



Import Inflows of Bangladesh: the Gravity Model Approach

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Abstract

Bangladesh suffers from a chronic deficit in her trade balance. The paper is an attempt to explore the imports of Bangladesh which is one of the most significant factors responsible for unfavorable trade balance of the country. The aim of the study is to intend some initiatives for an attempt to ultimately reshaping the trade balance of Bangladesh with her foreign trade partners. The paper examines the existence of the gravity theory for the imports of Bangladesh with its eight major trading partner countries- India, China, Singapore, Japan, Hong Kong, South Korea, USA and Malaysia. The data set consists of yearly data from 1985 to 2003 in a panel approach. The paper comes across with the findings that the gravity theory is consistent with the imports of Bangladesh. That is, the geographical distance of Bangladesh with its partner countries has significant impacts on its imports. But in near future this may change because of different factors such as profitability, easy trade procedures, product delivery time etc. that influence the imports decision more than does the geographical distance. This paper finds mixed relationship between the GDP and imports of Bangladesh. It also shows that the imports of Bangladesh influence the domestic production very little because Bangladesh mostly imports consumer goods rather than capital goods. Moreover, the population of Bangladesh has significant impacts on imports which in turn implies that Bangladesh is not capable of producing adequate consumer goods to meet the increased demand resulted from high population growth. It also shows that partner countries' GDP has significant positive impacts and partner countries' population has mixed impact on imports of Bangladesh. This paper concludes that it will be an alarming situation for trade balance of Bangladesh if the imports continue to increase in such a pattern that the rate increases five to eight times more in respect of population increases and at the same time the ratio of capital goods in proportion of total imports decreases.

Keywords: Gravity Model, Imports, Gross Domestic Product (GDP), Population, Geographical Distance, Panel

1. Introduction

In the past, national economies were relatively self-contained entities, isolated from each other by barriers to cross-border trade and investment; by distance, time-zones, and language; and by national differences in government regulations, culture, and business systems. As these barriers are being minimized by taking different initiatives, the contribution of cross-border trade to the development of national economy is becoming significant. The economic development of Bangladesh is also, to a significant extent, affected by the trade flows with partner countries. Although Bangladesh suffers from a chronic deficit in her trade balance (Table-1), scope might be found to explore the most significant factor(s)

responsible for unfavorable trade balance with a view to take some initiatives for an attempt to ultimately reshaping the trend of Bangladesh's trade balance with her foreign trade partners.

Import is one of the most important factors responsible for trade balance. Due to trade deficit where import is higher than export, the imports of Bangladesh need to look from different dimensions. While analyzing on imports, the import trading partners also get focus. In addition, recently the imports of Bangladesh also have started to move from border country to other countries. Though Bangladesh shares three of her borders with India and none with China, China has emerged as the largest source of import for Bangladesh replacing India for the first time in 2006 (Table-2). The value of imported amount of Bangladesh was 13.75b taka from China and 12.41b taka from India in 2005-2006 fiscal, where in 2004-2005 it was 12.33b taka from India and 6.94b taka from China.

The gravity model is a popular formulation describing the trade flows between different geographical entities. The theory says that there is negative relationship between geographical distance and trade volume which indicates that the lower distance influences for more trade and vice versa. As the imports of Bangladesh are geographically shifting, this paper aims at analyzing the gravity theory for Bangladesh. Moreover, this paper also finds out the impacts of home GDP, partner countries' GDP, home population, and partner countries' population on the imports of Bangladesh.

2. Literature Review

The empirical studies by Tinbergen (1962) and Linnemann (1966) showed trade flows follow the physical principles of gravity: two opposite forces determine the volume of bilateral trade between countries - the level of their economic activity and income, and the extent of impediments to trade. The latter includes, in particular, transportation costs, trade policies, uncertainty, cultural differences, geographical characteristics, limited overlap in consumer preference schemes, regulatory bottlenecks, etc. National borders are among these impediments, even for industrialized countries (Anderson and Van Wincoop, 2003).

