Eurasia: Economics & Business, 6(72), June 2023
DOI https://doi.org/10.18551/econeurasia.2023-06

UDC 339

A COMPARATIVE IMPORT DEMAND FUNCTION FOR BRICS AND G7

Damiyano David*
Post-Doctoral Researcher, Department of Development Studies, Faculty of Business and Economic Sciences, Nelson Mandela University, Gqeberha & Honorary Research Associate, Faculty of Management Sciences, Durban University of Technology, Durban, South Africa

Mago Stephen, Professor
Department of Development Studies, Faculty of Business and Economic Sciences, Nelson Mandela University, Gqeberha, South Africa

Dorasamy Nirmala, Professor
Faculty of Management Sciences, Durban University of Technology, Durban, South Africa

*E-mail: davydamex@yahoo.co.uk

ABSTRACT
This paper examined the import demand function for two panels, namely, BRICS and G7 countries, from 1992 to 2021. The study used panel time series data from the World Development Index (WDI). Choi test (Choi, 2006), Im, Peasaran, and Shin test (2003 unit root test) were used to test for stationarity. The tests indicated that variables became stationary at the first difference, I (0) and I (1). The Pedroni Cointegration Test exhibited a long-run relationship in G7 countries among the variables in question. However, for BRICS countries, the test indicated no long-run relationship between the variables in question. The dynamic ordinary least squares technique assessed the short- and long-run results. The results showed that real GDP influences import demand for both BRICS and G7 countries. Similarly, the real effective exchange rate antagonistically influences import demand capacity for G7 and BRICS countries. Pairwise Granger causality exhibited that there is bidirectional causality between real income (a real GDP proxy) and import demand in both trading blocs (BRICS and G7 countries). Even more along these lines, unidirectional causality runs from import price to import demand; however, in G7 countries, there is bidirectional causality between import price and import demand. Consequently, the policymakers for BRICS and G7 countries should monitor the movement of the authentic trading scale, real GDP, local prices, and import prices to stay aware of solidarity not yet settled in trade.

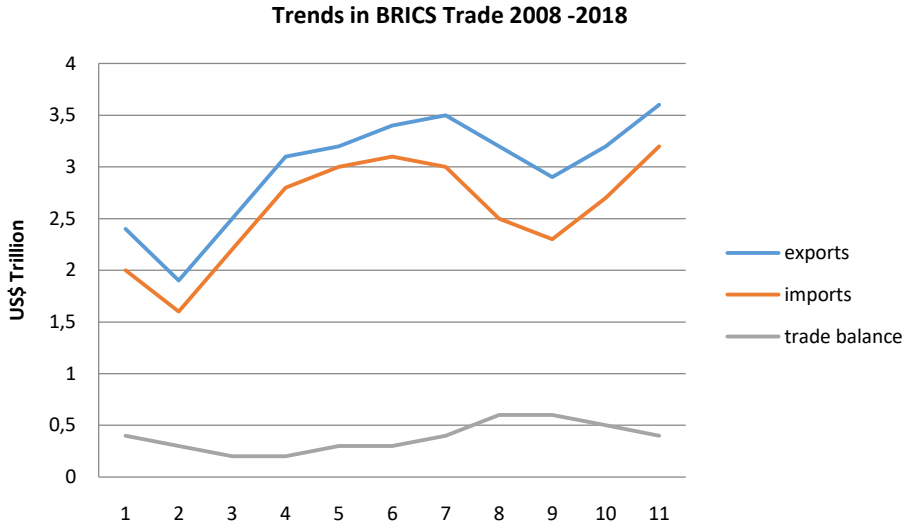
KEY WORDS
Import demand function, BRICS, G7, exchange rate, GDP.

The Heckscher-Ohlin theory is so typically captivating that comparative advantage remains the bedrock of present-day trade worldwide. The hypothesis relies on the idea that a country should import goods and services where no comparable advantage is accessible and export those goods and services where comparative advantage is accessible. Comparative advantage is the ability of a country to import goods or services from another country at a lower opportunity cost. Following the credence of comparative advantage, governments have been convinced to focus on studying the overall value chains, where specialization is the key to worldwide trade (Lanz et al., 2011). Also, globalization has emerged as the driver of commonplace participation in the world trading structure. The formation of regulatory boards such as the World Trade Organization (WTO), which aim to reduce trade barriers and implement rules and regulations among countries, has increased world trade. Global exports increased from US$16 trillion in 2008 to US$19.3 trillion in 2018 (WTO, 2019). The World Bank (2020) indicated that global trade volume increased by 6.9 percent someplace in the scope of 1991 and 2007, while in 2008-2009, the world economy was not exactly warmed by the overall financial quagmire, which affected trade volumes antagonistically. Nevertheless,

DOI https://doi.org/10.18551/econeurasia.2023-06

post-2010, trade volume reliably increased by 1.8 percent up to 2020, as shown (WTO, 2020).

