

Hung, Jason

**Article — Accepted Manuscript (Postprint)**

## AI Export and Digital Silk Road: A Comparative Analysis of China's Influences on Digital Economies and Geopolitics across Southeast Asia

Frontiers in Political Science

*Suggested Citation:* Hung, Jason (2025) : AI Export and Digital Silk Road: A Comparative Analysis of China's Influences on Digital Economies and Geopolitics across Southeast Asia, Frontiers in Political Science, ISSN 2673-3145, Frontiers Media, Lausanne, <https://www.frontiersin.org/journals/political-science/articles/10.3389/fpos.2025.1685231/>

This Version is available at:

<https://hdl.handle.net/10419/333717>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by/4.0/>

# AI Export and Digital Silk Road: A Comparative Analysis of China's Influences on Digital Economies and Geopolitics across Southeast Asia

Jason Hung<sup>1</sup> 

<sup>1</sup> Independent researcher, formerly the University of Cambridge, UK

Email: ysh26@cam.ac.uk

## Abstract

There is a lack of original research investigating the relationships between China's artificial intelligence (AI) exports and their possible impacts on strengthening Digital Silk Road (DSR) co-operation. This paper first studies the distribution of China's AI export projects to Southeast Asian countries (2006–2017) and then examines whether larger Southeast Asian AI importers were more active DSR partners (2018–2020). The analysis, drawing on data from the China's AI Exports Database (CAIED), the IISS China Connects, and the World Bank Open Data, employs a robust panel data methodology incorporating lagged explanatory variables and clustered standard errors to mitigate issues of heteroscedasticity and auto-correlation. Findings suggest that Southeast Asian countries importing AI technologies from China between 2006 and 2017 had not been statistically more DSR active between 2018 and 2020. Instead, the paper finds a positive impact that country-level economic freedom is a highly significant contributing factor to being an active DSR partner. This study enhances transparency in the dynamics of China's digital geopolitics by highlighting economic competitiveness as the primary driver of DSR partnerships, rather than prior AI import history.

## Keywords

*Belt-and-Road Initiative; Digital Silk Road Initiative; China; digital economy; digital geopolitics*

## Overview

China's Belt and Road Initiative (BRI), launched in 2013, aims to foster development and investment partnerships across Asia, Europe, Africa, Oceania, and Latin America. This global initiative has facilitated China's expansion of economic and political influence (McBride et al., 2023). In Southeast Asia, China has emerged as a dominant investor, signing infrastructure deals worth billions annually (Dayant & Stanhope, 2024). A core dimension for China to build global connectivity is through trade. China's supply chain connectivity has risen across BRI regions, with Southeast Asian countries (both richer and poorer economies) remaining the most connected (LSE Ideas, 2018). Within the region, Singapore, Vietnam, Thailand, Malaysia, Cambodia, and Myanmar are ranked among the world's most connected economies to China via trade (LSE Ideas, 2018).

Since BRI partnerships between the two parties are extensively researched and addressed in existing scholarship, this paper will instead examine the Digital Silk Road (DSR) relationships between China and Southeast Asia. The DSR, first officially mentioned in China's *13th Five-Year Plan (2016-20)*, has become a key pillar of the BRI. In recent years, given the intensified United States-China technological and artificial intelligence (AI) rivalry, expanding the DSR's influence on Southeast Asian markets has become crucial for China (Zheng, 2024). China's DSR prioritisation as a national strategy is shaped by two factors. The push factor is the rapid

53 growth of China's digital economy in recent years. The pull factor is China's perception of the  
54 digital gap in many developing countries, including Southeast Asian countries, which restricts  
55 their digital economy growth (Zheng, 2024). Since the 2008 global financial crisis, China has  
56 actively intensified its efforts to build its technological dominance, especially in the development  
57 and application of AI technology (Chung, 2023).

58  
59 Although the popularisation of AI technology has surged since the launch of ChatGPT in 2022,  
60 China's AI Exports Database (CAIED) indicates that China has strategically been delivering AI  
61 export projects globally since decades ago. Existing scholarship covers the analysis of China's  
62 DSR partnerships with Southeast Asian countries. However, there is a lack, if not an absence,  
63 of original research investigating whether China's global strategy of AI exports has impacted  
64 DSR partnerships across Southeast Asia. If not, it is scholarly important to identify the key  
65 driver(s) that have impacted DSR partnerships with Southeast Asian countries. This paper will  
66 assess whether larger AI importers from China are more active DSR players. If not, it will  
67 explore what factor(s) determine how active Southeast Asian countries are as DSR partners.  
68 Such an investigation helps enrich the global dialogue and enhance transparency in the  
69 dynamics of China's AI exports and DSR cooperation.

## 70 71 **Literature Review**

72  
73 Despite the 'debt trap' conspiracy criticisms (McBride et al., 2023), many Southeast Asian  
74 countries, such as Indonesia and Thailand, have welcomed BRI, including DSR, partnership  
75 opportunities (Busbarat et al., 2023; Yu, 2017). From an economic standpoint, Chinese  
76 investments have the potential to bolster Southeast Asia's economic growth and regional  
77 connectivity. However, there have been concerns across Southeast Asia that countries heavily  
78 dependent on Chinese investment may face long-term risks to their own economies due to  
79 rising debts and to their societies owing to geopolitical interventions (Busbarat et al., 2023).  
80 Additionally, racial tensions and safety issues have compounded the criticisms against  
81 Southeast Asian governments that are overly economically dependent on China (Busbarat et al.,  
82 2023; Dayant & Stanhope, 2024). Therefore, this paper would like to study today's dynamics of  
83 DSR partnerships between China and Southeast Asian countries, in order to present which  
84 Southeast Asian countries are more or less willing to form digital trade ties with China.

85  
86 Existing scholarship suggests that the Philippines is a Southeast Asian country who maintains  
87 negative BRI relationships with China, as of writing this paper. During the administration of  
88 President Rodrigo Duterte, the Philippines was more willing to form BRI cooperation with China.  
89 However, when President Bongbong Marcos took office in 2022, several early-stage  
90 infrastructure development projects funded by China were cancelled (Busbarat et al., 2023).  
91 Philippine elite and public sentiment have hardened towards the Chinese Government in recent  
92 years. Other Southeast Asian countries are more ambiguous, or even divided, in their stance  
93 towards the Chinese Government. Southeast Asian elites from countries such as Singapore and  
94 Indonesia prefer maintaining robust economic and security ties with major international players  
95 to offset China's dominance in the region (Feigenbaum et al., 2024). As this paper focuses on  
96 evaluating DSR instead of BRI relationships between China and Southeast Asia, it would be  
97 interesting to investigate whether the Philippines has cut DSR ties with China. Also, it would be  
98 interesting to understand the attitudes of other leading regional players, such as Singapore and  
99 Indonesia, regarding the formation of DSR partnerships with China.

