Money Buys Friends (or not) : Evidence from China's Belt and Road Initiative

Abstract

Although studies of commercial liberalism have shown the pacifying effect of economic interdependence via cross-national analysis, the theory has not been tested in a specific country or project. Meanwhile, studies of China's Belt and Road Initiative have focused on discussing China's intention without assessing its geopolitical effects. To bridge the two literature, this paper examines whether commercial liberalism holds in the context of the BRI. I find that: (a) the BRI appears to improve cooperation with target countries and (b) there is no systematic evidence that the BRI restrains hostile action from target countries. This result offers mixed evidence of commercial liberalism: money can induce cooperative gestures, but may not be enough to change the fundamentals of international relations.

Keywords: Belt and Road Initiative, commercial liberalism, China, political affinity, predictive models

Nearly five years have passed since China first announced its Belt and Road Initiative (BRI) in late 2013.[1] Although scholars have assessed the initiative's impact on several economic dimensions,[2] less attention has been paid to its political influence. However, the BRI bears serious geopolitical consideration by the Chinese leaders. Specifically, by strengthening the economic relationship with countries along the belt (or the road), China aims at deepening their political relationship. This way, Beijing can counterbalance the U.S. containment and bolster its status as a rising power.[3] In this regard, investigating whether the BRI has improved target[4] countries' political relationship with China is critical for both Chinese and U.S. decision makers.

More broadly, theories of commercial liberalism argue that economic interdependence can reduce hostility and promote cooperation because states are restrained by the opportunity costs due to economic disruption.[5] Applying this reasoning in real life politics, one may deduce that money can serve to buy friends: projects or investment intended to deepen economic exchange between states can improve their political relationship. Though intriguing, this possible relationship between money and political affinity has not been tested in a specific country or project.[6] In this regard, the BRI also provides a prime example to examine commercial liberalism more closely.

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[1] The initiative was first announced by the Chinese President Xi Jinping during his visit to Kazakhstan. Involving building infrastructures across the Eurasia, it is Xi's most ambitious foreign policy, representing China's departure from Deng Xiaoping's doctrine to 'hide our capabilities and bide our time; never try to take the lead.' China is currently doling out around $150 bn a year to the initiative. See https://www.economist.com/the-economist-explains/2017/05/14/what-is-chinas-belt-and-road-initiative, accessed 11 July 2018.

[2] These include investment, infrastructure, and environment. See Huang 2016; Schinas and Westarp 2017; Du and Zhang 2018; Zhai 2018.

[3] Other strategic incentives include spurring economic growth and whipping up nationalism. See Ferdinand 2016; Yu 2017; Nordin and Weissmann 2018; Zhou and Esteban 2018.

[4] Here and throughout the paper, I refer to target countries as targets of the BRI.

[5] S. W. Polachek 1980; Oneal and Russet 1997; Dafoe and Kelsey 2014.

[6] Studies of commercial liberalism typically examine cross-national correlation between trade and conflict. See Barbieri 1996; Oneal and Russet 1997; Gartzke, Li, and C. Boehmer 2001; O. M. Keshk, Pollins, and Reuveny 2004; H. M. Kim and Rousseau 2005; N. K. Kim 2014; Hegre, Oneal, and Russett 2010; Peterson 2011.

This paper bridges the two literature by examining whether the BRI improves political relationship between China and target countries. One primary challenge of studying this question relates to the fundamental problem of causal inference: we cannot observe the counterfactuals of these countries' political relationship with China were they not exposed to the BRI. Indeed, King and his colleagues point out no matter how perfect we collect the data or design the research, we will 'never know a causal inference for certain'. Most research designs constitute only 'partial attempts to avoid it.'[7]

With this caution in mind, I confront the above challenge by utilizing the power of predictive models.[8] Specifically, I train predictive models using non-BRI countries' data, including data from all countries before the proposal of the BRI and data from non-BRI countries after its proposal. Using the information from all these data, I select a model that has the best prediction performance. I then use this model to predict what the relationship between the BRI countries and China would have been given the amount of trade and the Chinese government's cooperative and hostile action. Comparing these predicted counterfactuals with the true responses offers a 'partial attempt' to gauge whether and how the BRI changes the political relationship with target countries.

I find that after controlling possible bias of the predictive model, the initiative does improve BRI countries' cooperation with China (as compared to non-BRI countries). There is also some evidence that the BRI may dampen low-level hostilities. However, there is no systematic evidence that the BRI can restrain states from high-level hostile action. Returning to the broad question of whether money can buy friends, my study offers a mixed answer: money can purchase friendly gestures, but may not lead to genuine friendship. States that are suspicious or antagonistic may still resort to high-level hostile reaction even when there are huge amounts of money pouring in.

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[7] King, Keohane, and Verba 1994, p. 79.

[8] Imai 2017; Cranmer and Desmarais 2017.

This paper proceeds as follows. I first discuss the existing theories of commercial liberalism and studies on the BRI. Basing on the two literature, I derive hypotheses on the expected effects of the initiative. In the research design section, I discuss the method and data for testing these hypotheses. After discussing the tests' results, I conclude with implications and limitations of the paper.

1   Theories of Commercial Liberalism

Theories of the relationship between economic interdependence and peace can be traced back to Immanuel Kant's thoughts on perpetual peace.[9] Scholars synthesize the Kantian peace into three pillars: democracy, commerce, and international organization.[10] Commercial liberalism, as one of the pillar, has been heavily studied and debated in recent decades.[11] It refers to the idea that as two countries' economic interdependence increases, they would be less likely to fight against each other. This is because states have the incentive to avoid opportunity costs brought by conflict and economic disruption.[12] Compared with conquest, trade is a cheaper substitute for states to acquire wealth.[13] Given this restraining effect of trade, scholars further argue deeper economic exchange can reduce hostility between states while promoting cooperation.[14]

However, it should be emphasized that economic interdependence's impact on international cooperation and hostility can be more nuanced. Some scholars have pointed out countries can engage in conflict and cooperation at the same time, and interdependence could

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[9]Kant 1983.

[10]Stein 1993; Ward, Siverson, and Cao 2007.

[11]For dissents and critiques, see Barbieri 1996; O. M. Keshk, Pollins, and Reuveny 2004; H. M. Kim and Rousseau 2005 .

[12]Oneal and Russet 1997; Oneal and Russett 1999.

[13]Rosecrance 1986; Gartzke 2007; Brooks 2007.

