

RESEARCH SHORT

INSIGHT Sharing academic research

November 2, 2022

What this is:

Research Shorts fuse two research cultures, blending intelligence information with academic insights on topics of interest to the IC. *Shorts* are intended to constructively start and add to the IC's conversations—not to finish them. NIU, the sole fully TS/SCI-cleared university, publishes the *Shorts*.

What this is not:

Research Shorts are not finished intelligence and are not IC-coordinated. The opinions expressed are solely those of the author and do not represent those of any U.S. Government agency.



Weighing Taiwan's Economic Take-Aways from Russia-Ukraine War

Dr. Janice Hinton and Dr. Phuong Hoang

Asia watchers have been exploring what lessons Taiwan might take from Russia's invasion of Ukraine to bolster Taipei's ability to deter or defend against a Chinese attack. They have focused on global political engagement and military preparedness. But what are the economic steps Taipei might take to increase its global posture and encourage the world's developed democracies to come to Taiwan's defense? This *Research Short* will explore the economic tools Taipei might use to strengthen its global standing and their implications for the United States.

Looking Beyond Political and Military Lessons

Taiwan joined the United States and other democracies in imposing robust economic sanctions on Moscow after Russia invaded Ukraine in 2022. Although largely symbolic (Russia and Taiwan account for just 0.75 percent of each other's trade^{1,2}), Taipei's sanctions covered 58 high-tech commodities, some of which—like Russian-designed Elbrus chips made by the Taiwan Semiconductor Manufacturing Company (TSMC)—support the Russian military and security services.³ Taiwan also has donated more than \$33 million in humanitarian relief to Ukraine and those neighbors absorbing Ukrainian refugees.⁴ These actions have signaled Taiwan's commitment to a global community dedicated to democratic principles—a community that Taipei hopes would defend Taiwan and impose comparable sanctions on China if Beijing were to use military force against the island. Indeed, Taiwan Foreign Minister Joseph Wu explicitly linked these two messages in May when he expanded Russian sanctions to include Belarus.⁵

Yet Taipei may doubt the effectiveness of this messaging, as it studies how lessons from the Russia-Ukraine war would apply to a China-Taiwan conflict. The first is that countries willing to sanction Moscow may balk at comparable measures on Beijing, because China's greater global commercial and financial clout⁶ would up the pain for both sanctioning countries and the global economy.^{7, 8} European leaders have shied away from certain measures against Russia so as not to harm their own economies.^{9, 10} Opinion polls, as of spring 2022, reveal that majorities in only 11 of the 53 countries support cutting economic ties to China if it were to invade Taiwan.¹¹ (see Appendix 1.) Taiwanese, themselves, note global fears about the impact of countermeasures China could impose, like using its monopoly position to withhold access to essential rare-earth metals. Taiwanese editorials are calling for Taipei to focus on political and military measures to deter forced unification.¹² Taiwan's political status also could impede potential sanctions: while nations and intergovernmental organizations, such as the UN, almost universally recognize Ukraine as an independent state, only 14 countries grant Taiwan that status.¹³

Another lesson Taiwan has drawn from the Russia-Ukraine war is the need to develop the same spirit of resistance that Ukrainians have shown, which has drawn international support to Kyiv's defense. The Taiwan public's confidence that the United States would defend Taiwan against a nuclear-armed aggressor dipped after the Russia-Ukraine war began and has only slowly rebounded in recent months. Surveys by National Chengchi University in Taiwan show 40 percent of respondents in March 2022 anticipated the United States would take military action, down from 57 percent in September 2021. However, the surveys also suggest the Taiwanese public's willingness to fight correlates directly to its confidence in Taiwan's own defensive capabilities, not to U.S. intervention (see Appendix 2). This spirit is prompting Taiwan to invest more in anti-access/area-denial



KEY RESEARCH INSIGHTS

- Taiwan is posed to take economic, as well as much touted political and military, steps to boost its global standing and defenses against China.
- In addition to developing specialized comparative advantage in industries beyond semiconductors and fortifying technical alliances abroad, Taipei is likely to press even harder for FTAs with the United States, the EU, and other democratic economies.
- Future academic research could include indicators of Taiwan's movement toward declared independence. China's feared "gray rhino" event.

weapon systems, rethink conscription, accelerate robust reservist training, and expand civil defense preparedness.^{14, 15}

In keeping with these lessons learned, many Asia watchers exploring how Taiwan can best deter or withstand a Chinese attack have focused on political engagement and military preparedness. They advise Taipei to increase its humanitarian assistance abroad to raise its global profile in the absence of UN representation or widespread diplomatic recognition and to strengthen asymmetric warfare strategy development and training.¹⁶ But could adding **economic** steps to this political-military mix inject “force multipliers” into its efforts to persuade other countries, particularly the world’s democracies, to come to Taiwan’s defense? This *Research Short* will explore several economic tools Taiwan could pursue to raise its global standing and garner international support if China were to try to wrest control over the island.

Using Economic Tools To Boost Taiwan’s Global Standing

Taiwan’s preeminence in the global semiconductor market has long been seen as a “silicon shield” to deter attack by China and underpin U.S. readiness to defend the island.¹⁷ China notably spared Taiwan’s semiconductor industry when Beijing imposed trade restrictions after U.S. Speaker of the House Nancy Pelosi visited the island in August 2022.¹⁸ China and the United States—the world’s largest consumers of semiconductors—each consume about 25 percent of global supplies. Both depend on the most advanced logic chips (in nodes below 10 nanometers)—92 percent of which are made in Taiwan—for their cutting-edge electronic devices and weapon systems.¹⁹ Clearly other factors drive the calculus Beijing and Washington bring to bear on Taiwan—including cross-Strait unification as a legacy issue of President Xi and the Chinese Communist Party—but Taiwan’s critical role in the semiconductor supply chain suggests there are ways to build strategic advantage. Can Taiwan develop leading-edge capabilities in other advanced industries that could encourage trading partners to defend Taiwan to protect supply chains? Would Taipei consider “forward deploying” some of these capabilities to other countries to forge “technical alliances” that would encourage support for Taiwan in time of conflict? What economic policy changes might Taipei make to reduce the island’s reliance on China, currently its largest trading partner?²⁰

Developing and Retaining Talent

Taipei could take advantage of the public’s increasing sense of Taiwanese identity²¹ to encourage its high-tech workers abroad to return home to contribute to the island’s future. A U.S.-educated Taiwanese, for example, returned home and founded TSMC to jumpstart the island’s semiconductor industry. Providing incentives to companies to offer more competitive salaries and benefits might stem the drain of domestic technology workers. As of 2019, Beijing had poached nearly one-tenth of Taiwan’s semiconductor engineers and executives to develop China’s semiconductor industry.²² The United States, wary of its dependence on Taiwanese semiconductors, is seeking to up its domestic semiconductor production,²³ which could drain more workers from Taiwan’s high-tech talent pool.^{24, 25} Taipei’s incentives could apply to

other emerging high-tech industries as well and could be used to encourage more international talent to immigrate to expand Taiwan's labor pool, particularly through its New Southbound Policy to enhance cooperation with Southeast Asia, South Asia, and Australia.

Long-term Efforts To Develop Specialized Comparative Advantage

To ensure overseas partners are more invested in the island's security, Taiwan could tap into its technically skilled workforce, reputation for research integrity, and government incentives to build specialized comparative advantage in industries beyond semiconductors. One initiative is the 5+2 Innovative Industries Plan—introduced by Taiwan President Tsai Ing-wen to develop innovative technologies to establish Taiwan as the “Asian Silicon Valley”²⁶—which could also deny overseas investment in, and tech transfer to, China's industries.

