International Research Journal of MMC (IRJMMC)
Open Access
Volume 4(1), 2023 ISSN 2717-4999 (Online) 2717-4980 (Print)

An Impact of Exchange Rate on Export in Nepal

Uttam Lal Joshi[1*], Krishna Prasad Poudel[2], Rajan Neupane[3]
Pabitra Pathak[4]
[1]Lecturer of Economics, Makawanpur Multiple Campus, Hetauda
[2]Lecturer of Economics, Makawanpur Multiple Campus, Hetauda
Email: paudelkrishna47@gmail.com
[3]Lecturer of Economics, Makawanpur Multiple Campus, Hetauda
Email: rajan.np35@gmail.com
[4]Lecturer of Economics, Makawanpur Multiple Campus, Hetauda
Email: pabitrapathak2041@gmail.com
*Corresponding Author: uttamjoshi88@gmail.com
Citation: Joshi, U. L., Paudel, K. P., Neupane, R., & Pathak, P. (2023). An impact of exchange rate on export in Nepal. *International Research Journal of MMC, 4*(1), 99–108. https://doi.org/10.3126/irjmmc.v4i1.51867

Abstract
This study examines the short-run and long-run co-integration of the exchange rate on export of Nepal. Data are extracted from the published source of World Bank from 1975 to 2020. ARDL Bounds test is applied to test the co-integration after the test of unit root. The dependent variable is export and the independent variables are exchange rate, import, money supply and GDP. Augmented Dickey- Fuller test shows the variables are in the order of I(1) where the error correction term is negative and significant. The results show there is long-run co-integration and the study also supports the short-run dynamic relationship between the dependent and independent variables that show the long-run and short-run impact of exchange rate on export of Nepal. So, the policy makers should focus on increasing export and reducing import and its sound exchange rate policy.

Keywords: co-integration; exchange rate; import; export; unit root

1. Introduction

Exchange rate of Nepal is pegged with the exchange rate of India. It is the rate at which the currency of one country is exchange with the currency of another country at a certain rate. This exchange rate has significant effect on export of the countries that it plays a major role on export of any country. The exchange rate has a significant effect on export volumes. It is found that export sectors differently respond to the same rate of exchange (Smith, 2004). The developing countries shift from exporting merchandise and commodities to exporting traditional and modern services for their development, appropriate real exchange rate policies become more important (Eichengreen & Gupta, 2013).

The exchange-rate volatility is emerging issue whether it hampers trade flows has been sincerely investigated in the literature. The main idea behind the issue of exchange rate volatility is that it decreases trade volume when exchange rate volatility increases uncertainty, which in turn decreases trade volume (Sekmen & Saribas, 2007). Now a day, a body of evidence dealing with the post-1973 period has been explained that supports the idea that exchange rate volatility does certainly impede trade (Akhtar and Hilton 1984; Coes 1981; Cushman 1983; Akhtar & Hilton 1984; Thursby & Thursby 1986; Kasman & Kasman 2005; Nguyen and Do 2020).

On the other hand, several recent studies have rejected the view that exchange-rate volatility has adverse impact on trade. Aristotelous (2001) explains that the empirical findings suggest that neither the different exchange-rate regimes nor the exchange-rate volatility that spanned the last century had an effect on volume of export. But some literatures argue the exchange rate has both positive and negative impact on export volume. Exchange rate volatility has negative impact on trade is found in Canada and Japan whereas positive impact obtained in United Kingdom and Netherlands (Qian and Varangis, 1994). Different economic literatures have highly inconsistence result regarding it because in one common argument the exporter can easily ensure from short-run fluctuation from financial market but it is much more difficult to hedge against long term risk (Wang and Barret, 2007).

In the case of Nepal, the literature of Paudel et al. (2015) confirms that the real exchange rate appreciation has negatively affected Nepal's exports, especially to third-country markets. The export competitiveness trap of Nepal's exchange rate-related provides a motivation to reconsider the current peg.

