# An analysis of India’s use of vaccine diplomacy – for influence or economic relations? Do Regional Power Tensions impact India’s vaccine diplomacy?

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*Do Regional Power Tensions impact India's vaccine diplomacy?*

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**Introduction:**

The Coronavirus pandemic has drastically changed how we value vaccine resources worldwide. The vaccine scarcity experienced in 2021, exponentiated by the incredible demand worldwide and the limited number of producers available, reiterated the categorization of vaccines as an essential strategic resource (Sparke & Levy, 2022). Vaccines support public health by ensuring that vaccine programs are not halted due to a lack of vaccines. Despite the great need for vaccines within their own states, vaccine producers are willing to provide vaccines to other states bilaterally. This bilateral coronavirus vaccine delivery process occurred in India's Vaccine Maitri program in 2021 and 2022 (Ministry of External Affairs, n.d.). There is evidence in the current literature that the provision of these vaccines, also called vaccine diplomacy, can operate as a form of soft power (Sparke & Levy, 2022). Considering how traditional sources of soft power, according to the balance of power theory, are used to attract states to a pole's coalition, there is a question if vaccine diplomacy operates in the same way (Pal, 2021).

By analyzing India's Vaccine Maitri Program and focusing on states within India's Neighbourhood First Policy [NFP], this paper aims to uncover if the geographical regional power tensions [RPT] between China and India, being the two most powerful states in Southern Asia, can explain the variation in vaccine diplomacy provided by India. India has used other forms of soft power, such as culture and investment projects, to balance China's influence within the region, but the literature has not considered if vaccine diplomacy operates similarly (Malik, 2021). Therefore, this paper aims to answer the question; *Do regional power tensions impact India's vaccine diplomacy?* To answer this research question, this paper uses quantitative and qualitative methods to illustrate the relationship between RPT and vaccine diplomacy while simultaneously illustrating that alternative explanations for vaccine diplomacy cannot explain the variation in the data. This process entails that various theories are tested, which, according to the literature, could explain the variation in vaccine diplomacy. These theories include economic relations, biosecurity policy, geographic proximity, and de-escalation tactics (Lee, 2021; Liu, Huang & Jin, 2022; Hotez, 2014). To test these theories, data is used from a variety of sources; AEC databased on China's investments, OEC data on India's trade relations, statements made by Indian representatives, migration statistics, and existing literature.

This paper has two contributions; firstly, there is no evidence that RPT can explain vaccine diplomacy. The results of this paper show that the RPT, operationalized as the increase in investments from China, does not follow the expectations of the power balance theory. Secondly, this paper finds that economic relations can explain vaccine diplomacy variation through statistical and qualitative evidence. These findings add to the academic body of literature on vaccine diplomacy by ruling out one possibility of why states provide vaccine diplomacy and providing evidence of a theory that can explain the variation. This assists in closing the existing gap in the literature regarding why states use vaccine diplomacy. Researchers have not systematically tested multiple theories of vaccine diplomacy to India's vaccine diplomacy; therefore, this paper is novel in its findings.

**Theory:**

In the last decades, power distributions have been shifting between the states in Asia (Pal, 2021). India and China's rising economic capacity and political influence have changed Asia's, more specifically Southern Asia's, political landscape (Paul, 2019). This has led to geopolitical tensions between the states (Paul, 2019). In the literature on this phenomenon realist theory, compared to liberal or constructivist-based theories, has been most widely utilized to explain these changes. The academic trend of using this grand theory has been instrumental in understanding why specific relations between states occur in the area and how states use soft power to gain influence within these relations (Shah, Hasnat & Rosefielde, 2017). Observations regarding the rising powers of India and China have led to new discussions on why these states use soft power to gain influence and control in the region (Paul, 2019). The balance of power theory is the primary and most successful theoretical framework to explain this process.

*The Balance of Power theory*

The balance of power theory argues that states form specific relations with other states in a geographical area because they want to protect themselves from the coercion of a more powerful state in the region (Nolte, 2010). This theory predicts that states feel threatened by the presence of a stronger state, which encourages them to take one of two actions; either they will ally with other states to form a coalition that balances against the stronger state's power, or they will join the coalition of the stronger state (Nolte, 2010). A state's power, concerning this process, is generally defined as the control a state has over resources; which considers a state's economic, military and influential abilities (Nolte, 2010). When this phenomenon is

observed in a specific regional area where there are two powerful states, as is the case regarding India and China in Southern Asia, the theory predicts that coalitions of states will form around these two poles (Nolte, 2010). Therefore, in Southern Asia, China and India are categorized by this theory to operate as poles, to balance against the influence and power of the other. For the poles to be more successful at balancing against the influence of the other pole, it attempts to gain more states in its coalition and ensure that the opposing coalition does not achieve more states (Paul, 2019; Nolte, 2010). Thus, the more states a pole has within its coalition, the fewer states the other pole has, the better they are at balancing against its coercion (Paul, 2019).

*Soft and Hard Power*

In the region of Southern Asia, the theory suggests that India and China want to gain as many states in their coalition as possible (Li, 2018). To do this, the literature suggests that poles can influence other states in two ways; either through the use of soft power or through hard power (Li, 2018; Nye, 2008). Hard power manipulates other states through threats and inducements to join the coalition, while soft power refers to attracting states through non-coercive measures (Nye, 2008). Using these mechanisms can pull states into the coalition of one pole and away from the coalition of another (Nye, 2008). This illustrates, the role of soft power in aligning states with coalitions (Li, 2018).

