The Chinese Debt Trap Diplomacy Narrative: An Empirical Analysis

Kerry Liu*

ORCID: https://orcid.org/0000-0003-0581-4049

Latest Version: October 2022

The final version of this article has been published by *Statistics, Politics, and Policy*. You can access it by following the link below:

Link to the published article

* Kerry Liu is an independent scholar in Australia. E-mail: kerry.luke@gmail.com

The Chinese Debt Trap Diplomacy Narrative: An Empirical Analysis

China's debt trap diplomacy has been debated among academia, think tanks, and the policymaking community. Unlike previous research, which mainly focuses on China's lending practice and strategic intentions, this study looks at the measurement of this narrative and its relations with the Belt and Road Initiative (BRI) and the China threat narratives. In particular, based on Google Trends search results from 1 February 2018 to 7 November 2021, this study creatively created weekly time series data to measure the narratives. Based on an autoregressive distributed lag model, this study finds that the BRI narrative and the China threat narrative make significant contributions to the information content used to formulate the debt trap diplomacy narrative. Results based on sub-datasets show that these significant relations are mainly driven by the English-speaking Indian public and that these relations are insignificant in the United States. This study contributes to the literature on China's debt trap diplomacy by bringing solid empirical evidence and to academia as well in methods by presenting a (still) new quantitative approach to international relations.

Keywords: debt trap diplomacy; belt and road initiative; China threat; autoregressive distributed lag (ARDL) model; Google Trends

Introduction

On 21 July 2021, Montenegro, an Adriatic country with 620,000 people, secured a deal with four international banks to ease its nearly $1 billion debt owed to China (Reuters, 2021). As argued by Đorđević (2021), Montenegro just narrowly avoided the Chinese debt trap. In fact, as an example of China's "debt trap diplomacy", the case of Montenegro has been extensively covered by media such as Birnbaum (2021), Frances 24 (2021), and NPR (2021). The term "debt trap diplomacy" was originated by Chellaney (2017), especially referring to "Beijing reputedly lending large sums to poorer countries, mostly in Africa, to build infrastructure, with the intention of seizing the infrastructure as collateral when the country inevitably defaults on

the interest repayment" (Fabricius, 2020). The terms of the loans are often vague (Horn, Reinhart & Trebesch, 2020).

China's "debt trap diplomacy" is hypothesised to be closely associated with China's Belt and Road Initiative (BRI). The BRI is a Chinese government-led worldwide infrastructure development project that was introduced in 2013. 140 countries and 31 international organisations have signed collaboration agreements, memo contracts, or other similar instruments with the Chinese government as of January 30, 2021 (Source: https://www.yidaiyilu.gov.cn/gbjg/gbgk/77073.htm (in Chinese). It is the official website of the Chinese BRI). While the BRI may herald in a new era of trade and growth for Asia and Africa's economies, some critics fear that China is trapping borrowing governments in a debt trap in order to achieve China's strategic objectives (Chatzky and McBride, 2020).

A few studies have already examined China's "debt trap diplomacy," arguing whether such a term is accurate (see Section 1: Literature Review for details). Rather than focusing on China's lending practice, strategic intentions, or on the consequences of the debt trap diplomacy narrative, this study examines the measurement issue of narratives. In particular, based on Google Trends search results, this study creatively created a weekly time series data set from 4 February 2018 to 7 November 2021 to measure the narrative of debt trap diplomacy. Time series modelling is employed to examine its relations with other variables such as the BRI and China threat narratives. This study contributes to the literature on China's debt trap diplomacy by bringing solid empirical evidence from the perspective of the general public and as well as contributes to academia in methods

The structure of this paper is as follows: Section 1 reviews relevant literature. Section 2 introduces the data source, i.e., Google Trends, including its characteristics, studies that have applied this data source, its role in measuring a narrative, and some practical issues when applying Google Trends. Based on the dataset Google Trends, Section 3 introduces the

dependent, i.e., debt trap diplomacy narrative, and independent variables, i.e., the BRI and the Chian threat narratives. Section 4 conducts a multivariate analysis by employing an Autoregressive Distributed Lag (ARDL) model as well as a series of robustness tests. Section 5 concludes this paper.

1. Literature Review

A few studies have already examined China's "debt trap diplomacy," arguing whether such a term is accurate. Some scholars support this argument. For example, according to the inventor of the term, Brahma Chellaney, Chellaney (2017) argued that China is very good at using economic tools to advance its geostrategic interests. Parker and Chefitz (2018) argued that China used the accumulated debt to achieve strategic goals, such as filling out a "String of Pearls" and projecting power across trading routes; undermining and fracturing the US-led regional coalition contesting China's South China Sea claims; and enabling the People's Liberation Army Navy to push through the "Second Island Chain" into the blue-water Pacific. Some scholars do not support this claim. For example, by investigating China–Africa relations, Singh (2020) found that the theory of debt trap diplomacy does not accurately describe Chinese finance. In particular, Chinese loans are not a major driver of Africa's debt distress; China did not engage in predatory behaviour toward borrowing countries; and Chinese lending can provide policy space to developing countries. Based on available evidence, Hameiri and Jones (2020) debunked the myth of "debt trap diplomacy", concluding that current BRI projects are primarily driven by economic factors; China's development financing system is too fragmented and poorly coordinated to pursue detailed strategic objectives; in addition, the governments of developing nations, along with their related political and economic interests, determine the specifics of BRI projects that are implemented on their soil. Brautigam (2020a) argued that the

rise of the debt trap diplomacy narrative was due to fear-based human negativity bias. By re-examining the cases of China's international involvement, including in Angola, Djibouti, Sri Lanka, and Venezuela, Brautigam (2020a) concluded that this meme of debt trap diplomacy is unjustified. In a review article, Kairy (2021) concluded that very few peer-reviewed journal articles were written to support the concept of Chinese debt trap diplomacy.

Some scholars are in the middle of this debate. For example, using data on African debt, Were (2018) argued that the debt trap narrative underestimates the decision-making power of African governments. However, African governments also need to consider some serious issues regarding Chinese debt. Shaikh and Chen (2021) concluded that there are clearly huge concerns about China's debt trap brought about by the China–Pakistan Economic Corridor project. Taking the case of Ethiopia, while not agreeing with such an argument as "a brand-new type of neocolonialism", Tarrósy (2020) pointed out African vulnerability as a result of Africa's escalating dependence on Chinese loans. Carmody (2020) also argued that rising debt levels are both a vector and an outcome, which can lead to a debt trap in some cases. That is to say, while the meme of debt trap diplomacy is misplaced, it also has some grounding in reality. Furthermore, while China may not be intentionally engaging in debt trap diplomacy, another essential issue is whether intentionality matters. In a recent paper, Carmody, Taylor, and Zajontz (2022) argued that the BRI is a multi-vector and -sector spatial fix with objectives such as addressing chronic overaccumulation of Chinese capital and materials and as well as geopolitical dimensions. In the context of the Covid-19 pandemic, there are rising concerns over a looming debt crisis in Africa and the questionable economic sustainability of some BRI projects.

DeBoom (2020) examined China's debt trap diplomacy from the perspective of narratives. For example, popular narratives often characterize a sovereign debtor as the one that holds all the cards. Narratives such as debt trap diplomacy also affect geopolitical

perceptions, such as China's image around the world. There are multiple state and non-state actors regarding debt trap diplomacy politics.

Rather than focusing on China's lending practice and strategic intentions or on the consequences of the debt trap diplomacy narrative as conducted by DeBoom (2020), this study examines the measurement issue of narratives. In particular, based on Google Trends search results, this study creatively created a weekly time series data set from 4 February 2018 to 7 November 2021 to measure the narrative of debt trap diplomacy. Time series modelling is employed to examine its relations with other variables such as the BRI and China threat narratives.

2. Data source

Several of the author's studies conducted a general introduction to Google Trends and its applications in various fields (not cited but available upon request). Author (2022) interpreted Google Trends as a measurement of a narrative in international relations. As this interpretation is still new to international relations, based on Author (2022), Google Trends is further discussed in this section, including its characteristics, studies that have applied this data source, its role in measuring a narrative, and some practical issues when applying Google Trends.

