Determinants of External Demand for Textiles and Garments of Sri Lanka

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Abstract

This paper evaluates the determinants of export demand for textiles and garments of Sri Lanka, using quarterly data from 1999 to 2013. A long run relationship is found between export demand and explanatory variables. The empirical results reveal that the depreciation of the real exchange rate does not increase the demand for Sri Lanka's textiles and garments, as this industry is found to be heavily dependent on imported raw materials. World GDP which proxies the income of buyers is also a major determinant of export demand. It is also found that the GSP plus (Generalised System of Preferences-plus) and MFA (Multifiber Arrangement) had a positive and significant impact on the demand for textiles and garments of Sri Lanka as they provided duty free access to major textile and garment markets such as USA and EU particularly when the global financial crisis and debt crisis had a negative impact on world demand for textiles and garments. It is surprising to observe that trade openness which proxies the level of trade restrictions between Sri Lanka and the rest of the world shows a negative relationship with export demand for textiles and garments from Sri Lanka.

JEL Classification: C51, F14, F53

Key Words: *External Demand, Textiles & Garments, Co-integration, Export Volume, Error Correction Model, Vector Auto Regressions.*

1. Introduction

As one of the key drivers of Sri Lanka's economy, the export oriented textiles and garments industry has played a major role during the five decades of its existence. The history of ready-made garment exports can be traced back to the 1960s, where the first garment exports from Sri Lanka were to Russia. After 1977 under open economic policies, the export oriented ready-made garment industry grew at a rapid pace. Under the Multifibre Arrangement (MFA)[2/] quota regime which was active from 1974 till 1994 and the Agreement on Textiles and Clothing (ATC)[3/] which was active from 1995 till 2004 as a replacement for MFA, Sri Lanka became an attractive destination for the textiles and garments manufacturing. Owing to the investment incentives offered by the government, coupled with the low cost of production due to the availability of a highly skilled and trainable workforce at lower cost, a high level of foreign investments were attracted in to the export oriented garment industry. However, on January 1, 2005, the worldwide system of textile and apparel quotas was discontinued leading to a major shift in global trade and production trends. Industries in the textiles and clothing sector, which provide the backbone to many developing economies, were faced with many challenges afterwards as they had to operate in a quota free environment amidst intense competition and increasing cost of production. In 2005, the Generalized System of Preferences (GSP) plus system came into operation. The scheme had three core objectives, namely, poverty reduction, promoting sustainable development and promoting good governance. Fifteen countries including eleven Latin American countries, Moldova, Georgia, Mongolia and Sri Lanka benefited from the GSP plus scheme. Sri Lanka benefited much from the scheme as the GSP plus extended a greater proportion of concessions to readymade garments to enter into European Union (EU) market. This is evidenced as the readymade garment exports from Sri Lanka to EU increased from 36.2 per cent of total garment exports in 2005 to 48.8 per cent in 2008, while the share of Sri Lanka's readymade garment exports to USA decreased from 59.4 per cent in 2005 to 45.2 per cent in 2008 in the absence of the MFA. However, the removal of GSP plus in 2010 brought many challenges to Sri Lanka as the country had to compete with fourteen other GSP plus recipients who also obtained the duty free access to the EU market and other competitors such as India, who already had preferential and free trade agreements with the EU.

2/ An international trade agreement on textile and clothing that was active from 1974 till 1994. The agreement imposed quotas on the amount that developing countries could export in the form of yarn, fabric and clothing to developed countries. This provided for the application of selective quantitative restrictions when surges in imports of particular products caused, or threatened to cause, serious damage to the industry of the importing country.

3/ In 1995, the MFA was replaced by the WTO Agreement on Textiles and Clothing (ATC), which set out a 10-year transitional process for removal of the quotas set under MFA. For this study, the abbreviation MFA is used to mean both the MFA and the ATC.

As per available data, between 2005 and 2011, the value of global apparel exports rose by 48 per cent. In 2011, the value of global apparel exports were US dollars 412 billion. As per Aid for Trade and Value Chains in Textiles and Apparel (2013), the top ten developing countries' (Table 1) suppliers account for around 58 per cent of global apparel exports, with China taking 37 per cent of global apparel exports. Since 2000, China has topped the list of apparel exporters to the USA and EU. Sri Lanka has also joined the top fifteen apparel exporters to the USA since 1980 and EU since 2000 (Table 2 and Table 3).

Table 1 : Developing Country Suppliers and the Global Apparel Markets

Exporter	2005 USD Mn	2011 USD Mn	Percentage change (2005–2011)	% of total exports in 2011
China	74,162	153,773	107%	37.00%
Bangladesh	6,889	19,938	189%	4.80%
India	8,738	14,364	64%	3.50%
Turkey	11,833	13,947	18%	3.40%
Viet Nam	4,680	13,153	181%	3.20%
Indonesia	4,958	8,045	63%	1.90%
Mexico	7,305	4,637	-36%	1.10%
Malaysia	2,478	4,567	84%	1.10%
Pakistan	3,603	4,549	26%	1.10%
Cambodia	2,210	4,050	83%	1.00%
World Total	278,000	412,000	48%	