Studies within the broader literature on the balance of power within Southern Asia have illustrated that poles have used traditional sources of soft power to ensure that states join and remain in their coalition (Pal, 2021; Malik, 2012). Authors such as Pal (2021) and Malik (2012) focus on how China and India use soft power mechanisms such as; economic incentives, trade agreements such as China's Belt and Road initiative, and infrastructure projects to influence surrounding states to join their coalition. These articles conclude that the use of soft power by both India and China is used to solidify their standings in the region by gaining support and influence in the countries where it is used (Pal, 2021; Malik, 2012). The soft power mechanism can convince states to join their coalition by attracting the state with incentives (Pal, 2021; Malik, 2012). Therefore, the research shows that the regional poles are already using soft power to persuade states to join their coalition. The power tensions between India and China are influencing how traditional sources of soft power are provided to specific states (Malik, 2012).

*Soft power: Vaccine diplomacy*

However, the articles that focus on the balance of power in Southern Asia have a very narrow scope regarding the *types of soft power* states utilize to create or maintain a coalition in the region. Current research, as stated earlier, focuses on traditionally defined soft power mechanisms that states use to gain influence, such as economic relations and cultural projects (Nolte, 2010). With the emergence of the Coronavirus pandemic and the bilateral grants of vaccines, the saliency of an understudied form of soft power emerges, vaccine diplomacy. *Vaccine diplomacy* is broadly defined as a form of health diplomacy whereby the delivery of vaccines achieves overarching health goals between the states or other common foreign policy goals (Hotez, 2014). Within the literature on why donor states provide vaccines, there are two broad schools of thought regarding the purpose of vaccine diplomacy (Sparke & Levy, 2022). The first school categorizes it as a non-political grant of vaccines based on necessity (Sparke & Levy, 2022). In contrast, the second, and more widely accepted conceptualization, recognizes that politics influences vaccine distribution and that vaccines are granted to influence other states (Sparke & Levy, 2022). This second categorization of vaccine diplomacy means that vaccine diplomacy operates as a form of soft power (Sparke & Levy, 2022). This is supported by the article by Pannu and Barry (2021), which, instead of conceptualizing vaccine diplomacy as unrestricted health support, concludes that the process of giving vaccine diplomacy is a political process based on underlying political objectives.

Vaccine diplomacy, unlike vaccine charity, is most often measured through bilateral agreements between states (Suzuki & Yang, 2022; Sparke & Levy). Vaccine charity, which most often occurs through multilateral institutions, refers to granting vaccines based on objective criteria whereby the highest number of vaccines are provided to the poorest states (Spark & Levy, 2022). The current literature on vaccine diplomacy determines that bilateral donations allow donor states to more distinctly decide which countries receive donations, therefore allowing for the maximization of diplomatic gains compared to multilateral distribution (Suzuki & Yang, 2022).

To understand why the provision of vaccines would encourage a recipient state to join the coalition of a donor state, the positive externalities created by receiving vaccine diplomacy must be discussed. Firstly, the vaccines provided through vaccine diplomacy are essential for the public health of developing states (Su et al., 2021). When a lack of vaccines is why a recipient states vaccination programs are halted, the grant of vaccines can help vaccinate a more significant portion of the public, which supports a state's public health. This produces a

population more protected against the vaccine-targeted disease. Secondly, due to the vaccines creating a healthier society in a donor state, the state will be able to enjoy the positive externalities of having a vaccinated population (Wang et al., 2021). A population which is healthier is more productive, which is important for the functioning of society (Wang et al., 2021). In the case of the Coronavirus pandemic, the states will be able to, for example, reopen their economy.

Moreover, the re-election of the political elite in these recipient states relies on, to a degree, how successfully they have handled the Coronavirus pandemic (Su et al., 2021). This incentivizes them to accept grants as they are set to gain public favour from the outcome of having a healthier state. India is, historically, the primary vaccine producer in Southern Asia and has granted various vaccines to developing states (Signh et al., 2022). This pattern does not vary regarding India providing the Coronavirus vaccine (Signh et al., 2022). Therefore, the recipient states are, theoretically, willing to join India's coalition in exchange for vaccines due to the positive benefits the state and political elite receive due to this provision (Signh et al., 2022).

Consequently, the theories have illustrated the following; the balance of power theory can be used to explain the tensions between two powerful states in a region, that these states create coalitions, and to encourage weaker states to join their coalition over their counterparts, soft power is used. The theory predicts that India provides vaccines to recipient states to ensure that these states join India's coalition instead of China's (Paul, 2018). By illustrating that vaccine diplomacy can operate as soft power, this creates expectations regarding its use.

Therefore, due to the consideration that vaccine diplomacy is politicized as soft power and considering that India's national interest responds to the balance of power against China, the question arises; *Do regional power tensions impact India's vaccine diplomacy?*

*Scope of the Research:*

To understand if RPT can explain the variation in vaccine diplomacy, the research focuses on India's use of vaccine diplomacy through its Vaccine Maitri Program (Ministry of External Affairs, n.d.). The research focuses on India as the donor of vaccine diplomacy due to India being the primary provider of vaccines to developing states and being the pole around which the coalition balancing against China in Southern Asia forms around (Wouters et al., 2021).

As discussed earlier, to observe the vaccine diplomacy provided by India, the research will observe the *bilateral* vaccines provided by India. India's bilateral donations occurred through a program named Vaccine Maitri, providing bilateral aid to various states worldwide (Ministry of External Affairs, n.d.). The bilateral vaccines are represented by the vaccines provided under the category of India's grants to other states (Ministry of External Affairs, n.d.). These grants are observed instead of, for example, the vaccines India donates through the COVAX program because India can unilaterally decide to whom the vaccines are provided to. The allocation of vaccines provided via multilateral institutions is not decided upon by India but rather by a collection of states or non-partisan bodies (Sparke & Levy, 2022).