2.1 Introduction

Google Trends (https://trends.google.com/trends/) is a Google product that analyses the popularity of Google search queries across different countries and languages. Anonymity, topic categorisation, and aggregation are some of its characteristics. While Google Trends offers real-time data for the last 7 days and monthly data for a longer period, this study relies on weekly data. Higher frequency data could suggest that the relations among variables are more sensitive. While just samples of Google searches are used in Google Trends, this is sufficient

because Google handles a significant number of searches every day. Furthermore, Google Trends search results are normalised to the time and location of a query and displayed on a scale of 0–100, with each point on the graph divided by the highest point, or 100. It means that regions with the same amount of interest in a phrase can have vastly different total search volumes. By normalising data, it is then feasible to compare searches across periods and regions. In a nutshell, the figures represent search interest for the selected location and time period in relation to the map's highest point. A score of 100 means the term is at its most popular, while a score of 50 means it is half as popular; and a score of 0 means there isn't enough data to determine the term's popularity.

2.2 Studies on Google Trends

Google Trends started in 2004 and became available to the public in 2006. It has been applied in various fields by many studies. In a review article, Jun, Yoo, and Choi (2018) conducted a network analysis on 657 research papers that used Google Trends during 2006-2017 and concluded that Google Trends has been applied in fields such as information systems or computer science, health care, economics, and finance.

From the viewpoint of communications, Google Trends is considered a measurement of the public agenda, i.e., those issues that the public thinks are most important (Scharkow and Vogelgesang, 2011). However, they did not examine the information content of Google Trends queries. Based on empirical evidence, Maurer and Holbach (2016) further concluded that media coverage is closely correlated with Google Trends. Using a range of policy issues such as health care, global warming, and terrorism covered by the *New York Times* as examples, Ripberger (2011) also confirmed this association. Based on empirical evidence, Oehl, Schaffer, and Bernauer (2017) also found that the empirical metrics of media salience and politicisation match Google Trends (and survey data) fairly well. According to Dearing, Rogers, and Rogers (1996), the agenda-setting effect "is not the result of receiving one or a few messages but is

due to the aggregated impact of a very large number of messages, each of which has a different content but all of which deal with the same issue". So, in essence, Google Trends can be interpreted as a measurement of the aggregated effects of agenda-setting, i.e., policy, media coverage, and individuals' issue attentiveness, on the general public.

2.3 Narrative Measurement

According to Hinchman and Hinchman (1997), narratives are "discourses with a clear sequential order that connect events in a meaningful way…and…offer insights about the world and/or people's experiences of it." Being different from arguments, which "have premises and conclusions," narratives contain "beginnings, middles, and ends" (Roe, 1992). There are many studies and theoretical reflections on different aspects of narratives and related aspects, such as critical discourse analysis (Fairclough, 2013) and framing theory (Entman, 1993). Hagström and Gustafsson (2021) conducted a comprehensive review of studies on theoretical and methodological issues regarding narratives in international relations.

However, the existing studies did not resolve the issue of how to measure a narrative. That is to say, while many studies have examined the construction of a narrative, one important issue is the effect of the narrative on the general public, such as how big. According to the media system dependency theory (Ball-Rokeach and DeFleur, 1976), the media is one of the key sources of foreign affairs knowledge for non-specialists. For example, we are mostly aware of China threat as a result of media reporting. More reports or analyses of China threat may be the result of a higher intensity of China's aggressive policies or actions. Additionally, more reports or analyses may result in increased online search activity. This is the rationale for measuring a narrative using Google search activities. While a narrative is closely associated with the quality and/or frequency of articles/viewpoints, they are not perfectly correlated. Google Trends may be able to measure the true and aggregated impact of international events on the general public.

2.4 Practical Issues

While it may be argued that because internet users are not demographically representative of the general population, some groups are underrepresented among internet users. Based on empirical evidence in the United States, Mellon (2014) concluded that the demographic differences between Internet users and non-Internet users are unlikely to have significant biases. Another concern is that the meaning of search terms used may not be consistent with their original meaning (Gruszczynski and Wagner, 2017; Ripberger, 2011). This issue emerges mainly from single-word searches. As this study uses complicated (two-word or three-word) key phrases, this issue has become less severe, if not totally resolved. Furthermore, if possible, different key phrases are used, and the peak data are checked for content validation purposes.

3. Variables

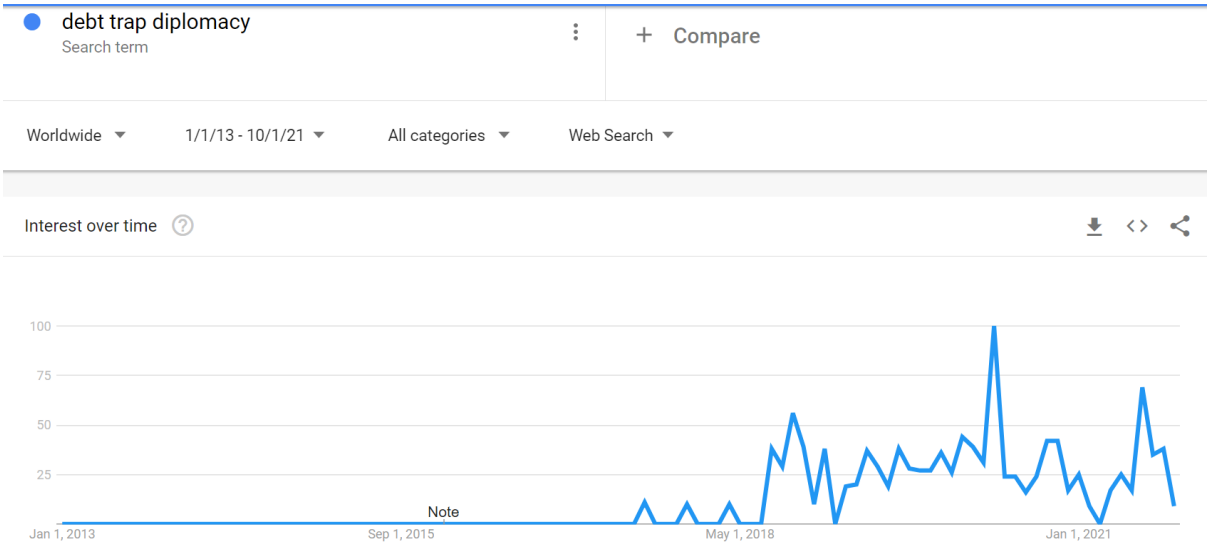
In this section, the dependent variable, i.e., the debt trap diplomacy narrative, is discussed in part 3.1. The independent variables, i.e., the BRI and the China threat narratives, are discussed in part 3.2.

3.1 Dependent Variable

Google Trends generates more results if "debt trap diplomacy" was chosen as the key phrase than "debt-trap diplomacy" (see Appendix 1). It means that the former one is more popular, and as a result, "debt trap diplomacy" was chosen. Figure 1 shows the results of a search for the key phrase "debt trap diplomacy", interpreted as the volume of debt trap diplomacy narrative worldwide.

