two-thirds of license applications for technology exports to China are approved. Of the licenses applied for in 2021, valued at \$545 billion, 526 were denied, 1407 were for a variety of reasons returned without

action, and 3990 valued at \$229 billion (67.4%) were approved. While the rate of approval for China was lower than for applications covering all destinations (67.4% vs 86.1%)<sup>7</sup> this suggests that in practical terms the requirement for an export license does not come with a presumption of denial and a strong flow of technology trade with China continues.

**Research collaboration** is also on the table. Chinese students, who began coming to the Bay Area in large numbers in the 1990s, heavily populate the graduate departments of computer science and engineering departments at universities such as Stanford and Berkeley. 2849 Chinese students were enrolled at Berkeley in the Fall of 2022, the largest number from any single country (India had the second largest number with 1,000). Half of those (1,403) were at the graduate level, with many concentrated in the Department of Engineering. Enrollment from China fell 1.6% from 2021-2022.<sup>8</sup> In 2021 Stanford hosted more than 1000 students and scholars from China.<sup>9</sup>

Faced with perceived hostility and pressure on Chinese-origin, faculty and academic researchers through the Department of Justice's now-withdrawn China Initiative, a growing number of Chinese scholars are leaving the United States or switching from U.S. to Chinese institutional affiliations. Others may never come. While the overwhelming majority (89%) of respondents to a 2022 survey conducted by major U.S. universities indicated that they would like to contribute to U.S. leadership in science and technology, 42% were fearful of conducting research in the U.S., 61% felt pressure to leave the U.S., and 45% intended to avoid applying for federal grants. Pressure was most acute on faculty in fields such as engineering and computer science.<sup>10</sup> This mirrors findings in a similar survey conducted by the Committee of 100 and the University of Arizona in 2021 that a high percentage of both Chinese and non-Chinese scientists believe that Chinese scientists make important contributions to research in their fields, and that collaboration with Chinese is important to their work; that limiting collaboration with China will have negative impacts on their research projects and academic disciplines; and that many Chinese scientists (42.2%) felt they were being racially profiled by the U.S. government.<sup>11</sup>

Collaboration between U.S. and Chinese scientists has been highly productive of cited publications and cutting-edge research.<sup>12</sup> and Silicon Valley's economy has particularly benefitted from the contributions of Chinese students, faculty and graduates who have stayed to contribute to the economy. B Building walls between research communities in China and the United States will negatively impact innovation, and Bay Area research universities are working to balance academic openness with recognized security concerns.

## Looking Ahead

The outcome of the just-concluded Party Congress offers little reassurance that the Chinese and American economies won't continue to diverge, and a continuing deterioration in the coming years is likely unless a new floor can be put under the relationship. The meeting of President Biden with China's President Xi Jinping in Bali in November may have accomplished that, though careful management by both sides will be needed. Either way, the Bay Area's economy will remain closely entwined with China's even if the scope of that engagement continues to narrow.

While the outlook for U.S.-China economic relations is clouded, some news is positive.

■ U.S. and Chinese regulators have agreed that U.S. inspectors from the Public Companies Accounting Oversight Board (PCAOB), can inspect the records of China-based audit firms, forestalling the de-listing of Chinese companies from American stock exchanges under the Holding Foreign Companies Accountable Act. Until December 2022 Chinese regulators had refused to allow the PCAOB to inspect Chinese-based accounting firms or routinely access the audit records of Chinese companies. As a consequence, by the summer of 2022 more 160 Chinese companies had been identified by the Securities and Exchange Commission for possible delisting. The breakthrough substantially increases protections for U.S. investors in Chinese securities. Prior to the agreement many U.S.-listed Chinese companies had moved to add listings in Hong Kong.<sup>13</sup>

- Also in December, Chinese regulators resumed granting publishing approvals for foreign videogames, ending a freeze that began in the summer of 2021.<sup>14</sup>
- In September Tesla delivered 83,000 units from its wholly-owned plant in Shanghai, a monthly production record that puts it neck and neck with Chinese automaker BYD for leadership in China's growing EV market. Cars produced in Shanghai accounted for more than half of the company's global deliveries (54%) in the quarter ending September 30.<sup>15</sup>
- And in a period when technology companies in the Bay Area are reducing their staffs and office footprints one of the largest commercial leases of 2022 was signed by ByteDance, the parent company of TikTok.