The exchange rate of Nepal, being peg with India, can have specific effect on export. In this regard a question is relevant- what is the impact of exchange rate on export of Nepal? So, the major purpose of this study is to examine the impact of exchange rate on export of Nepal. In this context, the study is focused on the given objective to find the co-integration of exchange rate and export with some other independent variables such as import, money supply and gross domestic product.

The paper includes review of literature in section 2, in section 3 methodology and data are included, result is explained in section 4 and conclusion and implication is explained in section 5.

1.2 Review of the Literatures

Different literatures in this field are found supporting the positive and negative effect of exchange rate on export. The related literatures related with exchange rate and export are minutely reviewed and they are mentioned as the following section.

In the research Thapa (2002) asserts the traditional view is that the real exchange rate operates through the channel of aggregate demand. It means the depreciation of the real exchange rate boosts net exports, supports to enhance the international competitiveness of domestic goods and eventually enlarges GDP.

Devkota and Panta (2018) explain the findings indicate that there is no co-integrating relationship existed between exports, imports, and the exchange rate in Nepal, and hence, no causal relationships within vector error correction model can be estimated for Nepal. So that macroeconomic policies of Nepal have not been effective in bringing import and export in long-run equilibrium.

Studying the exchange rate volatility, Bailey et al. (1987) states that theoretically, exchange-rate volatility can have either a positive or negative impact on trade. Empirical results are found for the flexible-rate and managed-rate periods. Both real and nominal measures of exchange rates are used for two specifications of volatility: absolute change in percentage and standard deviations.

Awokuse and Yuan (2006) find that the results suggest that the choice of volatility measure exists as there is a positive relationship between uncertainty on exchange rate and poultry exports. The findings are consistent with several previous studies.

Studying co-integration in Turkish export, Altintas et al. (2011) find the results of long-run estimation suggest that foreign income and real exchange rate volatility show positive and statistically significant effects on Turkish exports, while relative prices influence Turkish exports negatively and significantly. The results of the ECM model support that foreign income has an insignificant effect, relative prices have a negative and significant effect, and nominal exchange rate volatility has a positive and significant impact on Turkish exports.

Chou (2000) states the estimation results show that exchange rate variability has a long-run negative effect on exports of mineral fuels, on total exports and export of manufactured goods. They support the hypothesis that exchange rate uncertainty hampers trade in China.

Arize et al. (2003) assert the result shows that the increase in exchange rate volatility has significant negative effect on export demand in both long-run and short-run. The effects may result in reallocation of resources by the participants of market.

In the study, Ahmed (2009) finds greater exchange rate appreciation hampers export growth with the estimated cumulative price elasticity being greater than unity in both non-processed and processed exports. When the source of the increase in real exchange rate is appreciations against the currencies of other Asian trading partners, the effect on processing exports is insignificant positive, while the effect on non-processing exports is negatively significant.

Khosa et al. (2015) arrest the co-integration method is applied to test for panel co-integration to determine if there was a long-run relationship. The results show that exchange rate volatility has a significant negative effect on exports, regardless of the measure of volatility used. It is also evident that a long-run relationship does exist.

Cardebat and Figuet (2019) explain that the results suggest that French wines have become less competitive during the 2000s because of two factors: rising prices of domestic wine relative to foreign competitors and the increase in the euro against the GBP and USD. Chinese demand appears to be a key driver of French wine exports. In addition, some compositional effects in Bordeaux wine exports were found. In response to the increase of the euro, the portion of high-priced wines has increased, suggesting some degree of quality sorting in response to changes in exchange-rate.

2. Methodology and Data

In this study the data are extracted from published source of World Bank from 1975 to 2020 then ARDL Bounds test is used to test co-integration between the variables. Export is taken as dependent variable and exchange rate, import, money supply and GDP are taken as independent variables. Before co-integration test an Augmented Dickey-Fuller test is applied to test unit root in the data then error correction model is implied in this model.

