Impact of the India-Japan Comprehensive Economic Partnership Agreement on Bilateral Trade Dynamics: A Study of Exports, Imports, and FDI Inflows

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I **Mohit Kumar** hereby certify that the work which is being presented in the thesis entitled

"**Impact of the India-Japan Comprehensive Economic Partnership Agreement on Bilateral Trade Dynamics: A Study of Exports, Imports, and FDI Inflows**" in partial fulfilment of the requirements for the award of the Degree of MA Economics, submitted in the Department of Economics (USME), Delhi Technological University is an authentic record of my own work carried out during the period from June, 2023 to May, 2024 under the supervision of Ms Aishani Pal.

The matter presented in the thesis has not been submitted by me for the award of any other degree of this or any other Institute.

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CERTIFICATE BY THE SUPERVISOR

Certified that **Mohit Kumar (2K22/MAE/39**) has carried out their search work presented in this thesis entitled **"Impact of the India-Japan Comprehensive Economic Partnership Agreement on Bilateral Trade Dynamics: A Study of Exports, Imports, and FDI Inflows"** for the award of **MA Economics** from Department of Economics (USME), Delhi Technological University, Delhi, under my supervision. The thesis embodies results of original work, and studies are carried out by the student himself and the contents of the thesis do not form the basis for the award of any other degree to the candidate or to anybody else from this or any other University/Institution.

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ABSTRACT

Globalization has led to an era where international trade agreements are crucial in shaping economic landscapes. Among these agreements, the India-Japan Comprehensive Economic Partnership Agreement (CEPA), signed in 2011, stands as a significant bilateral trade accord aimed at enhancing economic cooperation and fostering mutual growth. This thesis examines the impact of the India-Japan CEPA on bilateral trade dynamics, focusing on exports, imports, and Foreign Direct Investment (FDI) inflows between the two countries. By employing a mixed-methods approach, this study combines quantitative analysis with qualitative insights to offer a comprehensive understanding of the CEPA's economic implications.

The primary objective of this research is to assess how the CEPA has influenced trade flows between India and Japan over the past decade. This is achieved by analysing trade data from 1991 to 2020, sourced from reputable databases such as the World Integrated Trade Solutions (WITS) and the World Bank Open Data. The study focuses on key variables including exports from India to Japan, imports from Japan to India, trade balance, GDP, inflation rates, and exchange rates. Additionally, data on FDI inflows is obtained from the Centre for Monitoring Indian Economy (CMIE), providing a holistic view of economic interactions between the two nations.

The research begins with a detailed descriptive analysis of the CEPA, outlining its provisions and intended objectives. This foundational understanding is crucial for contextualizing the subsequent data analysis. The descriptive analysis reveals significant shifts in trade patterns post-CEPA, highlighting the agreement's immediate and long-term effects on bilateral trade. Notably, the CEPA aimed to reduce tariffs, eliminate non-tariff barriers, and enhance market access across various sectors, thereby creating a conducive environment for increased trade and investment.

To quantify the impact of CEPA, the study employs regression analysis, using exports and imports as dependent variables and incorporating independent variables such as GDP, inflation rates, exchange rates, and a dummy variable representing the post-CEPA period. The regression model is meticulously designed to isolate the effect of CEPA from other macroeconomic factors, ensuring a robust and accurate assessment of the agreement's impact. Diagnostic tests for multicollinearity, heteroskedasticity, autocorrelation, and normality of residuals are conducted to validate the regression results, adding credibility to the findings.

The regression analysis yields compelling insights into the CEPA's impact on trade flows. For exports, the model reveals that a unit increase in lagged exports results in a 0.1656 unit increase in logged exports, indicating a strong positive relationship. The post-CEPA variable, though marginally significant, suggests a negative effect on logged exports post-CEPA, highlighting potential challenges in realizing the agreement's full benefits. The analysis also shows that India's GDP positively influences exports, underscoring the importance of domestic economic growth in enhancing trade performance. Conversely, inflation rates in India and Japan do not exhibit significant impacts, suggesting that trade dynamics are influenced more by structural factors than by short-term economic fluctuations.

The import model presents a slightly different picture. The coefficient for the post-CEPA variable is positive but not significant, indicating that the agreement has not had a substantial impact on imports from Japan. This finding suggests that while the CEPA has facilitated increased exports from India, it has not significantly altered the import landscape. The positive coefficients for the variable used for India's GDP and the variables used for Japan's GDP, both significant, underscore the role of economic growth in driving bilateral trade. The results highlight the complexity of trade dynamics and the need for continuous policy adjustments to maximize the benefits of trade agreements.

The findings from both models underscore the nuanced impact of the CEPA on bilateral trade. While the agreement has positively influenced exports, the anticipated benefits in terms of imports remain elusive. These results prompt a deeper examination of the underlying factors, including non-tariff barriers, regulatory challenges, and sector-specific dynamics that may be inhibiting the full realization of CEPA's potential. The analysis also points to the importance of sustained economic growth and structural reforms in both countries to enhance trade performance.

The implications of these findings are multifaceted. Economically, the CEPA has demonstrated the potential to enhance trade between India and Japan, albeit with varying degrees of success across different sectors. The agreement's positive impact on exports underscores the importance of market access and tariff reductions in driving trade growth. However, the lack of a significant impact on imports calls for a re-evaluation of non-tariff barriers and regulatory frameworks that may be hindering trade. Addressing these challenges is crucial for creating a more balanced and mutually beneficial trade relationship.

Politically, the CEPA's implementation highlights the complex interplay between domestic and international factors in shaping trade policy. The agreement's formation and execution were influenced by the strategic interests and economic priorities of both countries, reflecting the broader geopolitical context.

In conclusion, this thesis provides a comprehensive analysis of the India-Japan CEPA, offering valuable insights into its economic impacts and policy implications. The findings underscore the significant, albeit nuanced, benefits of the agreement in enhancing trade flows and fostering economic collaboration. The study contributes to a deeper understanding of the dynamics of bilateral trade agreements, offering lessons for policymakers and stakeholders involved in designing and implementing FTAs. By highlighting the successes and challenges of the IndiaJapan CEPA, this research provides a foundation for future studies and policy initiatives aimed at promoting sustainable and inclusive economic growth through international trade.

This thesis underscores the importance of rigorous empirical analysis in evaluating the impact of trade agreements. The mixed-methods approach employed in this study provides a robust framework for assessing the multifaceted effects of CEPA, combining quantitative data analysis with qualitative insights. The findings highlight the critical role of economic growth, market access, and regulatory frameworks in shaping trade dynamics, offering practical recommendations for enhancing the effectiveness of trade agreements. As globalization continues to evolve, this research underscores the need for adaptive and forward-looking trade policies that can navigate the complexities of international trade and promote shared prosperity.

