

# Trade fear behind the image of the Belt and Road Initiative: A Big data analysis

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## Abstract

Drawing on media reports globally, this paper uses big data analysis to quantitatively assess the image of China's Belt and Road Initiative (BRI) across different countries and geographies. First, we find that the Initiative is generally positively received. In fact, all regions as a whole, except South Asia, hold a positive image of the BRI but differences are marked at the country level with some countries very negative views in all continents except Central Asia. Interesting, there is no significant difference in the perception of the BRI between countries officially participating in the BRI and those who do not. As regards the factors explaining each country's image of the Initiative, we use our media big dataset to identify which topics are most frequently associated with the BRI, which happen to be trade and investment. Finally, we use regression analysis to identify the direction in which the frequency in which these topics are discussed in the news affect the image of BRI in different countries. We find that the more frequently trade is mentioned in the media, the worse perception a country tends to have about BRI. On the other hand, while investment seems to also attract attention in the media, it is not statistically relevant for the countries' perception of the BRI.

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# 1 Introduction

Five years have passed since President Xi Jinping announced the launch of the Belt and Road Initiative (BRI), originally called One Belt and One Road. Today, one could argue that the BRI has become China's most important geopolitical tool to build soft power and implement its plans (Dadabaev, 2018).

With the massive financing that China is bringing to Belt and Road countries to build infrastructure, the recipients, especially the less developed countries, should, in principle, view China's grand plan very positively. In fact, the Belt and Road Initiatives have been officially supported by sixty-six<sup>1</sup> countries. However, there is no systemic evidence of how this project fares among recipient countries and, more generally, globally.

Existing empirical analyses have already quantitatively gauged the potential gains for the Belt and Road countries. For example, Garcia-Herrero and Xu (2016) estimated how trade would be created thanks to the improvement of transport infrastructure in the Belt and Road geographies. The authors find that gains are 6% for the case of Europe, 3% for Asia and the rest of the world suffers a 0.04% reduction in trade. In the same vein, Casarini (2015) argues that most of the countries in Southeast Europe and Mediterranean area will benefit from China's infrastructure projects by linking the port of Piraeus with Central and Eastern Europe and becomes a hub for China's trade with Europe. Initially, this initiative induced Russia's tension because of its effect on the Trans-Siberian Railway. Nonetheless, the two international transport corridors (Primorye-1 and Primorye-2) under the BRI have linked Russia with the Asia-Pacific region and provide a new opportunity for Russia to develop (Li, 2018). An infrastructure project integrating Kenya, Ethiopia and South Sudan will massively stimulate the economy in these countries (Breuer, 2017). Also, massive investments in the form of infrastructure investment in Nepal are also from China, with a particular aim to link the economic activities between China and India. This could become a new momentum for Nepal's development (Shrestha M, 2017).

That said, global concerns over the Belt and Road projects have also increased over the past years. For most international critics, China-initiated projects lack regulation as well as market coordination. In Myanmar, the risk of Chinese investment is aroused because of the lack of transparency (Hallgren and Ghiasy, 2017). Without market principles, countries run the risk of engaging in too many projects which might not be profitable in the long run. Given that the sheer part of China's financial support is to be repaid, debt sustainability in host countries becomes a key concern, backdrop. (Sheng, 2018) studied that China's investment transactions in Uzbekistan and Bangladesh are over 20% of their gross domestic product (GDP). In the same vein, observers also doubt whether China has full economic energy, or willingness, to sustain these likely "non-profitable" overseas projects if not fully driven by commercial interests. Central Asian countries declare that more local labor needed to be trained and involved in Chinese projects, because over-reliance on China is risky (Laln, 2018). Beyond legal and economic aspects, India is aware of being isolated if the BRI gains powerful support (Banerjee, 2016).

Given the above pros and cons, it seems important to offer a quantitative assessment of the image of BRI across the globe, both for countries which make part of the Initiative but also for others. To that end, this paper conducts a quantitative analysis of the BRI's image across the globe based on a big data platform of international and local media. Such a platform is the Global Database of Events, Language, and Tone (GDELT), which covers broadcast, online and printed news for 132 countries in over 100 languages since 1979 until today<sup>2</sup>. (Cadenas, Garcia-Herrero, Ortiz and Rodrigo, 2015) used GDELT to analyze the relationship between social shock and response across regions and found the data is consistent with the Unrest Cycle Theory. The accuracy in predicting the future level of conflict in Afghanistan is high when using the month data in at the district level, but the (Yonamine, 2013). Besides, GDELT is also applied to analyze the connection between countries. (Yuan, 2017) built an ARIMA model with GDELT to investigate inter-country relations and found that the pattern is different across countries and time. Drawing on media reports globally, this paper uses big data analysis to quantitatively assess the image of China's Belt and Road Initiative (BRI) across different

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<sup>1</sup> Seventy-four countries were included in BRI range when this paper was written.

<sup>2</sup> Social media has not been integrated into GDELT.

countries and geographies. First, we find that the Initiative is generally positively received. In fact, all regions as a whole, except South Asia, hold a positive image of the BRI but differences are marked at the country level with some countries very negative views in all continents except Central Asia. Interesting, there is no significant difference in the perception of the BRI between countries officially participating in the BRI and those who do not. As regards the factors explaining each country's image of the Initiative, we use our media big dataset to identify which topics are most frequently associated with the BRI, which happen to be trade and investment. Finally, we use regression analysis to identify the direction in which the frequency in which these topics are discussed in the news affect the image of BRI in different countries. We find that the more frequently trade is mentioned in the media, the worse perception a country tends to have about BRI. On the other hand, while investment seems to also attract attention in the media, it is not statistically relevant for the countries' perception of the BRI.

Compared with previous studies, this paper offers a unique perspective of China's image through its landmark project, in terms of soft power, namely, the Belt and Road. In fact, the public sentiment about the initiative should be considered key to assess what China is achieving its soft power objective through the BRI. Our paper points to a generally positive result but with clear fears in some countries and, most importantly, trade playing a key role in driving such fears.

The paper is organized as follows. The second section discusses the data and key methodology. The third section presents the results and analysis by regions. The fourth section offers some explanation for the global perception of the Belt and Road. The fifth section concludes our paper.

