

Countries' perceptions of the Belt and Road Initiative: a big data analysis

Alicia GARCIA-HERRERO*, Jianwei XU*

November 2018

Abstract

Drawing on a global database of media articles, we quantitatively assess perceptions of China's Belt and Road Initiative (BRI) in different countries and regions. We find that the BRI is generally positively received. All regions as a whole, except South Asia, have a positive perception of the BRI, but there are marked differences at the country level, with some countries in all regions having very negative views. Interestingly, there is no significant difference in perceptions of the BRI between countries that officially participate in the BRI and those that do not. We also use our dataset of media articles to identify the topics that are most frequently associated with the BRI. The most common topics are trade and investment. Finally, we use regression analysis to identify how the frequency with which these topics are discussed in the news affect the perceptions of the BRI in different countries. We find that the more frequently trade is mentioned in the media, the more negative a country's perception of the BRI tends to be. On the other hand, while investment under the BRI seems to also attract attention in the media, it is not statistically relevant for countries' perceptions of the BRI.

* Alicia Garcia Herrero (alicia@ust.hk) is affiliated with the Department of Economic of Hong Kong University of Science and Technology (HKUST). Jianwei Xu (jwxu@bnu.edu.cn) is affiliated with the Business School of Beijing Normal University. Hanrui LI (hanrui@ust.hk) works at HKUST IEMS as Research Assistant.

1 Introduction

Five years have passed since China's President Xi Jinping announced the launch of the Belt and Road Initiative (BRI), originally called One Belt and One Road. One could argue that the BRI has become China's most important geopolitical tool to build soft power and implement its plans, and its content and nature could be evolving over time (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 Initiative has officially included 66¹ countries. However, there is no systemic evidence of how successfully this project has been fulfilling its aims in the recipient countries and, more generally, globally.

Empirical analyses have already quantitatively gauged the potential gains for the Belt and Road countries. For example, García-Herrero and Xu (2016) estimated how trade would be generated thanks to the improvement of transport infrastructure in the Belt and Road geographies. The authors found that gains are 6 percent for Europe and 3 percent for Asia, while the rest of the world suffers a 0.04 percent reduction in trade. A good example is Nepal. Massive Chinese infrastructure investments in Nepal aim to link the economic activities of China and India, providing new momentum for Nepal's development (Shrestha, 2017). Initially, this initiative made Russia worried because of its effect on the Trans-Siberian Railway. However, two international transport corridors (Primorye-1 and Primorye-2) under the BRI have linked Russia with the Asia-Pacific region, providing a new opportunity for Russia to develop (Li, 2018). Similarly, Breuer (2017) shows that the BRI will bring benefits also to Africa through its massive construction scheme.

That said, global concerns over BRI projects have also arisen. For most international critics, China-initiated projects lack regulation and market coordination. Hallgren and Ghiasy (2017) analysed the security implications of the BRI in Belarus, Myanmar and Uzbekistan. Without following market principles, countries run the risk of engaging in too many projects which might not be profitable in the long run. Given that most of China's financial support must be repaid, debt sustainability in host countries is a key concern. Observers also doubt whether China has the economic energy or willingness to sustain these likely unprofitable overseas projects if not fully driven by commercial interests. Beyond the economic aspects, there are also geopolitical concerns. For example, Banerjee (2016) argues that the success of Belt and Road relies on the participation of India (Banerjee, 2016).

Given these pros and cons, we provide a quantitative assessment of the image of BRI across the globe, both in countries that participate in the initiative and in countries that do not. To carry out the analysis, we used the Global Database of Events, Language and Tone (GDELT), which covers broadcast, online and printed news from 132 countries in over 100 languages since 1979². The database has been widely used in the earlier studies, including Cadenas *et al* (2015) and Yuan (2017).

Our analysis finds that the BRI is generally positively perceived. All regions, except South Asia, have a positive perception of the BRI, but differences are marked at the country level with some countries having very negative perceptions. Interesting, there is no significant difference in the perception of the BRI between countries that officially participate in the BRI and those that do not. In terms of the factors explaining each country's perception of the BRI, we use GDELT to identify the topics that are most frequently associated with the BRI, which happen to be trade and investment. Finally, we use regression analysis to identify how the frequency of discussion of these topics in the news affects the perception of BRI in different countries. We find that the more frequently trade is mentioned in the media, the worse the perception a country tends to have about the BRI. On the other hand, while investment seems to also attract attention in the media, it is not statistically relevant for countries' perceptions of the BRI.

¹ The official list can be viewed in the following website: www.yidaiyilu.gov.cn. Seventy-four countries were included in BRI list at the time when this paper was written.

² Social media has not been integrated into GDELT.

Compared with previous studies, this paper offers a unique perspective on perceptions of China's through its landmark BRI project, in terms of soft power. Public sentiment about the initiative should be considered a key element for the assessment of whether 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 organised as follows. The second section discusses the data and methodology. The third section presents the results and analysis by regions. The fourth section offers some explanation for global perceptions of the BRI. The fifth section concludes.

