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ABSTRACT

How does an authoritarian regime cover news about foreign countries for its domestic audience? What accounts for the variation in news coverage received by different foreign countries? While existing literature points to political concerns at home, in this article, we argue that a regime's economic interests can also be a driving force: the desire to deepen its international economic engagement can motivate the regime to treat foreign countries differently in its news coverage. To test this argument, we examine foreign news coverage by China's state-run television network between 2003 and 2018. Combining textual and quantitative analysis, we find that countries with stronger economic ties with China receive more favorable news coverage. Moreover, the manipulation of coverage favorability is achieved through selective reporting: negative events such as armed conflicts receive less coverage when taking place in a country with close economic ties with China. These findings contribute to our understanding of international news flow, especially in a non-Western setting. They also demonstrate a pragmatic rather than political use of information control by an authoritarian government.

Introduction

Preoccupied with regime survival, authoritarian regimes often take advantage of media control to manipulate information available to their domestic audience (Besley & Prat, 2006; Gehlbach & Sonin, 2014). While there is an extensive body of research on how regimes control information on domestic affairs (e.g., Egorov et al., 2009; King et al., 2013; Lorentzen, 2014), less is known about their motives and strategies pertaining to international information, especially with regard to individual foreign countries. How does an authoritarian regime cover foreign news for its domestic audience? Specifically, what factors determine the news coverage a foreign country receives in authoritarian media?

We argue that foreign news coverage is strategically deployed by authoritarian regimes to achieve specific policy goals. Although the use of mass media by the government to influence public discourse is not unique to authoritarian regimes,[1] they wield it with more force and control – thanks to media capture (Besley & Prat, 2006; Gehlbach &

Sonin, 2014) – by directly dictating the scope and content of news coverage in response to changing circumstances. This manipulation is particularly acute in the coverage of foreign news, as citizens generally have an information disadvantage regarding affairs outside their own country.

In this study, we focus on the case of China. We argue that its economic interest profoundly shapes how the Chinese state media covers foreign countries. This is particularly manifest in the *favorability* of news coverage: holding other things constant, countries with stronger economic ties with China tend to receive news coverage that is more favorable in its underlying sentiment. Through manipulation of reporting content, the Chinese state media directly shapes the image of each foreign country, thus conveying distinct feelings to the domestic audience. By portraying important economic partners more positively, it helps create an environment more conducive to deepening China's international economic engagement.

To test this argument, we analyze a corpus of over 33,000 pieces of foreign news as broadcast on China Central Television (CCTV) between 2003 and 2018. Applying supervised machine-learning techniques, we first classify each piece of news in terms of its issue topic and underlying sentiment, respectively. Next, based on text analysis results, we generate an original panel data set that measures the yearly coverage favorability for each of the 184 countries outside China. Combining the panel data set with other country-level variables, we estimate a fixed-effect model to investigate how China's evolving international economic ties influence its foreign news coverage. Consistent with the argument, we find that several key areas of bilateral economic engagement – including China's exports, imports of fossil fuels, and investment projects overseas – have significant positive effects on the favorability of news coverage a country receives. Moreover, we also explore *how* coverage favorability is manipulated, i.e., tactics used to artificially bias coverage. We find evidence indicating that this is achieved partly by under-reporting on negative events such as armed conflicts for countries with stronger economic ties with China. Together, these findings demonstrate the intentional and timely variations in foreign news coverage that serves China's interest in deepening its international engagement.

This study seeks to add to the existing literature on international news flow (e.g., Galtung & Ruge, 1965; Segev, 2015; Wu, 2000). By shifting our attention from each country's visibility in the news to its favorability in the news, we provide a new angle to understand foreign news coverage. Methodologically, we go beyond the volume of news and propose a composite measure that captures the underlying sentiment of news coverage. Using this as the outcome of interest, our analysis produces results in line with theoretical predictions, i.e., the positive effects of economic ties. These findings echo previous studies and provide a new case that extends the theory to a non-Western setting. More importantly, this study introduces a new dimension to the literature on international news flow: not only does it explain the volume of news received by each country, it also applies to the favorability of news coverage.

Second, the findings regarding variation in foreign news coverage favorability across different countries enrich our understanding of media control by authoritarian states, especially in the area of international information. While existing studies have identified concerns with regime stability to be a factor (Baum & Zhukov, 2015; Field et al., 2018; Rozenas & Stukal, 2019), we show that a regime's economic interests can also drive manipulation of foreign news coverage. The timely and sophisticated manners in which

CCTV manages its foreign news coverage in response to evolving international conditions, especially in terms of respective countries' coverage favorability, points to intentionality on the part of the Chinese government in deploying the media to serve its goal of economic development. Interestingly, rather than being used as a protectionist instrument (Friebel & Heinz, 2014; Kim, 2018), foreign news coverage is manipulated by the state media to encourage and promote international economic engagement.

The rest of the article is organized as follows. Section 1 reviews the relevant literature in communication and political science and highlights several key aspects in which the present study distinguishes itself; Section 2 describes the contextual information in China and introduces specific hypotheses to be tested; Section 3 presents the research design and main results of the empirical analysis; and Section 4 concludes with some discussion on the contribution of this study to our understanding of authoritarian media.

Foreign News Coverage in Authoritarian Media

To understand what factors influence foreign news coverage by authoritarian media, it is instructive to recognize the unique nature of authoritarian media that, due to government capture, it functions simultaneously as a news organization and a propaganda instrument on behalf of the regime.[2] This dual role of authoritarian media gives rise to two distinct sets of factors that co-exist to shape its foreign news coverage: one to inform the audience as a news organization and the other to shape public opinion as the mouthpiece of the state. In this article, we are primarily interested in the propaganda function of authoritarian media and seek to understand how a regime's interests and priorities influence its foreign news coverage, especially in response to changing circumstances.

In this section, we discuss the two sets of factors, respectively, in relation to the present study. Then, we introduce the notion of *coverage favorability*, which is the primary outcome of interest in our analysis, and distinguish it from other aspects of news coverage and other types of media bias in the existing literature.

International News Flow

There is an extensive research literature in communication that examines the determinants of international news flow, i.e., news coverage of events in foreign countries. Following the seminal work by Galtung and Ruge (1965), many studies empirically test the structural theory of foreign news, which argues that national traits determine the news coverage a foreign country receives in the media of the host country. In particular, economic factors such as the size of the economy and volume of trade are found to be positively correlated with coverage (e.g., Ahern, 1984; Dupree, 1971; Wu, 2000), along with other country-level characteristics such as elite national status. Another approach to understanding variations in coverage examines the logistical factors associated with news gatherings, such as the presence of news agencies that serve as gatekeepers (Larson, 1979; Wu, 2000). Both approaches seek to uncover the systemic factors of news coverage and to understand it from a deterministic perspective.

Our study seeks to build on this literature in several ways. First, existing research focuses primarily on media in North America and Europe. By examining foreign news coverage in China, we provide a test case outside of the Global North. Second, and more important, this

study makes use of an original panel data set: the longitudinal dimension of the data enables us to take into account both factors that are *time-invariant* (such as elite nation status and cultural affinity, especially within a given period of time) and factors that are *time-variant* (such as bilateral economic activities, which fluctuate over time). This research design distinguishes our analysis from earlier ones that adopt a cross-sectional approach and treat country-level variables as fixed over time.[3]

This is not merely a methodological difference. Accounting for temporal fluctuations in important variables such as bilateral economic activities allows us to move beyond a static and deterministic framework of understanding news coverage. Instead, we can identify and examine the dynamic behavior of media in its foreign news coverage *in response to* a constantly changing global environment. This approach lends itself particularly well for studying authoritarian media, for reasons we detail next.

Media Manipulation by Authoritarian States: Economic Motivation

While the known determinants of news flow presumably operate upon all media organizations, authoritarian media – especially those that are state-owned and state-run – often performs another important function, i.e., propaganda, on behalf of the state. In particular, the state-run Xinhua news agency in China has long been regarded as having a dual role "to report news and to disseminate Party and state propaganda" (Shambaugh, 2007). The expressly propagandist function of authoritarian media means that its foreign news coverage is not simply a news product; it also reflects the intentions and priorities of the state.

The pattern of foreign news coverage by authoritarian media is thus not merely determined by the structural and logistical factors of news flow; it is also *strategic* when responding to changes and fluctuations in the international environment. For instance, recent studies on Russian state media find evidence that it adopts at least two deliberate strategies in news coverage that involves foreign countries, namely distraction – for example, by providing more negative news coverage on the US during economic downturns in Russia (Field et al., 2018) – and selective attribution, which blames bad economic news on foreign countries (Rozenas & Stukal, 2019). Moreover, Baum and Zhukov (2015) find that when covering civil conflicts elsewhere, authoritarian media display a pro-incumbent bias by under-reporting protests by regime opponents. It is clear that an authoritarian regime's concern with political survival can drive its foreign news coverage.

