# Predictors of International News Flow: Exploring a Networked Global Media System


## Abstract

This study examines a networked global media system by discerning what drives international news flow in multiple dimensions. A network analysis of news coverage from news websites in 67 countries and their interactions in 2015 reveals that structural factors not only predict a country's international attention, but also its transnational intermedia agenda-setting (IAS) power —the power to influence international discourse. Rationales that drive different dimensions of news flow vary. For instance, our results show that economically influential and more populous countries continue to set the world news agenda in reporting international politics, but smaller countries may have the potential to determine how their own countries are portrayed by the outside world. In addition, trade volume explains international news flow in several ways. Overall, this article advances prior literature by demonstrating that international news flow is multilayered, networked, and possesses systemness and fluidity.



**Keywords:**

international news flow, network analysis, intermedia agenda setting (IAS), international communication

Increasing globalization and emerging digital communication technologies has complicated the flow of information (Segev, 2016). International news flow research focuses on country salience in international news, suggesting that world powers such as the United States are more "newsworthy" than others (Golan & Himelboim, 2015; Segev, 2016). One dominant theoretical framework to explain this biased information flow is the World System Theory (WST; Wallerstein, 1974), which emphasizes the power of the capitalist system in determining transnational relations. Researchers argue that this dominance should also predict international news flow. Global news attention should concentrate in core, capitalistic countries leaving weaker economies with little attention (Golan & Himelboim, 2015).

The WST-based approach conceptualizes international communication from an economic perspective (Strikwerda, 2000). Scholars have also found that other factors such as cultural and geographic proximity play roles in driving international news flow (see Segev, 2016). As the flow of information worldwide has become increasingly decentralized (Golan & Himelboim, 2015), it is possible that it is no longer so simply predicted. News media in distinct nation-states —small or large, similar or different—may now collaborate, interact, and compete with each other. If true, the "systemness" of the global media system remains yet undiscovered.

This study attempts to uncover the structure, or the lack of structure, in the global media system. To advance the existing literature, we offer three propositions that can enhance the prediction of international news flow. First, we propose that not only *attention* be measured, but also *influence*—the power to influence international discourse. Second, a combination of factors explain attention and influence in distinct ways. Third, international news flow is an interlinked network, where different countries and their respective news media interact with each other for attention and influence. Our approach sheds light on why news flows from one country to

another in multiple dimensions, thus offering nuance that mirrors the new digital flow of information. To offer empirical evidence, this study employs a network analysis approach to examine structural factors underlying international news flow among 67 countries in 2015.

## Attention and Influence

Traditional examination of international news flow focuses on a country's salience in foreign news coverage (Segev, 2016). A country's power in the global media system is operationalized as the news attention the country receives from the rest of the world. This speaks to the central aspect of soft power, the ability of a country to affect others through *attraction* (Nye, 2004). When a country attracts news attention around the world, it suggests other countries admire that country's values. However, news attention is not equivalent to attraction. For example, Syria has attracted a significant amount of international news attention mainly because of the conflicts happening in the country rather than its attractiveness.

An alternative measure of international news flow is *influence*: the extent to which a country's news media can set the agenda of foreign media (Guo & Vargo, 2017). Unlike news attention, a country's agenda-setting impact reflects its ability to attract other countries in terms of its *perspectives*. This approach can be traced to *intermedia agenda setting* (termed as IAS hereafter; McCombs, 2014). IAS asserts that news media often follow each other in deciding what topics to cover for reasons such as validating newsworthiness, journalist routines, or for reducing organizational costs (McCombs, 2014). Existing studies focus on IAS within a given society, but the media effect and its rationales can be extended to a global context. Here we call this "transnational IAS." To advance their own interests, more countries employ strategies such as public diplomacy, relying on news media to communicate their narratives to the world (Golan & Himelboim, 2015). A country with a greater level of transnational IAS power can better

promote its version of international politics to foreign publics and thus influence world order (Miskimmon, O'loughlin, & Roselle, 2014).

Attention does not necessarily lead to influence, and vice versa. While Syria is newsworthy, that does not mean the country has large bargaining power on the global media stage. Its perceptions of international politics have not transferred to others. Conversely, some countries such as Saudi Arabia may not be considered newsworthy in international news, but their media such as *Al Arabiya* have been successful—at least for some period of time—in pushing their agendas to the rest of the world (Nisbet & Myers, 2011). International news attention measures *prominence* and transnational IAS reveals *perception*.

Unlike international news flow, little is known about transnational IAS. Case studies have yielded mixed insights. The world marketplace of ideas has become more competitive. Media power is no longer concentrated to the few elite countries (Guo & Vargo, 2017). This is perhaps because information transmission no longer depends on western news agencies thanks to the Internet (Tunstall, 2008). On the other hand, research also shows that the emerging mediascape still appears to be driven by capitalistic countries (Guo, Mays, & Wang, 2019).