Figure1. Search results for "debt trap diplomacy", Google Trends data, worldwide

A. Time period: January 2013 – October 2021; monthly data



B. Time period: 4 February 2018 – 7 November 2021; weekly data

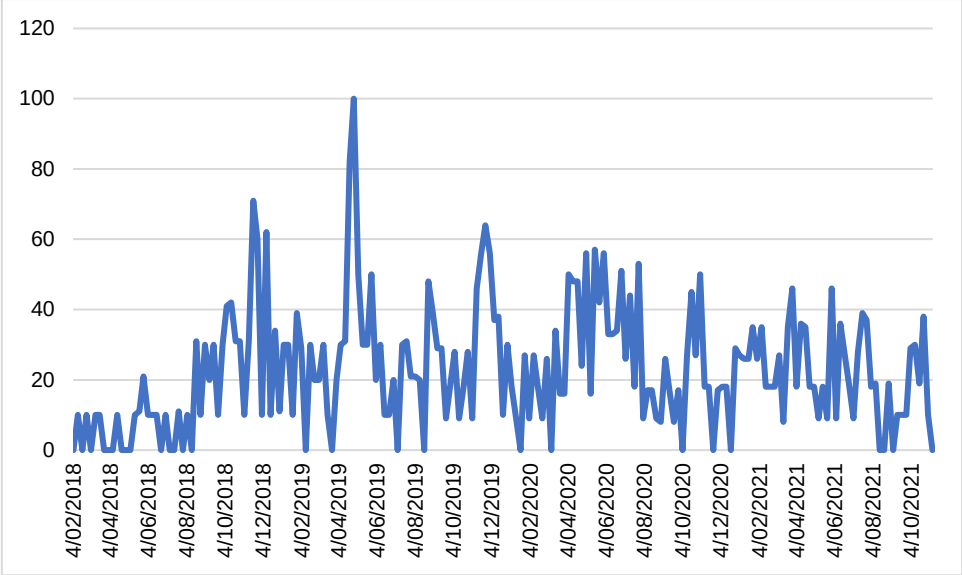


Figure 1-A shows that the first momentum of China's debt trap diplomacy narrative happened in August 2017. It is primarily related to a 99-year lease agreement in Colombo to develop Hambantota Port, signed by a Chinese firm and the Sri Lanka Ports Authority on 29 July 2017 (Bosu, 2017). This development almost immediately attracted the attention of scholars and analysts commenting on China's debt trap diplomacy and its implications. For example, from the viewpoint of Sri Lanka, Moramudali (2017) argued that debt diplomacy had put Sri Lanka into difficult situations. From the viewpoint of India, Dutta (2017) argued that

with the increasing Chinese presence in the Indian Ocean, India can hardly take the latest development lightly. Pant (2017) argued that China is using debt trap diplomacy to force smaller states to abide and India is facing increasing challenges. Cruz (2017) summarised relevant comments on this event.

Weekly data (Figure 1-B) shows that the debt trap diplomacy narrative really took off in 2018. This is consistent with previous analyses such as Ferchen and Perera (2019). For this study, the time period from 4 February 2018 to 7 November 2021 was chosen for statistical analysis.

Figure 1-B shows that the largest peak of the narrative of China's debt trap diplomacy happened in the week of 28 April 2019, followed by the second-largest peak in the week of 21 April 2019. The surge of search interest is primarily driven by the second Belt and Road Forum for International Cooperation held on 25-27 April 2019 (see part 3.2.1 for additional information). For example, commenting on China's second Belt and Road Forum, Green (2019) warned that some poor countries may face the challenges of achieving self-reliance. Regarding the controversial case of Hambantota port, Sri Lanka's ambassador in Beijing rejected the fears of China's debt trap diplomacy (Zhou, 2019). While China was accused of its debt trap diplomacy, China may use this opportunity to defend this policy (Horby and Zhang, 2019). There are also comments on China's debt trap diplomacy such as from *Wall Street Journal* (Taplin, 2019) and *Bloomberg News* (Browne, 2019). In a commentary published by the *New York Times*, Brautigam (2019) argued that the risks of the BRI, such as the debt trap diplomacy, are often overstated or mis-characterized. Rhodium Group reviewed 40 cases of China's external debt renegotiations and found that asset seizures are a rare occurrence and China's leverage in debt renegotiations is limited (Kratz, Feng, and Wright, 2019).

The surge of search activities is also related to Covid-19 and its impact on the debt-laden belt and road projects. For example, during the week of 12 April 2020, Brautigam (2020b)

broadly discussed China's debt relief practices. Davidson (2020) argued that Covid-19 could strengthen China's debt hold on struggling nations. Economics Explained (2020) concluded that China might be the big winner of the 2020 Covid-19 crisis. During the week of 11 October 2020, after the debt trap diplomacy theory was debunked by Hameiri and Jones (2020), Devonshire-Ellis (2020) suggested looking at opportunities for global investors to exploit the infrastructure now built. Jones (2020) argued that China's BRI is not a master plan but rather a mess as a result of fragmented authoritarianism and poor coordination. Dollar (2020) discussed the impact of BRI over the last seven years, as well as its economic and geopolitical opportunities and challenges. For example, Dollar (2020) concluded that America's fear of the BRI may be exaggerated. As a policy response, the US has launched a new development finance institution to compete with China, but this may not change the picture very much. Dollar (2020) also presented a few suggestions for the US, such as: embracing new and deep trade agreements with developing countries; leading a reform of the multilateral banks that would centre around infrastructure projects; dialling down the anti-China rhetoric; and encouraging China to be more transparent. Several articles also examined China's debt practices in particular regions such as Africa (Kazeem, 2020), the Western Balkans (Alloussi et al., 2020), and Sri Lanka (SCMP, 2020).

3.2 Independent Variable

3.2.1 Belt and Road Initiative (BRI)

As discussed at the beginning of this paper, the debt trap diplomacy narrative may be closely associated with China's BRI. The BRI infrastructure projects may bring potential trade, investment, and job opportunity gains to the host countries. At the same time, the debt finance may also be used to entrap nations in order to achieve China's strategic objectives. For example,

Xu and Li (2020) argued that "China's debt trap diplomacy" is an example the West uses to attack the BRI. Lai, Lin, and Sidaway (2010) also argued that discourses about "predatory lending" and "debt trap" feature in many commentaries and reports about the BRI.

Many studies have examined the BRI. This project is widely considered a reflection of China's ascendance in the global arena (Yu, 2017; Maçães, 2019). While the BRI has significantly strengthened bidirectional trade relations between China and BRI countries (Wu and Chen, 2021), it is controversial whether the BRI has promoted Chinese Outward FDI (Yu, Qian, and Liu, 2019; Li, Luo, and Vita, 2020). Chinese Outward FDI in the BRI countries can promote economic growth (Zhang, Cheng, and He, 2019) but may cause debt burden (Hurley, Morris, and Portelance, 2019), stranded infrastructure projects (World Bank, 2019), and permanent environmental degradation (Ascensão et al., 2018). While previous studies mainly focus on the fundamental analysis, this study focuses on the measurement of the BRI narrative.

Figure 2 shows the search results for the key phrase "belt road", interpreted as the volume of the BRI narrative worldwide.

Figure 2. Search results for "belt road", Google Trends weekly data, 4 February 2018–7 November 2021, worldwide

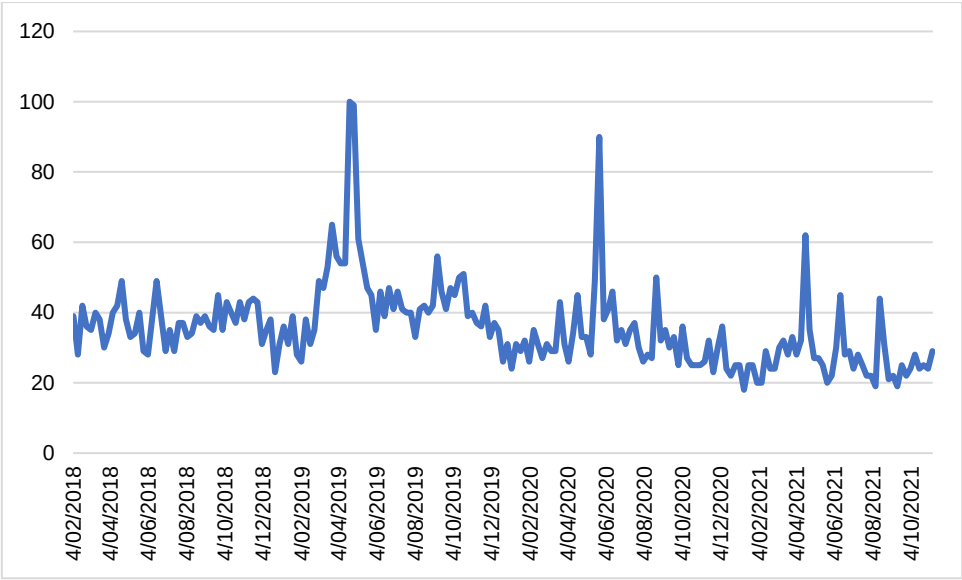


Figure 2 shows that the largest peak in China's BRI narrative happened in the week of 21 April 2019, followed by the second-largest peak in the week of 28 April 2019. They are related to the second Belt and Road Forum for International Cooperation, held on 25-27 April 2019. The third-largest peak happened in the week of 24 May 2020. It is related to a probable signing deal between Australia's state of Victoria and China, as well as the subsequent controversies (for more details, please see Author, 2022b).

