ISSN 0974-763X
UGC-CARE Listed Journal

SOUTH ASIAN JOURNAL OF MANAGEMENT RESEARCH (SAJMR)

Volume 15, Issue No.3 July, 2025

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Published by

CSIBER Press, Central Library Building

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Chhatrapati Shahu Institute of Business Education and Research (CSIBER)

South Asian Journal of Management Research (SAJMR)

Volume 15, Issue No. 3, July 2025

Editor: Dr. Pooja M. Patil

Publisher
CSIBER Press
Central Library
Chhatrapati Shahu Institute of
Business Education & Research (CSIBER)
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ISSN: 0974-763X
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South Asian Journal of Management Research
(SAJMR)

Volume 15, Issue No. 3 **July, 2025**

C O N T E N T S

Determinants of Gems and Jewellery Exports from India: A Time Series Analysis

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Abstract

Gems and Jewellery are part of various values and customs around the world. Gems and Jewellery have been essential parts of both aesthetic as well as investment drive. The gems and Jewellery industry has gradually become important for the Indian economy due to its contribution to India's total exports. This paper attempts to evaluate the impact of major factors affecting gems and Jewellery exports from India. For time series analysis, data (2003 to 2023) were collected from various sources and used to develop an export supply function at the macro level. The value of the finished gems and Jewellery exports from India was taken as a dependent variable, whereas export price, real exchange rate, trade openness, and the number of coloredgemsstones were taken as independent variables. Co-integration analysis and Error Correction methods were employed to estimate short and long-run elasticity. The coefficient of this variable explains that for every one percent increase in the exchange rate, there might be a 5.1 percent decrease in exports of gems and Jewellery in the long run. In a similar context, Real GDP, the share of semi-manufactured goods exports, and trade openness showed the effect of 3.2, 0.72, and 2.4 percent increase in the export supply of gems and Jewellery in the long respectively. Export prices showed a negative relationship with the value of gems and Jewellery exports. The coefficient of this variable suggested that for every one percent increase in the export prices, there might be -3.4 percent decreases in the export supply of finished gems and Jewellery in the long run. Based upon the findings, it is suggested exchange rate of the Indian rupee should be stabilized with a strengthening industry of semi-manufactured gems and Jewellery goods in the country.

Keywords: Gems and Jewellery, Exports, Co-integration Analysis and Error Correction Method

Introduction

Gems and Jewellery are a significant emerging sector in the Indian Economy. Gems and Jewellery is a leading foreign exchange earner for the country. The export of gems and Jewellery has been among the fastest-growing sectors in India in recent years. India also counts among the largest gold Jewellery exporters in the world, with almost 160 countries buying from India. India boasts close to 20 unique jewelry-making styles **(CII, Dec 2020)**. The gems and Jewellery industry of India contributes 7 percent to the GDP during 2020-21. The industry employs more than 5 million skilled and semi-skilled workforces in the country. This sector contributes about 10-12 percent of India's total merchandise exports, accounting for the third largest commodity share. During 2021-22, the gems and Jewellery exports played an instrumental role in growing India's overall exports to US$ 419 billion with a growth of 44 percent from 2020-21 and 34 percent from 2019-20. As per 2020 statistics, India's gems and Jewellery exports account for about 3.5 percent of the world's total exports, making it the seventh-highest exporter in the globe. India exports gems and Jewellery to the USA, Hong Kong, UAE, Belgium, Israel, Thailand, Singapore, the UK, Netherlands, Japan, etc. USA is the largest importer of Indian Jewellery with 2021-22 imports valued at US$ 14.5 billion growing from US$ 8.7 billion of exports in 2020-21. Hong Kong and UAE are among the largest export destinations for India at US$ 9.3 billion and US$ 5.7 billion in exports contributing about 23.7 percent and 14.5 percent of the total exports during 2021-22 respectively. Additionally, the opening of the India Jewellery Exposition (IJEX) center in Dubai and the signing of agreements with key export destinations such as UAE, Australia, Israel, the UK, and Canada among others should continue to drive exports in the future **(IBEF, Nov 2022)**.This study aimed at examining the impact of major determinants of Gems and Jewellery exports identified using time series analysis.