- **Data privacy, cybersecurity, and intellectual property protection.** Taiwan's strategic location and strong data and IP protection policies drew Microsoft and Google to the island,^{27, 28, 29} and Taipei could highlight its competitive advantage in data and IP protection to boost its allure as a regional data hub vis-à-vis China. International companies are increasingly leery of China's legal ambiguities and its stiff cybersecurity and data regulations that compel companies to provide data access to the Chinese government.^{30, 31} The European Commission has assessed that China's inadequate IP protection and forced technology transfer pose “irreparable harm to European businesses,”³² and Beijing's efforts to extend its legal framework to Hong Kong could lead to an exodus of tech firms located there,³³ many of whom would probably find Taiwan an attractive alternative.
- **Artificial intelligence and the Internet of Things (IoT).** Decades of semiconductor development have created a tech-centered culture and infrastructure on Taiwan, along with the hardware needed to store large amounts of data—helping Taipei become a major global AI hub.³⁴ Taipei has an action plan to turn the island into a global AI center and has launched an AI hub to further AI incorporation into business operations.^{35, 36} Taiwan's talent pool is ideal for AI and IoT development and has already drawn global tech companies to the island.³⁷ Microsoft has been operating its Asia IoT program in Taiwan since 2016, and in 2019 selected Taiwan to develop the company's global AI programs.
- **Biotechnology and precision medicine.** Over the longer term, Taipei is working to become a global biomedical R&D hub.^{38, 39} Its efforts to promote biotechnology have ensured the sector's steady growth in Taiwan since 2011.^{40, 41} Taipei recently launched a Biomedical Industry Innovation Program and has helped create and integrate innovation clusters and research parks. The biotech industry, particularly precision medicine, is integrating big data and AI into healthcare processes, providing opportunities for Taipei to use its high-tech capabilities to expand the industry. Taiwan has established a niche in developing new cancer drugs. Further aligning its regulatory environment with those in other countries would allow the island to boost its comparative advantage.⁴²

Establishing “Technical Alliances”

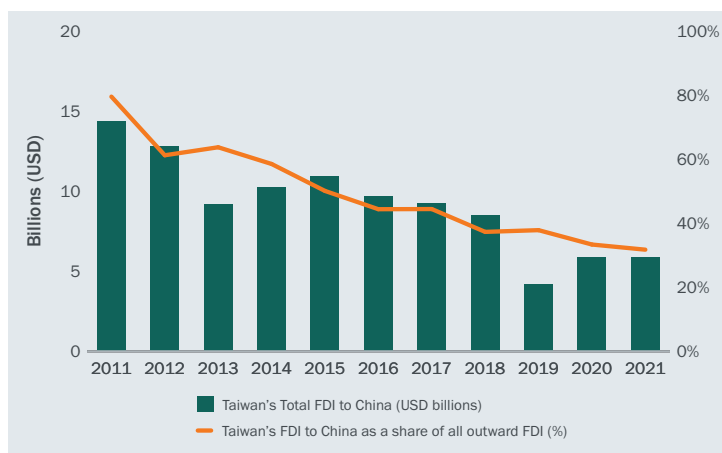
Taiwan already is taking discreet steps within its semiconductor industry to mitigate concerns about supply chain reliability, given globalization worries that emerged during the pandemic and more recent disruptions in global commodities trade (e.g., wheat, neon, oil, gas) created by the Russia-Ukraine war and related sanctions. As part of Taipei’s effort to build goodwill with leading trade and security partners, TSMC is constructing new chip factories in the United States and Japan—and potentially Germany and Singapore as well.⁴³

Beyond offshoring specific manufacturing capabilities, Taipei might broaden and deepen its collaboration abroad to include high-tech R&D partnerships that could forge “technical alliances” and strengthen political, and possibly security, ties, even as these bonds remain short of diplomatic recognition or military alliance. Taipei could build on the Science and Technology Innovation Centers (STICs)—established under its New Southbound Policy to strengthen ties to ASEAN countries—by developing S&T parks across a broader global landscape. Of particular promise are partnerships with Central and Eastern Europe—regions increasingly frustrated with China’s aggressive posture and unfilled economic promises under its Belt and Road Initiative.⁴⁴ The STICs pair experts from Taiwanese academic institutions with Indo-Pacific counterparts to conduct research in fields ranging from AI to sustainable energy.⁴⁵ S&T parks supported by Taipei and the host-country government could facilitate mutually beneficial business relationships between Taiwan’s techno-industrial giants and local innovators to improve Taipei’s economic competitive advantage vis-à-vis Beijing. These relationships might also foster political and security ties that lead host-country governments to exercise greater support for Taiwan during a cross-Strait conflict.

Reducing Economic Ties and Avoiding Boosting China’s Technology Growth

Expanding the geographical scope of Taipei’s New Southbound Policy would also help divert Taiwanese business investment from China and reduce Taiwan’s economic interdependence on China, which asymmetrically favors Beijing.⁴⁶ Taiwan’s investment controls and incentives to move design and manufacturing capabilities from China back to Taiwan or to third countries have reduced Taiwanese foreign direct investment (FDI) in China from \$14.4 billion to \$5.9 billion between 2011 and 2021.⁴⁷ The share of Taiwan’s FDI that goes to China has dropped from 80 percent in 2011 to 31 percent in 2021 (see Figure 1).⁴⁸ The Russia-Ukraine war might also push Taipei to up its oversight of foreign acquisition made by the island’s industries and services. Since 2018, Taiwan’s Evergreen shipping company has bought 44 cargo vessels from the China State Shipbuilding Corporation (CSSC), which builds surface

Figure 1. Taiwan's Decreasing FDI to China (2011-2021)



Source: Statista and author calculations

combatants for China's Navy at the same facility—suggesting CSSC's commercial revenue supports Beijing's naval modernization.⁴⁹ By shifting to other suppliers, Taiwan could reduce unintended subsidies to a threatening military force and strengthen trade relationships with prospective defenders.

Implications of Taipei's Expectations for the US and IC

In addition to exploring new economic and technological means of building strategic advantage, Taiwan's heightened concerns about U.S. and other countries' readiness to come to the island's defense appear to be propelling its efforts to join a range of multinational and bilateral economic accords that would bind Taiwan to global partners. Taipei will continue to press for membership in the U.S.-sponsored Indo-Pacific Economic Framework for Prosperity (IPEF), inaugurated in May. The island was not included—despite its request and the recommendation of the U.S.-Taiwan Business Council, plus 250 members of the U.S. Congress—reportedly to quell some members' concerns about overtly antagonizing China.⁵⁰ Taiwan has just established a Ministry of Digital Development to promote digital economic governance and infrastructure development, and its National Development Council has pledged to continue shifting Taiwanese firms' high-tech production from China to Southeast Asia, North America, and Europe to bolster global supply chains—both key IPEF pillars.⁵¹

Taiwan's bid to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)—to lessen its economic dependence on China, integrate into the global economy, and mitigate its political and economic isolation—is complicated by China's desire to also join. Australia's parliamentary committee overseeing CPTPP's expansion has endorsed Taiwan's ascension—citing the island's pandemic management and importance as a security and technology partner,⁵² while not endorsing China's bid. In July 2022, Japan said it would help Taiwan join CPTPP, and Canada welcomed a legislative delegation to discuss the island's membership.^{53, 54} CPTPP allows entry to “any State or separate customs territory,” so Taiwan's political status does not present legal membership challenges, although Singapore supports China's entry, noting “political complications” with Taiwan's.^{55, 56, 57}

Although being included in multinational groups such as IPEF and CPTPP could strengthen Taiwan's economic, political, and possibly even defense ties, bilateral free trade agreements (FTAs) would better ensure that “binding” effect—with the added benefit of expanded market access. Taipei is pressing to secure FTAs with the United States, EU, UK, Japan, and India.⁵⁸
^{59 60} Taipei has made it clear that it sees its talks this fall with Washington on the U.S.-Taiwan Initiative on 21st Century Trade—mirroring IPEF's planned cooperation—as a “building block” to signing a U.S.-Taiwan FTA.⁶¹ Although the EU is not engaged in FTA talks with Taipei, the bloc is Taiwan's largest foreign investor and upgraded its economic cooperation with Taiwan to facilitate Taiwanese investment in the EU semiconductor industry, despite earlier hesitation over China's potential reaction.⁶² Beijing's coercive efforts to disrupt European supply chains to punish Lithuania for opening a representative office in Taiwan, along with Taipei's support of Western sanctions on Russia, has further strained EU views of China and led to the German

government to highlight in its coalition treaty, for the first time, the need to support the island's membership in international organizations.⁶³ Beijing's criticisms of Western sanctions and continued diplomatic and economic support for Moscow during the Ukraine war have shown EU countries the similarities between the two authoritarian regimes, in contrast to Taiwan and other like-minded democracies.

