2025 Volume: 01 Issue: 06 www.ijrpa.com Research Article

International Journal Research Publication Analysis

Page: 01-12

EXPORTS COFFEE OF INDIA: A TIME-SERIES ANALYSIS

***[1]Anant Hanumanta Pujari, [2]Dr. N. S. Mugadur**

[1]Research Scholar, Department of Economics, Karnatak University Dharwad.

[2]Associate Professor, Department of Economics, Karnatak University Dharwad.

Article Received: 23 September 2025
Article Revised: 13 October 2025
Published on: 03 November 2025

***Corresponding Author: Anant Hanumanta Pujari**
Research Scholar, Department of Economics, Karnatak University Dharwad.

ABSTRACT

Coffee is a popular beverage and a significant agricultural commodity for many countries. Nearly 90 percent of global coffee production takes place in developing nations, where millions of small producers depend on it for their livelihoods. India holds a prominent position in the global coffee market, ranking seventh in world coffee production with an output of 384,000 metric tons (Szenthe, 2019). Indian coffee is renowned for its distinct historic flavour, making it one of the most extraordinary beverages in the world. The dedication of Indian coffee growers who pour their life, skill, and effort into the crop contributes greatly to its quality and global reputation. This study aims to quantify the impact of selected economic variables on the quantity of coffee exported from India. The findings reveal that the exchange rate significantly influences India’s coffee exports, highlighting the sector’s sensitivity to currency fluctuations in the international market.

KEYWORDS: Export, domestic price, quantity.

INTRODUCTION

Coffee is a popular beverage and a significant agricultural crop in many countries. About 90% of the world's coffee is produced in poor nations, where millions of small farmers depend on it for their livelihoods. India has a substantial market position in the worldwide coffee business, ranking eighth in the world for coffee production with an output of 384,000 metric tons (Szenthe, 2019).

In many nations, coffee is a major agricultural product and a popular beverage. Millions of small farmers rely on coffee for their livelihoods in developing countries, where it accounts for about 90 per cent of global production. With an output of 384,000 metric tons, India ranks seventh in the world for coffee production, giving it a significant market share in the global coffee industry (Szenthe, 2019). Global market for coffee is estimated to be USD 466 billion in 2020 (India Trade Portal 2024). India’s coffee exports show seasonal pattern with peak exports during the months of March to June (India Trade Portal 2024). Government of India is promoting the export of the coffee from the country.

REVIEW OF LITERATURE

Rajasekar T. (2009) emphasizes that port performance plays a pivotal role in promoting international trade, noting that approximately 90 per cent of global cargo is transported by sea. His study analyses the export and imports traffic performance of Tuticorin Port Trust (TPT), a historical hub for maritime trade and pearl fishery for over a century. Similarly, Vera Songwe (2010) examines the effects of exports and export diversification on economic growth, using a panel of 30 sub-Saharan African countries from 1995–2008, and finds significant impacts on value added, labour productivity, and both conditional and unconditional labour demand, providing valuable insights for post-crisis export strategies. Balassa (1978) was among the earliest to establish a positive link between export performance and economic growth, while love and Chandra (2005) demonstrated that trade openness significantly enhances productivity in developing economies. Hummels and Schaur (2013) highlight that logistics efficiency and trade facilitation particularly through modernized ports substantially reduce trade costs, boosting export competitiveness. Furthermore, UNCTAD (2018) underscores that well-functioning port infrastructure is a critical determinant of a nation’s ability to integrate into global value chains. Hausmann, Hwang, and Rodrik (2007) argue that the type and sophistication of exported goods influence long-term growth prospects, stressing the importance of export diversification. Similarly, Amurgo-Pacheco and Pierola (2008) find that entering new export markets and expanding the product base drive faster trade growth compared to merely increasing volumes of existing exports. In the Indian context, Veeramani (2008) observes that manufactured exports, supported by efficient logistics and port facilities, have contributed more to GDP growth than primary commodity exports. Collectively, these studies reinforce the idea that port efficiency, export diversification, and supportive trade policies form the backbone of a competitive export sector, which in turn drives sustainable economic development.