WTO, (2019) revealed that BRICS nations (Brazil, Russia, India, China and South Africa) are the main exporters in the world; exports increased from US$2.4 trillion in 2008 to US$3.6 trillion in 2018. During the same period, imports increased from US$2 trillion in 2008 to US$3.2 trillion in 2018. Thus, the BRICS countries experienced a positive trade balance from 2008 to 2018.



Apart from BRICS nations, G7 is another union that was formed to support the export-led growth of German, France, Italy, UK, Canada, Japan and the United States of America, With Germany being the leading exporter and Canada. However, according to WTO (2020) statistics the United Kingdom is struggling to boost the modest growth of its exports. This will then compromise the trade balance of the country. Freund (2017) argued that trade in the world is negatively affected by various obstacles, such as trade regime distortions, lack of commitment by member countries, poor customs, and communication infrastructure. Yokohama (2010) alluded that a lack of economic diversification limits trade between nations. Olusegun (2010) pointed out that depletion of foreign currency, increased capital outflows and persistent decline in capital inflows is one chronic challenge hampering trade growth in the world. Due to different opinions over international trade fluctuations, a bulk of research emerged with the intention to estimate import demand and its determinants. Macroeconomic policymakers developed an interest in studying the structural improvement

DOI https://doi.org/10.18551/econeurasia.2023-06

of economic variables like real income, relative prices, import prices, and real exchange rates. In addition, Ogbonna (2016) argued that relative prices and exchange rates antagonistically influence import demand, regardless of real GDP's earnestly influencing import demand ability. Aipi et al. (2015) argued that relative prices and exchange rates are the primary determinants of import demand for certain countries. Ahad et al. (2017) highlighted that policymakers should monitor the advancement of real GDP, exchange rates, relative prices, and domestic prices as their improvement would mull over the state of import interest for every country. Subsequently, the main target of this paper is to evaluate the import demand function across two sheets of BRICS and G7 countries. The study examines the effect of real effective exchange rates, relative prices, domestic and real GDP on import demand. It also seeks to investigate the causal relationship between the dependent and independent variables.

LITERATURE REVIEW

Globalization has set off a peculiarity among researchers who focus on the import-demand functions of different countries worldwide. This is also juxtaposed with the keenness to understand the variables that affect international trade, linking them with the theories of trade. Some of the studies are as follows:

Nwogwugwu et al. (2015) focused on Nigeria's import demand function's versatility between 1970 and 2013. The study used demand for imports into Nigeria as a dependent variable and the relative Price of imports, real gross domestic product, and domestic Price as independent elements. The study used Johansen cointegration integration to examine the presence of short- and long-run associations between the variables being alluded to. Along these lines, the ARDL bound testing approach was used to investigate the effects of independent elements on the dependent variable in both short- and long-term periods. The results showed that the Price of imports, the volatile exchange rate, and real GDP have a positive and significant relationship. The study found that, for a 1% development in real GDP, import demand increases by 0.05 percent. The study concluded that total real GDP was the fundamental determinant of import demand in Nigeria during the period under study. The study also analyzed the acceptability of the defective substitution framework in Nigeria.

More so, Triplet et al. (2015) explored the import demand for South Africa from China (the BRICS people) between 1993 and 2012. The study used the ARDL Bound Test approach by Pasaran et al. (2001). This study's results exhibited a significant and positive relationship between import demand and domestic price in both short and long-run periods in South Africa. The study concluded that domestic prices are the primary determinant of import demand in the South African economy. Similarly, Aipi et al. (2015) explored Papua New Guinea's import demand function; the study zeroed in on an essential determinant of import demand in Guinea. A cointegration technique was used to assess the presence of long-run and short-run relationships. The results showed that import prices don't impact the import demand function for Papua New Guinea. More so, the variable impacted import demand for Papua New Guinea in both short- and long-term periods. The study proposed that stringent measures to be implemented to coordinate the import demand in Papua New Guinea.

Tirmazee et al. (2014) analyzed the import demand function of Pakistan using time series data covering the period between 1970 and 2010. The study used the Johansen cointegration method to check for a long-term relationship. The study also used the VECM evaluation system and response function. Relative prices, exchange rates, and real GDP were associated with the investigation. Relative prices unfavorably influence import demand; in other words, with a rise in relative Price, imports will fall. The study also found real GDP to influence import demand in Pakistan vehemently.

