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# What determines global sentiment towards China's Belt and Road Initiative?

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## ABSTRACT

China's Belt and Road Initiative (BRI) is one of the most important geopolitical phenomena of this century. It signals China's increasing clout overseas while focussing on trade links and infrastructure in general. An important question which has not yet been fully answered is how different countries perceive this initiative, whether they are part of it or not. To answer this question, a large media repository, GDELT, is used to assess each country's perceptions of the BRI and how they evolve over time. The main finding is that global sentiment on the BRI deteriorated significantly in most geographies from 2017 to 2022, although generally still in positive territory. Further, an empirical analysis is conducted to test the relationship between individual countries' sentiment towards the BRI and three possible determinants, i.e. economic linkages with China, geopolitical closeness with China, and a country's perceptions and attitudes about some China-related issues. The results suggest that import dependence on China seems to worsen the image of the BRI. Instead, a country's geopolitical alignment with China, whether by being a member of the BRI or by voting at the United Nations (UN) like China, is positively correlated with its perceptions of the BRI.

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## KEYWORDS

China; BRI; sentiment

## Introduction

Over the last two decades, China's international footprint has steadily increased. In the realm of international lending, China eventually became the world's largest official creditor with an estimated global debt of US\$392 billion owed to it in 2017, surpassing that of the IMF and the World Bank in combined volume (Horn, Reinhart, and Trebesch 2021). Simultaneously, China has complemented its engagement with spearheading the creation of new international financial institutions, such as the Asian Infrastructure Investment Bank (AIIB) and the New Development Bank (NDB), providing alternative channels of development finance outside the Bretton Woods institutions (Subacchi 2022). Reasons for the increase in Chinese activities abroad are manifold. More export opportunities for Chinese companies in foreign markets

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are needed given China's ever rising supply of goods and the still weak domestic demand. It is also explained by the need to invest very large current account surpluses which China has accumulated since its accession to the WTO. Besides, its strategic engagement in Asia and Africa are promised to counter the United States (US)'s pivot to Asia and its most recent attempts of technological and economic containment. Finally, the unification of foreign engagement under a common framework serves well to defragment China's complex central state bureaucracy (Ye 2019).

The Belt and Road Initiative (BRI) – announced by President Xi Jinping in late 2013 and formalised in 2015 – has been China's most important platform to improve connectivity with the world, especially with emerging economies. Such connectivity first focussed on infrastructure, especially trade logistics between each BRI member and China, and later it has expanded beyond BRI membership. The implementation of this goal has mainly been carried out by Chinese state-owned enterprises (SOEs) to a large scale through the funding of Chinese development banks. More specifically, from 2013 to the end of 2022, China's central government signed Memorandums of Understanding (MoUs) with as many as 148 countries (Sacks 2021). This growing number of countries, with the important exception of Italy (the first case of a country that leaves the BRI), plateaued in 2019 together with the sudden stop of the Chinese funding of BRI projects. The drying up of funding came with the pandemic, which led to additional needs for resources. As if this were not enough, interest rates rose globally, and most importantly the US dollar interest rate surged, which sharply worsened financial conditions for emerging economies. All of this led to a sudden worsening of debt dynamics, and further complicated BRI-related projects. In fact, debt restructuring involving China as a creditor already became more frequent before 2020 but has reached new heights since then (Horn, Reinhart, and Trebesch 2022; Mingey and Wright 2023). At the same time, it is observed that China's narratives on its overseas engagement have shifted from economics-driven engagement to more political and security-focussed cooperation (Garcia-Herrero and Freymann 2022). This happened in the context of the 'community with a shared future for mankind', which President Xi has placed as the overarching narrative that the BRI itself depends on.

At this juncture, the BRI will need to be accepted by its members to be successful. Such success is difficult to measure given the fact that no official list of BRI projects exists and we know little about the perception of governments, companies and the public as a whole. To help in this endeavour, this paper first assesses how the BRI is perceived in different geographies building on the work by García-Herrero and Schindowski (2023). Secondly, it analyses empirically the determinants behind the sentiment towards the BRI across the globe.

On the first point, I find that the sentiment towards the BRI has worsened across the globe although such sentiment is still positive in some parts of the world and the diversity is very large. Next, on the determinants, the findings suggest that the sentiment towards the BRI is mainly driven by media narratives towards investment and trade relations with China. Besides, variables signalling political alliance such as similarity in the United Nations (UN) voting patterns and the signing of a BRI MoU also positively – although somewhat not surprisingly – relate to the sentiment towards the BRI. Finally, import dependence on China, measured as the share of

imports from China in the total imports of a given country, is negatively related to the BRI's image. A breakdown by region uncovers a more varied picture.

The rest of the paper is organised as follows. First, I review the current state of the literature. The following section presents the image of China's BRI and its evolution over time based on GDELT. Next, I discuss the empirical strategy and show the results. The last section concludes.

## Literature review

This work contributes to the existing literature that studies the BRI. Since China provides neither a comprehensive list of its overseas projects, nor the amount of financing, a range of articles have attempted to collect data on projects using a combination of news reports and manual online search (Horn, Reinhart, and Trebesch 2021; Strange et al. 2017). Efforts touch upon not only a quantitative assessment of the amount of funds dispersed, but also information on debt restructuring events and the nature of Chinese lending contracts, specifically in the context of accusations of debt trap diplomacy (Horn, Reinhart, and Trebesch 2022; Kratz, Feng, and Wright 2019; Mingey and Wright 2023). Another strand of related literature explains the motivation behind the BRI, considering both domestic determinants such as excess industrial capacity and bureaucratic fragmentation (Nugent and Lu 2021; Ye 2019), and diplomatic aspects such as the build-up of alternative international finance institutions and the promotion of soft power abroad (Freymann 2021; Subacchi 2022). Finally, several recent articles have debated the future of the initiative after the COVID-19 pandemic, its geographical reach and its expansion into digital and security domains (Amighini 2022; Garcia-Herrero and Freyermann 2022; Schulhof, van Vuuren, and Kirchherr 2022; Ye 2021).