Although trade potential primarily results from the matched export capacities and import demand (microeconomic), on a more aggregated level of analysis, proximity in demand, in per capita income, in space, and in culture, are the potential macroeconomic determinants of export. Thus various combinations of macroeconomic variables, such as gross domestic product (GDP) and population with geographic distance, are significant predictors of trade potentials. Hence, gravity equations have been used extensively in the empirical literature on international trade (Havrylyshin and Pritchett, 1991; Frankel and Wei, 1993; Bayoumi and Eichengreen, 1997; Evenett and Hutchinson, 2002).

Filippini (2003) used a gravity Equation model to analyze trade flows between East Asian industrializing countries (including China) and some developed countries in order to show the remarkable trade performance of East Asian countries. The study showed that all coefficient signs were consistent with model assumptions and found high propensity of Asian countries (including China but excluding Japan) to exchange high-tech manufactured products with Japan and USA. Another interesting result was that among the East Asian economies, China plays a very important role as an exporter and as an importer too in recent years.

Martinez-Zarzoso (2003) applied the gravity model to annual bilateral exports between 19 countries. His results indicated that incomes of exporter and importer, as expected, had positive influence on bilateral trade flows. Population had a large and positive impact on import, indicating that bigger countries import more than do small countries. Regarding transport infrastructure, he found that exporting countries' infrastructure fosters trade. Achay. (2006) investigated the determinants of trade flows between various countries of the world. He applied the gravity model on a sample of 146 countries for five-year sub-periods between 1970 and 2000. According to this study, GDP, distance and regional integration agreements are the determinants of trade. It is also found that all estimated coefficients were statistically significant and their signs were in conformity with expectations. The adjustment quality of the model as measured by determination coefficient (adjusted R^2) was quite high, standing at 71 percent. It was found that GDP, GDP per capita, common frontier, common official language, common currency or common colonial past have a positive impact on the volume of bilateral trade. On the other hand, the geographical distance had a negative impact on the volume of trade.

Very few studies on Bangladesh have been conducted so far in this area, which is perhaps due to unavailability of information, particularly regarding trade inflows and outflows with partner countries. Rahman (2004) applied a generalized gravity model to analyze Bangladesh trade flows with its trading partners using the panel data estimation techniques. The study estimated the gravity model of trade (sum of imports and exports). The results showed that Bangladesh's trade is positively determined by the size of the economies, per capita GNP (gross national product) differential of the countries involved and openness of the trading countries. The major determinants of Bangladesh's exports were found to be exchange rate, partner countries' total import demand, and openness of the economy. All these factors affected Bangladesh's exports positively whereas transportation cost was found to be a significant factor in influencing trade negatively.

From the extensive literature, gravity equations share common features that can be customized for different purposes: First, a gravity equation is bilateral; Secondly, gravity equations can be derived from various theoretical trade models

(Deardorff, 1995) and finally, a gravity equation may be used in order to estimate either determinants of the volume or determinants of the nature of trade flows.

3. Data and Model Specification

Classical gravity models generally use cross-section data to estimate trade effects and trade relationships for a particular time, for example one year. In reality, however, eight cross-section data observed over several periods (panel data methodology) result in more useful information than does cross-section data alone. There is couple of advantages of this method. First, panels can capture the relevant relationships among variables over time. Second, panels can monitor unobservable trading-partner-pairs' individual effects. If individual effects are correlated with the regressors, OLS estimates omitting individual effects will be biased. Therefore, the paper used panel data methodology for testing empirical gravity.

This panel study covers yearly data for Bangladesh and its eight major partner countries from 1985 to 2003; a balance panel of total 684 observations. The countries - India, China, Singapore, Japan, Hong Kong, South Korea, United States of America (USA) and Malaysia- are chosen based on the share of total import volumes of Bangladesh. These eight countries cover most of the imports of Bangladesh (Table-3). Bangladesh imported 64 percent in 1996, 60 percent in 2001 and 2002 of its total import from these eight countries.