Objectives of the Study

1. To study the impact of selected variables on the quantity of coffee exported from India.

2. To analyse the year-wise export performance of coffee in India.

Methodology

This study is entirely dependent on secondary sources and largely employs an empirical research design. The FAOSTAT database of the Food and Agriculture Organization of the United Nations was used to gather the secondary data from the internet. Simple average analysis, graphical analysis, and the least squares approach are the statistical tools utilized in this work to conduct analysis. The analysis of the regression model is as follows.

Export quantity = $\beta0$+ $\beta1$*Domestic Price+ $\beta2$*Domestic Production+ $\beta3$*Export Price+$\beta4$*Exchange Rate + u

Limitations of the Study

1. This study is purely based on secondary sources of data
2. Time factor is the major constraint of this study
3. The study is based on 1991-2022 data

RESULTS AND DISCUSSION

Figure-1 explains export quantity of Indian coffee since 1991 to 2022.

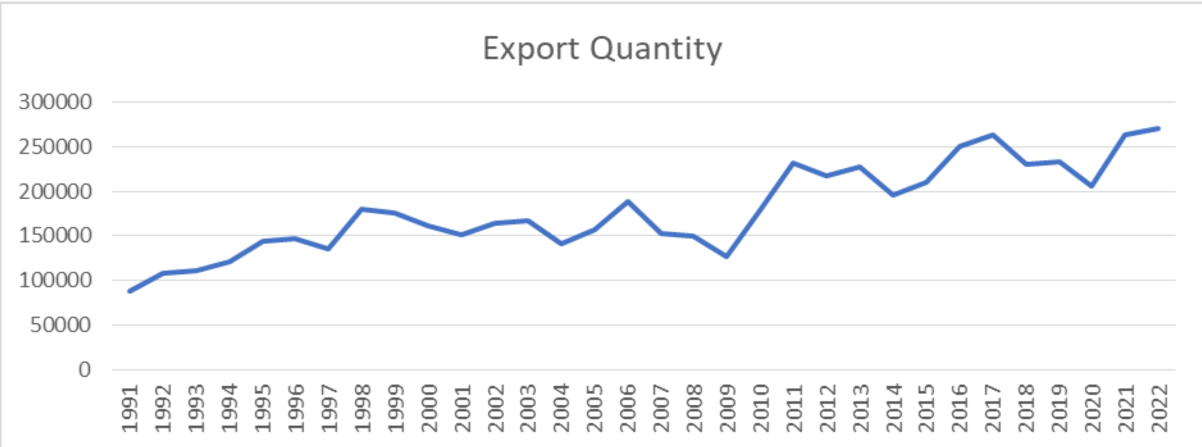

Figure- 1: Trends and pattern of coffee export Quantity over the years.

The trend of this export quantity curve shows that there is a continuous increase in the export quantity over the years. This is a positive sign with respect to the export of coffee from India to the different parts of the world.

The below figure-2 explains the export value of Indian coffee from 1992 to 2022. The trend of this export quantity curve shows that there is a continuous increase in the export quantity over the years. This is a positive sign with respect to the export of coffee from India to the different parts of the world.

