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DETERMINANTS OF AGGREGATE IMPORT DEMAND IN BANGLADESH

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ABSTRACT

This paper aims to examine the determinants of aggregate import demand behaviour in Bangladesh. In contrast with traditional import demand specification, the final demand variable (Real Gross Domestic Product) was further disaggregated into private consumption, government consumption, expenditure on export goods, and gross domestic investment. The other determinant is relative price. The bounds testing approach and unrestricted error correction model were employed for analysis. The findings are first, a long run relationship exists among quantity of import demand and its determinants over sample period 1965 to 1998. Secondly, Bangladesh's import demand is influenced differently by various components of final expenditure, particularly expenditure on export goods. The results have important policy implication to improve external balance.

Introduction

The present study aims to investigate the major determinants of the import demand function in Bangladesh, which is included among the eight least developed economies in the Asia Pacific region (Ariff and Khalid 2000, p.283). Bangladesh provides an interesting case study among the other LDCs (Least Developed Country). It is a founding member of the World Trade Organization (WTO) and signed the Uruguay Round of Agreement with the hope that the expected global trade liberalization would enable the country to raise its income and thereby improve the status of the impoverished people of the country (JETRO, 2001). In its pursuit of development, the government's policy on export-ed industrialization strategy was implemented in the eighties and has been continuing ever since to take advantage of a liberalized world trade regime and to achieve faster economic development. Its progress can be gleaned from the country's Real Gross Domestic Product (RGDP) growth of 5 percent on average for the period 1990 to 1998 and 4.6 percent for the period 1980 to 1990.

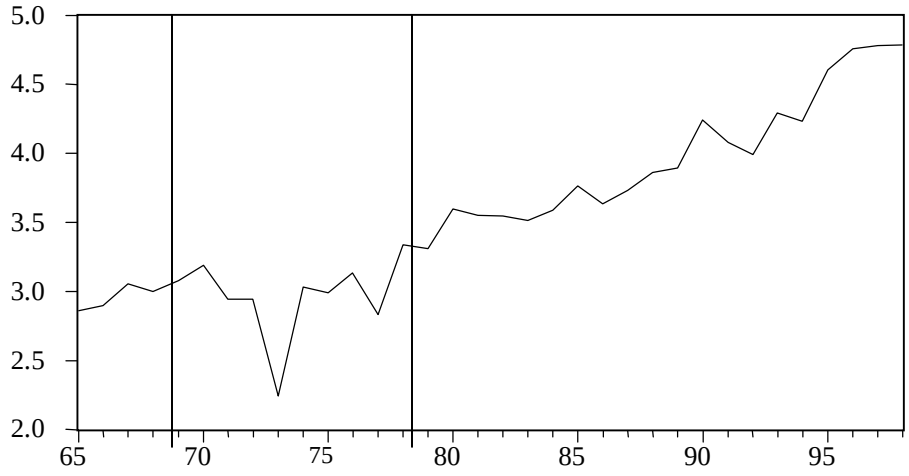
Table 1 reveals the import demand structure in Bangladesh over the period 1980 to 1998. On average, imports of agriculture, raw materials, ores and metals were less than 10 percent. Food import is the most important component. A high proportion of manufactured-good imports reflects the economic development experienced by Bangladesh. Bangladesh's aggregate import demand behavior exhibited an upward trend between 1965 and 1998, particularly during the period during 1961 and 1971 (see Figure 1). In that period, a pegged foreign exchange rate, import-substituting industrialization and specialization in a few primary products were pursued. Further, in the post-liberation regime I (1972-1982), the government pursued a public ownership strategy (i.e., a socialist economy); this goal was abandoned in late 1975 in favor of a mixed economy. In the post-liberation regime II, the import-substituting industrialization policy was replaced by a policy of export-oriented industrialization and the introduction of a managed flexible exchange rate policy (Begum and Shamsuddin 1998, p. 97).

Table 1
Share Total Imports for Bangladesh for the Period 1980 to 98 (in percentage)

Year	Agric Raw Materials	Food	Fuel	Ores & Metals	Manufactures
1980	6	24	9	3	58
1985	5	24	17	3	51
1990	5	19	16	3	56
1995	3	17	8	2	69
1996	4	17	7	3	69
1997	5	17	9	3	66
1998	5	15	7	2	69

Source: World Bank (2002), *World Tables.*

Figure 1
Bangladesh's Aggregate Import Demand (*Ln*M) and Liberation Regimes



Pre-liberation regime (1961-71) | Post-liberation regime I (1972-82) | Post-liberation regime II (1983-)