List of Figures

CHAPTER I
INTRODUCTION

The global economic landscape has witnessed a significant transformation over the past few decades, characterized by the proliferation of Free Trade Agreements (FTAs). These agreements, designed to eliminate barriers to trade between member countries, aim to foster economic integration and enhance trade flows. The Comprehensive Economic Partnership Agreement (CEPA) between India and Japan, signed in 2011, represents a landmark in bilateral trade relations, promising to unlock new economic opportunities and strengthen the strategic partnership between the two Asian giants.

The primary economic objective of FTAs, including CEPA, is to promote trade by removing tariffs, reducing non-tariff barriers, and creating a more predictable and transparent trading environment. The underlying principle is that by making it easier and cheaper for member countries to trade with each other, these agreements can stimulate economic growth, create jobs, and enhance consumer welfare. This thesis delves into the economic impacts of the India Japan CEPA, exploring its effects on trade flows, investment, and economic welfare.

A key component of understanding the impact of FTAs is the analysis of trade creation and trade diversion effects. Trade creation occurs when an FTA leads to the replacement of highercost domestic production with lower-cost imports from member countries, thereby increasing economic efficiency and consumer surplus. Conversely, trade diversion happens when lowercost imports from non-member countries are replaced by higher-cost imports from member countries due to preferential treatment. Both phenomena are critical in assessing the net benefits of FTAs.

The India-Japan CEPA was envisioned as a strategic partnership that leverages the complementary strengths of the two economies. India's vast market, youthful demographic, and competitive service sector are seen as ideal complements to Japan's advanced technology, strong manufacturing base, and surplus capital. The agreement covers a wide range of sectors, including goods, services, investment, and intellectual property rights, aiming to create a conducive environment for economic collaboration. This thesis aims to provide a comprehensive analysis of the CEPA's impact on trade flows between India and Japan, offering insights into its successes and challenges.

To achieve this objective, the study employs a mixed-methods approach, combining quantitative and qualitative analyses. Quantitative data from the World Integrated Trade Solutions (WITS) database and the World Bank Open Data provide a basis for assessing trade flows before and after the implementation of CEPA. This data includes exports from India to Japan and imports from Japan to India, trade balance, GDP, inflation rates, and exchange rates over a 30-year period from 1991 to 2020. Additionally, data on Foreign Direct Investment (FDI) inflows are obtained from the Centre for Monitoring Indian Economy (CMIE).

A detailed descriptive analysis of the CEPA provisions sets the stage for understanding its scope and objectives. This involves examining the specific commitments made by both countries in terms of tariff reductions, market access, and regulatory cooperation. The trade and investment data are then analysed to compare pre- and post-CEPA trends, calculating growth rates and

visualizing data through graphs and tables. Descriptive statistics provide an initial understanding of the trade patterns and trends.

The core of the analysis is the econometric model used to quantify the impact of CEPA on trade flows. A regression analysis framework is employed, where the dependent variables are exports and imports, while independent variables include GDP, inflation rates, exchange rates, and a dummy variable for CEPA implementation. The regression model helps isolate the effect of CEPA from other macroeconomic factors, providing a clearer picture of its impact on trade.

To ensure the robustness of the regression results, several diagnostic tests are conducted. These include checks for multicollinearity using the Variance Inflation Factor (VIF), tests for heteroskedasticity using the Breusch-Pagan test, and assessments of autocorrelation using the Durbin-Watson test. Normality of residuals is checked using the Shapiro-Wilk test and Q-Q plots. These tests help validate the reliability of the regression findings.

The results of the descriptive and regression analyses are then synthesized to draw meaningful conclusions about the CEPA's impact. The descriptive statistics reveal significant changes in trade patterns and volumes, while the regression analysis quantifies these changes, highlighting the contributions of various economic factors. The analysis also explores sector-specific impacts, identifying which industries have benefited the most from the agreement.

The thesis also addresses the broader economic and political implications of the CEPA. Economically, the agreement is shown to significantly enhance trade between India and Japan, promoting economic integration and growth. However, the analysis also highlights trade diversion effects, which can result in inefficiencies and affect non-member countries. Politically, the negotiation and implementation of FTAs are influenced by domestic interest groups, internal political competition, and the strategic dynamics of international bargaining. The India-Japan CEPA is no exception, with its formation and implementation shaped by the political and economic priorities of both countries.

Finally, the thesis discusses the challenges and barriers that continue to impede the full realization of the CEPA's potential. These include non-tariff barriers such as stringent regulatory standards, bureaucratic red tape, and differences in business practices. The study emphasizes the need for regulatory harmonization and mutual recognition of standards to overcome these obstacles. Improved infrastructure and connectivity, enhanced labor mobility, and continuous dialogue between the two countries are also identified as critical factors for maximizing the benefits of CEPA.

In conclusion, this thesis provides a comprehensive analysis of the India-Japan CEPA, offering valuable insights into its economic impacts and policy implications. By examining both the quantitative and qualitative aspects of the agreement, the study contributes to a deeper understanding of how FTAs can shape bilateral trade relations and promote economic growth. The findings underscore the importance of carefully considering both economic impacts and political dynamics when designing and implementing FTAs, offering lessons for future trade policy initiatives.

CHAPTER II
LITERATURE REVIEW

The primary economic objective of FTAs is to foster trade between member countries by removing barriers that impede the free flow of goods and services. According to Baier, S., & Bergstrand, J. (2009), FTAs have a significant positive impact on bilateral trade between member countries. By employing a structural gravity model, the study demonstrates that FTAs facilitate increased trade volumes by lowering tariffs and enhancing market access. The model reveals that trade creation is substantial, with member countries experiencing marked increases in exports and imports post-FTA implementation.

Similarly, Dai, M. et al. (2014) supports these findings by highlighting the positive effects of FTAs on intra-bloc trade. The empirical analysis shows that FTAs can double trade between member countries within a decade, corroborating earlier studies that also reported significant trade creation effects. This robust trend indicates that FTAs are effective tools for promoting economic integration and expanding market opportunities for participating countries. While FTAs are designed to boost trade among member countries, they can also lead to trade diversion, where trade shifts from more efficient global producers to less efficient member countries due to preferential treatment. The paper delves into this issue, revealing that trade diversion is a notable consequence of FTAs. The study finds that while FTAs do enhance trade between member countries, they also divert significant trade away from non-member countries. This diversion occurs because member countries begin to favour trading with each other, taking advantage of reduced tariffs, even if non-member countries could supply goods more efficiently.

Baier, S., & Bergstrand, J. (2009) also explores trade diversion, extending the gravity model to include trade flows with non-member countries. The analysis indicates that the trade diversion effects are more pronounced for imports than exports. This suggests that member countries are more likely to shift their import sources to fellow members, potentially leading to inefficiencies in resource allocation and production.

