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Global Shipping and Trade: Implication(s) for Nigeria's Economic Growth

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ABSTRACT

Many efforts have been made towards understanding the relationship between global shipping, trade and economic growth of Nigeria. Nigeria's shipping sector is yet to live up to its full potentials but with the right policies in place, it can make tremendous contributions to economic growth. Thus, the objective of this study, among others was to examine the impact of global trade and shipping on economic growth in Nigeria. The review of research design and methodology provided a basis for the selection and specification of the model which was used to show if and how global shipping impact on Nigeria economic growth. The data used in carrying out this research was sourced from the central bank of Nigeria statistical bulletin. The sample size employed from the study covers a period of 36 years (1985-2021). The Ordinary Least Squares regression technique was used to estimate the model while the Johansen co-integration test was used to ascertain of there is an equilibrium long tun relationship between the variables. The study found that balance of payments and shipping related expenses impacted economic growth positively. In light of this, the study recommends that it is necessary to enhance the institutional settings in order to increase the contribution of the balance of trade to the economy as a whole.

Keywords: Global Trade, Shipping, Economic Growth, Maritime, Regression, Balance of Payments

1. Introduction

When two or more nations exchange data, raw resources, finished products, and services, this is called global trade. The goods and services traded can be imported or exported. Goods involved in international trade consequently move over national borders, typically at seaports, airports, and land checkpoints (Ofobrukweta, 2001). Trade can have both overt and covert forms. When two countries trade tangible commodities, they are engaging in "visible commerce," which involves the movement of products across the border between the two nations. On the other hand, "invisible trade" refers to the bartering of intangible services. Transportation, finance, banking, tourism, freight forwarding, and technological expertise are all part of this category. When a nation's domestic supply of raw materials, finished goods, and services falls short of the demands of its people, a subsequent need arises for those goods and services that can be found in other countries (Ofobrukweta, 2001).

The maritime sector is vital to the economies of all countries. The sector both generates exciting possibilities and supervises actions that take place on the open sea or domestic waterways. Offshore economic activities include fishing, salvage, towing, and underwater resources, while onshore economic activities include port operations, shipping, and shipbuilding and repair. Shipping, in particular, is often cited as the activity that most significantly contributes to a country's prosperity. As a result, shipping is the most important maritime activity (Uche, 2008).

The practise of shipping entails moving items of value from one location to another across any body of water. The shipping industry is often regarded as one of the world's longest continuously operating commercial sectors. Since "he who governs the sea, rules the world," it has historically been a primary source of political power and geographical influence (Mukherjee, 2010).

Transportation by ships is crucial to the integration of international markets. The shipping business, however, is not a monolithic field; it is instead composed of numerous sub-sectors that vary in terms of their value and marketability to potential employees. Shipment is primarily divided into two categories: those that are for and those that are not for a certain function. Shipping is initially broken down into three categories: passenger, commercial, and maritime of special purposes (Vasilopoulos, 2013).

Shipping, namely container shipping, has been crucial to the spread of modern capitalism. Others have even said that container shipping was the first really global industry in the world. It may be argued that container shipping is the single most important sector for the functioning of a global economy. It facilitates global trade by bridging geographic distances and opening up access to previously unreachable markets. Without container transportation, global trade and, by extension, our consumer lifestyles, would be unthinkable.

Kummi (2007) argues that shipping is one of the most significant socioeconomic and political forces impacting the world today. Global economic, social, cultural, and political systems are being ever more closely integrated thanks to the shipping phenomenon. The "death of distance" has occurred as a direct outcome of globalization's shipping-based commerce. Globalization has shrunk the globe into "one little village" from where it once was.

A major contributor to and consequence of globalization is the shipping industry. Shipping, and especially container shipping, has been profoundly impacted by globalization. Moreover, shipping links nations, communities, enterprises, and individuals, facilitating unprecedented levels of industrialization and commerce. In light of this, it is crucial for nations to assess the effect that shipping commerce has on their economy.