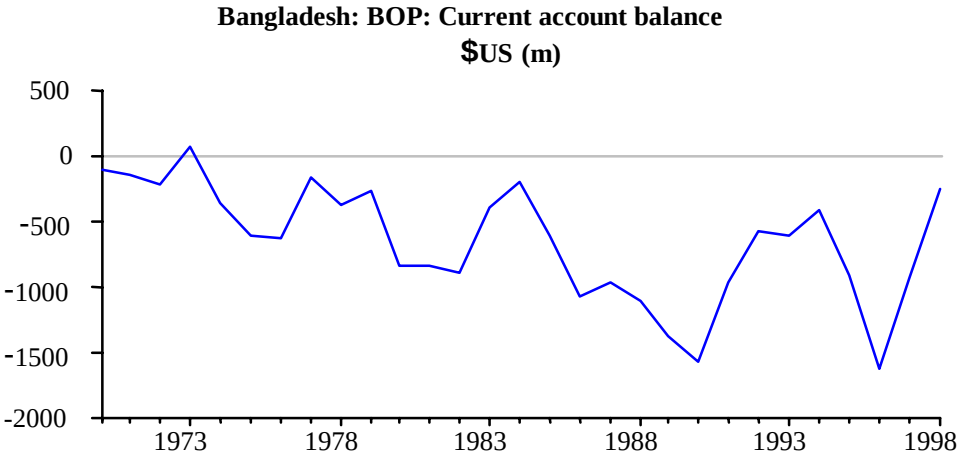
Source: World Bank (2002), *World Tables.*

Figure 2 indicates that Bangladesh experienced a long period of unfavorable current account deficits. The external sector is characterized by structural trade deficits. In order to overcome this adverse situation, the government initiated measures to bring about pragmatic changes in the trade and investment regime. The narrow and inward-looking import-substituting industrialization policies have been replaced by a broad and outward-looking export-oriented industrial policy. This also aims to ease the growing pressure on the balance of payments (JETRO 2001). In view of a persistent balance of payments deficit faced by Bangladesh, it is important to know the elasticity of aggregate import demand and its determinants. A relatively large price elasticity would suggest that exchange rate policies are likely to be favorable in improving the country's trade or balance of payments situation (Sinha 1997).

Import demand function investigation also has implications for a wide range of important macroeconomic policy issues. Among the issues are the impact of expenditure-switching through exchange rate management and commercial policy on a country's trade balance; the international transmission of domestic disturbances where import demand elasticities is a crucial link between economies; and the degree to which the external balance constraint affects a country's growth. The trade literature has adequately documented that one of the major concerns in formulating a commercial policy or an exchange rate policy to improve the external balance (current or trade account) is the responsiveness of trade flows to relative price changes. The relative prices play a significant role in the determination of trade flows, buttressing policies of devaluation as a way to correct trade imbalance, which is based on the relative price variable in static or long-run specifications of import demand or export supplies (Reinhart 1995, p.291). If the sum of import and export demand price's elasticity is greater than unity then the Marshall-Lerner condition is satisfied. Thus, a devaluation or depreciation will have favorable effects on the external balance (Bahmani-Oskooee and Niroomand 1998).

The available published empirical studies on Bangladesh's aggregate import demand function are numerous. Among them are Nguyen and Bhuyan (1977), Kabir (1988), Shilpi (1990), Bayes et al. (1995), and Hossain (1995). Recently, Dutta and Ahmed (1999, p. 465-6) claimed that those studies were suffering from *spurious* regression problems with Ordinary Least Squares (OLS) estimator as nonstationary data was involved, assuming there exists an underlying equilibrium relationship between import volume and its determinants. Dutta and Ahmed (1999) addressed the nonstationary data issue by employing cointegration and error correction modelling approaches (Engle and Granger 1987;

Figure 2
Current Account Balance for Bangladesh 1970 to 98 (m is million)



Source: World Bank (2002), *World Tables.*

Johansen 1988; Johansen and Juselius 1990) on Bangladesh's quarterly data from 1974 to 1994. Their study documented that real import and its determinants--namely real import prices, real GDP and real foreign exchange reserves--were cointegrated. The estimated long-run elasticities of the explanatory variables were based on Engle-Granger's (1987) approach and are –0.52 for relative price of imports, 1.63 for real GDP and –0.10 for real foreign exchange reserves (statistically insignificant at the 10 percent level). A dummy variable was entered to reflect the liberalization policies; it was found to be insignificant in the long run. In the short run, real import price, real GDP (with t-4, in quarter), and the dummy variable have emerged as significant determinants of the import demand function for Bangladesh. The estimated elasticities were –0.77, 5.7, and 0.14, respectively. The real foreign exchange reserve variable was insignificant at the 10 percent level. However, we have a reservation on Dutta and Ahmed's (1999) study as they used "constructed" quarterly data due to its unavailability. Quarterly data on unit value index of imports for Bangladesh covering the periods 1974 to 1982 and 1991 to 1994 was proxied by unit value indices of imports for non-oil Asian developing countries. Furthermore, the quarterly data on GDP were generated from the available annual data using the liner interpolation method. Mohammad and Tang (2000, p. 260) argued that measurement errors might be more serious when data used are constructed data. If the measurement errors are correlated with the regressors, use of OLS as in Dutta and Ahmed (1999) may lead to bias and inconsistent estimates. For example, in Dutta and Ahmed's (1999) study, the short run real income (GDP) elasticity was 5.7 and surprisingly high while it was only 1.63 in the long run. This indicates a possible misspecification.