[14]S. W. Polachek 1980; S. Polachek and Xiang 2010.

be related to both outcomes.[15] As such, trade could simultaneously increase cooperation and hostility in that the beneficial aspects of trade promotes cooperation, while the costly aspects of interdependence increase hostility.[16] It is also pointed out that while promoting cooperation, economic interdependence can increase the occurrence of low-level conflict and decrease the likelihood of high-level one (e.g. military conflict).[17]

2 Strategies of the BRI

Research on the BRI has focused on the strategic calculation of China. There are three primary areas of consideration that have been identified. First, China was motivated by the need of dealing with the recent economic downturn. As the Chinese economy slowed down, finding new ways of boosting the economy was on top of the leaders' agenda. The BRI provides plenty of opportunities, including developing infrastructures abroad which alleviates the problem of overcapacity[18] and bridging its western regions with other Eurasian countries which expands both natural resource supplies and foreign markets.[19] Second, the BRI was also a response to the rise of nationalism and the pursuit of the Chinese dream. As China becomes more responsive to popular nationalist calls,[20] the invocation of the historical glory (i.e. the silk road) serves to beef up this pride.[21] In return, the BRI can strengthen the domestic support and consolidate the party's ruling status.

Third, and closely related to the above-mentioned theories of commercial liberalism, China sought to solidify and improve the political relationship with target countries. In

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[15]McMillan 1997.

[16]Gasiorowski 1986.

[17]Crescenzi 2003; Pevehouse 2004.

[18]Jonathan E. Hillman, "China's Belt and Road Initiative: Five Years Later", Report, 2018. `https://www.csis.org/analysis/chinas-belt-and-road-initiative-five-years-later-0`, accessed 11 July 2018.

[19]Zhou and Esteban 2018.

[20]Zhao 2013.

[21]Yu 2017.

particular, the idea of a 'community of shared destiny' overlaps with commercial liberalism's idea of economic interdependence fostering a security community, where a shared identity can suppress conflict.[22] This way, China can better counter the containment by the U.S. (e.g. the 'pivot to Asia' policy) and build up its status as a rising power.[23] In return, it enables China to project its soft power, set agendas of global governance, and even transform the existing international system.[24]

Although research on the incentives of the Chinese government is abundant, there is relatively less emphasis on the BRI's impact. Among the existing studies, the focus is on the economic dimension. Scholars have argued that the BRI can help cut logistic costs, reduce carbon emission, promote foreign direct investment and trade, boost China's GDP and global welfare gains, and may even help reform the existing international economic system.[25] However, as pointed out previously, there are multiple layers' of strategic consideration for the BRI. The geopolitical consideration is of no less importance than the economic one. As such, from the perspective of furthering the research of the BRI, investigating its political repercussion is also in order.

To bridge the gap between the literature of commercial liberalism and the BRI thereof, my study assesses the influence of the BRI on China's political relationship with target countries. Building on the theories of commercial liberalism, I expect the increasing economic exchange between China and target countries will promote their cooperation. As potential benefits of cooperation rise, target countries will be more responsive to China's initiative. In the long run, I expect this effect to grow stronger over time as the benefits accumulate. However, in the short term the effect may fluctuate not least due to the challenges of imple-

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[22]Oneal and Russet 1997; Oneal and Russett 1999.
[23]Zhou and Esteban 2018.
[24]Nordin and Weissmann 2018; Zhou and Esteban 2018.
[25]Huang 2016; Schinas and Westarp 2017; Du and Zhang 2018; Zhai 2018.

mentation.[26] Therefore, I have the following hypothesis.

Hypothesis 1 *A target country's cooperation with China will improve after the proposal of the BRI.*

It should be noted that in Hypothesis 1 I emphasize the proposal of BRI as I expect China's effort to deepen economic exchange with target countries should begin around that time. I opt not to choose other alternatives such as the signing of BRI agreements because of the concern of endogeneity. That is, countries that sign the agreements tend to be in (or are changing into) a closer relationship with China. If so, using the signing of agreements would conflate the effects of the BRI with underlying changes of political affinity. In comparison, using the proposal of the BRI can reveal whether China's effort works or not. This is important in that target countries' attitude toward the BRI does vary substantially. For instance, India has not endorsed the BRI to this date while Kazakhstan has been participating actively.

As stated previously, the effect of the BRI on hostility from target countries can be more nuanced. In fact, I have two somewhat conflicting expectations (a) countries will reduce hostile action toward China for fear of opportunity costs and (b) countries will minimize high-level hostility toward China to avoid disrupting economic exchange but may increase low-level hostility to bargain for more benefits. These are summarized as below.

Hypothesis 2 *A country's hostility with China will decrease after the proposal of the BRI.*

Hypothesis 3 *A country's low-level hostility with China will increase and high-level hostility with China will decrease after the proposal of the BRI.*

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[26]For reports of the initiative's challenges, see `https://asia.nikkei.com/Spotlight/Cover-Story/Is-China-s-Belt-and-Road-working-A-progress-report-from-eight-countries`. See also `https://economictimes.indiatimes.com/news/international/world-news/chinas-bri-initiative-hits-roadblock-in-7-countries-report/articleshow/63771550.cms`.

3 Research Design

To examine whether the BRI improves China's relationship with target countries, I use predictive models. As mentioned before, the primary challenge of this study is we do not know the counterfactuals of those countries' cooperation and hostility with China if the BRI were not proposed and implemented. To address this challenge, I use predictive models to 'predict' these counterfactuals. I then compare the actual cooperation and hostility with these predicted counterfactuals to estimate whether and how much the BRI has promoted cooperation and reduced conflict.

The use of predictive modeling has been gaining popularity in recent decades.[27] Unlike inferential models (e.g. regression) that focus on minimizing bias, predictive models aim to strike a balance between reducing bias and estimation variance.[28] As such, they can better confront the problem of overfitting, i.e. the issue of predictors or models working well in data that they build on but failing miserably when dealing with out-of-sample data. Though not perfect, the performance in out-of-sample prediction of predictive models, especially machine learning techniques, can be quite impressive. Indeed, using machine learning techniques to predict counterfactuals has gradually been accepted and advocated in the field of causal inference.[29]

3.1 Dependent Variables

To measure the BRI countries' cooperation and hostility with China, I use the Integrated Crisis Early Warning System (ICEWS) dataset, which is one of the largest event data in so-

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[27]Beck, King, and Zeng 2000; Ward, Siverson, and Cao 2007; Hegre, Karlsen, et al. 2013; Colaresi and Mahmood 2017.

[28]Cranmer and Desmarais 2017; Hastie, Tibshirani, and Friedman 2011.

[29]Samii, Paler, and Daly 2016; Imai 2017.

cial science.[30] It is a machine-coded event dataset developed by Lockheed Martin and others for the U.S. Defense Advanced Research Projects Agency and the Office of Naval Research. Among others, the dataset records interstate events for about 250 countries and territories. Compared with other alternatives, the ICEWS data have three advantages. First, the dataset has been around for several years and enjoys great success and popularity in the operational community. In fact, its success led the U.S. government to reverse the policy of making the data freely available to the public in 2010.[31] Secondly, it assigns Conflict and Mediation Event Observations (CAMEO) scale values, ranging from -10 to +10, to each event. These CAMEO codes were motivated by the Goldstein scale for World Event/Interaction Survey (WEIS) coding and aim at measuring the hostility or cooperation level of an event. While this coding scale does not consider the issue of magnitude and could be simplistic at times, in practice, the deficiency can be partly addressed by more reports and attention associated with large-scale events. Lastly, the system applies a modern filtering mechanism, which can effectively weed out a large number of unrelated stories. Compared with other event data (e.g. GDELT), this filtering mechanism, though not perfect, is a great improvement [32].