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

We use big data analysis of media sources to measure the public perception of BRI. More specifically, we chose 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 (ie intensity of coverage) and, second, the sentiment about or perception of a certain topic covered in the media (ie tone of coverage). GDELT can be used in two different ways. The simplest way, based on application programming interface (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 of institutions and events developed by GDELT. The second method, 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. Unfortunately, neither the BRI nor the initiative under its previous name, One Belt One Road, has been included in the library, which constrains the use of the second method. Fortunately, BRI is a young enough concept to be mostly covered in the shorter sample.

Our querying of GDELT covered the period between 1 May 2017 and 25 April 2018. To accurately capture the concept, we conducted searches for Belt and Road, 'One Belt One Road' and 'New Silk Road' as keywords. One caveat on the use of GDELT is its exclusion of social media. There is widespread use of social media, but the growing importance of fake news might make it less relevant for our study.

Methodology

To quantitatively evaluate the perception of the BRI at country level, we first calculated the tone of coverage of the BRI in one specific article published in the country and then aggregated it with a simple average of the sentiments at country level to reflect the perception of the BRI in the local area. Using the definition of 'tone' in GDELT, the calculation of the tone of coverage of the BRI is as follows:

$$T_{j,c} = \frac{w_{j,p,c} - w_{j,n,c}}{w_{j,c}} \in (-100, +100) \quad (1)$$

$$T = \frac{1}{N_c} \sum_j T_{j,c} \in (-100, +100) \quad (2)$$

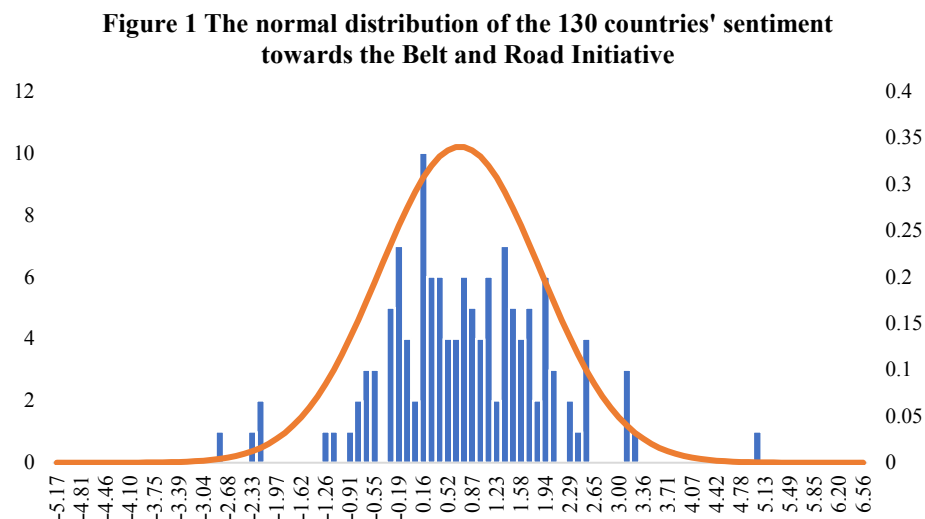
Where $w_{j,p,c}$ refers to the number of words with positive sentiment in article j of country c , $w_{j,n,c}$ is the number of words with negative sentiment in article j of country c , and $w_{j,c}$ is the total number of words in article j of country c . $T_{j,c}$ is the tone for article j of country 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 favours the BRI, whereas a negative tone means negative sentiment. The higher the tone rating, the more supportive sentiment in the country is towards the BRI. For regional comparison purposes, we also aggregated the measures by simple average for each region. The 'tone' range is from -100 (the most negative) to 100 (the most positive).

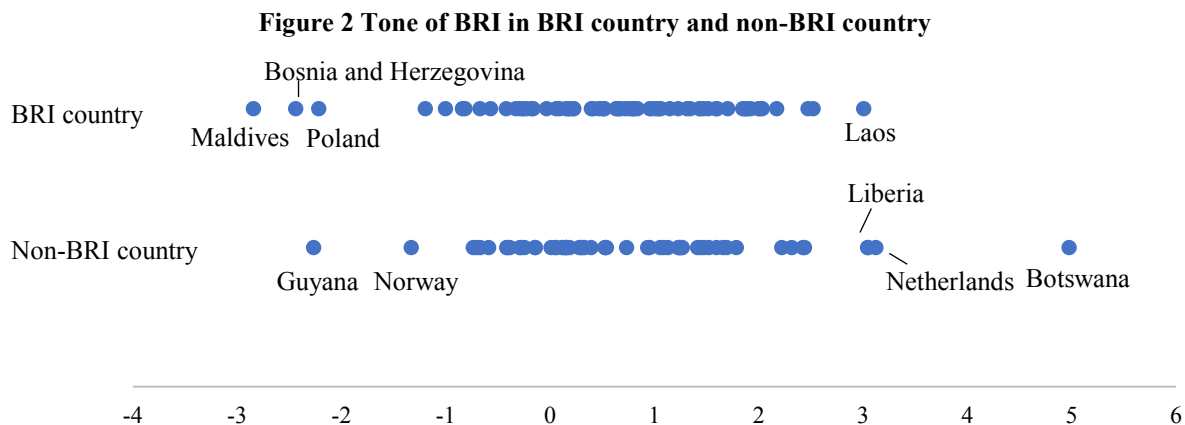
3 Descriptive analysis

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 has the least-positive perception of the BRI, while Africa has the most-positive perception