Existing studies on Bangladesh's import demand function use a single demand variable--viz. real income—as a scale variable. The traditional specification of an import demand function relates the quantity of import demanded to domestic real income and relative prices. Traditional import demand formulation follows an assumption that the import content of each macro component of final expenditure (real GDP or GNP) is the same. If the different macro components of final expenditure have different import content, the use of a single demand variable in the aggregate import demand function would lead to aggregation bias (Abbott and Seddigh 1996, p.1119). Indeed if the composition of demand changes, the aggregate import propensity would change even if the disaggregated marginal propensities are unchanged (Giovannetti 1989, p. 960).

Thus, the present study aims to examine the determinants of Bangladesh's aggregate imports demand by further disaggregating the expenditure variable (real income) into private consumption, government consumption, export expenditure, and gross domestic investment. The other explanatory variable is relative price. By disaggregating the demand variable, we might able to investigate

different effects of various demand components on aggregate import, and avoid the possibility of aggregation bias for fiscal policy implications. This disaggregation exercise is based on the argument that the composition of expenditure can be important if the various components of expenditure have different import contents (see Giovannetti 1989; Thirlwall and Gibson 1992; Abbott and Seddighi 1996; Mohammad and Tang 2000; Min, Mohammad and Tang, 2002).

The rest of this paper is as follows. The next section briefly discusses the model specification, data and modelling method, followed by the empirical results, conclusions and policy measures.

Model Specification, Data and Modelling Method

The traditional formulation of import demand equation relates the quantity of import demanded to domestic real income and relative prices (ratio of import prices to domestic prices) (Gafar 1988). In the present study, real domestic income (final expenditure) was divided into consumption expenditure on private and public sectors, investment expenditure, and exports. The other important explanatory variable is relative price. On the basis of the above assumptions, the long run import demand function is specified as:

$$M_t = f(PC_t \;\; G_t \;\; E_t \;\; GDI_t \;\; RP_t) \qquad (1)$$

where M_t is volume of imports, PC_t is private consumption expenditure, G_t is government consumption expenditure, E_t is exports, GDI_t is gross domestic investment and RP_t is relative price. A log-linear model (see Gafar 1988) is specified as follows:

$$LnM_t = \alpha_0 + \alpha_1 LnPC_t + \alpha_2 LnG_t + \alpha_3 LnE_t + \alpha_4 LnGDI_t + \alpha_5 LnRP_t + u_t \qquad (2)$$

where u_t is a random error assumed to satisfy classical assumptions. From economic theory, it is expected that the signs of the coefficients α_1, α_2, α_3 and α_4 will be positive, and α_5 negative. The equation (2) will capture the separate effects of various final demand components. All variables are in natural logarithmic form (Ln).

The volume of import (M) reflects nominal imports of goods and services deflated by import price index. The data for expenditure components is only available since 1965 from *World Tables* (World Bank 2002). The real expenditure components—namely private consumption (PC), government consumption (G), expenditure on export goods (E), and gross domestic investment (GDI)—are based on 1995 prices (deflated by price implicit indexes – GDP deflator). The relative price (RP) variable is the ratio of import price divided by domestic price (GDP deflator). All of the data were obtained from *World Tables* (World Bank 2002). The sample period covers annual data from 1965 to 1998.

The use of annual data is due to lack of availability of quarterly data from published sources. Dutta and Ahmed (1999) used constructed quarterly data. Begum and Shamsuddin (1998) used annual data (1961 to 1992) to examine the export-growth link for Bangladesh. However, using annual series can avoid possible distortions of the dynamic properties of the model of using seasonally adjusted data. Charemza and Deadman (1992, p.153) have recommended using annual data in estimating long run parameters with the standard tests for cointegration since the use of seasonal data may give rise to inconsistent estimates of the long run parameters. In addition, Hakkio and Rush (1991) found that an increase in the number of observations by using monthly or quarterly data does not add any robustness to the results in tests of cointegration. What matters more is the length of the period under study. The sample span used in this paper covers 34 years that should be sufficient for cointegration analysis.