To determine if RPT impacts India's vaccine diplomacy, the research focuses on a grouping of states that India determines to be salient for their foreign policy. As discussed in the balance of power theory, these are states that India would not want China to influence and, consequently, absorb into China's coalition as this causes a threat to India. Therefore, the scope of the research focuses on the states under India's Neighborhood First Policy [NFP], representing a geographical and relational grouping defined by India as necessary for their national interests (Das, 2016). This grouping of states originates from the SAARC summit, which established a basis of regional cooperation and political union between the states included (Jain & Singh, 2009). Countries within this group include; Thailand, Bangladesh, Nepal, Sri Lanka, Myanmar, Bhutan, Pakistan, and Afghanistan (Das, 2016). These states are of high national interest to India and are influenced by both China and India (Pal, 2021). This makes the comparison of the vaccine diplomacy provided to these states interesting; both poles want the states in this grouping to join their coalition (Pal, 2021). Therefore, would bilateral vaccine diplomacy follow the trends of soft power within this grouping?

Considering the theory and how soft power is determined to be used by a pole to ensure that weaker states join their coalition instead of their opposition, specific expectations arise regarding the outcome of this research (Nolte, 2010). Within India's NFP, the research expects that the vaccines are distributed in a similar pattern to the distribution of traditional soft power. Consequently, the vaccines are expected to be bilaterally provided to the states at risk of joining China's coalition to attempt to align these states with India's Coalition instead.

The theory points towards the assumption that; the more at risk a state in India's NFP is of joining China's coalition, the more likely India will provide vaccines to it.

Therefore, the following hypotheses arise:
*H1: The higher the increase in China's Influence within the state from India's Neighbourhood First Policy, the more likely the state is to receive vaccine diplomacy from India.*

*H0: The increase in China's Influence within the state from India's Neighbourhood First Policy does not affect India's vaccine diplomacy.*

**Research Method:**

To answer the research question and to accept or reject the hypotheses, a comparative analysis will be conducted across the scope of states within India's NFP. This research design will compare the RPT concentrated within each state to the number of vaccines they received through India's Vaccine Diplomacy program. Due to the limited number of cases, Spearman's rho is used to illustrate the correlation between the variables when statistical analysis is possible. This analysis reveals the correlation between the rankings cases and indicates the relationship between the variables. When the statistical analysis is unsuited to analyze the relationship between variables, the saliency of the theory will be determined by considering how successfully it could predict India's vaccine diplomacy. However, the correlation coefficients produced by these tests are not a representation of causality but merely indications that there is evidence that the theory can explain the variation in vaccine diplomacy.

To justify why Spearman's rho is used for the statistical analysis instead of other statistical methods, the characteristics of the data are evaluated. Due to having fewer than 30 cases and the data significantly failing the assumptions required for this Pearson's r, Spearman's rho is the chosen method to evaluate the correlation between the variables. To use this statistical method, the cases will be ranked, which reflects the relative size of the observations to each other without the analysis being skewed by possible outliers within the small sample size (Conover, 2012). The research question is focused on why some states received more vaccines than others; therefore, the analysis still tests the necessary relationship while accounting for the non-parametric nature of the data. This statistical method requires the following assumptions; the data must be ordinal and monotonic. Since the data meet these assumptions, this model can be used to observe the relationship between the variables.

The dependent variable throughout the research is vaccine diplomacy, which is operationalized by the number of vaccines per capita that India has bilaterally granted to states within its NFP in 2021 and 2022 (Ministry of External Affairs, n.d.). The data on the number of vaccines donated bilaterally by India, as is seen in table 1, originates from the sub-category, vaccine grants, within India's Vaccine Maitri program (Ministry of External Affairs, n.d.). This amount only reports on the bilateral grant of vaccines and does not consider the vaccines India donated through COVAX or other multilateral institutions. This is because, as discussed in the theory section, the donor state can independently decide where vaccines are provided when this is done bilaterally, compared to vaccines distributed via multilateral institutions (Fazal, 2020). The number of vaccines granted to the countries in India's NFP is converted to reflect the vaccines provided per capita to ensure that the effect of population size is accounted for in the research. The provision of 100,000 vaccines to the Maldives, which has a total population of just over 500,000 citizens, would be considerably more generous compared to giving the same amount of vaccines to Bangladesh, with a total population of over 166 million (World Bank, n.d.). For this conversion, the population sizes, as reported by the World Bank, will be utilized (World Bank, n.d.).

The research design is a two-fold comparative analysis; firstly, it will determine how successful the RPT are in explaining the variation in vaccine diplomacy, and secondly, it will evaluate how successful alternative theories on vaccine diplomacy are in explaining the variation. Due to the complexity of isolating and determining which variable specifically impacts vaccine diplomacy, especially when there are so few cases available, the research needs not only to test one theory but rule out alternative theories to gain a significant answer to the research question (Signh et al., 2022). Therefore, to gain a substantial answer to the research question, more is needed to illustrate a correlation between the two factors; it is also necessary to rule out the possibility that other theories can explain the variation. This process helps to determine, with a higher degree of certainty, if RPT affects vaccine diplomacy. This allows for a systematic approach of determining if the data confirms what is expected according to what RPT theorizes would occur and disproving alternative explanations.