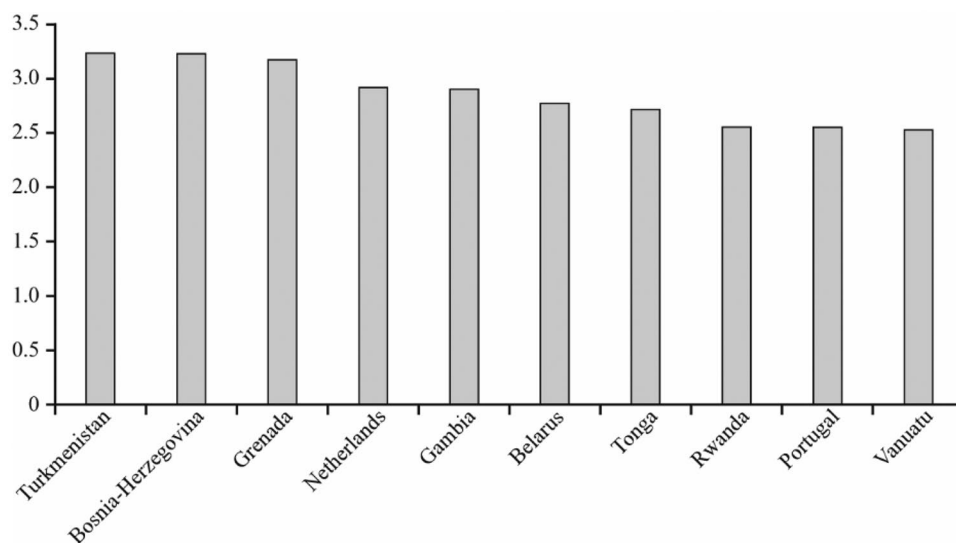
Studies on the international perceptions of the BRI, which this article will focus on, exist but are qualitative rather than quantitative. For instance, a report by the online network Global Voices (2022) recently examines local media narratives in recipient countries, either in support of or in opposition to the BRI. Narratives vary widely, ranging from China's willingness to invest when others do not to the fear of the Chinese government's covert geopolitical goals. These findings confirm the work by Freyermann (2021) who emphasises the divergence in the experience of recipient countries with the BRI based on case studies in Sri Lanka, Tanzania, and Greece. Finally, an earlier study by Mokashi et al. (2022) uses natural language processing to extract key narratives in some countries' media coverage. However, their initial sample of news articles comes from Factiva, and only covers a limited number of countries. In contrast, GDELT allows for a much more comprehensive analysis, as it collects online and offline news articles for the whole range of 191 economies. To the best of my knowledge, there has not been related work to quantitatively study the perceptions of the BRI on such a scale. Besides, the key determinants behind the evolution of the sentiment about the BRI in that large number of economies have not been empirically estimated.

## Global sentiment towards the BRI

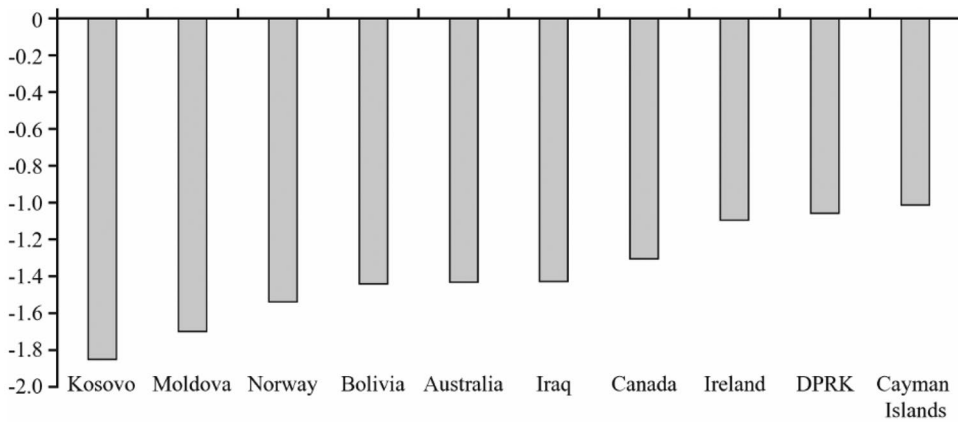
The data are sourced from GDELT, an online repository that is updated every 15 minutes and gathers online and offline news articles from over 190 economies.

And I use an in-built sentiment indicator which calculates the sentiment towards a certain topic using keyword search (the methodology underlying the sentiment indicator is described in Appendix). To capture the image of the BRI, the following keywords are used in the query: ‘China’ and ‘Belt and Road Initiative’ or ‘One Belt One Road’ (the original name of the BRI until 2015), such that media contributions that contain both ‘China’ and either ‘Belt and Road Initiative’ or ‘One Belt One Road’ are sampled from the GDELT database. The fact that ‘China’ is included as a keyword lends more robustness to the search as it excludes articles on related topics that mention the BRI only in an isolated phrase. The initial sample consists of 191 economies, for which the average sentiment is calculated across the period of observation, ranging from 1 January 2017 until 5 October 2022.<sup>1</sup> Figures 1 and 2 show the geographic distribution of the BRI’s image based on GDELT (for a comprehensive list, please refer to S1 in supplemental data).