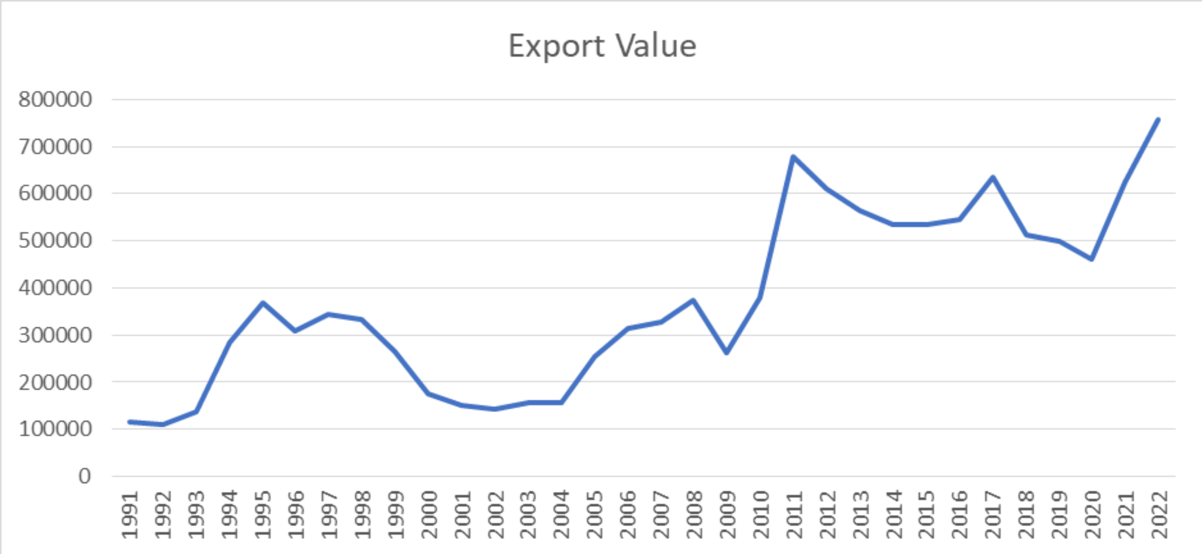

Figure-2: Trends and pattern of coffee export value over the years.

The export value showed significant fluctuations from 1991 to 2022, with an overall upward trend. From 1991 to 1995, exports rose sharply, peaking around 360,000 in 1995, before declining steadily to their lowest level of about 140,000 in 2002. A recovery began in 2003, reaching around 370,000 in 2007, but the 2009 global financial crisis caused a notable drop. This was followed by a sharp surge in 2010–2011, when exports hit a new peak of about 680,000. Between 2012 and 2016, values declined moderately before stabilizing, while 2017–2020 saw fluctuations between 500,000 and 620,000. In the final period, 2021–2022, exports experienced a steep rise, reaching an all-time high of approximately 760,000 in 2022.

Figure-3 explains the trend of domestic producer prices from 1991 to 2022. Here, what inference we can get is the producer prices of coffee at the domestic level; we can see the gradually increasing trend. The reason for the increase in domestic producer price is mainly because of the increase in the cost of production of coffee.

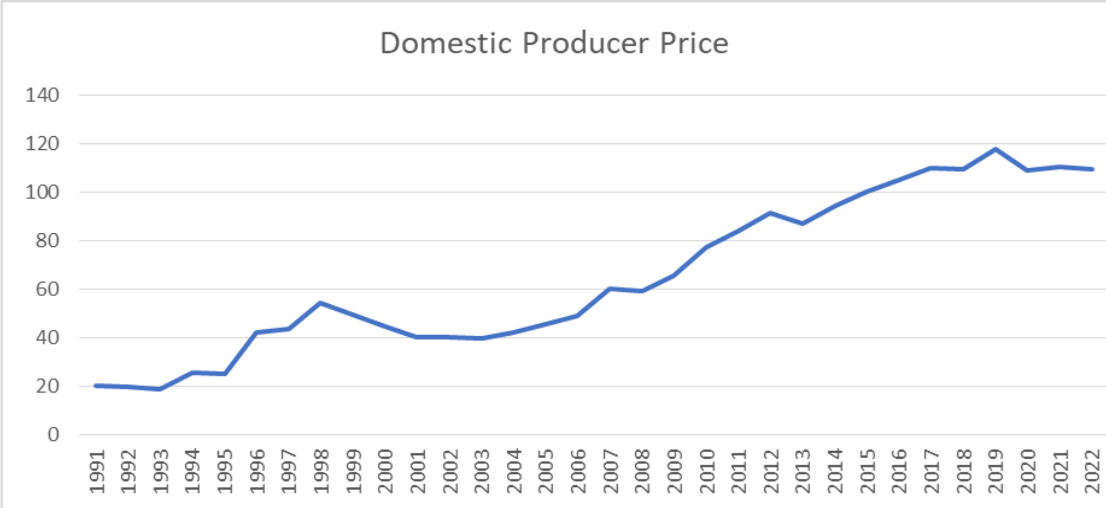

Figure-3: Trends and pattern of coffee domestic producer price over the years.

Figure-4 showing the quantity of domestic production of coffee from 1991 to 2022. Here we can observe the increasing trend of domestic production over the years. This trend is a result of increasing production prices and increasing demand for coffee all over the world.