3.2.2 China Threat (CT)

The debt trap diplomacy narrative may also be related to the China threat narrative. For example, Maluki, Patrick, and Lemmy (2029) argued that, while there are genuine concerns over China's lending practices, other factors also play a significant role in promoting the discourse of Chinese debt trap diplomacy. And these factors are all centered on China's perceived threats to the United States' strategic interests. Xu and Li (2020) also argued that the notion of China's debt trap diplomacy is related to some countries' anxiety about China's rise. Carmody (2020) argued that the meme of debt trap diplomacy is partially driven by "racialized fears" of "the rise of China". Were (2018) also argued that "Western accounts of Chinese lending to Africa have frequently been relatively sinophobic".

According to Vangeli (2018), the term "China Threat theory" refers to fatalistic narratives and contemplations about the world's future that are fuelled by anxiety, uncertainty, and fear in response to China's rise. The China threat theory assumes that China cannot and will not rise peacefully, that it is interested in and actively seeks to subvert the West and the current world order, and that the West must restrict China's rise to prevent serious planetary consequences.

The "China threat" has been a prominent international subject in Western and non-Western discourses since the 1990s, according to Song (2015). Various studies have examined

many issues such as Confucius Institutes (Zhou and Luk, 2016), Chinese outbound Foreign Direct Investment (FDI) (Zeng and Li, 2019), the framework of China-Central and Eastern European Relations (16+1 mechanism) (Pavlievi, 2018), and China's high-speed railway diplomacy in Southeast Asia (Pavlievi and Kratz, 2018) and so on. A few studies also examined the construction of the China threat narrative (Rogelja and Tsimonis, 2020; Campion, 2020). Unlike previous studies, this study focuses on the measurement of the China threat narrative.

Figure 3 shows the search results for the key phrase "China threat", interpreted as the volume of the China threat narrative worldwide.

Figure 3. Search results for "China threat", Google Trends weekly data, 4 February 2018–7 November 2021, worldwide

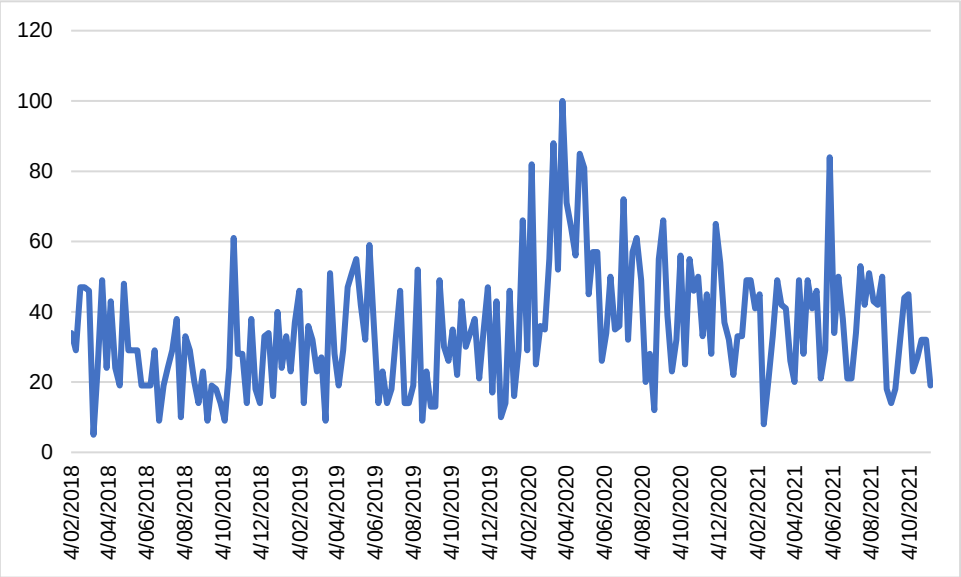


Figure 3 shows that the largest peak in the China threat narrative happened in March/April 2020. The surge of search activity is primarily related to Covid-19. The second-largest peak happened in the week of 30 May 2021. This week, China warned of a "nuclear showdown" with the US (for details, please see Author, 2020b).

4. Regression

In this section, the ARDL models are employed to analyse the factors that may cause the debt trap diplomacy, including model specification in part 4.1, presentation of results in part 4.2, and a series of robustness tests in part 4.3.

4.1 Model Specification

The statistical model adopted is ARDL, which is a standard least-squares regression with lags of both the dependent variable and explanatory variables as regressors. As discussed in Section 3, the dependent variable is the debt trap diplomacy (DTD) narrative and the independent variables employed in the regression analysis are the BRI narrative and the China threat (CT) narrative. It is possible that these independent variables may also be correlated, meaning that there may be multilinearity issues. One way to reduce structural multicollinearity is to standardise the variables by subtracting the means. The Variance Inflation Factors (VIFs) are used to detect this issue among predictors in a multiple linear regression model (Belsley, Kuh, and Welsch, 2005). Craney and Surles (2002) suggested that the rules of thumb for large VIFs are 5 or 10. There may also be endogeneity issues. However, this problem is unlikely to arise as regressors are typically lagged levels. Granger causality tests (see Appendix 2) confirm the unidirectional relations between *DTD* and *BRI*. While the *CT* may be endogenous, this only becomes a problem for zero lag order. If the *CT* is treated as endogenous, the fixed regressors of five lag orders of *CT* rather than dynamic ones were chosen. The results remain statistically unchanged (not reported, but available upon request). All variables are stationary. The model specification is as follows:

$$DTD\_Ln_t = \delta 0 + \delta 1\ BRI_{t-i} + \delta 2\ CT_{t-i} + \varepsilon_t \quad (1)$$

Where *DTD* represents the normalized volume of Chinese debt trap diplomacy narrative worldwide (see Figure 1-B), *BRI* represents the normalized volume of the BRI narrative

worldwide (see Figure 2), *CT* represents the normalized volume of the China threat narrative worldwide (see Figure 3), and ε is the residual term. The time period is 4 February 2018 – 7 November 2021 and all data are weekly.

4.2 Results

The results are presented in Table 1.

Table 1. The BRI and the China Threat's Roles in Promoting the Debt Trap Diplomacy Narrative

Dependent Variable: Debt Trap Diplomacy (DTD) (the normalized volume of the narrative of China's debt trap diplomacy around the world). Independent variables: BRI (the normalized volume of the narrative of China's belt and road initiative), China Threat (CT) (the normalized volume of the China threat narrative around the world),

Method: ARDL. Included observations: 195 after adjustments. Maximum dependent lags: 12 (Automatic selection). Model selection method: Akaike info criterion (AIC). Dynamic regressors (12 lags, automatic): CT BRI. Fixed regressors: C. Selected Model: ARDL(2, 0, 0)

A. Short-run Coefficients

Variable	Coefficient	Prob
DTD (-1)	0.218	0.8%
DTD (-2)	0.265	0.1%
BRI	0.332	1.6%
CT	0.208	0.2%
C	1.255	0.0%

Adjusted R-squared	0.300

B. Long-run Coefficients

Variable	Coefficient	Prob.
BRI	0.641	2.1%
CT	0.402	0.3%
C	0.134	94.7%

Table 1 reports both short-run and long-run coefficients. The ARDL Bounds test shows the existence of long-run relations (see Appendix 3). While short-run and long-run coefficients are consistent, the lag orders from short-run relations are largely noise. In the long run, the lag orders disappear.

First, a series of tests are conducted to check the model's specifications. Coefficient diagnostics (see Appendix 4) show that the VIFs are smaller than 1.4 for major variables, i.e., the *BRI* and *CT*, suggesting that multicollinearity issues can be safely ignored. Residual tests (see Appendix 5) reveal no autocorrelations. The kurtosis value is below 3, indicating a normal distribution (see Appendix 5). In addition, the adjusted R-squared is 0.300. While the heteroskedasticity test shows the presence of heteroskedasticity, white heteroskedasticity-consistent standard errors were chosen. The Ramsey RESET (not reported, but available upon request) shows no evidence of the existence of a non-linear functional form. In a word, the ARDL model adopted in this study is acceptable or good.