Ogbonna (2016) focused on Nigeria's import-demand function between 1980 and 2010. The survey used absolute import revenue as a dependent variable, while the certified suitable transformation scale, Nigeria's equity record, and additional money were taken as instructive elements. Granger causality was used to examine the causal effect between import interest and enlightening elements. The Vector Goof Model (VECM) was used to

DOI https://doi.org/10.18551/econeurasia.2023-06

analyze the effects among independent and subordinate variables in both short- and long-run periods. The survey uncovered a long run and a consistent association between import revenue and certified strong trading scale, local worth records, and additional money. Even more, the Granger causality found a unidirectional causality that runs from a suitable change scale to import interest in Nigeria. In any case, the elements did not show a short-term relationship with Nigeria's import demand capacity.

Katsimi and Moutous (2011) assessed Jamaica's import demand ability with the US and UK. The survey used the Johansen cointegration technique to investigate whether there is a long-run relationship among the elements being alluded to. The audit included certified GDP, new stores, relative expenses, and the flightiness of exchange rates. The audit used the ARDL model to perceive free factors' effect on subordinate factors. Even more along these lines, pairwise Granger causality was also used to dissect the heading of causality. The audit found that certifiable GDP vehemently influences import interest. Even more along these lines, Hibbert et al. (2012), in like manner, found authentic GDP to influence import interest distinctly. A verifiable change standard was found to influence import interest unfavourably, or if nothing else, an extension in the trading scale will cause import solicitation to fall.

Besides, Ahad et al. (2017) focused on the import-demand function for Pakistan. The study recalled money-related improvements for the audit to perceive its impact on import revenue in Pakistan. The investigation increased total national output as a mediator of exchange rates and relative prices. The results of the assessment show that money-related improvement firmly influence import demand. Similarly, relative prices influenced import demand unfavorably; in other words, an extension in the relative price sum mentioned for imports will profoundly fall. Ibrahim (2017) similarly drove a practically identical assessment and found that GDP and import demand are decidedly related in the short and long run.

Mishra et al. (2017) assessed import demand ability; the audit included relative prices and unusual exchange rates. The survey found a long-run association between import revenue and relative exchange rates. The investigation revealed a bidirectional causality between import demand and relative expense. The study assumed that both the relative Price and the unusualness of the real effective exchange rates would unfavorably influence import demand or that possibly an extension in the exchange rates for import demand would fall. In any case, this study seeks to examine a comparable import demand function for BRICS and G7 countries. However, many studies have been driven by import demand, but little thought has been put into assessment, especially for BRICS and G7 countries. With this, the study has seen a gap that lays the prerequisites for helping policymakers recognize the essential factors that impact import demand functions in developed and emerging nations.

METHODS OF RESEARCH

This study used the imperfect substitute model to examine a comparative import demand function for BRICS countries and G7 countries. Goldstein (1985) argued that the import demand function is expressed as a function of domestic price, foreign price and income (real GDP) proxy. The function is as follows:

$$M = f(Y, PD, PM) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where: M = import demand, Y = income, PD = domestic prices, and PM = import prices.

However, this study considers real effective exchange rate variable in the estimation of a comparative import demand function for BRICS and G7 countries. Ogbonna (2016) in studying Nigeria import demand function, real effective exchange rate was included in the study and was found to be the main determinant of import demand function.

$$M = f(Y, PD, PM, REER) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

DOI https://doi.org/10.18551/econeurasia.2023-06

Where, REER is real effective exchange rate.

Houthakker et al (1969) outlined that, the variables typically transformed into log form and the resulting coefficients for each variable are interpreted as elasticity estimates.

$$lnM_{it} = \beta_0 + \beta_1 Yt + \beta_2 lnPDt + \beta_3 lnPMt + \beta_4 lnREERt + \mu t \ldots\ldots\ldots\ldots\ldots(3)$$

The variables used in the regression model are defined as follows:

1. lnIMPit is the Total quantity of import demand for BRICS and G7 countries at time t;
2. lnYt is income (Real GDP proxy) for BRICS and G7 countries at time t;
3. lnDPt is domestic Price (CPI proxy) for BRICS and G7 at time t;
4. lnPMt is Price of imported goods by BRICS and G7 at time t;
5. lnREERt is Real Effective Exchange Rate at time t.

The time series panel data used in this study was extracted from World Development Indicators (WDI) from 1990 to 2021. Import demand is considered as dependent variable and is measured in monetary value (US$), Real Income is an independent variable together with domestic price, import price and real effective exchange rate. The study includes BRICS countries (Brazil, Russia, India, China and South Africa) and G7 countries (German, Italy, Japan, Canada, France, United States and United Kingdom).

The study examined both the short and long-run import demand function for BRICS and G7 countries using ARDL model based on equation (3). In order to estimate valid elasticities in the long run, the data must be stationary and the variables should be cointegrated. This section describes the statistical methods used to test for stationarity and cointegration.