Recognizing the United States' global clout, Taipei will press Washington to urge the IPEF, CPTPP, EU, and individual nations to help integrate Taiwan into bilateral or broader economic partnerships. Allies are likely to take their cue from U.S. efforts to remain resolute against a possible "new normal" of Chinese coercive behavior and military intimidation.⁶⁴ Beijing's actions, however, are leading some foreign businesses to question their presence on Taiwan—especially after seeing assets in Russia seized after Russia invaded Ukraine.⁶⁵ Although not advocating Washington compel U.S. firms to keep their investments in Taiwan, the head of the U.S.-Taiwan Business Council supports a U.S.-Taiwan FTA as a "framework and template" other countries could model to insulate Taiwan's economy.⁶⁶ Taiwan's chief trade negotiator is urging that China's "its harm to the global economic and trade order" included in U.S.-Taiwan Initiative on 21st Century Trade talks this fall.⁶⁷

With the China-watcher community divided on Beijing's unification timeline, U.S. policymakers and legislators will look to the IC to assess the urgency and effectiveness of Taiwan's economic efforts. The draft Taiwan Policy Acct (TPA) before Congress, for example, calls on "federal agencies to brief Congress on all available economic, diplomatic, and other strategic measures to deter the use of force ... and progress on all coordination efforts."⁶⁸ Draft TPA provisions authorizing details for U.S. Federal agencies in Taiwanese Government or other relevant organizations and prohibiting restrictions on Federal agencies from interacting with Taiwanese counterparts, and interim NSC guidance advocating support for Taiwan, suggest a bipartisan appetite for deeper intelligence sharing between Washington and Taipei.⁶⁹

The authors wrote this Short as part of the NIU Office of Research's "Year of China" academic initiative.

Janice Hinton, Ph.D., an editor at the National Intelligence University, served more than 30 years as an analyst and analytic manager on East Asian issues, and has worked and studied in China and Taiwan.

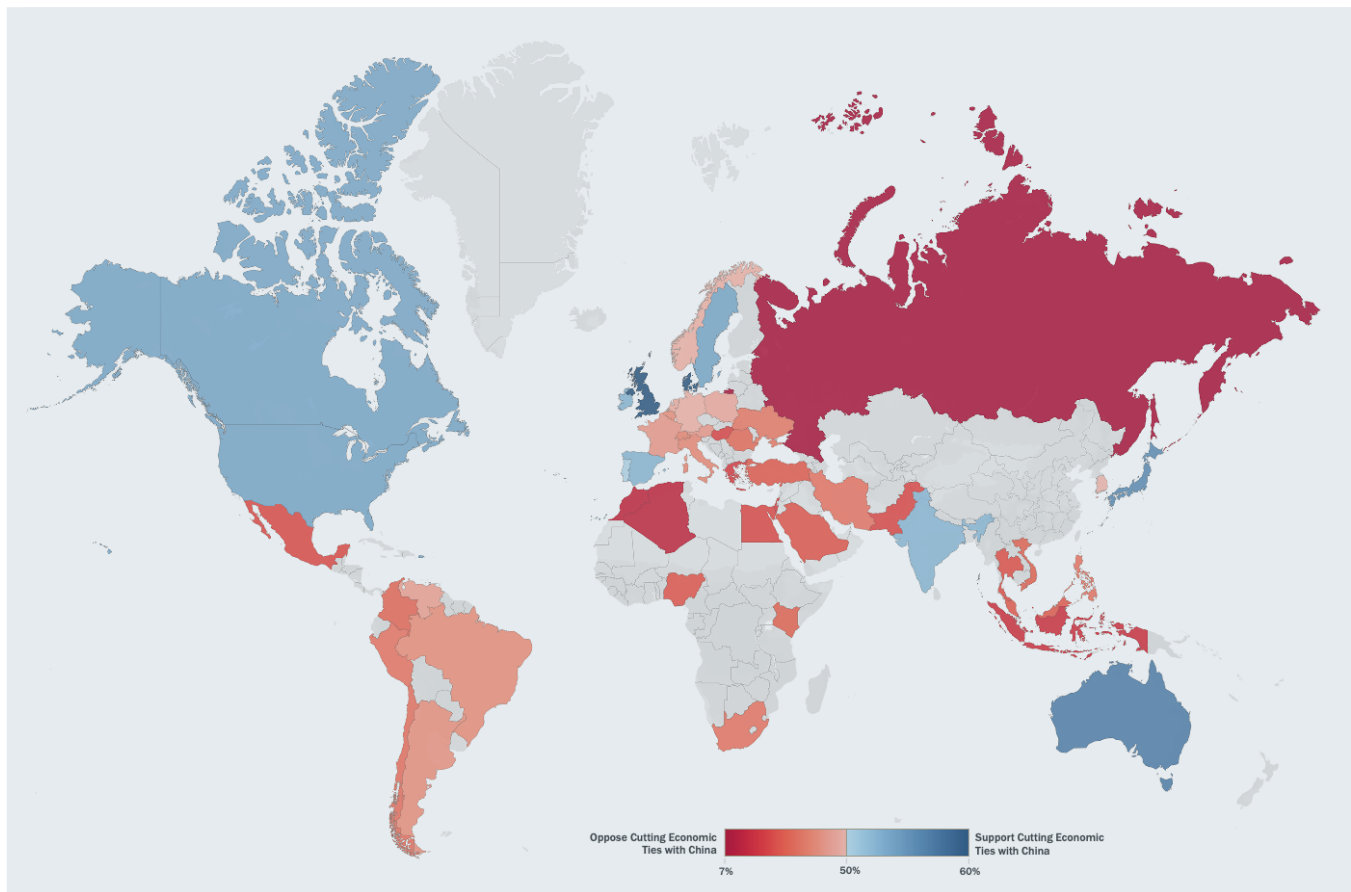
Phuong Hoang, Ph.D., is a research faculty member and co-director of the Center for Global Politics and Societies at NIU writes on geoeconomics, maritime/territorial disputes, and COVID-19 in the Indo-Pacific.

If you have comments, questions, or a suggestion for a *Research Short* topic or article, please contact the NIU Office of Research at Research@niu.odni.gov.

Appendix 1: International Public Support for Sanctions if China Invades Taiwan

Majorities in just 11 of 53 countries surveyed by Latana for the Democracy Perception Index Report 2022 expressed support for breaking economic ties to China if Beijing invaded Taiwan.* Four of these 11 are members of the Quad—an informal partnership of Australia, India, Japan, and the United States committed to supporting Indo-Pacific security. Russia, which issued a joint statement with China touting their “no limits” friendship just weeks before the Russian invasion of Ukraine, ranks at the bottom of this survey, with less than 10 percent endorsing sanctions against China in this scenario. Of note, only about 35 percent of Ukrainians polled supported severing economic ties to China (see Figure 3).