Source : WTO database

Table 2 : Top 15 Apparel Exporters to the United States

Rank	1970	1980	1990	2000	2008	2011
1	Japan	Hong Kong	Hong Kong	China	China	China
2	Hong Kong	Other Asia	China	Mexico	Vietnam	Vietnam
3	Other Asia	Korea	Korea	Hong Kong	Indonesia	Indonesia
4	Korea	China	Other Asia	Korea	Mexico	Bangladesh
5	Italy	Mexico	Philippines	Dominican Rep.	Bangladesh	Mexico
6	Philippines	Philippines	Italy	Honduras	India	India
7	Canada	Japan	Dominican Rep.	Indonesia	Honduras	Honduras
8	United Kingdom	Italy	Mexico	Other Asia	Cambodia	Cambodia
9	Mexico	India	India	Bangladesh	Thailand	Italy
10	Israel	Singapore	Indonesia	Thailand	Italy	Thailand
11	Germany	France	Singapore	India	Pakistan	Pakistan
12	France	Macao	Malaysia	Philippines	Hong Kong	El Salvador
13	Spain	Dominican Rep	Thailand	Canada	**Sri Lanka**	Malaysia
14	Austria	**Sri Lanka**	Bangladesh	Italy	El Salvador	**Sri Lanka**
15	Singapore	United Kingdom	**Sri Lanka**	El Salvador	Malaysia	Nicaragua

Source : Aid for Trade and Value Chains in Textiles and Apparel (2013)

Table 3 : Top 15 Apparel Exporters to the European Union

Rank	2000	2004	2008	2011
1	China	China	China	China
2	Turkey	Turkey	Turkey	Turkey
3	Hong Kong	Bangladesh	Bangladesh	Bangladesh
4	Tunisia	India	India	India
5	Bangladesh	Tunisia	Tunisia	Tunisia
6	India	Morocco	Morocco	Morocco
7	Morocco	Hong Kong	Vietnam	Vietnam
8	Indonesia	Indonesia	Indonesia	Pakistan
9	Thailand	Pakistan	**Sri Lanka**	**Sri Lanka**
10	Korea	Thailand	Pakistan	Indonesia
11	Pakistan	**Sri Lanka**	Thailand	Thailand
12	**Sri Lanka**	Vietnam	Hong Kong	Cambodia
13	Vietnam	Korea	Switzerland	Malaysia
14	Malaysia	Switzerland	Malaysia	Switzerland
15	Mauritius	Malaysia	Cambodia	Macedonia

Source : Aid for Trade and Value Chains in Textiles and Apparel (2013)

The garment industry in Sri Lanka has become an important driver of the economy in terms of its contribution to industrial production, foreign exchange earnings and direct and indirect employment generation. Being the country's largest industry, it accounts for nearly 25 per cent of industrial production and 40 per cent of export earnings while generating nearly 300,000 of direct employment opportunities and nearly 600,000 of indirect employment opportunities. The USA and the EU are the largest destinations for garment exports of Sri Lanka, with the USA accounting for around 42 per cent of exports while the share of EU is around 46 per cent. However, a gradual improvement is observed in textiles and garment exports to other countries such as Canada, Japan, South Korea and China over the period showcasing the efforts taken by the industry for market diversification. Over the years, Sri Lanka's textiles and garments industry performed well and Sri Lanka's strength in textile and garment manufacturing lies in its ability to produce high quality garments at competitive prices, combined with an industry structure which is flexible and uniquely capable of servicing the leading international brands. By utilising specialised ethical production processes acquired by the industry to cater to niche markets, the textile and garment industry targets an increase in exports to more than US dollars 5 billion by 2015.

The highly dynamic nature of the global apparel industry produces many challenges and opportunities such as frequently changing consumer preferences, the requirement of

intermediaries in the industry, intense competition and new technology that have to be faced by the firms. As garments are closely related to fashion industry it is necessary to be flexible as well as be able to meet the deadlines of the buyers. Consumers have become extremely price and quality sensitive as they are offered lot of choices by competitors. As explained by Fonseka and Fonseka (2004), when making the purchasing decision buyers seek value for money. This includes design, neatness, and excellence of workmanship for the price.

Accordingly, identifying the determinants of external demand for textiles and garments would be useful for pricing and other related decision making. This research intends to estimate the determinants of external demand for textiles and garments of Sri Lanka.

The paper is structured as follows. Section 2 presents the facts about the textiles and garments industry in Sri Lanka, Section 3 reviews the findings of previous empirical studies while Section 4 describes the theoretical framework and model, Section 5 discusses the methodology and empirical results and Section 6 discusses the findings followed by the conclusion and policy recommendations in Section 7.

2. Textiles and Garments Industry in Sri Lanka

As individual countries, the USA and the UK have historically been the largest buyers of Sri Lankan apparel through the decades while the USA and the EU been the largest markets. Being the main foreign exchange earner, Sri Lanka's textiles and garments industry has faced many challenges and opportunities (Figure 1). However, it has emerged as a major driver of the economy.

