

The Determinants of Import Demand: a Review of International Literature

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Abstract: This paper provides a review of the theoretical and empirical literature on the key determinants of import demand in developing and developed countries. On the whole, the findings from the studies reviewed in this paper show that the determinants of import demand differ from country to country and over time, and depend on the proxies used to measure import demand. Moreover, the findings confirmed that the key drivers of import demand depend on whether the income variable is used as a single variable or is disaggregated into different components. In general, the majority of the studies found that income and relative import price are the key determinants of import demand – although the nature of the impact of these factors differs from country to country.

Keywords: Foreign Trade; Import demand; Determinants

JEL Classification: F1

1. Introduction

The empirical literature on the relationship between imports and economic growth confirm that imports are an important component of economic growth (see Mishra, 2012; Mazumdar, 2001). According Malhotra and Meenu (2009), cited in Mishra (2012), imports are the source of raw materials that are not available domestically, as well as the source of technology and capital goods, which are crucial for raising productive capacity in the economy. Increased importation of consumer products encourages domestic import-substituting firms to innovate and restructure themselves in order to compete with foreign products (Kim *et al.*, 2007).

Furthermore, imports form part of foreign trade, which enables countries, especially poor countries and those with constrained production capacity, to access capital goods produced in richer countries and provide greater opportunities for people by improving their welfare (Mutreja and Ravikumar, 2014; Samuelson and Nordhaus,

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2002, cited in Mashra, 2012). There is, however, a conflicting view in this regard, which states that high import demand has a negative impact on a country's balance of payments. The proponents of this view advocate for import substitution and fair trade, because they believe that free trade may be harmful to economic development, especially in developing countries (Chani *et al.*, 2011). The lacking consensus on the importance of imports for economic growth has triggered great interest on the key drivers of import demand in different countries. This has led to an increase in empirical studies on this subject (see, among others: Bathalomew, 2010; Uzunoz & Akcay, 2009; Chen, 2008).

The aim of this study is, therefore, to review existing theoretical and empirical literature on the key determinants of import demand in different countries. The study is divided into four sections with section 2 covering the theoretical literature review, section 3 presenting the empirical literature, while section 4 concludes the study.

2. Theoretical Literature

The major theories that explain the import demand function include the imperfect substitution theory, the Keynesian theory and the neo-classical theory. These theories emphasise the role of income, price and exchange rates in the determination of trade (Hong, 1999). Using three different approaches, namely, Marshallian, Chamberlainian and Cournot, the imperfect substitution theory emphasises the importance of the effect of price and income on import demand (Bathalomew, 2010). The Marshall condition assumes constant returns to scale at a firm's level, but increasing returns at industry level (Shuaibu & Fatai, 2014). The Chamberlainian approach assumes that an industry consists of many monopolistic firms and new firms entering the market with differentiated products in order to eliminate industry-level monopoly profit. The Cournot approach assumes a market structure with few imperfectly competitive firms that take each other's output as given (Shuaibu & Fatai, 2014; Bathalomew, 2010). In accordance with the conventional demand theory, in the imperfect substitution theory, the consumer is postulated to maximise utility subject to a budget constraint. In other words, the import demand function represents the income of the importing country, price of the imported good and the price of domestically produced goods (Goldstein and Khan, 1985). Similarly, the Keynesian theory explains the role of macroeconomic factors in determining import demand. It explains import demand as a function of income and price, while assuming that employment is variable and that capital movements are adjustable (Englama *et al.*, 2013). It recognises and allows for the implications of changes in expenditure on output for balance-of-payments equilibrium (Johnson, 1976). The Neoclassical theory is associated with the Heckscher Ohlin (H-O) framework, which was developed based on the work of Ricardo (1817). The theory assumes that countries differ by factors of production, thereby importing goods for which they

have the least factor endowment (Englama *et al.*, 2013). In other words, the theory suggests that import demand is also determined by the cost at which the importing country produces a particular commodity relative to its trading partner. The comparative advantage is focused on the effects of relative import price on the volume and direction of international trade (Shuaibu & Fatai, 2014). The theory is not concerned with the effects of changes in income on trade, as the employment is assumed to be fixed and output is given (Bathalomew, 2010).