<< Table 3 >>

Data for total import flows of Bangladesh (million US\$) have been taken from Economic Review of Bangladesh. Then it has been converted into real value by adjusting with the US consumer price index (constant year 2000). GDP data are also in real term (constant 2000 million US\$) that have been taken from World Development Indicators (WDI-2007) database. Population data (in million) were also taken from World Development Indicators (WDI-2007) database. Geographical distance in kilometers has been gathered from a web based database (www.timeanddate.com). All of these data have been converted into logarithmic (ln) format. For the statistical output, the SAS has been used and for the panel regression, the TSCSreg procedure has been used.

In 1687, Newton proposed the "Law of Universal Gravitation." It held that the attractive force between two objects i and j is given by,

$$F_{ij} = G (M_i M_j / D_{ij}^2) \quad (1)$$

Where notation is defined as follows, F_{ij} is the attractive force, M_i and M_j are the masses, D_{ij} is the distance between the two objects and G is a gravitational constant depending on the units of measurement for mass and force.

This model originates from the Newtonian physics notion. Newton's Gravity Law in mechanics states that two bodies attract each other proportionally to the product of each body's mass (in kilograms) divided by the square of the distance between their respective centers of gravity (in meters). The gravity model has been applied to a wide variety of goods and factors of production moving across regional and national boundaries under different circumstances since the early 1940s (Oguledo and Macphee, 1994).

The gravity model for trade is analogous to this law. The analogy is as follows: "the trade flow between two countries is proportional to the product of each country's 'economic mass', generally measured by GDP, each to the power of quantities to be determined, divided by the distance between the countries' respective 'economic centers of gravity', generally their capitals, raised to the power of another quantity to be determined" (Christie, 2002). This formulation can be generalized to,

$$M_{ij} = K Y_i^{\beta_1} Y_j^{\beta_2} D_{ij}^{\gamma} \text{pop}_i^{\delta_1} \text{pop}_j^{\delta_2} \quad (2)$$

The linear form of the model is as follows:

$$\ln (M_{ij}) = K + \beta_1 \ln (Y_i) + \beta_2 \ln (Y_j) + \gamma \ln (D_{ij}) + \delta_1 \ln (\text{POP}_i) + \delta_2 \ln (\text{POP}_j) \quad (3)$$

The basic statistical model is specified in the following logarithmic form in which five variables are assumed to determine the import flows to Bangladesh from its major trading partners:

$$\ln (M_{ij}) = \alpha + \beta_1 \ln (Y_i) + \beta_2 \ln (Y_j) + \gamma \ln (D_{ij}) + \delta_1 \ln (\text{POP}_i) + \delta_2 \ln (\text{POP}_j) + u_t \quad (4)$$

where, M_{ij} is the flow of Bangladesh's (i) imports from partner country (j), Y_i is Bangladesh's GDP, Y_j is the partner countries' GDP, D_{ij} is the geographical distance between Bangladesh's (i) capital city to partner countries' (j) capital city, POP_i is Bangladesh's population, POP_j is the partner countries' population, u is the random error term and β , γ , δ are the structural parameters.

Here, this paper also observes the result for the basic model excluding the population variable from Equation no.-4, because there are few very highly populated countries such as China, India, and USA are available in partner countries' list that may impact the overall results. In this case the model is:

$$\ln (M_{ij}) = \alpha + \beta_1 \ln (Y_i) + \beta_2 \ln (Y_j) + \gamma \ln (D_{ij}) + u_t \quad (5)$$

The general hypothesis of the model is that the economic size of the importing countries, M_{ij} , are usually measured with GDP. The estimated coefficients are usually close to the predicted value of one. If GDP of a country increases, the country is expected to import more from foreign countries. The same holds true for the partner countries that are exporters. So, both β_1 and β_2 are expected to be positive.