100  
101 The pandemic boosted digital economies worldwide, facilitating Southeast Asia to offer  
102 investment opportunities in e-commerce logistics and digital financial services to circumvent  
103 restrictions on personal mobility and in-person meetings between 2020 and early 2023. Here,

104 regionally advanced economies such as Singapore, Malaysia, Thailand, and Indonesia have  
105 developed more competitive technological adoption environments (Chung, 2023). In such  
106 circumstances, Southeast Asian countries will continue to build and expand their digital  
107 economies in the long term. Investigating China-Southeast Asia relations through DSR  
108 partnerships is a timely and academically important topic. Understanding how active a  
109 Southeast Asian country is as a DSR player indicates its digital capacity, connectivity, and  
110 competitiveness. Such digital competence, to some degree, reflects the country's economic  
111 strength. This paper will discuss the nuances in digital geopolitics and economics to add  
112 transparency to the discourse on the strategic plans of China's technological and AI investment.

## 113 114 **Methodology**

115  
116 As highlighted, this paper aims to study whether larger Southeast Asian AI importers from China  
117 are more active players in the DSR. If not, this paper aims to explore the major factor(s) that  
118 determine how active Southeast Asian countries are as DSR partners. To satisfy these research  
119 aims, I need access to databases covering details about China's AI exports and DSR projects. I  
120 therefore analyse secondary data from multiple databases: the China's AI Exports Database  
121 (CAIED) and the IISS China Connects. I further collect data from the World Bank Open Data.

122  
123 The CAIED database is run by the RAND Corporation, while the IISS China Connects database  
124 is operated by the International Institute for Strategic Studies. The CAIED tracks Chinese  
125 government-supported development finance projects that utilised or enabled AI technology in  
126 the Global South between 2000 and 2017. Using the latest data mining tools, the CAIED  
127 identified a total of 155 AI export projects from China. The CAIED records all AI or AI enabling  
128 projects imported across the globe from China, between 2000 and 2017. However, according to  
129 the CAIED's tracked data, Chinese government-supported development finance projects that  
130 utilised or enabled AI technology in Southeast Asia had been implemented between 2006 and  
131 2017. Here AI projects included all technology-facilitated trades that required AI processing or  
132 were AI-powered. AI-enabling projects were, however, much broader. They referred to projects  
133 where AI acted as a catalyst to transform different sectors, such as building and delivering  
134 technological services (e.g. setting up CCTV network) to create a continuous stream of visual  
135 data essential for training AI algorithms—laying the groundwork for future AI integration.

136  
137 Alternatively, the IISS China Connects database is a virtual interactive tool that visualises  
138 independently researched and verified datasets on China's BRI and DSR projects planned,  
139 implemented, or completed between 2000 and 2020/2021 (2021 for BRI projects and 2020 for  
140 DSR projects). I will use the CAIED to summarise how many AI projects had been imported by  
141 each Southeast Asian country from China until 2017. In doing so, I can analyse how active each  
142 Southeast Asian country had been as an AI importer from China. Then, I will use the IISS China  
143 Connects to summarise how many DSR projects had been planned, implemented, or completed  
144 between 2018 and 2020 by each Southeast Asian country. Through this approach, I am able to  
145 make data-driven evaluation on whether Southeast Asian countries importing more AI  
146 technologies from China until 2017 had formed tighter DSR partnerships with China between  
147 2018 and 2020.

148  
149 Moreover, since this paper focuses on examining the DSR relationships between China and  
150 Southeast Asia, it is scholarly relevant to evaluate the digital capacity of all Southeast Asian  
151 countries. The broader digital capacity a Southeast Asian country has, the better digital adoption  
152 environment that country can offer and possibly the more DSR projects the country can form.  
153 Here, I measure digital capacity based on the World Bank Open Data of (1) mobile cellular  
154 subscriptions (per 100 people) and (2) individuals using the Internet (% of the population) using

155 2018-2020 data. I partly decide to measure digital connectivity by the proxy of mobile cellular  
156 subscriptions (per 100 people) because mobile phones instead of landline phones and  
157 computers have become more important as daily necessities. Measuring mobile cellular  
158 subscriptions in any given country per 100 people is a preferable methodological design  
159 because Southeast Asian countries have drastic differences in population sizes, so measuring  
160 and comparing the actual annual numbers of mobile cellular subscriptions between countries is  
161 not informative and indicative.

162  
163 It is equally important to evaluate the economic capacity of all Southeast Asian countries. The  
164 broader economic capacity a Southeast Asian country has, the more favourable a digital  
165 adoption environment it can offer, and the closer digital trade ties it can form. Here, I measure  
166 economic capacity based on Southeast Asia's economic competitiveness, assessed by (3) the  
167 real GDP per capita (constant 2015 US\$) from the World Bank Open Data and (4) the Index of  
168 Economic Freedom scores using 2018-2020 data. I was considering whether I should choose  
169 the IMD World Competitiveness Ranking scores, Global Innovation Index scores or Index of  
170 Economic Freedom scores as one of the proxies for economic competitiveness. Initially, I  
171 believe the Global Innovation Index, which measures countries' innovative capability in  
172 knowledge, technology and creative outputs would be ideal to help capture economic capacity.  
173 However, the Global Innovation Index has missing data for Laos and Myanmar in the 2018 and  
174 2019 data. Alternatively, while the IMD World Competitiveness Ranking measures how  
175 competitive an economy is based on government efficiency, business efficiency, and  
176 infrastructure, I find this metric calculates both institutional and economic capacity of any given  
177 country which may fail to solely reflect country-level economic competitiveness. Therefore, I  
178 decide to use the Index of Economic Freedom, which measures policy environment for business  
179 such as trade freedom and fiscal health of any country. Compared to the IMD World  
180 Competitiveness Ranking, the Index of Economic Freedom metric is partially but relatively less  
181 reliant on institutional aspects to measure economic competitiveness. Therefore, in this  
182 research paper, I use both real GDP per capita (constant 2015 US\$) and the Index of Economic  
183 Freedom scores as proxies to measure Southeast Asian countries' economic competitiveness.