Further, by considering the small sample bias on cointegration analysis using typical cointegration approaches [Engle-Granger (1987); Johansen (1988); and Johansen and Juselius (1990)], this paper uses a robust estimation approach--bounds testing approach (Pesaran et al. 2001) (see Mah 2000). This approach is based on an unrestricted error correction model (UECM) estimate. One of the advantages of Pesaran et al.'s approach is that the method can be applied to studies that have small samples such as present study. Mah (2000) applied this approach for estimating Korean import demand for information technology goods using 18 annual observations.[1] Other examples are from Pattichis (1999) and Tang and Nair (2002). Pattichis (1999) estimated Cyprus' disaggregated import demand for the annual period 1975 to 1994. Tang and Nair (2002) modeled Malaysian import demand function using annual data from 1970 to 1998. Secondly, the bounds test procedure can be applied irrespective of whether the regressors are purely I(0) or I(1) and mixed. A pre-test on series integration, I(*d*) is not necessary in applying Pesaran et al.'s procedure to test the

hypothesis. if a conclusion can be make on its hypotheses.

An unrestricted error correction model (UECM) that is constructed to estimate aggregate import demand function in equation (2) is:

$$\begin{aligned}\Delta LnM_t = {} & b_0 + \sum_{i=0}^{k1} b_{1i}\Delta LnPC_{t-i} + \sum_{i=0}^{k2} b_{2i}\Delta LnG_{t-i} + \sum_{i=0}^{k3} b_{3i}\Delta LnE_{t-i} \\ & + \sum_{i=0}^{k4} b_{4i}\Delta LnGDI_{t-i} + \sum_{i=0}^{k5} b_{5i}\Delta LnRP_{t-i} + \sum_{i=1}^{k6} b_{6i}\Delta LnM_{t-i} + b_7 LnM_{t-1} \\ & + b_8 LnPC_{t-1} + b_9 LnG_{t-1} + b_{10} LnE_{t-1} + b_{11} LnGDI_{t-1} + b_{12} LnRP_{t-1} + b_{13} DUM + e_t\end{aligned} \quad (3)$$

where Δ is first difference series, $X_t - X_{t-1}$. A dummy variable (*DUM*) is introduced in order to capture the effect of the country's import liberalization policy, with 1 for 1992-1998, and 0 for the period before 1992 (see Dutta, and Ahmed 1999, p. 467).

To investigate the existence of a long run relationship, Pesaran et al. (2001) proposed a bounds test procedure on the Wald test (*F*-statistic). The asymptotic distribution of the *F*-statistic is non-standard under the null hypothesis of no cointegration relationship between the examined variables, irrespective of whether the explanatory variables are purely I(0) or I(1). We test the null hypothesis by considering a restricted ECM model by excluding the lagged level variables that are LnM_{t-1}, $LnPC_{t-1}$, LnG_{t-1}, LnE_{t-1}, $LnGDI_{t-1}$, and $LnRP_{t-1}$ in equation (3). More formally, a joint significance test will be performed with the null hypotheses of $b_7 = b_8 = b_9 = b_{10} = b_{11} = b_{12} = 0$ (no cointegrating relationship). For some conventional significance level (10%, 5% or 1%), if the computed *F*-statistic is higher than the upper critical bounds value, then the null hypothesis of no cointegration can be rejected, suggesting that a long-run equilibrium relationship occurred among the variables in the import demand function (1). If the *F*-statistic is lower than the lower critical bounds value, then the null cannot be rejected and no long-run relationship among the variables can be assumed. In the case when the *F*-statistic falls between the upper and lower bounds, a conclusive inference cannot be made. Here, in the order of integration, I(*d*) for the explanatory variables must be known before any conclusion can be drawn.

From the estimated UECM, the long run elasticity is calculated by the coefficient of the one-lagged level explanatory variables (multiplied with negative sign) divided by the coefficient of the one-lagged level dependent variable (Bardsen 1989). For instance, the long run relative price elasticity is $-(b_{12} / b_7)$. The short run effects are captured by the coefficient of the first difference variables in (3).

Empirical Results

The first task is to select an optimum lag length for UECM. By using annual data, lag lengths of three, two and one were included for UECM (3). A general UECM under two-lag lengths (k1=k2=k3=k4=k5= k6=2) is well specified according to Ramsey RESET test (p-value is 0.37) that indicates no mis-specification errors compared to one and three lag length specification for UECM (equation 3). Further Hendry's general to specific approach was used in order to arrive at a parsimonious specification (Hendry et al. 1984). The general to specific approach is particularly appropriate when there is uncertainty regarding the explanatory variables to be included in the model. In addition, the desire to use such a specification to test for cointegration and the small size of the sample makes it almost impossible to include any more variables in the regression specification. This simplification process involves deleting the insignificant first difference variable with small absolute t-value sequentially (at 10 percent level). This method has been utilized by Pattichis (1999). An estimated final UECM is reported in Table 2.