This study systemically examines international news flow with respect to not only international news attention, but also transnational IAS. We distinguish between two types of influence: transnational IAS in terms of a given country's own media agenda and that in terms of international agenda. The former concerns whether the news media in a country can transfer the salience of issues associated with own country to foreign media, thus influencing how foreign media portray the country. This reflects the extent to which a given country is able to construct its image to the outside world (Buhmann & Ingenhoff, 2015). The second type of transnational IAS refers to the capability of a country's news media to push their perspectives on international

politics outside of their own country to the world. This can be considered a higher level of transnational media influence and ultimately a soft power that shapes world order. For instance, whether *Al Arabiya* can influence how BBC reports about Saudi Arabia, and whether *Al Arabiya* also sets the agenda of BBC in reporting other countries in the Arab world are two levels of media effect and should follow different sets of logics. Capturing these different powers helps our understanding of international news flow. The remaining question is what drives the news flow in terms of international attention and the two levels of transnational IAS respectively.

## Predictors of International News Flow

Structural factors could explain the patterns of international news flow from the perspectives of both attention and influence. Studies based on the WST demonstrate that a country's *economic power* positively correlates with its salience in international news (see Segev, 2016 for a review). Wealthier countries often attract news attention from less economically developed ones. Findings on population as a correlate remain mixed in the literature—larger countries were found to be more newsworthy than smaller countries in some studies (Segev, 2016), but not all (e.g., Wu, 2000). The interactions between a reporting and a reported country, or the relationships that two countries share economically, politically, and culturally are also bound to play a role in information flow. Economic interdependence between two countries, reflected in trade relationships, is a dominant predictor of international news flow (Segev, 2016). In addition, the greater proximity in terms of culture and geography between countries also means greater news relevance (Galtung & Ruge, 1965). There is a debate about the extent to which countries with share languages and shared borders impact news attention (Galtung & Ruge, 1965; Segev, 2016; Wu, 2000).

Finally, deviance, such as involvement in conflicts, should also predict international news attention (Shoemaker, Chang, & Brendlinger, 1987). Social uprisings in small Middle Eastern countries often receive high international attention. However, as Segev (2016) reviewed, research shows that the first two groups of variables—national traits and relatedness—often outperform the degree of deviance to determine a country's newsworthiness.

This study examines the extent to which different structural factors explain attention and also influence. First, the expectation that wealthier countries are also more likely to set the international media agenda begs empirical investigation. Guo and Vargo (2017) found the U.S. attracted much international news attention and was able to transfer the U.S. perspective to the world. Saudi Arabia however, a smaller country, was not considered newsworthy internationally but exhibited a significant level of transnational IAS. Given these contradictory findings, the link between a country's absolute power in terms of both economic influence and population and its transnational IAS effect is unclear. The question also remains how the two national traits predict a country's transnational IAS power with respect to transferring its domestic agenda and international agenda differently. Given that small- and medium-sized states also make great public diplomacy efforts to build their country images (Bátora, 2005), it is likely that smaller countries are capable of deciding how their own countries are portrayed in foreign media. In other words, a country's economic and political power is not necessarily associated with its transnational IAS power in transferring the salience of issues happening in its own country to the world. However, the transnational IAS power to influence foreign media in covering international news concerns a higher level of soft power, which may still be concentrated on traditional and emerging world powers.

It stands to reason that economic ties between any two countries could be related to inter-media influence. Trade has always been about building close relationships. Trading countries often have vested interests in their partner's economy (Desjardins, 2017). This economic interdependence prompts trading partners to pay attention to each other's stance in their respective domestic issues as well as international politics, which could lead to reciprocal transnational IAS in both aspects. Similarly, news media in countries that share the same culture and region should more closely follow each other's agenda—both domestically and internationally—than countries that are not related. Using the same running example, Saudi Arabia's *Al Arabiya* may be especially influential in the Arab world because of their shared culture and geolocation.

Lastly, just as a country's involvement in conflicts will lift its salience in foreign news coverage, we expect that this deviance factor can also explain transnational IAS in terms of transferring the country's domestic agenda to the rest of the world. No evidence would suggest the deviance principle would allow a country to exhibit influence in the global media system beyond its own domestic issues.

## International News Flow in a Networked System

Our last proposition states that the global media system, at its heart, is a network of actors. Structural factors of this network, including national traits, relatedness, and interaction, and deviance should be examined at the system level to understand how countries are related to each other. International news flow research treats individual countries in isolation. Most studies focus on selected countries, without capturing the information flow within the *global* system. Other studies have rank-ordered countries based on their positions in an international communication hierarchy, rather than explicating relationships between countries and the

underlying dynamics. Consider again the example of Saudi Arabia. Guo and Vargo (2017) reveal that the country received only a small portion of international news attention but ranked high in terms of its transnational IAS influence. While the finding is intriguing, it remains unknown where the news attention came from, on what specific countries Saudi Arabia exerted transnational IAS, and most importantly, what drove the information flow from or to Saudi Arabia. Some studies such as Wu (2000) examine the systematic determinants of international news flow across a large number of countries by zooming in on bilateral relationships. However, the analyses still consider countries discretely. That is, the results show some structural factors explained the news flow from and to certain countries, but not for others. This approach does not consider the global media system as a whole.