Table 1 shows that for both short-run and long-run relations, the coefficients of *BRI* are significantly positive at a 5 percent confidence level. It suggests the BRI narrative makes a

significant contribution to the information content used to formulate the debt trap diplomacy narrative. It may not be surprising. As discussed previously, the debt trap diplomacy narrative is closely associated with the BRI.

Table 1 also shows that the coefficients of *CT* are significantly positive at a 5 percent confidence level. For the short-run relations (Table 1-A), the China threat narrative can significantly contribute to the debt trap diplomacy narrative. At the same time, in the long run, these relations still hold.

4.3 Robustness Tests

There may be other factors that can potentially contribute to the relations. For example, Carmody (2020) discussed some countries' dependence on Chinese debt, which could be used by China for geopolitical objectives. Kratz, Feng, and Wright (2019) concluded that debt sustainability concerns are at the centre of current criticism of China's BRI. In fact, the World Bank Group and the IMF worked out a Debt Sustainability Framework and conduct regular Debt Sustainability Analyses for low-income countries (Hakura, 2020). Various key phrases, including "debt dependence", "debt sustainable", and "debt sustainability", were tried. At last, the key phrase "debt sustainability" was chosen. Granger causality tests show that, for the worldwide data, discussions on debt trap diplomacy can significantly cause discussions on debt sustainability, but not the other way around. It means that debt trap diplomacy may cause concerns over debt sustainability, but debt sustainability is not a factor contributing to debt trap diplomacy. For the sub-datasets from India and the US, either way of relations is insignificant.

As discussed in part 3.1, "debt-trap diplomacy" is also a possible key phrase, although it is less popular than "debt trap diplomacy". If the key phrase "debt-trap diplomacy" was chosen, the results would remain statistically unchanged (not reported but available upon request).

While previous analysis of this study used worldwide data, one issue is that many people in the world have difficulties accessing the internet or Google. So, the results mainly reflect the opinions of the English-speaking public who can access the internet and Google. In this part, the regions of the US and India are in particular chosen for robustness tests. Also, worldwide data in any language are also used.

As argued by Yang and Van Gorp (2021), among the five countries including India, UK, US, Japan, and Australia, India was arguably the most sustained and vehement skeptic of the BRI, and the US government repeatedly pointed to the opaqueness of BRI projects and associated "predatory lending practice". Google Trends search results also show that India is ranked No.1 in terms of interest by region, followed by the US. For countries including the UK and Australia, Google Trends almost generates no results for "debt trap diplomacy". For Japan, the main obstacle is the language barrier (in validating contents). So, in this part, the Indian and US data are separately conducted. The results are presented below.

Table 2. Robustness Tests: Long-run Coefficients in India and the US

Dependent Variable: Debt Trap Diplomacy (DTD) (the normalized volume of the narrative of China's debt trap diplomacy. The log form is adopted for Indian data). Independent variables: BRI (the normalized volume of the narrative of China's belt and road initiative), China Threat (CT) (the normalized volume of the China threat narrative around the world),

A: India

Method: ARDL. Included observations: 156 after adjustments. Maximum dependent lags: 12 (Automatic selection). Model selection method: Akaike info criterion (AIC). Dynamic regressors (12 lags, automatic): BRI CT. Fixed regressors: C @TREND. Selected Model: ARDL(5, 0, 2)

B. The US.

Method: ARDL. Included observations: 178 after adjustments. Maximum dependent lags: 12 (Automatic selection). Model selection method: Akaike info criterion (AIC). Dynamic regressors (12 lags, automatic): BRI CT. Fixed regressors: C. Selected Model: ARDL(1, 0, 0)

	A: India		B: US	
Variable	Coefficient	Prob.	Coefficient	Prob.
BRI	0.031	5.7%	0.060	66.2%
CT	0.027	1.2%	-0.090	44.0%
C	0.739	2.4%	-0.091	96.2%
@TREND	0.009	1.8%	NA	
Adjusted R-squared	13.7%		0.7%	

Table 2 shows some interesting results. For India, the conclusions drawn in part 4.2 still hold. At the same time, all relations in the US have become insignificant. As India dominates the search interest in China's debt trap diplomacy, it seems that the significant relations resulted from the BRI and the China threat worldwide are mainly driven by the English-speaking Indian public. This may explain why the debt trap diplomacy narrative originated from India.

At the same time, the US public's opinions are particularly interesting. DeBoom (2020) argued that incomplete stories may bring the greatest danger. The worldwide debt trap diplomacy narrative is dominated by the perspective of China's rise. It is also noted that there are also different stories, such as Hameiri and Jones (2020), Brautigam (2020a), and so on. Dollar (2020) also concluded that it is hard to find evidence of debt trap diplomacy. It turns out

that, as this study finds, the American public generally did not buy the story that there is a connection between China's BRI or the China threat narrative and the debt trap diplomacy. Based on a comprehensive data set on foreign policy opinion changes in the US from the 1930s to the 1980s, Shapiro and Page (1988) concluded that America's collective opinion has tended to be stable and rational. Page and Shapiro (2010) further concluded that America's collective public opinion is "remarkably coherent," reflecting "a stable system of values shared by the majority of Americans" and responding "sensitively to new events, arguments, and information reported in the mass media." They concluded that America has a "rational public." The American public's opinion toward China's debt trap diplomacy seems to be another example of a "rational public."

By reviewing American public opinion and policy data from 1935 to 1979, Page and Shapiro (1983) found that public opinion is often a proximate cause of policy, affecting policy more than policy influences opinion. This may explain why the Biden administration has dialled down its rhetoric on China's debt trap diplomacy, as suggested by Dollar (2020).

Lastly, Google Trends provides topic search. Search terms show matches for all terms in the query, in the language given. Topics are a group of terms that share the same concept in any language. For example, when we entered the "debt trap diplomacy", the topic "Debt-trap diplomacy (Topic)" was automatically displayed. Similarly, the topics "China Threat Theory (Topic)" and "Belt and Road Initiative (Topic) were automatically displayed. The choice of region is "worldwide." First, the ARDL Bounds Test shows no existence of long-run relations. Second, the short-run relations (not reported but available upon request) show a complicated lag structure and are difficult to interpret. It may show that, from the worldwide perspective in any language, the public has a non-single-sided and complicated viewpoint toward China's BRI, China threat, and China's debt trap diplomacy.

It is noted that Continent Europe is blank in this study. Further studies can further examine other non-English speaking regions.

5. Concluding Remarks

While many studies have examined various aspects of China's debt trap diplomacy, including lending practices, strategic intentions, narrative construction, and so on, they are mainly from the perspectives of policymakers, lending institutions, media, or other agents. For the first time in the academic literature, this study looks at this issue from the perspective of the general public. While the roles of public opinions vary in different countries, they certainly exert influence on policymaking. Also, this study presents a new quantitative approach to international relations and contributes to academia in methods.

In particular, based on Google Trends search results, this study creatively created a weekly time series data from 4 February 2018 to 7 November 2021 to measure the narrative of debt trap diplomacy. While the first momentum of China's debt trap diplomacy narrative happened in August 2017, it really took off in 2018. Also, the largest peak of search interest that happened in the weeks of 21 April and 28 April 2019 was primarily driven by the second Belt and Road Forum for International Cooperation held on 25-27 April 2019. Based on an ARDL model, this study finds that both in the short run and long run, the BRI narrative and the China threat narrative make significant contributions to the information content used to formulate the debt trap diplomacy narrative. Further analysis based on sub-datasets shows that this significance is mainly driven by the English-speaking Indian public. At the same time, these relations are insignificant in the US. According to the argument that public opinion is often a proximate cause of policy in the US, this may explain why the Biden administration has dialled down its rhetoric on China's debt trap diplomacy.

From the viewpoint of academia, this study contributes to academia by introducing a new data source that has the potential to generate rich time series data, and as a result, univariate or multivariate time series modelling with high-frequency (monthly, weekly, or daily) data in international relations becomes feasible. This study, like Author (2020a), can be seen as an example of the applications of Google Trends in international relations. There are some practical issues that need to be carefully considered when applying Google Trends data. For example, the selection of key terms should be done with care. Validation of data, such as examining the content of (a few) peaks to ensure that it matches the supposed interpretation, may be required. Extra attention should also be paid to those low-frequency search terms. The regression results based on Google Trends data should be supported by fundamental analysis.