*Regional Power Tensions:*

**Table 1: Vaccines per capita – India's NFP**

| Countries | Vaccines Donated Bilaterally | Vaccines per Capita |
|---|---|---|
| Bhutan | 550000 | 0.7052 |
| Maldives | 200000 | 0.3679 |
| Nepal | 1112000 | 0.0375 |
| Afghanistan | 1000000 | 0.0251 |
| Sri-lanka | 500000 | 0.0226 |
| Bangladesh | 3300000 | 0.0198 |
| Thailand | 200000 | 0.0029 |
| Pakistan | 0 | 0 |

To test the independent variable, RPT, the abstract concept must be operationalized in a manner that can be measured and analyzed within the research. The theory has indicated that the increase in China's influence in the region could predict India's use of vaccine diplomacy. To test this hypothesis, an indicator is required which captures the increase of influence that China has within the states in India's NFP. The indicator of direct investment per capita is established within the literature to represent a state's influence on another (Gong, 2018). As described in the literature, investment in this form represents a state's economic interest in another state and is utilized by China to gain influence in Southern Asia (Fong & Sakib, 2021). The wide use of this indicator in current literature and the availability of data on China's investment to states in India's NFP makes this indicator a more justified choice to utilize within the research compared to other indicators of influence, compared to cultural influence (Fong & Sakib, 2021).

To determine if the increase in investments made by China can explain the variation, the percentage increase in China's investments to states in India's NFP, in all sectors, between 2018-2019 will be utilized (American Enterprise Institute [AEI], 2022). This time frame is utilized as it captures the increase in investments in the short period leading up to India's use of vaccine diplomacy. The short-term increase in investment would represent China's attempts to encourage the state into their coalition instead of India's. The choice to analyze

the investments until 2019 is to control for the effect of the Coronavirus pandemic on both the number of investments made by China and the vaccine diplomacy provided by India. The choice to primarily use AEI as the data source for the variable is due to the database containing the most comprehensive data on all the cases in the research (AEI, 2022). This database, however, does not include data on China's investments in Bhutan between 2018-2019. To remedy this data gap, data will be used from Bhutan's government reports on FDI (Government of Bhutan, 2018). Alternatives to using this database would have entailed patching together data from reports, and other sources, made by states themselves which are not readily available and would have harmed the validity of the data. Despite this database being recognized as the most complete dataset on China's investments, the data is not triangulated using other sources due to a lack of availability. This is accounted for when analyzing the data.

*Alternative Theories:*

The other theories which could explain the variation, as established in current literature, are that vaccine diplomacy occurs due to; economic trade relations, India's biosecurity policy, the geographic closeness between India and the country and that vaccine diplomacy is used as a tool to de-escalate tensions between states (Lee, 2021; Liu, Huang & Jin, 2022; Hotez, 2014). To test the saliency of these theories in explaining India's distribution of vaccine diplomacy, their underlying theoretical approach, the justification for the specific indicator used to test the theory, and the outcome of results that would support or oppose its hypothesis will be briefly discussed in the results section. The comparison between what the theory predicts the vaccine diplomacy variation would look like to the reality of India's bilateral distribution of vaccines indicates its ability to successfully explain the variation in vaccine diplomacy. The reason for including these theories in the research design is to ensure that the alternative explanations are accounted for in researching RPT. To test these alternative theories, data will be used from various sources, such as; exports and imports per capita, a qualitative analysis of news articles, and migration data (OEC, 2019). The justification for why these specific measures are utilized is discussed per alternative theory in the results section.

To remain transparent, there is a complexity in proving if RPT is the underlying reason for India's use of vaccine diplomacy (Signh et al., 2022). The limits of this study lie in the difficulty of ruling out the effect of confounding factors and ensuring that alternative variables do not impact the correlation. Moreover, due to the risk of selection bias caused by

using a very narrow scope, the applicability of the research findings regarding vaccine diplomacy beyond India's NFP cannot be guaranteed. This would require more testing with a broader selection of cases. However, this paper aims to overcome these challenges by using a research method to observe if RPT can explain the variation and rule out alternatives.

*Qualitative Analysis:*

To understand the context in which India uses vaccine diplomacy, content analysis of statements made by Indian government representatives and official governmental briefs are utilized. The results of the initial research design, on testing the various hypotheses, revealed the significance of economic relation to India's distribution of vaccine diplomacy. To gain further evidence that this theory can explain the variation in vaccine diplomacy, a qualitative content analysis on a case study is utilized. The first part of the research indicated that Bhutan received the highest amount of vaccines and has the strongest economic relation with India compared to the other cases. Bhutan's unique combination of ranking first in both variables provides the opportunity to determine if the research can also qualitatively indicate that economic relations are India's reason for using vaccine diplomacy.

The qualitative analysis will analyze statements made by representatives of India's government regarding why they are providing vaccines to Bhutan. News articles are sourced using the Factiva database with the search terms; "India", "Bhutan", and "Vaccines". To ensure that the articles report on the use of vaccine diplomacy, articles will be sourced from two weeks before India's first shipment of vaccines to Bhutan to two weeks after India's second shipment to Bhutan (Bhutan-India Relations, 2020). This time frame captures articles reflecting on why India has donated vaccines; therefore, it should theoretically report on statements made by officials in response to vaccine provisions (Bhutan-India Relations, 2020). For the qualitative research to confirm that economic relations drive India's use of vaccine diplomacy, the qualitative analysis should reveal that India's government officials mention that economic relations and trade between the states drive the donation of vaccines. The coding frame will account for the possibility that alternative reasons regarding India's use of vaccine diplomacy are mentioned in these articles.