184  
185 In time-series or panel data, if the variables are non-stationary (i.e. contain trends), regressions  
186 can sometimes give false relationships known as spurious regressions. However, since my  
187 panel data is short ( $T=3$ ; years: 2018, 2019, 2020), I cannot meaningfully run robust panel unit  
188 root tests because these methods require longer time spans. However, any potential spurious  
189 regression concerns should be minimised given my methodological design. First, I build  
190 additional robustness check by re-running regressions using lagged explanatory values and  
191 clustered standard errors at the country level (in Table 6) to show that my empirical results are  
192 not an artifact of autocorrelation. Autocorrelation tells us that, in panel or time-series data,  
193 values today are often correlated with values yesterday. Therefore, in Table 6, I regress DSR  
194 projects in 2019 and 2020 on digital connectivity and economic competitiveness proxies using  
195 2018 and 2019 data respectively. Such an approach helps avoid running spurious regressions  
196 with false significance. Second, and more importantly, I strategically use proxies for digital  
197 connectivity and economic competitiveness that are plausibly stationary (or nearly stationary).  
198 For example, I use real GDP per capita (constant 2015 US\$) which is less trending than  
199 aggregate national GDP. Also, I use mobile cellular subscriptions (per 100 people) instead of  
200 the nominal total subscriptions as an independent variable, use individuals using the Internet (%  
201 of population), and use index scores from the Index of Economic Freedom. These mean my  
202 independent variables are either in percentages and index, which are far less problematic for  
203 stationarity.

204

205 It is acknowledged that the fixed-effects model, which relies only on within-country variation,  
206 inherently cannot estimate the coefficient for the time-invariant  $AI\_export_i$  variable. While  
207 advanced techniques like the between estimator or a two-stage process could potentially  
208 recover this estimate, the random-effects model was preferred for both the main analysis (Table  
209 5) and the robustness check (Table 6). This is because the random-effects model allows for the  
210 simultaneous estimation of all time-variant and time-invariant variables, directly addressing the  
211 core research question of this paper regarding the influence of  $AI\_export_i$  on DSR activity.

212  
213 Moreover, as mentioned, the IISS China Connects database shares all BRI and DSR projects  
214 planned, implemented, or completed between 2000 and 2020/2021. However, the BRI and DSR  
215 were introduced in 2013 and 2015 respectively. Some may question why the IISS China  
216 Connects database contains details about BRI and DSR projects from the 2000s while these  
217 initiatives were launched in the 2010s. It is noteworthy that the IISS China Connects database  
218 consists of officially labelled BRI and DSR projects. These are infrastructure and digital  
219 connectivity projects that the Chinese Government, ministerial agencies, or state media have  
220 recognised as falling under the broader BRI and DSR enterprises launched in 2013 and 2015  
221 respectively. Yet, the database further includes infrastructure projects that were not officially  
222 labelled as part of the BRI or DSR. These include projects initiated in the 2000s or early 2010s  
223 that did not receive explicit endorsement from the Chinese Government. These are known as  
224 “BRI-like” or “DSR-like” projects and are included in the IISS China Connects database (IISS  
225 China Connects, n.d.).

## 226 227 Findings

228  
229 According to the CAIED, 155 China’s AI-export projects were identified in 64 countries,  
230 classified as either AI applications or AI infrastructure (i.e., critical infrastructure for AI  
231 applications, or as a tool that enabled AI applications to be adapted in the future) (Bouey et al.,  
232 2023). Upon directly searching for country reports on the CAIED, as Table 1 summarises, three  
233 Southeast Asian countries received Chinese government-supported development finance  
234 projects that utilised or enabled AI technology between 2006 and 2017. These countries were  
235 Cambodia, Indonesia, and Laos. In Cambodia, in 2014, the Chinese Government granted RMB  
236 20 million (i.e., US\$2.76 million) to Cambodia’s Ministry of Public Security for a closed-circuit  
237 television (CCTV) Surveillance Project. Also, in 2015, China delivered 200 ultrasound medical  
238 equipment units to the Cambodian Government.

239  
240 In Indonesia, in 2011, the Chinese Government provided a US\$5.3 million grant for the  
241 Establishment and Operation of the Indonesia Maritime Surveillance Satellite System. In 2014,  
242 China signed an agreement to send remote sensing data to Indonesian remote sensing satellite  
243 ground stations to help the country update the stations and improve its maritime law  
244 enforcement and disaster prevention mitigation. In 2015, in partnership with China’s Huawei,  
245 Indonesia revealed the ‘Safe City’ model site in Bandung. The model site includes monitoring  
246 points, transmission networks, data platforms, resource management systems, broadband  
247 clusters, and emergency command centres.

248  
249 In Laos, in 2006, the China-Laos preferential loan framework agreement for Phase 1 of the  
250 National E-Government Project was signed. In the following year, China Eximbank and the Lao  
251 Government signed an RMB 280 million (i.e., US\$38.7 million) government concessional loan  
252 agreement for Phase 1 of the National E-Government Project. In 2012, Huawei donated a cloud  
253 computing laboratory to the National University of Laos in Vientiane. During the same donation  
254 ceremony, China also donated an electric car to the university. Then, in 2017, the Chinese

255 Government signed the National Seismic Monitoring Network Project and Earthquake Data  
256 Centre Project.

257  
258 **Table 1: AI Import Countries in Southeast Asia**  
259 *(Had the countries been the beneficiaries of Chinese Government-supported development*  
260 *finance projects that utilised or enabled AI technology between 2006 and 2017?)*

---

<b>Countries:</b>	<b>AI Projects/Descriptions</b>
<b>Cambodia</b>	<b>Donation of Ultrasound Medical Equipment</b>  On June 15, 2015, China delivered 200 ultrasound medical equipment to the Cambodian Government.  <b>CCTV Surveillance Project</b>  On August 13, 2014, the Chinese Government granted RMB 20 million to Cambodia's Ministry of Public Security for a CCTV Surveillance Project.
<b>Indonesia</b>	<b>Safe City Model Site Project</b>  Partnered with China's Huawei, Indonesia's first 'Safe City' model site was deployed in the main venue and surrounding areas of the event. The model site includes monitoring points, transmission networks, data platforms, resource management systems, broadband clusters, and emergency command centres. On April 11, 2015, the 'Safe City' model site in Bandung was unveiled.  <b>Maritime Surveillance Satellite System Project</b>  In 2011, the Chinese Government provided a US\$5.3 million grant for the Establishment and Operation of the Indonesia Maritime Surveillance Satellite System.  <b>Remote Sensing Data for Maritime Security Project</b>  On 6 October 2014, China signed an agreement to send remote sensing data to Indonesia remote sensing satellite ground stations to help the country update the stations and improve its maritime law enforcement and disaster prevention mitigation.
<b>Laos</b>	<b>Donation of Cloud Computing Laboratory</b>  On November 30, 2012, Huawei donated a cloud computing laboratory to the National University of Laos in Vientiane. During the same donation ceremony, China also donated an electric car to the university.  <b>Phase 1 of National E-Government Project</b>  On November 20, 2006, the Chinese Government and Lao Government signed a preferential loan framework agreement for

---

Phase 1 of the National E-Government Project. Then, in 2007, China Eximbank and the Lao Government signed an RMB 280 million government concessional loan agreement for Phase 1 of the National E-Government Project.

