

AN ASSESSMENT OF DEMAND FOR IMPORTS THROUGH THE VECM MODEL: EVIDENCE FROM PAKISTAN (1980-2014)

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Abstract

The aggregate demand function is derived by using an imperfect substitution approach on the basis of real Gross Domestic Product (GDP), real exchange rate, remittances and tariffs. The purpose of this paper is to ascertain the short run and the long run relationship between imports, real GDP, real exchange rate, remittances and tariffs, in Pakistan and also to find out the assessment of the demand for imports, on the basis of same research model of this study. Qualitative and quantitative approaches are applied to obtain the objectives of the study. The data for this study is collected from the websites of the Karachi stock Exchange (KSE), World Bank (WB) and State Bank of Pakistan (SBP) and several authorized published materials of different research scholars. The research covers a period from 1980-2014. The statistical

results exhibit no relationship between independent and dependent variables in the short run but stronger and significant relationship exists in the long run. Technology and knowledge are the major factors that can bridge the gap among dynamic, international and national trade.

Keywords: Import, Foreign Trade, Remittance, GDP, Tariff, Exchange Rate

INTRODUCTION

The study of demand analysis for imports is immensely important for the rational entrepreneurs and capital investors in Pakistan, as they can get information about the world's imports and exports climates. With increased knowledge about export and import climate and dynamic practices, Pakistan's economy will be able to generate maximum revenue with limited resource allocation and improve the economic indicators. The aggregate demand function is derived by using an imperfect substitution approach on the basis of real Gross Domestic Product (GDP), real exchange rate, remittances and tariff. The purpose of this paper is to ascertain the long run and the short run relationship between the imports, real GDP, real exchange rate, remittances and tariff, and also to find out the assessment of the demand for imports. This study will also help the policy makers in making decisions in framing industrial policy, expenditure switching and expenditure dampening to overcome persistent problems of the trade deficit with respect to real GDP's components.

The impact of tariffs can be either positive or negative for the economy. It changes with the level of development and capital investment. The negative effect can be the increase in the prices of imported goods and services due to imposition of tariffs, which ultimately leads to inflation and unemployment (Chaudhry, Ayyoub, and Imran, 2013)

The government institutions have to facilitate the small medium enterprises (SMEs) and large scale industries for the maximum production of goods and services. As a result, the local and foreign investors can buy domestic goods and services at reliable prices, and in return they will also sell these at affordable prices to the domestic consumers. The purchasing power in the local market can be sustained under the limited sources (Qayyum, 2006) with such activities. Furthermore, the dynamic investment packages of domestic industries enable them for global competition (Washington, and Kilmer, 2002). These sorts of supporting activities may establish the new era for economic development that may increase job opportunities and play a role in decreasing inflation (Ayyoub, Chaudhry, and Farooq, 2011).

Pakistan's economy has experienced a high rate of brain drain in the last several decades, which raises the inflow of remittances dramatically (Chaudhry, Qamber, and Farooq, 2012). The remittances are a much budgeted source of foreign exchange for economic

development. Thus, several developing countries are trying to maximize the benefits of resultant remittances from labor migration. Evidence points to the fact that Pakistan's economy is reaping benefits from huge amount of remittances from overseas Pakistanis. The Government can raise inflow of remittances by ensuring certainty, convenient processing and profitability. These objectives can be achieved by establishing an import substitution production process to compete with the level of foreign competition.

Furthermore, the imports are affected by sudden shocks of real exchange rate. The importers want to avoid excessive appreciation and depreciation of currency. After September 11, 2001 the higher inflow of remittances and foreign exchange have strengthened the rupee, so sudden shocks cannot affect exports of Pakistan. But in the last four years, investors tried to avoid export to the international market because of an appreciated exchange rate. In aggregate demand the exchange rates are always overlooked due to exports, which are the smallest part of four real GDP components, a relatively big change is required to contribute big change in real GDP (Samuel, And Nurina, 2015).

Problem Statement

Many studies have been carried out to study the outcome of an assessment of demand for imports. Researchers found out positive results in nominal GDP, stock market and foreign direct investment (FDI). However, in Pakistan no such study is carried out to study the outcome of an assessment of demand for imports. Therefore, research is required to study how assessment of demand affects imports in Pakistan.

LITERATURE REVIEW

Theoretical Background

Economic theory says that like consumption and saving, imports are also an increasing function of domestic income. Therefore, estimation results are in agreement with economic theory and so are the relative price variable. But the less significant nature of the price variation shows that the demand for imports is inelastic because of the immense need of the most diverse.