3. Empirical Literature

3.1. The Determinants of Import Demand in Developing Countries

Sinha (1997) estimated the import demand function for Thailand using annual data, covering the period from 1953 to 1990. The estimated model specified import demand as a function of income and relative import prices. To estimate this, the study used the Johansen's co-integration approach and ordinary least squares method. The long-run and short-run results showed that aggregate import demand is explained by income, and is price inelastic. In 1999, Pattichis carried out a similar study for Cyprus for the period from 1975 to 1994. The study employed the bounds test approach and the results suggested that relative import price and income are the major determinants of import demand. For Korea, Mah (2000) used the bounds test to examine the determinants of import demand for information technology products over the period from 1980 to 1997. The study specified import demand as a function of relative import price and income, and the results showed that the impact of income is insignificant, while the relative price is the most significant factor. Anaman *et al.* (2001) studied the determinants of aggregate import demand for Brunei Darussalam over the period from 1964 and 1997. The study modelled import demand as a function of real effective exchange rate, real GDP and population. Findings from the ordinary least squares suggested that all of the specified determinants have a significant impact on import demand. However, population appeared to be the most influential determinants of import demand.

For Iran, Abrishami and Mehrara (2002) examined the determinants of import demand for consumer, intermediate and capital goods over the period from 1971Q2 to 1999Q1. To estimate this, they used the bounds test and the results showed that the parallel market exchange rate is the main determinant of import demand. Lim and Kim (2002) examined the effect of economic and political changes on import demand in North Korea. The study expressed import demand as a function of income (gross national income) and price index (relative import price). To estimate this, the study applied the Johansen's co-integration method on annual data covering the period from 1962 to 1992. The results showed that non-market factors and income are the most important determinants of imports, while the relative import price variable was found to be not a significant determinant of imports. Dutta and Ahmed

(2004) conducted a similar study for India using the Johansen's co-integration model on a time series data for the period from 1971 to 1995. They estimated import demand as a function of relative import price, import liberalisation and gross domestic product. The findings showed that the income variable is the most influential determinant of imports in India. Furthermore, it showed that import demand is less sensitive to changes in price, which reflects on the non-competitive nature of India's imports (Dutta & Ahmed, 2004). With regard to import liberalisation, the study found that the effect on import demand is very little. Hussain (2007) examined the long-run elasticities of import demand for Jordan using the Engle-Granger test of co-integration on a time series data covering the period from 1980 to 2004. The study expressed import demand as a function of real income and relative import price. The results showed that real income and relative import price are important determinants of import demand.

Chen (2008) conducted a similar study for Taiwan using the bounds test co-integration approach on a time series data covering the period from 1976Q1 to 2004Q1. The study expressed import demand as a function of income and relative import price. The results suggested that import demand responds to changes in income and relative import price. Furthermore, it was found that the effect of income is greater in the short run than in the long run. Using the double logarithmic-linear model, Uzunoz and Akcay (2009) examined the determinants of import demand for wheat in Turkey over the period from 1984 to 2006. The study specified the import demand for wheat as a function of income per capita, domestic prices, the Turkish lira-US dollar exchange rate, lagged import, the production value of wheat, domestic demand and the trend factor. The findings suggested that domestic wheat prices are the main determinant of import demand for wheat.