**Results:**

*Testing Regional Power tensions:*

**Table 2: Vaccine diplomacy and the increase in investments (in millions of dollars)**

| Countries | Vaccines per Capita | Investments by China in 2018 (millions of dollars) | Investments by China in 2019 (millions of dollars) | Percentage change in investment from 2018-2019 |
|---|---|---|---|---|
| Bhutan | 0.7052 | 0 | 0 | 0 |
| Nepal | 0.0375 | 610 | 320 | -47.054% |
| Maldives | 0.3679 | 110 | 0 | -100% |
| Afghanistan | 0.0251 | 0 | 0 | 0 |
| Sri Lanka | 0.0226 | 1.120 | 390 | -65.17 % |
| Bangladesh | 0.0198 | 7.540 | 4950 | -34.78% |
| Thailand | 0.0029 | 1.470 | 710 | -51.7% |
| Pakistan | 0 | 3.610 | 4800 | 32.96% |

The increase in the investments made by China to the states within India's NFP between 2016-2019, as is seen in table 2, will be analyzed to determine the influence of RPT on vaccine diplomacy. The increase in these direct investments, as discussed earlier, is an indicator that the influence which China is practising within the target country is increasing (Gong, 2018). The relative population between the cases is not required for this analysis as the variable captures the percentage increase. Therefore, translating the data to a per capita amount is not necessary. The states will be ranked according to how high this percentage is relative to the percentages of the other states in India's NFP. A limitation of the research is that it does not quantify how significant the investments were in 2018 and 2019. This disallows the research to determine if a larger initial investment size influences the relationship.

The hypothesis being tested is: *The higher the increase in China's Influence within the state from India's Neighbourhood First Policy, the more likely the state is to receive vaccine diplomacy from India.*

This hypothesis is operationalized to; the higher the percentage increase in investment per capita China provides the state from India's NFP between 2018-2019, the more vaccines they receive from India. Spearman's rho is utilized to quantify the relationship between the two variables.

**Table 3: Order of vaccine diplomacy compared to order of RPT**

| Order of States: Vaccine Diplomacy | Order of States: Regional Power Tensions |
|---|---|
| Bhutan | Pakistan |
| Nepal | Bhutan |
| Maldives | Afghanistan |
| Afghanistan | Sri Lanka |
| Sri Lanka | Bangladesh |
| Bangladesh | Nepal |
| Thailand | Thailand |
| Pakistan | Maldives |

In table 3, the ranking of the states according to these variables is presented. The statistical analysis using Spearman's rho revealed that the correlation between vaccine diplomacy and the increase in investments by China is negative, $r(6) = -0.22$, $p = 0.601$. This means that the higher the increase in investments made by China, the fewer vaccines the state received from India. This result is not significant at $p < 0.05$ level or a $p < 0.1$ level. Therefore, this result does not support the H1 hypothesis. The direction of this hypothesis is not supported by these results due to the correlation coefficient being negative rather than positive, and additionally, these results lack significance which means that the null hypothesis, of no effect, cannot be rejected.

**Ruling out Alternative Explanations:**

This second section of results will discuss the saliency of the alternative theories in explaining the variation in vaccine diplomacy. The literature on vaccine diplomacy and the reasons behind its use have determined that there are four main alternative theories to explain the variation in vaccine diplomacy (Lee, 2021; Hotez, 2010, 2014; Liu, Huang & Jin, 2022; Bhide, 2021). To make a meaningful argument regarding how successful RPT is in explaining the variation, the results must indicate that the other theories are less capable of explaining the variation in India's vaccine diplomacy.

*Vaccine Diplomacy due to Economic Relations:*

**Table 4: Imports/Exports per country in India's NFP**

| Countries | India's Imports and Exports, to and from the states in India's Neighborhood First Policy (Millions of Dollars) | Imports/Exports Per Capita (in Dollars) |
|---|---|---|
| Bangladesh | 9430 | 56.705 |
| Nepal | 8198 | 276.306 |
| Thailand | 11510 | 164.546 |
| Sri Lanka | 5350 | 241.43 |
| Pakistan | 2033 | 91.742 |
| Bhutan | 930 | 1192.46 |
| Afghanistan | 1061 | 26.632 |
| Maldives | 300.65 | 553.051 |

As discussed by Lee (2021), the theory assumes that donor states would provide more vaccine diplomacy to states with whom they have important trade relations due to the benefits that the donor receives from the target state remaining healthy. This is due to healthier states, and states less heavily impacted by a pandemic have better functioning economies that benefit the donor state (Yuliantoro, 2022). Therefore, more economically important states to a donor state will be prioritized for vaccine diplomacy (Yuliantoro, 2022). The articles that focus on this theory indicate that the economic value of the imports and exports between the donor and recipient states would impact the vaccine diplomacy they receive (Yuliantoro, 2022; Lee, 2021). For this theory to explain the variation in the independent variable, the data should indicate that the highest amount of vaccines are provided to the states that imported and exported the greatest number of products per capita from and to India.

If this theory can explain the variation in vaccine diplomacy, India's 2019 exports and imports, as recorded by the Observatory of Economic Complexity [OEC] database, to and from the target states are utilized (OEC, 2019). The time frame of 2019 is chosen to make this comparison due to the trade occurring this year not being impacted by the confounding variable of the Coronavirus pandemic, compared to the trade occurring in 2020-2021 (Bas et al., 2022). Therefore, the independent variable, as seen in table 4, for this theory will represent the sum of imports and exports between India and the target state per capita in 2019. The states will be ranked according to the outcome of this variable, and Spearman's rho will be used to determine the correlation between the variables.