Table 3 reports the result of the bounds test, which is used to investigate the presence of a long run equilibrium relationship among the variables in equation (2). The Wald test statistic (*F*-Statistic) is 6.264, which is higher than the upper bounds value (4.68) at one percent level. Therefore, the null of no cointegration relationship can be rejected. This indicates that the quantity of import and its determinants, namely private consumption, government consumption, expenditure on export goods, gross domestic investment, and relative price are cointegrated. Bangladesh's aggregate import demand behavior is stable over the sample period.

Table 2
Specific UECM for Bangladesh's Aggregate Imports Demand

Dependent Variable: ΔLnM_t
Method: Least Squares
Sample(adjusted): 1968 1998

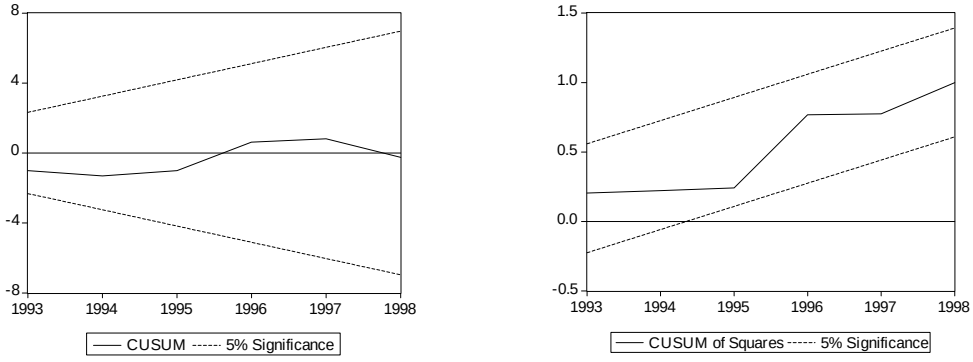
Variables:	Coefficients:	t-Statistic
$\Delta LnPC_t$	1.267**	2.827
ΔLnG_{t-2}	1.035**	2.828
ΔLnE_{t-1}	-0.732**	-2.843
ΔLnE_{t-2}	-0.572*	-3.957
$\Delta LnGDI_{t-2}$	0.417*	3.807
$\Delta LnRP_t$	-0.545*	-3.401
LnM_{t-1}	-0.907*	-3.538
$LnPC_{t-1}$	0.081	0.116
LnG_{t-1}	-0.318	-0.424
LnE_{t-1}	1.084*	4.097
$LnGDI_{t-1}$	-0.067	-0.493
$LnRP_{t-1}$	-0.228**	-2.154
DUM	-0.269**	-2.133
Constant	2.039**	2.619

Note: * and ** denote significant at 1% and 5% level. *Ln* is natural log form. Δ is first difference operator. M_t is volume of import demanded, PC_t is private consumption expenditure, G_t is government consumption expenditure, E_t is exports, GDI_t is gross domestic investment and RP_t is relative price that is the ratio of import price to domestic price. *DUM* is a dummy variable with 1 for 1992 to 1998 and 0 for 1960 to 1991 capture the effects of trade of country's import liberalization policy (Dutta, and Ahmed 1999, p.467).

Diagnostic Tests:

R-squared: 0.952 Adjusted R-squared: 0.915
S.E. of Regression: 0.076 F-statistic: 25.741 (0.00)
Jarque-Bera: 0.118 (0.943) Q-statistics [16]: White noise
Ramsey RESET [1]: 1.624 (0.203); [2]: 2.348 (0.309)
Breusch-Godfrey LM Test [2]: 3.159 (0.206); [3]: 4.171 (0.244)
ARCH Test : [1]: 0.023 (0.879); [2]: 0.013 (0.994)
( ) is p-value

Figure 3
Plot of CUSUM and CUSUM of Squares Tests



(Note: For estimated final UECM as in Table 2)

Table 3
Result for 'Bounds' Test

F-Statistic (Wald test): **6.264**
(Joints test for the coefficients of LnM_{t-1}, $LnPC_{t-1}$, LnG_{t-1}, LnE_{t-1}, $LnGDI_{t-1}$, $LnRP_{t-1}$ equal to zero)
Critical bounds at 1% level (five regressors case):
Lower bound, I(0): 3.41
Upper bound, I(1): 4.68
Pesaran, et. al. (2001, p.300), Table CI(iii) Case III: unrestricted intercept and no trend.