## **2 Our approach to measuring the public image of the Belt and Road Initiative**

We use big data analysis to measure the public image of BRI by using media sources. More specifically, we choose the Global Database of Events, Language, and Tone (GDELT) as our data source. GDELT is an open access, universal platform covering TV broadcast, print and online news in over 100 languages across 132 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 simplest way, based on API, only covers the last 365 days 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 methods, which relies on google query for the searches, has the advantage that it starts much earlier (1979) but requires a certain concept or institution to be in the GDELT library (See Appendix 12 for the comparison between these two methods). Unfortunately, BRI has not yet been included nor has its previous name, namely One Belt One Road, which constrains the use of the second method. Fortunately, BRI is a young enough concept so that it is mostly covered in the shorter sample.

Going back to the geographical coverage, GDELT contains online media articles in 130 countries and regions and we cover the period between May 1<sup>st</sup>, 2017 to April 25<sup>th</sup>, 2018. To accurately capture the concept we want to investigate, we conduct searches for Belt and Road as well as "One Belt One Road" and "New Silk Road" as keywords. One caveat for the use of GDELT is its exclusion of social media. Admittedly, the widespread use of social media but the growing importance of fake news might make it less relevant for our study. In any event, GDELT only covers mainstream media so that it is what we can cover.

We cover 130 countries, 74 included in China's official BRI webpage list. Last but not least, in the paper, we tend to analyze the sentiment towards for every country, including both the BRI countries and non-BRI countries. As for the BRI countries, we choose a definition consistent with the China State Information Center (CSIC), which include 74 countries up to May 14<sup>th</sup>, 2018 (Refer to Appendix 2 for detailed country list).

### *Methodology*

To quantitatively evaluate the image of the Belt and Road at the country level, we first calculate the tone of the Belt and Road in one specific article published in the country and then aggregate it with a simple average of the

sentiments at country level to reflect the image of BRI in the local area. Following the definition of tone in GDELT, the calculation of the tone of BRI is as follows,

$$T_{j,c} = \frac{w_{j,p,c} - w_{j,n,c}}{w_{j,c}} \in (-100, +100) \quad (2)$$

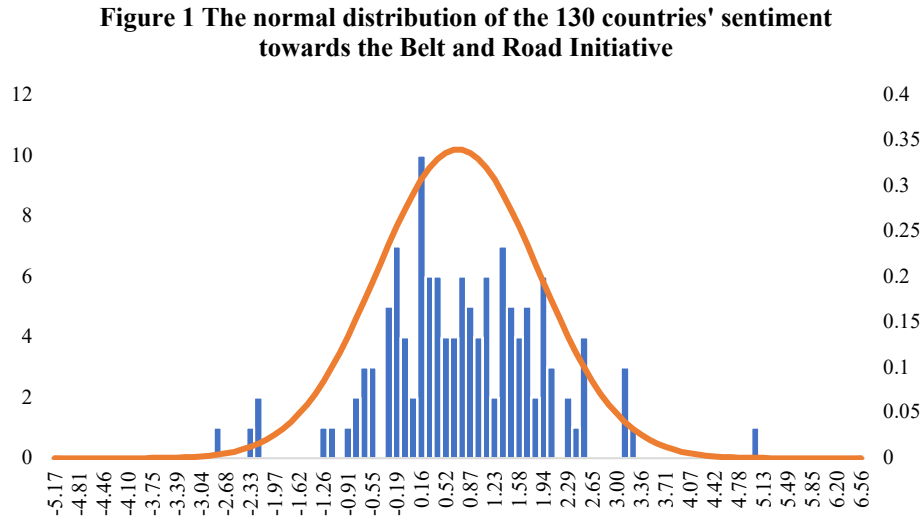
$$T = \frac{1}{N_c} \sum_j T_{j,c} \in (-100, +100) \quad (3)$$

Where  $w_{j,p,c}$  refers to the number of words with positive sentiment in article  $j$  of country  $c$ ,  $w_{j,n,c}$  is the number of words with negative sentiment in article  $j$  of country  $c$ , and  $w_{j,c}$  is the total number of words in article  $j$  of country  $c$ .  $T_{j,c}$  is the tone for article  $j$  of country  $c$ .  $T$  is the average tone for all selected articles of country  $c$ . Based on the construction of the measure, a positive tone means that the public media in the country favors the Belt and Road, whereas the negative tone means negative sentiment. The higher the tone, the more supportive sentiment the country has for the Belt and Road. For regional comparison purpose, we also aggregate the measures by simple average for each region. The range of the tone lies in between -100 (the most negative) and 100 (the most positive).

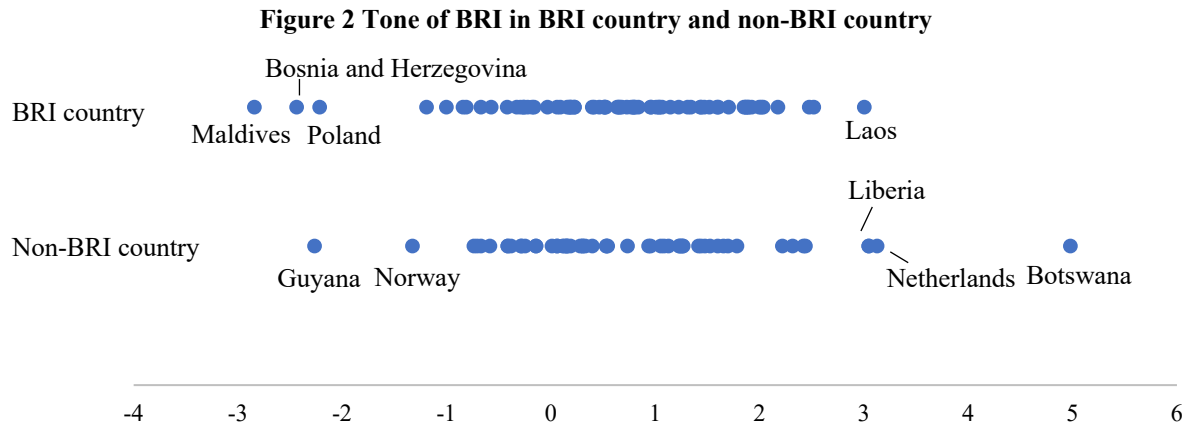
### 3 Descriptive analysis

#### *BRI perceived very similarly among BRI and non-BRI countries*

Figure 1 reports the summary statistics for our measurement of the sentiments across countries. We show that both the mean (0.7) and median sentiments (0.66) for the Belt and Road Initiative are above zero, indicating that the Initiative is on average positively received by the world. Among all the countries, the highest sentiment reaches 4.98 for Botswana, and the lowest sentiment is -2.8 for Maldives (Figure 1). In Figure 2, we further compare the tones between BRI countries and Non-BRI countries. Interestingly, the Belt and Road seems only slightly less positive for countries within the Belt and Road geographies than the outsiders, but the difference is statistically insignificant. The result still holds as we exclude the extreme observations, such as Botswana (4.98), Netherlands (3.12), Laos (3.01), Liberia (3.04), Norway (-1.33), Poland (-2.21), Guyana (-2.26), Bosnia and Herzegovina (-2.44), Maldives (-2.84).