Figure 1 : Textile and Garments Exports of Sri Lanka

Sources : Sri Lanka Customs, Central Bank of Sri Lanka

Figure 2 : Textiles and Garment Industry: Import Dependency Ratio (%)

Sources : Sri Lanka Customs, Author's own calculations
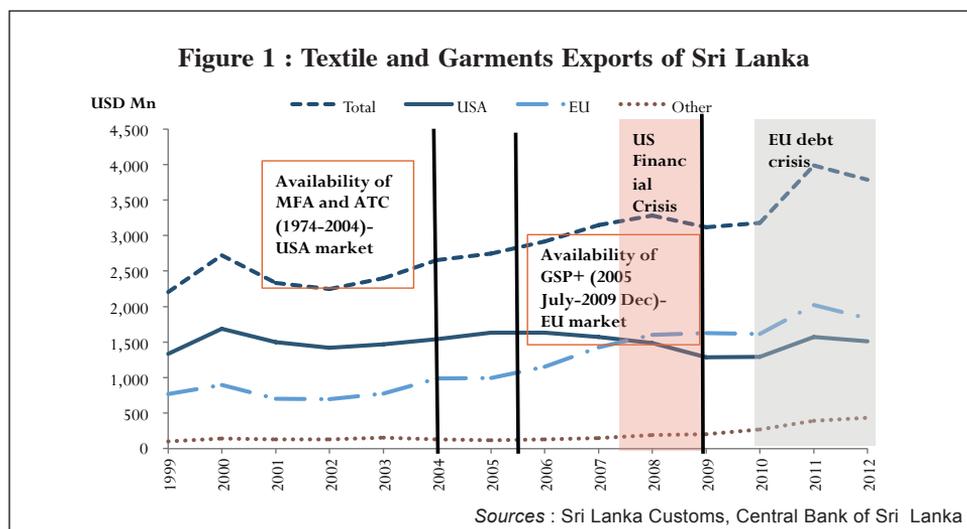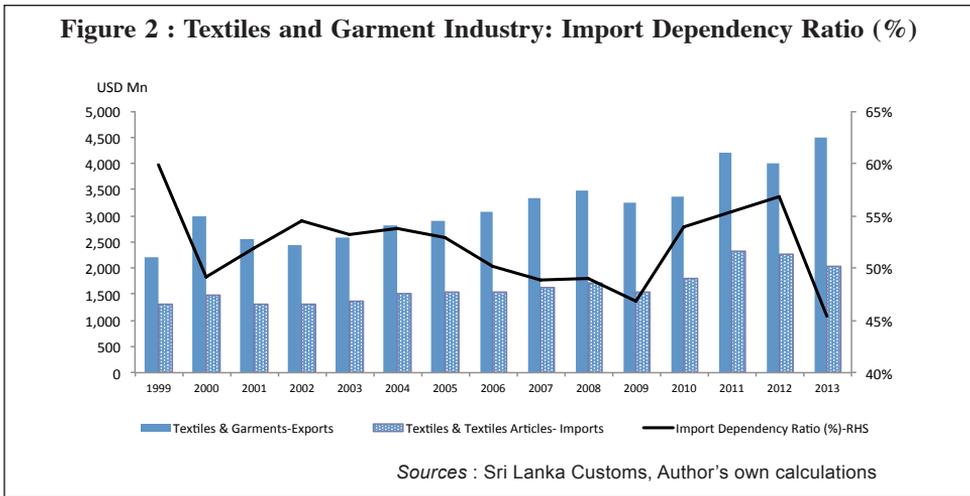
Initially, Sri Lanka's garment industry was engaged in the assembling of garments. However, it has now moved towards positioning itself as a 'fashion' industry. The continuous investment on research and development coupled with the acquisition of expert knowledge has helped the industry to move to high quality, fashionable products. Traditionally, the garment industry was found to be heavily dependent on imported raw materials (Figure 2). However, having recognised the importance of backward integration, the industry is taking continuous efforts to reduce the import dependency ratio, thereby increasing the value addition of the industry through local production of raw materials.

Generally, the buyers placing garment orders have the choice of selecting fabric and accessories from any part of the world to be brought to Sri Lanka for conversion into finished apparel. Further, there is an advantage in sourcing garments from Sri Lanka due to its location, which provides the shortest shipping times to Europe. At present, Sri Lanka is producing garments for reputed international brands. However, most of these items are handled via buying offices. The maintenance of safety and other international standards with regard to labour has helped the textile and garment industry in Sri Lanka to face the strong competition in international markets. Apart from these, the availability of a highly literate and skilled workforce has contributed for the rapid development in the garment industry.

However, Sri Lanka's garment industry faces many challenges. The high cost of production led by the high labour cost is a major challenge for Sri Lanka's garment industry. High utility charges and transportation costs also had adversely affected the competitiveness of the industry. These difficulties have coupled with delays and inefficiencies in documentation preparation, processing and inland transportation and handling.

Even though the industry has taken steps to improve backward integration, it is still at the initial levels. In order to be competitive in the fast growing and rapidly changing international fashion industry which has a very short life span, producers have to lower the lead time by lowering the procurement and production cycles. Hence backward integration would lower the procurement and production cycles by increasing domestic sourcing of fabrics and other accessories.

3. Review of Literature

The determinants of export demand, especially for small economies, have been extensively studied. Understanding these determinants is essential in policy decision making with regard to external trade. Even though, the literature is available at aggregate level examining the determinants of export demand, at the disaggregate level would give more insights into the formulation of policies. This paper contributes to the literature by adding empirical evidence of the determinants of export demand for Sri Lanka's key export, *i.e.*, textiles and garments.

