

Issue Brief

Chinese AI Investment and Commercial Activity in Southeast Asia

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Executive Summary

As part of its pursuit of global technology leadership, China's government has pushed for Chinese firms to go abroad, including to Southeast Asia's growing economies. Consistent with this mandate, Chinese financial and technology companies have scoured the region for opportunities to expand their market and strengthen the country's competitiveness in emerging technologies such as artificial intelligence (AI). Southeast Asian countries have largely welcomed Chinese investments in their technology sectors, seeing the benefits of lower prices and more purchasing choices for high-quality products.¹ That said, some experts are concerned that China's push into Southeast Asia's digital economy and the proliferation of Chinese technology in the region's digital and telecommunications infrastructure will undermine the competitiveness of U.S. and European companies in these fast-growing markets, create risks related to data security and privacy, and strengthen Beijing's ability to shape the global digital order, including norms and principles surrounding the use of AI.²

This report examines the scope and nature of Chinese investment in Southeast Asian AI companies and analyzes a range of AI-related linkages between Chinese technology companies and Southeast Asian government and commercial actors over the past decade. Using investment data from Crunchbase and data on AI-related overseas presence and activities of major Chinese firms collected by the Australian Strategic Policy Institute (ASPI) for the "Mapping Chinese Tech Giants" project, our key findings include the following:

AI investment:

- **Singapore is the main destination for investment in Southeast Asian AI companies**, accounting for 81 percent of the observed investment transactions in the region and 94 percent of all transaction value.
- **Southeast Asian AI companies are attracting capital from all over the world, including from the United States, China, Japan, Germany, and the United Kingdom.** More than 60 percent of the investment transactions targeting AI companies in Singapore, the Philippines, Thailand, Indonesia, and Malaysia involved foreign investors.
- **Chinese investment in Southeast Asia's AI companies has expanded over the past decade, but still trails behind that of the United States in terms of investment transactions.** Between 2010 and 2021, investors from the United States participated in 33 percent of all investment transactions targeting AI

companies in Southeast Asia, while Chinese investors took part in only 12 percent of all transactions.

- **Despite the intensifying economic and technological competition between the United States and China, investors from these countries occasionally invest in the same AI companies.** Co-investments by U.S. and Chinese investors account for a relatively small but notable share of the observed transactions involving U.S. or Chinese investors—about 12 percent of the 267 AI investment transactions featuring U.S. and Chinese investors and over \$1 billion, or 18 percent of the total \$5.6 billion coming from U.S. and Chinese investors over the past decade.

Other AI-related linkages:

- **Physical presence—including activities such as setting up company subsidiaries, opening regional offices or headquarters, building data centers or research and development labs—is the most common type of AI-related linkage established between Chinese tech companies and Southeast Asian public and commercial entities.** By expanding their economic and technological footprint in the region, China's leading tech companies are also gaining access to new talent, data, and information.
- **The majority of AI-related linkages between Chinese tech companies and Southeast Asian government and commercial entities are concentrated in Singapore, and to a lesser extent, Thailand, Malaysia, and Indonesia.** While AI companies based in Thailand have not received funding from Chinese investors, Chinese tech companies have pursued other AI-related activities in Thailand, most notably selling surveillance equipment and working on smart city projects.

While China currently plays a limited role in Southeast Asia's emerging AI ecosystems, especially outside of Singapore, there are indicators of expanding AI-related activity led by the country's tech giants which are, in turn, supported by the Chinese government in their outreach and expansion in the region. Southeast Asia represents a potentially significant and still largely untapped AI market for China, and the countries in the region appear open to Chinese investment of various kinds. But when viewed through the strategic competition lens, growing Chinese influence in the region could curtail the set of economic and technology-related investment opportunities available to U.S. companies and hinder efforts to promulgate AI development in line with democratic principles and civil and human rights.

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Introduction

Southeast Asia is home to some of the world's fastest growing digital economies, particularly in areas such as e-commerce, food delivery, and digital financial services.³ The region also has the potential to build strong infrastructure foundations that enable reliable and widespread connectivity important for AI development.⁴ Southeast Asian governments increasingly recognize the importance of AI for their national economic development and growth. The Singaporean government, for instance, announced its National Artificial Intelligence Strategy in 2019 with a vision of becoming a global AI leader by 2030.⁵ In Malaysia, the government named AI as one of the foundational Fourth Industrial Revolution (4IR) technologies, launching initiatives such as the National AI Framework and an AI park as a sign of the country's commitment to AI adoption.⁶ Indonesia's National Strategy for Artificial Intelligence focuses on education, health services, food security and smart cities, while Thailand's recently approved draft National AI Strategy and Action Plan (2022–2027) includes a focus on AI education, regulation of AI applications, and promotion of AI in public and private sectors.⁷

The Chinese government, meanwhile, considers AI critical not only to the country's economic development, societal welfare, and national security but also to its global position in emerging technology development. As China's blueprint for AI development, the 2017 State Council's New Generation Artificial Intelligence Development Plan (新一代人工智能发展规划) sets out to advance China's status as a global AI superpower. The plan frames AI as “a new focus of international competition” and urges Chinese firms to “go out” into the global economy—namely, to invest and expand overseas. This outward push is part of the broader strategy to grow China's domestic innovation base and leverage its “globally oriented innovation networks of corporations,” particularly the tech giants designated as national champions, to expand its economic sphere of influence, as outlined in the 2016 Innovation-Driven Development Strategy (国家创新驱动发展战略纲要).⁸ The Chinese government, for its part, provides political and financial assistance to these companies to seek foreign mergers and acquisitions (M&A), invest in foreign startups, and establish foreign research centers.⁹ Government subsidies and cheap credit from Chinese state banks, for instance, helped fuel Huawei's global market expansion.¹⁰

The Chinese leadership, as one prominent scholar from the Chinese Academy of Social Sciences put it, sees neighboring countries as “strategically indispensable in supporting China's rise to Great Power status.”¹¹ Southeast Asia is no exception. On a policy level, efforts to integrate the region into the China-centric economic and technological order fit within the framework of the Digital Silk Road (数字丝路, DSR), the technology

component of China's ambitious Belt and Road Initiative (一带一路, BRI). Introduced in 2015, the DSR aims to strengthen Chinese technological partnerships with countries along the historic Silk Road. In 2017, Xi Jinping declared that China and BRI signatories "should pursue innovation-driven development and intensify cooperation in frontier areas such as . . . artificial intelligence . . . so as to turn them into a digital Silk Road of the 21st century." By 2021, China had launched a number of AI projects with the Association of Southeast Asian Nations (ASEAN) as part of China-ASEAN Digital Economy Cooperation.¹² In some cases, Chinese companies have partnered with companies in ASEAN countries as the result of DSR agreements between the Chinese government and its ASEAN counterparts, such as agreements to build data centers to assist local firms with digital transformation.¹³