1.1 Statement of Research Problem

The shipping industry is vital to the economies of all coastal countries since it attracts workers from virtually everywhere except landlocked countries. As expected, Nigeria follows suit. The port of Abidjan is vital to the economies of landlocked West African countries like Mali and Burkina Faso. Due in large part to poor policymaking, Nigeria's shipping sector has failed to contribute to the country's economic expansion, while the sector as a whole has underperformed and failed to live up to its potential. Traditional maritime nations such as the United Kingdom, the United States, Scandinavia, and other European countries have achieved enviable levels of efficiency, sophistication, and monumental success in maritime activities, especially in terms of economic growth, due in large part to the investment of time, proper planning, coordination, and government intervention to implement clear policies. This industry is yet to reach its full potential in Nigeria.

After receiving 19 new tonnages from European shipyards in 1979 and 1980, the Nigerian National Shipping Line (NNSL) has since disbanded and lost all of its vessels. This is made more difficult by the fact that numerous countries have yet to successfully introduce their own national carrier.

1.2 Objective of the Study

The central objective of this study is to empirically determine the impact of global shipping and trade on Nigeria's economic growth. Specifically, the study intends to accomplish the following:

- 1. To examine the relationship between the shipping transport expenses and Nigeria's gross domestic product.
- 2. To determine the effect of shipping industry (using Nigeria's balance of trade as a proxy) on economic growth.
- 3. To ascertain the role of balance of payment in the level of gross domestic product
- 4. To determine the relationship between exchange rate and Nigeria's gross domestic product.

1.3 Justification of the Study

Because the economy is so central to people's daily lives, it's always been a hot button issue for discussion amongst a country's residents. The extreme poverty in the "country of surplus," as is the situation in Nigeria, is one of the reasons why this topic is so touchy. Nigeria has the Atlantic Ocean on one side and a massive 1 km of inland water on the other, both of which, if used well, have the potential to propel the country from the developing to the developed world in record time. Because of the current degree of poverty and penury, made worse by the ever-increasing levels of domestic and international debts, the generation yet-to-be-born is even saddled and sold into economic slavery.

So, at this time, a study of the connection between Nigeria's economic growth, its foreign exchange reserves, its debt payments, and its international shipping exports is essential.

Therefore, this research work is warranted by the pressing need to advocate for the kinds of long-term solutions to issues like underdevelopment, extreme poverty, tribal strife, Niger Delta Youth unrest, and religious bigotry that they propose.

In addition, this study incorporates more recent data (until 2021) into its analysis, making it more applicable to the current state of affairs.

Finally, academics and other players in the Nigerian maritime industry would find this study valuable.

2. Literature Review

Over time, there has been a pattern in global shipping that is driven by the supply and demand of goods moving from country to country. Because of its worldwide and entrepreneurial character, this industry is much more prone to volatility than the trading patterns it services, which are already subject to seasonality (Uche, 2008). The word economic growth refers to an increase in the amount of products and services generated by an economy over a specific time frame. In a population-based analysis, economic growth can be expressed in terms of per capita income, calculated by dividing a country's total output of goods and services in a given year by its total population in that same year. There are two primary hypotheses concerning potential growth sources that form the basis of the framework for understanding growth over the long run. A similar concept is growth accounting theory.

2.1 Theoretical Literature

Classical Growth Theory

According to the Classical Growth Theory, a country's economic growth slows as its population rises and its resources become more stretched. An increase in real GDP per person for a short period of time is believed by adherents of the classical growth theory to be followed by an increase in population, which in turn is seen to reduce real GDP. This will lead to a slowdown in the country's economic expansion.

Limitations of the Classical Growth Model

- The classic model of growth ignores the significance of effective technical innovation to the efficient running of an economy. Increases in technology's efficiency may assist slow the deterioration of profits.
- The conventional growth model assumes that salaries do not go over or below the poverty line, but this assumption is erroneous. Yet this isn't entirely correct. Due to shifts in the composition of the economy and potentially drastic changes in wage levels, the cost of living for the average worker could go up or down. To add insult to injury, unions' role in pay determination is not accounted for in the conventional theory of economic development.