The study employed Peasaran, and Shin (2003), Choi (2006), and Hadri (20000 tests to test for stationarity. This is done to validate regression results. To work with non-stationary data would result in producing spurious results.

This study used panel ARDL analysis to examine the long run and short run relationship between import demand and import prices, domestic prices, real GDP and real effective exchange rate. The method also identified short-run dynamics by obtaining the panel characteristics with the error correction model (ECM). ARDL method was preferred in this study because it gives more advantages than cointegration. The panel ARDL equations of correlation between economic growth and carbon dioxide emissions nexus can be expressed as follows:

$$Yit = \alpha\, 1it + \alpha 2it Xit + \mu it \ldots\ldots\ldots\ldots\ldots(4)$$

Where: Yit represent an endogenous variable; Xit represent an exogenous variable; it denotes the parametric coefficients; μit is the error term.

$$Yit = \alpha 1it + \sum_{i=1}^{p} Yit.Yi.t - 1 + \sum_{i=1}^{p} \alpha 2it\, Xi,t - 1 + \mu it \ldots\ldots\ldots\ldots\ldots(5)$$

The cointegration largely depends on the long term relationship in the system equation whereas the ARDL model applies a concise form. The panel ARDL model only used when the variables become stationary at different levels I (0) and I (1). Equation (3.5) has added an exogeneity assumption of explanatory variables, parameters and errors. The hypothesis for panel cointegration test is expressed as follows:

- H_0: there is no cointegration;
- $H_{1:}$ there is cointegration.

In which the null hypothesis assumption is investigated against the alternative hypothesis of cointegration by using F-test. If we fail to reject null hypothesis, it means there is short-run and long run cointegration between the dependent variables and independent variables; therefore, the model is estimated as follows:

$$lnM = a0 + \sum_{i=1}^{p} a1 lnMt - 1 + \sum_{i=0}^{p} a2 lnGDPt - 1 + \sum_{i=0}^{p} a3 lnPDt - 1 + \sum_{i=0}^{p} a4 ilnPMt - 1 + \sum_{i=0}^{p} a5 ilnRERt - 1 + \varepsilon it \ldots\ldots\ldots\ldots\ldots(6)$$

$$\Delta lnM = a1 + \sum_{i=1}^{p} a2\Delta lnMt - 1 + \sum_{t=1}^{p} a3\Delta lnGDPt - 1 + \sum_{t=1}^{p} a4\Delta lnDPt - 1 + \sum_{t=1}^{p} a5\Delta lnPM\, t - 1 + \sum_{i=1}^{p} a6\Delta lnRERt - 1 + \sum_{i=1}^{p} + a7ECTi, t + \varepsilon it \ldots\ldots\ldots\ldots\ldots\ldots\ldots(7)$$

The error correction term (ECT) was developed by Engle and Granger as a means of validating the short-run behaviour of an economic variable with its long-run behaviour according to Gujarati (2004). In other words, ECT measures the speed of adjustment to the long run equilibrium and it is depicted by the parameter (***a7)*** in the above equation. Pesaran (2001) argued that the error correction term (ECT) coefficient should be negative and statistically significant.

$$ECTi, t = (M)it - a2 - \sum_{i=1}^{p} a3lnMt - 1 - \sum_{i=1}^{p} a2lnMt - 1 - \sum_{t=1}^{p} a3lnGDPt - 1 - \sum_{t=1}^{p} a4lnDPt - 1 - \sum_{t=1}^{p} a5lnPM\, t - 1 - \sum_{i=1}^{p} a6lnRER1\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(8)$$

In order to test the fitness of the ARDL model, the study conducted a stability test. Gujarati (2004) posited that dealing with unstable parameters would lead to model misspecification. The cumulative sum of the squares (CUSUMQ) and CUSUM were used for the stability test.

After estimating the model, the study conducted diagnostic checks to address potential econometrics issues in the model. These diagnostic checks include normality tests, stability tests, and Durbin-Watson and Breusch-Godfrey tests for serial correlation.

RESULTS AND DISCUSSION

The tables 1 and 2 exhibited the results for panel unit root test for BRICS and G7 countries over the period 1992 to 2021. The results exhibited the stationarity outcome two tests, that the Choi test (Choi, 2006), and Im, Peasaran and Shin test (2003). Unit root test were held under the null hypothesis that, variables under investigation are not stationary against the alternative hypothesis that, variables are stationary.