The ICEWS data[33] are compiled by searching through a massive amount of newspaper in English and machine-coding daily interaction between different actors. Cooperative events include expressing intent to cooperate, engaging in diplomatic cooperation, providing aid, etc. Hostile events include threats, coercion, using force, etc. [34] A cooperative (hostile) event is assigned a positive (negative) value, with a higher absolute value indicating more intensity. Currently, the dataset covers the time span between January 1995 and Febru-

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[30]For a survey of the history of event data, see Ward, Beger, et al. 2013. Available at `https://www.researchgate.net/publication/303211430_Comparing_GDELT_and_ICEWS_event_data`, accessed 11 July 2018.

[31]This dataset has recently been made available at the Dataverse of Harvard University. `https://dataverse.harvard.edu/dataverse/icews`.

[32]See Ward, Beger, et al. 2013 for details.

[33]Boschee, Elizabeth; Lautenschlager, Jennifer; O'Brien, Sean; Shellman, Steve; Starz, James; Ward, Michael, 2015, "ICEWS Coded Event Data", https://doi.org/10.7910/DVN/28075, Harvard Dataverse, V22.

[34]Details can be found in the codebook. See `https://dataverse.harvard.edu/dataverse/icews`, accessed 11 July 2018.

ary 2017.[35] I sum the government to government events' cooperative and hostile values by month. The dependent variables are a country's monthly cooperation and hostility toward China respectively. Given the BRI was announced in late 2013, I assign a country BRI status if it is on the official list of the 65 countries[36] and the time is after 2013.

3.2 Independent Variables

To measure the level of economic exchange, I use bilateral trade data. I choose not to use foreign direct investment or the values of announced BRI projects because: (a) they can miss the daily economic exchange between states as it typically takes a long time to negotiate and complete a project and (b) many of the projects are either not transparent or delayed. Some Chinese outbound investment is branded BRI just to facilitate the approval process. Moreover, given that many of the big projects are related to infrastructure, trade volume, especially, Chinese export can be a better indicator. For instance, Chinese export to Pakistan increases by 77 percent between 2012 and 2015, thanks mainly to the increase of infrastructure projects under the BRI.[37]

Regarding data source, I use the IMF's Direction of Trade Statistics (DOTS) dataset, a primary source of trade data in conflict studies. I choose this dataset over some conventional choices such as the Correlates of War's trade data[38] because it offers monthly records. In addition, the DOTS dataset contains comprehensive bilateral import and export data, including export and import reported on a free on board (FOB) scheme as well as import data

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[35]See https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/28075&version=22.0, accessed 11 July 2018.

[36]See https://www.fbicgroup.com/sites/default/files/B%26R_Initiative_65_Countries_and_Beyond.pdf, accessed 11 July 2018. To be exact, there are 63 BRI countries in my data. China itself is excluded. Palestine and Serbia are also excluded because I use covariates from Correlates of War project, which provides no data for these two countries.

[37]https://www.csis.org/analysis/chinas-belt-and-road-initiative-five-years-later-0, accessed 11 July 2018.

[38]Barbieri and O. Keshk 2012.

on a cost, insurance, and freight (CIF) basis.

The main issue with DOTS is missingness.[39] Systematic missing data can produce sample bias in that countries with poor reporting standard tend to be 'less democratic, have lower power, and less developed.'[40] It should be noted that IMF has tried to attenuate this problem by estimating the missing data of a country with its partners' record (country A's import from country B can be estimated by B's export to A, and vice versa). Also, given the purpose of the data is to predict and that the primary prediction method introduced below can incorporate missing data, I believe using the DOTS data is appropriate.

[Figure 1 about here.]

As an illustration, I plot the level of trade dependence (i.e. total trade volume divided by GDP) for BRI and non-BRI countries in Figure 1. The x-axis represents time, while the y-axis captures the level of trade dependence: higher values indicate more profound economic exchange. The average level of trade dependence with the BRI countries appears to be higher than with the non-BRI ones.

For other covariates, I include a number of factors that have been proposed by scholars as determinants of inter-government cooperation and hostility. These include: (a) levels of democracy by using the Polity IV measurement[41] as studies have shown that democracy affects the credibility of international communication,[42] (b) contiguity[43] given that neighboring states have more opportunities of interaction,[44] (c) oil and gas production[45] since

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[39]In addition, the zeros in DOTS can indicate either the lack of trade taken place or the lack of report.

[40]C. R. Boehmer, Jungblut, and Stoll 2011.

[41]Marshall, Jaggers, and Gurr 2002.

[42]Fearon 1994; Schultz 1999.

[43]Correlates of War Project. Direct Contiguity Data, 1816-2016. Version 3.2. Stinnett et al. 2002.

[44]Starr 2013.

[45]Ross, Michael; Mahdavi, Paasha, 2015, "Oil and Gas Data, 1932-2014", `https://doi.org/10.7910/DVN/ZTPW0Y`, Harvard Dataverse, V2, UNF:6:xdrpUdF2kYUJYCgVfgMGcQ==

natrual resources can give rise to conflict[46] and have been attracting Chinese investment,[47] (d) GDP and population[48] as large and rich countries tend to interact more. The summary statistics for all variables are shown in Table 1.

[Table 1 about here.]

3.3 Cross Validation

As mentioned before, the data are first subset into two parts: one involving BRI countries (countries that are on the official 65 countries list after 2013) and the rest (non-BRI data). The goal is to utilize the information of the latter to predict the counterfactuals of the former. That is, I use the non-BRI data to select a best performing predictive model, which is then used to predict the counterfactuals of how the BRI countries would have interacted with China were the initiative not proposed and implemented.

To select the best predictive model, I use cross validation (i.e. out-of-sample validation), where I randomly divide the non-BRI data into training and testing sets.[49] The two sets are treated as two entirely distinct datasets: the training set is used to 'train' different models, which are then applied to predict the outcomes in the testing set. The model that has the lowest prediction errors is then selected. The idea of cross validation is elegant in that 'because the test set was randomly partitioned from the training set, the only thing the two have in common in expectation is the data generating process. Thus, if a model fits the test set well, one can expect that key elements of the data generating process are captured in the theoretically informed model.'[50] Utilizing the technique of cross validation, I can select

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[46]Koubi et al. 2014.

[47]Ramasamy, Yeung, and Laforet 2012.

[48]World Development Indicators, `https://datacatalog.worldbank.org/dataset/world-development-indicators`, accessed 11 July 2018.