However, a possible issue that can be raised in UECM (3) is multicollinearity among the regressors. From the estimated UECM in Table 2, nine out of twelve regressors (excluding constant and dummy variables) are statistically significant at the 5 percent level with R-square of 0.95 and a reasonable *F*-statistic, 25.74. This indicates that multicollinearity is not a serious issue.[2] In addition, the use of the log-linear specification can also avoid some estimation problems, particularly multicollinearity (Gafar 1988). Further, the diagnosis tests reject some obvious econometric problems. The Jarque-Bera test confirms residual normality and the ARCH test rejects heteroscedasticity in the disturbance term. The Breusch-Godfrey LM test shows no second and third order serial correlation. The Ramsey RESET test significantly indicates no misspecification error for the estimated final UECM. The estimated parameters were found to be stable over the sample period based on the CUSUM and CUSUM of squares plots (see Figure 3).

The estimated long-run elasticities are 0.09 (private consumption), -0.35 (government consumption), 1.19 (exports expenditure), -0.07 (gross domestic investment), and -0.25 (relative price). The export expenditure and relative price elasticites are statistically significant at 10 percent. A dummy variable that captures trade liberalization is significant but has a negative sign. A possible explanation is the insufficiency of time to capture the benefit of trade liberalization. All of the determinants of Bangladesh's import demand were found to be statistically significant in the short run. The main finding is that various final expenditure components have different effects on aggregate import in Bangladesh.

Conclusions and Policy Implications

This study was motivated by the need to re-examine the aggregate import demand function for Bangladesh considering the bias of using the single activity variable, real GDP. The disaggregated components of final demand variables are private consumption, government consumption, expenditure on export goods, and gross domestic investment. The other determinant is relative price. The bounds test procedure proposed by Pesaran et al. (2001) that is based on estimates of an UECM was employed for cointegration analysis.

The major findings may be summarized as follows. First, the result of bounds test has confirmed a long run equilibrium relationship (cointegrating relation) among volume of imports and its determinants. It means the country's import behavior is stable over the analyzed period. Secondly, the stability tests of CUSUM and CUSUM of squares suggest no evidence of structural instability in the parameters during the sample period. Thirdly, the estimated long-run (and short-run) elasticities of various demand components imply that differenct final expenditure components have differenct effects on aggregate import, highlighting the bias of using a single demand variable (real income) in aggregate import demand analysis. The result of the specification test, RESET, has supported the use of aggregate import demand function with disaggregated final demand components as determinants—namely private consumption, government consumption, investment expenditures, and exports.

Let us look at the policy implications that can be highlighted in this study. The estimated long-run elasticity of relative price is -0.25 (significant at the 10 percent level). The size of its elasticity is extremely low, implying that the Marshall-Lerner condition is unlikely to be satisfied, although the price elasticity of export demand has not been estimated in the present study. Furthermore, Heien (1968) has argued that "for any country, a value of the price elasticity (demand for imports) between –

0.5 and –1.0 is necessary to ensure success of exchange depreciation." Therefore, the estimated value of price elasticity suggests that exchange rate policy is found to be unfavorable in improving Bangladesh's trade balance in the long run. This point is consistent with a study by Kabir (1988), who found insufficient support for the hypothesis that exchange rate changes have direct effects on the current account balance of developing countries, as in the case of Bangladesh. Perhaps, Bangladesh has been pursuing a flexible exchange rate policy with a view to boosting exports and improving the current account position of the balance of payments through maintaining competitiveness of its international market.

In addition, the estimated long-run and short-run elasticities of relative price were inelastic (-0.25 and -0.55), indicating the quantities of import demanded are insensitive to increases in domestic price level. However, domestic price or inflation needs to be kept in check since these estimates were statistically significant at the 10 percent level, reflecting that domestic inflation would increase the imports demand.

Expenditure on exports is a major determinant for Bangladesh's aggregate imports demand in the long run. Its estimated elasticity is 1.19, suggesting that exports growth may have negative implications for the trade balance. Given a high import content of manufactured exports, economic growth driven by export demand will also lead to import growth. A possible explanation is the policy of import substitution that has been replaced by the strategy of export-led growth with high import content, as in garments. For the period 1991 to 2001, the export of textile and textile articles has averaged 78.8 percent total exports. At the same time, the average share of imports of textile and textile articles to total imports is 30.6 percent (calculated from data obtained from Asian Development Bank, http://www.adb.org/Statistics/default.asp). According to Begum and Shamsuddin (1998), for a small open economy like Bangladesh it seems realistic to assume that it is domestic supply rather than foreign demand that imposes a binding constraint on the growth of the export sector. As highlighted by import policy programs, recognized readymade garment and specialized textile industries operating under the Bonded Warehouse arrangement continued to be allowed to import against back-to-back Letter of Credit (LCs), raw and packaging materials under firm and irrevocable LCs. Similar facilities also continued for hosiery and knit-wear garments. The provision of export of gray fabrics was also in force on the condition that, after finishing, dyeing or printing, the entire fabric would be supplied to export oriented garment industries or exported abroad.[3]