Table 1 – Panel Unit Root Test for BRICS countries

Choi test						
Variables	Statistics	P-value	order	Statistics	P-value	order
lnM	-1.1328	0.8714	1(0)	-3.7567	0.0000***	1(1)
lnDP	-0.8429	0.1996	1(0)	-3.9062	0.0000***	1(1)
lnEXR	-1.2470	0.1062	1(0)	-5.5953	0.0000***	1(1)
lnGDP	-3.1820	0.000***	1(0)	- 0.0639	0.5255	1(1)
lnMP	1.0458	0.8522	1(0)	-6.1976	0.0000***	1(1)
IPS test for BRICS country						
Variable	Statistics	P-value	order	Statistics	P-value	order
lnM	1.2200	0.8888	1(0)	-3.5687	0.0002***	1(1)
lnDP	-0.0504	0.4799	1 (0)	-3.9073	0.0000***	1(1)
lnEXR	-0.4487	0.3268	1(0)	-4.4251	0.0000***	1(1)
lnGDP	1.4046	0.9199	1(0)	-3.4288	0.0000***	1(0)
ln MP	1.0589	0.8552	1(0)	-5.1672	0.0000***	1(0)

Source: Own estimation using Eviews version 12.

Tables 1 and 2 presented the results shows that variables under Choi test become station at first difference for BRICS countries accept the variable ln GDP, similarly, IPs test reported that all variables are stationary at first difference. More so, for G7 countries, Choi

test reported that variables are stationary at first difference. However, IPS test shows that lnEXR became at level. In order to come up with a remarkable conclusion, the study used the Chi test since many vriables become stationary at first difference.

Table 2 – Panel Unit Root test for G7 countries

Choi Test						
Variables	Statistics	P-value	order	Statistics	P-value	order
ln M	0.6751	0.7502	1(0)	-7.4671	0.0000***	1(1)
lnDP	0.1149	0.5458	1(0)	-5.5639	0.0000***	1(1)
lnEXR	-0.1749	0.4306	1(0)	-4.8085	0.0000***	1(1)
lnGDP	0.0585	0.5233	1(0)	-5.9620	0.0000***	1(1)
lnMP	1.8974	0.9711	1(0)	-6.5201	0.0000***	1(1)
IPS test						
Variables	Statistics	P-value	order	Statistics	P-value	order
lnM	2.5996	0.9953	1(0)	-7.5463	0.0000***	1(1)
lnDP	0.1414	0.5562	1(0)	-4.9571	0.0000***	1(1)
lnEXR	-2.6851	0.0041**	1(0)	-4.7430	0.0000***	1(1)
lnGDP	1.0143	0.8448	1(0)	-5.6693	0.0000***	1(1)
lnMP	1.2408	0.8927	1(0)	-5.3421	0.0000***	1(1)

Source: Own estimation using Eviews version 12.

In determining the optimum number of lags, a maximum of 2 lags was initially set due to the number of observations (1990 -2021). From the output obtained, the Akaike information criterion (AIC), Hannan-Quinn information criterion (HQ), FPE and LR selected lag order two, whilst the Schwarz information criterion (SC) selected lag order one. This study thus selected lag order two.

Table 3 – Panel Cointegration test Results for BRICS countries

Dependent Variable: lnM		
Variables	Without Trend	With Trend
Cross-Sectional Random		
Pedroni Residual Cointegration Test		
Alternative hypothesis: common AR coefficients. (within-dimension)		
Panel v-Statistic	-0.9460 (0.1721)	1.0532 (0.1461)
Panel rho-Statistic	0.2692 (0.6061)	0.0134 (0.5054)
Panel PP-Statistic	-0.5700 (0.6061)	-0.9492 (0.1713)
Panel ADF-Statistic	0.1444 (0.5574)	-0.2752 (0.3916)
Alternative hypothesis: individual AR coefs. (between-dimension)		
Group rho-Statistic	0.7622	0.7770
Group PP-Statistic	-0.6057	0.2723
Group ADF-Statistic	-0.2554	0.3992

*The Pedroni statistics was tested under the null hypothsis that there is no cointegration against the alternative hypothesis that there is cointegration. *** indicates significance at 1%. Source the authors' estimation: eviews 12.*

After all variables became stationary, the Pedroni residual cointegration test was used to determine whether there is a long-run relationship between import demand, domestic

DOI https://doi.org/10.18551/econeurasia.2023-06

Price, import price, real effective exchange rate, and real income (a proxy for real GDP) for both BRICS and G7 countries. The tests were conducted with no cointegration as the null hypothesis and coingration as the alternative hypothesis. Table 3 demonstrates that at all levels of significance, all 11 tests (PPP-Statistic, PADF-Statistic, GPP-Statistic, ADF-Statistic, Panel v-Statistic, Panel rho-Statistic, Group rho-Statistic, Panel PP-Statistic, Group PP-Statistic, and Group ADF-Statistical) became statistically insignificant. We failed to reject the null hypothesis of no cointegration and concluded no long-run relationship exists between the variables in question for the BRICS countries.