Countries in Southeast Asia differ somewhat in their attitudes toward China, but most continue to express concern about China's growing economic, political, and strategic influence in the region and generally distrust China, fearing it could use its vast economic and military power to threaten their country's interests and sovereignty.¹⁴ At the same time, in areas such as cybersecurity and information and communications technology, Chinese companies such as Huawei and ZTE have made headway in countries like Indonesia where the offer of relatively cheap, well-made technology products trumps concerns about China's geopolitical goals or the risks from integrating Chinese technology in broadband networks.¹⁵ Survey evidence shows similar attitudes toward Chinese investments in the digital economy among the citizens of Thailand and Malaysia who ranked the benefits of price reductions and more purchasing choices above geopolitical concerns surrounding China, further highlighting the disconnect that often exists between consumer behavior and politics.¹⁶

Within this context, this report aims to map the nature and scope of China's AI-related efforts in Southeast Asia. We assess data across two dimensions: investment from China into Southeast Asian AI companies and AI-related linkages between Chinese technology companies and Southeast Asian government and commercial actors. The findings suggest that, thus far, Chinese AI investment activity in Southeast Asia's AI ecosystem has been limited and largely concentrated in Singapore. That said, Chinese tech companies, motivated by a mixture of government incentives and profit opportunities in emerging and growing markets, are simultaneously pursuing other AI-related initiatives and partnerships with government and commercial entities in Southeast Asia, such as expanding their physical presence by opening overseas offices or subsidiaries, selling surveillance equipment and smart city technology, and forming commercial partnerships, among other activities.

AI Investment

Recent survey data suggests that investors around the world see Southeast Asia as the second-most ideal emerging market for private equity and venture capital investment, following China.¹⁷ In this section, we analyze domestic and foreign investment in Southeast Asian AI companies, focusing particularly on Chinese and U.S. investment activity across the 10 countries of the region, namely, Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam, all of which are members of ASEAN.

Our data shows that while AI companies based in seven of the aforementioned 10 Southeast Asian countries have received some investment between 2010 and 2021, Singapore is by far the most attractive destination for global AI investments in the region. China is not a dominant investor in Southeast Asia's AI markets, and while its AI investment activity is on the rise, it still lags that of the United States. Despite the intensifying strategic competition between the United States and China, our analysis also finds that between 2010 and 2021, U.S. and Chinese investors have co-invested in 12 percent of the observed AI investment transactions involving either U.S. or Chinese investors, pooling resources together to fund promising AI companies in the region.

Methodology and Scope

Our analysis builds on prior CSET research in cross-border AI investment using financial data from Crunchbase.¹⁸ No financial database covers the entire investment market perfectly, and Crunchbase data has limitations, including instances where certain information is undisclosed or missing. Where transaction value is undisclosed, we create an estimated value.¹⁹ We assign the nationality of target companies and investors based on the location of company headquarters. Where an investor's country of origin is missing from Crunchbase, we fill in the information based on data gathered from company websites, news coverage, and press releases.²⁰ Finally, English-language data services such as Crunchbase may have limited coverage of Chinese investment. Therefore, to account for possible missing data in Crunchbase, we checked against a company database hosted in Tech in Asia, a technology media company covering Asia, and found no meaningful missing information not already covered in Crunchbase as of December of 2021.

Two additional points are of note: First, the exact amount of money that individual investors provide to target companies at a particular investment stage is not publicly available, which means our discussion of the size of investment refers to the overall

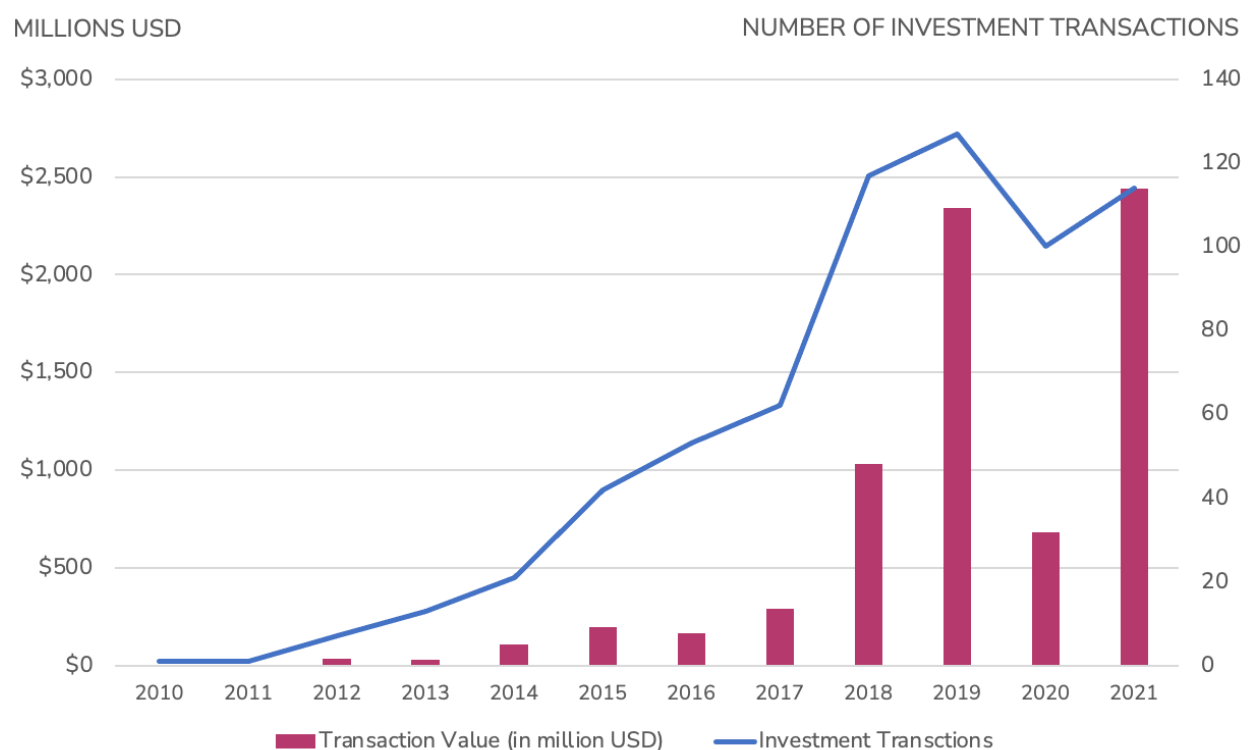
value of the deal in which all investors participated rather than the amount of money each investor invested in a given company. Second, companies may raise capital in funding rounds that involve multiple investors located in more than one country, which means that, for instance, our assessment U.S. or Chinese investment in a particular Singaporean AI company may also involve investors from other countries. These limitations notwithstanding, the data and methodology used in this report serve as a viable foundation for a meaningful discussion of AI investment activity in Southeast Asia.