Neoclassical Growth Model

The Neoclassical Growth Theory is a growth model in economics that explains how the interplay of labour, capital, and technology leads to a constant rate of economic expansion. The Solow-Swan Growth Model is the simplest and most often used variant of the Neoclassical Growth Model.

The theory proposes that different levels of labour and capital both play critical roles in production and contribute to short-term economic equilibrium. The thesis postulates that technical progress has far-reaching effects on how an economy operates as a whole. The three components of a flourishing economy are laid forth in the neoclassical growth theory. In contrast to long-term equilibrium, which does necessitate all three components, the theory emphasises the idea that short-term equilibrium is distinct.

2.2 Empirical Literature

After analysing several obstacles to the growth of the shipping industry, Momoh (2000) cautioned against basing Nigeria's shipping strategy on the UNCTAD code for liner conference. He clarified that the rule only applies to liner trade shipping discussions and particularly addresses the administrative possibility of resolving the freighting right of the "National line" of two trading nations, notwithstanding its well-orchestrated cargo sharing leverage. As Nigeria and the United States do not function within a liner conference, the code does not work on the USA/Nigeria trade route, which is dominated by crossed traders such as the Dutch, the Danes, and the Norwegians. He also thinks that Nigerian tonnage cannot be used in trades that are not covered by liner standards, such as very wet cargo and bulks. Thus, Decree 10 of 1987, the foundation of Nigeria's shipping policy, has to be updated to better serve the industry and the country's economy.

When looking into the future of Nigeria's maritime industry, Ja'afaru (2001) made the observation that the country needs a well-defined maritime legislation and policy in order to promote and stimulate economic growth and development. The maritime regulations in Nigeria are less the product of rigorous deliberation than of historical happenstance. According to someone who was tasked with giving teeth to the implementation of Nigeria's shipping policy, the country's maritime laws, which were inherited from her colonial master, have become absolute and ill-equipped to deal with the present economic demands of the nation. Furthermore, maritime law research and development is neither undertaken nor related to courses taught at higher institutions in Nigeria. It's now abundantly clear that drastic measures must be taken in order to revitalise the Nigerian economy's commercial sector.

According to Oyedeji's (2009) research, in order for a country to have a greater impact or relevance in the maritime sector, it needs to undertake a more elaborate shipping policy, which should encompass the development of maritime capacity building in line with the trends of the world maritime growth, taking into consideration the relevance of shipping globalisation. Present efforts should be on coordinating a National Shipping Policy that is consistent with international shipping practises and takes into account global maritime treaties and international conventions. The maritime sector, in particular, may benefit greatly from taking a page out of the playbook of more established maritime nations by investing in human capacity building and infrastructure to increase trade and shipping.

The effects of a shift in Nigeria's foreign reserves on the country's domestic investment, inflation rate, and exchange rate were studied by Usman and Ibrahim (2010). Changes in the country's external reserves only affect FDI and exchange rates, but not domestic investment or inflation, according to a statistical analysis using a mixture of ordinary least square (OLS) and vector error correction (VEC) techniques. The findings point to the need for more comprehensive reserve management plans that prioritize reinvesting a larger share of oil export proceeds into the local economy. In addition to the currency rate and FDI, this study also took into account the importance of the external reserve. As external reserve is a significant contributor to GDP, we treated it as such in our analysis.

Adeleye et al. (2015) used net export (i.e. total export minus total import) and the Balance of Payment as surrogates for international commerce and the Gross Domestic Product as a proxy for economic development in Nigeria. Regression analysis with co-integration and error correction modelling approaches was used to determine the nature of the long-term connection between economic output and foreign trade.

Ijirshar et al. (2016), on the other hand, looked at the connection between Nigeria's external debt and economic development from 1981 to 2014. The research employed econometric as well as descriptive methods. Every variable in the model underwent a unit root test, revealing that none of them were stationary at the level of significance (level 5%), but that they did so after the first difference. According to the regression findings, the balance of payments has a considerable impact on GDP expansion in Nigeria.