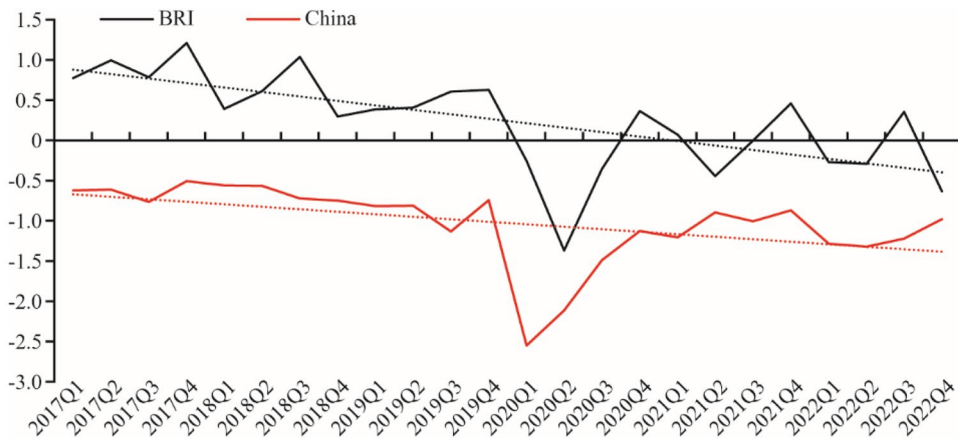
Considering all the economies in the sample, the mean (0.67) and the median (0.49) sentiment towards the BRI are both above zero, indicating that this initiative is, in principle, positively received. However, such a level is still hard to evaluate since there is hardly any point of comparison as no similar initiative exists.<sup>2</sup> Among all the economies, the highest sentiment reached is 4.62 in Monaco, and the lowest sentiment is  $-1.86$  for Kosovo. As depicted in Figures 1 and 2, there is great variation across geographies in the overall sentiment. The regions with the most positive sentiment towards the BRI are visibly Sub-Saharan Africa and Central Asia. On the other side, the Anglo-Saxon economies are uniformly critical of the BRI. For the rest of this paper, countries that mention the BRI less than ten times across the period of observation are deleted to prevent the image being driven by specific idiosyncratic events. This yields a final sample of 148 economies.



**Figure 1.** Media sentiment in the most positive economies.  
Data source: GDELT.



**Figure 2.** Media sentiment in the most negative economies.  
Data source: GDELT.



**Figure 3.** Sentiment towards the BRI and China in the 148 economies under observation.

Moving to an analysis of the sentiment towards the BRI over time, [Figure 3](#) shows how the BRI's image deteriorated from close to 1.00 in 2017 to around  $-0.50$  in late 2022. In other words, the overall sentiment now is no longer positive but negative. Such a dynamic analysis is particularly relevant in a context where the level of sentiment is hard to interpret. The change is clearly more informative and it happens to be negative across the board. While there was very sharp deterioration of the global sentiment on the BRI during the pandemic, the downward trend is quite consistent over time.

As a second step, the analysis on the evolution of the sentiment towards the BRI is complemented with that of the image of China as a country. [Figure 3](#) shows that the BRI is generally more positively perceived than China as a country, but its image has deteriorated faster than that of China. What is noticeable is that the positive spikes in the sentiment towards the BRI coincide with UN General Assemblies in which China promotes the BRI as a vehicle for global infrastructure development.

One major COVID-related collapse in sentiment occurred during the first and second quarters of 2020. During that period of time, several developing countries reported debt distress as their economies contracted. China's lending has ever since frozen, with debt distress being increasingly common (Horn et al. 2023).

Next, the sample is dissected by region. Figure 4 shows the geographical distribution as well as intra-regional discrepancies in the BRI sentiment. Specific outliers and important economies involved in diplomatic feuds over the BRI are highlighted. As can be seen from the graph, the BRI's images differ not only across regions but also within each region (except for Central Asia and North America): there is at least one country with strongly negative sentiment and one country with strongly positive sentiment. For instance, while Sub-Saharan Africa is generally more positive about the BRI, the sentiment in countries such as Namibia, Angola, and South Africa is either critical or neutral. Similarly, while the European Union (EU) has displayed a moderately positive perception of the initiative, Portugal and the Netherlands hold exceptionally positive views about the BRI. The variation in the BRI sentiment as uncovered by the descriptive analysis poses the question as to what are the determinants of the BRI's image in the media. This puzzle is tackled in the next section.

In Figure 5, I further show the decomposition of countries into 'early joiners', i.e. countries joining before 2018; 'late joiners', after 2018; and 'non-BRI countries'. Each dot above the line represents an individual country on the sentiment scale, while the red diamond-shaped points represent the average of the entire group, as calculated by the mean. Unsurprisingly, the BRI is received significantly more negatively in economies without a BRI MoU with China yet (as of early 2023), with the average sentiment in 'non-BRI countries' being  $-0.13$ . In contrast, early joiners and late joiners hold an average sentiment of 0.65 and 0.86, respectively. This result still holds as I exclude the extreme observations, namely Turkmenistan (3.24), Bosnia-Herzegovina (3.22), Grenada (3.17), the Netherlands (2.92), Australia (-1.44), Bolivia (-1.45), Moldova (-1.71), and Kosovo (-1.86), from the sample. As I will show later, the slight difference between early joiners and late joiners is largely

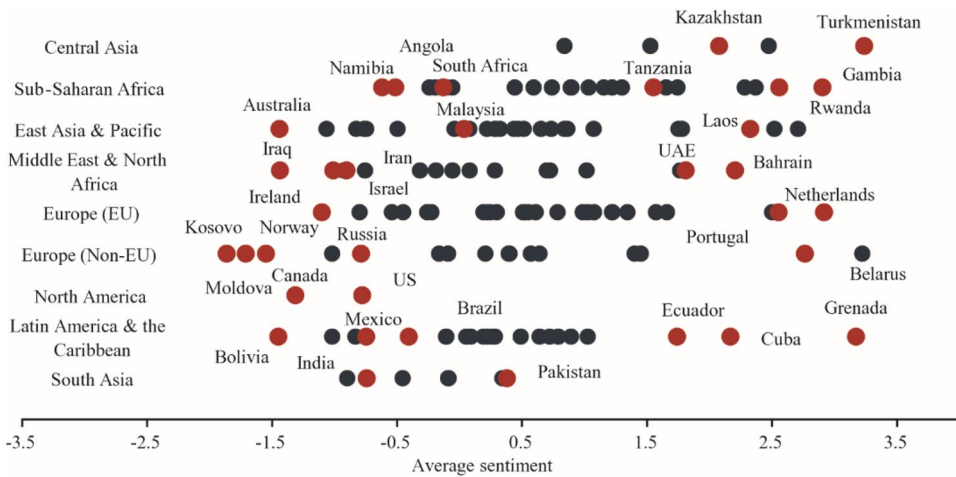


Figure 4. Distribution of sentiment across regions and across 148 economies.