We follow this dualistic view of authoritarian media and examine how foreign news coverage on China's state media is strategically harnessed to serve the regime's goals and priorities. Rather than political concerns about regime stability and political alignment, as detailed in existing studies,[4] we examine a different set of factors that can motivate a regime to strategically deploy its media control: economic development. Although not all authoritarian regimes share this goal and many dictators have a short time horizon (Olson, 1993), economic performance is often crucial to a regime's political viability (Reuter & Gandhi, 2011; Zhao, 2009). In order to pursue development in the age of globalization, it is imperative to promote economic engagement with other countries, especially in areas of strategic importance. To this end, an authoritarian government has the option of taking advantage of media control to manipulate foreign news coverage. Not only does it help

create a domestic political environment more conducive for international economic activities, it also signals goodwill to countries with which the regime does important business. In addition, strategic news coverage of foreign countries helps the government appear to be engaging with "good countries" so as to preempt potential criticism from citizens.[5]

In the Chinese case, the paramount importance of economic development leads us to expect that the state media behaves strategically in its foreign news reporting and reacts to fluctuations in China's bilateral economic relations with other countries. Specifically, we expect the favorability of news coverage received by each country to vary, thus creating differing sentiments and images for the domestic audience.

Coverage Favorability: A Composite Measure of Bias

There are many dimensions to news coverage and potential biases that stem from it. The news flow literature, as discussed above, is primarily concerned with the volume of coverage, which leads to varying levels of prominence and visibility for different countries (e.g., Segev, 2015). In this study, our outcomes of interest are different. Instead of a country's *prominence* in the news, we examine its *favorability*, i.e., its overall image based on the content of reporting. This aspect of news coverage is especially relevant for authoritarian media in its propaganda capacity, which seeks to inculcate specific views and sentiments to the public: not only should we understand the amount of attention it gives to each country, but also the nature of attention, positive or negative.

The notion of favorability is related to but conceptually distinct from prominence. A country highly prominent in the news can be seen as either favorable or unfavorable by the audience, depending on the content of coverage. In other words, prominence is a reflection of a country's objective importance and relatedness to the host country, whereas favorability approximates the host country's attitude toward and strategic interest vis-à-vis the foreign country, especially when the host country has tight control over the media.[6]

There is a long line of research on media bias that informs our thinking on favorability in news coverage. Scholars have proposed several conceptual frameworks to distinguish different forms of bias, such as coverage, gatekeeping, and statement bias (D'Alessio & Allen, 2000), or visibility, agenda, and tonality bias (Eberl et al., 2017).[7] While these classifications shed light on the sources of bias, the individual categories do not readily apply themselves to the purpose of this study. First, existing classifications are issue- or event-based. For example, D'Alessio and Allen (2000) examine news coverage surrounding U.S. presidential elections, each of which is a well-defined event, and provides a clear benchmark for what information was reported or omitted (i.e., gatekeeping), how much information was reported (i.e., coverage), and what opinion the media has interjected (i.e., statement). Our study, on the other hand, is country-based; it examines news coverage surrounding a country on *all* issues, in order to holistically assess its cumulative image as created by the media. As a result, it is impossible to measure the relative volume of news or selection of topics in the absence of a clear benchmark.[8] Second, and more important, our study seeks to capture the overall image of each foreign country as conveyed by the media to its audience. It is thus appropriate to adopt an audience-oriented approach to understanding bias. Rather than directly looking at specific issues or media opinions, we focus on the underlying sentiment as received by the audience through each news story and how it accumulates over time to shape audience perception of other countries.

Therefore, we adopt a holistic view on media bias and propose a novel, composite measure: *coverage favorability*, which takes into account both the underlying sentiment of news and the frequency of coverage (more details in Section 3.2.1). Different from the classification by D'Alessio and Allen (2000), the sentiment component in this measure is evaluated by viewers directly, which can be influenced by both the topic and media opinion in a news story (i.e., agenda and statement bias); the frequency component reflects the coverage bias and accounts for the cumulative effect of foreign news coverage on audience perception. Altogether, *coverage favorability* provides a comprehensive and accurate measure of how a foreign country is presented in news to its audience.

China: State Media and Economic Openness

State Media: Gateway to Foreign News

The state media in China is part of the sprawling propaganda and information dissemination machine of the Chinese Communist Party (CCP).[9] Despite media commercialization in the past two decades, Chinese state media has adapted itself to "accommodate market demands while maintaining a roughly uniform information flow" (Stockmann, 2013, 5). In particular, when it comes to news reporting, especially in the realm of foreign news, state media enjoys a significant advantage – if not a monopoly – over its local and commercial counterparts, thanks to its infrastructure both at home and abroad.

In this study, we examine foreign news coverage by the state-run television network, China Central Television (CCTV). Although the Chinese public consumes news through various outlets, television is arguably the most far-reaching and consequential for public consumption, as it requires less literacy on the part of the audience and its entertainment elements lure more people into watching the news (Prior, 2007). Specifically, we focus on *Xinwen Lianbo* ("Network News Broadcast"), the flagship news program on CCTV, that is broadcast daily to the national audience. Despite declining viewership in recent years, it is still the most-watched weekday evening television program.[10] It also has a significant influence on the policy preferences of the general public (Pan, Zhao & Xu Forthcoming).

The greater reach and public-facing nature of television makes CCTV – and *Xinwen Lianbo*, in particular – a critical mouthpiece of the Chinese government. In fact, CCP is known to use *Xinwen Lianbo* to shape public opinions on domestic and foreign issues in line with those of the regime (Zhao & Guo, 2005). Compared to news reporting by Xinhua News Agency, which is a "genuine news organization that competes avidly with the commercial media" (Shirk, 2011, p. 24), *Xinwen Lianbo* is produced under supervision of the Department of Propaganda to convey carefully crafted messages on behalf of the party.[11] Within its daily 30-min duration, the program faithfully follows government directives and curates a set of information that the government deems valuable or useful to disseminate to the public. News coverage on *Xinwen Lianbo*, therefore, is more deliberate and hence more indicative of state intention and preference.

These unique characteristics of *Xinwen Lianbo* make it an ideal subject for this study. Since it is at the service of CCP, its patterns of reporting are an accurate indicator of the regime's preference on what information to share with the domestic audience. Moreover, the flagship status of *Xinwen Lianbo* makes it a reliable proxy of foreign news in the entire Chinese media ecosystem, as it sets the tone for foreign news coverage. In other words, while there may be some

media outlets that are more nationalistic and outspoken on issues related to foreign countries (e.g., *Global Times*) and other outlets more liberal and moderate (e.g., *The Southern Weekly*), the foreign news coverage on *Xinwen Lianbo* is, on average, a bellwether of information that the domestic audience receives about the outside world.

Overriding Importance of Economic Openness

China today is not only the world's largest authoritarian regime but also the second largest economy that is highly open and integrated in the global market. Continued international economic engagement, therefore, is critical to China's economic development as well as the regime's political survival.

Since China's accession to the WTO in 2001, CCP consistently highlights the importance of economic openness (*jingji duiwai kaifang*) by codifying it in many of its top government documents and directives. Among them, the most indicative are CCP's Five-Year Plans (FYPs) that lay out the national policy priorities: not only is economic openness repeatedly emphasized, but explicit targets for international trade have also been set as development goals.[12] In addition to trade in goods, the government has also sought to expand its international footprint to encompass other activities, especially investment overseas.[13] The regime's reliance on economic openness is borne out not only by policy directives but also empirical statistics: between 2001 and 2008, for instance, net exports and investment accounted for over 60% of China's growth (Guo & N'Diaye, 2009).

Moreover, China's rapid development hinges on increasingly large demand for energy, which domestic supply alone cannot meet. This shortage is particularly acute in the case of fossil fuel, where China accounts for 60% of the world's growth in oil consumption in the past decade.[14] In 2014, China eclipsed the United States become the world's largest net importer of fossil fuels.[15] Securing sufficient quantities of fossil fuel via import is thus an issue of national energy security, as repeatedly mentioned in the FYPs.

It is evident that China has a vested interest in strengthening its international economic ties, especially with countries that can boost Chinese exports, Chinese imports of fossil fuels, and Chinese investment overseas. To achieve this goal, the government has an interest in rallying the domestic public by carefully crafting news coverage on foreign countries.