AI Investment Ecosystem in Southeast Asia

Our analysis of Crunchbase data shows that over the past decade, AI companies in Southeast Asia attracted over \$7.3 billion across 658 deals, accounting for less than 1 percent of the total investment transactions targeting AI companies around the world. While AI-related investment in Southeast Asia, with the possible exception of Singapore, has been relatively limited when compared to more established and technologically competitive markets like those in the United States, China, and parts of Europe, the capital flowing into the region helped fuel a boom of startups in emerging technologies, which in turn allowed companies, especially in Singapore, to attract more funding from investors. Moreover, large corporations in the region have increasingly emphasized the development of AI-related technologies as a strategic priority.²¹ Southeast Asian governments have also launched initiatives to partake in AI experimentation across multiple industries, while, in recent years, investors have become more excited about Southeast Asian AI companies.²² Together, these factors could facilitate the expansion of AI markets in the region.

Both the number of AI-related investment transactions and their value have increased over the past decade, with an exception of the sudden drop in investment activity in 2020, as Figure 1 below shows. With travel restrictions and overall economic slowdown due to the Covid-19 pandemic, investors were more cautious and selective in 2020.²³ The region's AI investment market nonetheless showed signs of resilience, and investment rebounded in 2021, with transaction value rising to a record \$2.4 billion. Some observers further expect the region's AI market to continue expanding over the next few years.²⁴

Figure 1. Foreign and Domestic Investment Flows into AI Companies in Southeast Asia (2010–2021)



Source: CSET analysis using Crunchbase.

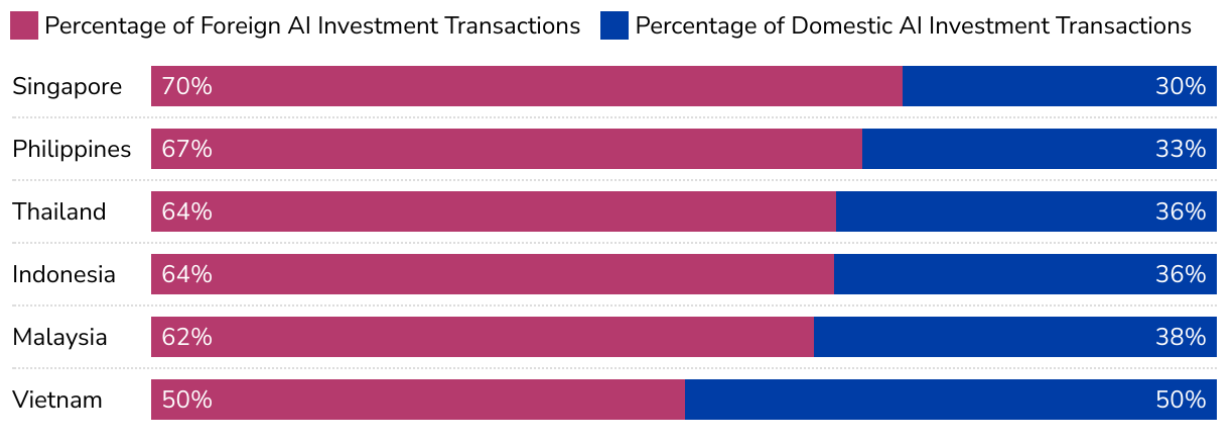
The AI investment ecosystems in Southeast Asian countries differ significantly in size, scope, and dynamism. Singapore has had the most active AI market in the region with more than 500 companies in operation as of December 2021. Between 2010 and 2021, Singaporean AI companies raised \$6.9 billion across 534 investment transactions, accounting for 81 percent of the observed investment transactions in the region and 94 percent of all transaction value.

AI companies located in Malaysia, Indonesia, Vietnam, and Thailand raised over \$400 million across 112 investment transactions from domestic and foreign investors, making up slightly over 5 percent of the region's observed transaction value and 17 percent of observed investment transactions. Finally, AI companies based in the Philippines and Cambodia received approximately \$10 million across 12 transactions, comprising only a small fraction of a percentage of the observed transaction value and nearly 2 percent of the observed investment transactions.

Over the past decade, foreign investors have played a pivotal role in financing AI development and commercialization in parts of Southeast Asia. As Figure 2 shows,

more than half of the investment transactions targeting AI companies in Singapore, the Philippines, Thailand, Indonesia, and Malaysia involved foreign investors.²⁵ These Southeast Asian countries are well integrated into global trade and finance networks, which raises the confidence of investors from around the world in their respective technology ecosystems and markets.²⁶

Figure 2: Share of Domestic and Foreign Investments in AI Companies in Singapore, the Philippines, Thailand, Indonesia, Malaysia, and Vietnam (2010–2021)

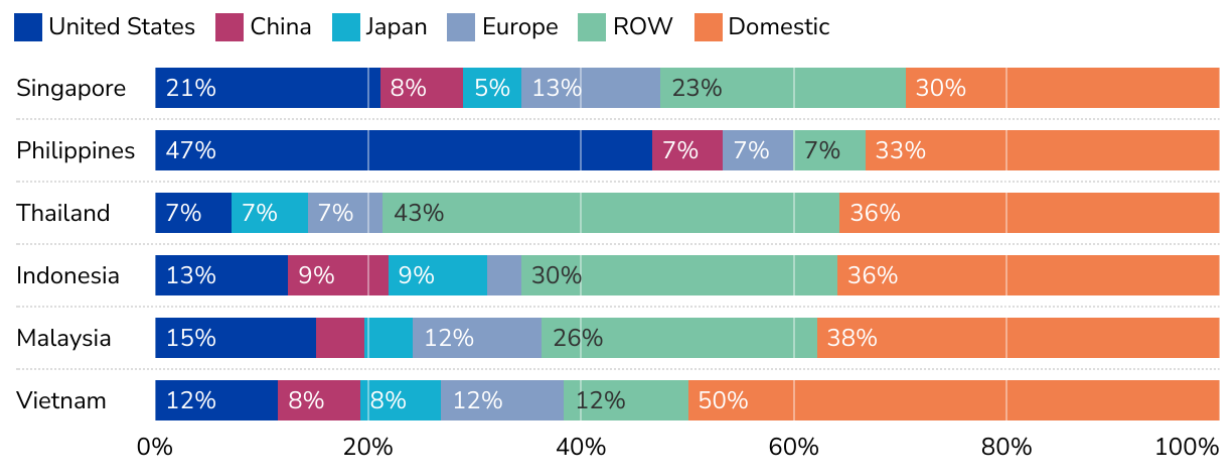


Note: Not shown is Cambodia, whose one AI company received one round of funding from a domestic investor.
Source: CSET analysis of Crunchbase.