3. Methodology

The research method is based on the Classical Growth Theory that was discussed earlier, which forms the theoretical foundation of the study. This research design is the expo-facto research design, relying on secondary data. The scope of the study spans the periods between 1985 and 2021. Secondary data was employed for this study, drawing from well-known and well-established publications such as the Central Bank of Nigeria Statistical bulletin. The main tool of model estimation and analysis is the Ordinary Least Squares (OLS) regression technique.

The econometric form of the model is stated as:

 $GDP = \beta_0 + \beta_1 STEX + \beta_2 BOP + \beta_3 BOT + \beta_4 EXR + u_t$

Where;

GDP is the dependent variable

STEX means Shipping Transport Expenses

BOP means Balance of Payment

BOT means Balance of Trade

EXR means Exchange rate

4. Findings and Discussion

This section deals with the analysis of the estimated model as well as other tests used for this study.

Table 4.1 – Pearson Correlation

Covariance Analy	Covariance Analysis: Ordinary					
	10lls: 50					
Correlation						
Probability	BOP	BOT	EXR	GDP	STEX	
BOP	1.000000					
BOT	-0.593173	1.000000				
	0.0036					
EXR	0.477574	-0.380081	1.000000			
	0.0246	0.0810				
GDP	0.390415	-0.273318	0.928859	1.000000		
	0.0724	0.2184	0.0000			
STEX	-0.517725	0.507436	-0.309482	-0.036486	1.000000	
	0.0136	0.0159	0.1610	0.8719		

Source: Author's Computation using E-views 12

From the above result, there is a positive linear relationship between GDP and balance of payment, and the value of the correlation is 0.390415, the strongest positive correlation value in the table is between GDP and exchange rate with a correlation coefficient of 0.928859.

The weakest positive correlation is that between BOP and GDP with a value of 0.390415. The strongest negative correlation is between balance of payment and balance of trade with a value of -0.593173, while the weakest negative correlation is between GDP and shipping/transport expenses with a value of -0.036486. However, econometric theory as seen in Gujarati (2004) proves that correlation does not imply causation, so a causal impact, using OLS will be considered.

Table 4.2 - Ordinary Least Squares

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Variable	Coefficient	Std. Error	t-Statistic	Prob.	
С	88874.54	16896.33	5.259991	0.0010	
BOP	0.052038	0.011729	4.436695	0.0069	
BOT	-0.001382	0.001659	-0.832991	0.4179	
EXR	595.5761	150.0072	3.970316	0.0012	
STEX	18.29508	7.612398	2.403327	0.0296	
R-squared	0.947569	Mean deper	ndent var	60914.13	
Adjusted R-squared	0.926596	S.D. depend	dent var	47233.01	
S.E. of regression	12796.90	Akaike info	criterion	22.00516	
Sum squared resid	2.46E+09	Schwarz cr	iterion	22.35231	
Log likelihood	-235.0568	Hannan-Qu	inn criter.	22.08694	
F-statistic	45.18152	Durbin-Wa	tson stat	1.521589	
Prob(F-statistic)	0.000000				

Dependent Variable: GDI
Method: Least Squares

Source: Author's computation using E-views 12

From the result, it can be seen that balance of payment has a positive impact on GDP as a unit increase in balance of payment leads to 0.052038 unit increase in GDP.

There is a negative impact on GDP by balance of trade as a unit increase in balance of trade causes GDP to fall by 0.001382 unit.

There is also a positive impact by exchange rate on GDP as a unit increase in exchange rate causes GDP to increase by 595.5761 unit.

STEX also impacts GDP positively as a unit increase in shipping expenses will cause GDP to increase by 18.29508 units.

The intercept value is 88874.54 implies that without all the independent variables used in this model or if they are held constant, then GDP will have positive value of 88874.54.

The test of individual significance of each of the independent variables was done using the t-test and their respective p-values. The t-ratios reveal that the coefficients of the intercept, shipping/transport expenses, balance of payments and exchange rate are statistically significant while the coefficient of balance of trade are not statistically significant.

The model has high explanatory and predictive powers as suggested by the R-squared and the adjusted R-squared values respectively. The R-squared value of 0.947569 suggests that about 94.8% of the systematic variations in GDP can be explained by balance of payment, balance of trade, exchange rate, and shipping/transport expense, while the remaining 5.2% are taken care of by the stochastic error term. The adjusted r-squared value of 92.7% shows that the model's predictive power is very good.