At the regional level (Figure 3), Central Asia and sub-Saharan Africa have the most positive perceptions of the BRI, reflecting China's long-term relationship with the regions even before the establishment of the BRI. Nearly all Central Asian countries exhibit very positive attitudes towards the initiative (Figure 4).

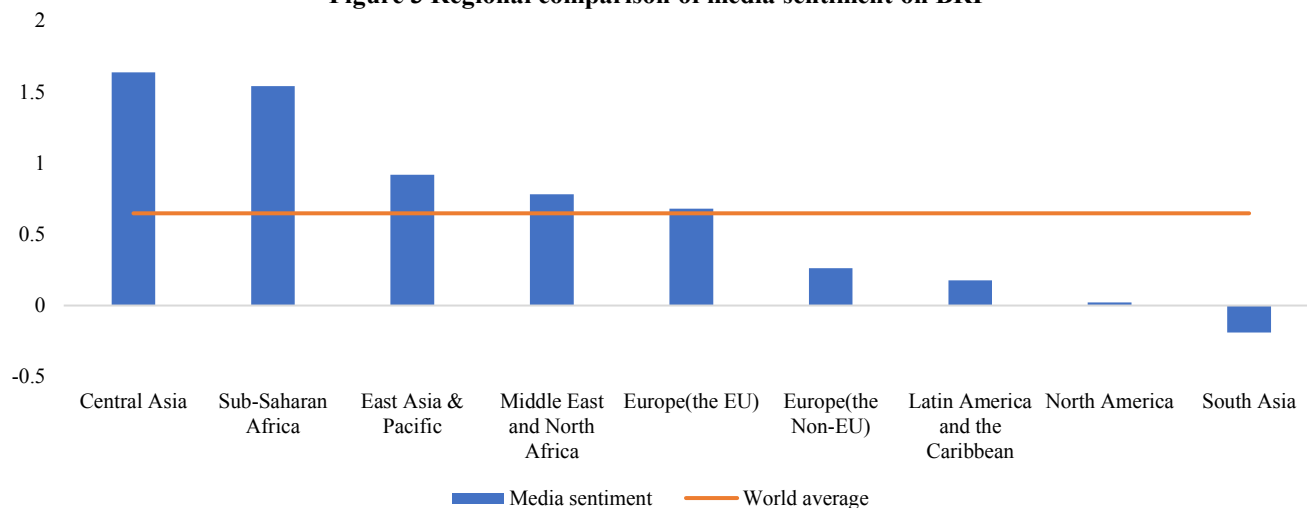
East Asia & Pacific countries – China’s neighbours – also show generally strong support for the BRI. Among them, Laos has the most positive perception, while the tone of coverage is most negative in Vanuatu.

In Europe, EU countries seem more positive about the BRI than non-EU European countries, though among the latter there are more direct recipients of BRI investment. Figure 4 shows that it is indeed the BRI recipients, such as Poland, Bosnia & Herzegovina and Ukraine, that have significantly negative attitudes towards the BRI.

As a whole, the South Asian countries have a negative view of the Chinese plan (Figure 3). India, Bhutan and the Maldives are three of the top ten countries with the most negative attitudes towards the BRI, reflecting the region’s long-term competition with China over border and economic issues (Figure 4).