U.S., Chinese, and Other Foreign Investments in Southeast Asian AI Companies

As previously noted, foreign investors account for a large share of the investment in Southeast Asian AI companies. The United States and China are important but not the dominant investors in the region, and, as Figure 3 below illustrates, Japan, European countries such as Germany and the United Kingdom, as well as other global players also participate in funding opportunities targeting promising AI companies in this part of the world.²⁷

Figure 3. Distribution of Investments in Southeast Asian AI Companies (2020–2021)

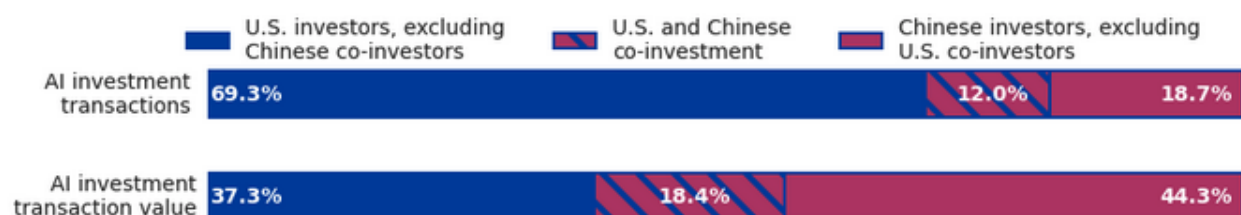


Note: ROW stands for the rest of the world.

Source: CSET analysis of Crunchbase.

Focusing specifically on U.S. and Chinese investments, it appears that investors from these two countries have participated in 267 of the 658 (40 percent) observed investment transactions in AI companies across Southeast Asia over the past decade. Because AI companies are keen to raise capital for growth, they often source funding from multiple investors and, in some cases, from different countries. Some funding deals, therefore, feature investors from both the United States and China. When examining U.S. investment activity independently from Chinese investors, as well as assessing their overlap, it appears that U.S. investors have been much more active in pursuing opportunities in the emerging AI market in Southeast Asia. As Figure 4 shows, of the 267 total investment transactions, 185 (69 percent) included U.S. investors but not Chinese investors, 50 (19 percent) included Chinese investors but not U.S. investors, and 32 (12 percent) included investors from both the United States and China. Put somewhat differently, U.S. investors have participated in nearly a third of all the investment transactions that funded AI companies across Southeast Asia between 2010 and 2021, while Chinese investors took part in only about 12 percent.

Figure 4. U.S. and Chinese Investments in Southeast Asian AI Companies (2010–2021)



| Investor country | Number of AI investment transactions | Total AI transaction value (millions USD) |
|--|--------------------------------------|---|
| U.S. investors, excluding Chinese co-investors | 185 | \$2,119 |
| Chinese investors, excluding U.S. co-investors | 50 | \$2,520 |
| U.S. and Chinese co-investment | 32 | \$1,047 |
| Total | 267 | \$5,686 |

Source: CSET analysis of Crunchbase.

Although U.S. investors have been more active in the region in terms of the number of AI investment transactions, Chinese investors have put down more capital. As Figure 4 illustrates, Chinese investment in Southeast Asian AI markets stands at about \$2.5 billion (44 percent) when excluding deals that involved U.S. investors, while U.S. investment in the region's AI ecosystem amounts to about \$2.1 billion (37 percent) in deals that did not involve any Chinese investors; joint U.S.-China investments accounted for over \$1 billion (18 percent) of the total of nearly \$5.7 billion that these two countries have allocated to spur growth and innovation across the region's AI companies. Alternatively, factoring in the funds from the joint U.S.-China deals, Chinese AI investment tops \$3.5 billion, while investment involving U.S. funders amounts to about \$3.1 billion.

It is worth noting that nearly 40 percent of the capital that Chinese investors have put down in Southeast Asia's emerging AI market between 2013 and 2021 came from a single deal, where the Chinese streaming platform JOYY (formerly known as YY) acquired BIGO Technology, a Singaporean AI company specializing in global live streaming, for \$1.45 billion in 2019. The Chinese government has described major deals such as this acquisition of BIGO Technology as a successful example of the Belt and Road Initiative in the region.²⁸ Since becoming a subsidiary of JOYY, BIGO Technology has reportedly entered the digital markets in Indonesia, Malaysia, Thailand, and Vietnam, as well as other countries in the Middle East and North Africa.²⁹

As investors from both the United States and China have become more active throughout the region, some have found themselves targeting the same high-performing or promising AI companies. As noted above, co-investments by U.S. and Chinese investors account for a relatively small share of the observed transactions involving U.S. or Chinese investors—about 12 percent of the 267 AI investment transactions featuring U.S. and Chinese investors and over \$1 billion, or 18 percent of the total of nearly \$5.7 billion coming from U.S. and Chinese investors over the past decade. Co-investment is common in the private investment sector, including in AI, because it can increase the rates of financial return, reduce operational uncertainty driven by unfamiliar markets or projects, and lower competition in bidding.³⁰ This is to say that while discussions of U.S. national security often position the United States and China as competing technological and economic powers vying for their share of the market and influence around the world, the financial activities of companies and individuals from the two nations are at times intertwined.³¹ Treating the U.S.-China technology competition as a zero-sum game therefore overlooks important areas of overlapping interests that can also contribute to AI development and growth in Southeast Asia.