[49]Following convention, I randomly choose 30% of the data into the testing set.

[50]Cranmer and Desmarais 2017.

a model that is expected to predict fairly well in the BRI countries' data.

3.4 Comparing Predictive Models

To quantify how close the predicted values are to the true response values, I use the conventional measure of mean squared error (MSE), given by

$$MSE = \frac{1}{n}\sum_{1}^{n}(y_i - \hat{y}_i)^2 \tag{1}$$

where y_i is the true value for observation i and $\hat{y}_i$ its respective prediction. A small MSE indicates a close prediction, while a large one suggests the prediction is not reliable.

Using this criterion, I evaluate the performance of three predictive models: lasso, random forest, and boosting.[51] The MSE for these models is shown in Table 2. The boosting method performs the best in that it has the smallest MSE for both cooperative and hostile events. As such, I opt to use the boosting method to predict the counterfactuals of the BRI data.

[Table 2 about here.]

3.5 Selecting Variables

Typically, in predictive models, simpler models tend to perform better than complicated ones. This is because complicated models that involve many covariates tend to suffer the

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[51]These three methods are common in machine learning literature. Lasso is a type of penalized regression, where coefficients are shrunk toward zero. Random forest builds on the idea of classification and regression trees (CART), which constructs a decision tree for prediction. Random forest refers to one way of improving the prediction performance of trees by bootstrapping (i.e. sampling with replacement) the data and grow many trees (hence the name forest) from the different samples. Each tree makes a prediction and the final prediction is decided by a majority vote. Boosting refers to a different way to improve prediction performance where misclassified observations are given more weights in each repetition. See Varian 2014 for a brief introduction. See Hastie, Tibshirani, and Friedman 2011 for more details.

problems of overfitting. By fitting the training data too tightly, they also pay too much attention to the noises in the sample data. As such, they tend to underperform when used to predict a different dataset.

To further improve the accuracy of the boosting model, I select covariates basing on their importance to prediction. The boosting method produces results that quantify the importance of each variable. The results are plotted in Figure 2. The x-axis represents the values of a respective variable's influence, i.e. the longer the dark bar along the x-axis, the more influential the variable is.

The figures suggested that: (a) cooperation and hostility are reciprocate in that a target country's level of cooperation (hostility) is best predicted by China's cooperation (hostility) toward that country, (b) cooperation and hostility are intertwined in that the level of co-operation is attenuated by hostility thereof, and vice versa, (c) bilateral export and import are also important predictors. As such, I further trim down the model by only including these variables for the boosting model.[52] The MSE for cooperation is reduced to 68.89, while the MSE for hostility is increased to 2.86. Given that hostile events are rare and zero-inflated (i.e. there are many observations where there is no hostile event), the slight increase in hostility's MSE is negligible. Moreover, cooperation is much harder to predict in that states typically have many cooperative events each month. As such, I opt to trade the increase of MSE in predicting hostility for the decrease of cooperation prediction's errors.

[Figure 2 about here.]

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[52]This choice is also informed by those variables' performance in other models. In addition, including all covariates lead to similar, though slightly less significant results. See my R code for details.

4 Results

The boosting method produces monthly prediction for each BRI country's cooperation and hostility toward China. One simple way to examine whether the BRI affects the underlying relationship between China and target countries is to perform a student t-test.[53] The issue with this simple method is it does not incorporate the possible bias of the predictive model: the boosting method, though producing the smallest MSE, may systematically overpredict or underpredict. To attenuate this concern, I also use the model to predict non-BRI countries' cooperative and hostile events toward China after 2013. I then compare the results of the BRI countries with that of non-BRI ones. The Welch test for cooperative events suggests we can be fairly confidence that the BRI improves the cooperation toward China (compared to non-BRI countries), giving strong support to Hypothesis 1.[54] The Welch test for hostility, however, indicates there is no systematic evidence that the BRI reduces hostility toward China, indicating the lack of evidence for Hypothesis 2. I also perform the Welch test by comparing groups with actual hostility toward China. The result is not statistically significant, indicating the lack of evidence for Hypothesis 3.

It should be noted the effects of the BRI do vary across countries. Given the space limit, I plot the results of four countries: Kazakhstan, Turkmenistan, India, and Singapore.[55] In the plots, the grey dashed line represents the predicted level of cooperation (hostility) given the level of existing economic exchange and China's cooperative (hostile) action. The x-axis represents the months between January 2014 and February 2017. The y-axis represents the values of cooperation or hostility. In the ICEWS data, cooperative events are assigned a

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[53]Specifically, we take the difference between the true response values with the predicted values. If the differences are significantly greater than 0, it suggests that the BRI has changed the fundamentals of the bilateral relationship in that it promotes cooperation or reduces hostility.

[54]The p-value for a one-tail test (the difference for BRI countries is larger than non-BRI countries thereof) is 0.029, indicating it is highly unlikely that the differences are due to random chances. Also the mean for non-BRI country is -0.3, suggesting the boosting method tend to overpredict the cooperation level.

[55]Plots for all countries can be found in the appendix.

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positive value and hostile events a negative one.[56] As such, the values along the y-axis in the cooperation plots are always positive and higher values indicate more cooperation. In comparison, the values along the y-axis in the hostility plots are always negative and lower values represent more hostility.

These four countries can be further divided into two groups: a low-hostility group where hostility toward China is always 0 and a high-hostility group where hostility toward China is not 0. For the first group, I plot the results for Kazakhstan in Figure 3 and Turkmenistan in Figure 4. The two countries are important targets of the BRI. Indeed, Kazakhstan is the country where the Chinese President first announced the initiative. However, their reaction toward Chinese money and cooperative action differ. Specifically, Kazakhstan's cooperation toward China generally underperforms. That is, the true response values (the solid yellow line) for cooperation are lower than what the model predicts (the grey dashed line) given the amount of trade and cooperation from China (note the three peaks of the dashed line spiking out of the solid line). In comparison, Turkmenistan appears to react more positively toward the BRI. The true response values of cooperation are generally higher than the predicted values.[57] This suggests for a given amount of cooperative gestures plus money from China, Turkmenistan reacted more cooperatively than predicted.[58]

[Figure 3 about here.]

[Figure 4 about here.]

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[56]I choose not to merge cooperation with hostility because the former may overwhelm the latter. That is, high cooperation between states may mask their conflict.

[57]In abstract, we should expect a time lag between China's cooperative initiation and a target country's reaction. However, given the data are compiled by month, I do not believe this would be a problem there, i.e. generally it should not take more than 30 days for a target country to respond.

[58]In terms of hostility, the true values and the predicted values are fairly close, largely due to the fact hostility from China is zero-inflated as well.