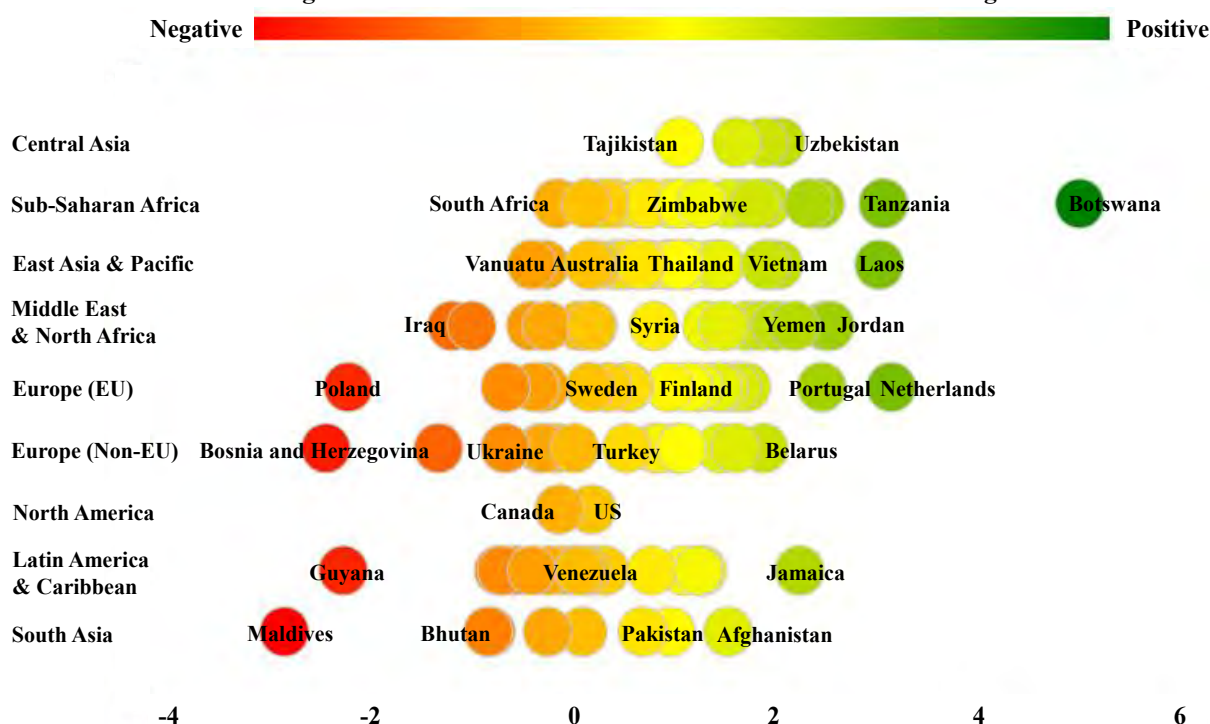
While a number of criticisms of the BRI have come from the US, the US has actually a slightly positive attitude towards the initiative for the covered period. That said, there are great differences between interest groups in their sentiment towards the Chinese Initiative.

Figure 3 Regional comparison of media sentiment on BRI



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 perception of the BRI are major and sometimes unexpected

Figures 5 and 6 further report the countries with the most positive and negative sentiments towards the BRI. The first impression is that both extremes are broadly based in Europe and Asia. That means China's initiative has particularly penetrated the two regions, but is evaluated very differently by different countries and regions. The most positive country in the world is Botswana while the most negative one is Maldives. Within Europe, BRI members tend to have a much worse view of China's initiative (especially Bosnia and by Poland), compared to others, especially the Netherlands. In other words, China does not seem to be necessarily improving its image through efforts made through BRI projects or, at least, not when compared with the way it is perceived in non-BRI countries.

Figure 5 Media sentiment for the most positive countries

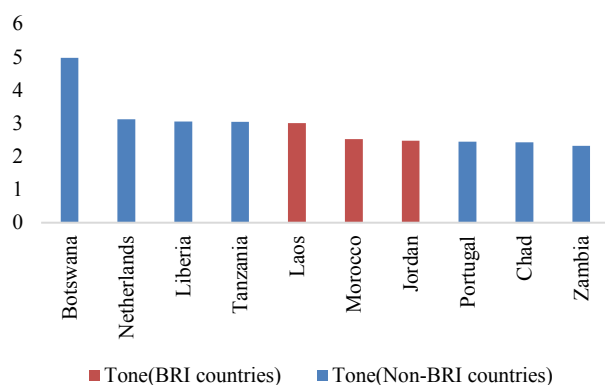
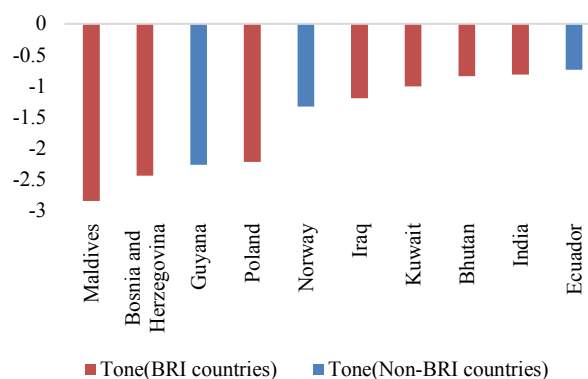


Figure 6 Media sentiment for the most negative countries



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

4 Some empirical analysis on the factors behind perceptions of the BRI: the role of trade

To investigate the relationship between perceptions of the BRI and the factors that might influence such perceptions, we need to identify the keywords that characterise the global media news about the BRI. To do this, we selected the countries in each region with the most and least positive views of the BRI. Within the selected sample, we further selected the most cited newspapers, as defined by GDEPT's built-in system, which amounts to the final sample of 94 newspapers.