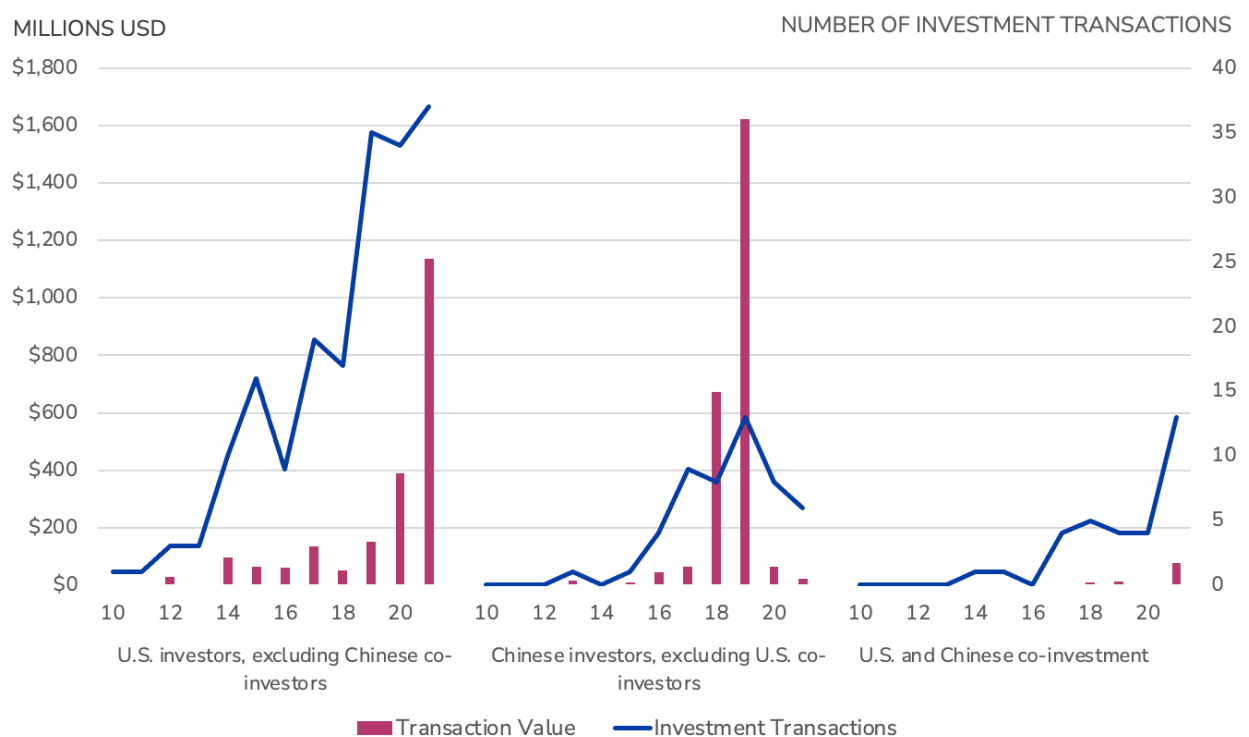
In terms of the regional distribution of U.S. and Chinese investments, Singapore, as previously noted, is the top destination for both, with U.S. investors taking part in 160 deals that raised a total of \$2 billion, and Chinese investors participating in 42 transaction investments amounting to about \$2.4 billion. In Indonesia, U.S. investors were part of six transactions that directed \$38 million into the country's AI companies. Chinese investors took part in only four transactions that nonetheless amounted to \$76 million, with the majority of funds transferred as part of a 2018 M&A deal where the Chinese e-commerce platform company, JollyChic, acquired the Indonesian fashion app LYKE, which uses AI-enabled facial recognition technology, in order to expand its market share in the country as well as absorb LYKE's technologies and talent.³²

U.S. investors were more active than Chinese investors in Malaysia's nascent AI market, with nine investments that totaled about \$29.2 million compared to the two transactions that involved investors from China and amounted to approximately \$4.3 million. The funds coming from China were aimed at a single Malaysian AI-enabled drone company called Aonic (formerly Poladrone). Chinese investors also had limited presence in the Vietnamese AI market where they participated in only two transactions totaling \$1.6 million, while U.S. investors took part in three deals that amounted to \$3.2 million. U.S. investors have been particularly critical for AI development and commercialization in the Philippines where they have been involved in six investment transactions totaling \$53 million and brought in more capital than domestic investors or

investors from any other country, including China. The Philippines notably has close historical, economic, and security ties with the United States, including treaties to facilitate bilateral trade and investment.³³ In Thailand, Crunchbase data documented no Chinese AI-related investments and only one AI-related transaction involving a U.S.-based venture capital firm, 500 Startups, that funded the Thai AI company DeepSparks in 2019.

Looking at trends over time, U.S. investment in Southeast Asian AI companies has grown significantly over the past decade, especially since 2018. Figure 5 shows that while funders from the United States have been actively investing in the region's AI companies since the early 2000s, according to Crunchbase, the first investment with Chinese participation only dates back to 2013, when China-based ClearVue Partners invested \$16 million in Gshopper, a Singaporean e-commerce startup that develops AI-enabled product recommendation systems. China's AI investment activity took off in 2016, with higher-value deals taking place in 2018 and 2019, but dropped notably in 2020 and 2021, possibly as a result of the Covid-19 pandemic.³⁴

Figure 5. U.S., Chinese, and Joint U.S.-Chinese Investments into Southeast Asian AI Companies by Year (2010–2021)



Source: CSET analysis of Crunchbase.

In terms of the type of AI companies that U.S. and Chinese investors are targeting, nearly half of the transactions in our dataset involved capital flowing into companies developing AI for application in sales, retail, and customer relations as well as business services and analytics. Meanwhile, companies building AI for the financial sector attracted more than a third of those funding rounds that featured both U.S and Chinese investors (see Appendix B, Figure B1 for more details).

Finally, as previously noted, while investments from funders in the United States and China are contributing to AI-related innovation in Southeast Asia, and especially Singapore, investors from other countries are also active in the region. Japanese investors, in particular, have been involved in 9 percent of the investment transactions aimed at AI companies in Indonesia, 8 percent of those targeting AI companies in Vietnam, 7 percent of the investment transactions funding AI companies in Thailand, and 5 percent of the investment transactions targeting AI companies in each Singapore and Malaysia. In Singapore, for instance, Japanese venture capital firm SBI Investment invested \$15 million in AntWorks to fuel the company's growth in AI and robotic process automation.³⁵ Japan has historically been a dependable economic partner for much of Southeast Asia and could become an increasingly important player in the region as Southeast Asian countries strive to resist the pressure of having to choose between the United States and China.³⁶ Indeed, according to the 2022 State of Southeast Asia survey by the ISEAS-Yusof Ishak Institute, Japan remains the most trusted power by Southeast Asians and, alongside the European Union, is one of the top choices when asked about hedging against the uncertainties of the U.S.-China strategic competition.³⁷

As a whole, emerging AI markets in Southeast Asia are increasingly capable of attracting foreign capital from all over the world, but Singapore stands out far above the rest in terms of the size and scale of its AI ecosystem. Over the past decade, U.S. investors have taken part in more investment transactions than their Chinese counterparts, but investors from China have brought in more capital—this regional trend is also reflected in U.S. and Chinese AI-related investment behavior in Singapore and Indonesia. U.S. investors were far more prominent than Chinese investors when pursuing opportunities in Malaysia, the Philippines, and Thailand, though the AI markets in these countries remain relatively small.