Source: <https://www.gdeltproject.org/>



Source: <https://www.gdeltproject.org/>

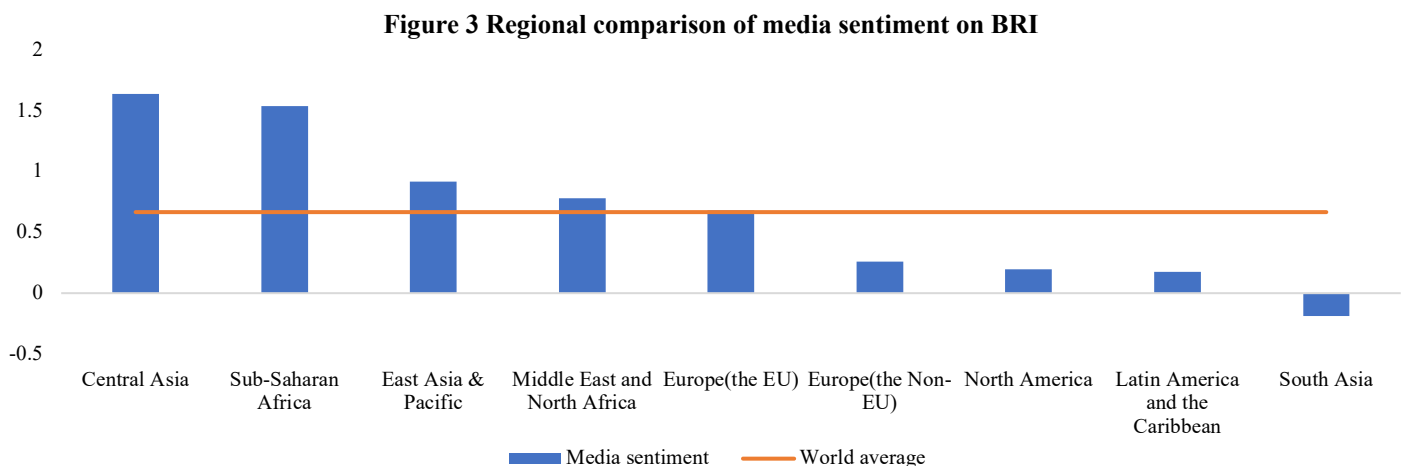
*At the regional level, South Asia fairs worst in terms of their image of the BRI while Africa fairs best*

At the region level (Figure 3), Central Asia and Sub-Saharan Africa showed the most positive perception of the Belt and Road, reflecting China's long-term relationship with the region even before the establishment of the Belt and Road. In fact, nearly all Central Asian countries show very positive attitudes towards the Initiative (Figure 4). East Asia & Pacific, who are China's neighboring countries, also show generally strong support of the Belt and Road Initiative. Among them, Laos holds the most positive tone while Vanuatu holds the most negative tone.

In Europe, the EU countries seem more positive about the Belt and Road than the non-EU European countries, although the latter consists of more direct recipients of the Belt and Road. One can further see from Figure 4 that it is indeed the Belt and Road recipients, such as Poland, Bosnia & Herzegovina, and Ukraine that show significant negative attitude against the Belt and Road.

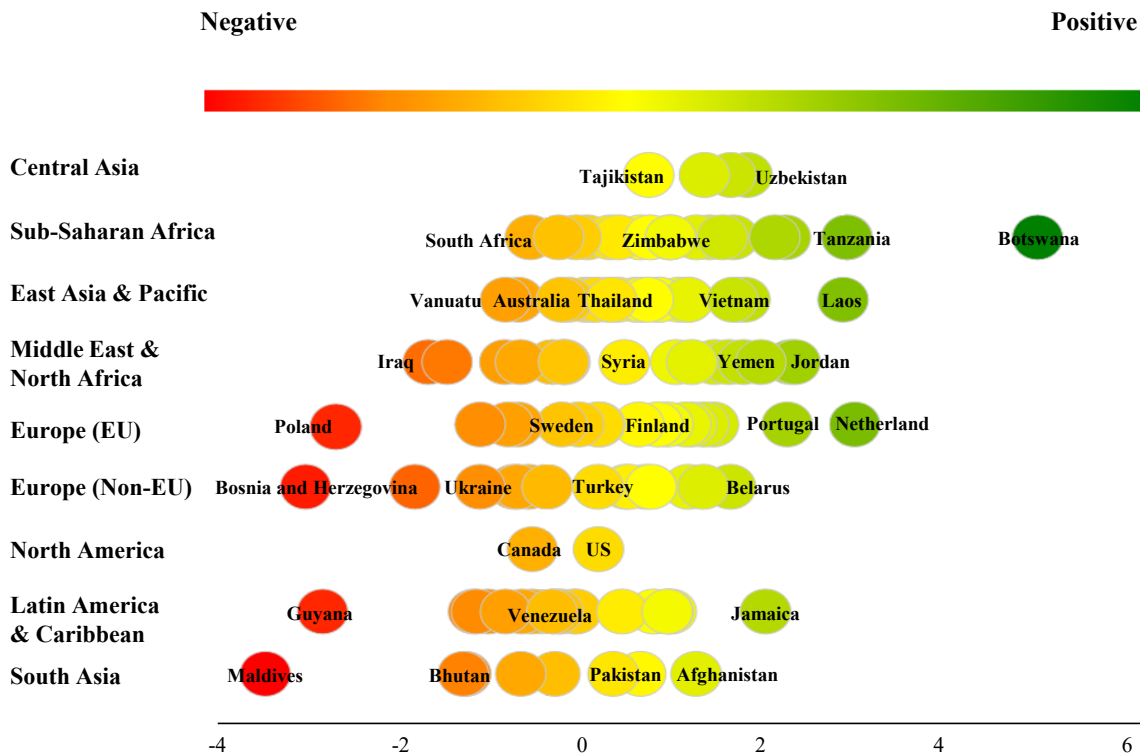
As a whole, the South Asian countries take a negative attitude against the Chinese plan (Figure 3). India, Bhutan and Maldives are three of the top ten countries holding the most negative attitude about the Belt and Road, reflecting the region's long-term competition with China over the boundary and economic issues. (Figure 4).