Relatively fewer studies that adopted a network perspective have examined international news flow operationalized as international newspaper and periodical trade (Kim & Barnett, 1996) and Internet hyperlinks (Barnett, 2005; Himelboim, 2010). All have observed that some structural factors of a country such as its economic strength and national culture are related to the information flow. However, while the measure of newspaper trade data may not be able to reflect the current media environment, website hyperlinks cannot capture the entire international media landscape. As Himelboim (2010) showed, the majority of foreign stories had no external links at all. Regardless, these studies are important in pointing out the significance of examining international news flow as a network. We conceptualize the global media system as an interlinked network, where each country represents a node. The edges represent the interactions between countries in terms of attention or influence. If the global network exhibits some systemness, structural factors should explain the information flow between nodes in the *entire* system.

## Hypotheses

From a network perspective, the focus of the study is on the *relative* position between two countries on key structural factors and how that is related to the news flow between the two countries with regard to attention and influence. First, focusing on the attention aspect of international news flow, we hypothesize:

**H1a:** Economically less influential countries are more likely to cover countries that are economically more influential.

**H1b:** Countries with less population are more likely to report about larger countries.

**H1c:** Countries that are more economically related to each other are more likely to report about each other compared to countries with less economic interdependence.

**H1d:** Culturally similar countries are more likely to report about each other compared with countries with different cultures.

**H1e:** Countries that are geographically closer to each other are more likely to report about each other compared with countries that are geographically farther.

**H1f:** Countries that are involved in fewer conflicts are more likely to report about countries involved in more conflicts.

Based on the literature review about the two types of transnational IAS influence, we anticipate:

**H2a:** Economically more influential countries are more likely to set the media agenda of countries that are economically less influential in covering international news.

**H2b:** Countries with larger population are more likely to set the media agenda of smaller countries in covering international news.

**H2c:** Countries that are more economically related to each other are more likely to set each other's media agenda compared to countries with less economic interdependence in covering each other's domestic news as well as in covering international news.

**H2d:** Culturally similar countries are more likely to set each other's media agenda compared with countries with different cultures in covering each other's domestic news as well as in covering international news.

**H2e:** Countries that are geographically closer to each other are more likely to set each other's media agenda compared with countries that are geographically farther in covering each other's domestic news as well as in covering international news.

**H2f:** Countries that are involved in more conflicts are more likely to set the agenda of countries involved in fewer conflicts in covering their own domestic news.

## Method

The study is based on the international news data collected for a larger research project (Authors XXXX). Using a network analysis approach with UCINET, the study examines the extent to which a list of structural factors influence how news flows from one country to another in terms of attention and influence.

### A Database of International News

To study international news flow this study leveraged the Global Database of Events, Language and Tone (GDELT). GDELT's Global Knowledge Graph (GKG) is a large, open-source database of online news articles collected from news outlets from around the world. It crawls most major news websites found in Google News. This study selected 67 countries[1] that represent different levels of economic development, culture, and geography (Guo & Vargo, 2017). GDELT returned 54 million news articles from 4,930 news websites in these countries in

2015. The top-level domain (TLD; e.g., .uk, .au) of each news website was used to determine the origin of the media. If the TLD is not associated with a certain country (e.g., .com, .org), the media's web address was searched in Wikipedia and other online resources to verify its host country. In addition to archiving news, GDELT computationally annotates news coverage in many ways. For this study we extracted out hyperlinks to news content and its "themes" and "location" annotations according to GDELT.

**GDELT GKG themes.** Themes are collections of keywords that are searched for in the body and title of a news story. For instance, the "immigration" theme contains keywords including immigration, immigrant and immigrants.[2] These keywords have been tested and validated to show that when present, articles contain that theme (Leetaru, 2012). To validate a theme, a manual review of randomly selected articles is conducted to ensure keywords are precise and exhaustive. Theme detection based on keyword matching is not a perfect measure. However the creators of GDELT believe it is on par with leading computer-assisted classification systems, and acceptable for use with macro analyses (Leetaru, 2012). Themes cover a broad range of topics and attributes. Researchers have taken the themes and arranged them in a way that broadly encompasses major issues in U.S. news coverage between 2014 and 2018 (e.g., Guo and Vargo, 2018). For instance, the issue *civil liberties* has the GDELT themes *gender violence* and *LGBT issues*, among others.[3] In this study, to further validate the categorization, two human coders were trained to assign the GDELT themes into one of the 16 issue categories and reached 0.84 Krippendorff's alpha in the intercoder reliability test. In this way GDELT GKG themes were used to infer the issues in present in any given news story. The 16 issues include taxes, unemployment, economy, border issues, healthcare, public order,

military/terrorism, civil liberties, environment, education, politics, poverty, disaster, religion, infrastructure, and media/internet.