The window remains open on both sides for mutually beneficial trade and investment in selected areas, and business relationships and other sub-national ties will be important to the relationship even as national-level issues play out.

2023 holds wild cards that if not managed by both sides could cause the U.S.-China relationship to deteriorate further.

- Taiwan remains a flash point. The visit of House Speaker Nancy Pelosi to Taiwan in the Fall of 2022, which did little to help Taiwan but was provocative to China, elicited a sharp response from Beijing that many saw as the template for a future conflict. A similar visit by newly elected House Speaker Kevin McCarthy could escalate the political confrontation.
- If China were to break sanctions by selling weapons to Russia for its war in Ukraine all bets would be off.
- In one of its first acts in January the House of Representatives voted 365-65 to create a Select Committee on Strategic Competition between the United States and the Communist Party of China". Though lacking the authority to write legislation, the Committee could become a focal point for advocates of harsher policies.
- A number of bills proposed on both houses of

Congress in 2022 could if passed further damage the relationship. Most significant from a business standpoint, the National Critical Capabilities Act (S.1854), introduced in 2021 by Senator Robert Casey (D-PA) and co-sponsored by Senator John Cornyn (R-TX), would establish a Committee on Critical Capabilities to review transactions by U.S. businesses, including outbound investment, that could result in unacceptable risk to national critical capabilities and would authorize the President to suspend or prohibit those transactions. The bill's language was included in the America COMPETES Act of 2022 (which became the CHIPS Act) but was taken out in the final negotiations. Opposed by many U.S. businesses, S.1854 would if passed represent an unprecedented imposition of outbound capital controls, creating a review hurdle for outbound U.S. investment in China similar to the role of CFIUS reviewing inbound investment.

- New restrictions are possible on the export of technologies relating to AI, quantum computing, and biotech.
- The National Science Foundation is also engaged in an assessment of research collaborations, which could lead to new restrictions (a development likely to isolate the United States as much as China).

As pressures for decoupling continue what can be done to keep doors open on both sides for trade, investment and research collaboration?

The meeting of Presidents Xi and Biden in Bali last year and the understandings reached between them can potentially set a floor under the relationship, stabilizing what had been a downward spiral. Communication and effective management on both sides will be critical.

A turn in Chinese policy that re-emphasizes economic growth, evident since late 2022, could also be helpful. In recent years the government has emphasized political priorities over the economy, cracking down on Chinese technology companies, restricting what had been growing sectors such as gaming and education, bolstering the role of state enterprises, and adhering rigidly to the zero-COVID policy, a strategy that severely damaged the economy



and led to social unrest. With the end of zero-COVID government spokesmen have emphasized a commitment to economic growth and openness to business. FN. This could lower the political temperature as private business development is prioritized. Observers should watch whether this will be a durable change or a near-term tactical shift.