Literature Review.

Shukla, M. S. (2000) highlighted the profile of gems and Jewellery from the Indian historical perspective. He told that pearls and precious stones were known as a specialty of India at a very remote epoch. India was indeed the first and for a long times the only source of diamonds and pearls known to the European nations. Further, he dabbled in sources and geographical distribution of gems, physical and chemical properties thereof and their working, occult and religious association, and treatment of jewels for jewellery. **SatyaSundaram (2001)** analyzed the possibilities of the Indian Gems and Jewellery Industry. The Government has undertaken various measures recently to promote investment and upgrade technology and skills to promote “Brand India” in the international market. In recent years, the performance of the Indian Gems and Jewellery industry has remarkably improved in the international market to enhance its market hold and in the long run survival in international trade. **Mukherjee and Ishita (2008)** dealt with an emerging global industry the gems and jewellery industry,

which is on the way to huge information. This industry is extremely global. She told that the gems and jewellery industry can be classified into various sub-sectors such as gemstones, jewellery, and pearls. Over the years, the global gems and jewellery markets have been impacted by various developments like falling trade barriers, increasing competition, changing customer preferences, and developments in technology in various areas. Kala **Alok (2009)** discussed the impact of the global economic recession on the export performance of the Indian Gems and Jewellery sector, product-wise. The study reveals the contrasting point that the total Gems and Jewellery industry has shown growth but Indian Gems and Jewellery has witnessed a decline. Further study reveals that cut & polished diamonds showed decreasing export trends while gold jewellery registered an increase in the year. **Kumar (2013)** analyzed the Indian gems and jewellery industry with problems and prospects for the period 2009-2010. This sector witnessed a CAGR of 16.59 percent of India's exports of gems and jewellery during the period 1990-91 to 2009-10. However, the gems and jewellery sector is facing various problems such as dependence on imports, changing fashion, imbalance growth of products, manual way of crafting, various problems regarding labourers, financial problems, procedural hardships, unemployment, etc. **Arora (2014)** studied the trade of gems and jewellery from the period 2001-02 to 2010-11. The study found a CAGR of 14.7% for the gems and jewellery industry in India. Diamonds are one of the most important constituents of the gems and jewellery trade in India. Against this background, the present research paper analyses the growth of the diamond trade of India vis-à-vis gems and jewellery trade and exports from India.
The gems and jewellery sector is a major foreign exchange earner. Due to its importance in India's foreign trade, the government has taken many initiatives to boost the sector. The government, for instance, has declared this sector as a thrust area for exports. During the global economic meltdown especially, the government has dealt out many initiatives for the badly-affected sector **(Parasakthi and Dhanalakshmi, 2015).**
The gems and Jewellery industry is influenced by the exchange rate (rupee/dollar) because it is an export & import-oriented industry. Any variation in the exchange rates directly affects the players in the market **(Lamba and Saini, 2015).**

Kapoor and ASSOCHAM (2015) examined the structure and concentration of the Indian Gems &Jewellery industry and tried to find out whether the Indian Gems and Jewellery Industry has the potential to contribute to the government's "Make in India" initiative and various economic indicators like GDP, gross value added indirect tax collections. The study concluded that the G& J industry has great potential to contribute to the government's "Make in India" initiative and has a significant positive contribution to the increment of GDP, indirect tax collections, gross value added, and so on.**Parul A. et al. (2017)** studied the structure of exports of the Indian gems & jewellery industry. The study suggested fastening up the growth and increasing the share of the Indian gems & jewellery industry, problems like import dependency, prices rise, and technical advancement need to be focused on. **Chellam K. Chitra (2018)** studied the origin, history, and structure of the gems & jewellery industry of India. From a very humble beginning in the 1950-the 60s, the Indian gems & jewellery industry has become the manufacturing powerhouse and the fastest-growing industry though it suffers from limited standardization and unorganized players

Methodology

Time Series Analysis: Secondary data were used to capture the effect of different variables which have direct or indirect blows on the export supply of gems and jewellery at the country level. Data for export supply was collected from 2003 to 2023. Data on the export value of gems and jewellery taken from the handbook statistics on the Indian economy and data on other variables like cut and polished diamonds, exchange rate, real GDP, Share in semi-manufactured goods exports, domestic prices, export prices and trade openness collected from various issues of Economic Survey of India.