Table 4 below exhibited G7 cointegration results. The test results revealed that in a total of eleven outcomes only six outcomes became significant and five outcomes remaining became insignificant. Under this outcome, we reject a null hypothesis of no cointegration and conclude that there is a long run relationship between the variables in question.

Table 4 – Panel Cointegration test Results for G7 countries 1992 to 2021

Dependent Variable: lnM		
Variables	Without Trend	With Trend
Cross-Sectional Random		
Pedroni Residual Cointegration Test		
Alternative hypothesis: common AR coefficients. (within-dimension)		
Panel v-Statistic	1.1353 (0.1281)	1.0103 (0.1562)
Panel rho-Statistic	0.7698 (0.7793)	0.5205 (0.6987)
Panel PP-Statistic	-2.4538** (0.0072)	-4.7498*** (0.000)
Panel ADF-Statistic	-3.5436** (0.0029)	-5.6713*** (0.000)
Alternative hypothesis: individual AR coefs. (between-dimension)		
Group rho-Statistic	1.2780	0.8994
Group PP-Statistic	-3.1684***	(0.001)
Group ADF-Statistic	-4.4990***	(0.000)

*The Pedroni statistics was tested under the null hypothsis that there is no cointegration against the alternative hypothesis that there is cointegration. *** indicates significance at 1%. Source the authors' estimation: eviews 12.*

In comparison, results for both BRICS and G7 countries reported holding other things constant; import demand, domestic Price, import price, real income and effective exchange rate have no long-run relationship in Brazil, Russia, India, China and South Africa. This is because we failed to reject the null hypothesis of no cointegration. However, for Germany, Italy, Japan, United States, the United Kingdom, France and Canada, results exhibited that; holding other things constant, import demand, domestic price, import price, real income (real GDP proxy) and real effective exchange rate have long-run relationships. Due to these results, Vector Autoregressive Model (VAR) is appropriate for BRICS countries since there is no cointegration. ARDL Model is suitable for G7 countries since the variables exhibited a long-run relationship.

Pairwise Granger causality was used to identify the direction of causality between the variables in question (import price, import demand, domestic Price, real effective exchange rate, and real income) for BRICS and G7 countries. Table 5 represents the results for BRICS countries, and Table 6 represents the results for G7 countries. The results reported a bidirectional causality between real income (a real GDP proxy) and import demand in both trading blocs (BRICS and G7 countries). Hence, we reject the null hypothesis that real GDP does not generate import demand and conclude that real GDP impacts import demand. In BRICS countries, there is unidirectional causality from import price to import demand, whereas in G7 countries, there is bidirectional causality between import price and import demand. In BRICS countries, there is bidirectional causality between the real effective

DOI https://doi.org/10.18551/econeurasia.2023-06

exchange rate and import demand. In contrast, in G7 countries, causality only runs from the real effective exchange rate to import demand. This means that real exchange rates have a direct impact on import demand. Unidirectional causality also exists in G7 countries, where import demand drives domestic prices.

Table 5 – Pairwise Granger causality for BRICS countries

Null Hypothesis:	Obs	F-Statistic	Prob.
lnGDP does not Granger Cause lnM	140	3.50769	0.025*
lnM does not Granger Cause lnGDP		2.26437	0.007**
lnMP does not Granger Cause lnM	140	3.96806	0.0212*
lnM does not Granger Cause lnMP		0.27305	0.7615
lnEXR does not Granger Cause lnM	140	4.20069	0.002**
lnM does not Granger Cause lnEXR		3.41454	0.001**

, ** and * indicates significance at 10%, 5% and 1%. Source the authors' estimation: eviews 12.*

Table 6 – Pairwise Granger Causality for G7 countries

Null Hypothesis:	Obs	F-Statistic	Prob.
lnGDP does not Granger Cause lnM	224	2.78624	0.010*
lnM does not Granger Cause lnGDP		3.44234	0.001**
lnMP does not Granger Cause lnM	224	4.97046	0.00***
lnM does not Granger Cause lnMP		3.84622	0.00***
lnEXR does not Granger Cause lnM	224	2.49440	0.035*
lnM does not Granger Cause lnEXR		1.21997	0.842
lnDP does not Granger Cause lnM	224	1.23664	0.2924
lnM does not Granger Cause lnDP		9.66056	0.00**

*Pairwise Granger Causality; *, ** and *** indicates significance at 1%. Source the authors' estimation: eviews 12.*

Table 7 – Long run Results for BRICS and G7 countries

BRICS Countries			G7 Countries	
Variable	Coefficient	Prob.	Coefficient	Prob.
C	11.08217	0.000***	-3.548128	0.0682*
lnDP	0.006069	0.000***	0.001313	0.3800
lnEXR	-0.013975	0.000***	-0.009677	0.000***
lnGDP	0.454085	0.000***	1.090353	0.000***
lnMP	-0.009833	0.004**	0.004246	0.00***
R-squared (BRICS)	0.710628			