Hypotheses on Coverage Favorability

Based on the theoretical discussion and the contextual information on China, we argue that the Chinese state media, in order to best serve the regime's interest, adjusts its foreign news coverage in response to the changing dynamics in China's international economic engagement. We introduce two hypotheses that can be tested. The first one is concerned with the effects of China's bilateral economic activities with other countries on coverage favorability; the second one explores how intentional variation in coverage favorability is achieved in news reporting. The first hypothesis is formulated as following:

H1: *Countries with stronger and more important economic ties with China receive more favorable news coverage in the Chinese state media.*

Considering the unique, strategic importance of export, fossil fuel import, and overseas investment to China's economic development, we focus on these three activities and estimate their respective effects on news coverage.

Moreover, we want to understand *how* news reporting is manipulated to achieve the variation in coverage favorability. In order to artificially manage the favorability of a foreign country in the news, the Chinese state media must over- or under-report on certain events or topics. In the empirical analysis, we zoom in on the reporting of negative events – specifically armed conflicts – as one possible area of manipulation and test the following hypothesis:

H2: *Negative events such as armed conflicts in countries with stronger and more important economic ties with China receive less news coverage in the Chinese state media.*

It should be noted that H2 is formulated as an exploratory effort rather than an exhaustive account of all tactics employed by the Chinese state media in its foreign news coverage. While it is possible, or even likely that the state media manipulates reporting on all types of events, we choose the topic of armed conflicts due to its newsworthiness. Since these are events that are expected to be covered in the news, any omission or under-reporting can be identified reliably with the aid of event data. Another reason for focusing on armed conflicts is because, as shown in our text analysis, these events invoke an unambiguously negative sentiment in the viewers. By reducing reporting on such events in a given country, the state media can boost the country's favorability with its news coverage with efficiency and effectiveness.

Empirical Analysis

To understand patterns of foreign news coverage on *Xinwen Lianbo*, we use web-scraping techniques to collect *all* news stories that were broadcast on the program between 2003 and 2018. Among them, 33,567 pieces are foreign news, covering affairs and events that took place outside China.[16] To understand what international information is fed to the Chinese public, we first analyze this corpus of text using machine-learning techniques. Next, we apply a fixed-effect model to analyze whether China's economic interest affects the favorability of news coverage that a foreign country receives. Last but not least, we investigate a possible mechanism through which coverage favorability is intentionally varied.

Unpacking the Foreign News Diet

Each news story can be positive, negative, or neutral in its underlying sentiment conveyed to viewers, depending on the topic or event being reported on. Even in the absence of media editorialization or sensationalism, news coverage can paint a grim picture of a country by exposing its social problems and political dysfunctions; conversely, by reporting on its competent governance, cultural, or scientific achievements, or friendly interaction with China, news coverage can create a rosy image of the country in the eyes of the Chinese public.

To understand the content of foreign news on *Xinwen Lianbo* and uncover potential patterns in its coverage, we employ machine-learning methods to classify news reports on two dimensions: 1) the *sentiment* each news story evokes in domestic viewers and 2) the *issue topic* each news story covers. Below we describe in detail the process of sentiment classification; the same approach is also used for topic classification.

To measure what sentiment a piece of news conveys, we adopt an audience-oriented approach and employ supervised machine-learning techniques. To start, a sample of 2,000 news reports were randomly chosen from the corpus. Two research assistants were recruited and trained as independent validators, whose task was to independently classify each of the 2,000 news reports as *positive, negative*, or *neutral*, i.e., a multi-class classification with three categories. Their independent outputs were then compiled and compared; in instances where the two disagreed (i.e., approximately 1.5% of the sample), we as authors made the final determination. The classification follows a set of coding rules, among which three are particularly important: 1) news reports on diplomatic visits by Chinese leaders abroad are coded as positive; 2) news reports involving multiple countries, where the underlying sentiment for each is inconsistent, are coded as neutral; and 3) action and behavior of international organizations, as mentioned in a news story, should not affect the classification for individual countries involved. Each of the 2,000 pieces of news was then coded with a value: −5 for negative, 0 for neutral, and 5 for positive.

Using the manual coding results from the random sample, we test the performance of four supervised machine learning methods, including Naive Bayes (Zhang, 2004), Support Vector Machine (Wu et al., 2004), K-Nearest-Neighbor (Altman, 1992), and Multi-layer Perceptron Classifier (MLPC) in neural networks (Cybenko, 1989; Rumelhart et al., 1986). Based on the accuracy rates (see Table A2 in Appendix), we choose MLPC for its superior performance to code the remaining body of news.

Topic classification proceeded in a similar way: a random sample of 3,000 news stories were manually coded by two independent validators based on a ten-category scheme (with a rate of disagreement at approximately 2.3%); MLPC was then applied to code the rest.[17]

Figure 1 reports the classification results. In Panel (a), we see that the majority of the news stories are perceived as negative. Panel (b) reports the frequency of news stories in the 10 topic categories. Among them, "armed conflict" is the largest category, accounting for about one-third of all foreign news. While it is expected that the media would focus on turbulent – hence often negative – events in reporting, the disproportionate coverage devoted to conflicts indicates a particularly high intensity with which *Xinwen Lianbo* shows its viewers the upheavals abroad. This pattern conforms with our impression that authoritarian state media tends to cover negative news about other countries. Nonetheless, there are also a significant number of news stories that are *not* negative (i.e., 20.7% positive and 24.8% neutral), indicating substantial variation in news coverage.

Combining the two dimensions, we plot the average sentiment value for each topic category over time. As shown in Figure 2, it is clear that each topic evokes a distinct and consistent sentiment from viewers, with some categories being overwhelmingly negative (e.g., armed conflicts, natural disasters, etc.) and others decidedly positive (e.g., diplomacy with China, science and technology, etc.). These response patterns make it easy for the state
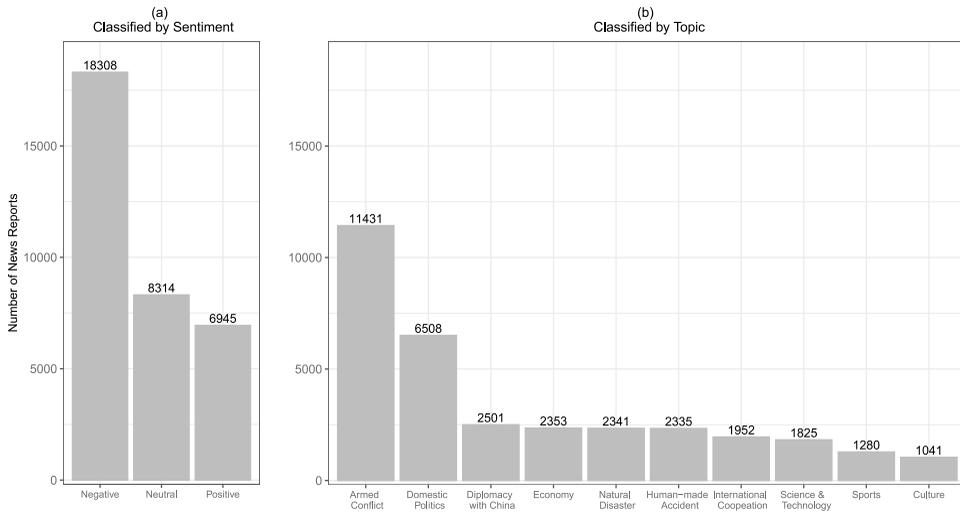
Figure 1. Classification of foreign news, 2003–2018. *Note*: Each panel reports the MLPC classification results on the 33,567 pieces of foreign news in terms of sentiment and topic, respectively. For a detailed breakdown by sample and population, see Figure A2 in the Appendix.
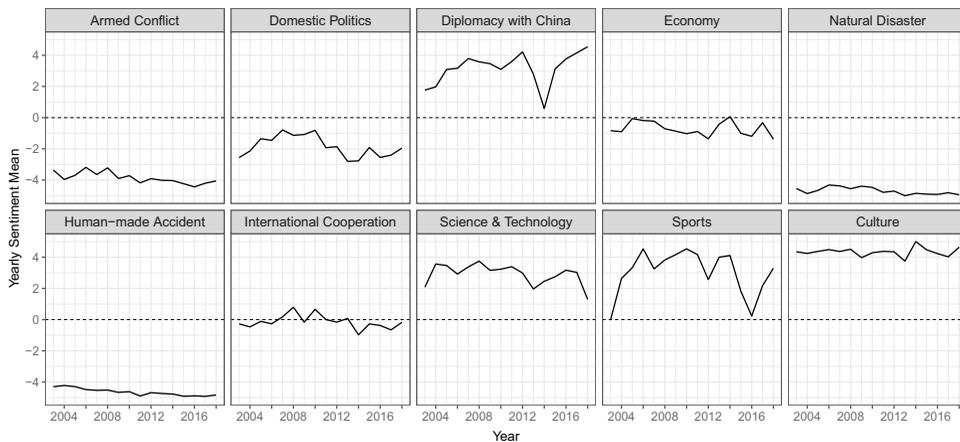
Figure 2. Average sentiment in foreign news by topic. *Note*: Each plot in this figure reports a year-on-year change in average sentiment in the topic category of foreign news between the value range from −5 (most negative) to 5 (most positive).

media to decide what news to cover about a foreign country: it can conveniently include or leave out news of a certain topic to create a more positive or negative image of the country, based on the government's preference.