Looking ahead, although China is a relatively new player in the region's AI market and currently not a dominant investor, this trend may shift in the near to medium term. The Chinese government continues to encourage the nation's technology companies, investors, and entrepreneurs to invest outside of the country's borders. While the

United States and some allied European countries are placing additional barriers to Chinese investment, developing economies such as those in Southeast Asia seem more receptive to a Chinese presence. According to a 2020 survey by strategic advisory firm Brunswick Group, 80 percent of the respondents from 23 emerging economies trusted Chinese companies; also notable is that among developed countries, Singapore showed the highest levels of trust in Chinese companies.³⁸ Southeast Asia could also become an attractive option for Chinese venture capital firms concerned about the government's recent restrictions on the technology sector and the broader slowing of Chinese economic growth.³⁹

AI-Related Linkages

While Chinese investment in Southeast Asian AI companies remains relatively limited, especially outside of Singapore, Chinese tech companies are seeking to expand their economic and technological footprint in the region, gaining access to and expanding their share of new markets and, in the process, accessing new talent, data, and information.⁴⁰ Increased presence in Southeast Asia could also help Chinese companies to localize supply chains in the Indo-Pacific region, which has become a higher priority for the government in light of the supply-chain crisis linked to the Covid-19 pandemic and the intensifying strategic competition between the United States and China.⁴¹

At the same time, facilitated in part by the BRI as well as 2018's China-ASEAN Strategic Partnership Vision 2030 (中国-东盟战略伙伴关系2030年愿景), Southeast Asian countries are opening their markets and economies to China's powerful technology companies, welcoming their variety of product offerings across sectors such as telecommunications, e-commerce, transportation, and public safety.⁴² Faced with rapidly growing urban populations and seeing the potential of digital transformation and emerging technologies such as AI in revitalizing the economy, some Southeast Asian leaders have been particularly eager to collaborate with Chinese tech companies as they implement smart city programs. Alibaba and Huawei, for example, already play a key role in smart city initiatives across Malaysia and Singapore.⁴³ Below, we analyze the various AI-related activities and linkages forged between Chinese companies and commercial and government entities across Southeast Asia.

Methodology and Scope

The following analysis draws on the Australian Strategic Policy Institute's (ASPI) publicly available data on overseas expansion of Chinese technology companies.⁴⁴ We begin by extracting all observations involving Southeast Asian countries, including Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore,

Thailand, and Vietnam between 2011 and 2021. Then, we narrow down this dataset by focusing exclusively on observations that entailed AI-related activities and linkages between Chinese technology companies and Southeast Asian entities. If both the Chinese company and the Southeast Asian entity are active in AI, or if the Southeast Asian entity's partnership with Chinese technology companies is AI-related, we include the linkage in our dataset.⁴⁵ To confirm that these activities and linkages are in fact related to AI, we rely on news articles, company websites, and government statements. In addition to the observations derived from the ASPI dataset, we add 10 new entries to our dataset that we identify as relevant in the course of our research.

Our expanded version of the ASPI data identifies 128 AI-related linkages between Chinese technology companies and public and commercial actors based in nine of the 10 aforementioned Southeast Asian countries, namely, Brunei, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. China's large technology companies include Alibaba, Baidu, BeiDou, ByteDance, Dahua, Hikvision, Huawei, iFlytek, Inspur, Megvii, Meiya Pico, Ping An Technology, SenseTime, Tencent, Uniview, Yitu, and ZTE.⁴⁶ To be clear, the 128 AI-related linkages and activities tracked in our dataset are most likely only a small subset of cases that may or may not be representative of the broader whole. The analysis in this section is therefore merely a first step, intended to assess the AI dimension of Southeast Asia's economic and technological linkages to China.

China's AI-Related Linkages with Southeast Asian Countries

Over the past decade, Chinese technology companies have established a broad range of AI-related linkages with public and commercial actors in Southeast Asia.⁴⁷ To better understand the types of opportunities Chinese technology companies and their local partners have pursued in this space over the past decade, we aggregate the 128 AI-related linkages in the following categories: 1) physical presence, which entails activities such as building data centers, opening overseas offices or subsidiaries, and establishing research and development (R&D) labs, 2) training, selling, or installing surveillance equipment, and engaging in projects related to smart cities, 3) commercial partnerships, 4) Memorandums of Understanding (MoU), and 5) research partnerships or training. Figure 6 below illustrates the distribution of these linkages and activities across the region, most specifically in Singapore, Thailand, Malaysia, and Indonesia.

Figure 6. AI-Related Linkages between Chinese Tech Companies and Southeast Asian Entities (2011–2021)

| Type of AI-related linkage | Singapore | Thailand | Malaysia | Indonesia | Others | Total |
|---------------------------------------|-----------|----------|----------|-----------|--------|-------|
| Physical presence | 14 | 8 | 6 | 10 | 4 | 42 |
| Smart city or surveillance technology | 4 | 10 | 7 | 7 | 7 | 35 |
| Commercial partnership | 8 | 5 | 8 | 6 | 2 | 29 |
| MoU agreement | 6 | 2 | 3 | 1 | 2 | 14 |
| Research partnership or training | 6 | | 1 | 1 | | 8 |
| Total | 38 | 25 | 25 | 25 | 15 | 128 |

Note: Others include Myanmar, Vietnam, the Philippines, Cambodia, and Brunei. See Appendix B, Figure B2 for more details.

Source: CSET analysis and adaptation of ASPI's "Mapping China's Tech Giants" dataset.

As Figure 6 shows, Singapore, which has been the top destination for Chinese AI-related investment, is also the country that has developed the most AI-related linkages with Chinese tech giants. Of the 128 AI-related linkages in our dataset, 38 (30 percent) of the total observations are between Chinese tech companies and Singaporean government and commercial actors. Thailand, Malaysia, and Indonesia are next, each with 25 AI-related linkages with Chinese technology companies, or 20 percent of the total, respectively. Finally, AI-related linkages between Chinese tech companies and relevant stakeholders in Myanmar, Vietnam, the Philippines, Cambodia, and Brunei comprise about 10 percent of the overall number of linkages. These results are perhaps not surprising given the level of AI development and commercialization in the relatively more advanced and larger economies of Singapore, Thailand, Malaysia, and Indonesia.⁴⁸

While Singapore, and to a lesser extent Indonesia and Malaysia, have attracted Chinese AI-related investment, Thailand, at least according to Crunchbase data, has not. Chinese tech giants, however, have engaged Thailand's government and commercial actors in AI-related activities by other means, for example, by working with the Phuket Municipal Government on smart city technology and providing surveillance equipment to the Central Bank of Thailand.⁴⁹ Similarly, while Chinese investors have not targeted AI companies in Myanmar, Cambodia, and Brunei, Chinese tech companies have

pursued certain types of AI-related opportunities in these countries, predominantly engaging with government actors and state-owned companies. Examples of such engagement include Chinese state-owned, AI-enabled surveillance company Hikvision helping the Yangon City Government in Myanmar to implement an AI-enabled intelligent traffic management system, and Huawei signing an MoU with the Cambodian government to provide AI technical assistance to the country's Techo Startup Center.⁵⁰