Table 1 *Description of variables*

S.N.	Notation	Variables
1	lnEXP	Natural log of Export
2	lnEXR	Natural log of Exchange Rate
3	lnIMP	Natural log of Import
4	lnM2	Natural log of Money Supply
4	lnGDP	Natural log of Gross Domestic Product

2.1 Model Specification

Model specifies the functional relationship between dependent and independent variables. In this study the dependent variable is export (EXP) and the independent variables are exchange rate (EXR), import (IMP), money supply (M2) and gross domestic product (GDP). The model can be specified as:

EXP = f(EXR, IMP, M2, GDP) ----------------- (i)

2.2 Econometric Model

Econometric model in this study can be specified from the given model for inferential analysis as:

$lnEXPt= \beta_0+\beta_1\ lnEXRt +\beta_2 lnIMPt +\beta_3\ lnM2t +\beta_4\ lnGDPt + \mathcal{E}t$ ------------- *(ii)*

The study includes β_0 as intercept and β_1, β_2, β_3 and β_4 are the respective coefficients then Ɛt stands for error term where t is for the time. The coefficients indicate the change in the value of EXR, IMP, M2 and GDP can change the EXP in certain units. Export, exchange rate, import, money supply and GDP are transformed into natural log for the model

2.3 Unit Root Test

Augmented Dickey-Fuller test is performed to test the stationary situation of the variables where the condition of unit root can be obtained from this test. The benefit to use this test is the ability to include sufficient terms with the purpose of uncorrelated error terms. The error terms may be correlated with each other when we the lagged values of the variable are used. The model is:

$\Delta EXPt = \beta_1 + \beta_2 t + \delta lnEXPt\text{-}1 + \sum_{i=1}^{p} \alpha i \Delta lnEXP\ t\ \text{-}1$

Where, ΔlnEXPt = lnEXPt-1 – lnEXPt-2 and t is a trend.

2.4 Co-integration (ARDL Model) Test

The ARDL model developed by Pesaran and Shin (1999) and Pesaran, Shin and Smith (2001) are widely used model to calculate co-integration. In this study all variables are integrated in order I(1) and ARDL model overcome the restriction of multivariate analysis. The ARDL model has numerous advantage that are from the co-integration models developed by Engel-Granger (1987), Johansen (1988), Johansen and Julius (1990).

$\Delta lnEXPt = \alpha_0 + \sum_{i=1}^{p} \alpha 1 i \Delta lnEXP\, t - 1 + \sum_{i=1}^{q} \alpha 2 i \Delta lnEXRt - 1 + \sum_{i=1}^{r} \alpha 3 i \Delta lnIMPt - 1 + \sum_{i=1}^{s} \alpha 4 i \Delta lnM2\, t - 1\ \sum_{i=1}^{t} \alpha 5 i \Delta lnGDP\, t - 1 + b_1 lnEXPt\text{-}1 + b_2 lnEXRt\text{-}1 + b_3 lnIMPt\text{-}1 + b_4 lnM2t\text{-}1 + b_5 lnGDPt\text{-}1 + \mathcal{E}_{1t}$

Where Δ is first difference operator. $\alpha 1i$, $\alpha 2i$, $\alpha 3i$, $\alpha 4i$ and $\alpha 5i$ are short-run parameters and b_1, b_2, b_3, b_4 and b_5 represent long-run parameters. Similarly $\mathcal{E}_{1t}$ represents the error term. To test ARDL Bounds test the long-run relationship can be obtained in the following conditions.

Null hypothesis (H_0) : $b_1 = b_2 = b_3 = b_4 = b_5 = 0$ no exist co-integration

Alternative hypothesis (H_1) : $b_1 \neq b_2 \neq b_3 \neq b_4 \neq b_5 \neq 0$ exists co-integration

The result obtained from ARDL Bounds test is compared with critical values provided by Pesaran ans Shin (1999). The F- statistic higher than critical value shows there exists long-run relationship between the variables then the null hypothesis of no co-integration is reject ted but when F-statistic obtained from the result is less than critical value then the null hypothesis cannot be rejected.