The goodness-of-fit model is further emphasized by the statistical significance of the F-statistics which is 45.18152 with a p-value of 0.0000, this means that all the explanatory variables taken together are significant.

The Durbin-Watson statistic of 1.521589 according to econometric theory suggests that there could be presence or absence of autocorrelation as the statistic falls within the grey region or region of indecision (Gujarati, 2004).

Breusch-Godfrey Serial Correlation Test

The Durbin-Watson statistic of 1.521589 suggests a state of indecision. Further test of serial correlation was carried out to check for the presence of serial correlation and the result is presented in table 4.3 below.

Table 4.3 – Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	3.548714	Prob. F(2,14)	0.4132
Obs*R-squared	2.613880	Prob. Chi-Square(2)	0.2863

Source: Author's computation using E-views 12

The Breusch-Godfrey test of serial correlation is based on the null hypothesis that the residuals are not serially correlated. From the above result, it can be seen that the p-value of the F-statistic is 41.32% which is above the 5% level of significance, thus we cannot reject the Breusch-Godfrey test null hypothesis which states that "there is no serial correlation". This further affirms the absence of serial correlation.

Table 4.4 – Johansen Co-Integration

No. of co-integrating equation	Trace Statistic	Maximum Eigen	Value	
	Trace Statistic	P-Value**	Max-EigenStatistic	P-Value*
None *	125.3415	0.0000	50.06389	0.0003
At most 1 *	75.27764	0.0000	33.82031	0.0069
At most 2 *	41.45732	0.0015	22.29718	0.0342
At most 3 *	19.16015	0.0134	17.98133	0.0123
At most 4	1.178819	0.2776	1.178819	0.2776
	1			

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's Computation using E-views 12

The trace and maximum eigen value tests produced the same result in that they both rejected the Johansen co-integration null hypothesis that there is no co-integrating relationship between the variables, additionally, both the trace and max-eigen tests indicate one cointegrating equations at 5% significance level. The exact identifying estimates of the Johansen Maximum likelihood estimates show the co-integrating coefficients normalized to the gross domestic product. The result of the above co-integration test shows that there is a long-run relationship between the variables.

5. Summary, Conclusion and Recommendations

The Johansen co-integration test revealed a long-term equilibrium relationship between balance of payment, balance of trade, shipping transport expenses and exchange rate.

The Regression test reveals that balance of payment impacts positively on gross domestic product, there is a positive impact by exchange rate on gross domestic product. From the test it was also discovered that balance of trade has a negative impact on gross domestic product and shipping transport expenses also has a negative impact on gross domestic product. In light of this, the null hypotheses are rejected.

The model has high explanatory and predictive powers as suggested by the R-squared and the adjusted R-squared values respectively. The Durbin-Watson statistic of the econometric theory suggests that there could be presence or absence of autocorrelation as the statistic falls within the grey region or region of indecision (Gujarati, 2004).

Conclusion

The impact of global shipping on Nigerian economy cannot be over-emphasized; a lot of studies and arguments have taken place over the years in order to ascertain the relationship between the global shipping and a nation's economic growth. While some have found a positive relationship or impact others have contradictory views.

This study is trying to ascertain the impact of global shipping on Nigerian economic growth, and it was reveals that balance of payment impacts positively on gross domestic product. There is a positive impact by exchange rate on gross domestic product. From the test it was also discovered that balance of trade has a negative impact on gross domestic product and shipping transport expenses also has a negative impact on gross domestic product.

Recommendations

As a result, the findings of this study highlight the necessity for the following recommendations:

- Because of the perceived weak institutional framework, it is necessary to enhance the institutional setting in order to increase the contribution
 of the balance of trade to the economy as a whole. Even though the shipping industry has been found to contribute positively to the economy
 in general, whether in terms of contribution to gross domestic product, balance of payments, exchange rate, or shipping transport expenses,
 one might be tempted to argue that more contributions would have been recorded if strong institutional settings had been in place.
- 2. Similarly, our country's inadequate transparency and corruption appear to be widespread, necessitating a determined effort to enhance performance.
- The activities of the Nigerian capital market should be made more transparent because this will increase investor trust and encourage people to invest.
- 4. Above all, policymakers must be consistent in their policy development and implementation.