**Table 5: Order of vaccine diplomacy compared to order economic relations**

| Order of States: Vaccine Diplomacy | Order of States: Economic Relations |
|---|---|
| Bhutan | Bhutan |
| Nepal | Maldives |
| Maldives | Nepal |
| Afghanistan | Sri Lanka |
| Sri Lanka | Thailand |
| Bangladesh | Pakistan |
| Thailand | Bangladesh |
| Pakistan | Afghanistan |

The results of this theory indicate that the states which should theoretically receive the highest amount of vaccines are Bhutan, Maldives, Nepal, and Sri Lanka. As is seen in table 5, the ordering of the states regarding who should receive the most vaccines according to economic relations is very similar to the vaccine diplomacy provided by India. Using Spearman's rho to analyze the relationship between the variables, the data shows that as the economic relations increases between India and the target states, the number of vaccines they receive also increases. The analysis results are as follows; there is a positive correlation between the two variables $r(6) = 0.69$, $p = 0.058$. Therefore, the direction of the correlation matches what is expected according to the theory, with the results being almost significant at $p < 0.05$. This evidence strongly supports the hypothesis of the theory.

*Vaccine Diplomacy as de-escalation policy:*

This theory is based on broader observations that the US provides vaccine diplomacy to states with a hostile foreign policy toward their donors (Hotez, 2010, 2014). Hotez (2014), in his later research, questions why US vaccine diplomacy targeting neglected tropical diseases is offered to states with hostile US foreign relations, such as Cuba and Indonesia. The underlying assumption of this theory is that these vaccines are supplied to de-escalate existing tensions between the donor and target state to improve relations (Hotez, 2014). The provision of vaccines is theorized to promote more favourable relations between the donor and target states (Hotez, 2014).

For this theory to explain the variation in vaccine diplomacy, the highest amount of vaccines is provided to states with whom India had an altercation or a conflict leading up to the donation of the vaccines (Hotez, 2014). According to this theory, the current literature is unclear regarding the necessary timeframe in which these altercations should occur for them to be salient. However, if the same logic is applied when analyzing RPT, we would assume that these tensions should be salient when the vaccines are donated. Therefore, a timeframe of 2 years before the donation of vaccines will be used to test this theory (Hotez, 2014). If the tension is no longer considered a factor in halting positive foreign relations between India and the target state, then the theory does not apply to the case (Hotez, 2014). For the categorization of "tension" to apply to the bilateral relations between the two states, an unsolved violent event occurred in the time frame leading up to the donation of vaccinations. These tensions can form a border dispute or conflict where one state harms soldiers or citizens from the other state (Hotez, 2014).

To determine the presence of tension, news sources and India's foreign policy briefs on India's foreign relations between the states are analyzed for mentions of conflicts (Hotez, 2014). The results of this analysis revealed that the only state with whom India had such an altercation is Pakistan, due to the armed border skirmishes, which resulted in casualties on both sides (Bishwakarma & Hu, 2021). This theory, therefore, argues that the highest amount of vaccines would be provided to Pakistan to de-escalate these tensions. However, the data on India's vaccine diplomacy does not reflect this assumption. India's vaccine diplomacy offered no vaccines to Pakistan while simultaneously providing a variety of vaccines between the other states where tensions were not concentrated. The tensions between Pakistan and India did not result in more vaccines being sent to Pakistan, which does not support this theory. Due to the lack of evidence, the theory cannot explain the variation in vaccine diplomacy.

*Vaccine Diplomacy as Bio-security Policy:*

Comparatively, an alternative theory focuses on how the securitization of transmittable diseases impacts vaccine diplomacy (Liu, Huang & Jin, 2022). This theory is based on the recognition that infected individuals in one state can move across borders and impact the biosecurity of another state (Liu, Huang & Jin, 2022). This process is also referred to as the spillover effect of a pandemic (Liu, Huang & Jin, 2022). Studies focused on vaccine diplomacy regarding China's foreign policy concluded that the state's national health security could be a reason for China's use of vaccines diplomacy (Liu, Huang & Jin, 2022). The nature of

transmittable diseases means that the risk of transnational infection increases when there is a higher movement of people between the countries. (Selvanathan et. al., 2021) Transmittable diseases are more likely to spread between countries when there is an increased amount of cross-border movement, whereby larger flows of people create a larger health threat to the state.

With this consideration, we can determine if this theory has succeeded in explaining the variation by looking at the migration statistics of individuals who move from a state within India's NFP to India. Therefore, the hypothesis for this theory would be that the states with the highest migration statistics would receive the highest amount of vaccines from India. The data on migration statistics is, unfortunately, not available for all states within India's NFP. There is data from 2020 which shows the states which make up the highest percentages of the migrant population in India (Migrants and Refugees, n.d.). As is depicted in table 6, the results of this data indicate the following; the states which should receive the highest number of vaccines are, in order, Bangladesh, Pakistan, and Nepal (Migrants and Refugees, n.d.).

**Table 6: Top 4 states with migrant populations in India**

| Countries | Number of Migrants |
|---|---|
| Bangladesh | 51% |
| Pakistan | 17% |
| Nepal | 15% |
| Sri Lanka | 3.8% |

Despite limited data, it does indicate which states this theory determines that the most vaccines would be provided to (Migrants and Refugees, n.d.). When comparing these statistics regarding the migrant populations in India to the amount of vaccine diplomacy these states received, there is obvious misalignment. Bangladesh and Pakistan have the largest migrant population within India; however, they did not receive the highest amount of vaccines from India. This limits this theory's ability to explain the variation in vaccine diplomacy.