2.5 Error correction model specification

The ECM represents the model is moving from short-run to long-run equilibrium that expresses the speed of adjustment in the model. The ECM is establishes if co-integratioin exists between the variables.

$\Delta lnEXPt = \alpha_{01} + \sum_{i=1}^{p} \alpha 1 i \Delta lnEXP\, t - 1 + \sum_{i=1}^{q} \alpha 2 i \Delta lnEXRt - 1 + \sum_{i=1}^{r} \alpha 3 i \Delta lnIMP\, t - 1 + + \sum_{i=1}^{s} \alpha 4 i \Delta lnM2\, t - 1 + \sum_{i=1}^{t} \alpha 5 i \Delta lnGDP\, t - 1 + \lambda ECTt\text{-}1 + \mathcal{E}_t$

In the ECM model $\lambda ECTt\text{-}1$ represents error correction term, $\alpha 1i$, $\alpha 2i$, $\alpha 3i$ and $\alpha 4i$ are short-run dynamic coefficients.

3. Result and Discussion

Results from different tests are presented in the following section where export is dependent variable and exchange rate, import, money supply and GDP are mentioned as independent variables. ARDL Bounds test is performed after Augmented Dickey-Fuller test of unit root. Results are presented in the tables.

International Research Journal of MMC (IRJMMC)
Open Access
Volume 4(1), 2023 ISSN 2717-4999 (Online) 2717-4980 (Print)

3.1 Unit Root Test

The Augmented Dickey-Fuller test is conducted to test the stationary situation of the variables used in this study. ARDL Bounds test is implied after confirming some variables are in the order I (1) and some in I (0) level from unit root test then error correction model is applied for the long-run co-integration test.

Table 2 *Augmented Dickey-Fuller test of unit root*

Variables	At Level		At First Difference	
	t-statistics	p-value	t-statistics	p-value
lnEXP	-1.040587	0.7306	-6.396095***	0.0000
lnEXR	-1.584405	0.4822	-4.591104***	0.0006
lnIMP	-1.819505	0.3666	-5.618325***	0.0000
lnM2	-1.366845	0.5900	-5.562142***	0.0000
lnGDP	0.893955	0.9946	-6.003883***	0.0000

Note. ***, ** and * show significant at 1%, 5% and 10% level of significance.

The results of Augmented Dickey-Fuller test of unit root is presented in the table 2 that shows the stationary condition of the variables in the model. The tests show export is significant at first difference with t-statistics (-6.396095). Exchange rate, import, M2 and GDP are also significant at first difference showing t-statistics lnEXR(-4.591104), lnIMP(-5.618325), M2(-5562142) and lnGDP(-6.003883).

3.2 ARDL Bounds Test (Co-integration Test)

ARDL Bounds test is applied to test co-integration between dependent and independent variables. The test shows the long run co-integration of the variables exchange rate with import, export, CPI and ln GDP. Export, exchange rate, import, money supply and GDP show stationary at first difference I(1).

Table 3 *ARDL Co-integration Test*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEXR	21.03191	5.032742	4.179016	0.0002
LNIMP	0.965515	0.198067	4.874678	0.0000
LNM2	-50.35025	21.04299	-2.392733	0.0221
LNGDP	-9.168380	7.149451	-1.282389	0.2079
C	123.4028	43.93992	2.808444	0.0080

R-squared: 0.951665; Adjusted R-squared: 0.942267; Durbin-Watson stat: 2.045349; Prob(F-statistics):0.000000

Result shows the ARDL Bounds test for long-run co-integration between the variables where the F-statistic is significant. The F-statistic (10.12592) is greater than Pesaran and Shin (1999) critical value at 5% level significance. lnEXR, lnIMP and lnM2 (-1) are significant at 1 percent level. It signifies that the null hypothesis of there is no co-integration is rejected that shows long-run co-integration between lnEXP with lnEXR, lnIMP, lnM2 and lnGDP in the model. R-squared is 0.951165 shows the independent variables explain 95.12 percent the dependent variable in the model.