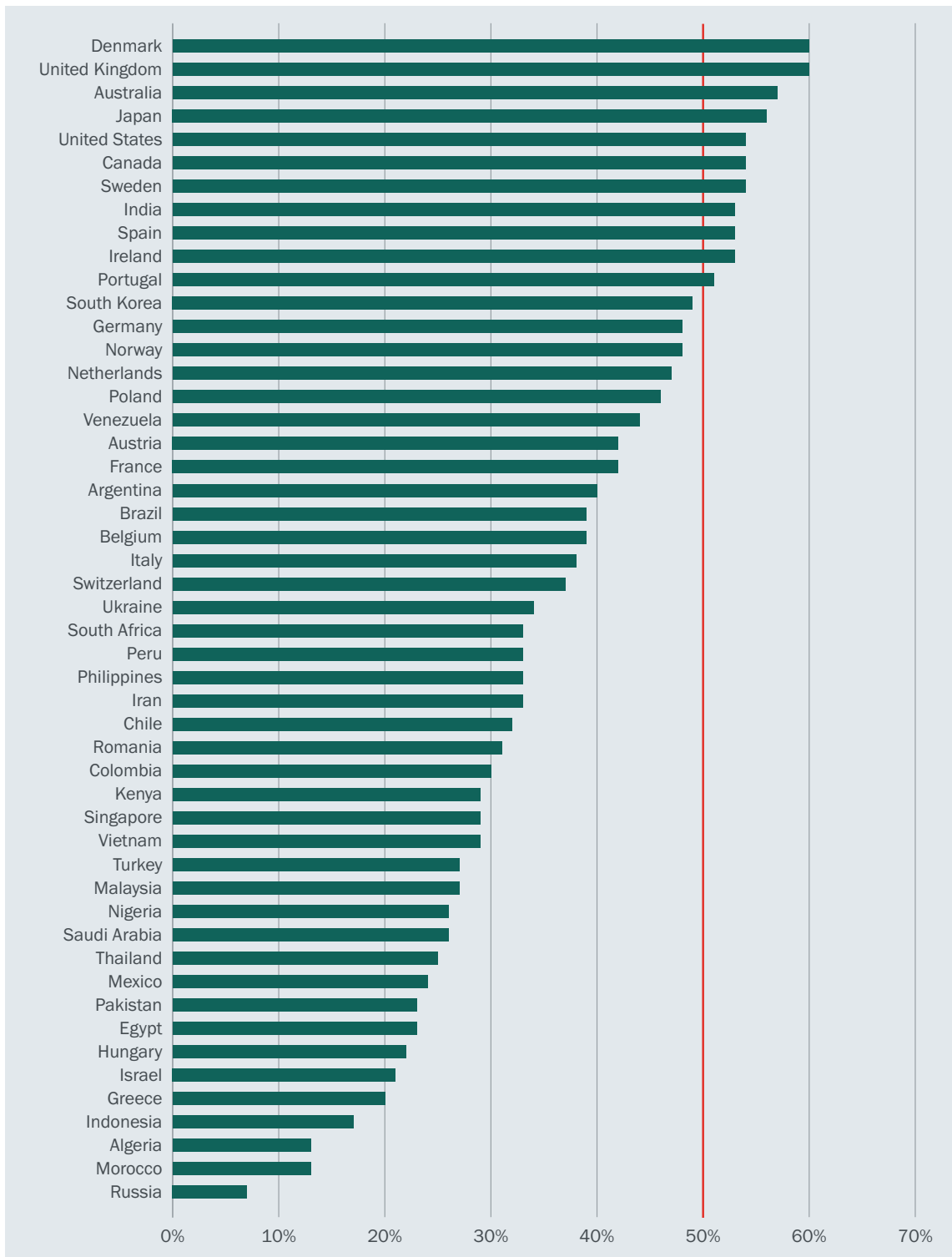
Figure 2. Countries Supporting Ending Economic Ties with China if it Invades Taiwan



Source: Latana, Democracy Perception Index Report 2022

* This was a survey of 52,785 respondents from 53 countries conducted between March 30–May 10, 2022. Participants in China, Taiwan, and Hong Kong were excluded from the question, “If China started a military invasion of Taiwan, do you think your country should cut economic ties with China?”

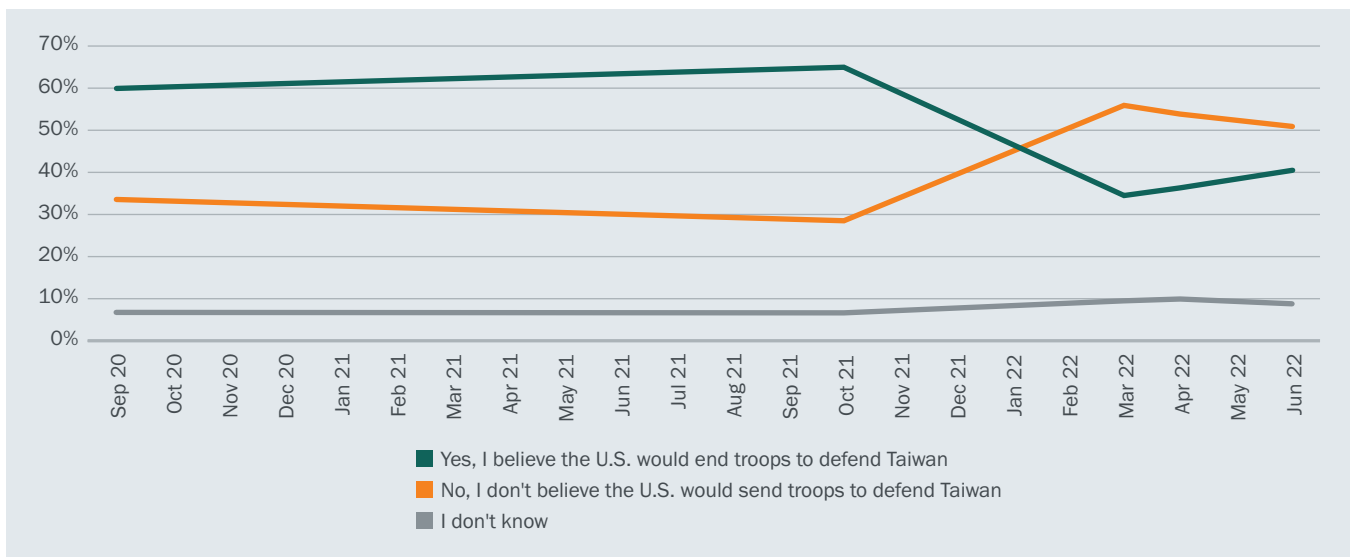
Figure 3. Percentage of respondents who answered “Yes” to the question, ‘If China started a military invasion of Taiwan, do you think your country should cut economic ties with China?’ (Survey of 52,785 respondents from 53 countries conducted between March 30 – May 10, 2022)