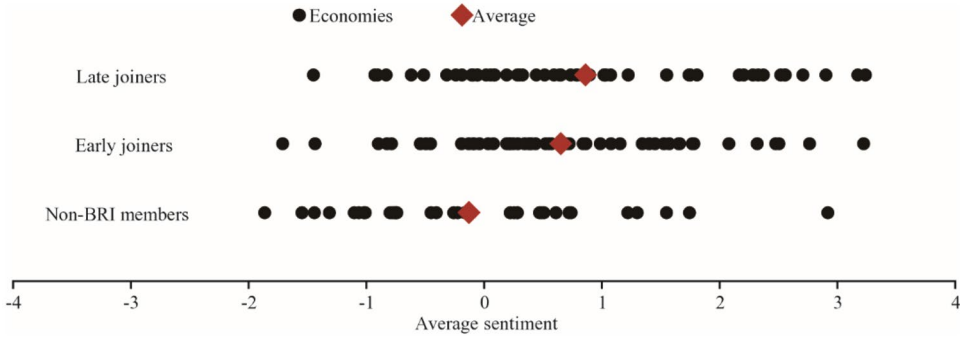


Figure 5. Average sentiment of BRI and non-BRI members.

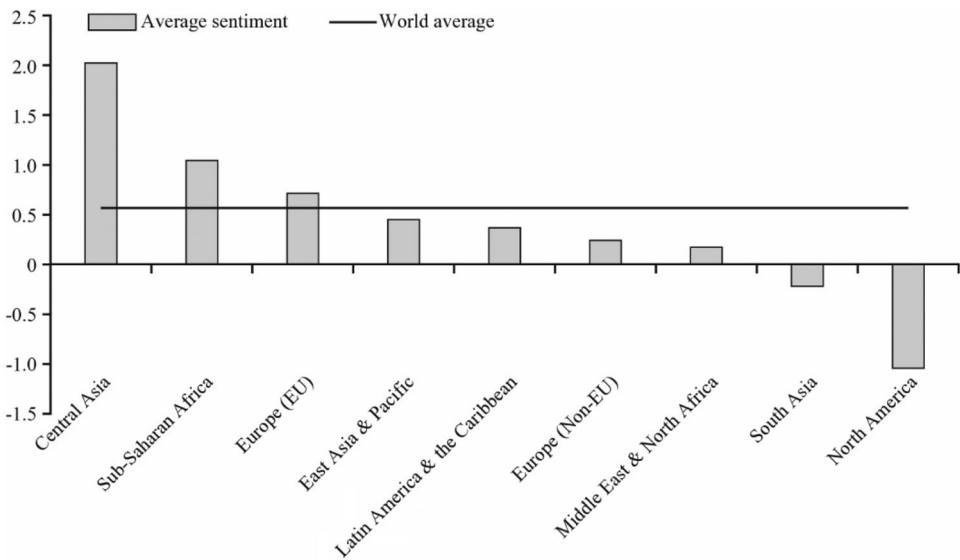


Figure 6. Regional comparison of the tone of media coverage of the BRI.

driven by a huge cohort of African countries joining in 2018 whose sentiment has been consistently positive throughout the period under observation, notwithstanding the crises occurring subsequently.

I next analyse regional disparities in sentiment. Figure 6 shows the average sentiment across the regions under observation. Central Asia and Sub-Saharan Africa generally hold positive views towards the BRI with the sentiment valued above 1.00. North America and South Asia are on the other extreme. The US and Canada each hold highly critical views of the BRI. South Asia is more positive although India and the Maldives are still strongly negative about the initiative, with their sentiment being  $-0.90$  and  $-0.74$ , respectively. The sentiment of the remaining regions tends to be somewhat around or slightly below the average, although still positive in absolute terms.

Finally, I also decompose the sample into countries in the Western or the non-Western bloc. The Western bloc consists of the US and EU countries, with the



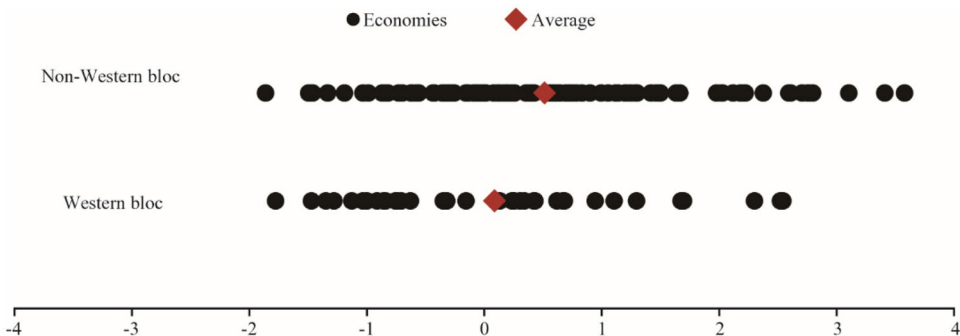
additions of Switzerland, Japan, Australia, the Republic of Korea, New Zealand, and the United Kingdom (UK). All other economies are labelled as the non-Western bloc. [Figure 7](#) shows that the non-Western bloc has on average a more positive view towards the BRI, although significant inner-group variation exists.

### What are the determinants of the BRI's image?

The descriptive analysis indicates that there is both great inter-regional and intra-regional variation in the perceptions of the BRI. In this section, three potential reasons as to what may explain this wide difference are suggested.