After each of the 33,567 pieces of foreign news has been coded, we attach the sentiment value of each news report to the countries involved and calculates a yearly average value, *Sentiment Index*, for each of the 184 countries. As shown in Figure 3, there is significant variation in *Sentiment Index* both across countries and over time.[18] It thus begs the question of *what* is driving the variation, which we investigate next.
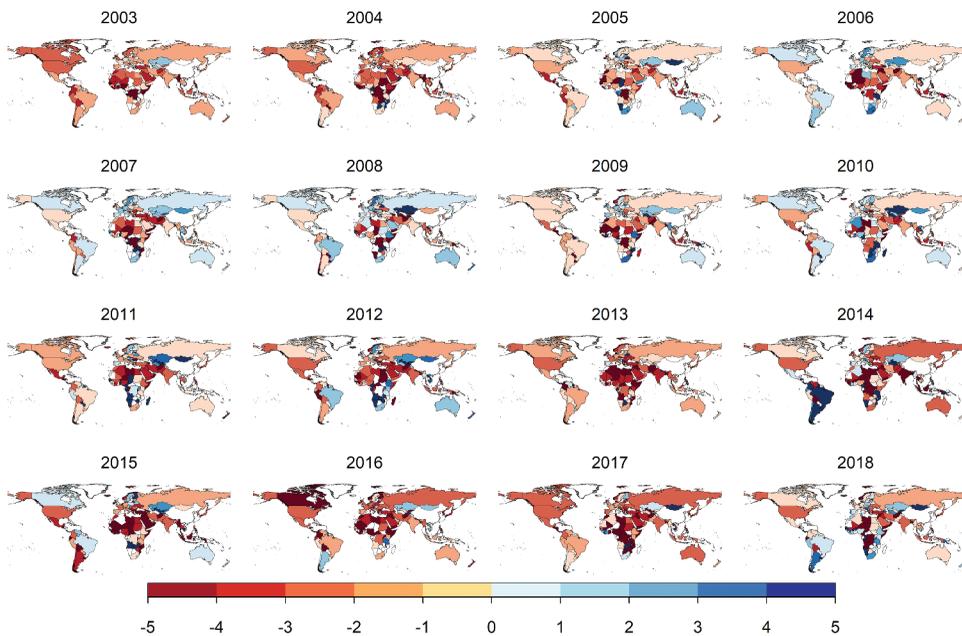
Figure 3. Sentiment Index, 2003–2018. *Note*: This figure presents the yearly maps of *Sentiment Index* for each country outside of China, based on news coverage by *Xinwen Lianbo* on CCTV. The value of *the Sentiment Index* has a range between −5 (most negative) and 5 (most positive). Countries with missing values for *the Sentiment Index* are left uncolored.

Effects of Economic Interests on Coverage Favorability

Measuring Coverage Favorability

In order to understand the overall impression that the Chinese state media creates for each foreign country through its news reporting, we generate a new variable, *coverage favorability,* that takes into account both *what* is reported about a country and *how often* it is covered. As discussed in Section 1.3, this variable more accurately and holistically reflects the state media's intention to influence audience perception because their perception of a foreign country is developed based on both the content and the intensity of news coverage. For instance, news of a country embroiled in an armed conflict generally conveys a negative sentiment to viewers; however, a viewer's negative sentiment is significantly amplified if she receives news updates about the conflict every day rather than once a week. This practice is also in keeping with the convention of measuring media bias in terms of reporting frequency (e.g., Gentzkow & Shapiro, 2006, 2010). Thus, we calculate coverage favorability for country i in year t using the following formula,

$$Coverage \quad Favorability_{it} = Sentiment \quad Index_{it} * \sqrt{Frequency_{it}}$$

such that a negative value represents overall negative news coverage, and a positive value represents overall positive coverage.[19] To account for coverage intensity, we use the square-root value of the frequency based on two considerations. First, we consider the diminishing marginal effect of repeated news coverage on audience perception due to mental fatigue,

taking square root of frequency accounts for this issue. Second, a few countries receive disproportionately frequent coverage compared to the rest, resulting in extreme skewness;[20] taking square root helps normalize the distribution.

The resultant variability, *coverage favorability*, has a range between −102.29 and 33.66, indicating substantial variation in how favorably or unfavorably *Xinwen Lianbo* portrays different countries. Additionally, there is a constant turnover of countries that take the top and bottom spots in coverage favorability each year (see Table B2 in Appendix), showing significant variation on how each country is covered in the news over time. In the following analysis, we use *coverage favorability* as the main outcome of interest.

Estimation Strategy

As discussed earlier, we expect both long-term structural determinants of news flow *and* short-term variation in China's relationship with other countries to influence foreign news coverage on *Xinwen Lianbo*. To test hypothesis H1, we estimate the following fixed-effect model:

$$Coverage \quad Favorability_{it} = \alpha + \beta \quad Economics_{it} + \Sigma\theta_j X_{ijt} + \eta_i + \gamma_t + \in_{it} \qquad (1)$$

where $Economics_{it}$ measures China's evolving bilateral economic ties with country i in year t; X_{ijt} represents a host of *time-variant* factors that measure 1) China's geopolitical dynamic with country i in year t, 2) the underlying political and socioeconomic conditions in country i in year t, and 3) presence of CCTV news correspondents in country i in year t; η_i is the country fixed effect for country i; γ_t is the year fixed effect for year t; and $\in_{it}$ is the error term. Robust standard errors are clustered at the country level. It should be noted that all long-term structural factors such as territory size, cultural affinity, and elite nation status are accounted for in country fixed effect, η_i, as they are essentially *time-invariant* for the time period of this study.

For the key predictors, i.e., China's bilateral economic ties with country i in year t, we include a battery of indicators, each representing a different facet of the international economy that is vital to China's development, including:

• *Bilateral trade_it*: logged value of bilateral trade of goods between country i and China in year t, i.e., the sum of export and import by China;

• *Export_it*: logged value of export of goods by China to country i in year t;

• *Import_it*: logged value of import of goods by China from country i in year t;

• *Fossil fuel import_it*: a dichotomous variable indicating whether China imports a substantial amount of fossil fuel from country i in year t;

• *FDI_it*: logged value of foreign direct investment from country i to China in year t[21]; and

• *Overseas projects_it*: logged value of China's investment projects in country i in year t.

We also take into account three groups of time-variant country-level covariates. The first group captures the geopolitical dynamic between China and the country i in year t. While some geopolitical factors – such as political alliance, ideological sympathy, and geographical proximity – are largely time-invariant and thus captured by the country fixed effects in the model, we control for three factors that vary with time: *political relations*, which measures government-to-government dynamics between China and country i in year t based on event data and the conflict-cooperation scale (Goldstein, 1992); *leader visits*, which records the number of visits by heads of state between the two countries; and *liberal democracy*, which indicates the regime type of country i in year t.

The second set of covariates measure the domestic conditions in each country, which should be reflected in news coverage. We include a dichotomous variable *armed conflict*, indicating whether a country i experiences any armed conflict in its territory in a year t. We also consider a set of variables that describe the political and social conditions in each country from the Worldwide Governance Indicators (WGI), including *political stability, government effectiveness*, and *rule of law*, where a negative score on any of them is likely to reflect some newsworthy events in a country, such as political upheaval, government breakdown, and criminal activities (Kaufmann et al., 2011).[22]

Finally, following the news flow literature, we control for a dichotomous variable, *news agency*, which indicates whether there is a CCTV news agency or correspondent stationed in country i in year t. For details on data sources and description of all variables, see Appendix Section B.

All variables in the model are for the current year. This is because news coverage on *Xinwen Lianbo* takes place on a daily basis; we expect the state media to adjust and update its coverage strategy in a timely manner following any significant event or change in external conditions. In other words, *Coverage Favorability$_{it}$* captures how the state media portrays country i in response to its economic ties with China in year t. As a robustness check, we test an alternative model specification with lagged variables.

