



Noneconomic Aspects of a US-Taiwan Free Trade Agreement: Insights with a New Tool

Christine McDaniel and Weifeng Zhong

August 2021

Economic considerations for bilateral or regional trade agreements are relatively straightforward, even given the challenge of measuring nontariff barriers. Noneconomic considerations, however, can be notoriously difficult to measure. In the case of US-Taiwan relations, one common factor defines the two countries' security alliance: China. In this policy brief, we discuss a new metric we recently developed that uses Chinese propaganda as a gauge of noneconomic factors underlying the interest in closer bilateral trade ties between the United States and Taiwan. We find increasingly antagonistic and aggressive rhetoric in Chinese propaganda toward the US-Taiwan alliance at key points in time (such as official visits between the United States and Taiwan) that reflect movement toward closer bilateral ties. These findings, though not unanticipated, indicate a closer security alliance between the United States and Taiwan.

Our new metric exploits the fact that China is a defining factor in the US-Taiwan alliance and leverages Chinese propaganda to measure a critical noneconomic aspect: how the Chinese Communist Party (CCP) sets the mood and manages the expectations of its own people with respect to their government's policy on Taiwan is a key variable in the complex equation of US-Taiwan relations. Using machine learning algorithms, we create a metric of the aggressiveness of rhetoric about US-Taiwan ties from text in the *People's Daily*—the official gazette of the CCP. The approach is not without its limitations, yet it offers a way to assess noneconomic factors underlying the interest in a bilateral trade agreement between the United States and Taiwan.

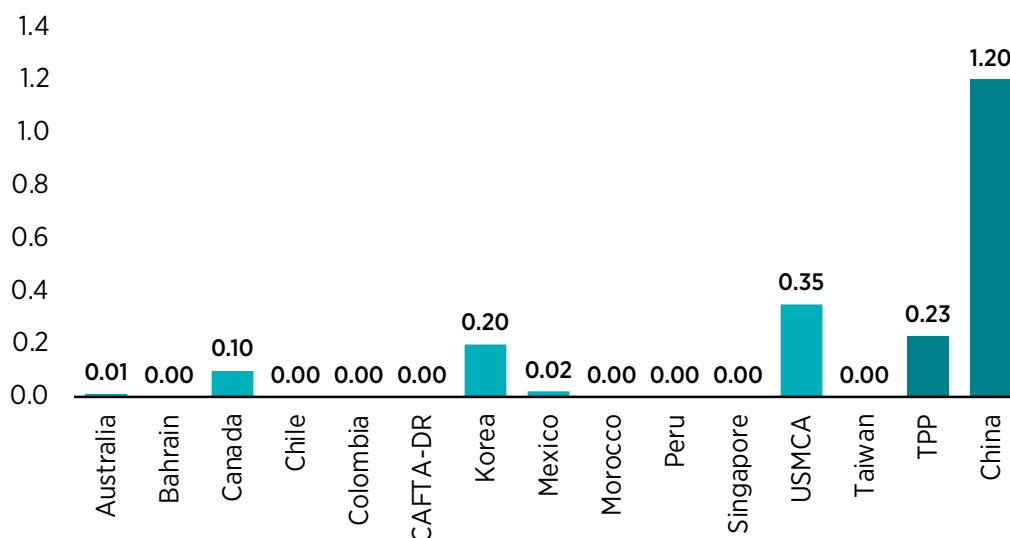
ESTIMATED ECONOMIC EFFECTS: SMALL BUT POSITIVE

Recent interest in a US-Taiwan free trade agreement (FTA) runs counter to the view that trade deals are primarily driven by economic motivations. If that view were true, the United States would have a stronger interest in forging an FTA with China, a much larger trading partner with greater differences in prices of factor inputs (labor, land, and capital) and, hence, more to gain from removing higher trade barriers.

Figure 1 shows the estimated potential economic effects of US FTAs by partner. These estimates are derived from applied general equilibrium models that feature multiple countries and sectors and include key input-output linkages across sectors. Applied, or computable, general equilibrium models generally remain the tool of choice among most trade policy analysts, given these models' ability to estimate economy-wide effects. The estimated potential gains of the agreements that have been enacted are just a fraction of 1 percent of GDP. The US economy is large, trade is still only about one-quarter of GDP, and most remaining tariffs are small.