The results of this study revealed that fiscal policies designed on various final demand components, particularly expenditure on exports, are essential to reduce the import of goods that always cause external imbalance. In order to promote economic growth under exports-led strategy, the government should monitor the export policies closely, and minimize import pressures. For sustained growth in the export and industrial sectors, development and expansion of modern technology based industries need to be encouraged. However, there is a *trade-off* between export and growth. Nevertheless, Begum and Shamsuddin's (1998) study has supported the export-led growth hypothesis that the weighted growth rate of exports has a positive effect on Bangladesh's economic growth. Further, they added that export promotion policies were found to be more effective in generating growth than policies that remove import restrictions. The contribution of export to economic growth was more pronounced during 1982 to 1990, when Bangladesh's government pursued policies for the liberalization of the economy.

Government strategies to give priority to the development of resource-based industries, which have low import contents, and to accelerate the development of backward linkages for nonresource-based industries in order to increase the use of local inputs, should dampen the increase in import demand that is driven by export growth. In addition, government policies on development of domestic capital goods industries and also industries that produce intermediate goods that are competitive in terms of price and quality to imports will help to implement previous strategies. In practice, implementation of the new Export Policy formulated, keeping in view the objectives of gradual reduction of trade deficit through boosting up of export earnings, promoting backward linkage industries for export oriented industries aimed at increasing domestic value addition, providing access to export credit at concessional terms, searching for new export market, promotion and development of non-traditional exports, encouraging use of appropriate technology in the manufacture of exportable goods etc., was strengthened.[4] But, we should keep in mind that export is not the only engine of growth. Begum and Shamsuddin (1998, p.90) have suggested four

sources of growth for Bangladesh-namely, input growth; changes in the allocation of resources between the export and non-export sectors; changes in the institutional characteristics of the economy; and technological progress.

This study has provided implications for both monetary and fiscal policies that should be used judiciously to rectify internal and external imbalances. However, as warned by Begum and Shamsuddin (1998), the success of trade policy reform crucially depends on the ability and willingness of economic agents to take advantage of new opportunities created by reform.

References

Abbott, A.J., and Seddighi, H.R. (1996). "Aggregate Imports and Expenditure Components in the UK: An Empirical Analysis," *Applied Economics* Vol.28: 1119-1125.

Ariff, M, and Khalid, A. M. (2000). "Bangladesh: Restructuring and Liberalization Did Help," in *Liberalization, Growth and the Asian Financial Crisis: Lessons for Developing and Transitional Economies in Asia* United Kingdom: Edward Elgar Publishing Limited: 283-306.

Bardsen, G. (1989). "Estimation of Long-Run Coefficients in Error Correction Models," *Oxford Bulletin of Economics and Statistics* Vol. 51, August: 345-350.

Bahmani-Oskooee, M., and Niroomand, F. (1998). "Long-Run Price Elasticities and the Marshall-Lerner Condition Revisited," *Economics Letters* Vol. 61: 101-109.

Bayes, A., Hossain, M. I. And Rahman, M. (1995). "Trends in the External Sector: Trade and Aid," in *Experiences with Economic Reform: A Review of Bangladesh's Development* (Ed.) Sobhan, R., Centre for Policy Dialogue and University Press Limited, Dhaka: 243-97.

Begum, S., and Shamsuddin, A.F.M. (1998). "Exports and Economic Growth in Bangladesh," *The Journal of Development Studies* Vol. 35, No. 1: 89-114.

Charemza, W. W., and Deadman, D. F. (1992). *New Directions in Econometric Practice* Edward Elgar Publishing Limited.

Davidson, R., and MacKinnon, J.G. (1993). *Estimation and Inference in Econometrics* New York: Oxford University Press, Inc.

Dutta, D., and Ahmed, N. (1999). "An Aggregate Import Demand Function for Bangladesh: A Cointegration Approach," *Applied Economics* Vol. 31: 465-472.

Engle, R. F., and Granger, C. W. J. (1987). "Cointegration and Error Correction: Representation, Estimation and Testing," *Econometrica* Vol. 55: 251-276.