On September 18, 2008, the Chinese Government and Lao Government signed an RMB 546 million preferential loan framework agreement for Phase 2 of the National E-Government Project. However, it is unclear if and when an actual loan agreement for Phase 2 was finalised. This issue merits further investigation.

### **National Seismic Monitoring Network Project and Earthquake Data Centre Project**

On Aug 11, 2017, the Chinese Government signed the National Seismic Monitoring Network Project and Earthquake Data Centre Project. After the project is completed, Laos will have the ability to report earthquakes of magnitude 3.0 or above in most parts of the country, effectively improve the seismic monitoring capacity of Laos, improve the level of public service of the Lao Government, and provide a strong guarantee for Laos' economic and social development.

---

#### **Source: RAND**

261  
262  
263 I extract relevant data from the CAIED, IISS China Connects and World Bank Open Data  
264 databases and from the Index of Economic Freedom ranking and transport them into a newly  
265 created panel dataset on STATA 18.2. The panel dataset contains observations from the same  
266 units (i.e. countries) over multiple time periods (i.e. years). Table 2 shows the description of  
267 variable definitions and sources. Here I aim to build linear regression models (without and with  
268 using lagged explanatory variables) for panel data to examine the average effect of (1) AI export  
269 from China, (2) mobile cellular subscriptions (per 100 people) and (3) individuals using the  
270 Internet (% of the population), (4) real GDP per capita (constant 2015 US\$), (5) the Index of  
271 Economic Freedom scores on DSR activities across all involved Southeast Asian countries.  
272 Appendix 1 lists out all the relevant variables of the panel dataset. We can see that country and  
273 AI export from China are time-invariant variables. Here country refers to the 10 Southeast Asian  
274 countries. AI export from China (i.e. the variable  $AI\_export_i$ ) means whether each country had  
275 any AI import trade from China between 2006 and 2017 (1 = yes; 0 = no). The variable  $DSR_{i,t}$   
276 refers to the number of planned, implemented, or completed DSR projects a Southeast Asian  
277 country undertook in any given year, between 2018 and 2020. The variables  $mobile_{i,t}$ ,  $Internet_{i,t}$ ,  
278  $real\_GDP\_per\_capita_{i,t}$  and  $IEF_{i,t}$  refer to mobile cellular subscriptions (per 100 people),  
279 individuals using the Internet (% of the population), real GDP per capita (constant 2015 US\$)  
280 and the Index of Economic Freedom scores respectively.

281  
282 **Table 2: Description of Variable Definitions and Sources**

<b>Variable</b>	<b>Description</b>	<b>Source</b>
$Country_i$	<i>Southeast Asian country name (Group Identifier)</i>	By author
$Year_t$	<i>Year of data collection (Time Identifier)</i>	By author
$DSR_{i,t}$	<i>How many DSR projects were planned,</i>	IISS China Connects

---

	<i>implemented, or completed by any given Southeast Asian country in any given year?</i> <b>(Dependent Variable)</b>	
<i>AI_export<sub>i</sub></i>	<i>How many AI or AI-enabling projects were imported from China by any given Southeast Asian country in any given year? (Time-Invariant Explanatory Variable)</i>	CAIED
<i>mobile<sub>i,t</sub></i>	<i>What was the number of mobile cellular subscriptions (per 100 people) in any given Southeast Asian country in any given year?</i>	World Bank Open Data
<i>Internet<sub>i,t</sub></i>	<i>How many individuals were using the Internet (as % of population) in any given Southeast Asian country in any given year?</i>	World Bank Open Data
<i>real_GDP_per_capita<sub>i,t</sub></i>	<i>What was the real GDP per capita (constant 2015 US\$) in any given Southeast Asian country in any given year?</i>	World Bank Open Data
<i>IEF<sub>i,t</sub></i>	<i>What was the Index of Economic Freedom score in any given Southeast Asian country in any given year?</i>	Index of Economic Freedom

---

283  
284 Before building linear regression models for panel data, I would need to examine whether there  
285 is any collinearity issue among the independent variables. Table 3 shows the variance inflation  
286 factor (VIF) values of all independent variables that are used for building linear regression  
287 models for panel data. The VIF values in the panel dataset indicate that there is no significant  
288 multicollinearity among the independent variables, as all values are between 1 and 5. The VIF  
289 value tells us how much the variance of an estimated regression coefficient is inflated due to its  
290 linear relationship with the other independent variables. A VIF value of 1 means there is no  
291 correlation between that variable and the others; and a VIF value that is lower than 5 poses no  
292 concern.

293  
294

**Table 3: Variance Inflation Factor (VIF)**

<b>Variable</b>	<b>VIF</b>	<b>1/VIF</b>
<i>AI_export<sub>i</sub></i>	2.11	0.47
<i>mobile<sub>i,t</sub></i>	1.99	0.50
<i>Internet<sub>i,t</sub></i>	2.35	0.43
<i>real_GDP_per_capita<sub>i,t</sub></i>	3.68	0.27
<i>IEF<sub>i,t</sub></i>	3.62	0.28
Mean VIF	2.75	

295  
296 Once I run the VIF test, there is no meaningful need to conduct the Spearman rank correlations.  
297 However, I decide to develop and present Table 4 as an additional source that indicates no  
298 concerning multicolliearnity issue is detected. Table 4 shows that correlations between AI export  
299 from China and all other independent variables that are used for regression analysis (in Tables

5 and 6). We can see that many variables are moderately to strongly correlated to one another at a statistical significance ( $p < 0.05$ ) level. While the correlations between  $real\_GDP\_per\_capita_{i,t}$  and  $IEF_{i,t}$  and between  $Internet_{i,t}$  and  $real\_GDP\_per\_capita_{i,t}$  are both positively strong, the VIF test results (in Table 3) already assures that no multicollinearity issues need to be addressed.

Table 4: Spearman Rank Correlation Table between AI Export from China (2006-17) and Other Variables

	$AI\_export_i$	$mobile_{i,t}$	$Internet_{i,t}$	$real\_GDP\_per\_capita_{i,t}$	$IEF_{i,t}$
$AI\_export_i$	1.0000				
$mobile_{i,t}$	-0.6177***	1.0000			
$Internet_{i,t}$	-0.4612*	0.2725	1.0000		
$real\_GDP\_per\_capita_{i,t}$	-0.4160*	0.3197	0.7965***	1.0000	
$IEF_{i,t}$	-0.3068	0.3449	0.6293***	0.8684***	1.0000

N (29)

Note: \*\*\*, \*\*, \* denotes significance at the 0.1%, 1%, and 5% level, respectively.