It is worth noting that FTAs with Bahrain, Colombia, the Dominican Republic and Central America, and Morocco were expected to generate only small economic gains. The United States' primary

Figure 1. Estimated Potential Economic Effects of US Free Trade Agreements (Percentage of GDP)



Note: All estimates are based on ex ante analysis. The TPP (Trans-Pacific Partnership) and China agreements are not in force, and, hence, those bars have a darker color (the United States withdrew from the TPP, and no US-China FTA has been negotiated). USMCA stands for United States-Mexico-Canada Agreement, and CAFTA-DR stands for Dominican Republic-Central America FTA.

Source: **Canada:** Drusilla K. Brown and Robert M. Stern, "U.S.-Canada Bilateral Tariff Elimination: The Role of Product Differentiation and Market Structure," in *Trade Policies for International Competitiveness*, ed. Robert C. Feenstra (Chicago: University of Chicago Press, 1989), 217-54. **China:** Cai Songfeng, Yaxiong Zhang, and Jianqin Yuan, "The Effects of China-US Free Trade Agreement (CHUSFTA)" (paper presentation, 18th Annual Conference on Global Economic Analysis, Melbourne, Australia, June 18, 2015). **All Other FTAs:** International Trade Commission publication numbers 3697 (Australia), 3726 (Bahrain), 3605 (Chile), 3896 (Colombia), 3717 (CAFTA-DR), 3452 (Korea), 2508 (Mexico), 3704 (Morocco), 3855 (Peru), 3603 (Singapore), 3548 (Taiwan), 4607 (TPP), which can be found at "Commission Publications Library," International Trade Commission, accessed August 12, 2021, https://www.usitc.gov/commission_publications_library.

motivation when negotiating those trade deals may have been foreign policy—that is, cooperation with the War on Drugs, elimination of state subsidies, and other economic reforms aimed at strengthening democratic institutions—and the United States offered those countries rewards for adopting policies aligned with its goals. Another motivation for the United States may have been having good relations with countries located in politically hostile neighborhoods.

The potential economic effects of a US-Taiwan FTA for the US economy are small but positive, at less than 1 percent of US GDP.¹ These economic gains reflect the elimination of trade barriers, including Taiwan’s barriers in motor vehicles, rice, fish, and other foods and US barriers in dairy, textiles, apparel, leather, and certain crop commodities. The overall gains are small because trade barriers are already low, and most of the possible gains from trade with Taiwan have already accrued, following each country’s lowering of barriers in earlier years. By contrast, a US-China FTA is estimated to generate gains of 1.2 percent of US GDP, 500 times the gains of an agreement with Taiwan, and over three times the gains of the United States-Mexico-Canada Agreement.

These estimates can underestimate the gains from trade that result from removing nontariff barriers, which are hard to quantify, or they underestimate the benefits of trade liberalization in the presence of global value chains and intra-industry trade. In the case of US-Taiwan trade, the latter is particularly important. Trade liberalization in the presence of intra-industry trade can generate economic benefits such as economies of scale and increased product variety.²

Intra-industry global value chain trade is 31.7 percent of US trade with the rest of the world and 34.9 percent of US-Taiwan trade.³ Furthermore, a recent study by the Stephen Ezell and Caleb Foote looks in depth at three advanced technology sectors: semiconductor chips, computer parts, and electronics.⁴ It finds that from 2002 to 2017, US-Taiwan intermediate trade in these three sectors has grown over time, while the share of capital and consumption goods trade has declined. These developments contrast with the trends in US trade with the rest of the world, particularly with regard to import flows. The bilateral trade relationship has become increasingly focused on making things together rather than selling final goods to each other, and so the standard economic estimates of the gains from a trade agreement may be somewhat understated. But still, given the relatively small size of Taiwan’s economy and existing openness to trade, the overall expected gains are still small but positive.

NONECONOMIC FACTORS: CRITICAL BUT HARD TO QUANTIFY

Noneconomic factors also influence the decisions of nations seeking to forge closer trade ties. Joanne Gowa and Edward Mansfield argue that a critical but often overlooked aspect of trade relations is security externalities.⁵ Specifically, although trade generates economic benefits for participants, trading with an adversary also has a negative security consequence: it avails the adversary of more resources. Security externalities, the authors contend, can help explain why closer trade ties may be more prevalent within, rather than across, political-military alliances.