Main Results

We first estimate a baseline model that regresses *coverage favorability* on economic variables only; then, we estimate the model with both economic variables *and* the full set of country-level covariates. For both specifications, we control for country fixed effects and year dummies; robust standard errors are clustered at the country level. The coefficient estimates on economic variables from both models are reported in Table 1.

As shown in both panels of Table 1, the coefficient estimates for the total volume of bilateral trade (Column 1), especially the export of goods (Columns 2 and 4), are positive and sizable. While the coefficient estimates for total imports are less robust (Column 3), those for fossil fuel imports are positive and substantial (Column 5). Similarly, the coefficient estimates for China's investment projects overseas are positive and significant (Column 7). Finally, in Column (8), we include all individually significant variables in a horse race. Once again, the results show that China's export, fossil fuel import, and investment projects overseas have significant positive effects on the favorability of a country's news coverage in *Xinwen Lianbo*.

The coefficient estimates of economic variables in both model specifications are highly similar, providing consistent support for hypothesis H1. In particular, results from Panel B where country-level covariates are controlled for give us further confidence in our argument (see Table B7 in Appendix for full results). A case could be made that the positive effects of economic activities on foreign news coverage merely reflect a pattern that China does more business with countries that are well-governed and politically stable; however, after controlling for variables such as *liberal democracy, armed conflict*, and *political stability* – all of which are also statistically significant – we see that the coefficient estimates for economic variables are still positive and significant. This indicates that, holding domestic conditions in a country constant, it is more likely to receive favorable news coverage on *Xinwen Lianbo* when it has stronger economic ties with China.

Table 1. Effects of economic activities on news coverage.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Estimation with economic variables only								
Bilateral trade	2.912 ***							
	(1.002)							
Export		2.963 ***		2.756 ***				3.332 ***
		(0.945)		(0.819)				(1.131)
Import			0.940 *	0.699 *				
			(0.501)	(0.422)				
Fossil fuel import					5.351 ***			3.641 **
					(1.791)			(1.406)
FDI						−0.073		
						(0.113)		
Overseas projects							0.593 ***	0.476 **
							(0.221)	(0.194)
Constant	−47.67 ***	−46.63 ***	−20.45 ***	−52.15 ***	−10.86 ***	−9.565 ***	−14.30 ***	−58.03 ***
	(13.10)	(11.81)	(5.762)	(13.37)	(0.770)	(0.864)	(1.615)	(15.14)
Observations	2270	2270	2261	2261	1924	2139	2063	1795
Panel B: estimation with economic variables and country-level covariates								
Bilateral trade	1.878 **							
	(0.843)							
Export		2.151 ***		1.858 **				2.158 **
		(0.796)		(0.715)				(0.952)
Import			0.969 *	0.757				
			(0.550)	(0.506)				
Fossil fuel import					4.480 ***			3.397 ***
					(1.042)			(1.172)
FDI						0.0390		
						(0.125)		
Overseas projects							0.497 ***	0.479 **
							(0.176)	(0.188)
Constant	−42.07 ***	−44.48 ***	−28.91 ***	−49.97 ***	−21.12 ***	−17.96 ***	−20.94 ***	−52.47 ***
	(12.22)	(11.03)	(8.122)	(12.43)	(4.139)	(4.218)	(3.965)	(13.27)
Observations	1704	1704	1702	1702	1519	1632	1604	1441

Note: This table presents panel regression estimates for *coverage favorability* with country fixed effects and year dummies; robust standard errors are clustered at the country level. All variables are for current year. Coefficient estimates for other country-level covariates in Panel B are omitted due to space constraints; full results are reported in Table B7 in Appendix.
$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Moreover, we plot the marginal effects of China's export, fossil fuel import, and investment projects overseas on coverage favorability over time, respectively (Figure 4). With the exception of a few years, we see that these economic activities consistently induce a favorable slant in the news coverage. The results in Table 1 and Figure 4 are in line with the existing literature on international news flow, which has established that economic ties predict foreign news coverage. However, they differ from earlier studies in two important ways. First, the outcome of interest in our analysis is not respective countries' prominence but favorability in news coverage; the findings show that China's economic activities influence state media's decision not only on *whether* to cover a certain country but also *what* to report on. Second, besides China's export, the significant effects of its fossil fuel import and investment projects overseas imply that it is not mere economic relatedness between China and other countries that drives news coverage. By itself, fossil fuel import constitutes only a small percentage of China's trade with other countries (i.e., low level of relatedness), yet it has an outsize influence in shaping coverage favorability. Similarly, in the area of investment, if it is relatedness that drives news coverage, we would expect investment flow in both directions, namely *FDI* and *overseas projects*, to be significant predictors; instead, only the latter, which is primarily led by China's state-owned enterprises to
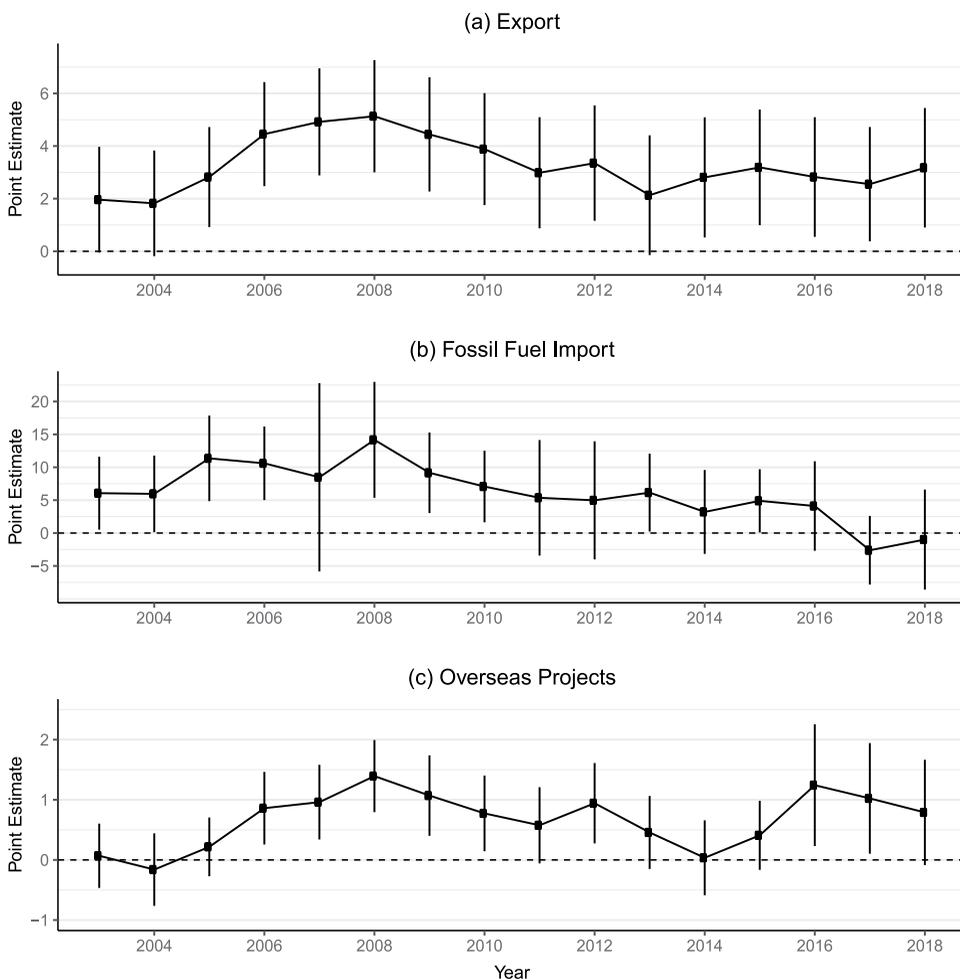
Figure 4. Marginal effects of economic activities on news coverage. *Note*: Each graph in the figure plots the estimated marginal effects by year of *export, fossil fuel import*, and *overseas projects*, respectively, with 95% confidence intervals. Estimates are based on a fixed-effects regression of *coverage favorability* for each predictor, country fixed effects, and year dummies; standard errors are clustered at the country level.

accomplish various government projects, has a significant effect on coverage favorability. These observations point to intentionality and strategic calculation on the part of the Chinese state in managing foreign news coverage.

Additional Tests

We subject the analysis above to a series of robustness checks. First, we estimate several alternative model specifications with different country-level predictors (i.e., GDP and lagged economic variables, respectively). Next, to address the concern that the dependent variable, *coverage favorability*, is calculated using an arbitrary formula, we consider two alternative specifications – one with imputed zero values and the other based on a different formula – and replicate the main analysis. Finally, to make sure the results are not driven by

a particular subset of news, especially news on diplomatic activities with China, which may simultaneously lead to increased economic activities and more favorable news coverage, we replicate the main analysis using alternative measures of coverage favorability, each calculated by dropping one topic category from the body of news. The results are reported in Tables B9 through B12 in Appendix, respectively; they are consistent across the board, giving us further confidence in the substantive findings of our analysis.