Agbola (2009) estimated aggregate short-run and long-run import demand functions for the Philippines over the period from 1960 to 2006. The estimated model included private consumption, investment, government expenditure, export of goods and services, import price index as explanatory variables. To test this, the study employed the Johansen's co-integration approach and the results indicated that import demand and these factors are co-integrated in the long run. Bathalomew (2010) estimated the aggregate import demand function for Sierra Leone using the Autoregressive Distributed Lag (ARDL) over the period from 1977 to 2008. Following the imperfect substitute theory, the study expressed the import demand as a function of relative import price, policy dummy for trade liberalisation and income for the importing country. The relative import price was measured as a ratio of import price to price for domestic goods, while income was split into private expenditure, public expenditure, investment expenditure and exports. The bounds test results suggested that there is a co-integration between imports and its determinants. Furthermore, the study found that in the short run, private expenditure is the most influential factor, followed by government expenditure, exports and investment

expenditure. In the long run, government expenditure, exports and consumption expenditure were found to be the major determinants of Sierra Leone's aggregate import demand, while investment expenditure appears to have no significant effect. The relative import price and trade liberalisation policy have no significant effect both in the short run and in the long run. Bathalomew (2010) argues that the significant influence of expenditure components on import demand signifies the ineffectiveness of the exchange rate policy in influencing import demand. The author advocates for the use of expenditure reducing policies, rather than the exchange rate as they appear to be the most effective.

Hoque (2010) examined the effects of trade liberalisation policy on imports in the case of Bangladesh. To test this, the study employed the bounds test approach with annual time series data from 1972 to 1973 and 2004 to 2005. In the estimated model, the study included income and relative import price as explanatory variables. The results suggest that trade liberalisation policy has a significant impact in the short run but not in the long run. Furthermore, the results showed that both income and relative import price have a significant effect in the short run and in the long run. Narayan and Narayan (2010) re-estimated the import demand function for Mauritius and South Africa by applying the bounds test on a time series data covering the period from 1969 to 2008. The study specified import demand as a function of domestic income and relative import price, and the results showed evidence of a long-run relationship between import demand and the estimated determinants in both countries, with income being the most significant factor.

Dube (2011) estimated import demand function for CIBS countries (Brazil, China, India and South Africa) using the bounds test for co-integration approach for the period from 1970 to 2007. In the study, the traditional approach was adopted, which expresses import demand as a function of GDP and relative import price, and four other models were modified. The first model modified the traditional approach by including a dummy variable, which captures structural changes. The second model replaced GDP with GDP less exports. The third model expressed import demand as a function of structural changes and disaggregated expenditure, which is expenditure on investment, consumption expenditure and exports. The fourth model replaced GDP in the first model with national cash flow. The findings showed that for all four countries and specified models, import demand is highly responsive and elastic to changes in income in the long run. Moreover, a positive insignificant link between import demand and relative import price was found. This implies that import demand in these countries is not highly responsive to changes in relative import price. The results on import demand were contrary to the traditional theory, which specifies a negative relationship between relative import prices and import demand. The study attributes this to the level of a country's economic development and type of goods that these countries import. For example, in the case of India, inputs account for a larger percentage of Indian good and imports for capital good are necessary for a

country's growth. Moreover, Dube (2011) argued that in the case of South Africa, imports in the sectors that are important for economic growth will not be responsive to changes in relative import price as the country continues to import these goods regardless of an increase in prices.

For China, Fukumoto (2012) estimated the disaggregate import demand functions for capital goods, intermediate goods, and final consumption goods over the period from 1988 to 2005. To estimate this, the study used the bounds test and specified the import demand for these groups of goods as a function of GDP, disposable income, aggregate consumption, aggregate investment, and aggregate exports. The findings suggested that import demand for capital goods is influenced by gross domestic product (GDP) and aggregate investment, intermediate goods are determined by exports and import demand for consumption goods are determined by GDP.