When building linear regression models for panel data, I use  $DSR_{i,t}$  as the dependent variable and  $AI\_export_i$ ,  $mobile_{i,t}$ ,  $Internet_{i,t}$ ,  $real\_GDP\_per\_capita_{i,t}$  and  $IEF_{i,t}$  as the independent variables. Here are the regression equations and assumptions for fixed-effects and random-effects:

### 1. Fixed-Effects Model

The fixed-effects model absorbs all time-invariant, country-specific differences ( $\alpha_i$ ) into the intercept, effectively estimating only the within-country variation. Since the variable  $AI\_export_i$  is time-invariant for each country, it is excluded from the fixed-effects estimation.

$$DSR_{it} = \beta_0 + \beta_2 mobile_{it} + \beta_3 Internet_{it} + \beta_4 real\_GDP\_per\_capita_{it} + \beta_5 IEF_{it} + \alpha_i + \epsilon_{it}$$

- $\alpha_i$ : Represents the unobserved time-invariant country-specific effects (group fixed effects).
- $\epsilon_{it}$ : The idiosyncratic error term, assumed to be independent across observations but heteroscedastic (i.e., not identically distributed):  $E[\epsilon_{it} | X_{it}, \alpha_i] = 0$  and  $Var(\epsilon_{it}) = \sigma_{it}^2$ . The heteroscedasticity-robust standard errors are used to provide valid inference despite this non-constant variance.

### 2. Random-Effects Model

The random-effects model assumes the country-specific effects ( $\alpha_i$ ) are random and uncorrelated with the independent variables, allowing for estimation using both within- and between-country variation.

$$DSR_{it} = \beta_0 + \beta_1 AI\_export_i + \beta_2 mobile_{it} + \beta_3 Internet_{it} + \beta_4 real\_GDP\_per\_capita_{it} + \beta_5 IEF_{it} + (\alpha_i + \epsilon_{it})$$

- $u_{it} = \alpha_i + \epsilon_{it}$ . The composite error term.
- $\alpha_i$ : Represents the unobserved time-invariant country-specific effects, modelled as random and assumed to be uncorrelated with  $X_{it}$ .

341 iii.  $\epsilon_{it}$ : The idiosyncratic error term, assumed to be independent across observations but  
342 potentially heteroscedastic. The heteroscedasticity-robust standard errors are used to  
343 provide valid inference for this model.  
344

345 I then run the Hausman test. The Hausman test is formally conducted to assess the suitability of  
346 the random-effects model. The null hypothesis ( $H_0$ ) of this test states that the unique errors are  
347 uncorrelated with the regressors, implying that both the fixed-effects and random-effects  
348 estimators are consistent. Since the resulting  $p$ -value of 0.71 is substantially greater than the  
349 conventional 0.05 threshold, we fail to reject the null hypothesis, confirming the random-effects  
350 model as the preferred and most efficient estimator for this primary analysis. Unlike the fixed-  
351 effects model, the random-effects model focuses on both within- and between-country variation.  
352 The fixed-effects model, however, removes anything that is constant within a group (i.e. within a  
353 country). Table 5 shows the empirical outputs of the fixed-effect model, random-effects model  
354 and Hausman test. From Table 5, it is conventionally statistically significant (i.e.  $p < 0.001$ ) to  
355 argue that for every unit increase in mobile cellular subscriptions (per 100 people), there is 0.05  
356 unit increase in DSR partnerships between Southeast Asian countries and China. Also, it is  
357 statistically significant (i.e.  $p < 0.05$ ) to argue that for every unit increase in the use of Internet  
358 (as % of population), there is 0.03 unit decrease in DSR partnerships. Moreover, it is statistically  
359 significant (i.e.  $p < 0.001$ ) to argue that for every unit increase in the Index of Economic  
360 Freedom score, there is 0.21 unit increase in DSR partnerships between Southeast Asian  
361 countries and China. It is noteworthy that this research paper addresses associations but not  
362 causal relationships.  
363

364 **Table 5: Regression Results from Fixed-Effects and Random-Effects Models (and**  
365 **Hausman Test)**

Variable	Fixed-effects model		Random-effects model	
	coefficient	standard error	coefficient	standard error
$AI\_export_i$	/	/	0.62	0.46
$mobile_{i,t}$	0.09	0.04	0.05***	0.01
$Internet_{i,t}$	-0.14	0.09	-0.03*	0.01
$real\_GDP\_per\_capita_{i,t}$	0.00	0.00	-0.00***	0.00
$IEF_{i,t}$	0.75	0.41	0.21***	0.02
constant	-56.51	24.72	-13.59***	1.47
N	29		29	
F-statistic/ Wald $\chi^2$	2.59 (df: 4,9)		265.27 (df: 5)	
P-value	0.1083		0.0000	

  

Hausman Test	$\chi^2 (4) = 2.13$	$p = 0.71$
--------------	---------------------	------------

366 Notes: Heteroscedasticity-Robust Standard Errors were used via `vce(robust)` in estimation. The Hausman  
367 test was performed using the standard command to justify the model choice ( $p=0.71$ ). \*\*\*, \*\*, \* denotes  
368 significance at the 0.1%, 1%, and 5% level, respectively.  
369

370 Conducting this study by solely relying on the empirical results from one single regression  
371 model (Table 5) fails to assure the robustness of my research. Therefore, I take autocorrelation  
372 into account by building an additional, advanced regression model with lagged explanatory  
373 variables and clustered standard errors. I have to build clustered standard errors at the country  
374 level in order to give my empirical results (in Table 6) against heteroskedasticity and

375 autocorrelation inside each country's short time series. This helps avoid any spurious  
376 significance. To choose between fixed-effects and random-effects estimators, I conduct a  
377 Sargan-Hansen test.

378  
379 Despite efforts to conduct a robust Hausman test using the recommended *rhausman* STATA  
380 routine, the procedure could not be completed. The failure was computational, arising from the  
381 small, severely unbalanced structure of the panel dataset (19 total observations across 10  
382 groups, with a high proportion of doubletons). Calculating a consistent  $p$ -value for the clustered  
383 standard errors requires a cluster bootstrap. The repeated resampling of these small groups  
384 consistently led to estimation samples with insufficient degrees of freedom and within-group  
385 variation, preventing the fixed-effects model from being computed in numerous iterations and  
386 generating a “no observations” error.

387  
388 To overcome this constraint and obtain a statistically sound test of model specification, we  
389 adopted the Sargan-Hansen C-statistic, implemented via the community-contributed *xtoverid*  
390 routine, as the robust alternative. This approach is superior to the standard Hausman test as it  
391 remains consistent when employing clustered standard errors. The test assesses the validity of  
392 the random-effects model's central assumption—that the unobserved country-specific effects  
393 are uncorrelated with the regressors—by evaluating a set of overidentifying restrictions, thereby  
394 providing a reliable basis for model choice.