Several studies have estimated import and export functions to ascertain the determinants of exports and imports elasticities. In most of the studies, when formulating the export demand function, factors such as real income of foreign trading partner/s, price of exports (or relative price), nominal (or real) exchange rate, exchange rate volatility, population and dummy variables to represent structural changes were considered.

Moreover, many recent studies which focused on the export and import demand functions suggested that income is the principal determinant of exports and imports. In the study carried out by Haideret *et al*. (2011) estimating the import and export demand functions revealed that income is the principal determinant of foreign trade while exchange rate also plays a major role in determining the demand for exports and imports.

Similarly, Siddiqi *et al*. (2012) examined the determinants of export demand of textiles and the clothing sector of Pakistan using annual data for the period 1971–2009 using the Johansen and Juselius methodology of maximum likelihood cointegration technique. As discussed in their paper, world income is the major determinant of export demand for textiles and the clothing sector of Pakistan. Trade openness which is used as a proxy of trade restrictions is the second major determinant of export demand. Other variables such as the price of textiles in the export market and the exchange rate were also found to be significant determinants of export demand.

In order to evaluate the prospects of a free trade area in the SAARC[4/] region by member nations, a study was carried out by Suhail and Sreejesh (2011) using a multiple regression model to analyse the export demand function. In this study, the impact of bilateral trade agreements on export performance of SAARC nations was analysed with special reference to the India-Sri Lanka bilateral free trade agreement. Accordingly, it was found that variables such as GDP and population were significant with positive coefficients while price was not a significant determinant of exports of India and Sri Lanka.

The impact of exchange rate volatility on the export quantity has also been analysed in the literature. As discussed in Clark *et al*. (2004), the volatility of exchange rate was found to have a negative impact on trade volumes. This was further studied by Jantarakolica and Chalermsook (2012) using panel data analysis comparing nine products in the textile and garment sector for the period from first quarter of 2000 to the first quarter of 2011. They found that in the case of Thailand, exports of textile and garment products were significantly influenced by the export price as well as the exchange rate. Accordingly, higher exchange rate volatility caused a decline in export volumes.

Hooy and Choong (2010) conducted a similar study to examine the impact of exchange rate volatility on export demand within SAARC members. Data on bilateral exports on a monthly basis from January 1980 to January 2010 for four members of SAARC (*i.e.*, Bangladesh, India, Pakistan and Sri Lanka) for which data are available were analysed using a multivariate asymmetric CCC-GARCH model applying a bound testing approach on the standard trade model framework. The results showed that foreign income, real exchange rate and exchange rate volatility affected exports in the region. Further, it was found that real exchange rate volatility had a significant and negative impact on the export demand of most of the SAARC countries.

As empirical studies suggest for small economies like Sri Lanka and Bangladesh the export demand is price inelastic. According to Choudhury (2001), there is evidence that for small economies, the devaluation of the currency does not have a significant impact on the demand for exports. Therefore, the exchange rate itself did not influence the demand decisions thus requiring some non-price policies to stimulate external demand.

A summary of empirical evidence on export determinants is given in Appendix I.

4/   The South Asian Association for Regional Cooperation (SAARC) is an economic and political organization of eight countries in Southern Asia namely India, Bangladesh, Pakistan, Sri Lanka. Nepal, Maldives, Bhutan and Afghanistan.

4. Theoretical Framework and the Model

As explained by Dornbusch (1988) and Hooper and Marquez (1993), there are two main determinants of export demand. The first is foreign income, which shows the purchasing power of the foreign buyer. This implies that an increase in real GDP of the importing country would increase the volume of exports. This is known as the income effect. The second major determinant is the relative price. The appreciation of the real exchange rate will cause domestic goods to become less competitive than foreign goods, thereby increasing imports while decreasing exports. This is referred to as the price effect. Apart from that, as explained in the literature, exchange rate fluctuations, level of trade restrictions and preferential arrangements on bilateral and regional basis, national attitude towards foreign goods, taste, quality and technology are other determinants of export demand. In order to identify the most representative set of explanatory variables which determine the external demand for textiles and garments of Sri Lanka, prior empirical studies were reviewed. This paper broadly followed the approach of Siddiqi *et al*. (2012) and Hooy and Choong (2010). Such determinates are export price, exchange rate, world real GDP/world income, trade openness and the availability of preferential access to markets *e.g.* MFA (Multifibre Arrangement), GSP + (Generalised System of Preferences).

Although all these variables would better represent the external demand function for textiles and garments of Sri Lanka, as a result of the possibility of loss of degrees of freedom due to a higher number of variables with fewer numbers of observations, and considering the suitability and the relevance to the Sri Lankan economy, selected variables were used for this study: importing country's income, real exchange rate and level of trade restrictions are being used as independent variables whereas two dummy variables are introduced in order to accommodate the effect of major changes in the consumption pattern of buyers during the sample period if any. As Khan and Ross (1977) and Salas (1982) suggest, in modeling the export demand function, the log-linear specification is preferred to a liner function. Therefore, the log-linear specification is used in the study.