Appendix 2: Taiwanese Confidence in U.S. Defense and Willingness To Fight

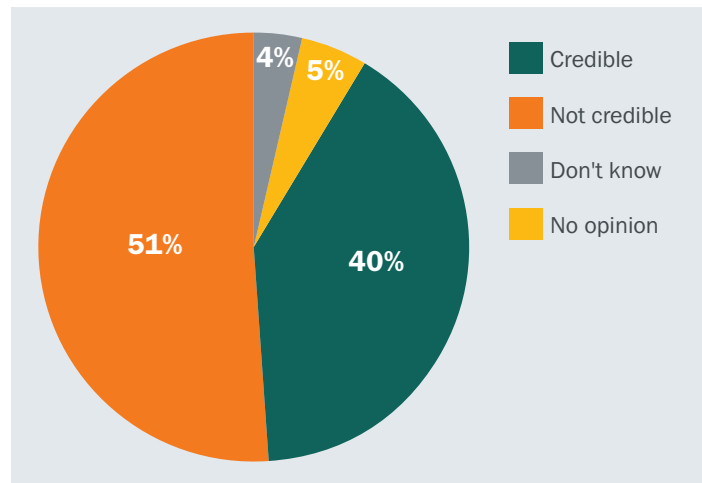
In addition to the surveys taken by Taiwan’s National Chengchi University, a series of polling data collected by the Taiwanese Public Opinion Foundation showed an even greater drop in Taiwanese confidence that the United States would come to the island’s defense, dipping from 65 percent in October 2021 to 34 percent around Russia’s invasion of Ukraine in February 2022. The data also show, however, that confidence has slowly increased again as of May and June 2022, inching back up to about 40 percent (see Figures 4 and 5).⁷⁰

Figure 4. If the CCP invades Taiwan by force, do you believe the United States will send troops to defend Taiwan? (September 2020 – May 2022)



National Chengchi University’s March 2022 survey also showed that the Taiwanese public’s willingness to fight against Chinese attack correlates to the public’s confidence in Taiwan’s own military preparedness rather than to U.S. intervention. Among survey respondents who expressed confidence in Taiwan’s self-defense capabilities, 90 percent were willing to fight against China, even if U.S. troops did not come to Taiwan’s defense, with those willing to fight rising to 95 percent if U.S. troops joined the combat. In contrast, among those who lacked confidence in Taiwan’s military proficiency, only 60 to 65 percent of respondents (again differentiated by the perceived likelihood of U.S. defense) pledged to fight.⁷¹

Figure 5. U.S. President Biden said he would use U.S. military force to defend Taiwan if it were invaded by China. Do you think his promise is credible? (June 2022, n=1,079)



Source: Taiwanese Public Opinion Foundation, June 2022 National Poll Summary Report

Endnotes

- 1 Taiwan Government, Ministry of Economic Affairs Bureau of Foreign Trade, “Taiwan-Russia Economic Relations,” last revised December 23, 2021, https://www.trade.gov.tw/english/Pages/Detail.aspx?nodeID=2912&pid=655091&dl_DateRange=all&txt_SD=&Pageid=0;
- 2 Russian Government, “Russian trade with Taiwan in 2021,” February 16, 2022, <https://en.russian-trade.com/reports-and-reviews/2022-02/russian-trade-with-taiwan-in-2021/>.
- 3 “Taiwan Joins West in Russia Sanctions,” *Taipei Times*, February 26, 2022, <https://www.taipeitimes.com/News/front/archives/2022/02/26/2003773796>; Jeanne Whalen, “Computer chip industry begins halting deliveries to Russia in response to U.S. sanctions,” *Washington Post*, February 25, 2022, <https://www.washingtonpost.com/technology/2022/02/25/ukraine-russia-chips-sanctions-tsmc/>; “Taiwan Tightens Russia Export Curbs, Details Tech Rules,” *Channel News Asia (CNA)*, April 6, 2022, <https://www.channelnewsasia.com/asia/taiwan-tightens-russia-export-curbs-details-tech-rules-2612026>; Ian Talley, “U.S. Says Export Controls Are Hurting Russia’s Battlefield Might,” *Wall Street Journal*, May 10, 2022, <https://www.wsj.com/livecoverage/russia-ukraine-latest-news-2022-05-10/card/u-s-says-export-controls-are-hurting-russia-s-battlefield-might-gg2nFxV47SvIOJOiXtcd>.
- 4 John Feng, “As China’s Xi Jinping Shuns Volodymyr Zelensky, Taiwan Engages With Ukraine,” *Newsweek*, June 21, 2022, <https://www.newsweek.com/china-xi-jinping-ukraine-volodymyr-zelensky-taiwan-diplomacy-joseph-wu-1717502>; Ben Blanchard, “From our Heart: Taiwan Rejects China’s Criticism Over Ukraine Aid,” *Reuters*, April 1, 2022, <https://www.reuters.com/world/asia-pacific/from-our-heart-taiwan-rejects-chinas-criticism-over-ukraine-aid-2022-04-01/>; “Czech FM Thanks Taiwan for Ukrainian Aid,” *Taipei Times*, May 2, 2022, <https://www.taipeitimes.com/News/taiwan/archives/2022/05/02/2003777565>; “Taiwan Collects \$10.6 Million in Donations for Ukraine,” *NHK News*, March 8, 2022, https://www3.nhk.or.jp/nhkworld/en/news/20220308_23/.
- 5 Ben Blanchard, “Taiwan Says Hopes World Would Sanction China if It Invades,” *Reuters*, May 7, 2022, <https://www.reuters.com/world/asia-pacific/taiwan-says-hopes-world-would-sanction-china-if-it-invades-2022-05-07/>.
- 6 David Sacks, “What Is China Learning From Russia’s War in Ukraine?” *Foreign Affairs* online, May 16, 2022, <https://www.foreignaffairs.com/articles/china/2022-05-16/what-china-learning-russias-war-ukraine>.
- 7 Orlanda Skylar Mastro and Derek Scissors, “Beijing is Used To Learning From Russian Failures,” *Foreign Policy* online, April 18, 2022, <https://foreignpolicy.com/2022/04/18/china-russia-ukraine-taiwan-war/>.
- 8 Devlin Barrett, “FBI Director Suggests China Bracing for Sanctions if It Invades Taiwan,” *Washington Post*, July 6, 2022, <https://www.washingtonpost.com/national-security/2022/07/06/china-taiwan-fbi-wray-sanctions/>.
- 9 Robert Perkins and Stuart Elliott, “Germany’s Scholz Reiterates Opposition To Immediate EU Sanctions on Russian Energy Imports,” *S&P Global Commodity Insights*, March 23, 2022, <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/oil/032322-germanys-scholz-reiterates-opposition-to-immediate-eu-sanctions-on-russian-energy-imports>.
- 10 Sam Meredith, “Hungary Says It’s Impossible for Europe To Ban Russian Gas Anytime Soon. Putin Agrees,” *CNBC*, June 10, 2022, <https://www.cnn.com/2022/06/10/russian-gas-ban-hungary-says-eu-cant-impose-a-gas-ban-on-russia.html>.
- 11 Latana, “Democracy Perception Index 2022,” <https://7049607.fs1.hubspotusercontent-na1.net/hubfs/7049607/Democracy%20Perception%20Index%202022.pdf>. For a detailed dataset of survey results see: https://docs.google.com/spreadsheets/d/1gdjTHqM_O2kDNyFgvLWVvCn4lFWzFRoMRUdTelXxTM4/edit#gid=1271546525.
- 12 “EDITORIAL: Would Sanctions Work Against China?” *Taipei Times*, May 11, 2022, <https://www.taipeitimes.com/News/editorials/archives/2022/05/11/2003778029>.
- 13 Ministry of Foreign Affairs, Republic of China (Taiwan), “Diplomatic Allies,” <https://en.mofa.gov.tw/AlliesIndex.aspx?n=1294&sms=1007>.
- 14 “Ukraine and Taiwan: Parallels and Early Lessons Learned,” (webinar, Center for Strategic and International Studies (CSIS) China Power Project, Washington D.C., March 22, 2022), <https://www.csis.org/analysis/ukraine-and-taiwan-parallels-and-early-lessons-learned>; Michele A. Flournoy, “How To Prepare for the Next Ukraine,” *Foreign Affairs* online, May 23, 2022, <https://www.foreignaffairs.com/articles/ukraine/2022-05-23/how-prepare-next-ukraine>; Helen Davidson, “Taiwan May Extend Conscription as Ukraine Invasion Stokes China Fears,” *The Guardian*, March 24, 2022, <https://www.theguardian.com/world/2022/mar/24/taiwan-may-extend-conscription-as-russia-ukraine-invasion-stokes-china-fears>; Eric Cheung and Wayne Chang, “Russia’s Invasion of Ukraine Sparks Concern in Taiwan Over