For the second group, I plot the results for India in Figure 5 and Singapore in Figure 6. This high-hostility group also demonstrates a sufficient amount of variation. Regarding cooperation, India appears to respond positively while Singapore somehow underperforms. Specifically, in 2015 given the amount of trade and cooperative action from China, Singapore should have reacted rather positively. However, its reaction is rather lukewarm. In one case, the true value of cooperation is less than a quarter of the predicted value.

Another interesting feature of this group is the BRI does not seem to rein in high profile hostility.[59] To be fair, in some cases the BRI seems to restrain low-level hostility.[60] For instance, India is predicted to have some hostile interaction with China in early 2015, while in reality the hostility level is strictly 0. However, in both the plots for India and Singapore, one can see that high-profile hostile events drop much lower than the predicted values, indicating the lack of restraining effect for serious conflict.

[Figure 5 about here.]

[Figure 6 about here.]

5   Explain the Lack of Restraining Effects

In this section, I delve further into the hostility data and offer some conjectures to explain the lack of restraining effects. To begin with, it is possible that conflict is initiated by a target while China exercises restraint. If that is the case, it adds more evidence to the lack of restraining effects. Take the Indian case as an example. The ICEWS data identify several

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[59]Here and throughout the paper, I use high (low) profile hostility and high-level (low-level) hostility interchangeably. I broadly refer to high hostility as events with above-average scale. In the plots, it can be identified by a downward spike.

[60]For evidence from the low-hostility group, see plots for countries such as Viet Name and Malaysia in the appendix.

months in 2014 when India displayed hostility toward China (note these downward spikes in Figure 5). In comparison, there is almost no hostile action from China.[61] If China's proposal of the BRI was attractive to India and that it restrains hostility, then we should expect a different pattern of behavior.

One possible explanation for the BRI's lack of restraining effects is that states have the incentive to exploit the cooperative environment to bargain for more benefits. For instance, the ICEWS data identified some hostile action from India in September 2015, when the Chinese President Xi Jinping visited India from the 17th to the 19th. Before the visit, on September 16th, a Dalai Lama's aide urged India to take a stronger stance with China. More importantly, on September 18, Modi, the Indian prime minister, made some remarks over the border uncertainty which the New York Times rated as the 'the most pointed' in decades. In the news briefing, Mr. Modi said, 'I raised our serious concern over repeated incidents along the border.' Indian analysts interpreted this as a strong message that India was only willing to talk business after a clear settlement of the border dispute.[62] Raising the issue of border dispute during the Chinese President's visit bears several benefits. It speaks to both the domestic and foreign audience that the leader is strong. It also communicates to the Chinese leaders that India's support for the BRI is contingent upon a clear resolution of the border dispute. Moreover, the risk of sabotaging the bilateral relationship is rather low, especially given the level of cooperation during this time (note the highest spike in the cooperation plot of Figure 5).

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[61]The only hostile action was on September 19, when The Times of India was coded as having a report where China criticized or denounced India. I was not able to find this report. However, based on the time and incidence, my best guess is this was a coding error, probably referring to Modi's strong remarks on China during Xi Jinping's visit. See the following discussion for details.

[62]The ICEWS identified a number of news sources such as Le Figaro and Thai News Service. There may be issues of double counting. Also, some of the news sources are not easily accessible. For convenience sake, I use the reports from the New York Times, `https://www.nytimes.com/2014/09/19/world/asia/modi-pushes-xi-to-resolve-border-issue-in-kashmir.html`, accessed 11 July 2018. The report also referred to the thousands of troops mobilized to face Chinese troops in Ladakh, Kashmir.

Another possible explanation is I do not have enough hostile events to test the hypotheses. As mentioned before, hostile events are rare and zero-inflated. As such, there are two issues we need to be concerned about. First, if most of the true responses are no hostility at all, then the boosting method will be biased toward predicting 0. The lack of evidence can be partly attributed to this bias. Second, for records of hostile action, most of the values are rather small, indicating they are driven by only a handful of reports. Therefore, unlike the data on cooperation, the data on hostility is more vulnerable to coding errors. The data on Singapore, for instance, highlights this need of caution in interpreting the results for hostility. There were two months in 2016 when Singapore displayed hostility toward China. In September, the Global Times, a Chinese news outlet, expressed 'disappointment' over Singapore's request concerning the South China Sea dispute during the Non-Aligned Movement (NAM) Summit in Venezuela. In response, the Singapore ambassador to China argued, the tabloid 'attributed actions and words to Singapore which are false and unfounded'.[63] This type of action is relatively mild and should not be taken as direct evidence against the restraining effect. As another example, in November 2014 China detained Singapore's army vehicles after a training exercise from Taiwan.[64] The ICEWS misidentified this incidence as hostility initiated by Singapore, while in fact it should be the reverse.[65] If so, the lack of a more hostile response from Singapore may point to possible restraining effect.

6 Conclusion

This paper studies the question of whether money of the BRI can buy affinity for China. My research shows that the initiative does improve the level of cooperation between China

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[63]https://www.channelnewsasia.com/news/singapore/singapore-ambassador-to-china-rebuts-response-from-global-times-7822490, accessed 11 July 2018.

[64]https://www.channelnewsasia.com/news/singapore/singapore-states-intent-to-recover-army-vehicles-held-in-hong-ko-7698602, accessed 11 July 2018.

[65]I reach this conclusion because the ICEWS data code this incidence as 'Arrest, detain, or charge with legal action Channel.'

and target countries. However, there is no systematic evidence that the BRI can rein in hostility. This result offers mixed evidence of commercial liberalism in that while money can induce cooperation, it may not be enough to suppress conflict. It should be noted that lack of restraining effects can be partially attributed to the feature of hostility data. With more data accumulated, future studies may be able to find a stronger result.[66]

My study also introduces a way to automatically process a vast amount of information on government interaction. Relying upon machines to 'read' all the newspapers available is a cost-efficient first step in the information age. Admittedly, there can be coding errors, especially for rare events. However, this method allows us to find patterns of behavior and identify interesting cases more efficiently. Aside from government interaction, the ICEWS data also provide information on non-government actors and on events such as civil protests and terrorist attacks. Future studies can utilize the data to explore other topics of interest.

For foreign policy practitioners, my study suggests the need of making the BRI more cost-efficient. Specifically, China needs to identify and solidify the relationship with individual countries that are more responsive to Beijing's initiative. Also, the improvement of bilateral cooperation is driven by the economic benefits of the BRI. As such, its future is also contingent on how the plan of deepening economic exchange unfolds — especially on the implementation of the BRI projects and the interaction with local governments.