In summary, the results of the panel regression analysis provide clear and robust support for our hypothesis that countries with stronger economic ties with China tend to receive more favorable news coverage on *Xinwen Lianbo*. Specifically, China's desire to maintain its high levels of export, to keep a steady supply of fossil fuel imports, and to expand its investment overseas all lead to more positive reporting on its economic partners.

Understanding Manipulation of Coverage Favorability

The analysis so far shows that CCTV adjusts its foreign news coverage in response to China's evolving economic relations with other countries. However, how is this intentional adjustment in coverage favorability achieved? In order to present a foreign country in a more positive light, the media must be selective in deciding what to report on; it can either under-report negative events or over-report positive ones in that country to improve the its overall image. In this section, we explore one possible avenue where this may occur: the reporting on negative events, especially those what are newsworthy; in particular, we look at armed conflicts and examine whether selective reporting takes place in response to China's economic interest.

We first examine whether bilateral economic activities have an effect on the frequency of coverage in each of the 10 news topics. For each topic category, we estimate a similar fixed-effect model with a log-smoothed number of news stories as the dependent variable. Table 2 reports the coefficient estimates for five select topic categories; for full results, see Table B8 in Appendix.

We interpret the results in Table 2 in conjunction with Figure 2, which illustrates the average sentiment for each news topic. We find that more Chinese export to a country is associated with reduced volume of news on its domestic politics (Column 1), a topic that

Table 2. Effects of economic activities on reporting frequency by topic.

	(1) Domestic Politics	(2) Economy	(3) Armed Conflict	(4) Culture	(5) Diplomacy with China
Export	−0.103 *	−0.083 ***	−0.066	−0.015	0.012
	(0.053)	(0.031)	(0.060)	(0.024)	(0.042)
Fossil Fuel Import	−0.137	−0.227 *	−0.208	−0.051	−0.018
	(0.202)	(0.126)	(0.139)	(0.063)	(0.170)
Overseas Projects	−0.005	−0.005	−0.034 **	0.020 ***	0.021 **
	(0.013)	(0.007)	(0.014)	(0.007)	(0.009)
Constant	2.404 ***	1.389 ***	3.005 ***	0.225	0.258
	(0.685)	(0.400)	(0.799)	(0.298)	(0.535)
Observations	2052	2052	2052	2052	2052

Note: This table presents regression estimates for reporting frequency on select topic categories with country fixed effects and year dummies; robust standard errors are clustered at the country level; all variables are for current year. In each column, the dependent variable is the logged number of news stories in a particular topic category. For full results, see Table B8 in Appendix.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

is generally negative in terms of sentiment; increased export and fossil fuel import are associated with less reporting on a country's economy (Column 2), which is also moderately negative in terms of sentiment. Moreover, the higher volume of Chinese investment projects overseas is associated with less reporting on armed conflicts (Column 3), which are overwhelmingly negative in sentiment; but it leads to more frequent reporting on a country's culture (Column 4), which is perceived to be over-whelmingly positive, as well as its diplomatic relations with China (Column 5). These patterns suggest that *Xinwen Lianbo* deliberately chooses what news stories to cover or not cover, depending on a foreign country's economic relations with China. In other words, there is a conscious gatekeeping bias in foreign news coverage, driven by China's economic interest.

Next, we test hypothesis H2 regarding the news coverage on armed conflicts and how it affects a country's coverage favorability, as mediated by its economic ties with China. This hypothesis is formulated based on two considerations. First, our text analysis shows that *armed conflict* as a topic category receives the most amount of coverage on CCTV (Figure 1), indicating that such events are the most newsworthy and most likely to be covered. With this knowledge, coupled with event data on armed conflicts, we can detect when – and under what conditions – they are under-reported on *Xinwen Lianbo* to lessen the negative effect on a country's coverage favorability. Second, because news reports on *armed conflicts* are consistently perceived as highly negative by audience (see Figure 2), varying the amount of coverage on this topic is an effective way to artificially manage a country's coverage favorability.

In the absence of under-reporting, we would expect the occurrence of an armed conflict to have the same negative effect on coverage favorability for all countries, regardless of their economic relations with China. To investigate whether this is the case, we interact with the dichotomous event variable *armed conflict* with *export* and *overseas projects*, respectively, in a flexible multiplicative model to estimate its marginal effect on coverage favorability for different values of each moderating variable (Hainmueller et al., 2019).[23]

As shown in Figure 5 both China's export and investment projects overseas moderate the negative effect that armed conflicts have on the news coverage a country receives: in particular, when a country falls into the high-value group of *export* or *overseas projects*, the occurrence of an armed conflict no longer leads to negative news coverage. We can thus infer that *Xinwen Lianbo* under-reports violence and armed conflicts in a country when it has a higher level of economic engagement with China.

These patterns are further evidence that the positive effects of economic activities on news coverage are *not* a statistical artifact caused by a positive correlation between favorable domestic conditions in a country (such as political stability) and the volume of business it does with China. On the contrary, China has significant economic engagement with countries embroiled in conflicts and civil strife; *Xinwen Lianbo* simply does not cover these events as much as expected. For example, in our data, Ethiopia experienced armed conflicts for 14 out of the 16 years between 2003 and 2018, largely due to a long-standing border conflict with Eritrea. Meanwhile, Ethiopia is host to large volumes of Chinese investment projects, i.e., it consistently ranks above 90 percentile in terms of yearly *overseas project* . As a result, news coverage by *Xinwen Lianbo* on Ethiopia belies the instability in the country: its *coverage favorability* scores above the yearly cross-national average for 12 out of the 16 years and it is even in the positive range for 5 years.
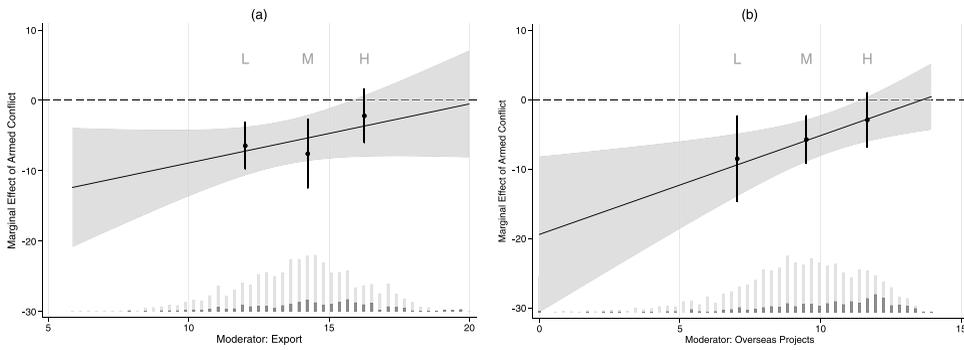
Figure 5. Effect of armed conflict on news coverage as moderated by economic activities. *Note*: Each graph in the figure plots the estimated marginal effect of *armed conflict* on news coverage as moderated by *export* and *overseas projects*, respectively, with 95% confidence intervals. Estimates are based on a fixed-effect regression of *coverage favorability* in *armed conflict*, the economic activity, and interaction terms between the two variables, as well as country fixed effects, and year dummies; standard errors are clustered at the country level.

The findings in this section provide evidence in support of hypothesis H2 that, for foreign countries with stronger economic ties with China, *Xinwen Lianbo* under-reports negative events such as armed conflicts that happened in their jurisdiction so as to artificially boost their overall coverage favorability. This sheds light on a concrete mechanism through which Chinese state media manipulates news coverage to shape audience perception of foreign countries.

Conclusion

In this article, we examine the patterns of foreign news coverage by the Chinese state media in relation to China's economic ties with other countries. Employing textual and quantitative analysis, we find robust evidence that countries with stronger economic ties with China – especially in areas of strategic importance to China – tend to receive more favorable news coverage. Moreover, the analysis indicates that favorability of news coverage for respective countries is artificially manipulated through selective reporting. Specifically, newsworthy negative events such as armed conflicts are under-reported when they take place in a country that is economically more important to China. Combined, these findings show that the Chinese government closely manages foreign news coverage in response to its interest in the global economy. They also highlight a different way of authoritarian information control: rather than censorship, the state engages in active information production that directly shapes public discourse and opinion.