-
- Readiness for Conflict With China,” *CNN*, March 17, 2022, <https://edition.cnn.com/2022/03/17/asia/taiwan-military-reservists-china-fears-intl-hnk/index.html>; Matthew Strong, “Taiwan Prepares Civil Defense Handbook,” *Taiwan News*, March 4, 2022, <https://www.taiwannews.com.tw/en/news/4462167>.
- 15 Christian Shepherd, Vic Chang, and Pei Lin Wu, “Taiwan Hones Invasion Response Amid China’s Threats Over Pelosi Trip,” *Washington Post*, July 27, 2022, <https://www.washingtonpost.com/world/2022/07/27/taiwan-china-military-invasion-drill-nancy-pelosi/>.
- 16 See, for example: “Taiwan’s Quest for International Space: Update on Pandemic Diplomacy and Beyond,” (webinar, George Washington University Sigur Center for Asian Studies, Washington D.C., May 19, 2022); “Ukraine and Taiwan: Parallels and Early Lessons Learned,” China Power Project; “Gray Zone Operations or Cross-Channel Invasion: How Should Taiwan Prioritize for Its Defense?” Global Taiwan Institute, online discussion, March 9, 2022, <https://globaltaiwan.org/2022/02/march-9-gray-zone-operations-or-cross-channel-invasion-how-should-taiwan-prioritize-for-its-defense/>; Brian Hioe, “Taiwan Watches the Ukraine Invasion and Asks: Are We Ready?” *The Diplomat*, March 15, 2022, <https://thediplomat.com/2022/03/taiwan-watches-the-ukraine-invasion-and-asks-are-we-ready/>; Mastro and Scissors, “Beijing Is Used To Learning From Russian Failures,” *Foreign Policy*, April 18, 2022, <https://foreignpolicy.com/2022/04/18/china-russia-ukraine-taiwan-war/>; Sacks, “What Is China Learning From Russia’s War in Ukraine?”
- 17 Craig Addison, *Silicon Shield: Taiwan’s Protection Against Chinese Attack*, (Irving, TX: Fusion Press, 2001); Joyce Huang, “Can Taiwan’s Silicon Shield Protect It Against China’s Aggression?” Voice of America, May 10, 2021, https://www.voanews.com/a/east-asia-pacific_can-taiwans-silicon-shield-protect-it-against-chinas-aggression/6205660.html; Scott Kennedy, *It’s Moving Time: Taiwanese Business Responds to Growing U.S.-Taiwan Tensions*.
- 18 “Why China is not sanctioning Taiwan’s key chip industry,” *Al Jazeera*, August 4, 2022, <https://www.aljazeera.com/economy/2022/8/4/why-china-is-not-sanctioning-taiwans-crucial-tech-industry>.
- 19 Antonio Varas, et al., “Strengthening the Global Semiconductor Supply Chain in an Uncertain Era,” Boston Consulting Group and Semiconductor Industry Association, April 2021, 5, 12, 35, and 47, <https://www.bcg.com/publications/2021/strengthening-the-global-semiconductor-supply-chain>; Yimou Lee, Norihiko Shirouzu, and David Lague, “Special Report: Taiwan chip industry emerges as battlefield in U.S.-China showdown,” *Reuters*, December 27, 2021, <https://www.reuters.com/investigates/special-report/taiwan-china-chips/>.
- 20 U.S. Department of Commerce, International Trade Administration, “Taiwan—Country Commercial Guide,” last updated September 13, 2021, <https://www.trade.gov/country-commercial-guides/taiwan-market-overview>.
- 21 National Chengchi University, Election Study Center, “Taiwanese / Chinese Identity (1992/06~2022/06), July 22, 2022, <https://esc.nccu.edu.tw/PageDoc/Detail?fid=7800&id=6961>.
- 22 Kensaku Ihara, “Taiwan loses 3,000 chip engineers to ‘Made in China 2025’,” *Nikkei Asia*, December 3, 2019, <https://asia.nikkei.com/Business/China-tech/Taiwan-loses-3-000-chip-engineers-to-Made-in-China-2025>.
- 23 Iain Marlow, “US Dependence on Taiwan Chips Is ‘Untenable,’ Raimondo Says,” *Bloomberg*, July 21, 2022, <https://www.bloomberg.com/news/articles/2022-07-22/us-dependence-on-taiwan-chips-is-untenable-raimondo-says#xj4y7vzkg>.
- 24 Che Pan, “US-China tech war: Will Taiwan chip engineers be key to success in the race for tech supremacy?” *South China Morning Post*, March 23, 2022, <https://www.scmp.com/tech/tech-war/article/3171571/us-china-tech-war-will-taiwan-chip-engineers-be-key-success-race-tech>.
- 25 Cheng Ting-Fang and Lauly Li, “Chip Talent War: Taiwan Faces Critical Staffing Shortage,” *Nikkei Asia*, February 18, 2022, <https://asia.nikkei.com/Business/Business-Spotlight/Chip-talent-war-Taiwan-faces-critical-staffing-shortage>.
- 26 Taiwan Executive Yuan, “5+2 Innovative Industries Plan,” <https://english.ey.gov.tw/iip/B0C195AE54832FAD>.
- 27 Property Rights Alliance, 2021 International Property Rights Index, <https://www.internationalpropertyrightsindex.org/compare/country?id=107,131>.
- 28 Lauly Li and Cheng Ting-Fang, “Microsoft to build Taiwan data center amid US-China tech war,” *Nikkei Asia*, October 26, 2020, <https://asia.nikkei.com/Economy/Trade-war/Microsoft-to-build-Taiwan-data-center-amid-US-China-tech-war>.
- 29 Yu Nakamura, “Google embraces Taiwan as Asia hub with third data center,” *Nikkei Asia*, September 4, 2020, <https://asia.nikkei.com/Business/Technology/Google-embraces-Taiwan-as-Asia-hub-with-third-data-center>.
-