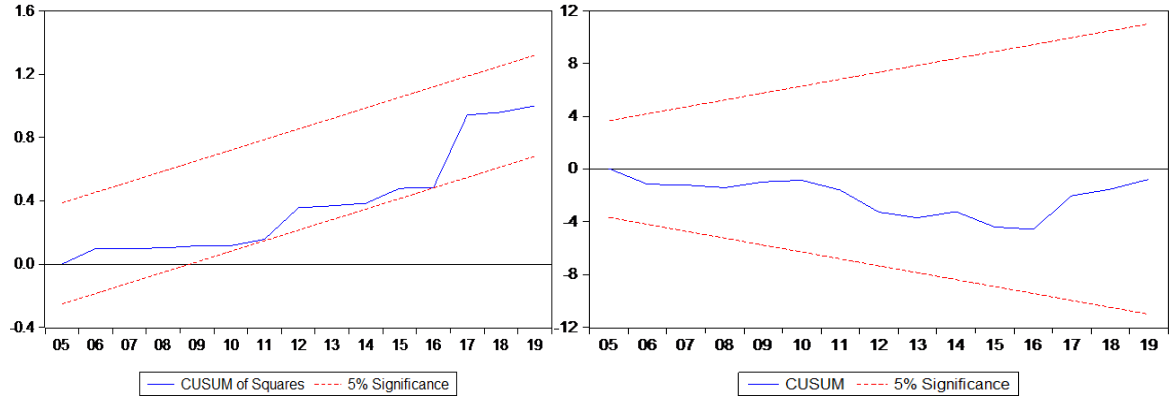
DOI https://doi.org/10.18551/econeurasia.2023-06

The table above is a long-run analysis of the BRICS and G7 countries' comparative import-demand functions. The results revealed that real GDP positively affects import demand for BRICS countries and G7 countries; that is, in BRICS, a 1 percent increase in real income (GDP proxy) will increase import demand by 0.006 percent. Similarly, in G7 countries, holding other things constant, a 1% increase in real income will cause import demand to rise by 0.0013 percent. Both blocs' probability values for real income are statistically significant at all levels. The results are consistent with the outcome from Mashkoor (2010), where real GDP was found to have a positive impact on import demand irrespective of the nature of the economy. More so, Ahad et al. (2017) found real GDP to have a long-run and positive effect on import demand in emerging economies.

The real effective exchange rate was found to have a negative impact on import demand from both BRICS and G7 countries. If the real exchange rate increases by 1 percent, import demand will decline by -0.01 percent in BRICS countries and -0.009 percent in G7 countries, respectively. In a study conducted by Omotor (2010) on the import demand function for developed countries, the real exchange rate was found to be negatively correlated with the import demand function.

In addition, the results also reported that the import price was negatively correlated with import demand in BRICS countries. This means that if the price of imports increases by 1%, the quantity demanded will fall by 0.1%. However, the results contradict those of the G7 countries, where import price was found to be positively correlated with import demand, that is, a 1 percent increase in import price would lead to a 0.004 percent increase. Thaver (2010) posited that people in emerging countries like South Africa and India have different perceptions towards a change in the Price of imports. The demand for imports is elastic; hence, a slight change in relative Price will cause a drastic fall in the quantity demanded for imports. However, in developed countries, the demand for imports is inelastic.

More so, the coefficient for domestic prices was positive and significant for BRICS countries but not for G7 countries. That is, holding other things constant, a 1 percent increase in domestic prices will cause import demand to increase by 0.006 percent. This is because if domestic prices increase, people will shift their focus to imports, increasing demand for imports.



a. Plot of CUSUMSQ

b. Plot of CUSUM test

The study also examines the short- and long-term stability of the coefficient. As proposed by Berelli (2003), the CUSUM and CUSUMSQ tests were used to investigate the stability of the ECT model. The results showed that both the CUSUM and CUSUMQ tests are within the critical bound. If the plot of the cumulative sum goes outside the area of the 5% critical lines, the parameter estimates are not stable.

CONCLUSION

The study examined comparable import demand capacity for BRICS and G7 countries using time series data from 1992 to 2021. The variable used in the survey combines import

DOI https://doi.org/10.18551/econeurasia.2023-06

demand, real effective exchange rates, domestic demand, import prices, and real income (a real GDP proxy). The cointegration results demonstrated a long-run association between import demand and independent variables in G7 countries, regardless of the developments in BRICS countries; the results suggested no cointegration between the dependent and free factors. The study found that real GDP significantly influences import demand, regardless of the economy's long-term and short-term prospects. As a result, it is possible to conclude that long-term GDP growth accelerates import demand in all economies.