That said, the above conclusions are not definitive. To begin with, the time span examined is limited to less than 5 years. Given more time, it is possible that the BRI may fundamentally change target countries' relationship with China in the long run. Relatedly, the Chinese government's attitude toward the BRI may fluctuate over time. Recently, China

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[66]Another possible avenue is to explore other states' projects similar to the BRI. That said, data on hostility will still be more zero-inflated than cooperation. Essentially, cooperation is easier to reciprocate because there are typically few costs. In comparison, retaliation of hostility is much harder because of the concern about further escalation.

has been emphasizing the initiative's role of promoting global cooperation, rather than focusing solely on Eurasia. Lastly, the U.S. and other countries such as India may counteract China's initiative, especially in some strategically important countries. As such, the BRI's effects can be more limited in those countries. This does not necessarily mean the Chinese effort is a waste. However, it does indicate the future challenges facing the BRI.

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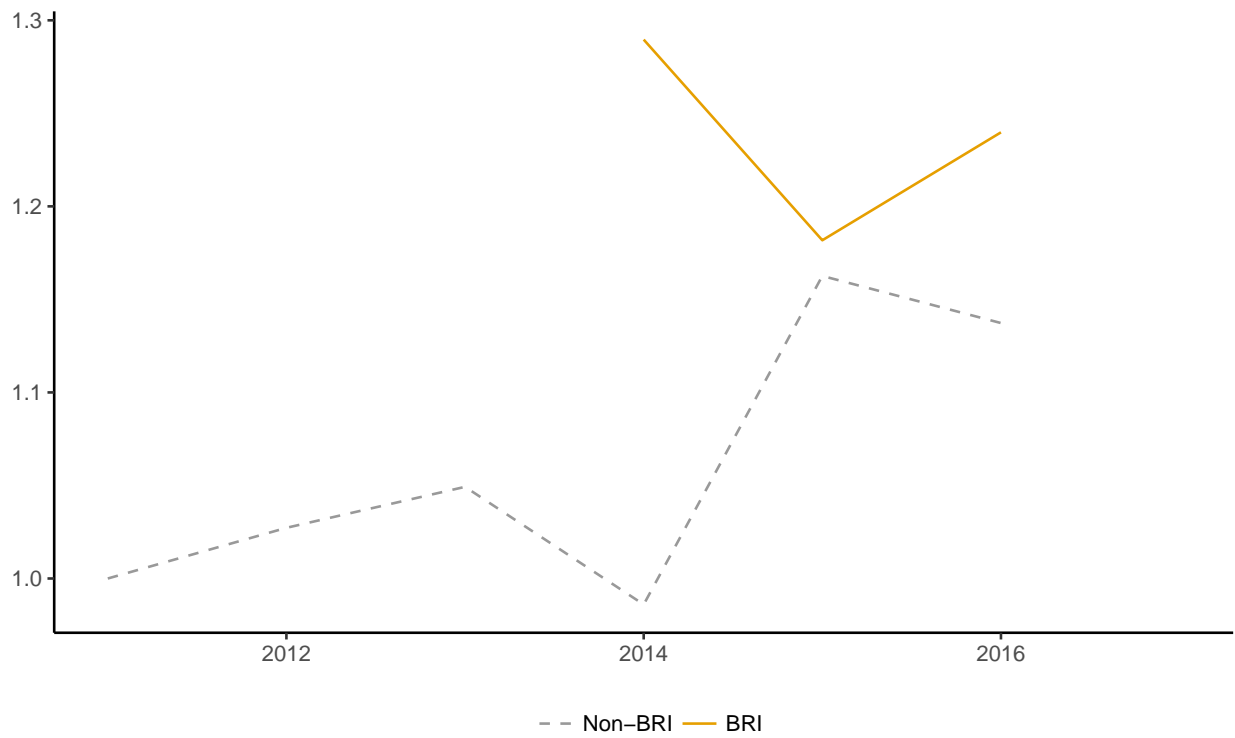
Figure 1: Trade Dependence BRI vs. Non-BRI Countries. This plot is composed by taking the average of each group's trade dependence (total trade volume divided by GDP). The level of trade dependence in 2011 is normalized to 1.
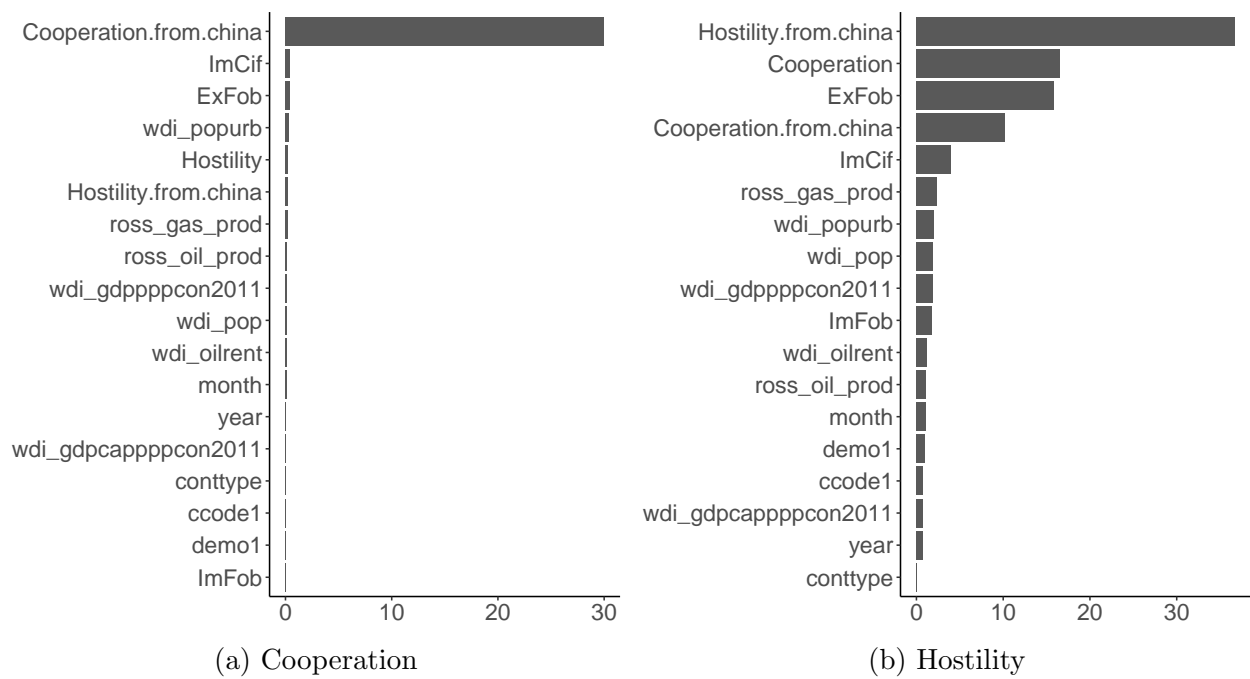
(a) Cooperation　　　　　(b) Hostility