Empirical Evidence

Domestic production of SMEs plays a vital role in the enhancement of the economic turnover of a country. The producers of goods and services can offer a more reliable platform for the buying and selling of the goods and services within the limited boundary of purchasing power. Investors can produce maximum goods and services and increase turnover of the overall goods both for

domestic and foreign markets, which can increase the GDP of a country (Khan, and Sajjid, 2005).

Economic activities are the reflection of mortal human behavior, and human resources play a defining role in making things possible in terms of economic development (Roubini, and Setser, 2004). Unemployment is one of the major problems for the world economy. In fact, during the period of 1973 the unemployment rate was 3.15% in Pakistan, with the passage of time it rose to 3.7% in year 1980. After that year it declined and was 2.56% in the year 1989. After that, all empirical studies views that the unemployment rate moved upwards as it was reaching 5.35% in 2010 (Wajid, 2012).

This paper investigates the impact of input demand for real GDP's components which may help investors in decision making to choose an investment opportunity. Remittances can be a source of Investment Avenue. In Asian countries, Pakistan is among the poorest and least developed country. The manufacturing, remittances and agriculture sector helps in growing semi industrialized economy. The GDP is growing by an average of 5 percent per year since 2005, but not enough to cope up with fast population growth. The things went worst with political instability, corruption, law and order situation which discourage private and foreign investment (Rizvi, Mohsin, and Zakaria, 2012). These all factors discourage Pakistan domestic business activity and the economy tends to rely more on imports. At government level, this paper contributes to an idea which industry to work upon. For raising business activity government must impose tariff on capital goods and services in order to sustain growth of domestic industries. It will boost the economy, reduce unemployment, inflation and help in raising a better standard of living in Pakistan (Wajid, 2012).

Economic yield is dependent on the world to the re-engineering process of business and enterprises with the trade flavor of globalization (Habibi, 2010). Inflation is constantly associated with rising of price variability of goods and services, that leads uncertain condition in future capital investment and profitability of the industries. As a result, the foreign and domestic investors will be afraid to make a huge capital investment in the stock market (Ayyoub, Chaudhry, and Farooq, 2011).

Pakistan is a victim of deteriorating trade since few decades. In order to maintain the trade surplus total exports must be greater than total imports. The imports of fixed and capital goods play a vital role in long term economic growth and productivity of developing economies (Ullah.,Khilji, and Hussain, 2013).

State Bank of Pakistan (SBP) has the authority to ensure price stability and obtain target level of inflation as set by the government to achieve economic growth. The central bank of Pakistan use money supply as an intermediate target (Qayyum, 2006). Monetary policy tools are used to

support the growth process in a country. The consequences of an expansionary monetary policy are increase in the real prices of goods. The real price level regulates by the change in price and output supply through the dynamic operation of the real balance of capital investment (Fatukasi and Awomuse, 2009).

Promotion of export could lead to direct economic development either through encouragement of manufacturing of exportable commodities or tailored addition of real foreign exchange that enable import of capital input assets. Furthermore, such act of trade may enhance the efficiency of capital utilization (Osei, 2012). In the financial markets, foreign exchange is considered as the unique element of demand (Thaver 2012). Dynamic quality reflects higher level prices of goods that have an insignificant impact on the demand, but higher quality also raises the margins on consumer's utility and as a consequence also has significant impact on demand (Priede, 2012).

In this era of knowledge and development experience, the international trade is being more flexible with technological adaptation as the main factor (Rua, 2008). Every country wants to achieve strongest economic indicators economic goals within limited sources. World Trade Organization (WTO) is also removing the barriers and restrictions of trade globally. The WTO is also playing a dynamic role in removing national and international trade barriers and restrictions (Chapagain, and Hoekstra, 2008).

METHODOLOGY

Research Approach

Quantitative approaches are applied to obtain the objectives of the study. This study has used secondary sources of data which was collected from the websites of the Karachi stock Exchange (KSE), World Bank (WB) and State Bank of Pakistan (SBP). The study covers a period from 1980 to 2014. This time period is selected for analysis because it is the most relevant and recent period that has a bearing on the assessment of demand for imports in Pakistan and also because of data availability, as data for later periods was not readily available from secondary sources.

Variables Description

Imports

The imports are the part of Gross domestic product. Countries imports capital goods and commodities which countries cannot produce competitively at low cost or don't have resources, raw material or technology to produce them domestically. For example, oil is imported from OPEC countries.