The result also focuses on short-run impact of import and export on exchange rate and error correction model where the ECM shows the speed of adjustment of short-run towards long-run equilibrium. The coefficient of ECM is negative and significant that indicates the co-integration and speed of adjustment in the model.

Table 4 *Error Correction Model*
ARDL Error Correction Regression
Dependent Variable: D(LNEXP)
Selected Model: ARDL(2, 0, 0, 1, 0)
Case 2: Restricted Constant and No Trend
Date: 01/21/23 Time: 13:45
Sample: 1975 2020
Included observations: 44

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNEXP(-1))	-0.299844	0.101131	-2.964918	0.0053
D(LNM2)	0.501924	5.283079	0.095006	0.9248
CointEq(-1)*	-0.443848	0.053358	-8.318279	0.0000

R-squared	0.634084	Mean dependent var	-0.091221
Adjusted R-squared	0.616235	S.D. dependent var	1.909385
S.E. of regression	1.182841	Akaike info criterion	3.239462
Sum squared resid	57.36365	Schwarz criterion	3.361111
Log likelihood	-68.26816	Hannan-Quinn criter.	3.284575
Durbin-Watson stat	2.045349		

* p-value incompatible with t-Bounds distribution.

Table 4 explains the short-run dynamics of this model. The coefficient of ECM (-1) is -0.443848 which is significant at 5 percent level. The negative and significant error correction term shows the model is adjusting towards long-run equilibrium. It means that the speed of adjustment is 44.38% signifies the model is converging 44.38% in the short-run towards long-run equilibrium. In the same way the value of R-squares is 0.634084 signifies export is explained 63.41% by its independent variables.

3.3 Other Tests

3.3.1 Serial Correlation LM Test

For serial correlation test, the Breusch-Godfrey test is conducted to find autocorrelation in the model. The result of the test is presented in the table 4. The test confirms the error terms are correlated or not.

Table 5 *Serial Correlation Test*
Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.100415	Prob. F(2,34)	0.3443
Obs*R-squared	2.674980	Prob. Chi-Square(2)	0.2625

The result of Breusch-Godfrey serial correlation test shows probabilities of F-statistic and Obs*R-squared are more than 5 percent level of significance indicating the null hypothesis of there is no serial correlation is not rejected that implies there is no serial correlation in this model.

3.3.2 Heteroskedasticity Test

Breusch-Pagan-Godfrey test is applied to test the heteroskedasticity in the given model. It identifies the higher variability in the error terms. The result of this test is presented in the table 6.

Table 6 *Heteroskedasticity Test*

Heteroskedasticity Test: Breusch-Pagan-Godfrey

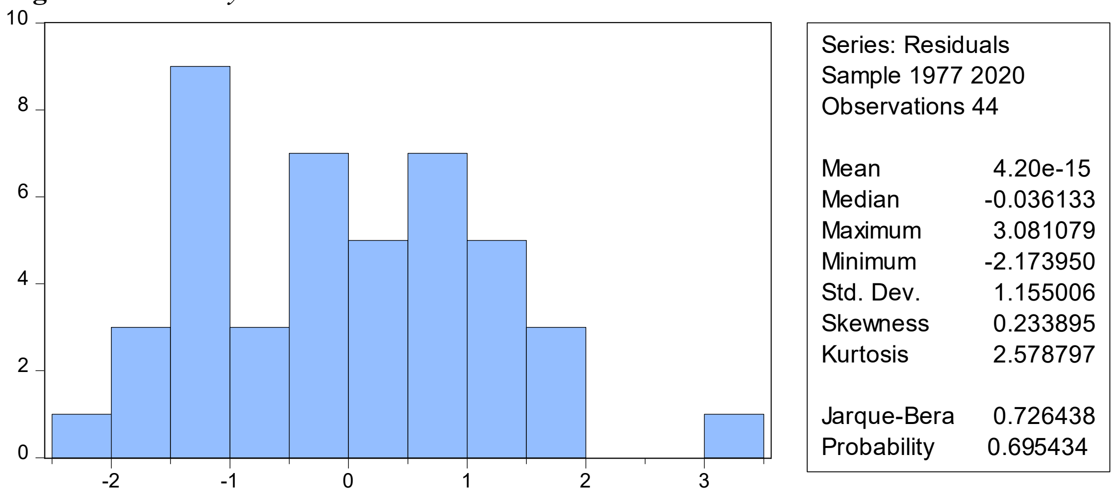
F-statistic	1.506001	Prob. F(7,36)	0.1965
Obs*R-squared	9.966229	Prob. Chi-Square(7)	0.1905
Scaled explained SS	5.266558	Prob. Chi-Square(7)	0.6275