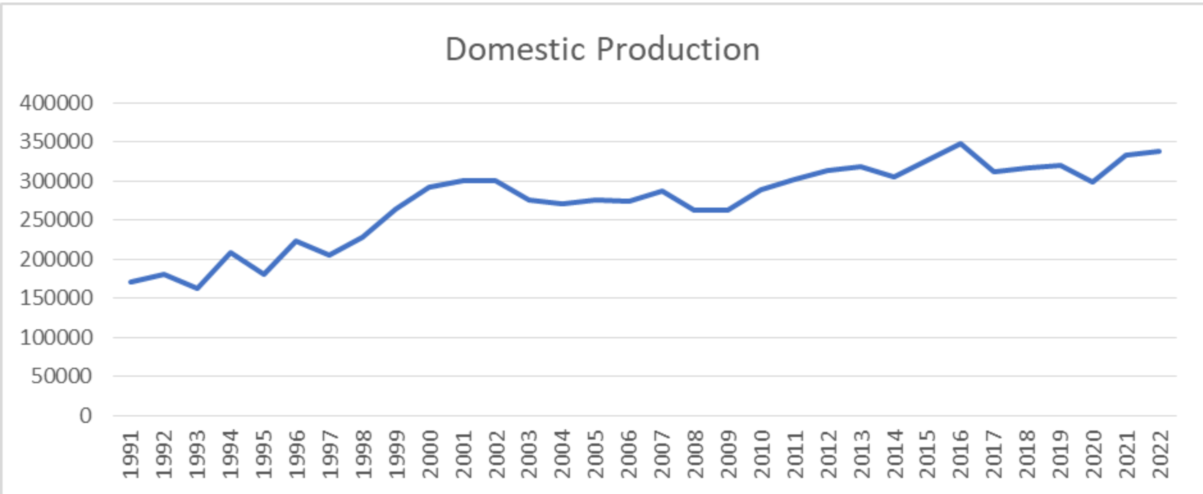

Figure-4: Trends and pattern of coffee domestic production over the years

Figure-5 shows that there is a constant increasing or increasing with less fluctuations the reason behind this trend is continues increase in the value of coffee.

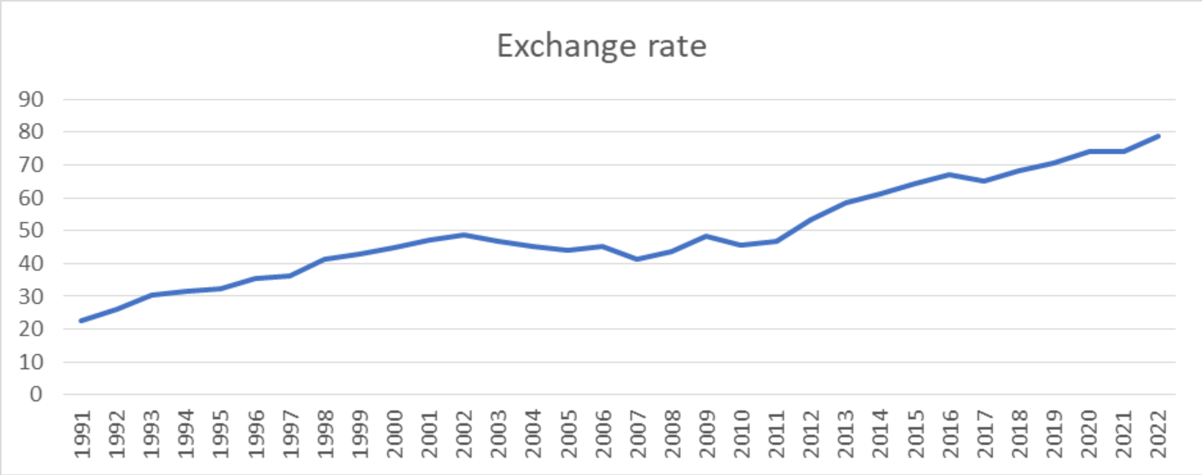

Figure-5: Trends and pattern of coffee Exchange Rate over the years.