I first analyse whether economic linkages between China and other economies may influence opinions about the BRI. Given the massive increase in trade and investment with China, one could imagine that this should have improved the image of the BRI in countries which are members of the initiative. However, since the launch of the initiative, Chinese economic involvement has come with a considerable degree of scepticism, ranging from fears of asset seizure in case of loan default to adverse impacts on the local economy. For example, Zambia defaulted on its debt in 2020 after the country had been a main recipient of Chinese loans during the preceding years. The restructuring negotiations have triggered a debate about Chinese lending practices beyond the case of Zambia. Further, economic relations with China outside of the BRI may influence the sentiment if they are felt on a local level. For instance, import competition from China following its accession to the WTO has had a measurable effect on the US manufacturing sector, although its significance has been debated (Autor, Dorn, and Hanson 2013; Caliendo and Parro 2023). However, the effect might go in a different direction if the BRI provides new opportunities for the recipients to export to China, or if Chinese foreign direct investment (FDI) benefits the local economy. Hence, I hypothesise that the effect of economic activities is ambiguous, depending on the variable concerned.

Second, I hypothesise that geopolitical alliances with China are reflected positively in the sentiment towards the BRI. Specifically, this is tested using two variables: voting similarity at the UN General Assembly, and the signing of an MoU on the BRI with China since its announcement. The former gives an indication of how a country is generally favourable of China's role in the world; and the latter tests the



**Figure 7.** Sentiment in Western and non-Western blocs.

intentions of its government to support the BRI specifically, independently of its stance on other geopolitical issues. I justify the inclusion of both variables by showing that the correlation between them is merely moderate, while an MoU with China is not correlated at all with the economic variables.

Third, I focus on the sentiment towards other issues which may relate to the BRI's narrative. This is potentially driven by government influence on media outlets as well as competition between news outlets pushing for extreme news. Usually, a government-controlled press is inclined to harmonise the policy focus with the media narrative, leading to a consistent narrative across interrelated topics. Inconsistency in the narratives of the government and government-controlled media would lead to a loss of public credibility, both for the media outlet and for the government. Hence, media sentiment towards the BRI is hypothesised to be driven by narratives towards related topics as well. In particular, media sentiment towards trade and investment with China, the two main promises of the BRI, is examined. In addition, I study whether the image of the BRI is simply shaped by the sentiment towards China as a country in general.

As one can be almost certain to encounter a positive relationship between these variables and the BRI sentiment, it is not so much their absolute effect as their practical and statistical significance in relation to one another that is of interest to us. In other words, this paper tries to find out which of these topics is a more important driver of the BRI's image.

## **Econometric analysis**

### ***Data***

To measure economic linkages, I use several indicators. First, I use the data of China's outbound FDI from the Ministry of Commerce of China and divide the FDI amount by a given economy's GDP. A positive coefficient points to a welcoming perception of China's investment across the countries surveyed. To measure the effect of sovereign loans, I also include the host economy's indebtedness with China using data provided by Horn, Reinhart, and Trebesch (2021). In particular, the percentage of the outstanding public debt to China as a share of an economy's total debt to all donors is calculated. Due to the availability of data, the debt variable is time-invariant and is based on the data of the year 2017. As for trade specifically, two variables are included in the regression using data from the United Nations Conference on Trade and Development (UNCTAD). The first is the trade balance with China measured as the difference between exports of a given economy to China and imports from China divided by that economy's GDP. The second variable is import dependence, measured as the share of imports from China as a percentage of the total imports of a given economy.

To assess geopolitical closeness with China, a measure of the UN voting similarity with China is included based on the voting at the UN General Assembly following Voeten, Strezhnev, and Bailey (2009) which has been regularly updated since 2009. It contains the voting behaviour of each individual country for the universe of the UN resolutions from 1946 until 2022. In the construction of this variable, I closely

follow Dreher et al. (2018), defining voting affinity with China as the share of votes in which a country is aligned with China in its total votes on the UN resolutions. To check the robustness of the results, the sample of the UN resolutions is restricted to those in which China and the US vote differently, as in these cases countries reveal their allegiance to one or the other side. A second geopolitical variable is the signing of an MoU on the BRI, which equals one if a country had signed an MoU on the BRI until 2021. The data are taken from Sacks (2021), whereas some missing values are complemented by manual online search of news articles.

A third set of variables relates to a country's media perceptions about key factors in the determination of the BRI sentiment, such as trade and investment. For trade, a new search in GDELT is conducted using the keywords 'trade' and 'China' and excluding the word 'investment'. I repeat the same search using 'investment' and 'China' as keywords and excluding the word 'trade'. Also, a search with merely 'China' as a keyword is conducted, explicitly excluding 'investment', 'trade', 'Belt and Road Initiative', and 'One Belt One Road'. In other words, the last variable measures China's image independently of its economic relations with an economy.

For the control variables, I include the data of China's GDP per capita taken from the World Bank, as well as population data from the UN Population Database. Both variables are included on a log scale. Finally, I include a variable on the freedom of the press, which is the World Press Freedom Index, with an annual ranking of economies published by Reporters without Borders. It is based on a multi-categorical questionnaire and has found use in academic literature as of recently (see e.g. Berlinger et al. 2022).

Based on all of those variables, the dataset equates to an unbalanced panel of the 148 economies under observation. The variable definitions are displayed in Table 1. Table 2 provides summary statistics for each of the variables. In Table 3, the bilateral Pearson correlation coefficients for each pair of variables are shown. As expected, the three explanatory sentiment variables are strongly correlated with one another, although all three are drawn from mutually exclusive sets of news articles. For instance, a country with a positive image of trade with China will most likely have a positive image of China independently of economic relations. I account for this correlation by running three models separately with each of the sentiment variables in one model. Table 3 equally reveals a strong correlation between the control variables and some of the independent variables. To account for this, I run the three models with and without controls separately.