While a number of criticisms over the Belt and Road are from the US, the US has actually slightly positive attitude towards the Initiative. Its tone is even more positive than Canada. That said, there is great disparity across different interest group in their sentiment towards the Chinese Initiative.



Source: <https://www.gdeltproject.org/>

**Figure 4 Distribution of sentiment within 130 countries and regions**

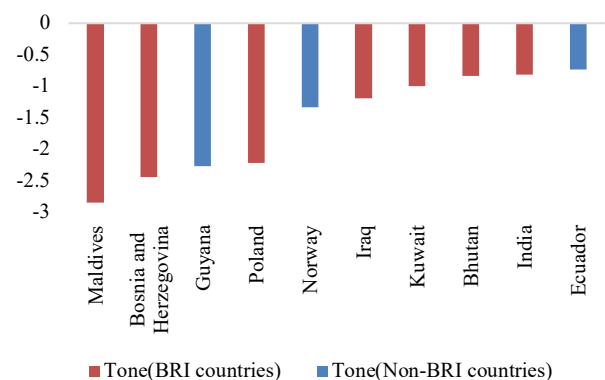


Source: <https://www.gdeltproject.org/>

*At the country level, differences in the BRI image are very large and sometimes unexpected*

In Figure 5 and Figure 6, we further reported the most positive and negative countries defined by their sentiments of the BRI. The first impression is that both extremes are broadly based in Europe and Asia. That means China's Belt and Road Initiative has particularly penetrated the two regions but received much-divided opinions within them: it is extremely positive in some countries but negative in the others. For example, the Netherlands is the second positive country in the world next to Botswana with the expectation to become a European hub to support the BRI. But, also located in Europe, Bosnia and Herzegovina sends very negative signal for the Belt and Road, as the project has raised concerns about the local environment. In other words, the implementation of the Belt and Road Initiative seems to be heavily influenced by the local characteristics.

Figure 6 Media sentiment for the most negative countries



Source: <https://www.gdeltproject.org/>

#### 4 Some empirical analysis on the factors behind the BRI's image: the role of trade

To investigate the relationship between the image of the BRI and the factors that may affect such image, we need to identify the keywords characterizing media news about Belt and Road news. To do this, we select the countries with the highest and lowest sentiment towards the BRI in each region (Appendix 4). Within the selected sample, we further selected the most cited papers, as defined by the built-in system in the GDELT, which leads us to 94 papers (Appendix 5). Most of the BRI-related articles contain two keywords: trade and investment. While there are other keywords appearing frequently, such as environment, security, compliance, etc, most of these are also related to China's trade and investment in the news. To that end, we run the searches for "BRI" + "trade" and "BRI" + "investment" in the full sample. Table 1 shows that 74.4% of all the BRI-related articles contain two keywords: 'trade' and 'investment'. As such, we can expect that the trade and investment are two of the most important channels through which the Belt and Road is influencing the recipient countries.

**Table 1 Descriptive statistic of the tone and proportion of trade, investment, and other topics**

Keywords	Tone	Proportion (%)
'trade' only in BRI-related news	0.58	22.9
'investment' only in BRI-related news	0.57	11.3
Both 'trade' and 'investment' in BRI-related news	0.88	40.2
Others and BRI	0.27	25.6
BRI (Total)	0.58	100

Source: <https://www.gdeltproject.org/>

Next, to assess how the readings of 'trade' and 'investment' affect the countries' perception of the BRI, we use the following econometric model to analyze their influences.

$$Tone_i = \theta_0 + \theta_1 BRI_i + \theta_2 Trade_i + \theta_3 Investment_i + \varepsilon_i$$

$Tone_i$  is the sentiment of the BRI in country  $i$ , in other words, the image of the BRI in country  $i$ . The range of tone in our sample is from -2.84 to 4.97.  $BRI_i$  is a dummy variable with its value is set to 1 if country  $i$  is in the BRI geographies and 0 if not. To maintain consistency with the coverage of the sentiment variable, we define the BRI countries using its official status (classified by China's official Belt and Road website) until April 25<sup>th</sup>, 2018.  $Trade_i$  represents the proportion of the BRI-related news mentioning the word 'trade' to all the BRI-related news, depicting the influence of trade in the local media reporting the BRI. Similarly,  $Investment_i$  represents the proportion of the BRI-related news mentioning 'investment' to the total BRI-related news.

In the model, we are particularly concerned about  $\theta_2$  and  $\theta_3$ , which measures the influence of trade and investment respectively. The higher the estimated coefficient, the higher the influence of the respective two channels will be on the perception of the BRI. The model is estimated by a robust ordinary least squares (OLS) regression.

The results are reported in Table 2. The first thing to note is that there is no statistical difference between the BRI and non-BRI countries as regards their perception of the Belt and Road. This is in line with our a priori based on our summary statistics in Section 3. In other words, the fact that a country is accepted in the BRI club does not seem to improve the image of China's grand strategy as far as this country is concerned.

Second, the key factor explaining the differences in the perception of BRI in our sample is trade and, more especially, how frequently trade is mentioned in the media relating to BRI. The more frequently trade is mentioned in the media (*trade intensity*), the worse perception a country tends to have about BRI. To quantify the importance of trade in influencing a country's image of BRI, we conduct the following exercise. Within the BRI countries sample, we set the investment at its average level, and calculate the predicted tone for less frequent mention of trade (10<sup>th</sup> percentile of  $Trade_i$ ) and more frequent mention of trade (90<sup>th</sup> percentile of  $Trade_i$ ) respectively. It shows that the image of the BRI is 47% higher for the countries whose media mentioned

trade less than for those that were higher. Similarly, we also tried the exercise for the non-BRI countries, showing that the effect is even 56% higher for the former group than the latter.