The graph, which most likely represents the Indian Rupee (INR) versus the US Dollar (USD), shows the trend in the exchange rate from 1991 to 2022. The rupee exhibits a noticeable long-term decline throughout this time, going from about ₹20 to USD in 1991 to about ₹80 to USD in 2022. The 1991 economic liberalization and the ensuing structural changes were among the factors that contributed to the rupee's gradual depreciation from 1991 to the early 2000s. The exchange rate fluctuated between ₹43 and ₹47 per USD between 2003 and 2007, briefly increasing in 2007 as a result of strong economic growth and capital inflows. But the global financial crisis of 2008 brought instability, and the rupee fell precipitously after 2011, reaching ₹55 to the US dollar by 2012. Due to a number of causes, including changes in global capital flows, trade deficits, inflation, and shocks to the price of oil, the rupee maintained its steady drop from 2013 onward, reaching ₹60 in 2013, ₹70 in 2018, and approaching ₹80 by 2022. Overall, the graph shows the rupee's steady decline in value, which raises the cost of imports while increasing export competitiveness.

Figure-6: Trends and pattern of coffee export price over the years.

The table below displays the results of the regression model. According to adjusted R square, the model explains 83.23 percent of the variability in the export quantity. The model is statistically significant in explaining the fluctuations in export quantities, as indicated by the F-statistic and the p-value. The coefficients (elasticities) that are statistically significant or not are also displayed in the table. The only factor that significantly and favourably affects India's coffee export volume is the currency rate.

Table-1: Regression results for level log data.

Adj R-squared = 0.8323			
F(4, 27) = 39.46			
Prob> F = 0.0000			
Explanatory variable	**Coefficient**	**P-value**	**Conclusion**
Domestic Producer Price	0.051081	0.758	Not significant
Production	0.305143	0.282	Not significant
Exchange Rate	0.486793	0.035	Significant
Export price	0.126819	0.227	Not significant
Intercept	6.083884	0.051	Not significant

The table below displays the results of the regression model. Adjusted Square shows that 83.23 percent of the changes in the export quantity are explained by the model. The model is statistically significant in explaining the fluctuations in export quantities, as indicated by the F-statistic and the p-value. The coefficients (elasticities) that are statistically significant or not are also displayed in the table. The only factor that significantly and favourably affects India's coffee export volume is the currency rate.

Table-2: Shows the residual diagnostics for homoskedasticity, serial correlation, and normality. The model suffers from non-normality problem.

Residual diagnostic tests on log level model			
	Test statistic	p-value	Conclusion
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	0.13	0.7218	p-value bigger than 0.05, There is homoskedasticity.
Durbin-Watson d-statistic (5, 32)	1.713		DW statistic in acceptable range, no serial correlation
Tests for Normality	6.19	0.0453	p-value smaller than 0.05, normality rejected.

The brush stroke cook's residual diagnostics are displayed in the table. There is homoskedasticity and Durbin Watson statistics within an acceptable range, as indicated by the Weisberg test p value of 0.072, which is greater than 0.05. There is no serial connection, and the normality test yielded a p value of 0.0453 (less than 0.05), indicating that the normality was rejected. The model has a problem with non-normality.

Table-3: There could be some multicollinearity problem in the explanatory variables.

Shows that there could be some multicollinearity problem in the explanatory variables.			
Variable	VIF	1/VIF	Conclusion
Domestic price	19.38	0.051596	Slight problem of multicollinearity
Exchange rate	10.74	0.093079	No multicollinearity problem
Production	8.09	0.123676	No multicollinearity problem
Export price	3.29	0.304189	No multicollinearity problem
Mean	VIF	10.37	

Table-3 demonstrates that VIF: This is a metric that quantifies the extent to which multicollinearity inflates a regression coefficient's variance. Greater multicollinearity is indicated by higher VIF scores. Another indicator of multicollinearity is the tolerance, or 1/VIF. Greater multicollinearity is indicated by lower 1/VIF values. A qualitative evaluation of each variable's VIF value is given in this column.

Domestic price: This variable has a VIF of 19.38, which is considered a moderate problem of multicollinearity. This means that the variance of its regression coefficient is inflated due to its correlation with other variables in the model.

Exchange rate: This variable has a VIF of 10.74, which is still within the acceptable range and does not indicate a multicollinearity problem.