Distance is usually measured using the “great circle” formula. This formula approximates the shape of the earth as a sphere and calculates the minimum distance along the surface. As the distance between countries becomes larger, imports will fall. The distance is a factor, which is used as a proxy to consider the impact of transport costs and other transaction costs. Hummels, et al. (2007) have argued that shipping costs (freight charges and marine insurance) can go a long way towards explaining why distance matters. Distance indicates the time elapsed during shipment. For perishable goods, the probability of surviving intact is a decreasing function of time in transit. In gravity model, distance is a resistance factor and has a negative impact on volume of bilateral trade. As a result, γ is expected to be negative.

The coefficient of population of the exporters may have negative or positive sign depending on whether the country exports less when it is big (absorption capacity) or whether a big country exports more compared to a small country (economies of scale). For similar reasons, the coefficient of importer population may have negative or positive sign (Martinez-Zarzoso and Nowak-Lehmann, 2003). Therefore, the expected signs of δ_1 and δ_2 may be negative or positive.

4. Results of Analysis

As the data has been taken from the countries of different regions and different economy sizes, here pooled OLS is not used. Moreover, geographical distance is fixed and not time sensitive. When working with constant data over time, time effect provides no output. Due to time constant, variable included in the equation-4 and equation-5, fixed effect model does not provide a good output. Moreover, m -value of Hausman test for equation-4 is insignificant, even in 90 percent confidence level which indicates to use fixed effect model. However, m -value of Hausman test for equation-5 is significant at 99 percent confidence level which indicates to use random effect model.

<< Table 4 >> << Table 5 >> << Table 6 >> << Table 7 >> << Table 8 >>

<< Table 9 >> << Table 10 >> << Table 11 >> << Table 12 >> << Table 13 >>

Domestic GDP has no significant impact on the imports of Bangladesh both in random effect and fixed effect model for the equations-4. However, the GDP of Bangladesh shows significant positive relationships with imports of Bangladesh both in random effect and one way fixed effect model for the equations-5. The coefficients of determination (R^2) of random effect models for both cases indicate that 80 percent of the total variation in the dependent variable is accounted for by the independent variables that indicate good fit of the model. However, a qualitative focus can give an in depth idea about the study. Imports criteria show that it influences the domestic production very little because Bangladesh mostly imports consumer goods rather than capital goods. One third of total imports of Bangladesh were capital goods in 2000, but in recent years the rate declines to 9 percent in 2004-05, 11 percent in 2005-06, and 12 percent in 2006-07 (Table-14). As a developing and trade deficit country it is alarming for Bangladesh that the rate of total imports is increasing but the ratio of capital goods is decreasing.

<< Table 14 >>

Due to time irresponsible fixed value, the fixed effect models do not provide any output for geographical distance variable. The random effect models show significant negative impacts of geographical distance on the imports of Bangladesh, which is accepted at the 99 percent confidence level for both equation-4 and equation-5. It is noted that here the sign of the coefficient is negative, means less geographical distance influence for higher import and vice versa. This result supports the theory of gravity model. However, recently Bangladesh has started to move its trade from lower distance country to higher distance country. The model of gravity mainly considers the geographical distance for trade, but the reality is more complex that might cause the inconsistency of this result in near future. There are lots of factors available that go beyond the assumption of gravity theory, such as, Bangladeshi importers are interested in China because it is offering goods with a wide price range, easy trade procedures, many duty free goods, shorter timing of shipment etc. China usually sends its products to Bangladesh within 25 days on an average by completing all the formalities while import from India takes 35 days. Many Chinese products, such as, food stuff, plastic goods, rubber goods, wooden products, raw hides, pulp, papers, electrical machinery and equipment and parts thereof, sound recorders and reproducers, television accessories of electronics articles, boilers, machinery and mechanical appliances, parts thereof, Cotton, yarn/thread and cotton fabrics etc., are cheap compared to the same quality products of India.