Physical presence—including activities such as setting up company subsidiaries, opening regional offices or headquarters, and building data centers or R&D labs—is the most common type of AI-related linkage established between Chinese tech companies and Southeast Asian public and commercial entities, accounting for about a third of all the cases in our dataset. Baidu, Bytedance, Hikvision, SenseTime, and Yitu have all opened regional offices or headquarters in Singapore, for example, Huawei has set up three R&D labs, including the Huawei OpenLab Singapore, which was added to the U.S. Entity List in August 2020.⁵¹ Other examples include Alibaba opening two data centers in Jakarta in 2019, reportedly responding to “strong demand for big data and analytic solutions from Indonesian enterprises,” and the Chinese tech company Ping An setting up an Indonesian subsidiary, OneConnect, a fintech enterprise that promises to deliver “technology solutions ranging from Artificial Intelligence, Blockchain, Biometrics Identification, and other technology solutions,” previously developed and used by Ping An.⁵²

Smart city or surveillance technology is the second most common category of AI-related linkages between Chinese tech companies and Southeast Asian public and commercial entities in our dataset. While initially focused on the domestic market, Chinese tech companies now sell a broad variety of surveillance technologies, including those that rely on AI, big data, and biometric collection, to a global customer base. Previous research has found that “technology linked to Chinese companies—particularly Huawei, Hikvision, Dahua, and ZTE—supply AI surveillance technology in sixty-three countries, thirty-six of which have signed onto China's Belt and Road Initiative.”⁵³ Governments and companies that purchase Chinese surveillance technology have their own motivations and goals in mind. But expanding linkages between Chinese companies and entities in other countries is an important aspect of the Chinese state's efforts to strengthen its political and economic influence around the world, as well as part of a concerning trend toward unwarranted surveillance and the proliferation of technologies and practices that facilitate repression and undermine human rights.⁵⁴

In some cases, Chinese tech companies in our dataset provided surveillance technology directly to Southeast Asian state security and law enforcement agencies. For instance, Hikvision collaborated with the Ampang Jaya District Police Department in Malaysia in 2014, while Uniview, another Chinese video surveillance company, supplied video surveillance equipment to the Malaysian Ministry of Defense headquarters in 2015.⁵⁵ In other cases, Chinese tech companies did business with local state-owned companies and banks. For example, Uniview provided surveillance equipment to nearly 100 electricity substations in Jakarta owned by state-backed Perusahaan Listrik Negara (State Electricity Company) in 2018, and, as of 2021, Uniview has also installed more than 4,000 security cameras in ATMs of the state-owned Bank Rakyat Indonesia (Indonesian People's Bank).⁵⁶

Interlinked with surveillance equipment is the broader category of smart city technology and services that includes products and systems related to telecommunications infrastructure, unified management platforms, e-government systems, and surveillance systems that are increasingly reliant on AI.⁵⁷ Smart city technology has become increasingly attractive to Southeast Asian countries that are experiencing rapid urbanization but often lack sufficient infrastructure and services to deal with related challenges such as traffic congestion, pollution, and public safety.⁵⁸ Chinese companies, meanwhile, are at the forefront of smart city technology development and export around the world, with previous research showing that Chinese firms have been involved in smart cities projects in as many as 106 countries.⁵⁹ In our dataset, examples of AI-related linkages in this category include Huawei working closely with stakeholders from both the private and public sectors in Thailand to develop a Smart City Framework for Phuket in 2019, and Megvii partnering with the Thai AI company SkyEye Tech to test Megvii's facial recognition technology to assist with public security and traffic regulation in Bangkok.⁶⁰

Commercial partnerships account for about a fifth of the AI-related linkages between Chinese tech companies and Southeast Asian partners in our dataset, and generally represent a common strategy for companies to sell more products, expand their market share, and localize in other countries.⁶¹ In one such example, Alibaba Cloud recognized Indonesian ICT infrastructure company INDONET as its "channel partner," meaning that the company sells and distributes Alibaba Cloud's products to local consumers as well as incorporates Chinese product offerings into its own products. In some cases, Chinese companies form commercial partnerships with non-commercial actors. For instance, iFlytek, a Chinese AI company specializing in speech intelligence, provided its products to 94 percent of Singaporean primary and secondary schools to help students learn Chinese.⁶²

The two remaining categories—MoUs and research partnerships and training—round out the rest of the AI-related linkages between Chinese tech companies and Southeast Asian public and commercial actors. The majority of partnerships in these two categories once again centered on Singapore, where the government has signed six MoUs with Chinese companies such as Huawei, SenseTime, and Yitu, while Singaporean universities, including the National University of Singapore and Nanyang Technological University forged partnerships with SenseTime. SenseTime also signed an MoU with the Malaysian company G3 Global in 2019, teaming up to reportedly build a \$1 billion AI park, as well as deepen technology cooperation in areas such as national security, surveillance, immigration, and border security and AI education and workforce development.⁶³ Another example of a research partnership and training is the longstanding partnership between Huawei and Indonesia's Bandung Institute of Technology (ITB) that was recently expanded to include opportunities for ITB students to learn about Huawei technology and take courses in areas such as cloud computing and AI.⁶⁴ Such research partnerships and training opportunities offered by Chinese tech companies may facilitate China's efforts to recruit international AI talent.

Although it is difficult to estimate the impact of these various AI-related initiatives on the broader convergence of technological and economic interests between China and Southeast Asian countries, it appears that Chinese technology companies are expanding their influence across the region. The majority of the AI-related linkages were forged between Chinese companies and government and commercial entities in Singapore, and to a lesser extent with stakeholders in Thailand, Malaysia, and Indonesia. Although the AI linkages examined in this section represent only a fraction of the commercial activities China's tech companies are pursuing in Southeast Asia, these initiatives cut across different sectors, include numerous government and state agencies as well as commercial partners, and ultimately expand the reach of Chinese technology and influence into the region's economies, infrastructure, and society.

Conclusion

Although still in its early stages, AI development and commercialization across Southeast Asia is gaining momentum. The region's AI markets—particularly Singapore and, to a lesser degree, Indonesia, Malaysia, Vietnam, and Thailand—are increasingly attracting foreign investment, with investors from the United States still playing a more prominent role in funding Southeast Asian AI companies and startups than investors from China. That said, AI companies in Southeast Asia are also drawing capital from countries such as Japan, Germany, and the United Kingdom, and neither the United States nor China can be viewed as the sole or predominant investor in the region. Moreover, in some instances, investors from the United States and China invest in the same promising AI companies, especially in the financial technology sector.