Most of the BRI-related articles contained two keywords: trade and investment. While other keyword also appeared frequently, such as environment, security or compliance, most of these are related to Chinese trade and investment insofar as either trade or investment were mentioned as well. To that end, we ran the searches for 'BRI' + 'trade' and 'BRI' + 'investment' in the full sample. Table 1 shows that 74.4 percent of all the BRI-related articles contain the two keywords: 'trade' and 'investment'. We can therefore expect that trade and investment are two of the most important channels through which the BRI influences recipient countries.

Table 1 Descriptive statistics of the proportion of the BRI-related articles referring to trade, investment and other topics

Keywords	Proportion (%)
Only 'trade' in BRI-related news	22.9
Only 'investment' in BRI-related news	11.3
Both 'trade' and 'investment' in BRI-related news	40.2
Others in the BRI-related news	25.6
BRI-related news (Total)	100

Source: Bruegel based on <https://www.gdeltproject.org/>.

Next, to assess how the concepts of ‘trade’ and ‘investment’ affect countries’ perceptions of the BRI, we used the following econometric model:

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

$Tone_i$ is the sentiment about the BRI in country i , in other words, the perception of BRI in country i . The range of the tone (perception) in our sample is from -2.84 to 4.97, from least to most positive. BRI_i is a dummy variable with its value set to 1 if country i is part of the countries officially considered part of BRI and 0 if not. We used China’s official BRI website to identify BRI countries (see footnote 1), with 25 April 2018 as the cut-off date for such classification. $Trade_i$ represents the proportion of BRI-related news mentioning the word ‘trade’ within all of the BRI-related news. Similarly, $Investment_i$ represents the proportion of the BRI-related news mentioning the concept of ‘investment’.

In the model, we are particularly interested in the estimation of θ_2 and θ_3 , which measure the influence of trade and investment, respectively, on the perception of the BRI that a certain country might have. The higher the estimated coefficient, the higher the influence of that channel (either trade or investment) on the perception of the BRI. The model is estimated by a robust ordinary least squares (OLS) regression.

Table 2 shows the results. The first thing to note is that there is no statistical difference between BRI and non-BRI countries as regards their perceptions of the BRI, at least on average. This is in line with our *a priori* assumption based on our summary statistics in section 3. In other words, the fact that a country is accepted into the BRI club does not seem to lead to a more positive perception of China’s grand strategy in that country.

Second, the key factor explaining the differences in perceptions of the BRI in our sample is trade and, more especially, how frequently trade is mentioned in the media relating to the BRI. The more frequently trade is mentioned (*trade intensity*), the more negative the perception a country tends to have of the BRI. To quantify the importance of trade in influencing a country’s perception of the BRI, we conducted the following exercise. Within the sample of BRI countries, we set the investment at its average level, and calculated the predicted tone of coverage for the cases in which trade is the least frequently mentioned (10th percentile of $Trade_i$) and for the cases in which trade is most frequently mentioned (90th percentile of $Trade_i$), respectively. This shows that the BRI is perceived 47 percent more positively in the countries where the media mentioned trade the least (10th percentile) than in those where the media mentioned trade the most (90th percentile). We conducted the same exercise for the non-BRI countries, showing that the effect is even 56 percent higher for the group where the media mentions the BRI the least, as opposed to those countries where it is most mentioned.

Third, while the coefficient estimated for investment is also negative, it is not statistically significant for all the specifications. In other words, there is no strong evidence that investment-related issues play a role in explaining perceptions of the BRI.

Table 2 Robust OLS regression result

Independent 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 ²	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: ^

Source: Bruegel.

5 Conclusion and possible extensions

We analysed the image of the Belt and Road Initiative across the world by making use of an open access big data database, namely GDELT. The key finding is that most regions in the world have a positive view of China's Belt and Road Initiative, although wide differences appear across regions and countries. We also find that there is no significant difference in the perception of the BRI between the countries that are officially part of the initiative and others.

We analysed empirically what key factor explains different countries' perceptions of the BRI. We found that trade is by far the most relevant. In other words, the more often a country's media mentions trade related to the BRI, the more likely it is for that country's media to portray a negative image of the BRI. Investment seems to be less relevant as it is not found to be a statistically significant factor.

The next step in this new strand of research will be to check to what extent fears related to trade are grounded in actual data on trade, such as growing trade deficits with China or similar. We will leave that issue, and the issue of controlling for factors other than trade and investment, to our follow-up studies.