Jiranyakul (2013) studied the impact of real exchange rate uncertainty on import demand in Thailand using the bounds test over the period from July 1997 to December 2011. In the estimated model, real income and real exchange uncertainty were also used as an explanatory variable. The results showed that income- and exchange rate uncertainty have an impact on import demand. It was found that the exchange rate uncertainty have a negative effect on Thailand's imports. For Pakistan, Khan *et al.* (2013) modified the traditional demand function by disaggregating real domestic income into consumption expenditure, investment expenditure and export. The authors argued that disaggregating the import demand helps to deal with the aggregate bias-related issues. To empirically estimate the long-run relationship between import demand and its determinants for the country under study, the study used data covering the period from 1981 to 2009, and employed the Engle-Granger and bounds tests co-integration methods. The results confirmed a long-run relationship between import demand and its determinants. They reveal a positive link between import demand and expenditure components, with the exception of export expenditure, which is adversely linked to import demand. Furthermore, the findings from this study show that the investment expenditure component is the dominant determinant of import demand in Pakistan. A negative link between relative import price and import demand was also found.

Budha (2014) examined the role of expenditure components on Nepal's imports from India. The study also used the bounds test on annual data for the period from 1975 to 2011. The estimated model included private expenditure, public expenditure, investment expenditure and spending on exports and relative import price and trade liberalisation policy as potential determinants of import demand. The findings showed that private consumption is a major determinant of Nepal's import demand from India, while government was found to have no significant impact. Unexpectedly, the investment and export expenditure was found to have a negative effect on Nepal's imports from India, while the relative import price and trade

liberalisation appear to be positively related to import demand. According to Budha (2014), the unexpected positive relationship between the relative import price and imports signifies a lack of substitutes for Nepal's imports from India. Furthermore, the author argues that Nepal can reduce its trade deficit with India by stimulating expenditure for investment purposes and enhancing the country's export base in order to reduce imports. This can be achieved by adopting an expenditure switching policy from private spending and also adopting monetary and fiscal policies (Budha, 2014).

In 2015, Baek studied Korea's import demand behaviour using the bounds test over the period from 1989Q1 to 2014Q2. The results confirmed a long-run relationship between imports and income, and relative import prices. In addition, income was found to be the most influential factor for Korea's imports in the short run and in the long run, while prices only have a significant impact in the short run.

Table 1. Summary of the Reviewed Empirical Literature on the Determinants of Import Demand in Developing Countries

Author(s)	Title	Country	Tested Variables	Methodology	Major determinants
Sinha (1997)	Determinants of Import Demand in Thailand	Thailand	Income and relative import price	Johansen's co-integration approach and Ordinary Least Squares method	Relative import price and income
Mah (2000)	An empirical examination of the disaggregated import demand of Korea—the case of information technology products	Korea	Relative import price and income	Bounds Testing Approach	Relative import price

Anaman <i>et al.</i> (2001)	Analyses of Determinants of Aggregate Import Demand	Brunei Darussalam	Real effective exchange rate, real income and population	Ordinary Least Squares	Real effective exchange rate, real income and population
Abrishami and Mehrara (2002)	Demand for Disaggregate Imports	Iran	Parallel market exchange rate	Bounds Testing Approach	Parallel market exchange rate
Lim and Kim (2002)	Economic and Political Changes and Import Demand Behaviour	North Korea	Income (Gross National Income) and relative import price	Johansen co-integration approach	Income
Dutta and Ahmed (2004)	An Aggregate Import Demand Function for India	India	Relative import price, import liberalisation and Income	Johansen co-integration approach	Income
Hussain (2007)	Estimating long-run elasticities of Jordanian import demand function	Jordan	Income and relative import price	Engle - Granger test of co-integration	Income and relative import price
Chen (2008)	Long-run aggregate import demand function in	Taiwan	Income and relative import price	Bounds Testing Approach	Income and relative import price (in the short run)