**GDELT GKG locations.** GDELT also has an event detection system, which automatically searches the full text of the article in its native language and determines the countries mentioned therein. These countries are extracted for each article and were used to infer what countries were mentioned in any given news article.

**Generation of Matrices**

To conduct network analysis, a 67 × 67 matrix of international news flow in terms of country salience was created to measure who reported about whom (hereafter, "attention matrix"). In this "attention matrix," each row or column—or the "node" in the network—represents a country. The value in each cell corresponding to two countries A (row) and B (column)—the "edge"—represents the percentage of news attention country A gave to country B. Table 1 provides an excerpt of the attention matrix. For example, in the dataset 6.23% of U.S. international news coverage mentioned China; reversely, China devoted 14.88% of its international new reporting to the U.S. In other words, China paid more attention to news about the U.S. than reversely.

<Insert Table 1 about here>

Another two dependent matrices were developed to represent transnational IAS among the 67 countries in terms of setting the domestic agenda (hereafter "domestic IAS matrix") and international agenda (hereafter "international IAS matrix"), respectively. In each matrix, each node represents a country and each edge represents the degree of the transnational IAS effect of one country on another. A series of time series analyses, Granger causality tests, were conducted to examine the extent to which the news media in one country set the agenda of another country

in reporting 16 issues associated with the 67 countries. That is, the analysis determines whether the news media in country A predicted the media agenda of country B in reporting about X issue in country Y. To be clear, we conduct time series analysis to create domestic and international IAS matrices separately, which are explained in detail below.

In constructing the domestic IAS matrix, the transnational IAS power of country A on country B is operationalized as the number of issues related to country A that achieved significance in the time series analysis ($p < 0.05$). For instance, in order to examine the transnational IAS effect of the U.S. media on the Chinese media, we conducted 16 Granger causality tests (i.e., 16 issues related to the U.S.). That is, we asked whether the U.S. media's coverage of a U.S. issue would trigger any Chinese news coverage of the issue. In each test, we arranged the U.S. and Chinese news coverage of a given U.S. issue (e.g., the U.S. economy) as two daily time series and investigated whether the U.S. time series "Granger cause" the Chinese time series. To define, time series X is said to "Granger cause" time series Y if Y can be better predicted from past values of X and Y combined than from past values of Y alone. Likewise, we also conducted 16 time-series analysis to examine whether Chinese media's coverage of a China-related issue would predict the U.S. news coverage of the issue. As for the time lag, previous research suggests that in this 24/7 news environment agenda-setting effects can happen within hours (Harder, Sevenans, & Van Aelst, 2017). Given that GDELT did not document specific time stamp for news coverage at the time of this research, we opted to use a one-day time lag. However, it may take longer than a day for news media in certain countries to follow the trend of international reporting. Capturing time lags for transnational IAS to occur among different countries would be a fruitful direction for future work. In our dataset, the U.S. media significantly set the agenda of Chinese media in reporting three out of 16 U.S.-related issues.

That is, in the domestic IAS matrix, the directional edge from U.S. to China is 3. However, Chinese media did not influence the U.S. media at all in reporting issues about China; the directional edge from China to US is 0.

As for the international IAS matrix, the transnational IAS power country A on country B is operationalized as the number of country-issue combinations out of 1,056 (66 countries × 16 issues) possible combinations—excluding issues related to country A—that achieved significance in the time series analysis ($p < 0.05$). Again, this measures country A's transnational IAS influence on country B in reporting international news beyond country A's domestic issues. For example, we conducted 1,056 Granger causality tests (i.e., 1,056 issue combinations such as Canada's economy and Singapore's healthcare) to examine the transnational IAS effect the U.S. media on Chinese media. Reversely, we also ran 1,056 tests to examine the transnational IAS effect Chinese media on the U.S. media. That is, we asked whether the U.S. media coverage of a non-U.S. issue would trigger Chinese news coverage of the issue, and whether Chinese news coverage of a non-China related issue would predict the U.S. media coverage of the issue. It turns out that the U.S. news media set the media agenda of China in covering 652 country-issue combinations; reversely, Chinese media predicted the U.S. media agenda in reporting 310 country-issue combinations. That is, the U.S. media were more likely to set the media agenda of China than reversely in reporting international news. In the transnational IAS matrix, the directional edge from U.S. to China is therefore 652, and the one from China to U.S. is 310.

**Independent Matrices**

Drawing upon the network analysis approach in Walter (2016), six 67 × 67 matrices were created to represent country relationships in terms of economic influence, population, economic interdependence, cultural proximity, geographical closeness, and involvement in conflicts. For

factors of economic influence, population, and involvement in conflicts, valued and asymmetrical matrices were created to reflect how countries are compared to each other in these aspects. Specifically, the relative economic influence of any two countries is operationalized as their difference in Gross Domestic Product (GDP) per capita in 2015, which was collected from the database of the International Monetary Fund (IMF; imf.org). As such, if country A had a higher GDP per capita than country B, the cell corresponding to A (column) and B (row) is a positive value and the one corresponding to B and A is negative. For example, the U.S.' GDP per capita is $55,836.8 and China's is $7,924.7, and therefore in the matrix the directional edge from the U.S. to China is 47,912.1 (i.e., 55,836.8 minus 7,924.7) and that from China to the U.S. is -47,912.1. The same approach was used to create matrices of population, collected from the database of the Population Division of the United Nations (population.un.org), to reflect the relative size of any two countries.