References

- Banerjee, D. (2016) 'China's One Belt One Road Initiative – An Indian Perspective', ISEAS Perspective No.14, ISEAS-Yusof Ishak Institute
- Breuer, J. (2017) 'Two Belts, One Road? The role of Africa in China's Belt and Road Initiative', Blickwechsel, July, Stiftung Asienhaus
- Cadenas-Santiago, G., A. Garcia-Herrero, A. Vidal-Abarca and T. Rodrigo (2015) 'An empirical assessment of social unrest dynamic and state response in Eurasia countries', *Eurasian Journal of Sciences* 3(3): 1-29
- Chen, Y. (2009) 'China's role in infrastructure development in Botswana', *SAILA Occasional Paper* No. 44, South African Institute of International Affairs
- Garcia-Herrero, A. and J. Xu (2016) 'China's Belt and Road Initiative: Can Europe expect trade gains?' *Working Paper* 5/2016, Bruegel
- Dadabaev, T. (2018) "'Silk Road" as foreign policy discourse: The construction of Chinese, Japanese and Korean engagement strategies in Central Asia', *Journal of Eurasian Studies* 9: 30-41
- Hallgren, H. and R. Ghiasy (2017) 'Security and economy on the Belt and Road: Three country case studies', SIPRI Insights on Peace and Security No 2017/4, Stockholm International Peace Research Institute
- Hurley, J., S. Morris and G. Portelance (2018) 'Examining the debt implications of the Belt and Road Initiative from a Policy Perspective', *CGD Policy Paper* 121, Center for Global Development
- Lain, S. (2018) 'The potential and pitfalls of connectivity along the Silk Road Economic Belt', in M. Laruelle (ed) *China's Belt and Road Initiative and its impact in Central Asia*, The George Washington University
- Li, Y. (2018) 'The greater Eurasian partnership and the Belt and Road Initiative: Can the two be linked?' *Journal of Eurasian Studies* 9(2): 94-99
- Shrestha, M. (2017) 'Cooperation on finance between China and Nepal: Belt and Road Initiatives and investment opportunities in Nepal', *The Journal of Finance and Data Science* issue 3: 31-37
- Yuan, Y. (2017) 'Modeling Inter-country Connection from Geotagged News Reports: A Time-Series Analysis', in Y. Tan, H. Takagi and Y. Shi (eds) *Data Mining and Big Data: Second International Conference, DMBD 2017, Fukuoka, Japan, July 27 – August 1, 2017, Proceedings*, Springer International Publishing

Appendix 1: Regional Classification

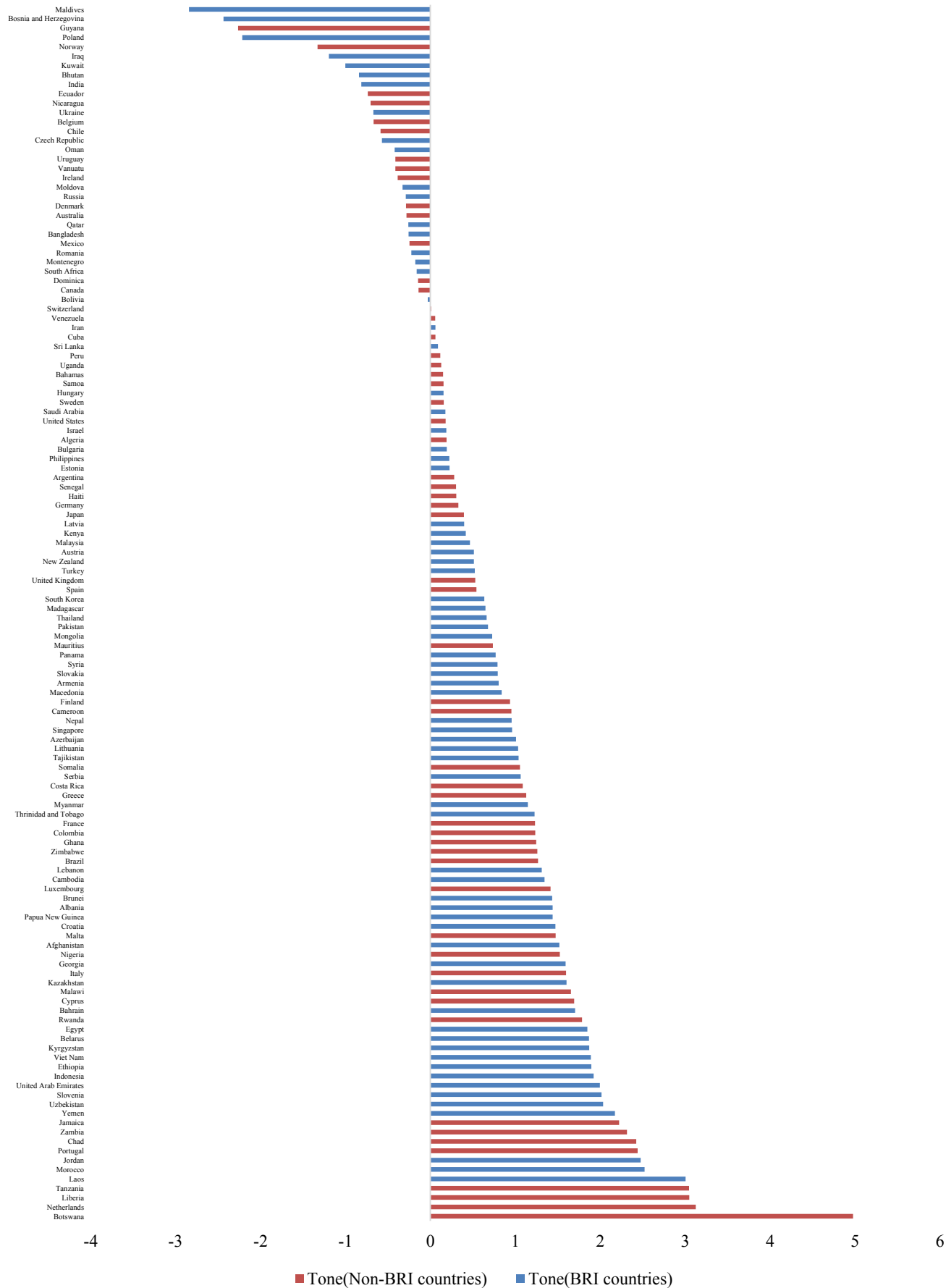
East Asia & Pacific	Central Asia	South Asia	Europe		North America	Latin America and the Caribbean	Middle East & North Africa	Sub-Saharan Africa
			EU	Non-EU				
Australia	Kazakhstan	Afghanistan	Austria	Albania	Canada	Argentina	Algeria	Botswana
Brunei	Kyrgyzstan	Bangladesh	Belgium	Armenia	United States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