In addition to AI investment, the Chinese government and the country's tech giants are also expanding their AI-related activities and technological footprint in Southeast Asia by forging commercial partnerships, selling surveillance equipment and smart city technologies, setting up regional headquarters and subsidiaries, building data centers and R&D labs, signing research partnerships, and pursuing other initiatives executed in coordination with local government actors and commercial bodies. If the United States and Europe continue to erect barriers to Chinese investment and impose limitations on the product offerings and data collection practices of Chinese tech companies, Southeast Asia, and especially Singapore, may see increased Chinese investment in AI over the coming years as well as a proliferation of other AI-related commercial activity.

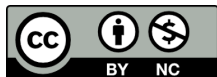
Southeast Asian countries have already acknowledged the incentives for opening their doors to China—the affordable technology stack, the promise of efficiency in dealing with a broad range of societal problems, and the prospects of technology-enabled economic growth. But while China's track record of exporting technologies that help governments—particularly authoritarian governments in developing countries—collect information and control their populations has allowed it to gain influence and data, it has done so to the detriment of the privacy, safety, and human rights of the citizens of these nations. The future of AI in Southeast Asia therefore remains in flux.

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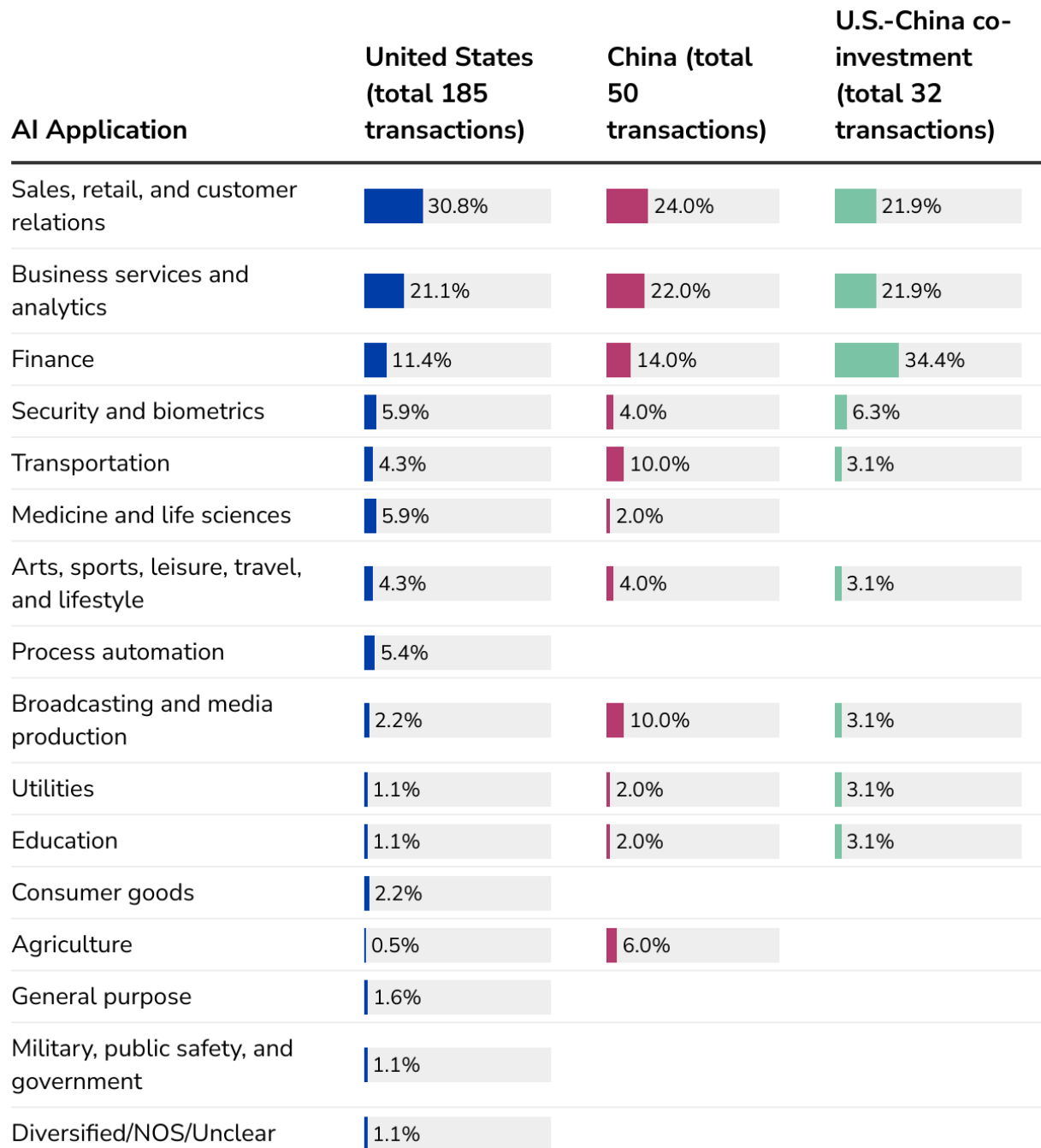
Appendix A: Identifying AI Companies

To identify AI companies, we ran a regular expression-based search query against business descriptions of the target companies in Crunchbase. The results include companies whose descriptions include either terms associated with specific AI applications such as “machine learning,” “computer vision,” or “TensorFlow,” or generic AI-related terms such as “artificial intelligence,” “machine learning,” or “semiconductor.”⁶⁵

In addition, given that the company business descriptions provided by Crunchbase appear limited in some cases, we supplemented the AI company identification using the keyword-based method with Crunchbase's AI tag. AI companies in our analysis include companies that CSET or Crunchbase have identified as AI companies.

Appendix B: Additional Figures

Figure B1. Distribution of U.S., Chinese, and Joint U.S.-Chinese Investment Transactions by AI Application Area (2010–2021)



Source: CSET analysis of Crunchbase.

Figure B2. Distribution of AI-Related Linkages in Myanmar, Vietnam, the Philippines, Cambodia, and Brunei (2011–2021)

| Type of AI-related linkage | Myanmar | Vietnam | Philippines | Cambodia | Brunei | Others | Total |
|---------------------------------------|---------|---------|-------------|----------|--------|--------|-------|
| Physical Presence | 1 | 2 | 1 | | | 38 | 42 |
| Smart city or surveillance technology | 4 | 1 | 1 | 1 | | 28 | 35 |
| Commercial partnership | | 1 | 1 | | | 27 | 29 |
| MoU agreement | | | | 1 | 1 | 12 | 14 |
| Research partnership or training | | | | | | 8 | 8 |
| Total | 5 | 4 | 3 | 2 | 1 | 113 | 128 |

Source: CSET analysis and adaptation of ASPI's "Mapping China's Tech Giants" dataset.

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