This study consists of quarterly data from the first quarter of 1999 to the first quarter of 2013. The dependent variable is the natural log of Sri Lanka's external quantity index (*lndemand*) for Textiles and Garments as a proxy for the external demand for textiles and garments. In order to incorporate the income effect on external demand, this study uses the log of world GDP (*lnwgdp*). As the real exchange rate represents Sri Lanka's competitiveness and as it captures the change in exchange rate, which is important for a highly imported input dependent industry, the study uses the log of quarterly average Real Effective Exchange Rate (REER 24[5/]) index (*lnreer*24). Further, trade openness

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[5/] REER 24 index is prepared by the Central Bank of Sri Lanka (CBSL) for 24 trading partners and competitor countries. The use of export price index in place of REER 24 does not change results of the study significantly.

is used to proxy the level of trade restrictions between Sri Lanka with the rest of the world (*lntopen*). Trade openness is measured by the sum of total exports and imports as a percentage of gross domestic production of Sri Lanka. An increase in trade openness indicates a decrease in trade restrictions with the rest of the world. The effect of MFA and GSP+ on export demand for textiles and garments is captured by the dummy variable 1 (*D*1). Further, during the sample period, consumers were faced with some challenges such as the global financial crisis and debt crisis. Dummy variable 2 (*D*2) is presented to capture the changes in consumption pattern due to such challenges. Data sources and data descriptions are given in Appendix II).

The study uses the following export demand function incorporating the factors described above:

$$lndemand_t = \alpha + \beta_1\ lnwgdp + \beta_2\ lnreer24 + \beta_3\ lntopen + \beta_4 D1 + \beta_5 D2 + \varepsilon_t \qquad (1)$$

where,

$$
\begin{aligned}
\alpha &= \text{constant} \\
lnwgdp &= \text{Natural log of world GDP} \\
lnreer24 &= \text{Natural log of Real Effective Exchange Rate index (REER, (2010=100))} \\
lntopen &= \text{Natural log of trade openness} \\
D1 &= \text{a dummy variable to capture the effect of MFA and GSP+} \\
D2 &= \text{a dummy variable to capture the effect of financial crisis and debt crisis} \\
\varepsilon &= \text{error term}
\end{aligned}
$$

An increase in income level of buyers is expected to increase the real demand for goods and services due to the improvement in purchasing power. Hence, a positive relationship is expected between world income and quantity demanded for textiles and garments. As explained by Haider *et al*. (2011), the real effective exchange rate is used as an indicator of the country's external competitiveness, where an appreciation of REER indicates loss of competitiveness while a depreciation of REER indicates an increase in the competitiveness. Therefore, the expected sign of the coefficient of the real effective exchange rate is negative. Trade openness is used as a proxy for the trade restrictions. An increase in trade openness indicates a reduction in trade restrictions between Sri Lanka and the rest of the world. Therefore, a positive relationship is expected between trade openness and the quantity of external demand for textiles and garments. The dummy variable 1 (*D*1) is expected to have a positive coefficient as the availability of MFA or GSP+ would certainly enhance the competitiveness of Sri Lanka's textiles and garments resulting in an increase of trade volume. Dummy variable 2 is expected to have a negative impact on the real income of foreign countries and thus on external demand.

5. Econometric Methodology and Empirical Results

Several methods have been proposed for testing co-integration in the literature. As explained in Siddiqi *et al*. (2012), Johansen and Juselius multivariate analysis is more appropriate in determining demand factors when prices are endogenously determined. Further, as explained by Kalyoncu and Huseyin (2006), when the study involves more than two variables, the Johansen and Juselius method of co-integration analysis provides more robust results.

The time series properties of the economic variables were examined using unit root tests such as the Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) test. Since the data is quarterly, lags up to 4 are included for correction of autocorrelation as proposed by the Akaike Information Criteria (AIC). These unit root tests are performed on both level and first differences. Summary results of the ADF test and PP test are given in Table 4 below.

Table 4 : Results of Unit Root Test

Variable	Indicator	ADF		PP	
		Level	1st Difference	Level	1st Difference
Indemand	Statistic	-1.4741	-7.2686	-10.1277	-74.1405
	P-Value	0.5389	0.0000	0.0000	0.0001
Inreer24	Statistic	-0.3271	-5.8649	-0.5620	-5.8897
	P-Value	0.9137	0.0000	0.8703	0.0000
Inwgdp	Statistic	-1.4395	-4.1708	-1.7142	-4.1344
	P-Value	0.5564	0.0017	0.4187	0.0019
Intopen	Statistic	-2.7967	-4.5880	-2.8155	-19.8144
	P-Value	0.2050	0.0029	0.0625	0.0001
*D*1	Statistic	-1.6841	-7.2313	-1.4900	-8.2713
	P-Value	0.4337	0.0000	0.5314	0.0000
*D*2	Statistic	-0.8640	-7.4162	-0.8640	-7.4162
	P-Value	0.7924	0.0000	0.7924	0.0000

At levels, the null hypothesis of "the series has a unit root" is failed to reject at 5% significant level. Accordingly, all the variables are non-stationary at levels or all these variables are I(1) variables.

As empirical evidence suggests, a Johansen (1995) multivariate co-integration analysis is carried out to check whether these I(1) variables are co-integrated in the long-run.