-
- 30 Ashley Feng, “We Can’t Tell if Chinese Firms Work for the Party,” *Foreign Policy* online, February 7, 2019, <https://foreignpolicy.com/2019/02/07/we-cant-tell-if-chinese-firms-work-for-the-party/>.
 - 31 Daniel Rechtschaffen and Jessie Niu, “Navigating China’s Data Maze: How Regulations Affect U.S. Companies,” The American Chamber of Commerce in Shanghai, May 2019, <https://www.amcham-shanghai.org/sites/default/files/2019-05/Viewpoint%20-%20Data%20%28May%202019%29.pdf>.
 - 32 European Commission, “Commission Staff Working Document: Report on the Protection and Enforcement of Intellectual Property Rights in Third Countries,” April 21, 2021, https://trade.ec.europa.eu/doclib/docs/2021/april/tradoc_159553.pdf.
 - 33 “Asia Industry Group Warns Privacy Law Changes May Force Tech Firms To Quit Hong Kong,” *Reuters*, July 5, 2021, <https://www.reuters.com/world/china/facebook-google-twitter-say-could-quit-hong-kong-over-proposed-data-laws-wsj-2021-07-05/>.
 - 34 Ralph Jennings, “How Taiwan Is Becoming A Top Destination For Artificial Intelligence In Asia,” *Forbes* online, September 29, 2018, <https://www.forbes.com/sites/ralphjennings/2018/09/29/how-taiwan-is-becoming-a-top-destination-for-artificial-intelligence-in-asia/?sh=550b0b2340a0>.
 - 35 “Taiwan Cabinet Approves Plan To Spur AI Industry Development,” *Taiwan News*, January 19, 2018, <https://www.taiwannews.com.tw/en/news/3345152>.
 - 36 Huang Tzu-ti, “Taiwan launches AI Hub to upgrade industries,” *Taiwan News*, October 2, 2019, <https://www.taiwannews.com.tw/en/news/3788889>.
 - 37 Ralph Jennings, “Why Microsoft Found It Easier To Expand AI And IoT In Taiwan,” *Forbes* online, June 28, 2019, <https://www.forbes.com/sites/ralphjennings/2019/06/28/why-microsoft-is-expanding-ai-and-iot-in-taiwan-not-in-china/?sh=265fad0077f8>.
 - 38 Taiwan Executive Yuan, “Biomedical Industry Innovation Program: Building Taiwan Into a World-class Center of Innovation Biomedical Research and Development,” October 28, 2020, <https://english.ey.gov.tw/News3/9E5540D592A5FEC2/2e752915-7149-48e0-ae33-06fcb2e33bc3>.
 - 39 Taiwan Executive Yuan, “‘Precision Health’ Key to Taiwan’s Future as Global Biomedical Innovation,” August 27, 2020, <https://english.ey.gov.tw/Page/61BF20C3E89B856/933750a1-146a-463d-a35d-1bb985884f93>.
 - 40 PwC, *Guide to Taiwan’s Health Industries*, July 2022, <https://www.pwc.tw/en/publications/assets/taiwan-health-industries-guide.pdf>.
 - 41 Han Ting-ting, Wen Kuei-hsiang, and Evelyn Kao, “BIO Asia-Taiwan Opens in Taipei, Highlighting Biotech Trends,” *Focus Taiwan*, July 28, 2022, <https://focustaiwan.tw/business/202207280018>.
 - 42 Timothy Ferry, “Will Biotech Be the Next Trillion NT Dollar Industry?” American Chamber of Commerce in Taiwan, September 26, 2019, <https://topics.amcham.com.tw/2019/09/will-biotech-be-the-next-trillion-nt-dollar-industry/>.
 - 43 Jessie Shen, “TSMC Arizona Fab Nears Completion,” *DigiTimes Asia*, July 29, 2022, <https://www.digitimes.com/news/a20220729VL200/tsmc.html>; Yang Jie and Keith Zhai, “TSMC Looks To Build Multibillion-Dollar Chip Plant in Singapore,” *Wall Street Journal*, May 19, 2022, <https://www.wsj.com/articles/tsmc-looks-to-build-multibillion-dollar-chip-plant-in-singapore-11652958840>; “TSMC in Early Talks on Germany Plant,” *Taipei Times*, December 13, 2021, <https://www.taipeitimes.com/News/biz/archives/2021/12/13/2003769478>; Akihiro Komuro, “TSMC Plans Plant in Japan, Operation Set for 2024,” *Power Systems Research*, October 24, 2021, <https://www.powersys.com/2021/10/tsmc-plans-plant-in-japan-operation-set-for-2024/>.
 - 44 “Comparing Economic Engagement: Taiwan and China in Eastern Europe,” (webinar, Stimson Center, Taiwan and Cross-Strait Relations Project, Washington, D.C., May 3, 2022, <https://www.stimson.org/event/comparing-economic-engagement-taiwan-and-china-in-eastern-europe/>).
 - 45 Taiwan Ministry of Science and Technology, New Southbound S&T Cooperation, “Science and Technology Innovation Center (STIC),” accessed May 24, 2022, <https://nsstc.narlabs.org.tw/NSTC/en/STIC.aspx>.
 - 46 Bradley Martin, et al., *Implications of a Coercive Quarantine of Taiwan by the People’s Republic of China* (Santa Monica, CA: RAND Corporation, 2022), 23-24, https://www.rand.org/pubs/research_reports/RRA1279-1.html.
 - 47 C. Textor, “Approved Outward FDI From Taiwan Into Mainland China 2011-2021,” *Statista*, March 1, 2022, <https://www.statista.com/statistics/1292815/taiwan-approved-foreign-direct-investment-into-mainland-china/>.
 - 48 Shelley Rigger, *The Tiger Leading the Dragon: How Taiwan Propelled China’s Economic Rise* (Lanham, MD: Rowman & Littlefield, 2021), 177-95; Sophia Yang, “China’s Pro-unification 31 Measures for Taiwan Have Failed: Academia Sinica scholar,” *Taiwan News*, January 26, 2019, <https://www.taiwannews.com.tw/en/news/3625988>;
-

-
- author calculations using <https://www.statista.com/statistics/863092/taiwan-value-of-outward-investment/> and <https://www.statista.com/statistics/1292815/taiwan-approved-foreign-direct-investment-into-mainland-china/>.
- 49 Matthew P. Funaiolo, Brian Hart, and Joseph P. Bermudez, Jr., “In the Shadow of Warships: How Foreign Companies Help Modernize China’s Navy,” online interactive, (Washington D.C.: Center for Strategic and International Studies), accessed April 23, 2022, <https://features.csis.org/china-shadow-warships/>; Michael Martina, “China Shipbuilding for Taiwan Firm Likely Aiding Chinese Navy Build-up – U.S. Think Tank,” *Reuters*, April 7, 2022, <https://www.reuters.com/world/asia-pacific/china-shipbuilding-taiwan-firm-likely-aiding-chinese-navy-build-up-us-think-tank-2-22-04-07/>
- 50 “Testimony: USTR – Fair and Resilient Trade Pillar of an Indo-Pacific Economic Framework 2022,” US-Taiwan Business Council, April 11, 2022, <https://www.us-taiwan.org/resources/testimony-ustr-fair-and-resilient-trade-pillar-of-an-indo-pacific-economic-framework-2022/>; “Unpacking the Indo-Pacific Economic Framework Launch,” Center for Strategic and International Studies, May 23, 2022, <https://www.csis.org/analysis/unpacking-indo-pacific-economic-framework-launch>; Matthew Strong, “Taiwan Top trade Envoy Still Hopes for IPEF Membership,” *Taiwan News*, June 7, 2022, <https://www.taiwannews.com.tw/en/news/4562625>.
- 51 “Testimony: USTR – Fair and Resilient Trade Pillar of an Indo-Pacific Economic Framework 2022;” “Taiwan to boost supply chain role for IPEF bid,” *Taipei Times*, June 1, 2022, <https://www.taipetimes.com/News/biz/archives/2022/06/01/2003779106>; White House Briefing, “Statement on Indo-Pacific Economic Framework for Prosperity,” May 23, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/23/statement-on-indo-pacific-economic-framework-for-prosperity>.
- 52 Parliament of Australia, “Expanding the membership of the Comprehensive and Progressive Trans-Pacific Partnership,” February 2022, https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Foreign_Affairs_Defence_and_Trade/CPTPPMembership/Report.
- 53 “Japanese Envoy Pledges Continued Efforts To Help Taiwan Join CPTPP,” *Focus Taiwan*, July 31, 2022, <https://focustaiwan.tw/politics/202207310008>.
- 54 Stephanie Chiang, “Taiwan Legislative Yuan CPTPP Initiative Delegation Arrives in Ottawa for Talks,” *Taiwan News*, July 31, 2022, <https://www.taiwannews.com.tw/en/news/4612114>.
- 55 Government of Canada, “Comprehensive and Progressive Agreement for Trans-Pacific Partnership,” <https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/cptpp-ptpgp/text-texte/cptpp-ptpgp.aspx?lang=eng>.
- 56 Krystal Chia and Shery Ahn, “Singapore Sees ‘Complications’ in Taiwan Bid to Join Trade Deal,” *Bloomberg*, November 17, 2021, <https://www.bloomberg.com/news/articles/2021-11-18/singapore-sees-complications-in-taiwan-bid-to-join-trade-deal>.
- 57 Dylan Loh, “Singapore to join Biden Indo-Pacific pact, back China’s CPTPP entry: Lee,” *Nikkei Asia*, May 23, 2022, <https://asia.nikkei.com/Editor-s-Picks/Interview/Singapore-to-join-Biden-Indo-Pacific-pact-back-China-s-CPTPP-entry-Lee>.
- 58 Graham Lanktree, “UK Risks Chinese Anger Over Trade Talks With Taiwan,” *Politico*, July 4, 2022, <https://www.politico.eu/article/uk-discussion-taiwan-trade-cptpp-anger-china/>.
- 59 “Japan Seeks To Resume Trade Talk Framework With Taiwan,” *Focus Taiwan*, February 18, 2022, <https://focustaiwan.tw/business/202202180020>.
- 60 Abhijit Mukhopadhyay, “India-Taiwan FTA in the Making,” Observer Research Foundation, May 30, 2022, <https://www.orfonline.org/expert-speak/india-taiwan-fta-in-the-making/>.
- 61 United States Trade Representative, “United States and Taiwan Commence Formal Negotiations on U.S.-Taiwan Initiative on 21st Century Trade,” press release, August 17, 2022, <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2022/august/united-states-and-taiwan-commence-formal-negotiations-us-taiwan-initiative-21st-century-trade>; “US-Taiwan Trade Talks Kick Off in Long-Planned Counter to China,” *Washington Post*, August 18, 2022, https://www.washingtonpost.com/business/on-small-business/us-taiwan-trade-talks-kick-off-in-long-planned-counter-to-china/2022/08/17/37f82604-1e98-11ed-9ce6-68253bd31864_story.html; Ben Blanchard, “U.S., Taiwan To Start Formal Trade Talks Under New Initiative,” *Reuters*, August 18, 2022, <https://www.reuters.com/world/us-taiwan-start-formal-trade-talks-under-new-initiative-2022-08-18/>; United States Trade Representative, “United States and Taiwan Hold Inaugural Meeting of the U.S.-Taiwan Initiative on 21st-Century Trade,” press release, June 27, 2022, <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2022/june/united-states-and-taiwan-hold-inaugural-meeting-us-taiwan-initiative-21st-century-trade>; Kao Shih-ching, “Taiwan and US To Launch Trade Talks,” *Taipei*
-