Theoretical Model: Granger 1981, Co integration was intended for testing and estimating the long-run and short-run association among the variables. The estimation of long-run association required the time series to be non-stationary in the level form. If the time series data are non-stationary then the common statistical tools are not recommended and regression becomes spurious (Granger and Newbold, 1974). In co integration approach, the first step is to test for the stationary or non-stationary data set. The second step is to test for long-run association between variables.

Testing for Unit Root: A series is stationary if its mean, variance, and covariance all are independent of time or in other words remain constant over time. Conversely, a series is non-stationary if it fails to satisfy any part of the above definition such as mean, variance, or covariance change over time. Various approaches are used to test the hypothesis of unit root but the most commonly used technique is Dickey-Fuller (DF) test (Dickey and Fuller, 1979) and (Dickey and Fuller, 1981). For the DF test, specified the number of lags and used Schwarz Bayesian Criterion (SBC) for each series. DF test estimates the following equation by OLS;

$$Yt = \Phi_1 Y_{t-1} + \mu \qquad (1)$$

If $\Phi_1<1$, the series Y_t is stationary and it is non-stationary if $\Phi_1 =1$. The null hypothesis of unit root, (H_o: $\Phi_1 =1$) is tested against the alternative hypothesis of no unit root, (H_1: $\Phi_1<1$). If H_o is rejected; the series is stationary and vice-versa.

Testing for Co-integration:

Co-integration technique identifies equilibrium long-run association between variables. If a long-run relationship exists between variables, then variables are co-integrated. For the implementation of co-integration, two conditions must be fulfilled. First, at least two individual variables should be integrated in the same order. Second, a linear combination among variables should exist. Consider the co-integration regression $Y_t= \alpha+\beta X_t+ \mu_t(2)$ If the series Y_t and X_t are both I (1) and the error term μ_t is I (0), then the series are co-integrated of order I, (1, 0). In the above equation, β measures the equilibrium relationship between the series Y_t and X_t, and μ_t is the deviation from the long-run equilibrium path. If the DF test fails to reject the null hypothesis of a unit root in levels but rejects the null hypothesis in the first differences, then the series contains one unit root and is of integrated order one I (1). If the test fails to reject the null hypothesis in levels and first differences but rejects the null hypothesis in second differences, then the series contains two unit roots and is of integrated order to I (2) (Mencet et al., 2006).

Following the functional form of export supply function of gems and jewellery was employed.

$$\text{Log } (EV_t) = a_o + a_1 \log (ER_t) + a_2 \log (RGDP_t) + a_3 \log (SSMAN_t) + a_4 \log (HS_t) + a_5 \log (DP_t) + a_6 \log (TO_t) + a_7 \log (EP_t) + \mu_t (3)$$

Where

Log (EV_t) = Logarithm of export value of gems and jewellery (Million Rs.)
Log (ER_t) = Logarithm of the exchange rate (Indian Rs./U.S.$)
Log ($RGDP_t$) = Logarithm of real gross domestic product (Million Rs.)
Log ($SSMAN_t$) = Logarithm of share in manufactured goods (Percentage)
Log (HS_t) = Logarithm of cut and polished diamonds (Million No.)
Log (DP_t) = Logarithm of domestic prices (Per Sq.M)
Log (TO_t) = Logarithm of trade openness (Ratio)
Log (EP_t) = Logarithm of export prices (Per Sq.M)
a_o is the intercept term and a_1, a_2, a_3, a_4, a_5, a_6 and a_7 are parameters

Results and Discussion

This section is divided into three divisions.

- The first division presents the descriptive statistics of the variables used for analysis;
- The Second division reports unit root results, and
- The third division presents co-integration results.

Descriptive statistics of the variables under study

Table 1 presents the descriptive statistics of the variables used for analysis for the period 2001 to 2021.