Production and Export price: These variables also have VIF values below the threshold for concern, indicating no multicollinearity issues.

Unit root tests

Table-4: Details of the level of data are nonstationary.

Level (ln) data, Augmented Dickey Fuller Test			
	Test statistic	**p-value**	**Conclusion**
Export Quantity	-2.641	0.2614	p-value less than 0.05, there is unit root
Domestic Producer Price	-1.302	0.6283	p-value less than 0.05, there is unit root
Production	-2.265	0.4535	p-value less than 0.05, there is unit root
Exchange Rate	-2.282	0.4437	p-value less than 0.05, there is unit root
Export Unit Value	-2.143	0.2277	p-value less than 0.05, there is unit root

Table-4 shows that level of data is nonstationary, all variables have p-values greater than 0.05. This means we fail to reject the null hypothesis of a unit root, indicating that all variables in their level form are non-stationary.

Non-stationary data can lead to unreliable results in time series analysis and econometric models.

Export Quantity: Even though it has the lowest p-value (0.2614), it's still not significant enough to reject the unit root.

Domestic Producer Price: Exhibits the least evidence against the unit root (p-value 0.6283)

Table-5: Shows that there is no unit root in first difference data.

First-difference (dln) data, Augmented Dickey Fuller Test.			
	Test statistic	**p-value**	**Conclusion**
Export Quantity	-5.098	0	p-value less than 0.05, no unit root
Domestic Producer Price	-2.444	0.0108	p-value less than 0.05, no unit root
Production	-3.708	0.004	p-value less than 0.05, no unit root
Exchange Rate	-4.304	0.0004	p-value less than 0.05, no unit root
Export Unit Value	-3.658	0.0004	p-value less than 0.05, no unit root

The table demonstrates that the first difference does not have a unit root. Now, every p-value is below 0.05: As a result, the null hypothesis that all variables have a unit root can be rejected. The variables are now successfully stationary thanks to the first-difference transformation. The unit root is most strongly refuted by export quantity (p-value of 0). Despite having the least amount of evidence (p-value of 0.0108) against the unit root, the domestic producer price nonetheless passes the stationarity test.

Regression using first-differenced data

Regression analysis was performed using the first difference to transform the nonstationary data into stationary data. The F-statistic is not significant, and the R squared value is quite low. Consequently, the differences in differenced export quantities cannot be explained by the first difference model.

Table-6: Regression of first difference data.

Regression of first difference data			
F(4, 26) = 0.39			
Prob> F = 0.8167			
R-squared = 0.0560			
Explanatory variable	**Coefficient**	**p-value**	**Conclusion**
Domestic Producer Price	0.03059	0.911	Not significant
Production	0.35188	0.344	Not significant
Exchange Rate	0.027805	0.959	Not significant
Export Unit Value	0.010692	0.945	Not significant
Intercept	0.02506	0.509	Not significant

The findings of a regression analysis utilizing first-difference data are shown in Table 6, which can be interpreted as follows. Total Model Importance: The p-value for the F-statistic (0.39) is 0.8167, significantly greater than the usual significance level of 0.05. This shows that there is no strong evidence of a relationship between the explanatory factors and the dependent variable, indicating that the model as a whole is not statistically significant. Significance of Individual Variable: Since none of the explanatory variables in this model have p-values less than 0.05, they are likewise not statistically significant. R-squared The model only explains roughly 5.6% of the variation in the dependent variable, according to the extremely low R-squared value of 0.0560.

Table-7: Model has no heteroskedasticity problem, no serial correlation problem, but there is non-normality problem.

Residual diagnostics of first-difference data regression			
	test statistic	**p-value**	**Conclusion**
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	0.3	0.5828	p-value bigger than 0.05, There is homoskedasticity.
Durbin-Watson d-statistic (5, 32)	2.35089		DW statistic in acceptable range, no serial correlation
tests for Normality	6.19	0.0453	p-value smaller than 0.05, normality rejected.

Homoskedasticity: The error terms exhibit constant variance, which is a desirable characteristic for regression models, according to the Breusch-Pagan/Cook-Weisberg test (p-value > 0.05).