-
- Times*, June 2, 2022, <https://www.taipetimes.com/News/front/archives/2022/06/02/2003779204>; Jeanny Kao and Ben Blanchard, “Taiwan Appeals To U.S. Not To Forget Its Desire for Free Trade Deal,” *Reuters*, June 7, 2022, <https://www.reuters.com/world/asia-pacific/taiwan-appeals-us-not-forget-its-desire-free-trade-deal-2022-06-07/>.
- 62 Finbarr Bermingham, “EU To Upgrade Trade Ties With Taiwan as China Warns Brussels ‘Not To Gamble on This Issue,’” *South China Morning Post*, May 18, 2022, <https://www.scmp.com/news/china/diplomacy/article/3178237/eu-upgrade-trade-ties-taiwan>.
- 63 Janka Oertel, “How COVID-19 and the War in Ukraine Could Change EU-Taiwan Relations,” Brookings Institution, July 13, 2022, <https://www.brookings.edu/blog/order-from-chaos/2022/07/13/how-covid-19-and-the-war-in-ukraine-could-change-eu-taiwan-relations/#:~:text=The%20European%20Union%20is%20Taiwan's,68%20billion%20dollars%20in%202021>.
- 64 Christopher P. Twomey, “The Fourth Taiwan Strait Crisis Is Just Starting,” *War on the Rocks*, August 22, 2022, <https://warontherocks.com/2022/08/the-fourth-taiwan-strait-crisis-is-just-starting/>; Bonny Lin and Joel Wuthnow, “Pushing Back Against China’s New Normal in the Taiwan Strait,” *War on the Rocks*, August 16, 2022, <https://warontherocks.com/2022/08/pushing-back-against-chinas-new-normal-in-the-taiwan-strait/>; “Impact of the Pelosi Visit to Taiwan and China’s Military Exercises on Regional Stability,” (webinar, Stimson Center, Washington D.C., August 11, 2022), <https://www.stimson.org/event/the-impact-of-the-pelosi-visit-to-taiwan/>; Lily Kuo, “China’s Military Extends Its Drills Around Taiwan,” *Washington Post*, August 9, 2022, <https://www.washingtonpost.com/world/2022/08/08/Taiwan-china-military-exercises-pelosi/>; Helen Davidson, “‘This Is About Striking Fear’: China’s Taiwan Drills the New Normal, Analysts Say,” *The Guardian*, August 9, 2022, <https://www.theguardian.com/world/2022/aug/10/china-taiwan-military-drills-the-new-normal-analysts-say/>; “Toward a Fourth Taiwan Strait Crisis,” (webinar, Center for Strategic and International Studies and Brookings Institution, Washington D.C., August 4, 2022), https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/220804_Fourth_Taiwan_Crisis.pdf?UicYdPZhJYJEaweFHaSjIJ5Te2tsKayC.
- 65 Phelim Kine, “U.S. Firms Eye Taiwan Exit on Chinese Invasion Risk,” *Politico China Watcher*, August 4, 2022, <https://www.politico.com/newsletters/politico-china-watcher>; Michelle Toh, “Russia’s Invasion of Ukraine Has Foreign Investors Fleeing Taiwan. Here’s Why,” *CNN Business*, March 23, 2022, <https://www.cnn.com/2022/03/23/investing/taiwan-investment-jitters-russia-ukraine-intl-hnk/index.html>.
- 66 Kine, “U.S. firms Eye Taiwan Exit on Chinese Invasion Risk.”
- 67 Blanchard, “U.S., Taiwan To Start Formal Trade Talks Under New Initiative.”
- 68 U.S. Congress, Senate Committee on Foreign Relations, Taiwan Policy Act of 2022, Sec. 211: Whole-of-Government Deterrence Measures To respond to the People’s Republic of China’s Force Against Taiwan, 117th Congress, 2d sess, 2022, accessed October 1, 2022, [https://www.foreing.senate.gov/imo/media/doc/SBS%20Taiwan%20Policy%20Act%20FINAL520\(i\).pdf](https://www.foreing.senate.gov/imo/media/doc/SBS%20Taiwan%20Policy%20Act%20FINAL520(i).pdf).
- 69 (U) U.S. Congress, Senate, “Taiwan Policy Act of 2022,” Sec. 607 and 703.
- 70 Taiwanese Public Opinion Foundation, “June 2022 Public Opinion Poll,” <https://www.tpof.org/wp-content/uploads/2022/06/2022年6月新聞發佈書面資料.pdf>
- 71 Calculations based on cross-sectional analysis by Kuan-chen Lee (Taiwan’s Institute for National Defense and Security Research) of National Chengchi University surveys on defense policy, conducted in September 2021 and March 2022 (1,080 participants with 2.98 percent margin of error and 95 percent confidence); Kuan-chen Lee, “Analyzing Stability and Change in Self-Defense Awareness Among the Taiwanese People Since the Russian Invasion of Ukraine,” *Biweekly Defense and Security Report*, Issue 52 (April 22, 2022): 9-16, https://indsr.org.tw/Content/Upload/files/biweekly/52/2_KuanChenLee.pdf; “Majority would go to war for Taiwan,” *Taipei Times*, May 1, 2022, <https://www.taipetimes.com/News/front/archives/2022/05/01/2003777507>.
-