A country's involvement in conflicts is operationalized using the Global Peacefulness Index (GPI), provided by Vision of Humanity (visionofhumanity.org), an online portal for peace research, news and initiatives around the world. The GPI measures the state of peace of each country using the level of societal safety and security, the extent of ongoing domestic and international conflict, and the degree of militarization. Similar to the matrices of GDP and population, each cell in the GPI matrix records the difference in GPI of the two corresponding countries. For instance, the U.S. GPI is 2.181 and China's is 2.291, and therefore in this GPI matrix the directional edge from the U.S. to China is -0.11 (i.e., 2.181 minus 2.291) and that from China to the U.S. is 0.11.

The matrix that represents bilateral economic interdependence records trade volume between two corresponding countries, operationalized as combined import and export between

trading partners. This data was collected from the IMF. To represent cultural proximity and geographical closeness between countries, binary and symmetrical matrices were created to represent whether any two countries speak the same language or whether they are located in the same region. For countries with more than one official language, all are counted. The region categorization was drawn from the Statistics Division of the United Nations (unstats.un.org).

**Data Analysis and Visualization**

Since the interest of the study is to test whether the relative position of any two countries on a series of structural factors is related to their bilateral information flow, the study chose to use the quadratic assignment procedure (QAP) and its extension multiple regression quadratic assignment procedure (MRQAP) with a double semipartialling permutation method (Dekker, Krackhardt, & Sniders, 2007). QAP calculates the association between two matrices by comparing the strength of ties from one network to another. For network data, a linear correlation test is not appropriate because of the problem of dyadic autocorrelation. QAP addresses this limitation with a permutation technique. Specifically, the approach first computes Pearson's correlation coefficient between corresponding cells of the two data matrices. In the second step, it randomly permutes rows and columns synchronously of one matrix and recalculate the correlation. The second step is repeated hundreds of times to compute the proportion of times that a random measure is larger than or equal to the observed measure in the first step. A low proportion ($<0.05$) suggests that the strong relationship between the two matrices is unlikely to have occurred by chance (Hanneman & Riddle, 2005). Similarly, MRQAP extends multiple linear regression model using the permutation technique. The double semipartialling method partials out the effect of any collinearity between the independent matrices. In this analysis, QAP correlation was examined between each of the six independent

matrices (economic influence, population, trade, language, region, and GPI) and each of the three dependent matrices (attention matrix, domestic IAS matrix, and international IAS matrix) respectively. Then all independent matrices were entered in the MRQAP model to predict each of the three dependent matrices. For data that are significantly skewed (i.e., population and trade volume), log transformation was performed before conducting network analysis. Lastly, Gephi was used to visualize the networks.

## Results

From a network perspective, this study examines the extent to which structural factors can predict international news flow in terms of attention and influence. Table 2 summarizes all results of the study. The first set of hypotheses focus on international news flow in terms of attention, or country salience. The results show that the relative economic power between two countries operationalized in GDP per capita is significantly correlated with the bilateral information flow in terms of news attention. However, the predictor loses significance in the MRQAP model when the influence of other variables are controlled. H1a is not supported. All other things being equal, economically less influential countries are not more likely to report about wealthier countries. The other national trait, the size of a country in terms of population, does significantly explain the country's newsworthiness. That is, smaller countries indeed report about larger countries more frequently than vice versa, thus supporting H1b.

<Insert Table 2 here>

Results in terms of country relatedness and interaction are all statistically significant. Countries that have closer trade relationships, share the same languages, and that are located in the same regions are more likely to report about each other than those who are not related in these aspects. H1c, H1d, and H1e are all supported.

Finally, GPI explains who reports about whom at the 0.1 significance level, suggesting that countries largely involved in conflicts may receive more news attention from more peaceful countries. Taken together, the model explains 29.2% of the variance of the outcome variable.

Findings of transnational IAS suggest a different pattern. With regard to the relative economic influence and country size between countries, news media in wealthier and more populous countries are indeed more likely to set the media agenda of smaller countries in reporting international news. However, the significant relationship is not found with respect to transnational IAS in transferring domestic agenda. In other words, countries that are less economically and smaller may be able to push the agenda of their own domestic issues to more powerful countries. H2a and H2b are both supported.

Moving to the country relatedness, trade relationships significantly predict transnational IAS between countries in reporting both domestic and international news. H2c is supported. However, cultural proximity in terms of shared languages between countries only predicts transnational IAS in reporting international news but not each other's domestic issues. H2d is only partially supported. The impact of geographic closeness shows an opposite pattern. Countries that are geographically closer to each other are indeed more likely to set each other's agenda in reporting their respective domestic issues, but the same relationship is not significant in terms of transnational IAS in reporting international news. H2e is also partially supported.