Exploring patterns of foreign news coverage, our study joins a long line of scholarship on media bias, especially in the realm of foreign news reporting. However, it departs from existing classification (D'Alessio & Allen, 2000) and empirical studies that focus on a specific issue (e.g., Baum & Zhukov, 2015; Kim, 2018) or a specific country (e.g., Lee, 1981; Stockmann, 2011). By taking into account all coverage a country receives in the news, we create a composite measure, *coverage favorability*, that captures the comprehensive image of each

country as presented by the Chinese state media. This measure provides a window to seeing the international landscape from the vantage point of the Chinese government. It also points to a form of subtle information manipulation: instead of manipulating economic news alone, the state media seeks to create heuristics that prime public perception of other countries by weaving together news of various topics.

Beyond the methodological innovation, this study speaks to the international news flow literature in two ways. First, by studying the Chinese state media, it provides a significant case study in a non-Western setting and confirms the positive relationship between economic ties and foreign news coverage. Second, by examining different aspects of foreign news coverage, i.e., favorability, it enriches our understanding of the existing theory and demonstrates that economic ties not only influence the volume of news a foreign country receives but also news content and its underlying sentiment, which create a distinct media image for each country.

The sophisticated patterns of foreign news coverage by the Chinese state media, especially in terms of favorability, illustrate that news production by an authoritarian media is not simply a deterministic function of structural factors. Rather, it reflects the regime's interest in the face of fast-evolving international conditions. The findings in this study help advance our understanding of authoritarian states and what motivates them to strategically deploy the media. Rather than concerns about political survival, we find that economic interests can also be a driving force. In the Chinese case, the ruling CCP appears to have taken a pragmatic approach and treated its economic partners more favorably in news coverage. This is not to say that political and other factors do not matter. Rather, *holding everything else constant*, economic considerations play a significant role in determining what international information the regime wants to share with its citizens. This is especially relevant in the age of globalization, as democracies and authoritarian regimes alike become more economically interdependent.

We recognize that this is only the first step toward understanding the patterns and motivations of China's control of international information for domestic audience. Ideally, we would like to conduct the analysis on a more granular level in terms of temporal variation to parse out different behaviors by the state media – anticipatory, preemptive, and reactive – in response to economic activities. However, the existing data do not afford such a possibility, considering the fact that most countries do not receive enough news coverage to allow for an analysis at monthly or weekly intervals. Second, to further explore the tactics used by the state media to vary coverage favorability, more in-depth text analysis (e.g., structural topic modeling) would need to be done to uncover trends in topics. Finally, the current study examines only one news program on one state-run media platform, while patterns of coverage on other platforms may vary. We hope to overcome these limitations in the future as we continue to collect more data and deepen our inquiry.

Caveats aside, the findings in this study underscore the value of information to an authoritarian government, even when the information does not directly pertain to its internal affairs. This complements existing research that focuses on domestic information to enhance our understanding of the dynamics and motivations behind authoritarian information control.

Notes

1. For example, Herman and Chomsky (1988) explore how industrial democracies use "filters" in mass media to shape popular opinion. Baum and Potter (2008) analyzes the dynamic among democratic leaders, mass media, and public opinion in the realm of foreign policy.
2. "Authoritarian media" refers to media outlets in an authoritarian regime that are captured by the state and operate under its influence and control; they can be either privately owned or state-owned (Besley & Prat, 2006; Gehlbach & Sonin, 2014).
3. For instance, variables such as GDP, trade volume, and number of news agencies are measured in a snapshot and treated as time-invariant in most existing studies (e.g., Lei Guo & Vargo, 2020; Pietiläinen, 2006; Wu, 2000).
4. Authoritarian state media has shown to be deployed to enhance political survival at home (Field et al., 2018; Rozenas & Stukal, 2019), to reinforce political alignment and ideological sympathy (Bakhshandeh, 2014; Kitzberger, 2010), and to address geopolitical challenges (Weiss, 2013).
5. A notable example is Chinese news coverage of Sudan, China's third largest trading partner in Africa. Although the country is regularly covered, there was no reporting of the war crimes and genocide in Darfur, according to our collection of CCTV news reports between 2003 and 2018. On the contrary, CCTV coverage focused on the "Western interference" led by the United States, with a few cursory mentions of a "humanitarian crisis."
6. These two concepts are also analytically different due to their value distributions: prominence, based on news volume, is non-negative and has a floor value (i.e., zero); favorability, on the other hand, takes on both negative and positive values and has no floor or ceiling. Such differences have important implications for analysis.
7. Coverage or visibility bias refers to the *volume* of news an actor or entity receives; gatekeeping or agenda bias refer to the *topic* of news an actor or entity receives; statement or tonality bias refers to the *opinion or evaluation* interjected in the news by the media.
8. In fact, D'Alessio and Allen (2000, p. 136) acknowledge that both gatekeeping bias and coverage bias are "impossible to measure . . . outside the electoral realm."
9. *State media* here is define as media outlets, including print publications, TV and radio networks, and Internet websites, that are run by the Chinese government at various levels. They are officially under the leadership and guidance of the central CCP Department of Propaganda.
10. In March 2019, *Xinwen Lianbo* captured 4.61% of all households with television and 21.06% of weekday television viewers, according to audience data from CSM Media Research; see http://www.csm.com.cn/cpfw/.
11. More recently, when Xi Jinping visited CCTV in 2016, the network displayed a giant slogan that read, "[CCTV is] surnamed after the Party, absolutely loyal" (*yangshi xing dang, juedui zhongcheng*). See https://news.ltn.com.tw/news/world/breakingnews/1607964.
12. For instance, the tenth FYP (2001–2005) called for China's trade of goods to reach $680 billion; the eleventh FYP (2006–2010) set the target at $2.3 trillion.
13. As early as 2000, the CCP leadership announced the "China Goes Global" strategy to invest overseas and wrote it into the tenth FYP. Under the leadership of Xi Jinping since 2013 and his signature "Belt Road Initiative", outbound investment has become a new pillar of China's international economic engagement. In particular, the thirteenth FYP (2016–2020) calls to increase trade of services as a share of total trade to over 16%.
14. See report by the Economist, Nov 24, 2016, https://www.economist.com/special-report/2016/11/24/where-indias-and-chinas-energy-consumption-is-heading.
15. See report by the U.S. Energy Information Administration, https://www.eia.gov/todayinenergy/detail.php?id=15531.
16. The choice of time period is constrained by the data availability. The earliest news report on the CCTV website was from September 2002. For technical details on identification of foreign news and associated countries, see Appendix Section A.1.

17. We increase the sample size for manual coding from 2,000 to 3,000 because the topic categories are more numerous. For details on classification regarding coding rules and methods, see Appendix Sections A.2 and A.3.
18. A country that does not receive any news coverage in a given year has a missing value for *Sentiment Index* for that year.
19. Country-year observations with zero news coverage have a missing value for the variable *coverage favorability* due to their missing values in *Sentiment Index*. However, it could be argued that if a country does not receive any coverage in a given year, its public image remains neutral. As a robustness check, we later impute the value zero for these observations and replicate the main analysis.
20. For example, while half of the country-year observations in the data have a frequency of 4 or less, the United States appears in the news hundreds of times every year.
21. FDI inflow is vital for export-oriented industries in China and accounts for more than 50% of China's export every year since 1996.
22. We do not include GDP as a covariate, as it is highly correlated with *Export* (correlation coefficient 0.871). For more discussion and an alternative model specification, see Section B.2.3 and Table B9 in Appendix.
23. We do not interact *armed conflict* with *fossil fuel import* due to the unbalanced distribution in both dichotomous variables.

Data Availability Statement

The data described in this article are openly available in the Open Science Framework at https://doi.org/10.17605/OSF.IO/TPA6U.

Open Scholarship

This article has earned the Center for Open Science badges for Open Data, Open Materials and Preregistered. The data and materials are openly accessible at https://doi.org/10.1080/10584609.2021.1960451

Disclosure Statement

No potential conflict of interest was reported by the author(s).

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References

Ahern, T. J., Jr. (1984). Determinants of foreign coverage in U.S. newspapers. In R. L. Stevenson & D. L. Shaw (Eds.), *Foreign News and the New World Information Order* (pp. 217–236). Iowa State University Press.