Declarations

- Financial Support: This research received no specific grant from any funding agency, commercial or not-for-profit sectors
- Competing interests: The authors report there are no competing interests to declare
- Data availability statement: The data that support the findings of this study are available from the corresponding author upon reasonable request

References

Alloussi, D., Guce, A., Klein, F., Milutinovic, N., Planincic,V., Xhambazi, V. (2020, October 12). "Will the Western Balkan countries fall for China's 'debt-trap diplomacy'?" Available at https://www.united-europe.eu/2020/10/will-the-western-balkan-countries-fall-for-chinas-debt-trap-diplomacy/

Ascensão, F., Fahrig, L., Clevenger, A. P., Corlett, R. T., Jaeger, J. A., Laurance, W. F., & Pereira, H. M. (2018). "Environmental challenges for the Belt and Road Initiative". *Nature Sustainability*, *1*(5), 206-209.

Ball-Rokeach, S J and DeFleur, M L (1976). "A dependency model of mass-media effects." *Communication research* 3.1: 3-21

Belsley, D. A., Kuh, E., and Welsch, R. E., (2005) *Regression diagnostics: Identifying influential data and sources of collinearity*. Vol. 571. John Wiley & Sons.

Birnbaum, M., (2021, April 18). "Montenegro mortgaged itself to China. Now it wants Europe's help to cut it free." *Washington Post*. Available at https://www.washingtonpost.com/world/europe/china-montenegro-highway-nato-europe/2021/04/17/99a745b4-9ebb-11eb-b2f5-7d2f0182750d_story.html

Bosu, R. S., (2017). "Hambantota Port deal opens new era for China-Sri Lanka ties." Available at http://www.china.org.cn/opinion/2017-08/19/content_41433013.htm

Brautigam, D., (2019, April 26). "Is China the World's Loan Shark?." *New York Times*. Available at https://www.nytimes.com/2019/04/26/opinion/china-belt-road-initiative.html

Brautigam, D., (2020a) "A critical look at Chinese 'debt-trap diplomacy': The rise of a meme." *Area Development and Policy* 5.1: 1-14.

Brautigam, D., (2020b, April 15). "Chinese Debt Relief: Fact and Fiction." *The Diplomat*. Available at https://thediplomat.com/2020/04/chinese-debt-relief-fact-and-fiction/

Browne, A., (2019, May 4). "Five myths of China's Belt and Road Initiative." *Bloomberg News*. Available at https://www.bloomberg.com/news/newsletters/2019-05-04/five-myths-of-china-s-belt-and-road-initiative

Campion, A. S. (2020) "From CNOOC to Huawei: securitization, the China threat, and critical infrastructure." *Asian Journal of Political Science* 28.1: 47-66.

Carmody, P., (2020). "Dependence not debt-trap diplomacy." *Area Development and Policy* 5.1: 23-31.

Carmody, P., Taylor, I., & Zajontz, T. (2022). "China's spatial fix and 'debt diplomacy' in Africa: constraining belt or road to economic transformation?" *Canadian Journal of African Studies/Revue canadienne des études africaines*, *56*(1), 57-77.

Chatzky, A., and McBride, J., (2020, January 28). "China's Massive Belt and Road Initiative." Council on Foreign Relations. Available at https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative

Chellaney, B., (2017) "China's debt-trap diplomacy." *Project Syndicate* 23. Available at https://www.project-syndicate.org/commentary/china-one-belt-one-road-loans-debt-by-brahma-chellaney-2017-01

Craney, T. A., and Surles, J. G., (2002) "Model-dependent variance inflation factor cutoff values." *Quality Engineering* 14.3: 391-403

Cruz, E. S. (2017, August 2). "China debt trap." *The Philippine Star*. Available at https://www.philstar.com/opinion/2017/08/02/1724147/china-debt-trap

Davidson, H., (2020, April 12). “Coronavirus chaos could strengthen China's debt hold on struggling nations.” *The Guardian*. Available at https://www.theguardian.com/world/2020/apr/12/coronavirus-chaos-could-strengthen-chinas-debt-hold-on-struggling-nations

Dearing, J W, Rogers, E M, and Rogers, E, (1996) *Agenda-setting*. Vol. 6. Sage

DeBoom, M. J. (2020). “Who is afraid of ‘debt-trap diplomacy’? Geopolitical narratives, agency and the multiscalar distribution of risk.” *Area Development and Policy*, *5*(1), 15-22.

Devonshire-Ellis, C., (2020, October 7). “Belt and Road Initiative Negativity Now in The Past as Debt Trap Burdens Are Debunked And Global Investors Can Look To Opportunity Returns.” Available at https://www.silkroadbriefing.com/news/2020/10/07/belt-and-road-initiative-negativity-now-in-the-past-as-debt-trap-burdens-are-debunked-and-global-investors-can-look-to-opportunity-returns/

Dollar, D., (2020, October 1). “Seven years into China’s Belt and Road.” Available at https://www.brookings.edu/blog/order-from-chaos/2020/10/01/seven-years-into-chinas-belt-and-road/

Đorđević, N., (2021, August 7). “Montenegro narrowly avoids Chinese debt trap, for now.” *Emerging Europe*. Available at https://emerging-europe.com/news/montenegro-narrowly-avoids-chinese-debt-trap-for-now/

Dutta, P. K. (2017, July 29) . “Sri Lanka leases Hambantota port to China for non-military use. Should India worry?” *India Today*. Available at https://www.indiatoday.in/india/story/sri-lanka-leases-hambantota-port-china-non-military-use-india-worry-1027012-2017-07-29

Economics Explained. (2020, April 17). “Why China Will be the Big Winner of the 2020 Crisis.” Available at https://www.youtube.com/watch?v=b07eafPe7pY

Entman, R. M. (1993). “Framing: Towards clarification of a fractured paradigm.” *McQuail's reader in mass communication theory*, *390*, 397.

Fabricius, P., (2020, April 30). “Will Mombasa and Port Sudan be ceded to foreign powers to repay debt?” Available at https://issafrica.org/iss-today/is-covid-19-enabling-debt-trap-diplomacy

Fairclough, N. (2013). *Critical discourse analysis: The critical study of language*. Routledge.

Ferchen, M., and Perera, A., (2019) "Why unsustainable Chinese infrastructure deals are a two-way street." Carnegie-Tsinghua center for global policy 22. Available at https://carnegieendowment.org/files/7-15-19_Ferchen_Debt_Trap.pdf

Frances 24. (2021, August 30). “Montenegro's highway to debt: Unfinished Chinese road comes with strings attached.” Available at https://www.france24.com/en/tv-shows/focus/20210830-montenegro-s-highway-to-debt-unfinished-chinese-road-comes-with-strings-attached

Granger, C. WJ. (1969) “Investigating causal relations by econometric models and cross-spectral methods.” *Econometrica: journal of the Econometric Society* 424-438.

Green, M. (2019, April 25). “China’s debt diplomacy: how Belt and Road threatens countries’ ability to achieve self-reliance.” *Foreign Policy*, *25*. Available at https://foreignpolicy.com/2019/04/25/chinas-debt-diplomacy/

Gruszczynski, M. and Wagner, M W, (2017) “Information flow in the 21st century: The dynamics of agenda-uptake.” *Mass communication and society* 20.3: 378-402.

Hagström, L, & Gustafsson, K, (2021). “The limitations of strategic narratives: The Sino-American struggle over the meaning of COVID-19.”" *Contemporary Security Policy*, 42(4), 415-449.

Hakura, D. S. (2020). “Back to Basics: What is Debt Sustainability?” *Finance & Development*, *57*(003). Available at https://www.imf.org/en/Publications/fandd/issues/2020/09/what-is-debt-sustainability-basics

Hameiri, S., and Jones, L., (2020) “Debunking the Myth of ‘Debt-trap Diplomacy’: How Recipient Countries Shape China’s Belt and Road Initiative.” Research Paper, London: Chatham House. Available at https://www.chathamhouse.org/sites/default/files/2020-08-25-debunking-myth-debt-trap-diplomacy-jones-hameiri.pdf

Hinchman, L P, & Hinchman, S K, (1997). *Memory, identity and community: The idea of narrative in the human sciences*. SUNY Press

Horby, L., and Zhang, A., (2019, April 24). “Belt and Road debt trap accusations hound China as it hosts forum.” *Financial Times*. Available at https://www.ft.com/content/3e9a0266-6500-11e9-9adc-98bf1d35a056

Hurley, J., Morris, S., & Portelance, G. (2019). “Examining the debt implications of the Belt and Road Initiative from a policy perspective.” *Journal of Infrastructure, Policy and Development*, *3*(1), 139-175.