Table 5 : Co-integration Test Results

Null Hypothesis	λ- Trace	λ- Trace 5% Critical Value	λ- Max	λ- Max 5% Critical Value
r = 0	105.74	95.75	42.86	40.08
r ≤ 1	62.89	69.82	25.15	33.88

As per the results shown above (Table 5), both the Trace statistics and Maximum Eigenvalue statistics confirm the existence of one co-integrating vector between the variables. Once the existence of one co-integrating relationship is established, the next step is to estimate the Error Correction Model to identify the normalised co-integrating coefficients with respect to export demand of textiles and garments. Table 6 shows the results of the Error Correction Model.

Table 6 : Normalised Co-integrating Coefficients

	lndemand	*lnwgdp*	*lnreer*24	*lntopen*	*D*1	*D*2
β Coefficient	1	-0.3926	-0.9962	0.5498	-0.2590	0.1157
Standard Errors		0.1884	0.3130	0.1793	0.0660	0.0882
T-Statistics		-2.0836*	-3.1828*	3.0660*	-3.9255*	1.3120

* Significant at 5% level

Accordingly, the t-statistics confirm that, *lnwgdp* (world GDP), *lnreer*24 (REER 24 index), *lntopen* (trade openness with rest of the world) and *D*1 (GSP+ and MFA) are significant at 5% level. As per the results, the expected signs of variables other than REER (*lnreer*24) and trade openness hold true. However, as these two variables are significant at 5% level, it could not be dropped from the model.

Table 7 : Error Correction Model

	D(*lndemand*)	D(*lnwgdp*)	D(*lnreer*24)	D(*lntopen*)	D(*D*1)	D(*D*2)
α Coefficient	-0.4916	0.0053	0.0312	-0.3023	0.8271	-0.1685
Standard Errors	0.1498	0.0111	0.0485	0.1741	0.3845	0.2620
T-Statistics	-3.2817*	0.4760	0.6427	-1.7361	2.1510*	-0.6431

* Significant at 5% level

The coefficient of Error Correction Term of D(*lndemand*) as shown above, is -0.4916. This indicates that 49% of the deviation from the equilibrium is corrected within a quarter, taking around 2 quarters to reach the equilibrium.

Accordingly, the determinants of external demand for Sri Lanka's Textiles and Garments can be specified as follows:

$$lndemand_t \ = \ 1.44 + 0.39 \ lnwgdp + 0.99 \ lnreer24 - 0.55 \ lntopen + 0.26D1 - 0.12D2 \qquad (2)$$

As per the estimated equation above, a 1 per cent increase in the real GDP of buyers would increase the export demand for Sri Lanka's textiles and garments by 0.39 per cent, while a 1 per cent appreciation (increase) in REER would increase the export demand for textiles and garments by 0.99 per cent and demand for textiles and garments will decline by 0.55 per cent when trade openness is increased by 1 per cent. As shown by the findings, MFA and GSP+ had a positive effect of 0.26 per cent on demand. The occurrence of financial and debt crisis had a negative effect of 0.12 per cent on the demand for textiles and garments of Sri Lanka in the world market.

The residual tests were carried out for the model and it was found that the model is free from autocorrelation and heteroskedasticity. Results of alternative models which were carried out to check the robustness of the study is given in the Appendix III. As an alternative to REER 24, export price index for textiles and garments was used in the alternative analyses. Accordingly, it is also found that the income of foreign buyers has a positive and significant impact on the demand for textiles and garments while price of textiles and garments has a negative and significant impact. Trade openness shows a negative relationship with the demand for textiles and garments in all three alternative analyses.

6. Discussion of Findings

Findings of the study confirm that the variables, income of foreign buyers and availability of preferential arrangements such as MFA and GSP+ have a positive effect on the external demand for textile and garments as expected. The results indicate that the income elasticity of world demand for Sri Lanka's textiles and garments is 0.39 per cent. Similar results were found in previous studies, for instance, Hooy and Choong (2010) which estimates the export demand of SAARC economies for the sample period 1980–2010 reports 0.26 per cent of average income elasticity of export demand. However, the trade openness and REER 24 have an opposite impact on demand to what is expected. Therefore, it is necessary to examine the causes for such results and to examine whether it is true in real circumstances. When the facts are analysed, as shown in figure 3, it is evident that both total exports and imports increased during the period under consideration, showing increasing integration with the rest of the world. However, trade openness measured as a percentage of GDP is decreasing due to the fact that, the GDP of Sri Lanka has risen

more than the increase in international trade. As the results of the study suggest, trade openness has decreased during the period under consideration even though the demand for textiles and garments increased showing a negative relationship. However, since the liberalization of the economy in 1977, trade restrictions have been removed gradually and the tariff structure also has been simplified. Hence, the decline in trade openness since 2005, (as shown in figure 3), could be due to the change in the development strategy of the government which has placed more emphasis on infrastructure development and import substitution.