The overall economic benefits of FTAs extend beyond mere increases in trade volumes. By fostering competition, FTAs can lead to lower prices for consumers, greater variety of goods and services, and enhanced innovation. The papers reviewed indicate that FTAs contribute to economic growth by enabling countries to specialize in the production of goods and services in which they have a comparative advantage. This specialization, driven by improved market access and reduced trade barriers, enhances productivity and economic efficiency.

The formation and implementation of FTAs are deeply influenced by domestic political dynamics. Matsushita, M., & Lee, Y (2011) discuss how domestic political considerations shape the negotiation and ratification processes of FTAs. The paper highlights the role of interest groups, noting that governments must balance the demands of various stakeholders. Industries that benefit from reduced tariffs and increased market access often support FTAs, while those facing heightened competition may oppose them. This balancing act is crucial for the political feasibility of FTAs, as policymakers must ensure that influential domestic groups are adequately appeased.

Grossman, G., & Helpman, E. (1993) further elaborates on the domestic political landscape, presenting a two-stage model of political interaction. The first stage involves internal political competition within each country, where different sectors and interest groups vie for influence over the government's policy stance. The second stage consists of international negotiations between governments, where the outcomes of internal political struggles influence the bargaining positions. The study underscores that the success of FTA negotiations depends significantly on the political power of export-oriented industries relative to import-competing sectors within each country.

The negotiation of FTAs is a complex process that involves multiple rounds of bargaining and compromise. In their study they illustrate that the international stage of FTA negotiations is shaped by the relative power and interests of the negotiating countries. Countries with strong export sectors and significant market potential are often in a better position to negotiate favourable terms. Conversely, countries with weaker economic positions may have to make more concessions to secure the benefits of an FTA.

The paper also emphasizes the role of political leadership and diplomacy in FTA negotiations. Effective leaders can leverage their political capital and diplomatic skills to build coalitions and navigate the intricacies of international bargaining. The ability to articulate and pursue national interests, while accommodating the concerns of partner countries, is crucial for the successful negotiation and implementation of FTAs.

Policymakers face the challenge of balancing economic benefits with political realities when designing and implementing FTAs. The economic advantages of FTAs, such as increased trade and economic growth, must be weighed against the potential political costs, including opposition from domestic industries and trade diversion effects. Matsushita, M., & Lee, Y (2011) and Grossman, G., & Helpman, E. (1993) both highlight the importance of achieving a balance that maximizes economic gains while minimizing political risks.

One approach to achieving this balance is through the inclusion of safeguard measures and adjustment assistance programs in FTAs. These measures can help mitigate the negative impacts on vulnerable industries and workers, making the agreements more politically palatable. By addressing the concerns of adversely affected groups, policymakers can build broader support for FTAs and enhance their political feasibility.

The CEPA between India and Japan was conceived with the objective of leveraging the complementary strengths of both economies. India, with its vast market, youthful demographic, and competitive service sector, presents an ideal partner for Japan, which boasts advanced technology, a strong manufacturing base, and surplus capital. The agreement encompasses a wide range of sectors, including goods, services, investment, and intellectual property rights, aiming to create a conducive environment for economic collaboration.

Bhattacharya B., & Mukhopadhyay, K. (2015) paper analyses the impacts, prospects, and barriers associated with this agreement. Their computable general equilibrium (CGE) analysis highlights that tariff reductions under CEPA are expected to marginally increase output growth for both countries. India's exports to Japan are projected to increase more significantly than Japan's exports to India. The CGE model predicts positive net welfare gains for both countries

due to trade liberalization, with India benefiting slightly more than Japan. These gains stem from enhanced market access and the efficient allocation of resources across sectors.

The analysis indicates that the sectors expected to benefit the most include automotive, pharmaceuticals, and electronics. For Japan, India's growing demand for automobiles and electronic goods represents a lucrative market. Conversely, India's pharmaceutical sector, which already has a substantial presence in global markets, stands to gain from improved access to Japan's market. The agreement also facilitates joint ventures and collaborations in these high growth sectors, fostering innovation and technology transfer.

Despite the potential benefits, the paper identifies several structural reforms and barriers that must be addressed to maximize the gains from CEPA. One of the primary challenges is the presence of non-tariff barriers (NTBs), such as stringent regulatory standards, bureaucratic red tape, and differences in business practices. These NTBs can impede the smooth flow of goods, services, and investments. Bhattacharya B., & Mukhopadhyay, K. (2015) emphasize the need for regulatory harmonization and mutual recognition of standards to overcome these obstacles.

The paper also points to the need for improved infrastructure and connectivity between the two countries. Efficient logistics, transportation networks, and digital connectivity are crucial for facilitating trade and investment. The authors argue that both countries should invest in infrastructure projects, such as ports, highways, and information technology networks, to support the increased economic activity resulting from CEPA.

The movement of skilled labor between India and Japan is another critical area that requires attention. While CEPA includes provisions for the movement of professionals, actual implementation has been slow. They also suggest that both countries should develop frameworks for recognizing professional qualifications and enhancing language and cultural training to support labor mobility. Additionally, joint skill development programs can help address skill mismatches and meet the demand for specialized talent in both economies.

Gaurav, K., & Bharti, N. (2018) offers insights into the dynamics of services trade between these two major Asian economies. The qualitative analysis of the General Agreement on Trade in Services (GATS) and the India–Japan CEPA reveals a robust framework aimed at enhancing bilateral trade in services. The CEPA includes commitments that go beyond the WTO's GATS, reflecting the strategic intent of both nations to deepen their economic integration. The agreement covers a wide array of service sectors, including business services, communication services, financial services, and more. By committing to liberalize these sectors, both India and Japan aim to facilitate smoother cross-border trade in services, improve regulatory cooperation, and promote investment in service industries.

The quantitative analysis employs the Revealed Comparative Advantage (RCA) index to identify key areas of potential in services trade between India and Japan. The RCA index, which measures a country's relative advantage or disadvantage in specific sectors based on export performance, indicates significant untapped potential and strong trade complementarities between the two nations.

India demonstrates a comparative advantage in various service sectors, including IT and software services, business process outsourcing (BPO), and other knowledge-based services.

India's large pool of skilled professionals, particularly in IT and engineering, coupled with its cost-competitiveness, positions it as a global leader in these areas. The RCA analysis reveals that India can leverage its strengths to enhance its service exports to Japan, meeting the latter's demand for high-quality, cost-effective IT solutions and services.