### ***Model specification***

The regression model is characterised by the three variable groups mentioned above. I include time dummies to control for political or economic shocks during the period but exclude country fixed effects in order to capture cross-economy variation in the sample. To ensure causality, the time-varying real variables are lagged by one year, which is based on two considerations. First, it is assumed that economic variables only affect the sentiment towards the BRI with a certain lag as investment takes time to fully materialise, and the effect of Chinese import competition might be felt only after a period of time. Second, media outlets often rely on the release

**Table 1.** Variable definition.

Variable name	Variable symbol	Definition
BRI sentiment	<i>BRIsent</i>	Sentiment towards China's BRI
Investment sentiment	<i>Invsent</i>	Sentiment towards investment with China
Trade sentiment	<i>Tradesent</i>	Sentiment towards trade with China
China sentiment	<i>Chinasent</i>	Sentiment towards China as a country, excluding investment, trade and BRI related keywords
UN voting	<i>UNvot</i>	Voting similarity with China at the UN General Assembly
BRI MoU	<i>BRImember</i>	Dummy variable indicating whether a country has signed a BRI MoU with China
FDI from China	<i>FDI</i>	FDI from China denominated by the GDP of a given economy
Trade balance	<i>Balance</i>	Difference between exports and imports denominated by the GDP of a given economy
Import dependence	<i>Imdep</i>	The ratio of imports from China to imports from the world
Public debt to China	<i>Debt</i>	The share of debt owed to China in 2017 as a percentage of the debt owed to all major creditors
Log GDP per capita	<i>Lngdppc</i>	The logarithm of the GDP per capita of a given economy
Log population	<i>Lnpop</i>	The logarithm of a given economy's population
Freedom of the press	<i>Press</i>	The World Press Freedom Index

**Table 2.** Summary statistics.

	N	Mean	SD	Min	Max
<i>BRIsent</i>	673	0.44	1.59	-9.07	7.39
<i>Tradesent</i>	726	-1.17	1.05	-3.94	5.08
<i>Invsent</i>	720	-0.11	0.86	-3.15	5.27
<i>Chinasent</i>	645	-1.19	1.15	-4.83	7.17
<i>UNvot</i>	695	69.74	12.59	0.00	87.36
<i>BRImember</i>	882	0.76	0.43	0.00	1.00
<i>FDI</i>	784	0.01	0.15	-1.32	2.78
<i>Balance</i>	840	-0.02	0.06	-0.37	0.37
<i>Imdep</i>	868	14.58	8.71	0.80	51.51
<i>Debt</i>	882	23.10	29.74	0.00	100.00
<i>Lngdppc</i>	700	8.94	1.41	5.91	11.80
<i>Lnpop</i>	870	15.98	1.98	9.29	21.07
<i>Press</i>	670	64.77	16.35	11.00	92.00

of data in order to issue statements on the underlying issues. These figures are usually released in the subsequent year after the occurrence of the issues in question. The model is estimated by the Pooled Ordinary Least Squares (OLS) method. The period of observation here ranges from 2017 to 2021. The regression specification follows three equations:

$$BRIsent_{it} = \beta_0 + \beta_1 Tradesent_{it} + \beta_2 Geopolitical_{it} + \beta_3 Economic_{it-1} + \beta_4 X_{it} + \tau_t + \mu_{it}$$

$$BRIsent_{it} = \beta_0 + \beta_1 Invsent_{it} + \beta_2 Geopolitical_{it} + \beta_3 Economic_{it-1} + \beta_4 X_{it} + \tau_t + \mu_{it}$$

$$BRIsent_{it} = \beta_0 + \beta_1 Chinasent_{it} + \beta_2 Geopolitical_{it} + \beta_3 Economic_{it-1} + \beta_4 X_{it} + \tau_t + \mu_{it}$$

Table 3. Pearson correlations.

	BRIsent	Tradesent	Invsent	Chinasent	UNvot	BRImember	FDI	Balance	Imdep	Debt	Lngdppc	Lnpop	Press
BRIsent	1.00												
Tradesent	0.42***	1.00											
Invsent	0.38***	0.57***	1.00										
Chinasent	0.43***	0.74***	0.69***	1.00									
UNvot	0.10**	0.08**	-0.03	0.05	1.00								
BRImember	0.20***	0.18***	0.07*	0.05	0.31***	1.00							
FDI	-0.05	-0.02	0.01	0.15***	0.09**	-0.07*	1.00						
Balance	0.01	0.04	-0.01	0.05	0.05	0.04	0.04	1.00					
Imdep	-0.07*	0.13***	0.06	0.10***	0.33***	0.17***	-0.02	-0.06*	1.00				
Debt	0.09**	0.11***	-0.06	0.10***	0.39***	0.23***	-0.04	0.13***	0.16***	1.00			
Lngdppc	-0.13**	-0.22***	-0.06	-0.09**	-0.45***	-0.38***	0.05	0.14***	-0.40***	-0.33***	1.00		
Lnpop	-0.17***	-0.14***	0.01	-0.11***	0.09**	0.00	-0.14***	0.03	0.38***	-0.02	-0.27***	1.00	
Press	-0.09**	-0.16***	-0.17***	-0.17***	-0.49***	-0.25***	-0.11***	0.01	-0.31***	-0.17***	0.45***	-0.27***	1.00

Note: \*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

where  $BRI_{sent_{it}}$ , the dependent variable, is the sentiment score for China's BRI.  $Tradesent_{it}$ ,  $Inv_{sent_{it}}$  and  $Chinasent_{it}$  are the three variables of attitudes towards related topics, specifically trade with China, investment with China, and China as a country. Due to their high correlations, each of them is included in a separate model.  $Geopolitical_{it}$  stands for the variables describing geopolitical alliances with China, which include the UN voting similarity and the BRI membership. The economic variables are captured by the term  $Economic_{it-1}$ , including FDI from China, the public debt owed to China in 2017, the trade balance vis-à-vis China, and import dependence on China. Finally,  $X_{it}$  is the control matrix comprising the log scale GDP per capita, the log scale population and the press freedom index.  $\tau_t$  controls for year fixed effects, and  $\mu_{it}$  is the usual error term.

## Results

### **Factors affecting perceptions towards the BRI**

Table 4 illustrates the factors affecting the BRI's image across different economies. Model 1 represents the effect of the attitudes towards trade with China, Model 2 towards investment relations with China, and Model 3 towards China as a country, independently of economic relations.