Real Gross Domestic Products

The Inflation adjusted real gross domestic product expresses the amount of goods and services produced in the economy in terms of base year.

Official Exchange Rate

The official exchange rate is a period average rate to determine price of a currency in terms of US Dollar.

Remittances

Remittances are a process of sending money electronically via transfer or mail to fulfill an obligation.

Tariffs

Tariffs are used as trade barriers; it can be a tax or service charges or insurance charges or restrictions imposed by governments to discourage imports and to encourage domestic productivity of particular sector of an economy.

Data Analysis

Data is analyzed through E-Views Statistical analysis Packages. To check the unit root, Augmented Dickey Fuller (ADF) test is applied to know the stationary and non-stationary results of the study. Furthermore, cointegration analysis model is applied to know the cointegration between variables. VECM is applied to identify the long term relationship of independent variables with dependent variable.

Econometric Models

$$\begin{aligned}
 D(\text{TARIFF}) = & C(1) * (\text{TARIFF}(-1) - 4020.46297215 * \text{REMITTANCES}(-1) + \\
 & 3998.16040466 * \text{REALGDP}(-1) + 2017.12262747 * \text{IMPORTS}(-1) + \\
 & 0.717407930159 * \text{EXCHANGERATE}(-1) - 63.8594547731) + C(2) * D(\text{TARIFF}(-1)) + \\
 & C(3) * D(\text{TARIFF}(-2)) + C(4) * D(\text{REMITTANCES}(-1)) + C(5) * D(\text{REMITTANCES}(-2)) + \\
 & C(6) * D(\text{REALGDP}(-1)) + C(7) * D(\text{REALGDP}(-2)) + C(8) * D(\text{IMPORTS}(-1)) + C(9) * D(\text{IMPORTS}(-2)) \\
 & + C(10) * D(\text{EXCHANGERATE}(-1)) + C(11) * D(\text{EXCHANGERATE}(-2)) + C(12)
 \end{aligned}$$

$$\begin{aligned}
 D(\text{REMITTANCES}) = & C(13) * (\text{TARIFF}(-1) - 4020.46297215 * \text{REMITTANCES}(-1) + \\
 & 3998.16040466 * \text{REALGDP}(-1) + 2017.12262747 * \text{IMPORTS}(-1) + \\
 & 0.717407930159 * \text{EXCHANGERATE}(-1) - 63.8594547731) + C(14) * D(\text{TARIFF}(-1)) +
 \end{aligned}$$

$$C(15)*D(TARIFF(-2)) + C(16)*D(REMITTANCES(-1)) + C(17)*D(REMITTANCES(-2)) + C(18)*D(REALGDP(-1)) + C(19)*D(REALGDP(-2)) + C(20)*D(IMPORTS(-1)) + C(21)*D(IMPORTS(-2)) + C(22)*D(EXCHANGERATE(-1)) + C(23)*D(EXCHANGERATE(-2)) + C(24)$$

$$D(REALGDP) = C(25)*(TARIFF(-1) - 4020.46297215*REMITTANCES(-1) + 3998.16040466*REALGDP(-1) + 2017.12262747*IMPORTS(-1) + 0.717407930159*EXCHANGERATE(-1) - 63.8594547731) + C(26)*D(TARIFF(-1)) + C(27)*D(TARIFF(-2)) + C(28)*D(REMITTANCES(-1)) + C(29)*D(REMITTANCES(-2)) + C(30)*D(REALGDP(-1)) + C(31)*D(REALGDP(-2)) + C(32)*D(IMPORTS(-1)) + C(33)*D(IMPORTS(-2)) + C(34)*D(EXCHANGERATE(-1)) + C(35)*D(EXCHANGERATE(-2)) + C(36)$$

$$D(IMPORTS) = C(37)*(TARIFF(-1) - 4020.46297215*REMITTANCES(-1) + 3998.16040466*REALGDP(-1) + 2017.12262747*IMPORTS(-1) + 0.717407930159*EXCHANGERATE(-1) - 63.8594547731) + C(38)*D(TARIFF(-1)) + C(39)*D(TARIFF(-2)) + C(40)*D(REMITTANCES(-1)) + C(41)*D(REMITTANCES(-2)) + C(42)*D(REALGDP(-1)) + C(43)*D(REALGDP(-2)) + C(44)*D(IMPORTS(-1)) + C(45)*D(IMPORTS(-2)) + C(46)*D(EXCHANGERATE(-1)) + C(47)*D(EXCHANGERATE(-2)) + C(48)$$