On the other hand, Japan holds a comparative advantage in sectors such as financial services, engineering consulting, and construction services. Japan's advanced technology, robust financial sector, and expertise in infrastructure development are significant assets that can be capitalized upon in its trade with India. The RCA index highlights Japan's potential to increase its service exports to India, especially in areas where India is seeking technological and infrastructural upgrades.

The reviewed literature provides a comprehensive understanding of the economic and political dimensions of FTAs. Economically, FTAs are shown to significantly enhance trade between member countries, promoting economic integration and growth. However, they also lead to trade diversion, which can result in inefficiencies and affect non-member countries. Politically, the negotiation and implementation of FTAs are influenced by domestic interest groups, internal political competition, and the strategic dynamics of international bargaining.

FTAs represent a powerful tool for promoting economic integration and trade liberalization. The insights from the literature underscore the importance of carefully considering both the economic impacts and political dynamics when designing and implementing these agreements. Future research should continue to explore sector-specific impacts, long-term consequences, and strategies to enhance the inclusivity and effectiveness of FTAs in the ever-evolving landscape of global trade.

The literature on the India-Japan CEPA indicates that while significant progress has been made in boosting bilateral trade, especially in services, there remains considerable untapped potential. The complementarities between the two economies, as highlighted by the RCA index, suggest that with the right policy measures and continuous dialogue, both countries can achieve substantial economic gains. Addressing existing barriers and expanding cooperation into new and emerging sectors will be crucial for maximizing the benefits of CEPA.

The reviewed studies underscore the importance of a multifaceted approach to trade liberalization, one that goes beyond tariff reductions to include harmonization of standards, protection of IPR, and mutual recognition of professional qualifications. As India and Japan continue to navigate their economic partnership, the lessons drawn from these studies will be instrumental in shaping future trade policies and strategies.

CHAPTER III

METHODOLOGY

3.1 Data Sources

The primary data for this study comes from the World Integrated Trade Solutions (WITS) database and World Bank Open Data. The variables include exports from India to Japan and imports from Japan to India, trade balance of India with Japan, GDP of both countries, inflation rates of both countries, and exchange rates of both countries. The data spans from 1991 to 2020, covering the period before and after the implementation of CEPA. Additional data on FDI inflows are obtained from the Centre for Monitoring Indian Economy.

3.2 Descriptive Analysis

A detailed examination of CEPA provisions was conducted to understand its objectives and scope. The trade and investment data were analysed to compare pre- and post-CEPA trends. This involves calculating growth rates and visualizing data through graphs and tables.
Descriptive statistics will provide an initial understanding of the trade patterns and trends.

3.3 Econometric Model

A regression analysis framework was used to quantify the impact of CEPA on trade flows. The dependent variables are exports and imports, while independent variables include GDP of both countries, inflation rates of both countries, exchange rates of both countries, and a dummy variable for CEPA implementation.

The econometric model is specified as:

$\log(\text{Exports}) = \beta 0 + \beta 1\text{PostCEPA} + \beta 2\log(\text{GDPIndia}) + \beta 3\log(\text{GDPJapan}) + \beta 4\text{InflationIndia} + \beta 5\text{InflationJapan} + \beta 6\text{ExchangeRate} + \epsilon$ Where:

- Where Exports represents exports from India to Japan.
- PostCEPA is a dummy variable taking the value 1 for the years after CEPA implementation and 0 otherwise.
- GDP and inflation variables capture the economic conditions in both countries.
- ExchangeRate accounts for currency fluctuations.

3.4 Diagnostic Tests

To ensure the robustness of the regression results, several diagnostic tests will be conducted:

- Multicollinearity was checked using the Variance Inflation Factor (VIF). Variables with VIF greater than 10 were carefully examined and potentially transformed or excluded.
- Heteroskedasticity was tested using the Breusch-Pagan test.

- Autocorrelation was assessed using the Durbin-Watson test. Lagged dependent variables or differencing was used to address autocorrelation if detected.
- Normality of residuals was checked using the Shapiro-Wilk test and Q-Q plots. Transformations or alternative models may be employed if the normality assumption is violated.

CHAPTER IV
DATA ANALYSIS AND RESULTS

IV.1 Descriptive Statistics

In this section the pre- and post-CEPA periods were compared to identify significant changes in trade patterns.

Trend in Trade before CEPA

FIG IV.1

The chart illustrates that the absolute scale of trade has significantly increased since 2004. The data also reveal that India's trade deficit grew substantially in 2006 and has remained high since then.

Trade Partnership Share before CEPA

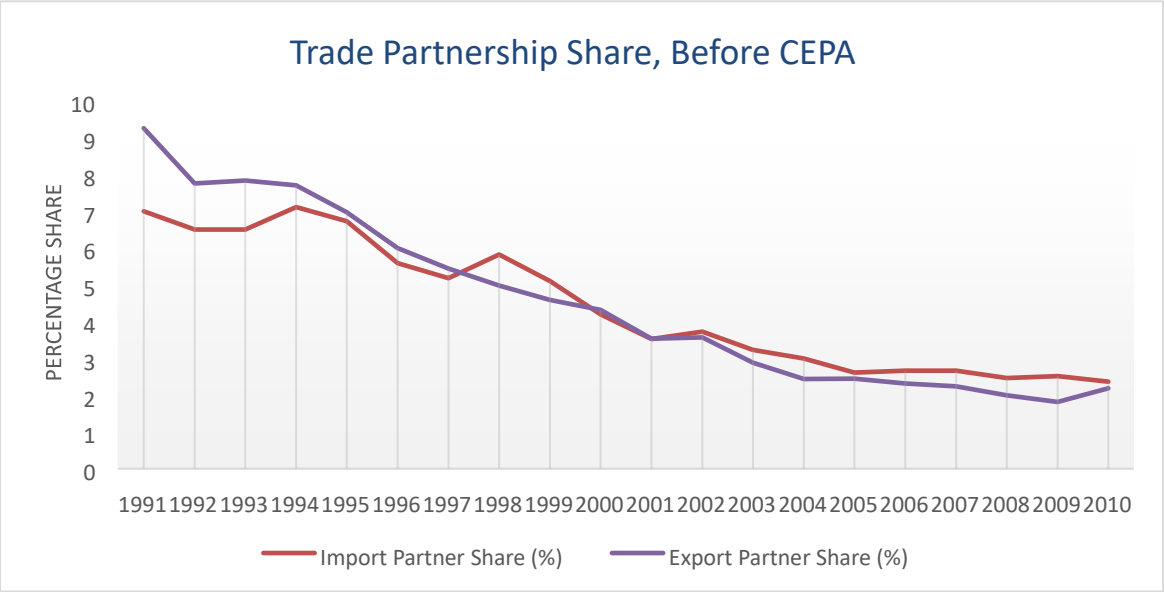

FIG IV.2

During this period, the trade partnership shares between India and Japan declined for both exports and imports. One contributing factor to this economic situation is the "Look East Policy" implemented by the Indian government in 1991. This policy led to a rapid increase in trade dependence between India and East Asia (excluding Japan). The share of East Asia in India's total imports surged from 13 percent in 1980 to 30 percent in 2009, while its share in India's total exports rose from 20 percent in 1980 to 24 percent in 2009.