395  
396 The application of the Sargan-Hansen C-statistic to the final random-effects estimation yielded a  
397 test statistic of 13.079 with four degrees of freedom, resulting in a  $p$ -value of 0.0509. Since this  
398 value is above the conventional 0.05 significance threshold, we are not statistically confident to  
399 reject the null hypothesis—that the random-effects estimator is consistent and efficient. This  
400 robust evidence confirms that the random-effects assumption is held, compelling its selection as  
401 the preferred and consistent estimator for the final interpretation of the lagged variables in Table  
402 6.

403  
404 Once we confirm that the random-effects model should be used for data analysis, I develop  
405 Table 6 that shows the fixed-effects model and random-effects model with lagged explanatory  
406 variables and clustered standard errors at the country level. It is statistically significant (i.e.  $p <$   
407  $0.05$ ) to argue that for every unit increase in the Index of Economic Freedom score, there is  
408 0.28 unit increase in DSR partnerships between Southeast Asian countries and China (Table 6).  
409 Below is the regression equation and assumptions for random-effects with lagged explanatory  
410 variables and clustered standard errors:

411  
412 **3. Random-Effects Model (with lagged explanatory variables and clustered standard**  
413 **errors)**

414  
415 
$$DSR_{it} = \beta_0 + \beta_1 AI\_export_{it} + \beta_2 mobile_{i,t-1} + \beta_3 Internet_{i,t-1} + \beta_4 real\_GDP\_per\_capita_{i,t-1} + \beta_5 IEF_{i,t-1} + (\alpha_i + \epsilon_{it})$$
  
416

- 417  
418 iv. *AI\_export<sub>it</sub>*: The *AI\_export<sub>it</sub>* variable is time-invariant and does not need to be lagged.  
419 *mobile<sub>i,t-1</sub>*, *Internet<sub>i,t-1</sub>*, *real\_GDP\_per\_capita<sub>i,t-1</sub>*, *IEF<sub>i,t-1</sub>*: The explanatory variables (digital  
420 connectivity and economic competitiveness proxies) are lagged by one period (year  $t-1$ ).  
421 v.  $\alpha_i$ : The unobserved time-invariant country-specific random effect, as defined in the random-  
422 effects model for Table 5.  
423 vi.  $\epsilon_{it}$ : The idiosyncratic error term.

424 vii. Error term assumptions (clustered standard errors): The use of clustered standard errors at  
425 the country level modifies the core assumption about the error term's variance and  
426 covariance structure. It assumes that the errors ( $u_{it}$ ) may be correlated within each country  
427 (autocorrelation) and may have different variances across countries (heteroskedasticity),  
428 but are independent across countries (clusters). This is a more robust approach that does  
429 not require the strong independent and identically distributed assumption for the  
430 idiosyncratic errors  $\epsilon_{it}$  that is often assumed in standard random-effects models.

431

432 **Table 6: Regression Results from Fixed-Effects and Random-Effects Models (Lagged**  
433 **Explanatory Variables, Clustered Standard Errors)**

Variable	Fixed-effects model		Random-effects model	
	coefficient	standard error	coefficient	standard error
$AI\_export_i$	/	/	-1.40	1.99
$mobile_{i,t-1}$	-0.01	0.06	0.00	0.02
$Internet_{i,t-1}$	-0.56	0.27	-0.07	0.04
$real\_GDP\_per\_capita_{i,t-1}$	-0.01	0.00	-0.00	0.00
$IEF_{i,t-1}$	1.75	0.90	0.28***	0.08
constant	-8.21	43.67	-9.66*	4.20
N	19		19	
F-statistic/ Wald $\chi^2$	6.79 (df: 4,9)		27.76 (df: 5)	
P-value	0.0084		0.0000	

Sargan-Hansen C-statistic  $\chi^2(4) = 13.08$   $p = 0.05$

434 Note: \*\*\*, \*\*, \* denotes significance at the 0.1%, 1%, and 5% level, respectively.

435

## 436 Discussions

437

438 This paper attempts to explore the relationships between being an active AI importer from China  
439 and being an active DSR partner with China. However, findings suggest that Southeast Asian  
440 countries importing AI technologies from China between 2006 and 2017 had not necessarily  
441 been more active in DSR partnerships in the next few years (see Tables 5 and 6). Instead, the  
442 research indicates that digital connectivity (mobile phone instead of Internet access; in Table 5)  
443 and economic freedom (in both Tables 5 and 6) are minor and significant factors respectively in  
444 being active DSR partners.

445

446 According to the IISS China Connects database, within the region, Indonesia is mediocre in  
447 terms of digital connectivity (ranked 6<sup>th</sup> among all 10 Southeast Asian countries) and economic  
448 competitiveness (ranked 5<sup>th</sup> among all 10 Southeast Asian countries). However, Indonesia was  
449 an active AI importer from China and has also been an active DSR player. Despite being an  
450 upper-middle-income country currently, Indonesia was a lower-middle-income country between  
451 2006 and 2017. Therefore, during the period when Indonesia imported AI technologies from  
452 China, it was significantly underdeveloped digitally and economically. This explains why  
453 Indonesia depended on importing AI technologies from China in the 2000s and early 2010s to  
454 expand its digital and technological capacity. It is worth noting that the country has had notable  
455 economic and geopolitical potential, given its sizable population and willingness as a BRI/DSR  
456 partner. As mentioned, Indonesia has been very active in forming BRI/DSR partnerships with  
457 China. Despite ongoing geopolitical conflicts, such as the South China Sea disputes, Indonesia

458 has been open to strengthening its DSR ties with China to ensure long-term (digital)  
459 infrastructure development. Indonesia's geopolitical attitudes have indicated why it is a leading  
460 DSR partner within Southeast Asia.

461  
462 In addition, the Philippines is a very digitally connected country. It had also been a relatively  
463 active DSR player under President Duterte's administration (its DSR activities were only behind  
464 Singapore, Indonesia, Thailand and Malaysia between 2018 and 2020). During President  
465 Duterte's administration (between 2016 and 2022), the Philippines was a willing BRI and DSR  
466 partner with China. The geopolitical attitudes of the Philippines under President Duterte's  
467 administration explain why, in parallel with being very digitally connected, the country was  
468 willing to form strong DSR ties with China.