The general Price has a long-term negative impact on import demand in the cases of G7 countries and BRICS but has a massive positive impact in the short run. However, relative price significantly impacts import demand in G7 countries, both in the long and short runs. In addition, the real exchange rate for BRICS has an unfavorable effect on import demand both in the short run and over time. It also unambiguously influences import demand in the event of a manufactured economy, both in the short and long run.

More so, exchange rates have a long-term impact on import demand and have a significant negative impact in the short term in the case of the BRICS countries. As a result, it could be argued that, in the early stages of economic development, the general prices and transformation scale have a negative impact on import demand. People's standards of living will change as the economy improves. Structure the plan from various perspectives; the BRICS and G7 transformation standards should be controlled to assemble the import level. To control the stipulations of this methodology, imports of excess products rather than capital items and normal substances should be controlled to reap the benefits of a lower trading scale. The general prices of BRICS countries should be kept at a particular level to strengthen the vicious spot of domestic goods. In contrast, the general prices of G7 countries should be kept at a particular level to shield new goods from assault, which will put domestic goods more on the map. Finally, it may be assumed that this study anticipates widespread participation from policymakers at the general and global levels in predicting the components of great interest as a result of advancements in level to forecast the dynamics of significant demand due to changes in income level, relative Price, and exchange rate for all economies.

REFERENCES

1. Adam, A., Katsimi, M., Moutos, T. (2008). Inequality and the Import Demand Function CESifo. Working Paper No.2196, Category 6: Monetary Policy and International Finance
2. Alam, S. and Q. M. Ahmed (2010). "Exchange Rate Volatility and Pakistan's Import Demand: An Application of Autoregressive Distributed Lag Model", International Research Journal of Finance and Economics, Issue 48.
3. Awomuse, B. O. and B. Fatukasi (2011). "Determinants of Import in Nigeria: Application of Error Correction Model", Centrepoint Journal: Humanities Edition Vol. 14(1), pp. 52-72.
4. Babatunde, M. A. and F. O. Egwaikhide (2010). "Explaining Nigeria's Import Demand Behaviour: A bound Testing Approach", International Journal of Development Issues, Vol. 9(2), pp.167-187.
5. Ghorbani, M., Motallebi, M. (2009). Application of Pesaran and Shin Method for Estimating Irans' Import Demand Function. Journal of Applied Sciencs, 9(6), 1175–1179.
6. Hibbert, K., Thaver, R., Hutchinson, M. (2012). An Econometric Analysis of Jamaica's Import Demand Functions with the US and UK. The International Journal of Business and Finance Research, 6(1), 109–120.
7. Ibrahim, M. A. (2015). Merchandise Import Demand Function in Saudi Arabia. Applied Economics and Finance, 2(1), 55–65. http://dx.doi.org/10.11114/aef.v2i1.626.
8. Ibrahim, M.A. (2017). An Examination of Merchandise Imports Demand Function for Egypt. Applied Economics and Finance, 4(2), 101–112. http://dx.doi.org/10.11114/aef.v4i2.1969.
9. MSCI (2019). MSCI 2019 Annual Market Classification Review. Retrieved from https://www.msci.com/market–classification.

DOI https://doi.org/10.18551/econeurasia.2023-06

10. Narayan, S. and P. K. Narayan (2010). "Import Demand Elasticities for Mauritius and South Africa: Evidence from two recent Cointegration Techniques", Monash University Australia Department of Economics Discussion Papers No. 09/03, pp. 1-35.
11. Omoke, P. C. (2010). "Error correction, CoIntegration and Import Demand Function for Nigeria", International Journal of Development and Management Review, Vol. 5(1).
12. Omotor, D. (2010). An Aggregate Import Demand Functions for Nigeria. Economic Research, 23(1), 1–14. http://dx.doi.org/10.1080/1331677X.2010.11517397.
13. Pesaran, M. H, Y. Shin and R. J. Smith (2001). "Bounds Testing Approaches to the Analysis of Level Relationships", Journal of Applied Econometrics, Vol.16 (3), pp. 289-326.
14. Pesaran, M. H. and B. Pesaran (1997). Microfit 4.0, Oxford University Press, Oxford, ISBN 0-19-268531-7, pp. 1-6.
15. Pesaran, M. H. and Y. Shin (1997). "An Autoregressive Distributed Lag Modeling Approach to Cointegration Analysis", forthcoming in Centennial Volume of Ragner Frisch, ed. by S. Strom, A. Holly and P. Diamon, Cambridge: Cambridge University Press, pp. 1-33.
16. Yin, F., Hamori, S. (2011). Estimating Import Demand Function in the Autoregressive Distributed Lag Framework: The Case of China. Economics Bulletin, 31(2), 1576–1591. January 2008. http://dx.doi.org/10.3923/jas.2009.1175.1179.