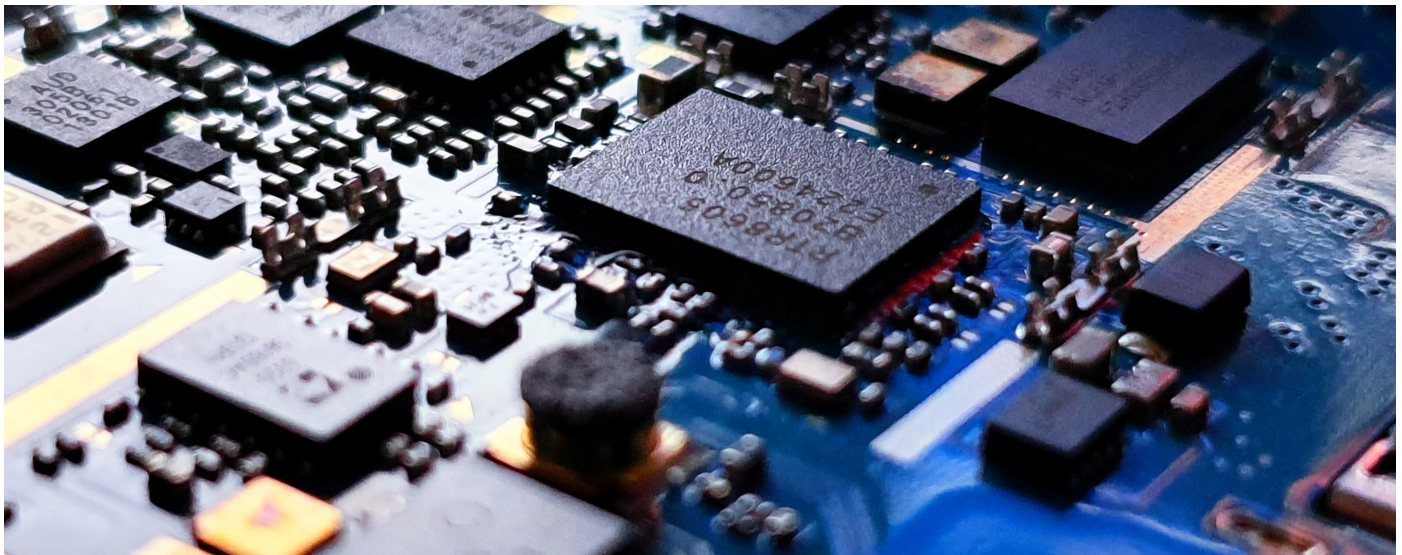
In the meantime, the United States and China could take what during the cold war with the Soviet Union were termed “confidence building measures” – specific bilateral steps that if productive can build mutual confidence and a positive record of achievements. Since the US-China relationship is already large the measures chosen can be too: challenges such as climate and health (with challenges such as cancer) that impact both nations and the world. Smaller steps can help too. For example, the China International Import Exhibition (CIIE), the world’s largest import fair, is held in Shanghai each year as a vehicle for Chinese imports. Until now the United States has chosen not to participate, though sub-national entities such as the Bay Area Council have. To help its exporters and as a positive bilateral gesture the U.S. could reconsider and support a U.S. Pavilion.

There is also room for creativity. China, for example, has promoted the development of the Greater

China Bay Area, an economic region in Southern China encompassing Hong Kong, Macau, and parts of Guangdong Province, including the technology hub of Shenzhen. The idea of the Greater China Bay Area is loosely modeled on the San Francisco Bay Area – a multi-jurisdictional, innovation led economic region.<sup>16</sup> China is already using its Bay Area as a regulatory sandbox to improve connectivity and support business. Perhaps the Bay-to-Bay connection can be used as a sandbox for U.S. business as well, identifying and developing specific research, entrepreneurial and investment opportunities. Climate adaptation comes to mind but fields like healthtech, medtech, fintech, and enterprise software may also offer opportunities. Hong Kong could play a key role.

Subnational (state, city and business) organizations have a key role to play in sustaining the relationship. This is particularly important as dialogue at the national level has atrophied. To identify common ground it is also important to avoid zero-sum thinking.

Whether or not the political dialogue improves the economic relationship with China will continue to face headwinds in 2023. This means that every company with an active global presence will need a China+ (China plus other partners) strategy.



## Acknowledgements

This analysis was prepared by Dr. Sean Randolph, Senior Director at the Bay Area Council Economic Institute.

## About the Institute

Since 1990, the Bay Area Council Economic Institute has been the leading think tank focused on the economy of the San Francisco/Silicon Valley Bay Area. A forum for stakeholder engagement and a respected source of information and fact-based analysis, the Institute is a partner and adviser to both business leaders and government officials, universities, and overseas partners. Through its economic and policy research and its partnerships, the Institute addresses issues impacting the competitiveness, economic development, and quality of life of the region and California, including infrastructure, health, science and technology, entrepreneurship, innovation, and international trade and investment. It is guided by a Board of Trustees drawn from influential leaders in the corporate, academic, non-profit, and government sectors.

The Institute is part of the Bay Area Council, a business-supported public policy organization that includes hundreds of the region's largest employers. It also manages the Bay Area Science and Innovation Consortium (BASIC), a partnership of Northern California's leading scientific research laboratories and thinkers.

## Endnotes

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