469  
470 Another key finding is that Brunei, being an advanced economy with high GDP per capita, is the  
471 second-least active DSR player regionally. This circumstance is due to Brunei's foreign policy  
472 attitudes. For example, in 2023, Brunei was the only Southeast Asian country with a negative  
473 foreign direct investment (FDI) inflow. Singapore received FDI of nearly US\$160 billion, and  
474 Indonesia received nearly US\$22 billion. Even Myanmar and Laos received nearly US\$2 billion  
475 each. However, Brunei recorded negative FDI of about US\$57 million that year (Statista  
476 Research Department, 2025). Therefore, it is not surprising that Brunei had not been an active  
477 DSR player between 2018 and 2020 (i.e. only Laos was more DSR-inactive within the region).

478  
479 Overall, countries lacking digital connectivity were more likely to become AI importers from  
480 China (between 2006 and 2017). Also, countries with better digital connectivity might be more  
481 likely been active DSR players (between 2018 and 2020). More importantly, we find a positive  
482 impact that Southeast Asian countries with more favourable economic and trade environments,  
483 measured by their economic freedom, had been more likely to become active DSR partners  
484 from 2018 to 2020. The DSR partnerships allow many developing countries to overcome  
485 weaknesses in digital infrastructure and tap into vast economic opportunities unlocked by the  
486 digital revolution (Ngeow, 2021). Despite the benefits, scepticism has surrounded Southeast  
487 Asia, where critics question whether China is exporting its digital authoritarianism to developing  
488 countries with weak democratic foundations. China's high-tech surveillance technologies could  
489 be used to support authoritarian regimes in monitoring and suppressing political opponents.  
490 Critics also express concern that China is building 'internet sovereignty' in the developing world,  
491 leading to the long-term development of a more illiberal world order (Ngeow, 2021).

492  
493 The export of information technology and AI infrastructure appears to be a winning formula for  
494 China, allowing the Chinese Government to promote its own standards and open up new  
495 markets for Chinese technology companies. Despite advanced technologies traditionally being  
496 dominated by American, European, and South Korean companies, Chinese technological  
497 products—where the prices and quality are generally considered lower—are acceptable in new,  
498 emerging markets (Chung, 2023). To further consolidate its technological dominance in the  
499 developing world, partnerships play a crucial economic and geopolitical role in disseminating  
500 China's global influence.

501  
502 From Southeast Asia's standpoint, stronger digital connectivity and competitiveness help open  
503 possibilities for regional economic development, narrow the digital divide in accessibility, and  
504 provide good-value-for-money products and services for local citizens. Reliable data collection,  
505 transmission, and sharing among DSR partner countries regionally and globally may also  
506 provide supplementary information to monitor and evaluate the progress on technology-  
507 facilitated sustainable development (Sen & Li, 2019). Therefore, despite national security  
508 concerns, DSR partnerships, if properly regulated, are conducive to developing countries' long-

509 term development. This explains why most Southeast Asian countries have been active DSR  
510 players in recent years.

## 511 512 **Conclusions**

513  
514 Southeast Asia has been a key player in China's BRI and DSR cooperation. A major driver of  
515 forming DSR partnerships with China is to facilitate Southeast Asia's economic, financial, and  
516 sustainable growth, in addition to strengthening the region's digital connectivity. Geopolitical  
517 tensions between China and Southeast Asia may not necessarily hinder DSR partnerships. For  
518 example, countries such as Indonesia and Thailand had been open to tightening their DSR ties  
519 with China, according to 2018-2020 data. Singapore, Indonesia, Thailand, Malaysia, the  
520 Philippines and Vietnam are the six largest economies (by national GDP) in Southeast Asia.  
521 These six Southeast Asian countries had also been the most active DSR partners in recent  
522 years within the region. In this study, the main takeaway is that, among all measured time-  
523 variant independent variables, Southeast Asian countries' levels of economic freedom had been  
524 the strongest determining factor of whether they would form close DSR ties with China. Forming  
525 strong DSR ties with the largest economies in Southeast Asia allows China to exert significant  
526 geopolitical, economic, and technological influence regionally. This further reinforces China's  
527 global position as a leader in shaping the order of the developing world.

528  
529 Findings suggest that importing AI technologies from China might have been need-based  
530 between 2006 and 2017. The findings show that Southeast Asian countries with the least digital  
531 and economic capacities were more likely to have been AI importers from China. However, in  
532 the 2020s, the AI revolution has drastically transformed the global landscape in the digital  
533 economy and digital geopolitics. As the United States, China, and the European Union have  
534 been actively and fiercely competing in technological and AI fields, China's DSR partnerships  
535 may gain more traction in the developing world. This is not only because China may become  
536 more active in expanding its DSR ties with new and emerging markets, but also because more  
537 developing economies have recognised the importance of staying digitally relevant and  
538 competitive for long-term developmental growth. It will be interesting to see whether Indonesia  
539 will surpass Singapore to become the most active DSR player within Southeast Asia. It will also  
540 be valuable to see whether Southeast Asian countries, despite the persistent geopolitical  
541 tensions with China, have strengthened their DSR ties with China in the 2020s as technological  
542 advancement continues to shape the regional and global order.

## 543 544 **Statements and Declarations**

545  
546 The author does not have any competing interests that are directly or indirectly related to the  
547 work submitted for publication to disclose. Also, the author does not receive any funding to  
548 develop this study.

## 549 550 **References**

- 551  
552 Bouey, J., Hu, L., Scholl, K., Marcellino, W., Yi, S., Dossani, R., Gazis, J., Malik, A.,  
553 Solomon, K., Zhang, S., & Shufer, A. (2023). China's AI Exports Database (CAIED). RAND  
554 Corporation. Retrieved from <https://www.rand.org/pubs/tools/TLA2696-1.html> (Accessed March  
555 5, 2025).
- 556 Busbarat, P., Camba, A., Pratiwi, F., Po, S., Do, H., Sengkhambhouthavong, B., Yean, T.,  
557 & Thuzar, M. (2023). How Has China's Belt and Road Initiative Impacted Southeast Asian  
558 Countries? Carnegie Endowment for International Peace. Retrieved from