Firstly, among the economic variables, the coefficient of import dependence is negative and statistically significant in almost all of the models, except for Model 5. For instance, Model 6 suggests that a 1% increase in import concentration is associated with a decrease in the value of the BRI sentiment of  $-0.023$ . In other words, excessive import dependence on China does not help improve the BRI's image across different economies. Interestingly, in Model 5 where control variables and the variable on investment from China are included, the effect of import dependence is rendered insignificant. This suggests that the effect of a positive attitude towards investment mitigates concerns of import dependence. The coefficients of all the other variables are not statistically significantly different from zero.

Secondly, as expected, geopolitics matters. Countries with their UN voting more aligned with China see a better image of the initiative, and the BRI membership is positively and significantly correlated with positive sentiment. In Model 6, for example, an increase in UN resolution voting in alignment with China by 1% is associated with a 0.012 higher value in the BRI sentiment. It goes without saying that we cannot determine the causality about how strategic engagement affects UN voting similarity. Just as is the case with import dependence, the coefficient of UN voting similarity loses its significance when controls and investment sentiment are included, suggesting again that the positive sentiment towards investment dominates the effect of other variables.

Thirdly, an economy's perceptions of trade with China, investment with China, and China as a country separately happen to be relevant factors explaining the country's BRI sentiment. The coefficients of the three variables are found significant, even more than those of economic variables.

These findings are somewhat surprising, as one would expect economic factors to play a much larger role in the depiction of the BRI in the media. The findings

**Table 4.** The pooled OLS regression.

	Dependent variable: $BRI_{sent}_{it}$					
	(1)	(2)	(3)	(4)	(5)	(6)
$Tradesent_{it}$	0.661*** (7.11)			0.686*** (5.81)		
$Invsent_{it}$		0.609*** (6.09)			0.637*** (6.07)	
$Chinasent_{it}$			0.537*** (4.90)			0.565*** (4.97)
$UNvot_{it}$	0.010* (1.86)	0.010* (1.68)	0.013** (2.49)	0.011* (1.87)	0.011 (1.64)	0.012** (2.12)
$BRI_{member}_i$	0.525*** (2.94)	0.605*** (3.37)	0.713*** (4.00)	0.380** (2.08)	0.351* (1.76)	0.426** (2.27)
$FDI_{it-1}$	-4.100 (-0.59)	-1.705 (-0.21)	-3.624 (-0.54)	-7.542 (-1.06)	-7.569 (-1.02)	-9.756 (-1.39)
$Balance_{it-1}$	0.301 (0.19)	0.0158 (0.01)	-0.377 (-0.17)	0.706 (0.49)	0.651 (0.32)	-0.425 (-0.23)
$Imdep_{it-1}$	-0.028*** (-3.58)	-0.027*** (-2.92)	-0.032*** (-3.09)	-0.022** (-2.24)	-0.017 (-1.51)	-0.023** (-2.13)
$Debt_i$	-0.002 (-0.48)	0.003 (0.85)	0.000 (0.02)	-0.002 (-0.60)	0.001 (0.24)	0.002 (0.43)
Controls	No	No	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.335	0.278	0.322	0.347	0.305	0.347
No. of economies	132	132	121	127	127	119
No. of observations	594	594	552	573	573	542

Note:  $T$  statistics in parentheses; \*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

suggest that the BRI sentiment is more driven by an economy's geopolitical alliances with China and media narratives about China's economic engagement, while economic factors might be less relevant than expected.

### Regional differences

The descriptive analysis above has revealed great inter-regional differences in the sentiment towards the BRI. To gain a more complete picture of regional drivers of the BRI's image, the sample is dissected into sub-samples based on regional classification. Based on this, the regression is re-run. The regional classification includes the EU, non-EU Europe, Sub-Saharan Africa, Latin America and the Caribbean, the Middle East and North Africa, and China's neighbourhood defined to cover all Central Asian, South Asian and East Asian and Pacific countries. Although outliers exist in all regions, countries in the same region share a common historical, geopolitical or economic experience. For example, the EU countries have a common economic framework, while most Latin American countries share a common colonial heritage. China's neighbourhood is directly affected by the BRI where investment and trade activities are most intense. Hence, with regard to the influencing factors, I assume that these commonalities exert a common effect that is captured through the regression. Here I only include one of the sentiment variables in the regression, namely the sentiment towards China as a country.

Table 5 shows the results. Model 1 represents the EU. It can be seen that the sentiment towards the BRI is driven by the sentiment towards China as a country.

The BRI membership is equally associated with a higher sentiment score. The coefficient of debt owed to China is significant, but a look at the data reveals that this is driven by Bulgaria and Romania, the only countries in the EU in debt to China in 2017, which reduces the statistical power of the coefficient. Considering Sub-Saharan Africa, the sentiment towards the BRI is exclusively driven by the sentiment towards China as a country rather than any geopolitical and economic variables. In China's neighbourhood, the image of the BRI is negatively related to FDI, suggesting that countries receiving large amounts of Chinese overseas investment are rather critical of the BRI. However, at the same time, trade balance positively predicts the sentiment towards the BRI, suggesting that countries which gain from China as a market for their products are more positive about the initiative, possibly in expectation of more trade gains. Finally, debt owed to China is positively correlated with the BRI's image. This somewhat surprising result is most likely associated with reverse causality, indicating that countries with a positive view of the BRI tend to borrow relatively more. The coefficient of the debt variable, however, has to be treated with caution. The effect of debt does not only depend on the share of debt owed to China but equally on the ratio of a country's overall debt to GDP. For instance, a country with a large part of its debt owed to China might have positive sentiment towards the BRI if its overall debt-to-GDP ratio is low. Finally, the coefficient of import dependence is only significant for non-EU Europe and the Middle East and North Africa. UN voting is positively associated with the BRI sentiment in China's neighbourhood, Latin America and the Caribbean, non-EU Europe, and the Middle East and North Africa.