*Vaccine diplomacy as Geographical proximity:*

The final theory considered in this paper is that the geographical closeness of a recipient state to the donor influences the recipient state's ability to receive vaccine diplomacy (Bhide, 2021; Suzuki & Yang, 2022). Geographical proximity refers to the physical distance between two

states, whereby this theory determines that the closer a recipient state is to the donor, the more vaccines it will receive (Bhide, 2021). Similarly to the previous theory, cross-border movement concerning transmittable diseases, such as Coronavirus, is considered a risk to the public health of the states (Bhide, 2021). Therefore, to protect the public health of their states, donors will provide vaccines to the countries closest to them geographically (Bhide, 2021).

By looking at India's geographic orientation, the hypothesis of this theory can be tested. India shares land borders with Afghanistan, Pakistan, Bhutan, Nepal, and Bangladesh, in addition to water borders with the Maldives and Sri Lanka. Within the scope of the research, there is not a wide degree of variation regarding states which do and do not border India. All states within India's NFP, except for Thailand, border India, making it difficult to make statistical inferences regarding whether this theory can explain the variation in vaccine diplomacy. However, by looking at the cases in India's NFP, there is a large degree of variation in vaccine diplomacy between the states which border India. There is significant variation in the number of vaccines provided to Bhutan and Pakistan, 0.072 per capita compared to 0 per capita, despite both states bordering India. Additionally, Thailand, which does not share a border with India, received more vaccines than Pakistan, which illustrates the opposite outcome expected under the theory.

*Qualitative Analysis: Case Study Bhutan*

The starting point for the qualitative analysis is India's official report on the bilateral relations between India and Bhutan (Bhutan-India Relations, 2020). In this document, the economic relations between the two states are consistently discussed as being a key component of the relations between the states (Bhutan-India Relations, 2020). The hydropower project and the large electricity exports from Bhutan to India are considered key components of economic cooperation between the states (Bhutan-India Relations, 2020).

Additionally, the analysis of the statements made by the Indian government officials revealed interesting trends. Firstly, India's officials most often refer to altruistic motives when discussing why vaccine diplomacy is provided. However, the research shows that bilateral vaccines are not provided to those who need them most. Therefore, this reason seems more like a blanket statement that hides India's real interests rather than a true motive. Secondly, the representatives mention the importance of the economic relations between the states during the coronavirus pandemic. The Indian ambassador to Nepal mentions that the pandemic provides

an opportunity to develop further economic ties (Nayak, 2021). A speech by the foreign secretary of India mentions the importance of continued trade between the states due to Bhutan's provision of electricity when discussing vaccines (Baluni, 2021). The discussion of the importance of Bhutan's electricity transport to India in the context of discussing vaccine diplomacy, in both the official report and the statements made by officials, provides further indication that the theory of economic relations can explain the provision of vaccine diplomacy (Sibal, 2021).

**Analysis:**

**Table 7: Overview of Theories**

| Theories | Evidence or No Evidence |
|---|---|
| Regional Power Tensions | No Evidence |
| Economic Relations | Evidence |
| De-escalation policy | No Evidence |
| Bio-security Policy | No Evidence |
| Geographical Proximity | No Evidence |

The results above have systematically tested the available theories which, according to the literature, could explain the variation in India's vaccine diplomacy. The complexity of studying why states utilize soft power, such as vaccine diplomacy, required the testing of multiple theories to illustrate if RPT can explain the variation in India's vaccine diplomacy (Kearn, 2011). Therefore, theory testing formed the basis of this research, and the analysis of the results is largely based on how successful these theories were in explaining the variation. The results disprove the RPT H1 hypothesis that an increase in investment from China to a state within India's NFP would result in more vaccines being provided from the donor India. The direction of the correlation is not as expected under the hypothesis; however, these results were not significant at $p < .10$ level. Due to the lack of significance, the null hypothesis (H0) that RPT does not affect vaccine diplomacy cannot be rejected. Further research is required to determine if the H1 hypothesis can explain vaccine diplomacy in different contexts outside India's vaccine diplomacy to the states in the NFP.

Additionally, the research was unsuccessful in ruling out all alternative theories. One of the alternative theories, economic relations, can explain the variation in vaccine diplomacy. Using a statistical correlation and a case study on Bhutan, the argument that greater economic

relations between states indicate more vaccine diplomacy is explored. The theory hypothesized that if a recipient state has greater economic relations with India, as measured by the total exports and imports per capita, these states would receive more vaccines (Lee, 2021). The correlation between vaccine diplomacy and economic relations is positive and almost statistically significant at $p < 0.05$; $p = 0.058$. The qualitative case study of Bhutan complements this result. The qualitative case study, which delved into why India provided vaccines to Bhutan, provides a thick description of India's use of vaccine diplomacy. The discussion by India's representatives on the importance of continued trade between the states during the coronavirus pandemic, and the focus on the importance of Bhutan's electricity exports to India, are two indications that economic relations were considered during India's vaccine diplomacy campaigns.

The qualitative case study indicated several possible nuances to the theory of economic relations that require more future research. Firstly, due to the recognized importance of Bhutan's trade of electricity to India, there is a possibility that the specific trade sector between the states is influential on vaccine diplomacy. India's national interest in wanting to move towards using more renewable energy sources may indicate why India is so interested in providing vaccines to Bhutan specifically; Bhutan has a hydropower dam which exports electricity to India. Secondly, the statements by the representatives mention how India's supply of vaccines allowed Bhutan to vaccinate "their whole population" (Sibal, 2021). This statement is repeatedly used when describing India's second shipment of vaccines. This could indicate a possibility that India donated such a significant amount of vaccines to Bhutan, as it credited India for achieving Bhutan's successful vaccination program. Thirdly, the articles mentioned that Bhutan used India's vaccines due to the logistical aspects of the vaccines not having to travel far to reach Bhutan (Nayak, 2021). This nuance would mean that the enthusiasm that a state has in accepting the vaccines could be influenced by the ability that the state has to administer the vaccines.