Trend in Trade after CEPA

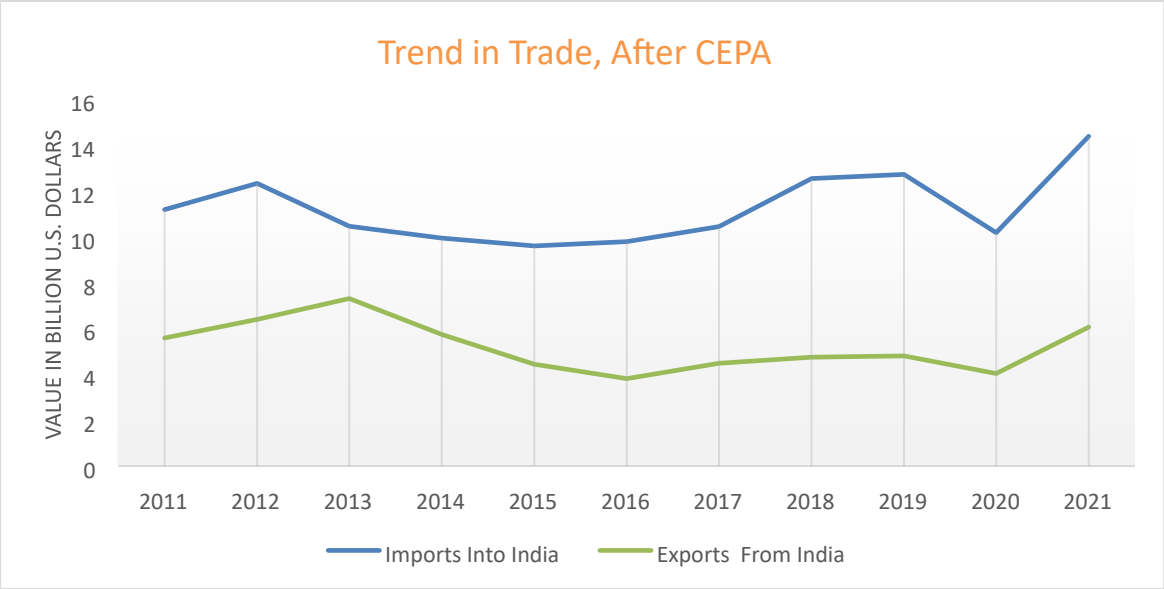

FIG IV.3

- Exports - India's exports to Japan were US $1.65 billion in 1991, representing an export share of 9.24%. The figure has increased to US $6.07 billion in 2022, but the share of India's exports has decreased to 1.53%.
- Imports - India's imports from Japan were US $1.36 billion in 1991, representing an import share of 6.99%. The figure has increased to US $14.41 billion in 2021. The share of Japan in India's imports has decreased to 2.52%.
- Trade Balance - India has a consistent trade deficit balance with Japan since 1994. During this period, the trade balance went from a positive amount of US $290 million in 1991 to a trade deficit of US $8.34 billion in 2021.

Trade Partnership Share After CEPA

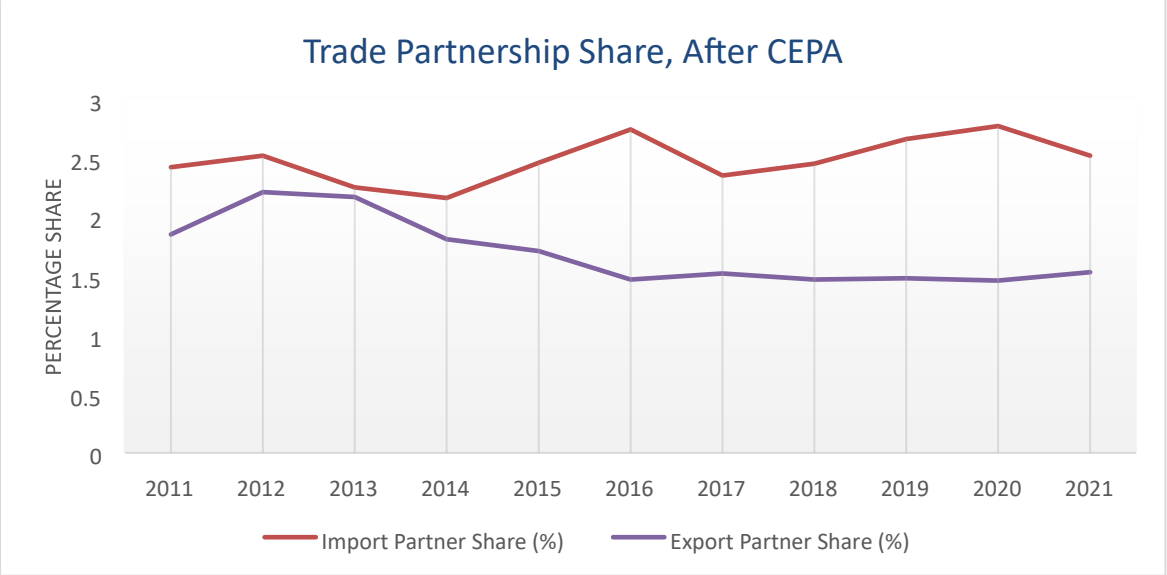

FIG IV.3

This graph shows that trade didn't grow as much after CEPA. Some of the reasons that could explain this slowdown are listed below:

1. A significant number of tariffs were reduced in the "final tenth year," which led to limited benefits during the preceding nine years.
2. Exporters face discouragement from using preferential routes due to complex rules of origin, insufficient information on FTAs, higher compliance costs, and administrative delays.
3. Japan's engagement in similar FTAs with other countries has intensified competition for market access and trade share, thereby reducing the advantages of the Japan-India CEPA.
4. There are persistent SPS concerns about the quality and safety of India's agricultural products.
5. "Behind the border" barriers imposed by Japan continue to limit the influx of Indian goods into the Japanese market.