Table No. 1: Descriptive statistics of the variables under study

Variables	Units	Mean	Std. Deviation	Kurtosis	Skewness
Gems and Jewellery exports(Q)	Million Sq.M	27467.29	32.06142	-1.38474	-0.040489
Gems and Jewellery exports /Value	Million Rs	375.2	3078.879	-1.67897	-0.24166
Exchange rate	Indian.Rs./U.S.$	54.5849	2.428494	-1.34923	0.51155
Real GDP	Million Rs.	161480.5	175386.7817	-1.28037	0.05349
Percent Share of manufactured goods	Percentage	14.244	0.46879431	0.57207	-0.76849
Export prices of Gems and Jewellery	Pergrams	20535.5335	130.2644	-1.33564	0.32661
Trade Openness	Ratio	0.35467	0.02044487	-0.20692	-0.13061
Domestic prices of Gems and Jewellery	per grams	20535.5335	2827.37786	-0.64034	0.35367

Source: Computed

Table 1 presents the descriptive statistics of the variables used for analysis for the period 2001 to 2021. During the study period, India exported 27467.29Million Sq.M of finished gems and jewellery annually on average. Export prices of gems and jewellery mean value was 20535.5335pergrams. The mean and standard deviation value of Domestic prices of finished gems and jewellery was 20535.5335, and 2827.37786. The real

GDP of India was 161480.5 million Rs per annum on average, -1.28037 million Rs per annum at kurtosis, and 0.05349 million Rs per annum at Skewness. The mean, Kurtosis, and Skewness value of the exchange rate (Indian Rs./U.S.$) was 54.5849, -1.34923and 0.51155. Percent Share of semi-manufactured goods exported and its average value was 14.244 percent. The value of Trade Openness average value was 0.35467.

Unit Root Results: Most time series data exhibit trends (data series changes over time) and are termed non-stationary (Nelson and Plosser, 1982; Perron 1988). It is often the case that an economic series has a unit root when its first difference is stationary. Therefore, the first step in any time series empirical analysis is to test for the presence of unit roots to avoid the problem of spurious regression. It is important to examine the order of integration of each variable in a model to establish whether it contains unit roots and how many times it needs to be differenced to achieve a stationary series. In the first step, all the data sets were tested for the presence of unit roots. Export value of Gems and Jewellery (LEV), Exchange Rate (LER), Real Gross Domestic Product (RGDP), Share in manufactured goods exports (LSMAN), cut and polished diamonds (LCPD), Trade Openness (LTO), Domestic Prices (LDP) and Export Prices (LEP) were tested for unit roots for the period 2001-2021. Table 2 represents the results of tests of the series in logarithms for unit root using the ADF test for both with and without linear trends. In the non-trended model, the absolute values of the ADF statistics and Φ_3 values for LEV, LER, LRGDP, LSMAN, LTO, and LEP are well below the 95% critical value of the test statistics (2.9605) and (7.37) respectively and hence the null hypothesis of unit root for these variables is accepted. Whereas, LCPD and LDP are stationary series in level form because the absolute values of the ADF statistics and Φ_3 values for these variables are well above the 95% critical value of the test statistics.

Table No. 2: Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variables	Non-Trended Model	Trended Model	Φ_3	Conclusion
LEV (Export value)	-1.8838	-3.0057	2.8961	I(1)
LER (Exchange rate)	-1.4875	-2.5335	2.4213	I(1)
RGDP (Real Gross Domestic Product)	-0.41263	-4.1754	4.3237	I(1)
LMAN (Share in Manufactured goods exports)	-1.5345	-1.5386	1.4956	I(1)
LCPD(Cut And Polished Diamonds)	-3.140671	-4.2368	10.1533	I(0)
LTO (Trade Openness)	-3.3412	-1.0541	7.6325	I(1)
LDP (Domestic Prices)	-5.7421	2.64324	17.3642	I(0)
LEP (Export Prices)	-2.4530	-1.2876	4.3761	I(1)
Critical Values	**-2.9605**	**-3.4957**	**7.37**	---

I (0) =Stationary

I (1) = Non-Stationary Note: Critical values (95% confidence interval)

In a trended model where the absolute values of the ADF statistics and Φ_3 values for LEV, LER, LRGDP, LSMAN, LTO, and LEP are well below and for LCPD and LDP are above the 95% critical value of the test statistics (-2.9605) and (7.37) respectively. Hence the LEV, LER, LRGDP, LSMAN, LTO, and LEP are non-stationary series and LCPD and LDP are stationary series in the trended and non-trended models in the level form.