Finally, as expected, a country's involvement in conflicts is not related to its transnational IAS power in reporting international news, but does predict its capability to transfer the salience of the country's own issues to the foreign media agenda. H2f is supported. Together, the model explains 6.1% and 19.5% of the variance of transnational IAS in setting the domestic and international news agenda, respectively.

To better present the results, Figure 1-2 visualize international news flow in terms of the two types of transnational IAS. In both networks, each node represents a country and each edge represents the degree of transnational IAS effect in transferring domestic and international agendas, respectively, between the countries. The Force Atlas algorithm was used for the network layout so that countries that more frequently set each other's agenda are closer to each other in the graph. In addition, the more central a country is in the network, the greater transnational IAS power it had on other countries. The symbols and labels (i.e., country names) are sized to reflect each country's relative economic power and population respectively. Colors of the symbols represent geographic regions in which the countries are located.

<Insert Figure 1 and 2 here>

As the figures show, overall, economically influential countries and populous countries occupy the center of both networks. In addition, geographically closer countries (i.e., nodes of the same color) are generally located closer to each other. The two figures also demonstrate some notable differences. Compared with the transnational IAS network about the domestic agenda (Figure 1), the network about the international agenda (Figure 2) is more centralized to a group of countries. This illustrates our finding that smaller countries may have the potential to transfer their own country salience to the outside world. For example, as Appendix A illustrates, news media in small countries such as Jamaica cannot set the agenda of international politics, but may be able to tell their own countries' stories to the world.

## Discussion

Based on a network analysis of news coverage from media outlets in 67 countries and their interactions in 2015, this study provides evidence that news media in distinct nation-states operate in consistent ways that together comprise a networked global media system. Specific

structural factors not only predict a country's international attention but also its transnational IAS power. Nevertheless, rationales that drive different dimensions of information flow are different. Among other findings, it appears that powerful countries continue to set the world news agenda in reporting international politics, but smaller countries may have the potential to determine how their own countries are portrayed by the outside world. Overall, the study demonstrates that international news flow is multilayered and multidirectional, with news media from different nation-states interwoven as nodes in a complex networked system.

In line with previous international news flow findings, this study shows that population, trade, cultural proximity, and geographic closeness significantly predict international news attention. Further advancing the literature, the former three factors are also found to explain transnational IAS in reporting international news. In particular, trade explains all three aspects of international news flow—attention and transnational IAS in transferring domestic and international agendas. Overall, the finding that certain structural factors can predict international news flow in multiple dimensions provides strong evidence that some logics exist that explain international news flow. That is, our study finds support for the *systemness* of the global media system, with the systemness not only based on political economy as what the WST would suggest but also on cultural and geographical factors.

Trade as a significant predictor of international news flow in terms of both attention and influence is particularly important given the ongoing disputes involving the current U.S. presidential administration. Most news coverage on diminished trade relations warn of inflated consumer costs for goods (Gajanan, 2019). Our work here suggests that for the U.S., a drop in Chinese trade volume would also mean a decrease in its attraction in Chinese news coverage as

well as its agenda-setting power on Chinese media. When a country suffers in trade, its position in international news flow will become more peripheral in multiple regards.

Our results also show that international news attention and the two types of transnational IAS influence are driven by different rationales. Notably, the economic power of a country predicts its transnational IAS power in transferring international news agendas, but not its own domestic agenda. Nor is the country's economic influence related to its newsworthiness in foreign media. Put simply, wealthier countries such as Switzerland and Australia are not necessarily more salient in international news or more influential in delivering their own country images to the world, but are indeed better able to determine international discourse than those countries that are less well off. This finding has at least two important implications for our understanding of soft power in today's international relations. First, consistent with the WST, it appears that advanced economies remain central in the global media system in terms of pushing their *perspectives* on international politics to the rest of the world. World elite media such as the *New York Times* and *BBC* likely still have the say on how the world is portrayed and perceived. While economy is not the sole source of impact—all other things being equal—a stronger economy holds the power to tell weaker countries what to think about international politics beyond their borders.

Second, the finding that economic influence predicts transnational IAS in transferring international *but not* domestic agendas is worth noting. This pattern is also found as related to population. Together, this means that while smaller countries are still not capable of shaping the overall international discourse, they do have the potential to transfer the salience of their own issues to the outside world. The results may indicate that the emerging global media landscape

affords more opportunities for smaller countries to compete with world powers by telling their own stories on the global media stage.

Other structural factors also predict international news flow with mixed results. While geographically closer countries do pay attention to each other and follow each other's news media, their international news agendas do not interact reciprocally. When two countries are located in the same region, does that make them, and their agendas, adversarial in some way? Given the rise in tensions between border countries worldwide (e.g., the U.S. and Mexico), it could be that bordering nations may be at odds in terms of agendas regarding international politics. In this light, future research should dive into different operationalizations of geographic closeness, for example, bordering nations versus being in the same geographic region.