Diagnostic Tests

Appendix A. Johansen Co-integration Test

A. Breusch-Godfrey Serial Correlation Test

F-statistic	3.548714	Prob. F(2,1	5)	0.4132
Obs*R-squared	2.613880	Prob. Chi-S	quare(2)	0.2863
Test Equation:				
Dependent Variable: RES	SID			
Method: Least Squares				
Presample missing value	lagged residuals set	to zero.		
Variable	Coefficient	Std. Error	t-Statistic	Prob.
	2.015.05	0.000.120	0.00000	0.01/2
BOP	-3.01E-05	0.000438	-0.068662	0.9462
BOL	0.000729	0.000494	1.477453	0.1617
EXR	-18.21481	18.78855	-0.969464	0.3488
STEX	-0.902393	1.795417	-0.502609	0.6231
RESID(-1)	0.700722	0.264813	2.646102	0.0192
RESID(-2)	0.305419	0.336977	0.906348	0.3801
R-squared	0.446421	Mean deper	ndent var	565.2822
Adjusted R-squared	0.169631	S.D. depend	lent var	3536.137
S.E. of regression	3222.290	Akaike info	criterion	19.26886
Sum squared resid	1.45E+08	Schwarz cri	iterion	19.66560
Log likelihood	-203.9575	Hannan-Qu	inn criter.	19.36232

Appendix B Johansen Co-integration Test

1.317902

Durbin-Watson stat

Trend assumption: Linear deterministic trend Series: GDP STEX BOP BOT EXR Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	
None *	0.918177	125.3415	69.81889	0.0000	
At most 1 *	0.815668	75.27764	47.85613	0.0000	
At most 2 *	0.672038	41.45732	29.79707	0.0015	
At most 3 *	0.593051	19.16015	15.49471	0.0134	
At most 4	0.057238	1.178819	3.841465	0.2776	

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.918177	50.06389	33.87687	0.0003
At most 1 *	0.815668	33.82031	27.58434	0.0069
At most 2 *	0.672038	22.29718	21.13162	0.0342
At most 3 *	0.593051	17.98133	14.26460	0.0123
At most 4	0.057238	1.178819	3.841465	0.2776

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

GDP	STEX	BOP	BOT	EXR	
-2.57E-05	0.000607	1.29E-06	1.05E-06	-0.013570	
3.97E-05	-0.003897	1.44E-07	6.23E-07	-0.031604	
-1.13E-06	-0.001213	6.04E-07	2.45E-08	-0.055525	
7.06E-05	0.001462	-2.77E-07	-1.15E-06	0.009595	
8.87E-05	-0.003913	6.26E-07	1.15E-06	-0.107445	
Unrestricted A	djustment Coefficients	s (alpha):			
D(GDP)	903.3182	-223.3302	-1534.982	-272.8080	-97.71020
D(STEX)	-20.02151	138.0608	59.30174	-82.38695	-57.86705
D(BOP)	-1805961.	38019.22	-544168.2	-495143.0	115179.3
D(BOT)	111964.5	-1033498.	794779.3	-269469.0	-110482.5
D(EXR)	-0.113845	-0.122808	2.079109	8.844115	0.025562
Normalized coi	ntegrating coefficients	s (standard error in paren	theses)		
GDP	STEX	BOP	BOT	EXR	
1.000000	-23.61994	-0.050356	-0.040872	528.4526	
	(15.5264)	(0.00512)	(0.00655)	(317.139)	
Adjustment coe	fficients (standard erro	or in parentheses)			
D(GDP)	-0.023196				
	(0.01412)				
D(STEX)	0.000514				
	(0.00224)				
D(BOP)	46.37529				
	(8.36116)				
D(BOT)	-2.875139				
	(11.4536)				
D(EXR)	2.92E-06				

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*\$11*b-D

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