Jones, L. (2020, October 9). “China’s Belt and Road Initiative Is a Mess, Not a Master Plan.” *Foreign Policy*. Available at https://foreignpolicy.com/2020/10/09/china-belt-and-road-initiative-mess-not-master-plan/

Jun, S. P., Yoo, H. S., and Choi, S. (2018). “Ten years of research change using Google Trends: From the perspective of big data utilizations and applications.” *Technological forecasting and social change* 130: 69-87.

Kairy, S. (2021, November 12). “Chinese Debt Trap Diplomacy: The Debate and the Gaps in the Literature.” *Modern Diplomacy*. Available at https://moderndiplomacy.eu/2021/11/12/chinese-debt-trap-diplomacy-the-debate-and-the-gaps-in'-the-literature/

Kratz, A., Feng, A., and Wright, L., (2019, April 29). “New Data on the Debt Trap Question.” Available at https://rhg.com/research/new-data-on-the-debt-trap-question/

Kazeem, Y., (2020, October 9). “The truth about Africa’s “debt problem” with China.” *Quartz Africa*. Available at https://qz.com/africa/1915076/how-bad-is-africas-debt-to-china/

Lai, K. PY., Lin, S., and Sidaway J. D. (2020) “Financing the Belt and Road Initiative (BRI): Research agendas beyond the “debt-trap” discourse.” *Eurasian Geography and Economics* 61.2: 109-124.

Li, C., Luo, Y., & De Vita, G. (2020). “Institutional difference and outward FDI: Evidence from China.” *Empirical Economics*, *58*(4), 1837-1862.

Lui, C., P. Metaxas, T., and Mustafaraj, E., (2011). “On the predictability of the US elections through search volume activity.” Available at https://repository.wellesley.edu/islandora/object/ir%3A153/datastream/PDF/view

Mações, B. (2021). *Belt and road: A Chinese world order*. Oxford University Press.

Maluki, P., and Lemmy, N., (2019) “Is China’s Development Diplomacy in Horn of Africa Transforming into Debt-Trap Diplomacy? An Evaluation.” *The HORN Bulletin* 2.1: 9-17.

Maurer, M, and Holbach, T, (2016) “Taking online search queries as an indicator of the public agenda: The role of public uncertainty.” *Journalism & Mass Communication Quarterly* 93.3: 572-586.

Mellon, J, (2014) “Internet search data and issue salience: The properties of Google Trends as a measure of issue salience.” *Journal of Elections, Public Opinion & Parties* 24.1: 45-72.

Moramudali, U., (2017, August 16). “Sri Lanka’s Debt and China’s Money.” *The Diplomat*. Available at https://thediplomat.com/2017/08/sri-lankas-debt-and-chinas-money/

NPR. (2021, June 29). “How A Chinese-Built Highway Drove Montenegro Deep Into Debt.” Available at https://www.npr.org/2021/06/28/1010832606/road-deal-with-china-is-blamed-for-catapulting-montenegro-into-historic-debt

Oehl, B, Schaffer, L M, and Bernauer, T, (2017) “How to measure public demand for policies when there is no appropriate survey data?” *Journal of Public Policy* 37.2: 173-204.

Page, B. I., and Shapiro, R. Y. (1983) “Effects of public opinion on policy.” *American political science review* 77.1: 175-190.

Page, B. I., and Shapiro, R. Y. (2010) *The rational public*. University of Chicago Press

Pant, H. V. (2017, August 3). “China’s debt trap diplomacy.” Available at https://www.orfonline.org/research/chinas-debt-trap-diplomacy/

Parker, S., & Chefitz, G., (2018). “Debtbook diplomacy: China's strategic leveraging of its newfound economic influence and the consequences for US foreign policy.” Diss. Harvard University, Available at https://www.belfercenter.org/sites/default/files/files/publication/Debtbook%20Diplomacy%20PDF.pdf

Pavlićević, D., (2018). " 'China threat' and 'China opportunity': politics of dreams and fears in China-Central and Eastern European relations." *Journal of Contemporary China* 27.113 688-702.

Pavlićević, D., and Kratz, A. (2018) "Testing the China Threat paradigm: China's highspeed railway diplomacy in Southeast Asia." *The Pacific Review* 31.2: 151-168.

Pesaran, M. H., Shin, Y., and Smith, R. J., (2001). "Bounds testing approaches to the analysis of level relationships." *Journal of applied econometrics* 16, no. 3: 289-326.

Reuters. (2021, July 21). "Montenegro agrees hedging deals to ease Chinese debt burden." Available at https://www.reuters.com/article/us-montenegro-debt-idUSKBN2ER1GO

Ripberger, J T, (2011) "Capturing curiosity: Using internet search trends to measure public attentiveness." *Policy studies journal* 39.2: 239-259.

Roe, E M, (1992). "Applied narrative analysis: The tangency of literary criticism, social science and policy analysis." *New Literary History*, 23(3), 555–581. Available at https://doi.org/10.2307/469220

Rogelja, I., and Tsimonis, K. (2020) "Narrating the China threat: securitising Chinese economic presence in Europe." *The Chinese Journal of International Politics* 13.1:103-133.

Scharkow, M, and Vogelgesang, J, (2011) "Measuring the public agenda using search engine queries." *International Journal of Public Opinion Research* 23.1: 104-113.

SCMP (South China Morning Post). (2020, October 12). "Sri Lanka secures US$90 million grant from China amid 'debt trap' call." Available at https://www.scmp.com/news/china/diplomacy/article/3105133/sri-lanka-secures-us90-million-grant-china-amid-debt-trap-call

Shapiro, R. Y., and Page, B. I., (1988) "Foreign policy and the rational public." *Journal of Conflict Resolution* 32.2: 211-247.

Singh, A., (2020) "The myth of 'debt-trap diplomacy' and realities of Chinese development finance." *Third World Quarterly* 42.2: 239-253.

Shaikh, R., and Chen, C. K., (2021) "China's Debt Trap in Pakistan? A Case Study of the CPEC Project." *South Asia Research* 41.3: 399-414.

Song, W. (2015). "Securitization of the' China Threat' discourse: A poststructuralist account." *China Review* 15.1: 145-169.

Taplin, N., (2019, May 2). "One Belt, One Road, and a Lot of Debt." *Wall Street Journal*. Available at https://www.wsj.com/articles/one-belt-one-road-and-a-lot-of-debt-11556789446

Tarrósy, I. (2020). "China's Belt and Road Initiative in Africa, debt risk and new dependency: The case of Ethiopia." *African Studies Quarterly*, *19*(3-4), 95-28.

Taylor, J., (2020, May 25). "China's belt and road initiative: what is it and why is Victoria under fire for its involvement?" *The Guardian*. Available at https://www.theguardian.com/world/2020/may/25/chinas-belt-and-road-initiative-what-is-it-and-why-is-victoria-under-fire-for-its-involvement

Vangeli, A. (2018). "16+ 1 and the re-emergence of the China threat theory in Europe." *China-CEE Institute Working Paper*, *19*.

Were, A., (2018) "Debt trap? Chinese loans and Africa's development options." South Africa Institute for International Affairs. https://www.africaportal.org/documents/18711/sai_spi_66_were_20190910.pdf

World Bank. (2019). “Belt and Road Economics: Opportunities and Risks of Transport Corridors.” The World Bank. Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/31878/9781464813924.pdf

Wu, Y., & Chen, C. (2021). “The impact of China’s outward foreign direct investment on trade intensity with Belt and Road countries.” *Emerging Markets Finance and Trade*, *57*(6), 1773-1792.

Xu, S., and Li, J., (2020) “The Emergence and Fallacy of China's Debt-Trap Diplomacy Narrative.” *China International Studies*. 81: 69.

Yang, H., & Van Gorp, B., (2021). “A frame analysis of political-media discourse on the Belt and Road Initiative: evidence from China, Australia, India, Japan, the United Kingdom, and the United States.” *Cambridge Review of International Affairs*, 1-27.