Figure 3 : Trade Openness

Source : Author's Estimates
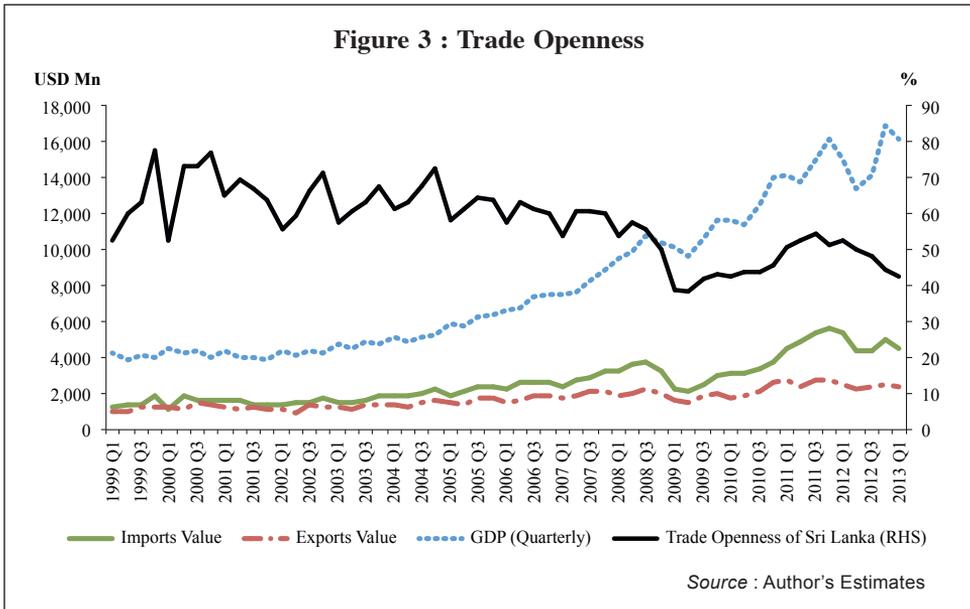
When analysing the reasons for the change in expected sign in REER 24 in the model, several reasons were found as described in empirical studies. As explained in Alam (2010) there was no causality from real depreciation of the Taka to export earnings of Bangladesh. Further, he explains that the depreciation of currency may coincide with greater exchange rate volatility and uncertainty and such uncertainty may have an adverse impact on exports. Telak and Yeok's (1998) findings may have more relevance for small economies whose exports are highly dependent on imported raw materials and intermediate inputs. The study uses Singapore data and finds that due to high import content, exports are not adversely affected by currency appreciation as the lower import price due to appreciation reduces the production cost of exports. Further, they have highlighted the importance of analysing the negative impact of depreciation on other sectors of the economy before

taking any policy that helps depreciation. Dozovic and Pripuzic (2013) found that real effective exchange rates reflect the development of the relative price of the economy and hence they only relate to one aspect of international competitiveness and that does not capture all relevant aspects. Further, they state that as the REER is based on aggregate indicators like aggregate price or cost indices, it neglects differences that can exist between industries. They suggested using REER indices at industry level which is based on trade weights calculated at industry level and corresponding producer price indices, in order to reflect price competitiveness of particular industry more realistically. Therefore, as found in the analysis, the positive relationship between the real effective exchange rate and the export demand for textiles and garments of Sri Lanka could be due to a collective outcome of all these factors. Accordingly, appreciation in the real exchange rate of the Sri Lanka rupee has not dampened the demand for textiles and garments in international markets.

7. Conclusion and Policy Implications

As in many developing countries, the export oriented textile and garment industry is found to be one of the main drivers of the economy of Sri Lanka. The garment industry in Sri Lanka has become an important industry of the economy in terms of its contribution to industrial production, foreign exchange earnings and direct and indirect employment generation. Hence, identification of the determinants of external demand for textiles and garments is important both for the industry as well as policy makers.

This study attempts to identify the determinants of external demand for textiles and garments in international markets. According to the empirical findings, external demand of textiles and garments in the international market was determined by GDP of importing countries, appreciation/depreciation in exchange rate and trade openness with the rest of the world.

As in many studies in the literature, income of foreign buyers has a significant impact on the demand for textiles and garments. However, this study finds that the appreciation of exchange rate does not have a negative impact on the demand for textiles and garments. This could be due to the high dependency of the textile and garment industry of Sri Lanka on imported inputs, on average which is around 45 per cent. Therefore, it is evident that the depreciation of the exchange rate does not bring the expected favourable benefit in enhancing exports of textiles and garments. It suggests the importance of non-price factors such as innovation and quality improvements that may have an influence on the decisions of foreign buyers of textiles and garments. Further, as supported by the findings, the availability of the MFA and GSP+ had a positive and significant effect on the demand for Sri Lanka's textiles and garments in the international market as Sri Lanka enjoyed duty

free access to the main markets. During the financial and debt crisis, external demand for Sri Lanka's textiles and garments had dampened due to the liquidity shortage and lower spending capacity of the buyers.

Accordingly, for the betterment of the textiles and garments industry of Sri Lanka several initiatives could be recommended. Among such initiatives, product diversification through vertical integration which will broaden the product base, market diversification to reduce the dependency on key markets thereby minimising concentration risk could be considered as important factors. Further, with the maturity of the industry, import dependency for raw materials could be reduced through backward integration where inputs are produced domestically. Other measures such as enhancing efficiency and reducing the lead time in delivery through improving the processes at ports and airports should be emphasised. Further, innovation through research and development for technological enhancements could also be considered as important.