Table 3 indicates the first differenced results in both the non-trended model and trended model. The First difference absolute values of ADF statistics for all variables (LEV, LER, LRGDP, LSMAN, LTO, LEP, LCPD, and LDP) are well above the 95% critical value in both Non-Trended and Trended Models, therefore the null hypothesis is rejected. This means that all the variables have no unit roots and have become stationary after the first difference i.e. I (1).

Table No. 3: Non-Trended Model and Trended Model

Variables	Non-Trended Model	Trended Model	Conclusion
DLEV	-3.9675	-4.7780	I(0)
DLER	-6.2550	-5.1882	I(0)
DLRGDP	-5.7174	-6.8766	I(0)
DLSMAN	-6.4714	-7.1202	I(0)
DLCPD	-7.1981	-7.5437	I(0)
DLTO	-4.1211	-3.5254	I(0)
DLDP	-2.0741	-4.1570	I(0)
DLEP	-6.3170	-6.5602	I(0)
Critical Values	**-2.9750**	**-3.5867**	**-**

First differenced ADF Unit Root Test Results
I (0) =Stationary
Note: Critical values (95% confidence interval)
From Tables 2 and 3, it can be concluded that cut and polished diamonds production and Domestic Prices of finished gems and jewellery are integrated in the order of zero i.e. I (0), and the Export value of finished gems and jewellery, Exchange Rate, Real Gross Domestic Product, Share in semi-manufactured goods exports, Trade Openness and Export Prices are integrated of the order of one i.e. I (1).

Co-integration Results: After testing for unit root, the next step is to test for co-integration. For co-integration, two conditions must be satisfied. First, at least two of the individual variables going to be integrated should be of the same order, and second, a linear combination of the series should exist which is integrated to order lower than the individual variables. Johansson's procedure was applied to test the co-integration between the respective variables. The first step in Johansson's procedure is the selection of the order of Vector Auto-Regressive (VAR). An adjusted LR test on the VAR with a maximum of three lags was carried out.
Table 4, the Adjusted LR test selects order one of VAR because at order one the parenthesis values (p-values) of the Adjusted LR test is greater than 0.05. The value of SBC is maximum at order one i.e. 138.4417. Thus SBC also selects the order one of VAR. AIC selects order three because the maximum value of AIC (276.1453) is at order three but the Adjusted LR test and SBC both showed order one, so, the order of VAR was taken as one.

Table No. 4: LR-Test on VAR with Maximum of Three Lags

List of variables included in the unrestrictedVAR			
LEV LER LRGDP LSMAN LEP LTO			
List of deterministic and/or exogenous variables			
A LCPD LDP			
Order	**AIC**	**SBC**	**Adjusted LR test**
3	276.1453	159.4932	----
2	187.6708	134.4458	37.5408 (.315)
1	181.5417	138.4417	63.4981 (.806)
0	96.9283	92.1432	122.4359 (.162)

AIC= Akaike Information Criterion SBC=Schwarz Bayesian Criterion
After the VAR with order one has been selected, the second step in Johansson's procedure is to test the presence and number of co-integrating vectors among the series of the model.

Table No. 5: Co-integration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

List of variables included in the cointegrating vector			
LEV LER LRGDP LSMAN LEP LTO **A (Intercept)**			
List of I(0) variables included in the VAR: **LCPD LDP**			
Null	**Alternative**	**Statistic**	**95% Critical Value**
r = 0	r> = 1	135.9423	102.560
r<= 1	r >= 2	90.2467	95.980
r<= 2	r >= 3	54.6787	59.480
r<= 3	r >= 4	26.9331	34.870
r<= 4	r >= 5	14.0971	20.180
r<= 5	r = 6	3.2615	9.160

In Table 5trace test also proves that there is one cointegrating vector at a 95 percent critical value because the first statistical value of the trace test (135.9423) is greater than its 95 percent critical value (102.5600). Where for the remaining five statistical values of the Trace test, the null hypothesis of no cointegrationcan not be rejected.