Yu, H., (2017). “Motivation behind China’s ‘One Belt, One Road’initiatives and establishment of the Asian infrastructure investment bank.” *Journal of Contemporary China*, *26*(105), 353-368.

Yu, S., Qian, X., & Liu, T., (2019). “Belt and road initiative and Chinese firms' outward foreign direct investment.” *Emerging Markets Review*, *41*, 100629.

Zeng, K., and Li, X., (2019) “Geopolitics, Nationalism, and Foreign Direct Investment: Perceptions of the China Threat and American Public Attitudes toward Chinese FDI.” *The Chinese Journal of International Politics* 12.4: 495-51

Zhang, Y., Cheng, Z., & He, Q., (2019). “Time lag analysis of FDI spillover effect: Evidence from the Belt and Road developing countries introducing China’s direct investment.” *International Journal of Emerging Markets*.

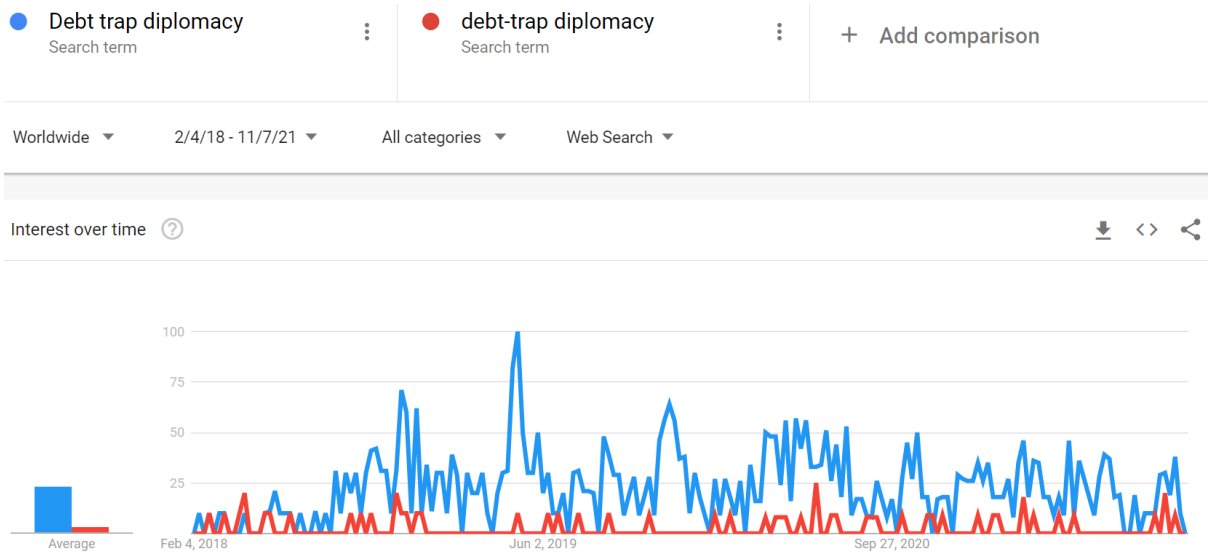
Zhou, C., (2019, April 26). “China's Belt and Road Forum shows Xi Jinping's “genius marketing policy” has become “project of the century”. *Australian Broadcasting Corporation*. Available at https://www.abc.net.au/news/2019-04-26/what-is-chinas-trillion-dollar-belt-and-road-initiative/11042036

Zhou, Y., and Luk, S., (2016) “Establishing Confucius Institutes: a tool for promoting China’s soft power?” *Journal of Contemporary China* 25.100: 628-642

Appendix 1: Comparison of Key Phrases

A. Time period: January 2013 – October 2021; monthly data

B. Time period: 4 February 2018 – 7 November 2021; weekly data



Appendix 2: Granger Causality Tests

Correlation does not necessarily mean causation. Granger (1969) used a method to determine how much of the present *y* can be explained by past values of *y*, and then whether including lagged values of *x* can improve the explanation's accuracy. The Granger causality test answers the crucial question of whether *x* aids in the prediction of *y*. Because both variables are time series data, they must be examined for stationarity. Augmented Dickey-Fuller tests (not reported, but available upon request) show that both variables are stationary. Table A shows the results of the Granger causality tests.

Table A. Granger Causality Tests - DTD vs BRI

DTD represents the normalized volume of the debt trap diplomacy narrative worldwide. *BRI* is the normalized volume of the BRI narrative worldwide.

Time period: 4 February 2018 – 7 November 2021. Frequency of data: weekly. Obs: 192-197

Null Hypothesis	Lag Order 1	Lag Order 2	Lag Order 3	Lag Order 4	Lag Order 5	Lag Order 6
DTD does not Granger Cause *BRI*	15.2%	10.4%	19.6%	34.6%	56.3%	30.6%
BRI does not Granger Cause *DTD*	39.2%	3.2%	3.4%	4.1%	4.7%	7.9%

Table A shows that there are unidirectional relations between *DTD* and *BRI*. The null hypothesis that *DTD* does not cause *BRI* cannot be rejected at a 10 percent confidence level. It means that *BRI* is not endogenous. However, Table A shows that the null hypothesis that *BRI* does not cause *DTD* is rejected at lag orders 2, 3, 4, 5, and 6. It means that the BRI narrative worldwide has higher precedence and significantly contributes to the information content used to formulate the debt trap diplomacy narrative worldwide. If a different keyword such as “belt

and road initiative" was used in a Google Trends search, the results would remain statistically unchanged (not reported but available upon request).

Table B. Granger Causality Tests – DTD vs CT

DTD represents the normalized volume of the debt trap diplomacy narrative worldwide. *CT* is the normalized volume of the China threat narrative worldwide.

Time period: 4 February 2018 – 7 November 2021. Frequency of data: weekly. Obs: 192~197

Null Hypothesis	Lag Order 1	Lag Order 2	Lag Order 3	Lag Order 4	Lag Order 5	Lag Order 6
DTD does not Granger Cause *CT*	24.3%	7.6%	25.1%	34.6%	5.2%	12.0%
CT does not Granger Cause *DTD*	4.0%	0.5%	2.7%	4.7%	0.4%	0.7%

Table B shows that there are bidirectional relations between the debt trap diplomacy narrative and the China threat narrative. However, the debt trap diplomacy narrative can only cause the China threat narrative at lag orders 2 and 5. It is unlikely that these significant relations exist at zero lag order. At the same time, as expected, the China threat narrative significantly contributes to the information content used to formulate the debt trap diplomacy narrative worldwide.

Appendix 3: ARDL Bounds Test

Included observations: 192.

Test Statistic	Value	k
F-statistic	12.45	2
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	3.17	4.14
5%	3.79	4.85
2.5%	4.41	5.52
1%	5.15	6.36

Note: The ARDL bounds testing approach was developed by Pesaran, Shin, and Smith (2001) to test the presence of a long-run relationship between variables. The null hypothesis is that no long-run relationships exist. The critical values are provided for significance levels of 10%, 5%, 2.5%, and 1%, respectively.

Appendix 4: Variance Inflation Factors (VIF)

Variable	VIF
DTD(-1)	1.320
DTD(-2)	1.305
BRI	1.103
CT	1.096
C	1.114

Appendix 5: Residual Tests

A. Correlogram of standardised residuals

Included observations: 195
Q-statistic probabilities adjusted for 2 dynamic regressors

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
.|. |	.|. |	1	-0.006	-0.006	0.0061	0.938
.|. |	.|. |	2	0.011	0.011	0.0282	0.986
.|. |	.|. |	3	0.003	0.003	0.0295	0.999
*|. |	*|. |	4	-0.073	-0.073	1.1007	0.894
.|. |	.|. |	5	-0.057	-0.058	1.7636	0.881
.|* |	.|* |	6	0.126	0.128	4.9822	0.546
.|. |	.|. |	7	-0.008	-0.005	4.9962	0.660
.|. |	.|. |	8	0.004	-0.005	4.9994	0.758
*|. |	*|. |	9	-0.096	-0.108	6.9173	0.646
.|. |	.|. |	10	-0.017	-0.002	6.9757	0.728

B: Residual Tests: Normality Test