- 559 [https://carnegieendowment.org/posts/2023/12/how-has-chinas-belt-and-road-initiative-impacted-](https://carnegieendowment.org/posts/2023/12/how-has-chinas-belt-and-road-initiative-impacted-southeast-asian-countries?lang=en)  
560 [southeast-asian-countries?lang=en](https://carnegieendowment.org/posts/2023/12/how-has-chinas-belt-and-road-initiative-impacted-southeast-asian-countries?lang=en) (Accessed February 15, 2025).
- 561 IISS China Connects (n.d.). China Connects: Methodology. Retrieved from  
562 <https://chinaconnects.iiss.org/methodology.aspx> (Accessed March 5, 2025).
- 563 Chung, C. (2023). China's Digital Silk Road. *East Asian Policy*, 15(2), 123-37.
- 564 Dayant, A. & Stanhope, G. (2024). *Mind the Gap: Ambition Versus Delivery in China's*  
565 *BRI Megaprojects in Southeast Asia*. Sydney: Lowy Institute.
- 566 Feigenbaum, E., Ian, C., & Noor, E. (2024). China through A Southeast Asian Lens.  
567 Carnegie Endowment for International Peace. Retrieved from  
568 [https://carnegieendowment.org/research/2024/11/china-through-a-southeast-asian-](https://carnegieendowment.org/research/2024/11/china-through-a-southeast-asian-lens?lang=en)  
569 [lens?lang=en](https://carnegieendowment.org/research/2024/11/china-through-a-southeast-asian-lens?lang=en) (Accessed February 15, 2025).
- 570 Gordon, D. (2022). The Digital Silk Road: Introduction. International Institute for  
571 Strategic Studies. Retrieved from [https://www.iiss.org/sv/online-analysis/online-](https://www.iiss.org/sv/online-analysis/online-analysis/2022/12/digital-silk-road-introduction/)  
572 [analysis/2022/12/digital-silk-road-introduction/](https://www.iiss.org/sv/online-analysis/online-analysis/2022/12/digital-silk-road-introduction/) (Accessed February 24, 2025).
- 573 LSE Ideas (2018). *China's Belt and Road Initiative (BRI) and Southeast Asia*. Kuala  
574 Lumpur: CIMB Southeast Asia Research.
- 575 McBride, J., Berman, N., & Chatzky, A. (2023). China's Massive Belt and Road Initiative.  
576 Council on Foreign Relations. Retrieved from [https://www.cfr.org/background/chinas-massive-](https://www.cfr.org/background/chinas-massive-belt-and-road-initiative)  
577 [belt-and-road-initiative](https://www.cfr.org/background/chinas-massive-belt-and-road-initiative) (Accessed March 1, 2025).
- 578 Ngeow, Chow-Bing (2021). *China-ASEAN Information Harbour: The Digital Silk Road*  
579 *from Guangxi to Southeast Asia*. Bonn: Friedrich-Ebert-Stiftung.
- 580 Sen, G. & Li, B. (2019). The Digital Silk Road and the Sustainable Development Goals.  
581 *IDS Bulletin*, 50(4). Retrieved from  
582 <https://bulletin.ids.ac.uk/index.php/idsbo/article/view/3061/3037> (Accessed March 5, 2025).
- 583 Statista Research Department (2025). Foreign Direct Investment (FDI) Inflows to the  
584 ASEAN Member Countries in 2023, By Country (in Billion U.S. Dollars). Statista. Retrieved from  
585 [https://www.statista.com/statistics/1008281/asean-foreign-direct-investment-inflows-by-](https://www.statista.com/statistics/1008281/asean-foreign-direct-investment-inflows-by-country/#:~:text=In%202023%2C%20Singapore%20received%20foreign,billion%20U.S.%20dollars%20in%202023)  
586 [country/#:~:text=In%202023%2C%20Singapore%20received%20foreign,billion%20U.S.%20dollars%20in%202023](https://www.statista.com/statistics/1008281/asean-foreign-direct-investment-inflows-by-country/#:~:text=In%202023%2C%20Singapore%20received%20foreign,billion%20U.S.%20dollars%20in%202023) (Accessed February 28, 2025).
- 587  
588 Yu, H. (2017). China's Belt and Road Initiative and Its Implications for Southeast Asia.  
589 *Asia Policy*, 24, 117-22.
- 590 Zheng, W. (2024). China's Digital Silk Road (DSR) in Southeast Asia: Progress and  
591 Challenges. *ISEAS Perspective*, No. 1. Retrieved from [https://www.iseas.edu.sg/wp-](https://www.iseas.edu.sg/wp-content/uploads/2024/01/ISEAS_Perspective_2024_1.pdf)  
592 [content/uploads/2024/01/ISEAS\\_Perspective\\_2024\\_1.pdf](https://www.iseas.edu.sg/wp-content/uploads/2024/01/ISEAS_Perspective_2024_1.pdf) (Accessed February 28, 2025).

## 593 594 Appendix

### 595 596 Appendix 1: List of Relevant Variables from the CAIED and IISS China Connects 597 Database

<i>Country<sub>i</sub></i>	<i>Year<sub>t</sub></i>	<i>DSR<sub>i,t</sub></i>	<i>AI export<sub>i</sub></i>	<i>mobile<sub>i,t</sub></i>	<i>Internet<sub>i,t</sub></i>	<i>real GDP per capita<sub>i,t</sub></i>	<i>IEF<sub>i,t</sub></i>
Brunei	2018	0	0	129.27	95.0	29200.20	64.2
Brunei	2019	1	0	129.85	95.0	29996.20	65.1
Brunei	2020	1	0	119.93	96.3	30016.00	66.6
Cambodia	2018	2	1	119.31	.	1884.28	58.7
Cambodia	2019	6	1	129.96	52.3	2008.32	57.8
Cambodia	2020	0	1	126.08	53.7	1908.63	57.3
Indonesia	2018	0	1	118.33	39.9	3701.32	64.2
Indonesia	2019	8	1	125.24	47.7	3850.90	65.8
Indonesia	2020	5	1	129.40	53.7	3739.45	67.2
Laos	2018	0	1	51.38	36.3	2459.98	53.6

Laos	2019	0	1	64.07	47.0	2554.96	57.4
Laos	2020	0	1	63.11	54.0	2529.75	55.5
Malaysia	2018	6	0	128.87	81.2	10610.20	74.5
Malaysia	2019	9	0	133.37	84.2	10903.00	74.0
Malaysia	2020	0	0	129.02	89.6	10171.50	74.7
Myanmar	2018	3	0	116.97	29.4	1361.57	53.9
Myanmar	2019	5	0	155.67	36.5	1440.99	53.6
Myanmar	2020	1	0	148.16	45.4	1301.31	54.0
Philippines	2018	5	0	122.96	44.1	3410.94	65.0
Philippines	2019	4	0	151.01	43.0	3575.88	63.8
Philippines	2020	1	0	133.46	53.8	3198.67	64.5
Singapore	2018	2	0	152.07	88.2	61250.40	88.8
Singapore	2019	9	0	159.35	88.9	61345.50	89.4
Singapore	2020	6	0	150.26	92.0	59189.70	89.4
Thailand	2018	5	0	175.27	56.8	6314.20	67.1
Thailand	2019	8	0	181.22	66.7	6434.54	68.3
Thailand	2020	5	0	162.33	77.8	6035.19	69.4
Vietnam	2018	2	0	146.14	69.8	3048.28	53.1
Vietnam	2019	2	0	140.19	68.7	3241.08	55.3
Vietnam	2020	4	0	141.66	70.3	3303.17	58.8