The result of heteroskedasticity test indicates the F-statistic and Obs*R-squared are not significant at 5 percent level. The null hypothesis of no heteroskedasticity is not rejected implying the model is free from the problem of heteroskedasticity.

3.3.3 Normality Test

Jarque-Bera test is performed to test for normality condition of the variables and significance of the test confirms the normal distribution in the data. The result of normality test is presented in the given figure 1.

Figure 1 *Normality Test*



Result of Jarque-Bera test shows the p-value of the test is 0.695434 and coefficient is 0.726438 indicating not significant at 5 percent level. It implies the null hypothesis is not rejected indicating the variables are normally distributed.

3.3.4 Stability Test

The stability test confirms the model is consistent and stable econometrically. For the test cumulative sum (CUSUM) and cumulative sum of square (CUSUMSQ) tests ate performed. Under null hypothesis of the test is the coefficient is stable. The value of the sequence outside the expected range indicates a structural change in the model over time. Systematic parameter change is measured by CUSUM whereas a sudden change is measured by CUSUMSQ.

International Research Journal of MMC (IRJMMC)
Open Access
Volume 4(1), 2023 ISSN 2717-4999 (Online) 2717-4980 (Print)

Figure 2 *Figure of CUSUM test*

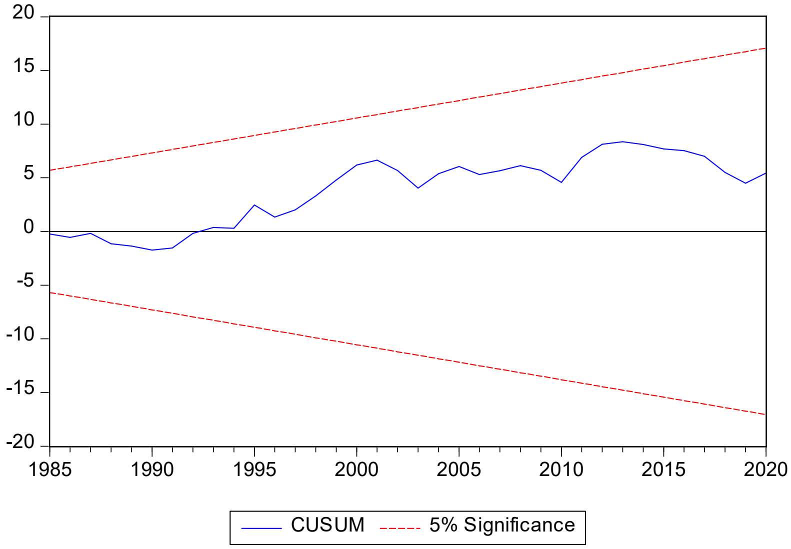


Figure 3 *Figure of CUSUMSQ test*

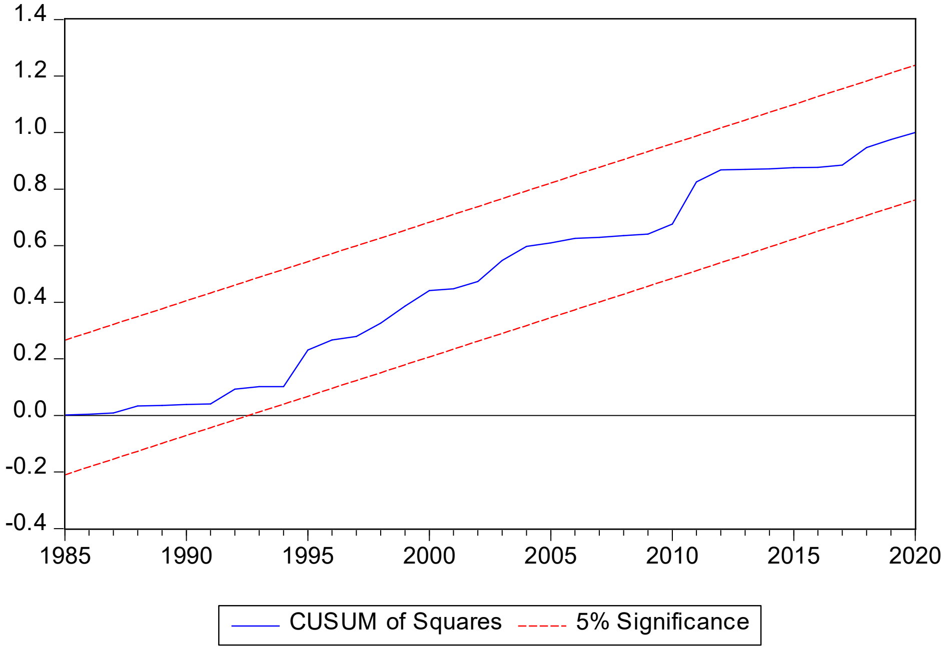


Figure 3 shows the CUSUM test and figure 2 represents CUSUMSQ test in which the lines are within the boundaries of 5 percent critical bound that imply the models are stable and consistence.

4. Conclusion and Implication