Third, while the coefficient before the investment is also negative, it is not statistically significant for all the specifications. In other words, there is no strong support for that mentioning investment in the news would dampen the image of the BRI.

**Table 2 Robust OLS regression result**

In dependent variable	BRI only	Trade only	Investment only	All controls
BRI	-0.117 (0.20)			-0.249 (0.20)
Trade (%)		-0.019 (0.01)		-0.030* (0.01)
Investment (%)			-0.004 (0.02)	-0.016 (0.01)
R <sup>2</sup>	0.0025	0.0305	0.0009	0.08
Obs	130	118	113	107

p<0.001: \*\*\*; p<0.01: \*\*; p<0.05: \*; p< 0.1: ^

## 5 Conclusion and possible extensions

In this paper, we analyze the image of the Belt and Road Initiative in the world by making use an open access big data set, namely GDELT. The key finding is that most regions in the world are holding a positive view on China's Belt and Road Initiative, although wide differences appear across regions and countries and some do have a negative image of BRI. This is particularly the case of South Asian economies while African countries are the most positive, on average. We also find that there is no significant difference in the perception of the BRI between the countries who are officially part of the initiative and others.

We also analyze empirically, which is the key factor explaining the BRI image across countries and we find that trade is by far the most relevant. In other words, the more often a country mentions trade issues in its media related to BRI, the more likely it is for that country's media to portrait a negative image of BRI. Investment seems to be less relevant as it is not found statistically significant.

The next step for this paper will be to check to what extent fears relate to trade are grounded on actual data on trade, such as a growing trade deficit with China or the like. We will leave the issue, as well as the control for other factors than trade and investment, to our follow-up studies.

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## Appendix 1: Regional Classification

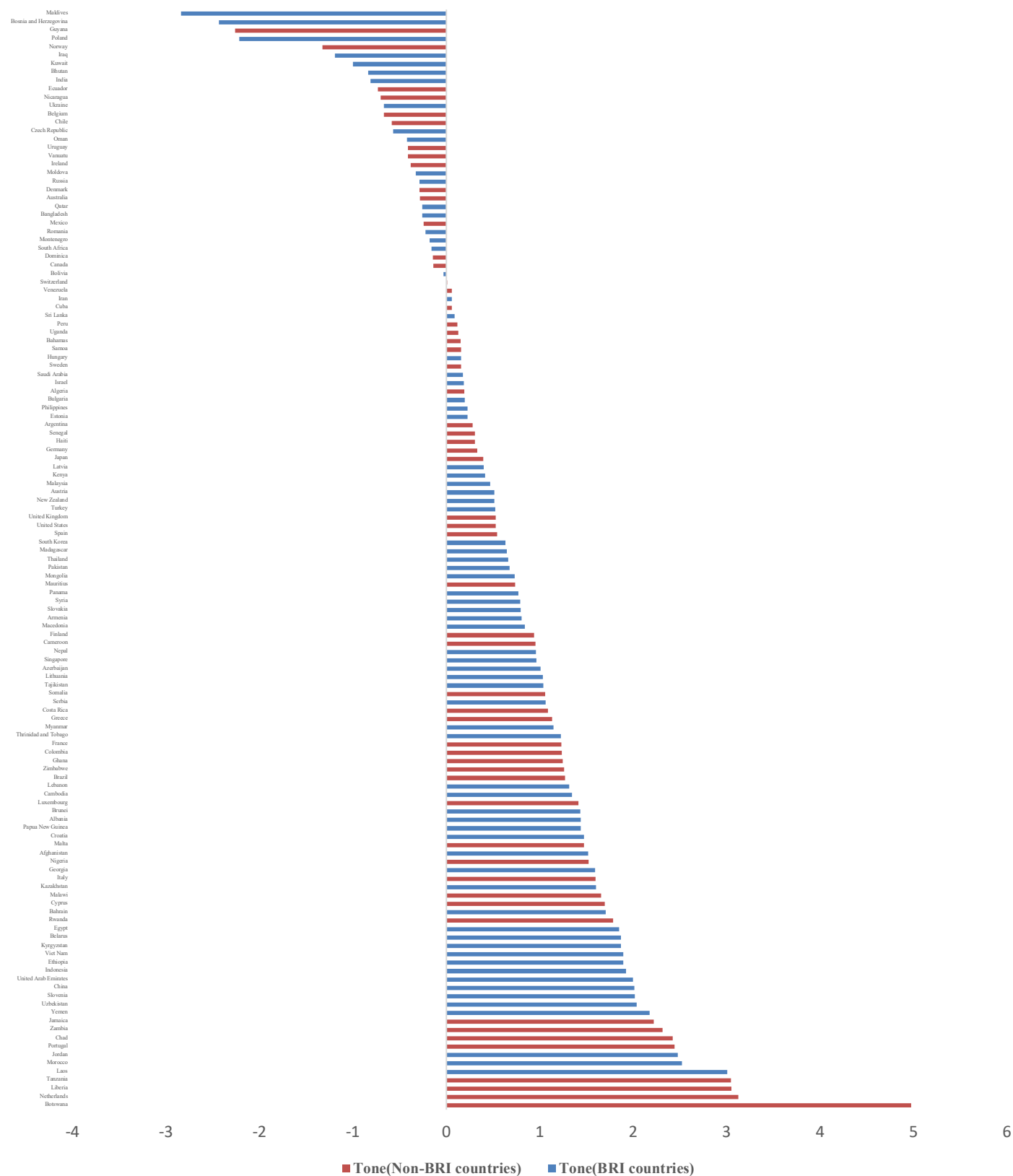
East Asia & Pacific	Central Asia	South Asia	Europe		North America	Latin America and the Caribbean	Middle East & North Africa	Sub-Saharan Africa
			EU	Non-EU				
Australia	Kazakhstan	Afghanistan	Austria	Albania	Canada	Argentina	Algeria	Botswana
Brunei	Kyrgyzstan	Bangladesh	Belgium	Armenia	United States	Antigua and Barbuda	Bahrain	Cameroon
Cambodia	Tajikistan	Bhutan	Bulgaria	Azerbaijan		Bahamas	Egypt	Chad
China	Turkmenistan	India	Croatia	Belarus		Bolivia	Iran	Ethiopia
Hong Kong, SAR	Uzbekistan	Maldives	Cyprus	Bosnia and Herzegovina		Brazil	Iraq	Ghana
Indonesia		Nepal	Czech Republic	Georgia		Chile	Israel	Kenya
Japan		Pakistan	Denmark			Colombia	Jordan	Liberia
Laos		Sri Lanka	Estonia	Macedonia		Costa Rica	Kuwait	Madagascar
Macao, SAR			Finland	Moldova		Cuba	Lebanon	Malawi
Malaysia			France	Montenegro		Dominican Republic	Morocco	Mauritius
Mongolia			Germany	Norway		Ecuador	Oman	Nigeria
Myanmar			Greece	Russia		Guyana	Qatar	Rwanda
New Zealand			Hungary	Serbia		Haiti	Saudi Arabia	Senegal
Niue			Ireland	Switzerland		Jamaica	Syria	Somalia
Papua New Guinea			Italy	Turkey		Mexico	Tunisia	South Africa
Philippines			Latvia	Ukraine		Nicaragua	United Arab Emirates	Tanzania
Samoa			Lithuania			Panama	Yemen	Uganda
Singapore			Luxembourg			Peru		Zambia
South Korea			Malta			Trinidad and Tobago		Zimbabwe
Taiwan, China			Netherland			Uruguay		
Thailand			Poland			Venezuela		
Timor-Leste			Portugal					
Vanuatu			Romania					
Viet Nam			Slovakia					
			Slovenia					
			Spain					
			Sweden					
			United Kingdom					