Figure 2: Relative Influence Plots. The influence for cooperation from China is almost 100 for predicting cooperation outcome. I set the maximum to 30 for illustration purpose.
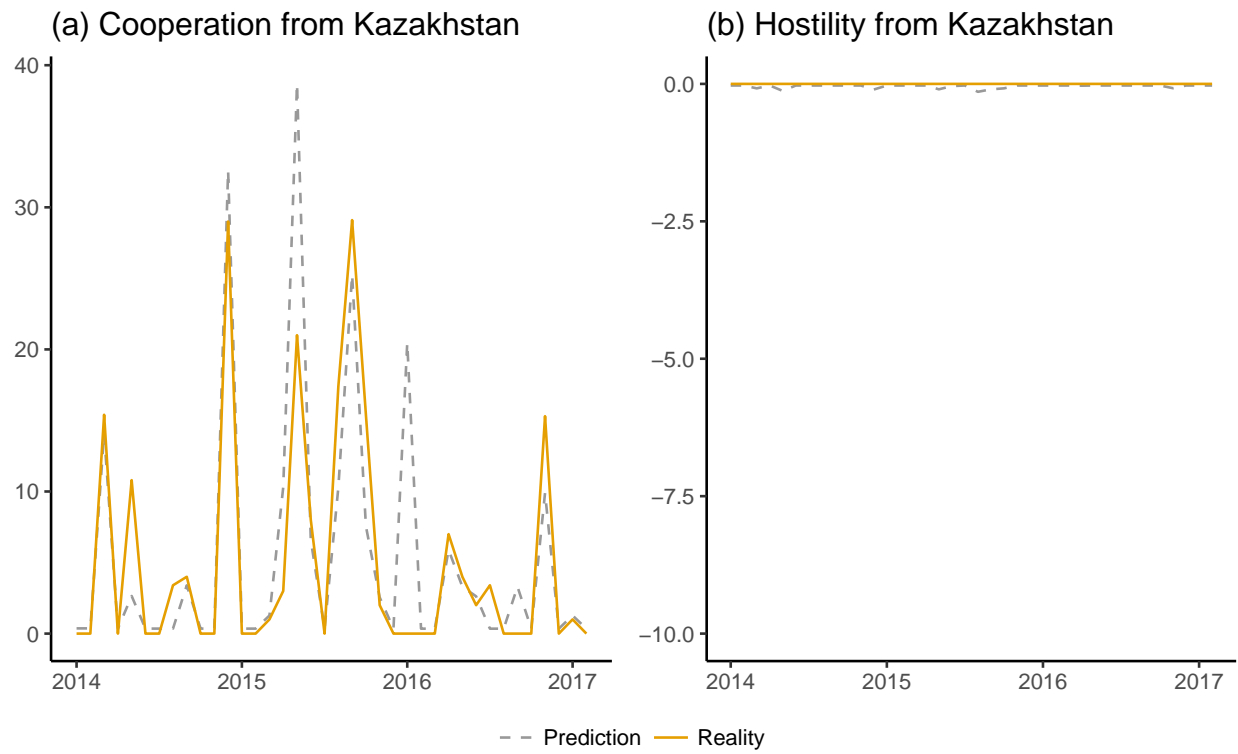
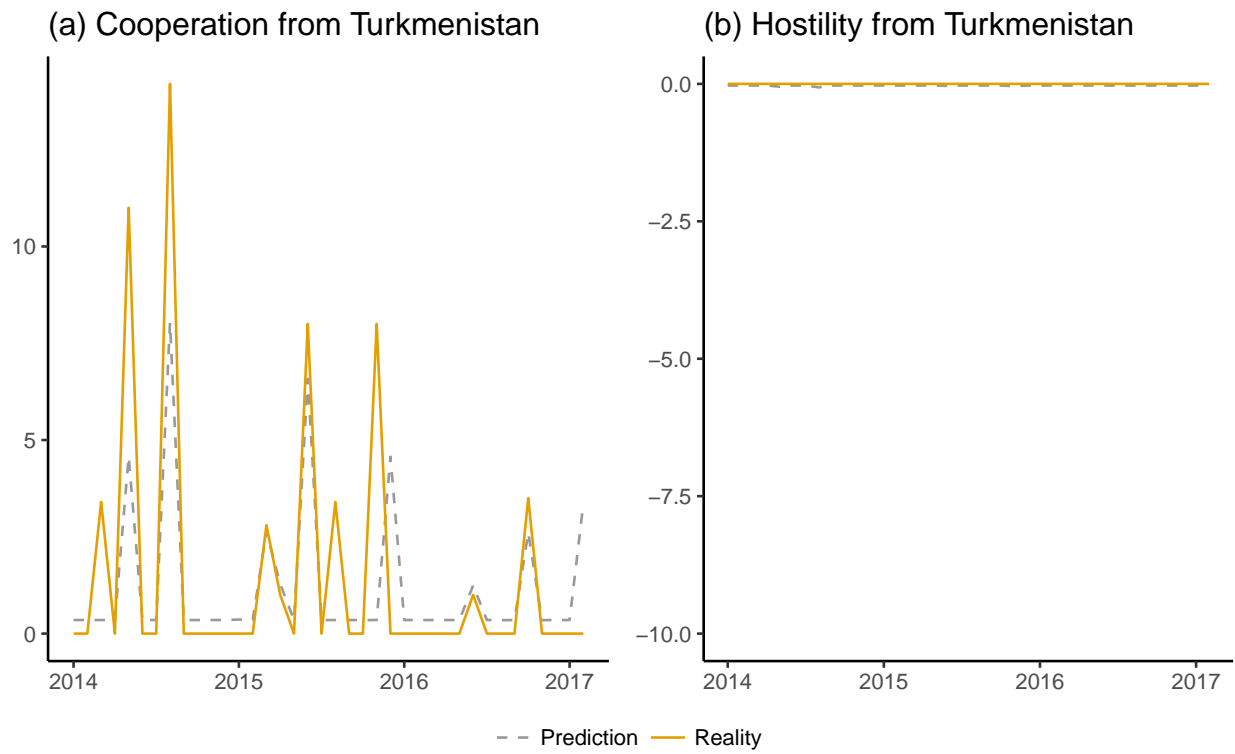Figure 3: Kazakhstan's cooperation and hostility toward China.

Figure 4: Turkmenistan's cooperation and hostility toward China.