IV.2 Regression Analysis Results

```
Call:
lm(formula = exports_log ~ Exports_lag1 + PostCEPA + Inflation_India +
    Inflation_Japan + India_GDP + Japan_GDP, data = data)

Residuals:
     Min       1Q   Median       3Q      Max
-0.24905 -0.07046  0.00014  0.05427  0.26471

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)     -9.517e-01  2.639e-01  -3.607  0.00149 **
Exports_lag1     1.656e-01  3.528e-02   4.695 9.95e-05 ***
PostCEPA        -2.671e-01  1.420e-01  -1.881  0.07264 .
Inflation_India  9.293e-03  9.985e-03   0.931  0.36167
Inflation_Japan  1.712e-02  3.338e-02   0.513  0.61300
India_GDP        3.167e-04  6.060e-05   5.226 2.66e-05 ***
Japan_GDP        2.295e-04  6.098e-05   3.763  0.00101 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1288 on 23 degrees of freedom
Multiple R-squared:  0.9484,    Adjusted R-squared:  0.9349
F-statistic: 70.44 on 6 and 23 DF,  p-value: 1.204e-13
```

Table 1

Table 1 indicates the regression of logged exports (exports_log) on the lagged exports (Exports_lag1), a post-CEPA dummy variable (PostCEPA), the inflation rates of India (Inflation_India) and Japan (Inflation_Japan), India's GDP (India_GDP), and Japan's GDP (Japan_GDP).

Interpretation of Coefficients

1. **Intercept (β0=−0.9517)**:
    - The intercept represents the expected value of the dependent variable (log exports) when all independent variables are zero. In this context, it doesn't have a meaningful economic interpretation since a log-transformed export value of zero does not occur naturally.
2. **Lagged Exports (β1=0.1656)**:
    - **Interpretation**: For each unit increase in the lagged exports, the log of exports increases by approximately 0.1656, holding all other variables constant. This suggests a positive and significant relationship between past and current export values. In economic terms, higher past exports are associated with higher current exports, likely due to established trade relationships and market continuity. ○ **Significance**: The p-value for this coefficient is extremely low ($p<0.001$), indicating that this relationship is highly statistically significant.
3. **Post-CEPA Indicator (β2=−0.2671)**:

- **Interpretation**: The negative coefficient indicates that, on average, the log of exports decreased by approximately 0.2671 units following the implementation of the CEPA, holding other variables constant. This suggests that the CEPA might have had an adverse effect on exports, though the effect is only marginally significant ($p=0.07264$).
- **Significance**: The p-value is slightly above the conventional threshold ($p<0.05$), indicating marginal significance. This suggests that the effect of CEPA on exports is not strongly conclusive but warrants further investigation.

4. **Inflation in India ($\beta3=0.009293$):**
   - **Interpretation**: The coefficient for India's inflation rate is positive but not statistically significant ($p=0.36167$). This suggests that variations in India's inflation rate do not have a significant impact on the log of exports.
   - **Significance**: The lack of significance indicates that inflation in India is not a strong predictor of export levels in this model.
5. **Inflation in Japan ($\beta4=0.01712$)**:
   - **Interpretation**: Similar to India's inflation, the coefficient for Japan's inflation rate is positive but not statistically significant ($p=0.61300$). This implies that changes in Japan's inflation rate do not significantly affect the log of exports.
   - **Significance**: The high p-value suggests that Japan's inflation rate is also not a significant predictor of exports in this model.
6. **India's GDP ($\beta5=0.0003167$)**:
   - **Interpretation**: For each unit increase in India's GDP, the log of exports increases by approximately 0.0003167 units, holding other variables constant. This indicates a positive relationship between India's GDP and exports, implying that economic growth in India is associated with higher export levels.
   - **Significance**: The p-value is very low ($p<0.001$), making this relationship highly significant. This suggests that India's economic growth is a strong driver of export performance.
7. **Japan's GDP ($\beta6=0.0002295$)**:
   - **Interpretation**: For each unit increase in Japan's GDP, the log of exports increases by approximately 0.0002295 units, holding other variables constant. This positive relationship implies that as Japan's economy grows, exports increase as well.
   - **Significance**: The p-value ($p<0.01$) indicates a statistically significant relationship, though less strong compared to India's GDP, highlighting Japan's economic influence on export levels.

Residual Analysis

The residual standard error of the model is 0.1288, which provides a measure of the average distance that the observed values fall from the regression line. The residuals appear to be relatively small, suggesting that the model fits the data well.

Overall Model Fit

- **Multiple R-squared**: The value of 0.9484 indicates that approximately 94.84% of the variance in the log of exports is explained by the model. This high value suggests a strong fit.
- **Adjusted R-squared**: The value of 0.9349 adjusts for the number of predictors in the model and remains high, indicating that the model is not overfitting.
- **F-statistic**: The F-statistic of 70.44 with a very low p-value suggests that the model is statistically significant and that the predictors, as a whole, reliably predict the log of exports.

Economic Implications

The results suggest that past exports, India's GDP, and Japan's GDP are significant predictors of current export levels. The negative coefficient for the post-CEPA indicator, although marginally significant, raises questions about the effectiveness of the CEPA in boosting exports. The non-significant coefficients for inflation rates indicate that other macroeconomic factors might be more influential in determining export levels.

```
Call:
lm(formula = Imports ~ Imports_lag1 + PostCEPA + Inflation_India +
    Inflation_Japan + India_GDP + Japan_GDP)

Residuals:
     Min       1Q   Median       3Q      Max
-2.08325 -0.38583 -0.05448  0.44483  1.32554

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)     -6.5612024  1.8288912  -3.588  0.00164 **
Imports_lag1     0.1464166  0.1519256   0.964  0.34565
PostCEPA         0.4591074  0.9018233   0.509  0.61576
Inflation_India  0.0656288  0.0739572   0.887  0.38447
Inflation_Japan  0.2586558  0.2113064   1.224  0.23387
India_GDP        0.0033362  0.0005706   5.847 6.98e-06 ***
Japan_GDP        0.0014211  0.0004189   3.393  0.00262 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.8415 on 22 degrees of freedom
Multiple R-squared:  0.9694,    Adjusted R-squared:  0.9611
F-statistic: 116.3 on 6 and 22 DF,  p-value: 1.606e-15
```

Table 2

Table 2 indicates the regression model to explain the imports using several predictors: lagged imports (Imports_lag1), a Post-CEPA indicator(PostCEPA), Inflation rates for India(Inflation_India), Inflation rates for Japan(Inflation_Japan), and GDP values for India(India_GDP) and Japan(Japan_GDP).

Interpretation of Coefficients

1. **Intercept (β0=−6.5612)**:
    a. **Interpretation**: The intercept represents the expected value of imports when all independent variables are zero. Economically, this value may not have a direct interpretation, as imports cannot be negative.
    b. **Significance**: The intercept is significant (p=0.00164p = 0.00164p=0.00164), indicating that the model has a baseline level of imports when all other variables are controlled for.
    c. **Lagged Imports (β1=0.1464)**:
    d. **Interpretation**: For each unit increase in the lagged imports, the imports increase by approximately 0.1464 units, holding all other variables constant. This suggests a positive, though not statistically significant (p=0.34565), relationship between past and current import values.

e. **Significance**: The high p-value indicates that lagged imports are not a significant predictor in this model.