Both random effect and one-way fixed effect models show that domestic population has significant positive impacts on the imports of Bangladesh (equation-4). At 96 percent confidence level, one-way fixed effect model shows that 1 percent increases in domestic population will lead to 5.65 percent increases in imports of Bangladesh. And at 99 percent confidence level random effect models show that 1 percent increases in domestic population will lead to 7.19 percent increases in imports of Bangladesh. That means Bangladesh is not capable to produce enough in proportion of increasing

demand due to population growth. As a result, demand for import increases five to eight times of the rate of its population increases.

Partner countries' GDP has significant positive impacts on the imports of Bangladesh both for equation-4 and equation-5. If Bangladesh imports more, the partner countries will produce more to meet the demand of Bangladesh. Fixed effect model shows no impact of Partner countries' population on Bangladeshi imports, where random effect models show significant negative impact.

5. Conclusion

Recently trade of Bangladesh is decreasing with its border countries and trade volume is increasing with far distance countries, such as, the case of China and India. Therefore, to find out the impacts of gravity model on the trade patterns of Bangladesh, its import is tested on home GDP, partner countries' GDP, geographical distance between home capital city and partner countries' capital city, home population, and partner countries' population.

The paper finds mixed results for the impact of Bangladeshi GDP on its imports. If population is not considered, GDP shows positive relationships with imports of Bangladesh. In a quantities focus, imports criteria show that it influences the domestic production very little because Bangladesh mostly imports consumer goods rather than capital goods. Further, population of home country has highly significant impact on imports of Bangladesh. It in turn implies that Bangladesh is not capable of producing enough in proportion of increasing demand due to population growth. Partner countries' GDP has significant positive impacts on the imports of Bangladesh and partner countries' population has mixed results on imports of Bangladesh.

Most importantly it is found that geographical distance has significant impact on imports of Bangladesh which means transport costs and other transaction costs, such as, the probability of surviving intact of perishable goods etc. still have significant impacts on its import. But in recent phenomenon, the imports are more influenced by profitability, easy trade procedures, product delivery time etc., rather than the geographical distance. As a consequence, policy makers need to conduct further serious studies to find out the relationship, if any, between trading pattern, geographical distance and trade deficits of Bangladesh. Policy makers also need to carefully consider the future alarming situation for trade balance of Bangladesh if the import increases continuously in such a pattern that the rate increases five to eight times more in respect of population increases and at the same time the ratio of capital goods in proportion of total imports decreases.

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Table 1. Trade Balance of Bangladesh (Million US \$)

Year	Goods Imports	Goods Exports	Trade Balance
1985	2,286	999	-1,287
1986	2,301	880	-1,421
1987	2,446	1,077	-1,369
1988	2,734	1,291	-1,443
1989	3,300	1,305	-1,995
1990	3,259	1,672	-1,587
1991	3,074	1,689	-1,386
1992	3,354	2,098	-1,256
1993	3,657	2,545	-1,113
1994	4,351	2,934	-1,416
1995	6,057	3,733	-2,324
1996	6,285	4,009	-2,275
1997	6,551	4,840	-1,711
1998	6,716	5,141	-1,574
1999	7,536	5,458	-2,077
2000	8,053	6,399	-1,654
2001	8,133	6,085	-2,049
2002	7,780	6,102	-1,678
2003	9,492	7,050	-2,442
2004	11,157	8,151	-3,006
2005	12,292	9,186	-3,105

Source: World Development Indicators, 2007

Table 2. Common Commodity Imports by Bangladesh from China and India

Group-wise Commodity	China (TK in Millions)		India (TK in Millions)	
	2005-2006	2004-2005	2005-2006	2004-2005
Cotton,(all types) cotton yarn/thread and cotton fabrics	2,987	2,072	2,284	1,246
Boilers, Machinery and mechanical appliances, parts thereof	2,094	1,595	994	1,147
Electrical machinery and equipment and parts thereof, sound recorders and reproducers, television image and sound recorders and reproducers and parts and accessories of such articles	1,334	636	323	302
Man-made staple fibers	1,016	884	286	267
Knitted or crocheted fabrics	857	665	91	93
Vehicles other than railway or tramway, rolling stock and parts and accessories thereof	214	200	704	504
Plastics and articles thereof	164	98	474	444
Cereals	21	20	1,425	2,961

Source: Bangladesh Bank (2004-2005, 2005-2006), Import Payments (annual), Department of Public Relations & Publication, Dhaka, Bangladesh.