Noneconomic factors, such as the strength of political-military alliances, are notoriously difficult to measure. The Correlates of War project, established by J. David Singer and Melvin Small in 1963,⁶ attempts to measure these factors by counting defense pacts, nonaggression pacts, etc., between two countries. But these factors do not apply to US-Taiwan relations because no formal pact between the two countries exists. US arm sales to Taiwan could be a crude measure, although data for that factor tend to be intermittent over time and incomplete.⁷

CHINESE PROPAGANDA PROVIDES INSIGHTS INTO NONECONOMIC FACTORS

We investigate the Chinese government's viewpoints on US-Taiwan relations by analyzing the text of the *People's Daily*, China's most prominent official newspaper. The paper covers major issues ranging from domestic economic policy to foreign policy and defense policy, including US-Taiwan relations. We find that, at least from China's perspective, the United States and Taiwan have become increasingly close security allies in recent years.

Usefulness of this investigative approach hinges on the extent to which the *People's Daily* reflects the CCP's official or strategic positions. Similar to the Soviet Union's *Pravda*, the *People's Daily* is under tight control by the CCP and serves as a major channel for the government to shape public opinion and signal policy intentions. A major change in policy is usually accompanied (or preceded) by adjustments to the corresponding issue narrative.

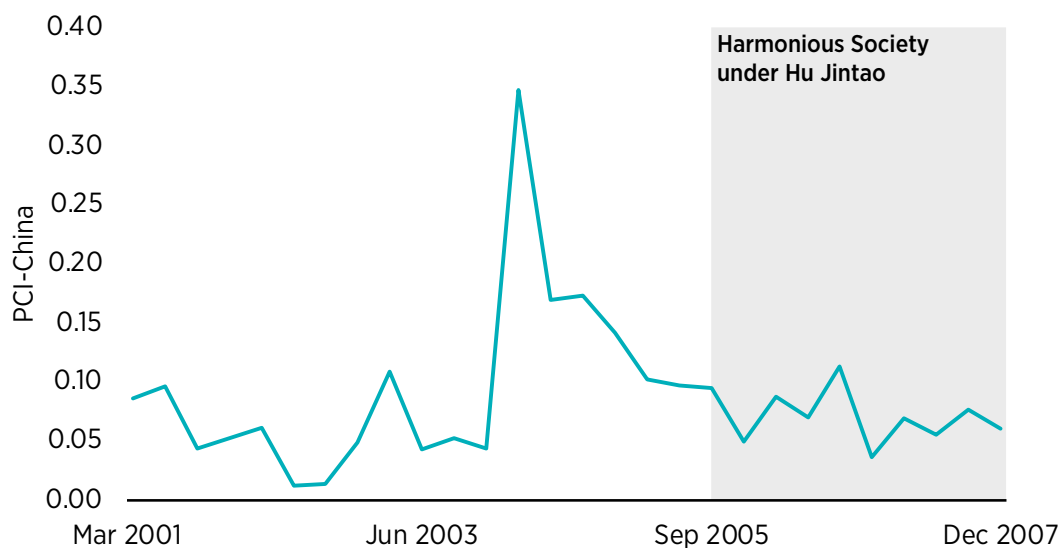
To measure these adjustments, one of us (Weifeng Zhong), along with Julian TszKin Chan, developed the Policy Change Index for China (PCI-China).⁸ By using machine learning algorithms to gauge the attention given to particular topics and the intensity of tone used when writing about these topics, the PCI-China assigns the *People's Daily* a policy change score—the higher the score, the more likely that the CCP is signaling an impending policy change.

China's Taiwan Policy

We first examine whether China's Taiwan policy in recent years has shifted in a significant way. Figure 2 plots the PCI-China from 2001, when US policymakers started to consider a potential FTA with Taiwan, to 2007. A spike in the index indicates that, at that time, China's official newspaper prioritized policy issues in a way that deviates from the past.⁹

The index recorded a spike in the first quarter of 2004. As one of us (Zhong) demonstrates in a previous paper coauthored with Chan,¹⁰ the change in narrative in the *People's Daily* foretold a major policy initiative in 2005, "socialist harmonious society," under former Chinese President Hu Jintao's administration. Domestically, the policy change represents a major slowdown in China's promarket reforms and a renewed emphasis on the role of government intervention in solving policy problems. As to foreign policy, China became more assertive about its overseas interests and in its attitude toward Taiwan in particular.

Figure 2. Change in China’s Policy Priorities Detected by the Policy Change Index for China, 2001 to 2007



Source: Authors’ calculations based on the *People’s Daily*.

In the spring of 2004, the Chinese government issued a formal statement that fundamentally altered its Taiwan policy: from emphasizing unification in the long term to thwarting the Taiwanese government’s attempt to proclaim independence in the short term. The move implicitly recognized Taiwan’s de facto independence from mainland China. But what mattered to the Chinese government was that Taiwan did not proclaim independence, not whether it was de facto independent.