$$D(EXCHANGERATE) = C(49)*(TARIFF(-1) - 4020.46297215*REMITTANCES(-1) + 3998.16040466*REALGDP(-1) + 2017.12262747*IMPORTS(-1) + 0.717407930159*EXCHANGERATE(-1) - 63.8594547731) + C(50)*D(TARIFF(-1)) + C(51)*D(TARIFF(-2)) + C(52)*D(REMITTANCES(-1)) + C(53)*D(REMITTANCES(-2)) + C(54)*D(REALGDP(-1)) + C(55)*D(REALGDP(-2)) + C(56)*D(IMPORTS(-1)) + C(57)*D(IMPORTS(-2)) + C(58)*D(EXCHANGERATE(-1)) + C(59)*D(EXCHANGERATE(-2)) + C(60)$$

Where,

AG = Import, RGDP = Real Gross Domestic Product, OEXR = Official Exchange Rate, REM= Remittances, Tarff = Tariff, € = Stochastic or Error Term, B1-β2 = coefficient of exogenous variable.

Research Hypothesis

For this study “An Assessment of Demand through Import”. The hypothesis has been made as;

H1: There is significant long run and short run impact of remittance, real GDP, import, exchange rate on tariff.

Ho1: There is no long run and short run impact of remittance, real GDP, import, exchange rate on tariff.

H2: There is significant long run and short run impact of tariff, real GDP, import, exchange rate on remittance.

Ho2: There is no long run and short run impact of tariff, real GDP, import, exchange rate on remittance.

H3: There is significant long run and short run impact of tariff, remittance, import, exchange rate on real GDP.

Ho3: There is no long run and short run impact of tariff, remittance, import, exchange rate on real GDP

H4: There is significant long run and short run impact of tariff, remittance, real GDP, exchange rate on real imports.

Ho4: There is no long run and short run impact of tariff, remittance, real GDP, exchange rate on real imports.

H5: There is significant long run and short run impact of tariff, remittance, real GDP, import on exchange rate.

Ho5: There is no significant long run and short run impact of tariff, remittance, real GDP, import on exchange rate.

ANALYSIS AND FINDINGS

Table 1: The estimation of Unit Root Test (At Level)

Variables	T-Statistics	Prob. *
Imports	2.659147	1.0000
Official Exchange Rate	-2.633742	0.0966
Real GDP	-3.892934	0.0054
Remittances	-2.980228	0.0472
Tariff	-3.819378	0.0073

Table: 1 unit root test at level’s statistical results is showing that there are only a few variables that have probability valueless than 0.05 such as Real GDP 0.0054, Remittances 0.0472 and Tariff 0.0073; these all statistical results are showing the stationary outcomes and significant

relationship of the variables. The other variables prob. value is greater than 0.05 which is showing the insignificant effect and non-stationary status of the variables. As the value of the variables are defining here Import 1.0000 and Real Exchange rate 0.0966, that showing the non-stationary outcomes and insignificant relationship between variables.

Table 2: At First Difference

Variables	T-Statistics	Prob. *
Imports	-1.121873	0.0000
Official Exchange Rate	-7.579058	0.0000
Real GDP	-7.770616	0.0000
Remittances	-7.619243	0.0000
Tariff	-2.295534	0.0000

Table: 2 at the first difference analysis of all variables the statistical results showing the stationary outcomes, Prob. value of all contain variables are less than 0.05 that showing the significant relationship in between all variables. The values are like Import is 0.000, Official Exchange rate is 0.000, Real GDP is 0.000, Remittances is 0.000 and Average Tariff is 0.000.

Table 3: The Estimation of Co-Integration Vectors
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Prob.**
None *	0.570698	73.07730	69.81889	0.0268
At most 1	0.490481	46.01824	47.85613	0.0737
At most 2	0.371254	24.44099	29.79707	0.1824
At most 3	0.206785	9.592111	15.49471	0.3134
At most 4	0.065826	2.178977	3.841466	0.1399

Statistical analysis of Trace test indicates that there is one co-integration equation found at the Prob. value 0.0268 which is less than 0.05.

Table 4: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	Critical Value	Prob.**
None *	0.570698	27.05905	33.87687	0.2602
At most 1	0.490481	21.57725	27.58434	0.2429
At most 2	0.371254	14.84888	21.13162	0.2996
At most 3	0.206785	7.413134	14.26460	0.4415
At most 4	0.065826	2.178977	3.841466	0.1399

Statistical analysis of Max-Eigen indicates that there is no any co-integration found between variables, that prob. value is greater than 0.05.