Table 3. Goods Import Market Shares of the Eight Major Trading Partners of Bangladesh

Year	India	China	Singapore	Japan	Hong-Kong	S. Korea	USA	Malaysia	Sub-Total (a)	Total Imports (b)	(a) as % of (b)
1985	67	90	291	301	51	56	286	48	1,190	2,286	52.1%
1986	60	74	209	255	46	64	164	27	899	2,301	39.1%
1987	64	82	156	378	68	64	178	24	1,014	2,446	41.5%
1988	87	91	145	456	112	82	216	36	1,225	2,734	44.8%
1989	104	110	186	445	116	103	325	50	1,439	3,300	43.6%
1990	145	132	323	475	157	126	208	41	1,607	3,259	49.3%
1991	181	133	334	336	184	165	181	32	1,546	3,074	50.3%
1992	231	149	275	286	247	181	230	42	1,641	3,354	48.9%
1993	342	248	211	365	299	258	207	53	1,983	3,657	54.2%
1994	414	223	200	498	331	284	202	57	2,209	4,351	50.8%
1995	689	420	275	587	399	340	274	41	3,025	6,057	49.9%
1996	1,100	707	343	695	390	366	330	69	4,000	6,285	63.6%
1997	922	575	297	647	409	360	302	197	3,709	6,551	56.6%
1998	934	593	321	483	443	381	311	172	3,638	6,716	54.2%
1999	1,235	560	553	494	452	287	301	131	4,013	7,536	53.3%
2000	833	568	701	685	455	319	325	108	3,994	8,053	49.6%
2001	1,184	709	824	846	478	411	248	148	4,848	8,133	59.6%
2002	1,019	878	871	655	441	346	261	145	4,616	7,780	59.3%
2003	1,358	938	1,000	605	433	333	223	169	5,059	9,492	53.3%

Source: Bangladesh Economic Review, Ministry of Finance, 2005

Table 4. Model Efficiency Random Effect (Eq No. 4)

Method	m-Value	m-Prob.	d o f	R ²
One-way Random Effect	5.33	0.15	3	0.82
Two-way Random Effect	4.16	0.13	2	0.81

Table 5. Model Efficiency for Random Effect (Eq No. 5)

Method	m-Value	m-Prob.	d o f	R ²
One-way Random Effect	21.01 *	0.000	2	0.79
Two-way Random Effect	8.11 *	0.004	1	0.79

* Significant at 99% confidence level

Table 6. Model Efficiency for Fixed Effect (Eq No. 4)

Method	F-Value	F-Prob.	Numerator d o f	Denominator d o f	R ²
One-way Fixed Effect	40.1 *	0.000	7	139	0.88
Two-way Fixed Effect	31.96 *	0.000	25	121	0.89

* Significant at 99% confidence level

Table 7. Model Efficiency for Fixed Effect (Eq No. 5)

Method	F-Value	F-Prob.	Numerator d o f	Denominator d o f	R ²
One-way Fixed Effect	41.4 *	0.000	7	141	0.87
Two-way Fixed Effect	32.33 *	0.000	25	123	0.89

* Significant at 99% confidence level

Table 8. Both One-way and Two-way Random Effect Regression Output (Eq No. 4) (Dependent Variable: ln (Mij))

Model	Coefficient	t-Value	p-Value
Constant	-7.67 **	-1.85	0.07
ln (Yi)	-1.59	-1.31	0.19
ln (Yj)	1.07 *	5.52	0.0001
ln (Dij)	-2.03 *	-4.13	0.0001
ln (POPi)	7.19 *	2.76	0.007
ln (POPj)	-0.41 *	-3.12	0.002