China’s Attitude toward US-Taiwan Relations

Not only has China become more confrontational toward Taiwan, but as we show next, an increasingly negative attitude toward US-Taiwan relations is apparent in the *People’s Daily* coverage on the issue.

To see this, we collect the text of the *People’s Daily* articles from 1990 to 2020 that are relevant to US-Taiwan relations, a total of 706 articles.¹¹ For each relevant article, we compute the sentiments of each sentence in the article (in Chinese) using Amazon Comprehend, a natural language processing tool developed by Amazon Web Services. Amazon Comprehend’s algorithm takes a sentence as input, and it computes the extent to which the sentiment of the sentence is positive, negative, mixed, and neutral.¹² Thus, the overall sentiment of a sentence is more positive if it has a higher positive score and a lower negative score.

Figure 3 plots two measures of China’s attitude toward US-Taiwan relations from 1990 to 2020: (a) the number of the *People’s Daily* articles that are relevant to US-Taiwan relations and (b) the aggregate sentiment of the sentences in the relevant articles published in a given year.

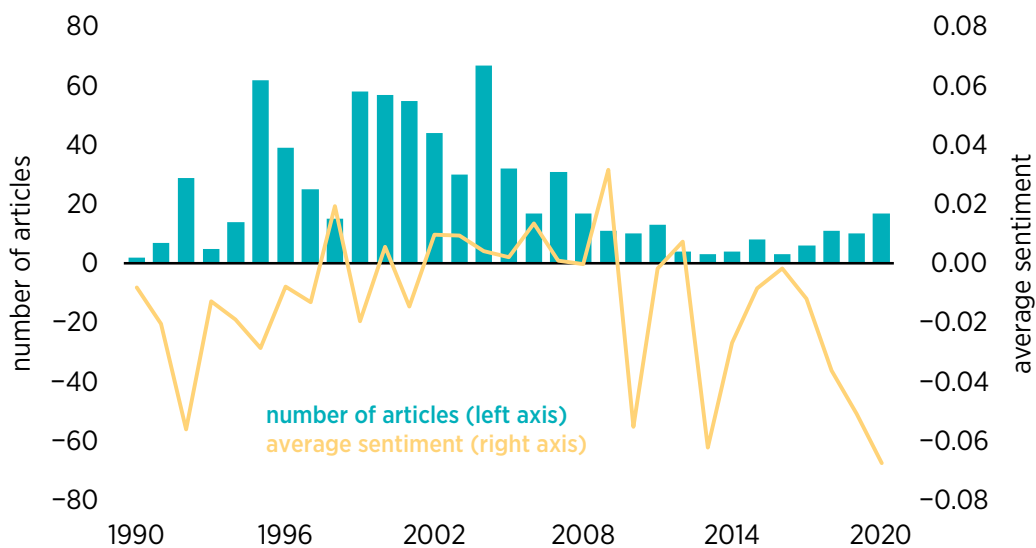
We make three observations about China’s attitude toward US-Taiwan relations. First, the frequency of *People’s Daily* articles relevant to US-Taiwan relations and the sentiment of those articles tend to move together. The greater the frequency, the more positive (or less negative) the sentiment.¹³

Second, 2000 to 2005, roughly the time when China fundamentally changed its Taiwan policy, marks a turn in how China addressed US-Taiwan relations. The 1990s saw increasing coverage and increasingly positive coverage, whereas the coverage after 2005 has been decreasing and less and less positive.¹⁴

Third, we find that when the *People’s Daily* has covered US-Taiwan relations more frequently, such as in the 1990s, it has emphasized US-China diplomatic ties—namely, the US government’s affirmation of the “One China” policy and lack of intent to recognize Taiwan. Sentiment is more positive in those times. By contrast, when the newspaper has addressed US-Taiwan relations less often, such as in recent years, it has condemned attempts by the United States and Taiwan to forge more official ties with each other—hence, the less positive sentiment.

We draw two key findings from this analysis on Chinese propaganda. First, China’s Taiwan policy has become more confrontational. Second, China’s attitude toward US-Taiwan relations has grown more negative. These findings suggest that, at least from the Chinese perspective, the United States and Taiwan have become closer security allies.

Figure 3. China’s Attitude Toward US-Taiwan Relations, 1990–2020



Source: Authors’ calculations based on the *People’s Daily*.