Cultural proximity significantly predicts country salience and transnational IAS in transferring international agendas follows our expectation. Contrary to what we anticipated, when reporting about each other, culturally similar countries are not more likely to set each other's media agendas. Given that cultural proximity is measured in shared languages, it may be that while journalists do follow news about other culturally similar countries, they follow various sources in languages they understand instead of just relying on the target countries' news media. This again speaks to the question of operationalizations of different structural variables.

Lastly, deviance does seem to explain news attention at least to some extent (Shoemaker et al., 1987). It also significantly predicts transnational IAS in transferring domestic agendas, with the issues of attention possibly being conflicts-related. As we expected, the level of conflicts a country is involved in has nothing to do with its transnational IAS power in transferring international agendas. Again, we suggest that international news flow should be measured in different dimensions for a better understanding of the global media system.

Overall, the different amount of variance explained in the three models suggest that the transnational IAS effect, especially that related to domestic agenda, is more nuanced and difficult to predict when compared to news attention. The finding is consistent with the thesis that the global media landscape is no longer Americanized but polycentric (Tunstall, 2008), and the power to influence international discourse is subject to competitions from a number of new players. In addition, the level of unpredictability found in this study speaks to the fluidity of the networked global media system. We find some degree of systemness, but the relationships and interactions between nation-states and their news media are constantly evolving.

To conclude, this study steps forward the theorization of a networked global media system by discerning what drives international news flow in three aspects—international news attention and the two types of transnational IAS influence. Our proposed model advances prior literature by demonstrating that international news flow is multilayered, networked, and possesses systemness and fluidity. It is important to emphasize that the network analysis approach used here is not only methodologically innovative, but also of theoretical significance. In existing research, countries are often analyzed separately, with rare exceptions. The use of a networked approach allows for considering the interactions between countries in terms of attention and influence in the global media system as a whole.

This study is limited in several aspects. The operationalization of predictors of international news flow requires future work. Readers should take precaution in interpreting the results considering that MRQAP analysis does not necessarily indicate a causal relationship. Future research should also include the examination of structural factors that explain not just news media, but also a greater variety of media components and other stakeholders.

## Endnotes

1. The 67 countries are AE, AF, AR, AS, AU, BG, BE, BH, BR, CA, CH, DA, EG, FJ, FI, FR, GA, GM, GH, GR, HA, HU, IC, IN, ID, IR, IZ, EI, IT, JM, JA, KE, KU, MI, MY, MR, MX, NP, NL, NZ, NI, NO, PK, RP, PL, RS, RW, SA, SG, SE, SL, SN, SF, KS, SP, CE, SU, SW, SZ, SY, TH, TU, UK, UY, US, VM, and ZA. The country codes can be found at: https://en.wikipedia.org/wiki/List_of_FIPS_country_codes

2. An earlier version of GKG's themes and the keywords used in matching can be found here: https://github.com/ahalterman/GKG-Themes/blob/master/SET_EVENTPATTERNS.xml

3. For a list of all issues and their corresponding GDELT themes, see: https://github.com/chrisjvargo/gdelt/blob/master/GDELT%20Issues.ipynb

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Table 1. An Excerpt of the Attention Matrix

| Reporting / Reported | FR | US | BR | CH | CA | UK | ID | SY | RS |
|---|---|---|---|---|---|---|---|---|---|
| **FR** | | 6.43 | 3.81 | 4.68 | 5.40 | 5.53 | 4.55 | 5.11 | 4.97 |
| **US** | 13.68 | | 29.81 | 14.88 | 30.77 | 22.35 | 15.52 | 13.78 | 22.17 |
| **BR** | 1.66 | 1.10 | | 0.99 | 0.75 | 1.66 | 1.20 | 0.22 | 0.49 |
| **CH** | 4.45 | 6.23 | 3.23 | | 3.67 | 4.77 | 11.28 | 0.75 | 3.71 |
| **CA** | 1.32 | 3.35 | 2.23 | 1.96 | | 3.43 | 2.33 | 0.97 | 1.59 |
| **UK** | 5.84 | 8.40 | 6.26 | 5.87 | 7.75 | | 6.83 | 4.60 | 5.67 |
| **ID** | 0.86 | 1.10 | 0.39 | 2.13 | 0.70 | 0.78 | | 0.24 | 0.43 |
| **SY** | 4.58 | 3.69 | 2.00 | 2.96 | 2.88 | 2.50 | 2.17 | | 5.82 |
| **RS** | 4.43 | 3.84 | 3.94 | 2.91 | 3.23 | 3.09 | 2.58 | 2.45 | |

*Note.* All values are in percent.