* Significant at 99% confidence level, ** Significant at 90% confidence level

Table 9. One-way Fixed Effect Regression Output (Eq No. 4)(Dependent Variable: ln (Mij))

Model	Coefficient	t-Value	p-Value
Constant	-28.31 *	-12.8	0.0001
ln (Yi)	-1.29	-1.08	0.28
ln (Yj)	1.43 *	5.28	0.0001
ln (Dij)	0	-	-
ln (POPi)	5.65*	2.12	0.04
ln (POPj)	-0.39	-0.48	0.63

* Significant at 95% confidence level

Table 10. Two-way Fixed Effect Regression Output (Eq No. 4)(Dependent Variable: ln (Mij))

Model	Coefficient	t-Value	p-Value
Constant	-13.68 *	-2.90	0.004
ln (Yi)	0	-	-
ln (Yj)	1.41 *	5.15	0.0001
ln (Dij)	0	-	-
ln (POPi)	0	-	-
ln (POPj)	-0.54	-0.66	0.51

* Significant at 99% confidence level

Table 11. Both One-way and Two-way Random Effect Regression Output (Eq No. 5) (Dependent Variable: ln (Mij))

Model	Coefficient	t-Value	p-Value
Constant	-13.67 *	-3.39	0.0009
ln (Yi)	2.06 *	9.27	0.0001
ln (Yj)	0.78 *	5.33	0.0001
ln (Dij)	-1.57 *	-3.35	0.001

* Significant at 99% confidence level

Table 12. One-way Fixed Effect Regression Output (Eq No. 5) (Dependent Variable: ln (Mij))

Model	Coefficient	t-Value	p-Value
Constant	-31.06*	-21.07	0.0001
ln (Yi)	1.11 *	3.73	0.003
ln (Yj)	1.56 *	7.00	0.0001
ln (Dij)	0	-	-

* Significant at 99% confidence level

Table 13. Two-way Fixed Effect Regression Output (Eq No. 5) (Dependent Variable: ln (Mij))

Model	Coefficient	t-Value	p-Value
Constant	-15.39*	-3.89	0.0002
ln (Yi)	0	-	-
ln (Yj)	1.33*	5.49	0.0001
ln (Dij)	0	-	-

* Significant at 99% confidence level

Table 14. Category-Wise Yearly Imports of Bangladesh (Million US \$)

Major Commodities	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
FOOD GRAINS	186	409	431	574	418	581
Milk & cream	59	61	61	86	73	83
Oil seeds	72	64	73	86	90	106
Edible oil	251	364	471	441	473	583
Pulses all sorts	88	145	120	159	164	195
Sugar	23	104	110	220	124	294
Clinker	150	144	139	170	210	240
Crude petroleum	242	267	252	350	604	524
POL	481	620	770	1252	1400	1709
Chemical	335	353	406	510	580	668
Pharmaceutical products	39	44	45	41	50	49
Fertilizer	107	109	150	332	342	357
Dyeing, tanning etc. materials	87	86	109	132	148	161
Plastics and rubber articles thereof	250	281	367	477	523	643
Raw cotton	312	393	583	666	742	858
Yarn	283	270	323	393	501	582
Textile and articles thereof	1063	1106	1295	1571	1728	1892
Staple fiber	39	41	57	75	76	97
Iron, steel and other base metals	413	455	479	680	980	985
Capital goods	2617	2735	2875	1115	1539	1929
Others	803	848	870	2823	2887	3401
Subtotal :	7913	8931	10016	12195	13684	16013
Imports of EPZ	627	727	887	952	1062	1144
Grand Total :	8540	9658	10903	13147	14746	17157
Capital Goods as % of Total Import (Except EPZ)	33%	31%	29%	9%	11%	12%

Source: Bangladesh Bank, Import Payments Data, Available at

<<http://www.bangladesh-bank.org/econdata/import/categoryimp.html>>