**Table 5.** Regional decomposition.

	Dependent variable: $BRI_{sent}_{it}$					
	EU	Sub-Saharan Africa	China's neighbourhood	Latin America & the Caribbean	Non-EU Europe	Middle East & North Africa
	(1)	(2)	(3)	(4)	(5)	(6)
$Chinasent_{it}$	0.566*** (2.66)	1.221*** (3.69)	0.312** (1.94)	0.409 (0.94)	0.230 (1.03)	0.188 (1.37)
$UNvot_{it}$	0.010 (0.22)	0.004 (0.09)	0.032** (2.21)	0.082** (2.20)	0.032** (2.27)	0.030* (1.75)
$BRI_{member}_i$	0.991* (1.79)	0.0356 (0.08)	0.222 (0.68)	1.167* (1.74)	0.353 (0.15)	0.283 (0.40)
$FDI_{it-1}$	2.264 (0.09)	12.800 (0.28)	-18.930** (-2.40)	-13.280 (-0.41)	50.000 (0.65)	-74.550 (-0.84)
$Balance_{it-1}$	-7.223 (-0.86)	-0.741 (-0.19)	1.757** (2.13)	7.523 (1.22)	13.46 (0.83)	-8.959 (-1.50)
$Imdep_{it-1}$	-0.063 (-0.93)	-0.011 (-0.43)	-0.009 (-1.24)	-0.074 (-1.47)	-0.121* (-1.83)	-0.072* (-1.66)
$Debt_t$	0.097* (1.79)	-0.009 (-0.62)	0.019*** (4.60)	-0.006 (-0.85)	0.004 (0.31)	0.007 (0.72)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.439	0.342	0.754	0.401	0.647	0.505
No. of countries	26	20	27	14	13	16
No. of observations	119	92	125	65	56	70

Note:  $T$  statistics in parentheses; \*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .



## Concluding remarks

This paper analyses the sentiment towards the BRI around the world using a large open-access dataset of news, i.e. GDELT. The key finding is that global sentiment regarding the BRI has deteriorated even if the level remains positive in general. Differences across countries are very large, though. North America and South Asia hold a negative view of the initiative, while the views from Central Asia and Sub-Saharan Africa are most positive. Countries not having signed an MoU have a more negative image of the BRI compared with early joiners and late joiners. This analysis also suggests that the BRI's image deterioration is only partially connected to the deterioration of China's general image. In fact, the sentiment towards the BRI has come down faster than the sentiment towards China as a country. I also document that Sub-Saharan Africa, where debt restructuring has been most frequent, still holds a positive view of the BRI.

Apart from that, this paper analyses empirically the determinants of countries' perceptions of the BRI. The major finding is that the most relevant economic variable is the concentration of imports from China. In particular, the more an economy depends on China's imports, the worse will be the perception of the BRI. Secondly, geopolitical alignment with China, through UN voting or participation in the BRI, helps improve the sentiment towards the BRI. Finally, the more an economy perceives trade with China, investment with China, and/or China as a country positively, the more it will be ready to accept the BRI as positive development.

## Notes

1. The average is calculated for each economy by the sum of the daily sentiment, weighted by daily news articles in the sample, over the entire count of news articles over the period of observation.
2. I also estimate the sentiment towards the most similar project I can think of, namely the Global Gateway, an EU-led infrastructure project which offers funding mostly for green and digital projects in the emerging world and, in particular, in the EU's neighbourhood. Unfortunately, the number of media mentions is scarce for most of the countries included in the analysis.

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## Appendix

To measure the sentiment towards the BRI across the world, I extract data from GDELT, i.e. the Global Database of Events, Language, and Tone. GDELT is an open-access, universal platform covering TV broadcast, print and online news in over 100 languages across all countries and regions. The information is updated every 15 minutes. GDELT offers two main products: first, the frequency with which a certain topic is raised in the news (i.e. intensity) and second, the sentiment or image of a certain topic covered in the media (i.e. tone). GDELT can be used in two different ways. The simple way, based on Application Programming Interface (API), only covers the date after 1 January 2017, but has the advantage of being able to search any concept of interest, even if not included in the library developed by GDELT, to locate institutions or events. The second method, which relies on the google query for the searches, has the advantage that the dataset starts much earlier (1979) but requires a certain concept or institution to be in the GDELT library. Unfortunately, none of the terms in usage for the BRI is included in the library, which constrains the use of the second method. Fortunately, the BRI was only formalised in 2015. Hence, by setting the initial year to 2017, we are still able to capture the BRI sentiment over much of its existence and over the period in which the initiative is most covered in the media. One potential issue with GDELT could be that the sentiment merely reflects the general sentiment within a country. Countries who report on average more critically on other topics might also be more critical of the BRI. While I acknowledge that this might be the case for individual countries, these findings largely match the evolution of diplomatic engagement with respect to the initiative for the majority of countries. Plus, GDELT translates articles from other languages into English prior to the analysis, which eliminates a potential language bias.

To quantify the sentiment of news topics, GDELT uses the methodology described in detail in Young and Soroka (2012). First, GDELT calculates the tone (used interchangeably with the term 'sentiment') in one specific news article published in country  $i$  at time  $t$  based on a predefined list of 'positive' and 'negative' keywords. The specific calculations follow this equation:

$$T_{j,i} = \frac{w_{j,p,i} - w_{j,n,i}}{w_{j,i}} \in (-100, +100)$$

where  $w_{j,p,i}$  refers to the number of words with positive sentiment in article  $j$  of country  $i$ ,  $w_{j,n,i}$  is the number of words with negative sentiment in article  $j$  of country  $i$ , and  $w_{j,i}$  is the total number of words in article  $j$  of country  $i$ .  $T_{j,i}$  is the tone for article  $j$  of country  $i$ . To quantitatively evaluate the image of the BRI, I then aggregate the tone at a country level using a simple average:

$$T = \frac{1}{N_i} \sum_j T_{j,i} \in (-100, +100)$$

where  $T$  is the average tone for all selected articles of country  $i$ . Based on the construction of the measure, a positive tone means that the public media in the country favours the BRI, whereas a negative tone indicates negative sentiment towards the BRI. A higher value of the tone indicates that the country is more supportive towards the BRI. The value range of the tone lies in between  $-100$  (the most negative) and  $100$  (the most positive), although the values for most articles are found to be in the range of  $-10$  to  $10$ .