No Serial Correlation: There is no significant serial correlation, indicating that the mistakes are not correlated with one another over time, as indicated by the Durbin-Watson d-statistic of 2.35089, which is within the permissible range.

Non-Normality: The residuals are not normally distributed, as indicated by the normality test's p-value of 0.0453 (less than 0.05). For certain statistical judgments, this may be problematic. The regression model satisfies two requirements for reliable statistical inference: homoskedasticity and the absence of serial correlation. However, some outcomes, such confidence intervals and hypothesis tests that depend on normalcy, should be interpreted cautiously due to the violation of the normalcy assumption.

Table-8: Shows that there is no multicollinearity problem in the first difference data.

Multicollinearity in regression using first difference data.			
Variable	VIF	1/VIF	Conclusion
Domestic price	1.5	0.665029	No multicollinearity problem
Domestic production	1.47	0.679364	No multicollinearity problem
Export price	1.37	0.73059	No multicollinearity problem
Exchange rate	1.24	0.806947	No multicollinearity problem
Mean	VIF	1.4	

The variance inflation factor, or VIF, quantifies the extent to which multicollinearity inflates a regression coefficient's variance. Greater multicollinearity is indicated by higher VIF scores. 1/VIF (Tolerance): An additional multicollinearity metric. Greater multicollinearity is indicated by lower values. Every VIF value is less than 2: This implies that the explanatory variables do not significantly exhibit multicollinearity. A mean VIF of 1.4 This supports the general absence of multicollinearity issues. There is no issue with multicollinearity in this regression model. This indicates that the computed coefficients can be properly evaluated and that correlations between the explanatory factors do not significantly alter them.

CONCLUSION

The exchange rate affects India's coffee exports are significantly. Indian coffee has a unique historic flavour and it is the most extraordinary of beverages. The Indian coffee growers pour his life into the crop. If government takes initiative in supporting the coffee producers, the market will find a prospect. The export performance of coffee of India is found to be good and it can be improved by adding value to the coffee beans at the origin. India has consistently produced and exported a remarkable variety of high-quality coffee for over one hundred and fifty years. Coffee consumption in India steadily increases, Export earnings earned by trading coffee are satisfactory at the present and it is predicted to be better in future.

REFERENCES

1. Coffee Board of India. (2024). *Coffee export statistics*. Ministry of Commerce & Industry, Government of India. https://indiacoffee.org
2. Food and Agriculture Organization of the United Nations. (2023). *FAOSTAT database – Crops and livestock products*. FAO. https://www.fao.org/faostat
3. International Coffee Organization. (2023). *Coffee market report*. ICO. https://www.ico.org
4. Directorate General of Foreign Trade. (2023). *Export import data bank*. Ministry of Commerce & Industry, Government of India. https://tradestat.commerce.gov.in
5. Rajasekar, T. (2009). An analysis of export and import performance in Tuticorin Port Trust. *Indian Journal of Marketing, 39*(7), 45–54.
6. Venkatesh, H., & Reddy, A. R. (2016). Export performance of Indian coffee – A trend analysis. *International Journal of Agricultural Sciences*, *8*(1), 48–53.
7. Raghavendra, B. R., & Nagesha, G. (2015). Dynamics of coffee exports from India: An econometric study. *Agricultural Economics Research Review*, *28*(2), 277–284. https://doi.org/10.5958/0974-0279.2015.00033.4
8. Gokarn, S., & Dhananjaya, B. N. (2017). Performance and competitiveness of coffee exports from India. *Journal of Plantation Crops, 45*(1), 59–66.
9. Sharma, V., & Kannan, E. (2012). Trends and determinants of India's agricultural exports. *Indian Journal of Agricultural Economics, 67*(4), 611–628.
10. World Bank. (2024). *World development indicators*. The World Bank. https://databank.worldbank.org/source/world-development-indicators
11. Songwlere, V. (2010). Exports and export diversification in Sub-Saharan Africa: A strategy for post-crisis growth. *Journal of Management & World Business Research, 6*, 142–150.
12. Szenthe, A. (2019, May 29). Top coffee producing countries. *WorldAtlas*. https://www.worldatlas.com/articles/top-coffee-producing-countries.html