Table 2. Predictors of International News Flow

| | | | Transnational IAS | | | |
|---|---|---|---|---|---|---|
| | Country salience | | Domestic | | International | |
| | QAP | Model 1 | QAP | Model 2 | QAP | Model 3 |
| a. GDP per capita | 0.172* | 0.385 | -0.017 | 0.044 | 0.085* | 0.140** |
| b. Population (log) | 0.232** | 0.351** | 0.042 | 0.005 | 0.089** | 0.126* |
| c. Shared language | 0.092* | 0.133** | -0.018 | 0.025 | 0.085 | 0.189** |
| d. Geographic closeness | 0.135** | 0.053** | 0.063** | 0.034* | 0.052* | -0.027† |
| e. Trade (log) | 0.288** | 0.329** | 0.228** | 0.231** | 0.407** | 0.393** |
| f. GPI | 0.064 | 0.128† | 0.007 | 0.101* | -0.020 | 0.022 |
| ***Adjusted $R^2$*** | | ***0.292**** | | ***0.061**** | | ***0.195**** |

† $p < .1$, * $p < .05$, ** $p < .01$

Figure 1. International News Flow in Terms of Transnational IAS (domestic agenda)

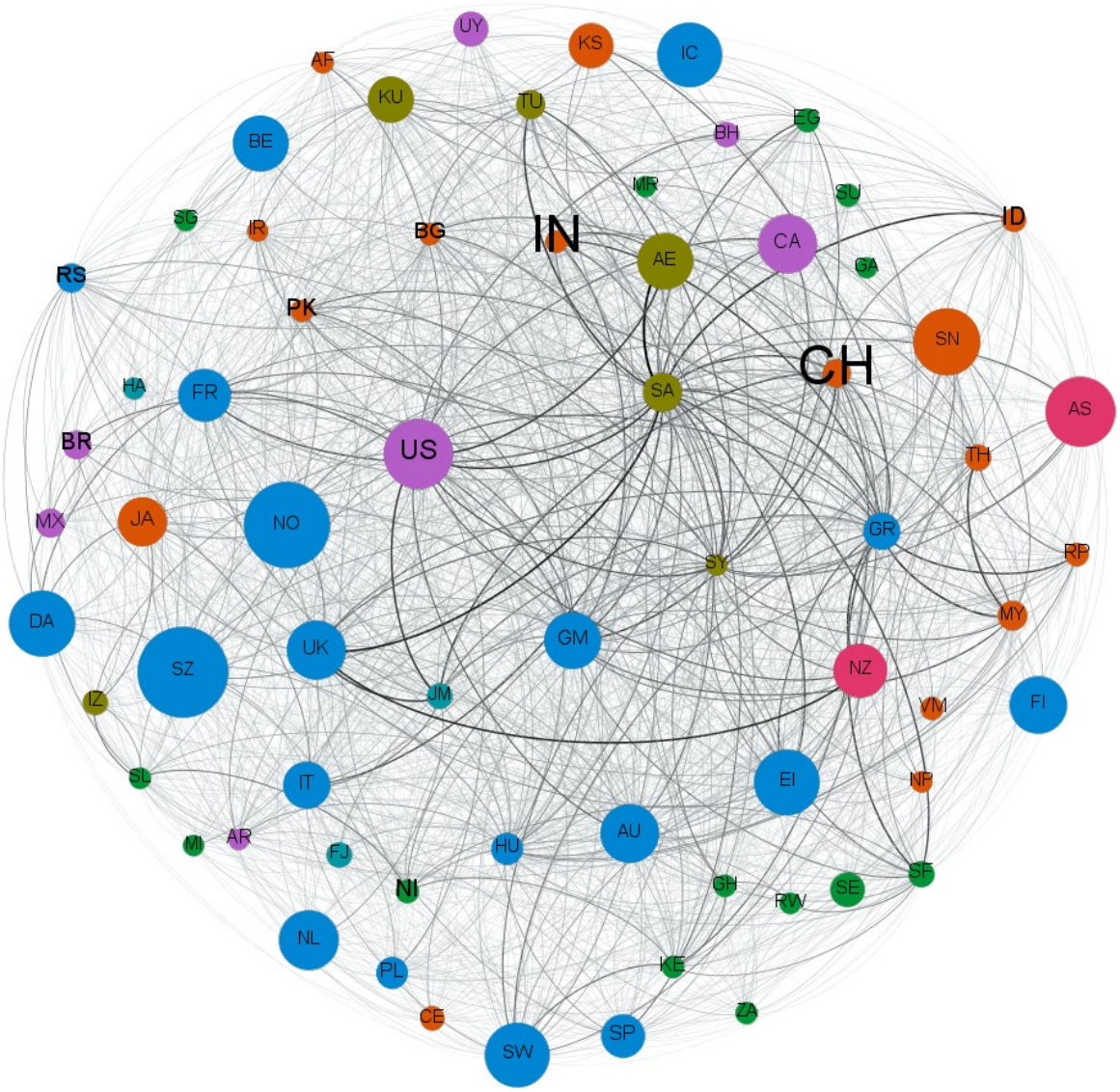

Figure 2. International News Flow in Terms of Transnational IAS (international agenda)