Table No. 6: Cointegration LR-Test Based on Trace of the Stochastic Matrix

List of variables included in the Co-integrating vector **LEV LER LRGDP LSMAN LEP LTO A (Intercept)**			
List of I(0) variables included in the VAR **LCPD LDP**			
Null	**Alternative**	**Statistic**	**95% Critical Value**
r = 0	r = 1	44.6658	40.530
r<= 1	r = 2	34.3820	34.400
r<= 2	r = 3	28.2516	28.270
r<= 3	r = 4	12.0352	22.040
r<= 4	r = 5	11.5364	15.870
r<= 5	r = 6	3.2615	9.160

Table 6 indicates that the first statistical value of the Maximal Eigenvalue test (44.6658) is greater than its 95 percent critical value (40.530), therefore, we reject the null hypothesis of no co-integration and accept the alternative hypothesis, i.e., there is one co integrating vector. Whereas for the remaining five statistical values of the Maximal Eigenvalue test, the null hypothesis of no co-integration cannot be rejected.

In Johansson's model, parameters in the co-integrating vector can be interpreted as estimates of long-run co-integrating relationships between variables (Hallam and Zanoli, 1993). Therefore the estimated parameter values from these equations when normalized on the exported quantity of gems and jewellery are long-run elasticities. The results are reported in table 7; the coefficients represent estimates of long-run elasticities of the exported quantity of gems and jewellery concerning Exchange Rate, Real GDP, share in manufactured goods export, Export Prices, and Trade Openness.

Table No.7: Johansson's Normalized Estimates

Variables	**Long Run Elasticities**	**Std.Errors**	**T-Ratio**
LER	-5.1112	2.9345	-1.7813
LRGDP	3.1657	.97038	3.1926
LSMAN	0.7276	.37710	2.0095
LEP	-3.3987	2.0923	-1.6705
LTO	2.3914	1.2023	1.9134
A*	36.0979	12.6230	2.8378

Note: Indicates significance at 5 percent *A is an intercept

The co-integrating vector in Table 6 can be written in the form of an equation as shown below

LEV= 36.0979 -5.1112 LER +3.1657 LRGDP +0.7276 LSMAN -3.3987 LEP +2.3914 LTO

Theoretically, a rise in the price of the foreign exchange rate (Dollar) is a depreciation of the home currency (Rupees). Foreign currency will become more expensive hence the relative value of the home currency will be fallen (Mencet et al., 2006), (Haleem et al., 2005). Table 7 indicates that the exchange rate harms exports of gems and jewellery as expected. A one percent increase in the exchange rate will cause a 5.1112 percent decrease in exports of gems and jewellery in the long run. The coefficient of the exchange rate variable in the export supply of gems and jewellery is statistically significant at a 5 percent level. This empirical result suggests that a depreciation of Indian currency will cause a drop in the export supply of gems and jewellery from India. Real GDP is the measure of Gross Domestic Product that seeks to reflect the actual value of production goods and services produced, by removing the effect of changes in prices. It is an important variable that shows the economic growth of a country in terms of goods and services produced. RGDP is positively related to the export supply of gems and jewellery and is statistically significant at a 5 percent level. The implication is that a one percent increase in the RGDP will lead to a 3.1657 percent increase in the export supply of gems and jewellery from India in the long run. The share of manufactured goods in exports is also an important variable that shows the export concentration of any country in the manufactured sector. In the model of export supply of gems and jewellery share of manufactured goods exports is positively related and is statistically significant at a 5 percent level. This indicates that a one percent increase in the share in manufactured goods exports will lead to a 0.7276 percent increase in the export supply of gems and jewellery from India in the long run. Export prices are considered to be an important variable to check the export availability of the product. Theoretically, high export prices mean greater availability of the product in export markets while low export prices mean abundant availability of the product in the domestic market. In the model of export supply of gems and jewellery export price are negatively related and is statistically significant at a 5 percent level. This indicates that a one percent increase in the export prices will lead to a -3.3987percent increase in the export supply of gems and jewellery

from India in the long run. The variable of trade openness generated by the addition of total exports and total imports then the total may be called total trade divided by the Gross National Product (GNP) of the respective year. Trade openness indicates the foreign trade performance of the country. So in the model of export supply of gems and jewellery trade openness is positively related and is statistically significant at a 5 percent level. This indicates that a one percent increase in the value of trade openness will lead to a 2.3914 percent increase in the export supply of gems and jewellery from India in the long run.