	Taiwan: an ARDL bounds testing approach				
Uzunoz and Akcay (2009)	Factors Affecting the Import Demand of Wheat in Turkey	Turkey	Income per capita, domestic prices, exchange rate, productio n value of wheat, domestic demand and trend factor	Double logarithmic- linear model	Domestic wheat prices
Agbola (2009)	Aggrega te Imports and Expendi ture Compon ents in the Philippi nes: An Econom etric Analysi s	Philippin es	Private consumpti on, investmen t, governme nt expenditur e, export of goods and services, import price	Johansen's co-integration approach	Expenditure components and relative import price (in the long run).
Bathalom ew (2010)	An Econom etric Estimati on of the Aggrega te Import Demand Functio n for	Sierra Leone	Relative import price, policy dummy for trade liberalisati on and expenditur e	Bounds Testing Approach	Private expenditure, government expenditure, exports and investment expenditure (in the short run). Government expenditure, exports and

	Sierra Leone		components		consumption expenditures (in the long run)
Emran and Shilpi (2010)	Estimating Import Demand Function in Developing Countries: A Structural Econometric Approach with Applications to India and Sri Lanka	India and Sri Lanka	Relative import price, private spending, ratio of real domestic exchange rates to real foreign exchange rates	Johansen's co-integration method	Relative import price, private spending, the ratio of real domestic exchange rate to real foreign exchange rates
Yusop (2010)	Impacts of Trade Liberalisation on Aggregate Import in Bangladesh: An ARDL Bounds Test Approach	Bangladesh	Income and relative import price	Bounds Testing Approach	Income and relative import price
Narayan and Narayan (2010)	Estimating Import and Export Demand	Mauritius and South Africa	Domestic income and relative import price	Bounds Testing Approach	Domestic income and relative import price

	Elasticities for Mauritius and South Africa				
Dube (2011)	Import Demand Functions: Evidence from CIBS	CIBS countries	Income, income less exports, dummy variable for structural changes, disaggregated expenditure components	Bounds Testing Approach	Income, relative import price
Fukumoto (2012)	Estimation of China's Disaggregate Import Demand Functions	China	Capital goods, intermediate inputs, and final consumption goods	Bounds Testing Approach	Income, aggregate investment, exports
Jiranyakul (2013)	Exchange Rate Uncertainty and Import Demand	Thailand	Real income and real exchange uncertainty	Bounds Testing Approach	Income and real exchange rate uncertainty
Khan <i>et al.</i> (2013)	An Estimation of Disaggregate Import Demand Function for Pakistan	Pakistan	consumption expenditure, investment expenditure and export	Engle-Granger and Bounds tests co-integration methods	consumption expenditure, investment expenditure and export

Budha (2014)	The Role of Expenditure Components in Nepal's Import from India	Nepal	private expenditure, public expenditure, investment expenditure and spending on exports and relative import price and trade liberalisation	Autoregressive Distributed Lag approach	Private consumption, relative import price, trade liberalisation, investment and exports expenditure
Baek (2015)	Empirical Evidence on Korea's Import Demand Behaviour Revisited	Korea	Income, and relative import price	Bounds Testing Approach	Income and relative import price

3.2. The Determinants of Import Demand in Developed Countries

Abbott and Seddighi (1996) examined the long-run effects of macroeconomic components on aggregate import demand for the United Kingdom. The estimated model included macroeconomic components (private and public consumption expenditure, expenditure on investment goods, including gross domestic fixed capital formation, and stock building and expenditure on exports) and relative import price. To estimate this, the study employed the Johansen's multivariate co-integration approach and annual data covering the period from 1972 to 1990. The results suggested that both the expenditure components and relative import price are significant determinants of import demand. Furthermore, the results revealed that the level of the importance of the different components of income differs, and private expenditure appeared to be the most significant factor. For Greece, Sinha and Sinha (2000) conducted a similar study using the Johansen's co-integration method and

time series data covering the period from 1951 to 1992. The estimated model included relative import price and income as independent variables. The results showed that the demand for imports is highly income-elastic and price-inelastic in the long run.