## Appendix 2: Narrow Belt and Road Initiative countries and Broad Belt and Road Initiative countries

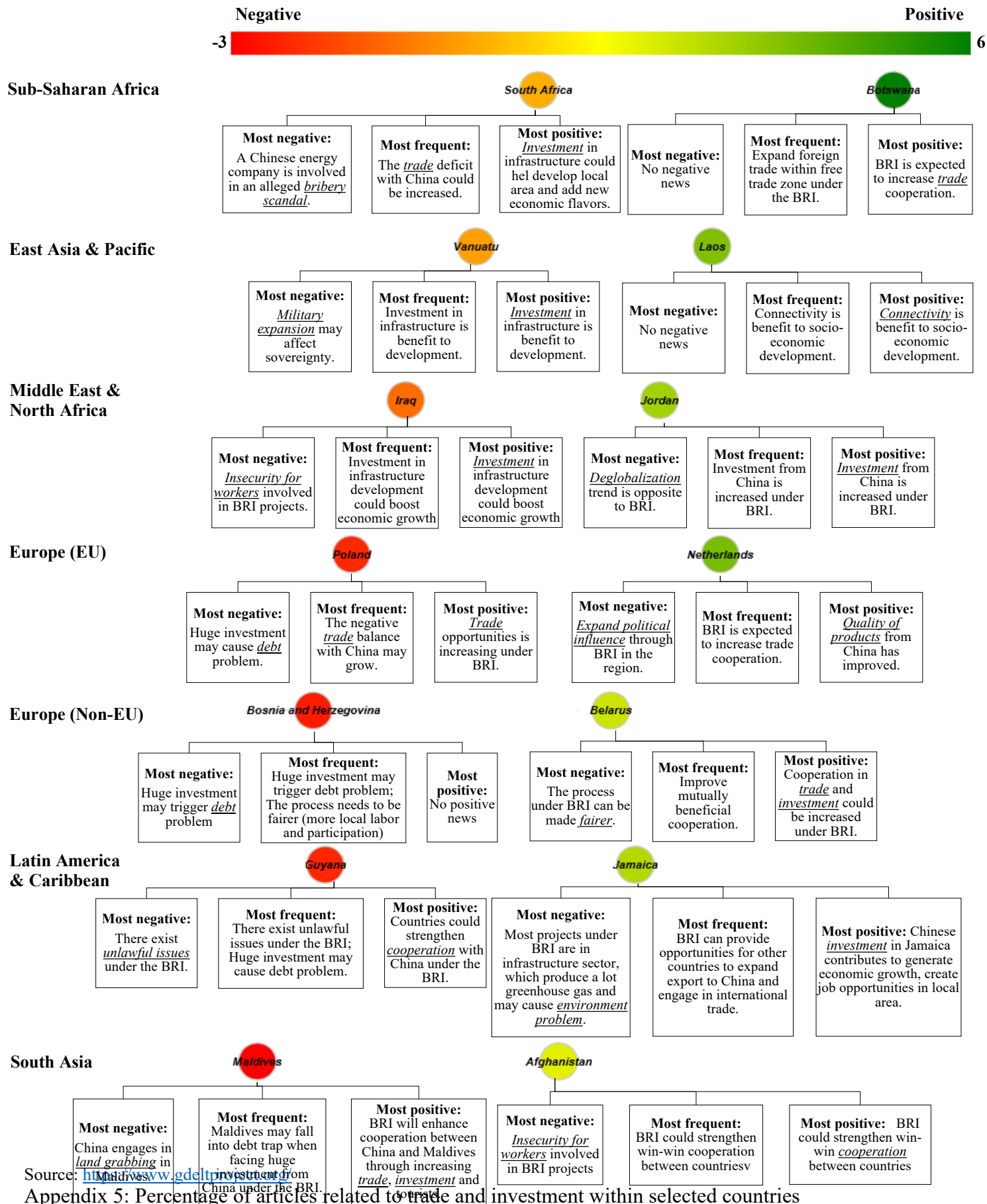
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Appendix 3: Media sentiment on BRI of 130 countries in the world

Chart 5 Media sentiment on BRI in the world



Appendix 4: Topics of the most negative, most positive and most frequent sentiment for selected countries



Appendix 5: Percentage of articles related to trade and investment within selected countries

<b>Region</b>	<b>Country</b>	<b>Average tone</b>	<b>Percentage of articles related to trade or investment (%)</b>	<b>Percentage of articles related to topics other than trade and investment (%)</b>
Sub-Saharan Africa	Botswana	4.98	100	0
	South Africa	-0.16	78	22
East Asia & Pacific	Laos	3.01	50	50
	Vanuatu	-0.41	63	37
Middle East & North Africa	Jordan	2.52	95	5
	Iraq	-1.19	77	23
Europe (EU)	Netherlands	3.12	72	28
	Poland	-2.21	97	3
Europe (Non-EU)	Belarus	1.87	59	41
	Bosnia and Herzegovina	-2.44	44	56
Latin America & Caribbean	Jamaica	2.22	92	8
	Guyana	-2.30	53	47
South Asia	Afghanistan	1.52	59	41
	Maldives	-2.84	82	18