2. **Post-CEPA Indicator (β2=0.4591)**:

   a. **Interpretation**: The positive coefficient indicates that, on average, imports increased by approximately 0.4591 units following the implementation of the CEPA, holding other variables constant. However, this effect is not statistically significant (p=0.61576).

   b. **Significance**: The p-value suggests that the impact of the CEPA on imports is not statistically significant, implying no strong evidence that CEPA has a direct effect on import levels.

3. **Inflation in India (β3=0.0656)**:

   a. **Interpretation**: The coefficient for India's inflation rate is positive but not statistically significant (p=0.38447). This suggests that variations in India's inflation rate do not have a significant impact on imports.

   b. **Significance**: The high p-value indicates that India's inflation rate is not a significant predictor of imports in this model.

4. **Inflation in Japan (β4=0.2587)**:

   a. **Interpretation**: The coefficient for Japan's inflation rate is positive but not statistically significant (p=0.23387). This implies that changes in Japan's inflation rate do not significantly affect imports.

   b. **Significance**: The high p-value suggests that Japan's inflation rate is not a significant predictor of imports in this model.

5. **India's GDP (β5=0.0033362)**:

   a. **Interpretation**: For each unit increase in India's GDP, imports increase by approximately 0.0033362 units, holding other variables constant. This indicates a positive and highly significant ($p<0.001$) relationship between India's GDP and imports, suggesting that economic growth in India is associated with higher import levels.

   b. **Significance**: The low p-value indicates that India's GDP is a highly significant predictor of import levels.

6. **Japan's GDP (β6=0.0014211)**:

   a. **Interpretation**: For each unit increase in Japan's GDP, imports increase by approximately 0.0014211 units, holding other variables constant. This positive relationship implies that as Japan's economy grows, imports increase as well. This relationship is statistically significant (p=0.00262).

b. **Significance**: The low p-value indicates that Japan's GDP is a significant predictor of import levels.

Residual Analysis

The residual standard error of the model is 0.8415, which measures the average distance that the observed values fall from the regression line. The residuals appear to be relatively small, suggesting that the model fits the data well. **Overall Model Fit**

- **Multiple R-squared**: The value of 0.9694 indicates that approximately 96.94% of the variance in imports is explained by the model. This high value suggests a strong fit.
- **Adjusted R-squared**: The value of 0.9611 adjusts for the number of predictors in the model and remains high, indicating that the model is not overfitting.
- **F-statistic**: The F-statistic of 116.3 with a very low p-value suggests that the model is statistically significant and that the predictors, as a whole, reliably predict imports.

Economic Implications

The results suggest that India's GDP and Japan's GDP are significant predictors of import levels, indicating that economic growth in both countries drives higher imports. The positive coefficient for the Post-CEPA indicator, though not statistically significant, might suggest a potential increase in imports post-CEPA, warranting further investigation. The non-significant coefficients for inflation rates indicate that other macroeconomic factors might be more influential in determining import levels.

CHAPTER V
EVALUATION OF RESULTS

The regression models for exports and imports between India and Japan provide substantial insights into the dynamics of bilateral trade under the Comprehensive Economic Partnership Agreement (CEPA). These results have significant implications for policymakers, trade analysts, and economic strategists.

Exports Model

The regression model for exports indicates several noteworthy findings. The positive coefficient for lagged exports ($\beta1=0.1656$) suggests a persistence in export values; past export performance tends to influence current exports significantly. This could imply a strong foundation of existing trade relationships and supply chain dependencies between India and Japan.

The coefficient for the Post-CEPA variable ($\beta2=-0.2671$) is negative and marginally significant ($p=0.07264$). This suggests that, after the implementation of CEPA, there has been a slight reduction in the logged exports from India to Japan, though this effect is not strong enough to be considered statistically robust. This outcome might indicate that while CEPA intended to boost trade, other factors such as non-tariff barriers, stringent quality standards, or competitive pressures from other countries could have counteracted the anticipated benefits.

The GDP variables for both India and Japan are positive and highly significant. Specifically, the coefficient for India's GDP ($\beta5=0.3167$) implies that economic growth in India is strongly associated with an increase in exports. This aligns with economic theories suggesting that as a country's economy grows, its production capabilities and export capacities expand. Similarly, the positive coefficient for Japan's GDP ($\beta6=0.2295$) indicates that as Japan's economy grows, its demand for imports (including from India) increases.

Inflation variables for both countries are not significant predictors of exports, which suggests that inflation rates may not have a direct or substantial impact on the export levels between India and Japan. This might be due to the nature of goods traded, where price competitiveness is not the primary determinant, or due to effective hedging strategies against inflation.

Imports Model

The regression model for imports reveals that India's GDP ($\beta5=0.003362$) is a highly significant predictor, indicating that as India's economy grows, it imports more goods from Japan. This finding is consistent with economic theories that link economic growth with increased demand for diverse goods, including those from international markets.

Interestingly, the coefficient for Japan's GDP ($\beta6=0.0014211$) is also positive and significant. This suggests that as Japan's economy grows, it results in increased exports to India, likely due to enhanced production capacities and competitive advantages in various sectors.

The Post-CEPA variable (β2=0.4591) in the imports model shows a positive but not statistically significant coefficient. This could imply that while there was an expectation for CEPA to significantly boost imports, other barriers or market conditions may have tempered this effect. Factors such as administrative delays, compliance costs, and stringent rules of origin might have played a role.

The lagged imports variable (β1=0.1464) is not significant, indicating that past import levels do not have a strong predictive power for current import levels. This could be due to fluctuating demand or shifts in trade policies and economic conditions.

CHAPTER VI
POLICY IMPLICATIONS

1. **Strengthening Trade Agreements**: The marginal significance of the Post-CEPA variable for exports and its non-significance for imports suggest that merely having a trade agreement might not be sufficient. Policymakers need to address non-tariff barriers, streamline administrative procedures, and enhance information dissemination about the benefits and compliance requirements of CEPA. This would ensure that businesses can fully capitalize on the agreement.

2. **Economic Growth and Trade Dynamics**: The strong significance of GDP variables indicates that economic growth is a major driver of trade. Policymakers should focus on fostering economic growth through supportive fiscal and monetary policies, investments in infrastructure, and facilitating ease of doing business to enhance trade capacities.

3. **Addressing Non-Tariff Barriers**: The results hint at the presence of non-tariff barriers that might be impeding the full benefits of CEPA. Efforts should be made to negotiate the reduction of these barriers, ensuring smoother and more predictable trade flows.