If applicable to a wider geographical scope, these findings have important implications for understanding vaccine diplomacy. The rising influence of China within a state does not encourage India to provide more vaccine diplomacy. This conclusion indicates that developing states can accept investments from China without negatively impacting the health support they receive from India. Developing states interested in gaining investment from China should not fear that this impacts the vaccine diplomacy they receive. Additionally, the economic relations

between a donor state and a target state are important regarding vaccine diplomacy. This would imply that states with strong economic relations with India but who are increasingly influenced by China would still benefit from India's vaccine diplomacy. Outside of India's NFP, the research expects states such as the United Arab Emirates, which have strong economic relations with India while still being increasingly influenced by China, to receive a high number of vaccines from India (Workman, n.d.; Hoffman, 2021).

To remain transparent, this research is conducted with a limited number of cases, relying on a statistical method that analyzes the ranks of cases instead of the ratio variables. Despite the use of this statistical method, Spearman's rho, being the most appropriate for this research, cannot capture the nuances of the relationship between the variables. If more cases are used, Pearson's correlation can be utilized, which more accurately determines how the increase in one unit of the independent variable changes the dependent variable. This method could reveal more information on how various factors, such as RPT and economic relations, influence vaccine diplomacy. Additionally, the relationship between economic relations and vaccine diplomacy requires a more elaborate research design which considers the nuances stated above to truly understand the correlation between the variables.

**Conclusion:**

To conclude, this paper has made the tentative first steps toward understanding if RPT influences vaccine diplomacy. This process has not only answered this research question regarding if RPT can explain the variation in India's vaccine diplomacy but has recognized that an alternative theory of economic relations is more suited to explain the variation. The results indicate that the percentage increase in investments made by China to states in India's NFP is not correlated to vaccine diplomacy, as expected by the power balance theory. The direction of the correlation between RPT and vaccine diplomacy is not in line with the expectations under the hypothesis, and this result is not significant. However, the alternative theory of economic relations is supported by both statistical analysis and a qualitative case study on Bhutan. The correlation coefficient was almost significant at the $p < 0.05$ level. The correlation was in the direction established by theory and was complemented by the thick description of why India provided the vaccines to Bhutan. Therefore, by establishing these findings, the research makes scientific contributions to the academic literature on understanding why vaccine diplomacy is used.

Additionally, by using a framework for testing multiple theories to understand why a state provides vaccine diplomacy, this paper has illustrated that there is no evidence, according to the research design, that supports any of the theories except for economic relations. These are important contributions to the existing body of research on vaccine diplomacy. Substantively, these findings imply that a developing state in a region where two poles want to gain influence can accept investments and increasing influence from China while simultaneously receiving vaccines from India. These two processes, according to this research, operate rather independently from each other. What this implies for the health of developing states is that the amount of vaccine support they receive from one pole is not dependent on the increase in the influence that the other has within the state. For developing states, this would mean that their vaccination programs can progress more successfully due to the provision of vaccines. Beyond India's RPT scope, states with strong economic relations with a pole state receive more vaccines regardless of the investment they gain from another pole. This can influence how developing states interact with the pole states in their region.

Moreover, the research has revealed multiple opportunities for future research. Firstly, there is an opportunity for future research to use a wider scope of states to determine if the findings apply beyond India's NFP. The external validity of the research is restricted due to the limitations of using statistical analysis with a very small number of cases. Secondly, the qualitative analysis of India's vaccine diplomacy with Bhutan has revealed interesting nuances that can be explored further regarding the effect of economic relations on vaccine diplomacy. As explained in the analysis, these nuances are the following; the effect of the economic sector on vaccine diplomacy, logistical restriction to vaccine diplomacy, and the significance of a donor state being able to claim significant responsibility for supporting the vaccination campaign of another state. How these factors influence the provision of vaccine diplomacy will further the academic understanding of the mechanism. More research is required to understand the effects of these nuances. Therefore, a broadened approach with more cases is necessary to truly determine how applicable these findings are to a wider scope.

**Appendix 1:**

Coding Frame: Determining Why India provided vaccine diplomacy to Bhutan:

| Codes | Definition | Application |
|---|---|---|
| Economic Relations | Economic relations refer to trade transnationally between states (Gilpin, 1971). | This code is applied when the Indian representative mentions that economic relations are the reason for the use of vaccine diplomacy or when economic factors are mentioned concerning why India has such strong relations with Bhutan. Therefore, this code is applied to statements where economic sectors are mentioned, any kind of trade relation between Bhutan and India is discussed, or future economic commitments are made in relation to the pandemic or the provision of vaccine diplomacy. |
| Cultural Relations | States decide to take action due to a shared culture or a shared history (Sparke & Levy, 2022). | This code is applied when India's representatives mention that the shared history between India and Bhutan or their cultural similarities is why they use vaccine diplomacy. |
| Altruistic Motives | This would indicate that India is providing vaccines due to wanting to help other states out of their own free will. This would imply that India wants nothing in return for their provision of vaccines (Aukia, 2014). | This code is provided to texts where the Indian government representatives discuss that vaccine diplomacy is provided as a form of goodwill or due to humanity. |

This code is created using an open-coding qualitative method. Therefore, the codes are not exhaustive regarding the reasons why India provided vaccine diplomacy to Bhutan but do capture the reasons discussed by Indian Representatives in the newspapers.

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