Table No.8: The Long-Run and Error Correction Model Estimates for Finished Gems and Jewellery Export

Regressors	**Short Run Elasticities**	**Long Run Elasticities**
A	-12.8970 (-3.9684)	33.0989 (2.8389)
LER	-1.1295 (-2.1863)	-4.2130 (1.7412)
LRGDP	1.6279 (3.6778)	3.5679 (-3.2927)
LSMAN	0.58475 (2.9187)	0.72754 (-2.0195)
LEP	0.76453 (1.8953)	-3.4988 (-1.6706)
LTO	0.75261 (-2.1823)	2.3924 (1.9430)
LDP	0.16544 (0.41257)^{NS}	
LCPD	0.21247 (1.8758)	
ECM1	-0.21394 (2.3584)	
Diagnostic Tests		
R-squared		0.64
DW-statistics		1.8386
LM-test-$x^2(1)$		0.83679[.359]
RESET test-$x^2(2)$		5.4732[.061]

Note: Indicates significance at 5 percent, values in parenthesis is t-ratios, Values in square brackets are p-values and ^{NS} indicates non-significant.

It is also apparent from table 8 that the exchange rate is negatively related in the short run to the export value of gems and jewellery as if a one percent increase in the exchange rate there will be a 1.1295 percent decrease in the export value of gems and jewellery from India. The signs of Real Gross Domestic Product (LRGDP), Share in manufactured goods exports (LSMAN), Trade Openness (LTO), and Export Prices (LEP) in the short-run, these variables showed the same trend as showed in the long run. These variables are directly related to the export value of gems and jewellery, if there is a one percent increase in Real Gross Domestic Product, Share in manufactured goods exports, Trade Openness, and Export Prices, there will be 1.6279, 0.58475, 0.75261, and 0.76453 increases in the export value of gems and jewellery respectively in the short run. Cut and polished diamonds production and domestic prices are also directly related but the domestic prices are not statistically significant. Because if the domestic prices of the exports increased then exporters will sell their products in the domestic markets rather than export the products. But in our model, the coefficient of the domestic prices showed the opposite result, which is not true. If the production of Cut and polished diamonds increases by one percent there will be a 0.21247 percent increase in the export value of gems and jewellery in the short run. The coefficient of error correction term has an expected negative sign. It measures the speed of adjustment towards long-run equilibrium. The coefficient (-0.23194) indicates that about 23 percent of the deviation of export value of gems and jewellery, from long-run equilibrium, is corrected in the current period. In table 8, the value of R-squared (goodness of fit measure) shows that 64 percent of the variation in the export supply value of gems and jewellery is caused by the independent variables included in the model while the remaining 33 percent variation is due to some unknown factors. The value of Durbin-Watson Statistics is near about 2 which indicate the absence of autocorrelation among the variables. For all Diagnostic Tests, the model gives satisfactory results. The LM-test for up to one order indicates no serial correlation problem in the residuals. The p-value for the RESET test for functional form misspecification is greater than 0.05. This means that the functional form is correct and the residuals are normally distributed.

Conclusion and Recommendation

This study estimated the impact of major determinants of Gems and Jewellery exports from India. The findings of this study confirmed the major factors affecting gems and jewellery exports from India. The exchange rate harms exports of finished gems and jewellery as expected. A one percent increase in the exchange rate will cause a 5.1112 percent decrease in exports of finished gems and jewellery in the long run. RGDP, the share of semi-manufactured goods exports, and trade openness will lead to 3.1657, 0.7276 and 2.3914 percent increases in the export supply of finished gems and jewellery in the long respectively. Export prices are negatively related and indicate that a one percent increase in the export prices will lead to -3.3987 percent increases in the export supply of finished gems and jewellery in the long run. So to promote gems and jewellery exports from India, there is a need to develop quality standards according to importing countries' requirements. Future research

could explore that specific dynamics of export diversification of gems and jewellery and the role of global value chains in shaping trade patterns between India and major exporting countries.

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