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Appendix I : Summary of the Empirical Evidence

Authors	Scope	Methodology	Key Findings
Jahanzaib Haider, Muhammad Afzal and Farah Riaz (2011)	Annual data of Pakistan with all the trading partners from 1973 to 2008 for the following variables– i. imports and exports ii. real GDP iii. CPI iv. Bilateral exchange rate of Pakistan with ten trading partners	Johansen technique to test long run relationship The lag order of VAR is determined by (SIC) Schwarz Information Criterion, (FPE) Final prediction Error and AIC (Akaike Information Criterion) for both import and export models.	The results revealed that income is the principle determinant of foreign trade while exchange rate also plays a major role in determining the demand for exports and imports (Pakistan)
Wasif Siddiqi, Nawaz Ahmed, Abdul Aziz Khan and Kamran Yousef (2012)	Annual data from 1971-2009 for the following variables i. Export volume is used as export demand. ii. Consumer price index of textiles and clothing sector of Pakistan iii. World real per capita income iv. Trade openness v. Nominal Exchange rate for Pakistan rupee against US dollar	Johansen and Juselius methodology of maximum likelihood co-integration technique to test long run relationship	Results show that world income is the major determinant of export demand as it shows high coefficient of income for export demand of textiles and clothing sector. Trade openness is second major determinant of export demand (Pakistan).
Suhail P and Sreejesh S (2011)	Annual data from 1999–2007 for the following variables i. Export volume is used as export demand. ii. Price of exports of India and Sri Lanka iii. GDP iv. Population v. Dummy variable for the free trade agreement between India and Sri Lanka	Multiple regression model has been used for the analysis	It was evidenced that the variables like GDP and population have positive and significant coefficients while the price is not a significant determinant of export of India and Sri Lanka.

Tatre Jantarakolica and Porjai Chalermsook (2012)	Quarterly data from 2000 Q1 to 2011 Q1 for the following variables – i. Thai's Export quantity index ii. Weighted average of GDP of importing counties iii. Thai's export price index of textiles and garments iv. Exchange rate for Thai Baht per US dollar	Three models to measure exchange rate volatility– i. Natural log of quarterly variance ii. Univariate GARCH model iii. Bivariate GARCH model	Export price index is the factor that has significant negative impacts on export quantity of textiles and garment. Exchange rate does not directly influence exports but its impacts are caused through the exchange rate risk determined by exchange rate volatility The results confirm that Thai textiles and garments export products are sensitive to income; therefore the income effect turns out positively significant.
Chee-Wooi Hooy and Chee-Keong Choong (2010)	Monthly data from January 1980 to January 2010 for the four members of SAARC (Bangladesh, India, Pakistan, Sri Lanka) for the following variables– i. Bilateral exports ii. Income of trading partners iii. Real Exchange rates iv. Nominal exchange rate volatility	Multivariate asymmetric CCC-GARCH model and applied the bound testing approach on the standard trade model framework	The results showed that the foreign income, real exchange rate and exchange rate volatility does affects exports in the region. Further, it was found that real exchange rate volatility have a significant and negative impact on the export demand of most of the SAARC countries.
Choudhury (2001)	Data on the following for the 15 trading partners of the Bangladesh for the period 1972/73 to 1997/98 – Total exports and exports to fifteen trading partners – Export prices – GDP	Multiple regression model has been used for the analysis	It is evidenced that for small economies, the devaluation of local currency, does not have a significant impact on the demand side of exports

Appendix II : Data Definitions and Sources

Quarterly data on world GDP, export and import values and GSP of Sri Lanka were obtained from IMF e-library for International Financial Statistics. Quarterly data relating to Sri Lanka's export volume index and REER 24 index were obtained from CBSL's Annual Reports (various years) and CBSL data bases. Details of the sources are given below.

Variable	Definition	Source
lndemand	Export volume index for textiles and garments (in log) 2010=100	Database of Central Bank of Sri Lanka
lnwgdp	Quarterly world GDP as a proxy for the income of buyers (in log)	International Financial Statistics, IMF
lntopen	% of trade openness with rest of the world [(Value of exports + value of imports) / GDP] *100 - on quarterly basis (in log)	International Financial Statistics, IMF
lnprice	Export price index for textiles and garments (in log) 2010=100	Database of Central Bank of Sri Lanka
*lnreer*24	Quarterly average REER index for 24 currency basket (in log)	Database of Central Bank of Sri Lanka
*D*1	Dummy variable to show facility of MFA/ATC and GSP+ Value 1 for the period 1999 Q1 to 2004 Q4 and again for the period 2005 Q2 to 2009 Q4	
*D*2	Dummy variable to show the impact of global financial crisis and debt crisis in the EU. Value 1 for the period 2007Q2 to 2009 Q4 and again for the period 2010 Q1 to 2013 Q1	

Appendix III : Robustness Check (Alternative Models)

In order to check the robustness of the results following alternative models were analysed.

Variable	Model 1	Model 2	Model 3
lnwgdp	+0.3926	+ 1.2991	+1.2819
	(-2.0836)	(-5.1088)	(-8.5971)
lnreer24	+0.9963		
	(-3.1828)		
lntopen	-0.5498	-0.2984	-0.6401
	(3.0660)	(2.4947)	(7.5561)
D1	+0.2590		+0.1461
	(-3.9255)		(-3.6567)
D2	-0.1157 (1.3120)	+0.0708	+0.0346
		(-1.5716)	(-1.1996)
lnprice		-0.9612	-0.7866
		(4.1730)	(5.0624)
c	1.4411	2.3164	1.61236
R Squared	0.9538	0.9594	0.9692
F Statistics	63.5483	90.2571	32.7022