4. **Sector-Specific Strategies**: Given the differential impacts on exports and imports, sector-specific strategies might be necessary. For example, improving quality standards and compliance in sectors where India has competitive advantages could help boost exports. Similarly, identifying and nurturing sectors with high import potential could optimize the benefits of imports.

5. **Trade Elasticity**: The persistence in exports (lagged exports) suggests that maintaining consistent trade relations and fulfilling existing contracts are crucial for sustaining export growth. Policies that encourage Businesses to focus on building long-term relationships and ensuring high standards of quality and reliability can help to leverage this persistence or inertia in export performance.

6. **Investment in Trade Facilitation**: The non-significant impact of inflation suggests that macroeconomic variables might have less immediate impact on trade compared to structural factors. Investing in trade facilitation measures, such as better logistics, streamlined customs processes, and reducing administrative overheads, could have a more direct and substantial impact on enhancing trade flows.

CHAPTER VII
CONCLUSION

The exploration of the India-Japan Comprehensive Economic Partnership Agreement (CEPA) and its impact on bilateral trade dynamics offers profound insights into the intricate nature of international trade. By delving into the econometric models of exports and imports, we gain a clearer understanding of the multifaceted effects of CEPA and the economic conditions that influence trade between these two nations.

The econometric models for exports and imports between India and Japan reveal significant findings about the trade dynamics under CEPA. The persistence in export values, as indicated by the significant coefficient for lagged exports, suggests that existing trade relationships play a crucial role in current export performance. This finding underscores the importance of maintaining and nurturing established trade links to sustain and grow export volumes. It highlights that past export performance is a strong predictor of current exports, which suggests that businesses that have been successful in the past are likely to continue performing well if they maintain their quality and reliability.

The Post-CEPA variable in the exports model, although negative, was only marginally significant. This suggests that while the CEPA was designed to boost exports, the expected benefits may have been offset by other factors such as non-tariff barriers, stringent quality standards, or competitive pressures from other countries. This complexity indicates that trade agreements alone are not sufficient to ensure increased trade flows; comprehensive measures addressing various barriers to trade are also necessary.

GDP variables for both India and Japan were significant predictors of exports, emphasizing the role of economic growth in driving trade. Specifically, the positive impact of India's GDP on exports indicates that as the Indian economy grows, its export capacity expands. Similarly, Japan's GDP positively influencing exports suggests that economic growth in Japan increases its demand for imports. This finding aligns with economic theory, which posits that growing economies have higher demands for goods and services, both domestically produced and imported.

In the imports model, India's GDP emerged as a highly significant predictor, indicating that economic growth in India drives increased imports from Japan. This aligns with the theory that growing economies have a higher demand for a diverse range of goods, including those from international markets. Japan's GDP also had a positive and significant impact on imports, suggesting that as Japan's economy grows, it results in increased exports to India. This reciprocal relationship between GDP and trade underlines the interconnectedness of economic growth and international trade.

The Post-CEPA variable in the imports model was positive but not statistically significant. This indicates that while there was an expectation for CEPA to significantly boost imports, other barriers or market conditions may have tempered this effect. The non-significance of the lagged imports variable suggests that past import levels do not have a strong predictive power for current import levels. This could be due to fluctuating demand, shifts in trade policies, or other external factors influencing trade flows.

The implications of these findings for policymakers and trade practitioners are profound. Firstly, the marginal significance of the Post-CEPA variable for exports and its non-significance for imports suggest that merely having a trade agreement is not sufficient. Policymakers need to address non-tariff barriers, streamline administrative procedures, and enhance information dissemination about the benefits and compliance requirements of CEPA. By doing so, they can ensure that businesses fully capitalize on the agreement. Addressing these barriers would involve negotiating the reduction of non-tariff barriers, simplifying compliance requirements, and reducing administrative delays. These measures would make it easier for exporters to use preferential routes and fully benefit from the trade agreement.

The analysis of the India-Japan CEPA reveals the complex interplay of economic factors and trade policies in shaping bilateral trade dynamics. While the agreement has the potential to enhance trade, realizing its full benefits requires addressing non-tariff barriers, fostering economic growth, and implementing sector-specific strategies. The significant impact of GDP on trade underscores the importance of macroeconomic stability and growth, while the mixed results for the Post-CEPA variable highlight the need for diversification and trade facilitation. Policymakers and trade practitioners must work together to create a conducive environment for trade, ensuring that agreements like CEPA deliver their intended benefits and contribute to sustained economic growth.

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APPENDIX

Trends in India-Japan Trade, 1991-2010 (in billion U.S. dollars)					
Year	**Imports Into India**	**Import Partner Share (%)**	**Exports From India**	**Export Partner Share (%)**	**Trade Balance**
1991	1.36	6.99	1.65	9.24	0.29
1992	1.58	6.49	1.6	7.74	0.02
1993	1.51	6.49	1.74	7.82	0.23
1994	2.04	7.1	2.03	7.69	-0.01
1995	2.46	6.72	2.21	6.96	-0.25
1996	2.18	5.58	2.01	5.99	-0.17
1997	2.14	5.17	1.89	5.43	-0.25
1998	2.46	5.81	1.65	4.97	-0.81
1999	2.54	5.09	1.69	4.58	-0.85
2000	2.21	4.19	1.83	4.31	-0.38
2001	1.78	3.52	1.55	3.53	-0.23
2002	2.13	3.72	1.79	3.56	-0.34
2003	2.33	3.22	1.71	2.88	-0.62
2004	2.96	2.99	1.85	2.43	-1.11
2005	3.67	2.61	2.45	2.44	-1.22
2006	4.74	2.66	2.8	2.31	-1.94
2007	5.83	2.66	3.26	2.23	-2.57
2008	7.78	2.46	3.62	1.99	-4.16
2009	6.68	2.51	3.22	1.81	-3.46
2010	8.26	2.36	4.81	2.18	-3.45

Trends in India-Japan Trade, 2011-2021 (in billion U.S. dollars)					
Year	**Imports Into India**	**Import Partner Share (%)**	**Exports From India**	**Export Partner Share (%)**	**Trade Balance**
2011	11.21	2.42	5.59	1.85	-5.62
2012	12.36	2.52	6.41	2.21	-5.95
2013	10.48	2.25	7.32	2.17	-3.16
2014	9.96	2.16	5.75	1.81	-4.21
2015	9.62	2.46	4.45	1.71	-5.17
2016	9.808	2.74	3.82	1.47	-5.988
2017	10.46	2.35	4.49	1.52	-5.97
2018	12.57	2.45	4.75	1.47	-7.82
2019	12.74	2.66	4.81	1.48	-7.93
2020	10.206	2.77	4.04	1.46	-6.166
2021	14.41	2.52	6.07	1.53	-8.34

ANNEXURE-IV

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