LIMITATIONS

The *People's Daily* is but one piece of the larger puzzle of US-Taiwan-China relations, and it could be misleading if taken to represent the entire relationship. China's views and attitudes are not necessarily correlated with the feasibility of an FTA between the United States and Taiwan, and other sources are necessary to tell whether the US-Taiwan informal alliance is growing stronger. Even establishing definitively increased strength in the alliance would not be sufficient to determine the feasibility of a US-Taiwan FTA, given that other strategic considerations may play a role.

Nevertheless, our metric could be a useful input as analysts search for better ways to measure noneconomic factors in complex country relationships. It is our hope this analysis spurs further work in measuring noneconomic factors.

ABOUT THE AUTHORS

Christine McDaniel is a senior research fellow at the Mercatus Center at George Mason University. Her research focuses on international trade, globalization, and intellectual property rights. McDaniel previously worked at Sidley Austin, LLP, a global law firm, where she was a senior economist. She has held several positions in the US government, including deputy assistant secretary at the Treasury Department and senior trade economist in the White House Council of Economic Advisers, and she has worked in the economic offices of the US Department of Commerce, US Trade Representative, and US International Trade Commission.

Weifeng Zhong is a senior research fellow at the Mercatus Center at George Mason University. Zhong has a PhD in managerial economics and strategy from Northwestern University. His work focuses on bridging the field of natural language processing and machine learning to economic policy studies. He is also a core maintainer of the open-source Policy Change Index, a machine learning framework to predict policy changes in authoritarian regimes.

NOTES

1. International Trade Commission, "U.S.-Taiwan FTA: Likely Economic Impact of a Free Trade Agreement between the United States and Taiwan" (publication no. 3548, International Trade Commission, Washington, DC, October 2002). The estimate was 0.002 percent of US GDP, or \$200 million in 2001 terms, the baseline year for the study's analysis.
2. Marc J. Melitz and Daniel Trefler, "Gains from Trade When Firms Matter," *Journal of Economic Perspectives* 26, no. 2 (2012): 91-118.
3. World Trade Organization, Trade in Value Added and Global Value Chains: United States, n.d., https://www.wto.org/english/res_e/status_e/miwi_e/US_e.pdf; Stephen J. Ezell and Caleb Foote, *Global Trade Interdependence: U.S. Trade Linkages with Korea, Mexico, and Taiwan* (Washington, DC: Information Technology and Innovation Foundation, June 2019), 8.
4. Ezell and Foote, *Global Trade Interdependence*.

5. Joanne Gowa and Edward D. Mansfield, "Power Politics and International Trade," *American Political Science Review* 87, no. 2 (1993): 408–20.
6. Correlates of War Project (website), accessed August 12, 2021, <https://correlatesofwar.org/>.
7. Shirley A. Kan, *Taiwan: Major U.S. Arms Sales since 1990* (Washington, DC: Congressional Research Service, 2014).
8. Julian TszKin Chan and Weifeng Zhong, "Reading China: Predicting Policy Change with Machine Learning" (AEI Economics Working Paper No. 2018-11, American Enterprise Institute, Washington, DC, April 2019).
9. Precisely, the index captures whether the *People's Daily* publishes content on and off its front page, a proxy for high and low prioritization, in a way that is different from the past. A spike in the index, therefore, detects a one-off change, marking a structural difference between the time before and the time after that point.
10. Julian TszKin Chan and Weifeng Zhong, "Will China Fold on Structural Issues? An Algorithm Says Not Any Time Soon," *China Business Review*, March 11, 2019.
11. To filter the relevant articles, we first require that an article contain at least three mentions of keywords related to US-Taiwan relations in total and at least three mentions per 1,000 words. We then manually rule out the articles that satisfy the criteria but do not substantively relate to the bilateral relations.
12. The typical output of sentiment analysis in the literature consists of these four dimensions, capturing the extent to which a sentence has different degrees of positivity, negativity, a mixture of the two, and neutrality. In this study, we take the positive score net of the negative score as the overall sentiment of a sentence.
13. A Granger causality test can be used to assess whether one time series can help explain another time series and whether the causality goes only one way. Using this test, we find that the number of relevant articles determines the average sentiment the following year, with a p value around 0.018; we also find no statistically significant evidence that the Granger causality goes in the other direction.
14. A structural break test on the average sentiment identifies an optimal break point at year 2009. From 1990 to 2009, the average sentiment trends upward by 0.02 per year. But from 2010 to 2020, it trends downward by 0.02 per year.