Table 5: Vector Error Correlation Model (VECM)

Dependent Variable	Coefficient	Std. Error	t-Statistic	Prob.	Results
Tariff	0.003974	0.004167	0.953578	0.3523	No Long Run Impact
Remittance	0.016985	0.014799	1.147717	0.2653	No Long Run Impact
Real GDP	0.024375	0.013878	1.756353	0.0951	Long Run Impact
Import	-0.014895	0.012383	-1.202846	0.2438	No Long Run Impact
Real Exchange Rate	0.033933	0.024110	1.407412	0.1755	No Long Run Impact

Note: only Real GDP has long run relation with Tariff, Remittance, Import, and Real Exchange Rate*

In the above table econometrics analysis outcomes are showing that the only Real GDP has long run relation with tariff, remittance, Import and real exchange rate in Pakistan context.

Table 6: Wald Test (Short run Relationship)

Dependent Variable	Independent Variable	Probability Value	Results
Tariff	Remittance	0.8378	No Short Run Impact
	Real GDP	0.6293	No Short Run Impact
	Import	0.8386	No Short Run Impact
	Real Exchange Rate	0.6293	No Short Run Impact

Note: Tariff has no short run relation with Remittance, Real GDP, Import and Real Exchange Rate*

Table 7: Wald Test (Short run Relationship)

Dependent Variable	Independent Variable	Probability Value	Results
Remittance	Tariff	0.8550	No Short Run Impact
	Real GDP	0.4283	No Short Run Impact
	Import	0.1312	No Short Run Impact
	Real Exchange Rate	0.6293	No Short Run Impact

Note: Remittance has no short run relation with Tariff, Real GDP, Import and Real Exchange Rate*

Table 8: Wald Test (Short run Relationship)

Dependent Variable	Independent Variable	Probability Value	Results
Real GDP	Remittance	0.1274	No Short Run Impact
	Tariff	0.6624	No Short Run Impact
	Import	0.1236	No Short Run Impact
	Real Exchange Rate	0.0668	No Short Run Impact

Note: Real GDP has no short run relation with Remittance, Tariff, Import and Real Exchange Rate*

Table 9: Wald Test (Short run Relationship)

Dependent Variable	Independent Variable	Probability Value	Results
Import	Remittance	0.1558	No Short Run Impact
	Real GDP	0.1538	No Short Run Impact
	Tariff	0.1076	No Short Run Impact
	Real Exchange Rate	0.8341	No Short Run Impact

Note: Import has no short run relation with Remittance, Real GDP, Tariff and Real Exchange Rate*

Table 10: Wald Test (Short run Relationship)

Dependent Variable	Independent Variable	Probability Value	Results
Real Exchange Rate	Remittance	0.8618	No Short Run Impact
	Real GDP	0.8676	No Short Run Impact
	Import	0.4033	No Short Run Impact
	Tariff	0.5419	No Short Run Impact

Note: Real Exchange Rate has short run relation with Import*

**Real Exchange rate has no short run relation with Remittance, Real GDP and Tariff *

Above tables of econometrics analysis are showing that the only Real Exchange rate has short run relation with the imports in the context of Pakistan data.

CONCLUSION AND RECOMMENDATIONS

In this research study, we applied the econometric analysis approach and self-observation of empirical studies to obtain the factual results of the study. The study found that the only real GDP has the long run relationship with imports, remittances, real exchange rate and tariff in the context of Pakistan. On the other hand real exchange rate has short run relationship with only imports and there is no relationship found with remittances, tariffs, and real GDP. Over all, research model was not fit. Demand of imports is a very crucial factor in balancing the national income of any economy. Strategies should be made effectively such that identifying the import of such capital goods or raw materials that are beneficial to the development of domestic production, positive effects on employment and positive opportunities to replace imports. The policies made for domestic and adjustment significant impact on import. The research shows that the main part of revenue generating is the import that is why researcher suggests that the fiscal discipline must be encouraged by Government in a country like Pakistan.

Recommendation are the Government fiscal discipline must be encouraged whenever country's like Pakistan that is experiencing reduction in the importation of goods and services, there is need to develop strategies for economic balance to reach breakeven. And there is a need to facilitate the local SMEs as they can produce the maximum goods and services and provide on reliable cost to the consumers

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