Appendix 2: Narrow definition of the Belt and Road Initiative (BRI) countries and broad definition of BRI countries

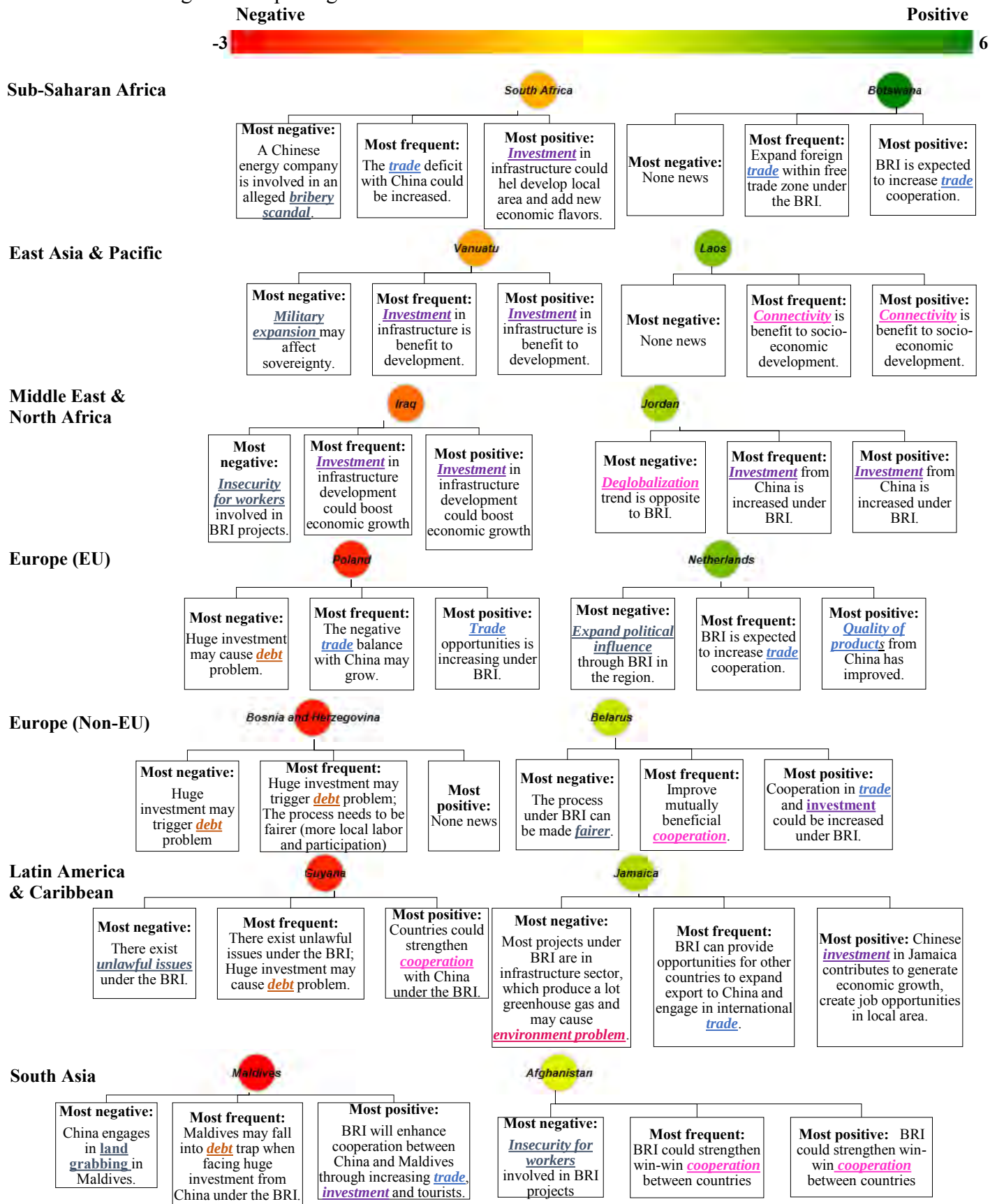
BRI country								Non-BRI country
Narrow BRI country								Broad BRI country
East Asia & Pacific	Central Asia	South Asia	Europe		Latin America and the Caribbean	Middle East & North Africa	Sub-Saharan Africa	
			EU	Non-EU				
Brunei	Kazakhstan	Afghanistan	Austria	Albania	Antigua and Barbuda	Egypt	Ethiopia	Bahrain
Cambodia	Kyrgyzstan	Bangladesh	Bulgaria	Armenia	Barbuda	Iran	Kenya	Bhutan
Indonesia	Tajikistan	Maldives	Croatia	Azerbaijan	Bolivia	Israel	Madagascar	India
Korea	Uzbekistan	Nepal	Czech Republic	Belarus	Guyana	Jordan	South Africa	Iraq
Laos		Pakistan	Estonia	Bosnia and Herzegovina	Panama	Kuwait	Senegal	Turkmenistan
Malaysia		Sri Lanka	Hungary	Georgia	Trinidad and Tobago	Lebanon	Rwanda	Yemen
Mongolia			Latvia	Macedonia		Morocco		
Myanmar			Lithuania	Moldova		Oman		
New Zealand			Poland	Montenegro		Qatar		
Niue			Romania	Russia		Saudi Arabia		
Papua New Guinea			Slovak Republic	Serbia		Syria		
Philippines			Slovenia	Turkey		United Arab Emirates		
Singapore				Ukraine		Tunisia		
Thailand								
Timor-Leste								
Vietnam								