Appendix 6: Tone ranking for East Asia & Pacific (18 countries)

<b>Country</b>	<b>Tone</b>	<b>Tone Ranking</b>
Laos	3.01	1
Indonesia	1.92	2
Vietnam	1.89	3
Papua New Guinea	1.44	4
Brunei	1.43	5
Cambodia	1.35	6
Myanmar	1.15	7
Singapore	0.96	8
Mongolia	0.73	9
Thailand	0.66	10
Korea	0.63	11
New Zealand	0.51	12
Malaysia	0.47	13
Japan	0.40	14
Philippines	0.22	15
Samoa	0.16	16
Australia	-0.28	17
Vanuatu	-0.41	18

^Data for Timor-Leste is not available between April 2017 to April 2018.

Appendix 7: Tone ranking for Central Asia (4 countries) and South Asia (8 countries)

<b>Central Asian</b>	<b>Tone</b>	<b>Tone</b>	<b>South Asian</b>	<b>Tone</b>	<b>Tone</b>
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<b>Country</b>		<b>Ranking</b>	<b>Country</b>		<b>Ranking</b>
Uzbekistan	2.04	1	Afghanistan	1.52	1
Kyrgyzstan	1.87	2	Nepal	0.96	2
Kazakhstan	1.60	3	Pakistan	0.68	3
Tajikistan	1.04	4	Sri Lanka	0.09	4
			Bangladesh	-0.26	5
			India	-0.81	6
			Bhutan	-0.84	7
			Maldives	-2.84	8

^ Data for Turkmenistan is not available between April 2017 to April 2018.

#### Appendix 8: Tone ranking for EU countries and Non-EU countries in Europe (43 countries)

<b>EU Country</b>	<b>Tone</b>	<b>Tone Ranking</b>	<b>Non-EU Country</b>	<b>Tone</b>	<b>Tone Ranking</b>
Netherlands	3.12	1	Belarus	1.87	1
Portugal	2.44	2	Georgia	1.59	2
Slovenia	2.02	3	Albania	1.44	3
Cyprus	1.69	4	Serbia	1.06	4
Italy	1.60	5	Azerbaijan	1.01	5
Malta	1.47	6	Macedonia	0.84	6
Croatia	1.47	7	Armenia	0.81	7
Luxembourg	1.42	8	Turkey	0.52	8
France	1.23	9	Switzerland	0.01	9
Greece	1.13	10	Montenegro	-0.18	10
Lithuania	1.03	11	Russia	-0.29	11
Finland	0.94	12	Moldova	-0.33	12
Slovakia	0.79	13	Ukraine	-0.67	13
Spain	0.54	14	Norway	-1.33	14
United Kingdom	0.53	15	Bosnia and Herzegovina	-2.44	15
Austria	0.51	16			
Latvia	0.40	17			
Germany	0.33	18			
Estonia	0.23	19			
Bulgaria	0.19	20			
Sweden	0.16	21			
Hungary	0.16	22			
Romania	-0.22	23			
Denmark	-0.29	24			
Ireland	-0.38	25			
Czech Republic	-0.57	26			
Belgium	-0.67	27			
Poland	-2.21	28			

#### Appendix 9: Tone ranking for Latin America & Caribbean and North Americas (22 countries)

<b>Latin America &amp; Caribbean</b>	<b>Tone</b>	<b>Tone Ranking</b>	<b>North America</b>	<b>Tone</b>	<b>Tone Ranking</b>
Jamaica	2.22	1	United States	0.53	1

Brazil	1.27	2	Canada	-0.14	2
Trinidad and Tobago	1.23	3			
Colombia	1.21	4			
Costa Rica	1.09	5			
Panama	0.77	6			
Haiti	0.31	7			
Argentina	0.28	8			
Bahamas	0.15	9			
Peru	0.12	10			
Venezuela	0.06	11			
Bolivia	0.00	12			
Cuba	-0.05	13			
Dominican Republic	-0.14	14			
Mexico	-0.24	15			
Uruguay	-0.41	16			
Chile	-0.59	17			
Nicaragua	-0.70	18			
Ecuador	-0.74	19			
Guyana	-2.30	20			

Appendix 10: Tone ranking for Middle East & North Africa (16 countries) and Sub-Saharan Africa (19 countries)

Middle East & North African Country	Tone	Tone Ranking	Sub-Saharan African Country	Tone	Tone Ranking
Jordan	2.52	1	Botswana	4.98	1
Morocco	2.48	2	Liberia	3.05	2
Yemen	2.17	3	Tanzania	3.05	3
UAE	2.00	4	Chad	2.42	4
Egypt	1.85	5	Zambia	2.32	5
Bahrain	1.70	6	Ethiopia	1.90	6
Lebanon	1.31	7	Rwanda	1.79	7
Syria	0.79	8	Malawi	1.66	8
Algeria	0.19	9	Ghana	1.54	9
Israel	0.19	10	Nigeria	1.52	10
Saudi Arabia	0.18	11	Zimbabwe	1.26	11
Iran	0.06	12	Somalia	1.06	12
Qatar	-0.26	13	Cameroon	1.02	13
Oman	-0.42	14	Mauritius	0.74	14
Kuwait	-1.00	15	Madagascar	0.65	15
Iraq	-1.19	16	Kenya	0.42	16
			Senegal	0.30	17
			Uganda	0.13	18
			South Africa	-0.16	19