Gafar, J.S. (1988). "The Determinants of Import Demand in Trinidad and Tobago: 1967-84," *Applied Economics* Vol. 20: 303-313.

Giovannetti, G. (1989). "Aggregated Imports and Expenditure Components in Italy: An Econometric Analysis," *Applied Economics* Vol. 21: 957-971.

Hakkio, C. S., and Rush, M. (1991). "Cointegration: How Short is the Long Run?," *Journal of International Money and Finance* December: 571-581.

Heien, D. M. (1968). "Structural Stability and the Estimation of International Import Price Elasticities in World Trade," *Kyklos* 21: 695-711.

Hendry, D.F., Pagan, A., and Sargan, J.D. (1984). "Dynamic Specification," in *Handbook of Econometrics* Oxford: Oxford University Press.

JETRO (2001). "Challenges and Measures for Trade Promotion in the New Economy – Bangladesh," *ATPF Bulletin* Vol. 11. Japan External Trade Organization (Jetro). www.jetro.go.jp. [Access date: 19 December 2001].

Johansen, S. (1988). "Statistical Analysis of Cointegration Vectors," *Journal of Economic Dynamics and Control* Vol.12: 231-254.

Johansen, S., and Juselius, K. (1990). "Maximum Likelihood Estimation and Inference on Cointegration with Applications to the Demand for Money," *Oxford Bulletin of Economics and Statistics* Vol. 52: 169-210.

Kabir, R. (1988). "Estimating Import and Export Demand Function: The Case of Bangladesh," *The Bangladesh Development Studies* Vol. 14, No. 4:

115-27.

Mah, J. S. (2000). "An Empirical Examination of the Disaggregated Import Demand of Korea - The Case of Information Technology Products," *Journal of Asian Economics* Vol. 11: 237-244.

Min, B. S., Mohammad Haji Alias, and Tang, T. C. (2002). "An Analysis of South Korea's Import Demand," *Journal of Asia-Pacific Affairs* Vol. 4, No. 1: 1-17.

Mohammad Haji Alias, and Tang, T. C. (2000). "Aggregate Imports and Expenditure Components in Malaysia: A **C**ointegration and Error Correction Analysis," *ASEAN Economic Bulletin* Vol. 17, No. 3: 257-269.

Nguyen, D.T., and Bhuyan, A.R. (1977). Elasticities of Export and Import Demand in Some South Asian countries," *The Bangladesh Development Studies* Vol. 2: 133-152.

Pattichis, C. A. (1999).. "Price and Income Elasticities of Disaggregated Import Demand: Results from UECMs and an Application," *Applied Economics* Vol. 31: 1061-1071.

Pesaran, H., Shin Y., and Smith, R.J. (2001). "Bounds Testing Approaches to the Analysis of Level Relationships," *Journal of Applied Econometrics* Vol.16, No.3: 289-326.

Pindyck, R. S., and Rubinfel, D.L. (1998). *Econometric Models and Economic Forecasts (*Fourth Edition), Irwin/McGraw-Hill.

Sinha, D. (1997). "Determinants of Import Demand in Thailand," *International Economic Journal* Vol.11: 73-83.

Shilpi, F. J. (1990). *Estimating Income and Price Elasticities of Imports and Exports of Bangladesh* Dhaka: Bangladesh Institute of Development Studies.

Tang, T. C., and Nair, M. (2002). "A Cointegration Analysis of Malaysian Import Demand Function: Reassessment from the Bounds Test," *Applied Economics Letters* Vol. 9: 293-296.

Thirlwall, A. P., and Gibson, H. D. (1992). *Balance of Payments Theory and the United Kingdom Experience* London: Macmillan.

Reinhart, C. M. (1995). "Devaluation, Relative Prices, and International Trade: Evidence from Developing Countries," *IMF Staff Papers* Vol. 42: 290-312.

World Bank (2002). "World Tables," *The Time Series Data Express - dx for Windows version 3.0* EconData Pty Ltd, February 28, 2002.

Endnotes

[1] The study was based on Pesaran, H., Shin, Y., and Smith, R. J. (1996) Bounds Testing approaches to the Analysis of Level Relationships. Department of Applied Economics, Working Paper No. 9622, University of Cambridge, Revised.

[2] A relatively high R-square in an equation with few significant *t* statistics is one indicator of multicollinearity. In fact, it is possible that the *F* statistic for the regression equation will be highly significant, while none of the individual t statistics are themselves significant. (Pindyck and Rubinfeld, 1998, p. 97-98).

[3] From <http://www.bangladesh.net/article_bangladesh/economic_trends/eco_17_external_trade.htm>

[4] Manufactured export has contributed about 72% of total exports over the period 1974 to 1998 (World Bank 2002).

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