Altman, N. S (1992). An introduction to Kernel and nearest-neighbor nonparametric regression. *The American Statistician*, *46*(3), 175–185. http://doi.org/10.2307/2685209

Bakhshandeh, E. (2014). How mainstream Iranian newspapers portray the west: The influence of anti-westernism and anti-americanism. *The Journal of International Communication*, *20*(2), 184–199. https://doi.org/10.1080/13216597.2014.948034

Baum, M. A., & Potter, P. B. K. (2008). The relationships between mass media, public opinion, and foreign policy: Toward a theoretical synthesis. *Annual Review of Political Science*, *11*(1), 39–65. https://doi.org/10.1146/annurev.polisci.11.060406.214132

Baum, M. A., & Zhukov, Y. M. (2015). Filtering revolution: Reporting bias in international newspaper coverage of the Libyan civil war. *Journal of Peace Research*, *52*(3), 384–400. https://doi.org/10.1177/0022343314554791

Besley, T., & Prat, A. (2006). Handcuffs for the grabbing hand? Media capture and government accountability. *American Economic Review*, *96*(3), 720–736. https://doi.org/10.1257/aer.96.3.720

Cybenko, G. (1989). Approximation by superpositions of a sigmoidal function. *Mathematics of Control, Signals, and Systems (MCSS)*, *2*(4), 303–314. https://doi.org/10.1007/BF02551274

D'Alessio, D., & Allen, M. (2000). Media bias in presidential elections: A meta-analysis. *Journal of Communication*, *50*(4), 133–156. https://doi.org/10.1111/j.1460-2466.2000.tb02866.x

Dupree, J. D. (1971). International communication: View from 'A window on the world'. *Gazette*, *17*(4), 224–235. https://doi.org/10.1177/001654927101700403

Eberl, J.-M., Boomgaarden, H. G., & Wagner, M. (2017). One bias fits all? Three types of media bias and their effects on party preferences. *Communication Research*, *44*(8), 1125–1148. https://doi.org/10.1177/0093650215614364

Egorov, G., Guriev, S., & Sonin, K. (2009). Why resource-poor dictators allow freer media: A theory and evidence from panel data. *American Political Science Review*, *103*(4), 645–668. https://doi.org/10.1017/S0003055409990219

Field, A., Kliger, D., Wintner, S., Pan, J., Jurafsky, D., & Tsvetkov, Y. (2018). Framing and Agenda-setting in Russian news: A computational analysis of intricate political strategies. *arXiv:1808.09386 [Cs]. arXiv: 1808.09386*. https://arxiv.org/abs/1808.09386

Friebel, G., & Heinz, M. (2014). Media slant against foreign owners: Downsizing. *Journal of Public Economics*, *120*, 97–106. https://doi.org/10.1016/j.jpubeco.2014.09.001

Galtung, J., & Ruge, M. H. (1965). The structure of foreign news: The presentation of the Congo, Cuba and Cyprus crises in four Norwegian newspapers. *Journal of Peace Research*, *2*(1), 64–90. https://doi.org/10.1177/002234336500200104

Gehlbach, S., & Sonin, K. (2014). Government control of the media. *Journal of Public Economics*, *118*, 163–171. https://doi.org/10.1016/j.jpubeco.2014.06.004

Gentzkow, M., & Shapiro, J. M. (2006). Media bias and reputation. *Journal of Political Economy*, *114*(2), 280–316. https://doi.org/10.1086/499414

Gentzkow, M., & Shapiro, J. M. (2010). What drives media slant? Evidence From U.S. Daily Newspapers. *Econometrica*, *78*(1), 35–71.https://doi.org/10.3982/ECTA7195

Goldstein, J. (1992). A conflict-cooperation scale for WEIS events data. *Journal of Conflict Resolution*, *36*(2), 369–385. https://doi.org/10.1177/0022002792036002007

Guo, K., & N'Diaye, P. (2009). *"Is China's export-oriented growth sustainable?"* IMF Working Paper, WP/09/172. https://www.imf.org/external/pubs/ft/wp/2009/wp09172.pdf

Guo, L., & Vargo, C. J. (2020). Predictors of international news flow: Exploring a networked global media system. *Journal of Broadcasting & Electronic Media*, *64*(3), 418–437. https://doi.org/10.1080/08838151.2020.1796391

Hainmueller, J., Mummolo, J., & Xu, Y. (2019). How much should we trust estimates from multiplicative interaction models? Simple tools to improve empirical practice. *Political Analysis*, *27*(2), 163–192. https://doi.org/10.1017/pan.2018.46

Herman, E. S., & Chomsky, N. (1988). *Manufacturing consent: The political economy of the mass media*. Pantheon.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2011). The worldwide governance indicator: Methodology and analytical issues. *Hague Journal on the Rule of Law*, 3(2), 220–246. https://doi.org/10.1017/S1876404511200046

Kim, S. E. (2018). Media bias against foreign firms as a veiled trade barrier: Evidence from Chinese newspapers. *American Political Science Review*, 112(4), 954–970. https://doi.org/10.1017/S0003055418000242

King, G., Pan, J., & Roberts, M. E. (2013). How censorship in China allows government criticism but silences collective expression. *The American Political Science Review*, 107(2), 326–343. https://doi.org/10.1017/S0003055413000014

Kitzberger, P. (2010). *"The media activism of Latin America's leftist governments: Does ideology matter?"* (GIGA Working Paper No. 151).

Larson, J. F. (1979). International affairs coverage on U.S. network television. *Journal of Communication*, 29(2), 136–147. https://doi.org/10.1111/j.1460-2466.1979.tb02956.x

Lee, C.-C. (1981). The United States as seen through the people's daily. *Journal of Communication*, 31(4), 92–101. https://doi.org/10.1111/j.1460-2466.1981.tb00453.x

Lorentzen, P. (2014). China's strategic censorship. *American Journal of Political Science*, 58(2), 402–414. https://doi.org/10.1111/ajps.12065

Olson, M. (1993). Dictatorship, democracy, and development. *American Political Science Review*, 87(3), 567–576. https://doi.org/10.2307/2938736

Pan, J., Zhao, Z., & Xu, Y. (Forthcoming). How Government-controlled media shifts policy attitudes through framing. *Political Science Research and Methods*. https://doi.org/10.1017/psrm.2021.35

Pietiläinen, J. (2006). Foreign news and foreign trade: What kind of relationship? *International Communication Gazette*, 68(3), 217–228. https://doi.org/10.1177/1748048506063762

Prior, M. (2007). *Post-broadcast democracy: How media choice increases inequality in political involvement and polarizes elections*. Cambridge University Press.

Reuter, O. J., & Gandhi, J. (2011). Economic performance and elite defection from hegemonic parties. *British Journal of Political Science*, 41(1), 83–110. https://doi.org/10.1017/S0007123410000293

Rozenas, A., & Stukal, D. (2019). How autocrats manipulate economic news: Evidence from Russia's state-controlled television. *The Journal of Politics*, 81(3), 982–996. https://doi.org/10.1086/703208

Rumelhart, D. E., Hinton, G. E., & McClelland, J. L. (1986). A general framework for parallel distributed processing. *Parallel Distributed Processing: Explorations in the Microstructure of Cognition*, 1, 45–76.

Segev, E. (2015). Visible and invisible countries: News flow theory revised. *Journalism*, 16(3), 412–428. https://doi.org/10.1177/1464884914521579

Shambaugh, D. (2007). China's propaganda system: Institutions, processes and efficacy. *The China Journal*, 57, 25–58. https://doi.org/10.1086/tcj.57.20066240

Shirk, S. (2011). Changing media, changing China. In S. Shirk (Ed.), *Changing media, changing China* (pp. 1–37). Oxford University Press.

Stockmann, D. (2011). Race to the bottom: Media marketization and increasing negativity toward the United States in China. *Political Communication*, 28(3), 268–290. https://doi.org/10.1080/10584609.2011.572447

Stockmann, D. (2013). *Media commercialization and authoritarian rule in China*. Cambridge University Press.

Weiss, J. C. (2013). Authoritarian signaling, mass audiences, and nationalist protest in China. *International Organization*, 67(1), 1–35. https://doi.org/10.1017/S0020818312000380

Wu, H. D. (2000). Systemic determinants of international news coverage: A comparison of 38 Countries. *Journal of Communication*, 50(2), 110–130. https://doi.org/10.1111/j.1460-2466.2000.tb02844.x

Wu, T.-F., Lin, C.-J., & Weng, R. C. (2004). Probability estimates for multi-class classification by pairwise coupling. *Journal of Machine Learning Research*, *5*, 975–1005. https://www.jmlr.org/papers/volume5/wu04a/wu04a.pdf

Zhang, H. (2004). The optimality of naive bayes. *AA*, *1*(2).

Zhao, D. (2009). The mandate of heaven and performance legitimation in historical and contemporary China. *American Behavioral Scientist*, *53*(3), 416–433. https://doi.org/10.1177/0002764209338800

Zhao, Y., & Guo, Z. (2005). Television in China: History, political economy, and ideology. In J. Wasko (Ed.), *A companion to television.* (pp. 521-539). Blackwell Publishing.