The major purpose of this study is to examine the impact of exchange rate on export in Nepal whereas the exchange rate of Nepal is pegged with the exchange rate of India. Data from 1975 to 2020 are obtained to test the co-integration between the dependent and independent variables. ARDL Bounds test is performed after the test of unit root. Augmented Dickey-Fuller test is implied to find the stationary situation of the variables where all variables are found integrated in order I(1). Error correction Model is calculated after confirming the co-integration between the variables.

Result shows there is co-integration between the dependent variable export and independent variables exchange rate, import, money supply and GDP that indicate the long-run co-integration relationship between the variables. The result verifies there is short-run and long-run relationship between exchange rate, import, money supply and GDP with export of Nepal.

Result confirms that the pegged exchange rate has adverse effect on country's poor export performance and it may suggest the country should consider on its pegged exchange rate policy (Paudel & Burke, 2015). It also suggests the policy makers that the country should focus on export than import by export increasing export and reducing import policies for the betterment of the country. Sound exchange rate policy is one of the major determinant of export and it should be implemented for the sake of people and country.

5. Reference

Ahmed, S. (2009). Are Chinese exports sensitive to changes in the exchange rate?. *FRB International Finance Discussion Paper*, (987). http://dx.doi.org/10.2139/ssrn.1536755

Akhtar, M.and Hilton, R. S. (1984) Effects of Exchange Rate Uncertainty on German and U.S. Trade, Federal Reserve Bank of New York Quarterly Review 9: 7-16.