Chinn (2003) tested the existence of a relationship between import demand and its determinants for the United States of America over the period from 1975 to 2001 using the Johansen's co-integration approach. The results showed that exchange rates and real income have no significant impact on import demand. Using the bounds test approach, Bahamani and Kara (2003) estimated the import demand function for nine industrial countries, namely, Australia, Austria, Canada, France, Germany, Denmark, Italy, Japan and the USA. The study covered the period from 1973Q1 to 1998Q2. It was found that, in the long run, income has a significant influence on imports. For France, Italy, the Netherlands, the UK and the US, Tsionas and Christopoulos (2004) estimated the import demand function over the period from 1960 to 1999. In the study, import demand was specified as a function of relative import price and income. To estimate this, ordinary least squares and Johansen's co-integration approach were used, and the results confirmed significant effects of relative import price and incomes, and short-run effects from temporary shocks.

Arize and Osang (2007) looked at the determinants of import demand, focusing on the impact of foreign exchange reserves in Latin America. They applied Johansen's co-integration approach on quarterly data covering the period from 1973Q2 to 1999Q1. The estimated model included foreign exchange reserves, income and relative import price index as potential determinants. The findings showed that the three variables play a significant role towards import demand. Moreover, it was found that the foreign exchange reserve is the least significant determinant when compared to the income and relative import price index. Alexiou (2010) examined the effects of government expenditure on import demand for Greece using the bounds test on time series data covering the period from 1970 to 2007. The results suggest that public expenditure has a positive effect on imports positively.

Table 2. Summary of the Reviewed Empirical Literature on the Determinants of Import Demand in Developed Countries

Author(s)	Title	Country	Tested Variables	Methodology	Major determinants
Abbott and Seddighi (1996)	Aggregate Imports and Expenditure Components in the UK: An Empirical Analysis	United Kingdom	Export, government consumption, investment and private consumption and relative import price	Johansen multivariate co-integration approach	Disaggregated expenditure components and relative import price
Sinha and Sinha (2000)	An Aggregate Import Demand Function for Greece	Greece	Relative import price and income	Johansen's co-integration method	Relative import price and income
Chinn (2003)	Doomed to Deficits? Aggregate U.S. Trade Flows Re-examined	United States of America	Exchange rates and real income	Johansen co-integration approach	Exchange rates and real income have no significant impact on import demand
Bahamani and Kara (2003)	Relative Responsiveness of Trade Flows to a Change in Prices and Exchange rate	Australia, Austria, Canada, France, Germany, Denmark, Italy, Japan and the USA.	Income and relative import price	Bounds Testing Approach	Income (in the long run)
Tsionas and Christopoulos (2004)	International Evidence on Import Demand	France, Italy, the Netherlands, the UK, and the US	Income and relative import price	Ordinary least Squares and Johansen's co-integration approach	Relative import price, incomes, and short-run effects from

					temporary shocks
Arize and Osang (2007)	Foreign Exchange Reserves and Import Demand: Evidence from Latin America	Latin America	Foreign exchange reserves, income and relative import price	Johansen's co-integration approach	Foreign exchange reserves, income and relative import price
Alexiou (2010)	An Empirical Note on Government Expenditure and Imports: an ARDL Co-integration Investigation	Greece	Public expenditure	Bounds Testing Approach	The results suggest that public expenditure have a positive effect on imports positively

4. Conclusion

In the study, the theoretical and empirical literature survey on the determinants of import demand are provided. The reviewed theories of import demand include the imperfect substitution, Keynesian and neo-classical theories. The theories, however, do not give us certainty in terms of the determinants of a country's import demand. The empirical evidence also provides no consensus, as the findings from the different studies vary. On average, the findings in cases of developing and developed countries, and the combination of the two groups of countries, show that disaggregated income and relative import price are the major determinants of import demand. The variances in the results can be attributed to the different methodologies used, study periods, proxies used to measure the explanatory variables, and the characteristics of the different countries that were studied. Most of the studies modified the income variable by disaggregating it into different components and they modified the traditional import demand function to include exchange rates, trade liberalisation, exchange rate volatility, foreign reserves and population as additional explanatory variables.

5. References

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