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

Figure 7 Media sentiment on BRI in the world



Appendix 4: Topics of the most negative, most positive sentiment and most frequent mentioned for countries with best and worst image of BRI per region



Note: Trade-related topics are marked with blue, investment-related are marked as purple, debt-related are marked as brown, security-related including working conditions, geopolitics, unlawful issues are marked as navy blue, governance-related including are marked as pink, environment problem is marked as ruby.

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

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

Region	Country	Average tone	Percentage of articles related to trade or investment (%)	Percentage of articles related to topics other than trade and investment (%)
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)

Country	Tone	Tone Ranking
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)

Central Asian Country	Tone	Tone Ranking	South Asian Country	Tone	Tone Ranking
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)

EU Country	Tone	Tone Ranking	Non-EU Country	Tone	Tone Ranking
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)

Latin America & Caribbean	Tone	Tone Ranking	North America	Tone	Tone Ranking
Jamaica	2.22	1	United States	0.18	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

Region	Country	Best	Country	Worst
		Reason		Reason
Sub-Saharan Africa	Botswana	Chinese state-owned enterprises and private firms' active investment in Botswana's infrastructure projects (Chen, 2009). For example, China helped Botswana build the first "spaghetti road" to relieve the traffic pressure ⁴ .	South Africa	As a leading country in Africa, it is concerned that China's active participation in the region may eliminate its influence, also is afraid to fall into the "loan trap" due to debt expansion ⁵ .
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. ⁶	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 ⁷ .
Middle East & North Africa	Jordan	Jordan has the oil development cooperation with China ⁹ . 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 ¹⁰ .
Europe (EU)	Netherlands	The key reason behind the image is its ambition to extend cooperation with China to finance the Belt and Road.	Poland	Polish companies' involvement in China's market is limited. Also, Poland is aware of China's increasing influence in

⁴ http://www.xinhuanet.com/english/2017-06/26/c_136394003.htm

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

⁶ http://www.nationmultimedia.com/detail/big_read/30326442

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

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

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

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

		Also, a railway has already connected Yiwu (a city of China) and Amsterdam and enables Netherlands to take the role to gather and deliver product across Europe from and to China ¹¹ .		Central may become a geopolitical threat ¹² . Last but not the least, Poland is worried about the termination of Chinese investment ¹³ .
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 ¹⁴ .	Bosnia and Herzegovina	Bosnia and Herzegovina is aware of the debt trap ¹⁵ . Also, Bosnia and Herzegovina has received an energy project from China, but it has caused massive environmental concerns in the country ¹⁶ .
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 ¹⁷ .	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 ¹⁸ .
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 ¹⁹ .	Maldives	Belt and Road-related financing projects in Maldives are over \$1400 million and bring Maldives into 'debt trap' ²⁰ .

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

¹² <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>

¹³ https://logistyka.wnp.pl/chinczycy-beda-hamowac-inwestycje-wzdluz-nowego-jedwabnego-szlaku,304330_1_0_0.html

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

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

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

¹⁷ http://www.jamaicawatcher.com/business-report/caribbean-must-dynamicaly-engage-with-china_126355?profile=1283&template=MobileArticle

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

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

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

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
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)