Altintaş, H., Cetin, R., & Öz, B. (2011). The impact of exchange rate volatility on Turkish exports: 1993-2009. *South East European Journal of Economics and Business*, *6*(2). http://doi.org/10.2478/v10033-011-0017-8

Aristotelous, K. (2001). Exchange-rate volatility, exchange-rate regime, and trade volume: evidence from the UK–US export function (1889–1999). *Economics Letters*, *72*(1), 87-94. https://doi.org/10.1016/S0165-1765(01)00414-1

Arize, A. C., Malindretos, J., & Kasibhatla, K. M. (2003). Does exchange-rate volatility depress export flows: The case of LDCs. *International Advances in Economic Research*, *9*(1), 7-19. https://doi.org/10.1007/BF02295297

Awokuse, T. O., & Yuan, Y. (2006). The impact of exchange rate volatility on US poultry exports. *Agribusiness: An International Journal*, *22*(2), 233-245. https://doi.org/10.1002/agr.20082

Bailey, M. J., Tavlas, G. S., & Ulan, M. (1987). The impact of exchange-rate volatility on export growth: some theoretical considerations and empirical results. *Journal of Policy Modeling*, *9*(1), 225-243. https://doi.org/10.1016/0161-8938(87)90010-X

Cardebat, J. M., & Figuet, J. M. (2019). The impact of exchange rates on French wine exports. *Journal of Wine Economics*, *14*(1), 71-89. https://doi.org/10.1017/jwe.2019.2

Chou, W. L. (2000). Exchange rate variability and China's exports. *Journal of Comparative Economics*, *28*(1), 61-79. https://doi.org/10.1006/jcec.1999.1625

Coes, D. (1981) The crawling peg and exchange rate uncertainty. In exchange rate rules: The theory, performance and prospects of the crawling peg (J. Williamson, Ed.). New York: St. Martin's Press.

Cushman, D. V. (1983) The Effects of Real Exchange Rate Risk on International Trade. Journal of International Economics 15: 45-63.

Devkota, M. L., & Panta, H. (2019). Are Exports, Imports, and Exchange Rates Cointegrated? Empirical Evidence from Nepal. *International Journal of Economics and Financial Issues*, *9*(2), 273. https://doi.org/10.32479/ijefi.7588

Eichengreen, B., & Gupta, P. (2013). The real exchange rate and export growth: are services different?. *Bank of Korea WP*, *17*. SSRN: https://ssrn.com/abstract=2579533 or http://dx.doi.org/10.2139/ssrn.2579533

Paudel, R. C., & Burke, P. J. (2015). Exchange rate policy and export performance in a landlocked developing country: The case of Nepal. *Journal of Asian Economics*, *38*, 55-63. https://doi.org/10.1016/j.asieco.2015.04.003

Pesaran, M. H., & Shin, Y. (1999). An autoregressive distributed lag modelling approach to cointegration analysis. In I. S. Strom, Ecnometrics and Economic Theory in the 20th Century, The Ragner Frisch Centennial Symposium (pp. 371-413). Cambridge: Cambridge University Press.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics(16), 289-326.

Qian, Y., & Varangis, P. (1994). Does exchange rate volatility hinder export growth?. *Empirical Economics*, *19*(3), 371-396. https://doi.org/10.1007/BF01205944

Kasman, A., & Kasman, S. (2005). Exchange rate uncertainty in Turkey and its impact on export volume.

Khosa, J., Botha, I., & Pretorius, M. (2015). The impact of exchange rate volatility on emerging market exports. *Acta Commercii*, *15*(1), 1-11. https://hdl.handle.net/10520/EJC171106

Sekmen, F., & Saribas, H. (2007). Cointegration and causality among exchange rate, export, and import: Empirical evidence from Turkey. *Applied Econometrics and International Development*, *7*(2).

Smith, M. (2004). Impact of the exchange rate on export volumes. *Reserve Bank of New Zealand Bulletin*, *67*.

Thapa, N. B. (2002). An econometric analysis of the impact of real effective exchange rate on economic activities in Nepal. *Economic Review: Occasional Paper*, *14*, 17-36.

Thursby, J., and Thursby, M. C. (1986) Bilateral Trade Flows, the Linder Hypothesis, and Exchange Risk, University of Western Ontario Working Paper 8612C, April.

Wang, K. L., & Barrett, C. B. (2007). Estimating the effects of exchange rate volatility on export volumes. *Journal of Agricultural and Resource Economics*, 225-255. https://www.jstor.org/stable/40987362