Appendix 11: Selected countries and possible reasons for their holding sentiment

Best			Worst	
Region	Country	Reason	Country	Reason
Sub-Saharan Africa	Botswana	Chinese state-owned enterprises and private firms' active investment in Botswana's	South Africa	As a leading country in Africa, it is concerned that China's active participation in the



		infrastructure projects (Chen, 2009). For example, China helped Botswana build the first “spaghetti road” to relieve the traffic pressure <sup>4</sup> .		region may eliminate its influence, also is afraid to fall into the “loan trap” due to debt expansion <sup>5</sup> .
East Asia & Pacific	Laos	Laotian friendship with China can be traced back to 1961, even before the establishment of formal diplomacy between China and the US. Under the Belt and Road, China’s promise to support more infrastructure projects have given the land-locked country an opportunity to link to the rest of the world. <sup>6</sup>	Vanuatu	Vanuatu has not joined in the Belt and Road Initiative yet. Also, Vanuatu is aware of its sovereignty because there are some reports imply that China will consolidate its dominion through BRI. Besides that, the huge debt that they need to pay to Chinese firms is another threat <sup>7</sup> .
Middle East & North Africa	Jordan	Jordan has the oil development cooperation with China <sup>9</sup> . Jordan is one of top 10 largest oil shales holder in the world, but production of this energy is still low relative to the other oil countries. An oil-fueled power plant is built by a joint company consists of China, Jordan and Estonia, and this power plant could solve around 10%-15% of Jordan’s need in energy consumption.	Iraq	Iraq’s most negative sentiment circumstance originated from its debt risk (Hurley, Morris, Portelance, 2018). Total public debt in Iraq has increased to 67% of GDP in 2016. This problem could be even worse when Iraq owes China huge debt in oilfield, satellite communication and so on. Also, the workers killed in Pakistan by ISIS may raise the tension in Iraq <sup>10</sup> .
Europe (EU)	Netherlands	The key reason behind the image is its ambition to extend cooperation with China to finance the Belt and Road. Also, a railway has already connected Yiwu (a city of China) and Amsterdam and enables Netherland to take the role to gather and deliver product across Europe from and to China <sup>11</sup> .	Poland	Polish companies’ involvement in China’s market is limited. Also, Poland is aware of China’s increasing influence in Central may become a geopolitical threat <sup>12</sup> . Last but not the least, Polish is worried about the termination of Chinese investment <sup>13</sup> .

<sup>4</sup> [http://www.xinhuanet.com/english/2017-06/26/c\\_136394003.htm](http://www.xinhuanet.com/english/2017-06/26/c_136394003.htm)

<sup>5</sup> <https://www.fes-connect.org/trending/south-africas-dilemma-in-the-belt-and-road-initiative-losing-africa-for-china/>

<sup>6</sup> [http://www.nationmultimedia.com/detail/big\\_read/30326442](http://www.nationmultimedia.com/detail/big_read/30326442)

<sup>7</sup> <http://www.espectador.com/internacionales/china-y-ceuu-superpotencias-camino-de-un-conflicto>

<sup>8</sup> <https://www.afr.com/opinion/columnists/vanuatu-should-beware-of-beijings-strategic-strings-20180411-h0ym9h>

<sup>9</sup> <https://www.gisreportsonline.com/gis-dossier-the-south-china-sea,defense,2488.html>

<sup>10</sup> <https://www.arabherald.com/news/253522676/is-says-it-killed-2-captive-chinese-nationals-in-pakistan>

<sup>11</sup> <https://www.railfreight.com/corridors/2018/03/07/amsterdam-added-to-new-silk-road-with-new-rail-freight-line/>

Europe (Non-EU)	Belarus	In Belarus, over 30 projects have been financed by Chinese companies. Also, Belarus eagers to expand its oil suppliers and Belt and Road could provide it a platform <sup>14</sup> .	Bosnia and Herzegovina	Bosnia and Herzegovina is aware of the debt trap <sup>15</sup> . Also, Bosnia and Herzegovina has received an energy project from China, but it has caused massive environmental concerns in the country <sup>16</sup> .
Latin America & Caribbean	Jamaica	Jamaica's Foreign Affairs Minister has said that "Belt and Road Initiative" can provide Caribbean region with significant development opportunity. Also, Jamaica is proactive to engage into Chinese investment projects in Jamaica and ensure these projects are socially benefit to local area <sup>17</sup> .	Guyana	Guyana holds the most negative emotion to China's BRI due to debt concerns spilled over the country, but the reality is that China has yet invested any major infrastructure projects in the country <sup>18</sup> .
South Asia	Afghanistan	Currently, China is the largest foreign investor in Afghanistan and conflict issues have never been occurred between these two countries. Increasing Sino-Afghan cooperation could bring Afghanistan stability <sup>19</sup> .	Maldives	Belt and Road-related financing projects in Maldives are over \$1400 million and bring Maldives into 'debt trap' <sup>20</sup> .

## Appendix 12: Comparison between GDELT raw data and GDELT Summary

	GDELT	GDELT Summary
Chosen keyword(s)	Key words are restricted within the built-in list. For the project, only "One Belt and One Road" is available	No restriction on the choice of key words for search

<sup>12</sup> <https://geopolitica.eu/more/in-english/2724-china-poland-and-the-belt-and-road-initiative-the-future-of-chinese-engagement-in-central-and-eastern-europe>

<sup>13</sup> [https://logistyka.wnp.pl/chinczycy-beda-hamowac-inwestycje-wzdluz-nowego-jedwabnego-szlaku,304330\\_1\\_0\\_0.html](https://logistyka.wnp.pl/chinczycy-beda-hamowac-inwestycje-wzdluz-nowego-jedwabnego-szlaku,304330_1_0_0.html)

<sup>14</sup> <https://belarusdigest.com/story/belarus-and-one-belt-one-road-alternative-oil-scto-belarus-state-press-digest/>

<sup>15</sup> <http://www.capital.ba/zamke-na-kineskom-putu-svile/>

<sup>16</sup> <https://www.business-humanrights.org/en/bosnia-herzegovina-air-pollution-worsens-in-tuzla-while-govt-plans-for-more-coal-power>

<sup>17</sup> [http://www.jamaicaobserver.com/business-report/caribbean-must-dynamicaly-engage-with-china\\_126355?profile=1283&template=MobileArticle](http://www.jamaicaobserver.com/business-report/caribbean-must-dynamicaly-engage-with-china_126355?profile=1283&template=MobileArticle)

<sup>18</sup> <https://www.stabroeknews.com/2017/news/world/07/01/sri-lankas-top-court-dismisses-case-chinese-industrial-zone-deal/>

<sup>19</sup> <http://afghanistantimes.af/chinas-role-key-in-afghanistans-stability/>

<sup>20</sup> <https://maldivesindependent.com/business/chinese-lending-puts-maldives-at-risk-of-debt-distress-136331>

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Content coverage	Print, broadcast and online news	Online news
Time coverage	Jan 1, 1979 to present	The past 355 days before the date of search
Extraction method	SQL in Google BigQuery	Application Programming Interface (API)

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