(a) Cooperation from India

(b) Hostility from India
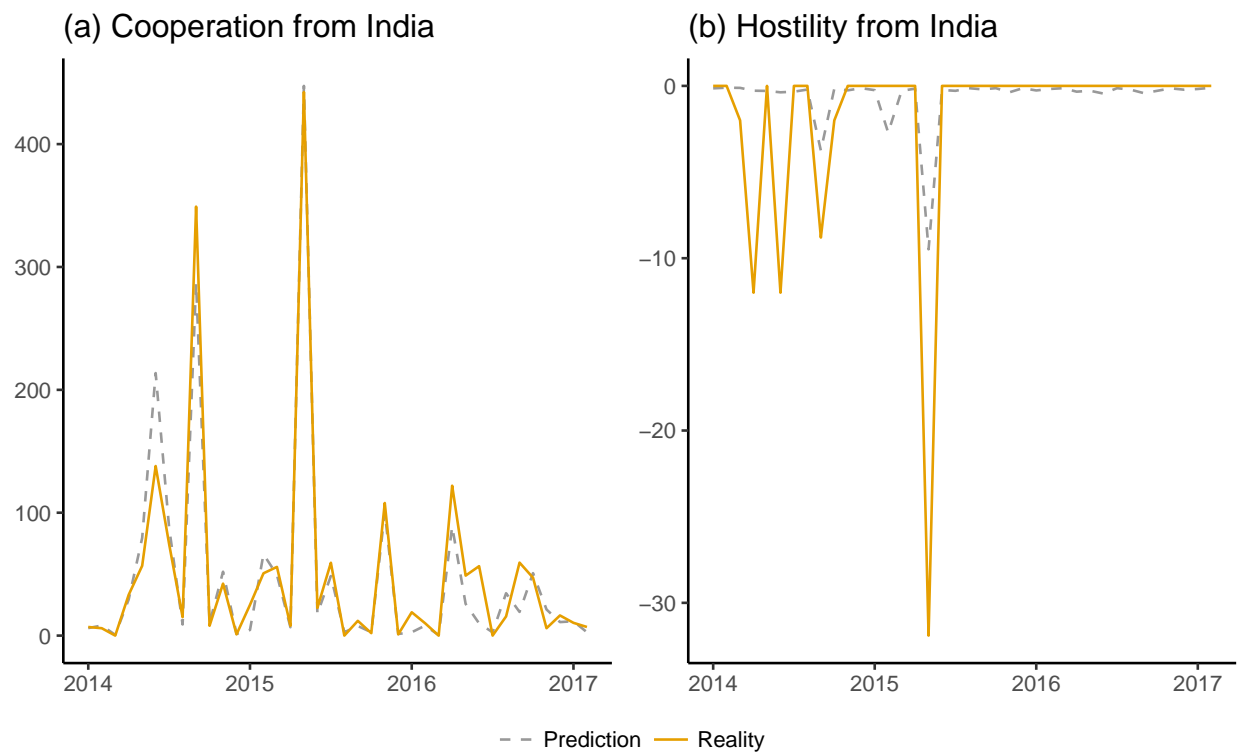
- - Prediction — Reality
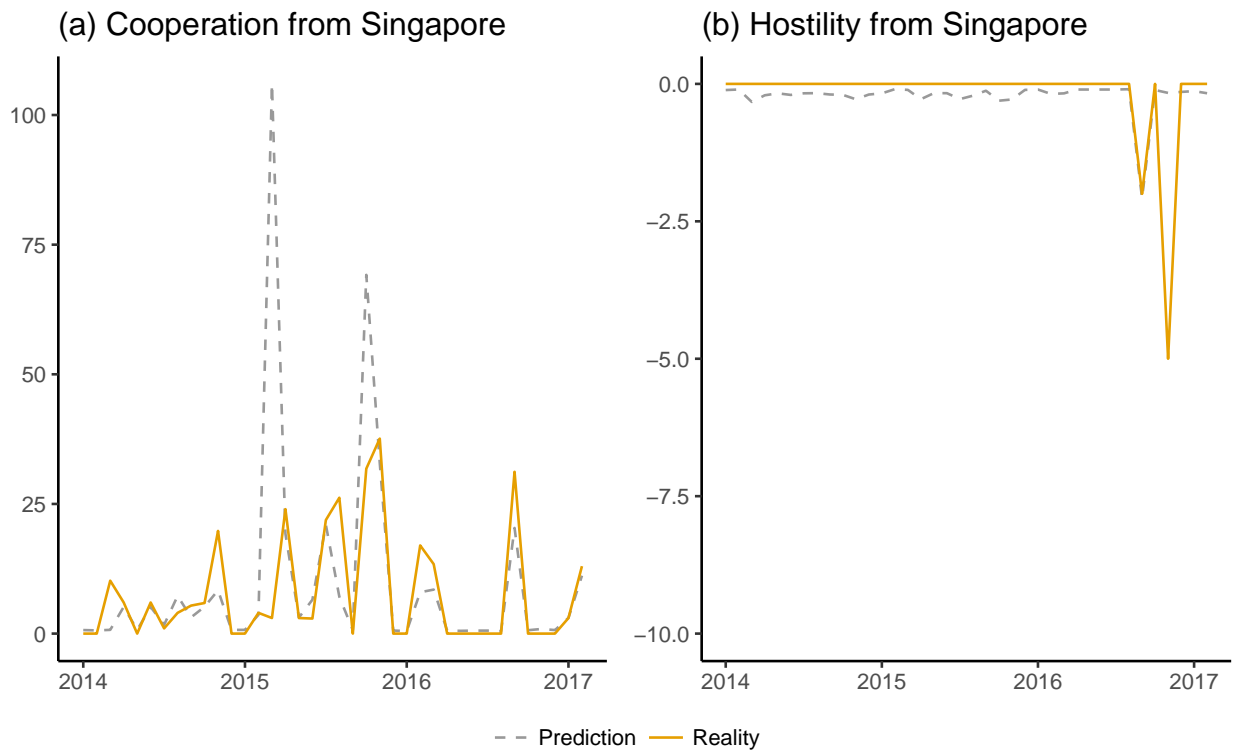
Figure 5: India's cooperation and hostility toward China.

Figure 6: Singapore's cooperation and hostility toward China.

Table 1: Summary Statistics of All Variables. Total number of observation is 49742.

	Median	Mean	Standard.Deviation	NumberofNA
Cooperation.Target	0.00	5.01	28.60	0.00
Hostility.Target	0.00	-0.11	1.66	0.00
Cooperation.China	0.00	4.87	26.34	0.00
Hostility.China	0.00	-0.15	3.42	0.00
Export.Fob	8927507.00	330245700.81	1185742831.43	10004.00
Import.Cif	28822228.00	493445784.24	2235330504.68	4469.00
Import.Fob	117461652.50	791275760.91	1344966073.36	46850.00
Democracy	6.00	3.63	6.40	8198.00
Contiguity	6.00	5.58	1.35	374.00
GasProduction	0.18	133.05	506.82	10958.00
OilProduction	54991.40	20148705.55	61160972.38	9902.00
OilRent	0.00	5.25	12.24	11078.00
GDP	43612112016.05	383121709244.32	1256184701972.38	9134.00
GDPPerCapital	8697.31	15481.10	18632.38	9134.00
Population	7295320.50	28207741.84	92027525.36	6278.00
UrbanPopulation	55.56	54.75	23.62	6278.00

Table 2: MSE of Predictive Models

MSE	Model		
	lasso	random forest	boosting
Cooperation	114.35	123.83	70.06
Hostility	3.84	1098.8	2.77