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Tariff Preference and Trade Cost as Determinants of Export: The Case of Bangladesh

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Abstract

Bangladesh's export trend has been robust throughout the last couple of decades, but her exports have been limited to a number of products and product-destinations are restricted to only a certain developed regions. The current study examines whether tariff preferences impacts Bangladesh's export. Additionally, the paper also examines whether trade cost impacts Bangladesh's exports. In the above context, the study evaluates performance of export of the Bangladesh economy together with an analysis based on the relative preferential margin (RPM). The paper highlights that Bangladesh could make only a small progress towards diversifying her exports during last ten years (2003-2013). The RPM estimations for Bangladesh further reveals that tariff preferences for most of the export flows from Bangladesh faced unfavourable tariff preferences in 2013. As regards trade cost and its components, it is found that Bangladesh's exports are influenced by the economic condition of partner countries and GSP facilities. Since the trade cost variable incorporates a number of components including tariff, transport cost, cultural components and trade facilitation issues, future trade policies of Bangladesh will need to address these issues with utmost sincerity.

Keywords: Export, Bangladesh, Tariff Preferences, Trade Cost, Relative Preferential Margin (RPM), Gravity Model

JEL Classification: C10, C21, F14

I. Introduction

Exports originating from Bangladesh have been concentrated to a limited number of products. This has been the case historically with Bangladesh, from the spell when Bangladesh started to shift to an export-oriented economy since the early 1990s. What is more noteworthy is that exports are shipped to a limited number of destinations, mainly the developed US and Euro destinations. Bangladesh's exports grew by 7.8 per cent from 1980-1990. But the figure showed substantial increase in the subsequent decade of 1990-2000, taking a value of 15.7 (UNCTAD, 2014). The trend has continued in recent decades but has kept approximately to the same levels – 12.9 per cent growth between 2000 and 2010 and 13.6 per cent growth between 2010 and 2013. Lack of both product and geographic diversification of exports represent a grave concern for Bangladesh concerning the sustainability of export-led growth strategy, which has been a trending concept for Least Developed Countries (LDCs) (similar to Bangladesh²) for the past couple of decades.

The importance of higher survival rates of new export dimensions and trade at the extensive margin³ is continually stressed for sustained economic growth of the poorer nations (Besedes and Prusa, 2006; Brenton, Pierola, and von Uexkull, 2009). While export diversification mitigates external volatility, but several constraints are faced by the developing countries in opting for export diversification. Some of the *el primo* factors would include transaction costs, weak infrastructure and rule of law, poor implementation of trade facilitation mechanisms and unbalanced national and regional trade policies. Another factor worth noting is that system of trade preference (e.g. most-favoured nation [MFN] tariff rate) determines exports of the developing countries. On the favourable side, there is preferential treatment by the developed trading partners, but on the other hand, sombre tariff and non-tariff barriers are encountered by these nations while venturing other developing and regional destinations.

The Doha Development Round (DDR) of the World Trade Organisation (WTO) was a major breakthrough in the sphere of tariffs. It was since assumed that tariffs would be a

² Bangladesh is included in the list of LDCs. The LDC currently includes 49 countries.

³ The extensive margin indicates new products at a later date as compared to a prior reference period

thing of the past and would be “relatively irrelevant” as a trade barrier. But the case has been essentially different in the face of the deadlock of the WTO. Even today, after more than one decade of the DDR, tariffs continue to be a solemn deterrent of trade for the developing countries. One can argue that there are trade facilitation instruments and there are Aid for Trade measures, but the question remains as to whether tariffs are still relevant and whether there is tariff erosion? We would like to put forward the hypothesis that tariffs are very relevant in today’s world. The “trade agreement shopping” that is evident between each and every nation further supports the hypothesis. “Trade agreement shopping” essentially refers to the notion that each country is opting for bilateral, multilateral, plurilateral or regional trade agreements, irrespective of their developmental state.

While it can be argued that overall tariffs are on the decline pertaining to both developed and developing countries and is receiving lesser and lesser attention as compared to other non-tariff measures, however, what appears to be disquieting is that tariffs still have a role to play in the determination of exports, especially that of the developing hosts. The first part of the study aims to identify determinants of exports from Bangladesh by focusing on the role of market access, specifically tariffs. The research question involves around the identification of the trend of whether the export-led growth of Bangladesh has been due to the increase in value and/or volume of existing trade flows or new trade flows. Together with examination of Bangladesh’s overall export trends, the paper identifies the relative market access of Bangladesh’s exports. This has been examined with the estimation of the relative preferential margin for Bangladeshi exports at the Harmonised System (HS) 6-digit level.

With tariffs falling under the broad category of trade costs, the second part of the paper aims to examine whether trade costs affect Bangladesh’s exports. This is important from the point of view that Bangladesh has very meagre amounts of trade with her developing partners, specifically the South Asian counterparts. The destination of the majority of the exports has been the Euro zone (EU 27) and the US. In this connection, 55.13 per cent⁴ of Bangladesh’s export in 2012 accounted for the Euro zone and 19.28

⁴ According to data from Trade Map data, International Trade Centre, 2013

per cent went to the US; while in contrast, only a meager 1.22 per cent of Bangladesh's exports catered to the ASEAN (Association of Southeast Asian Nations) region in the same timeframe (Bangladesh's imports from ASEAN stood at 18.8 per cent in the same year) and 2.47 per cent for the South Asian counterpart. It can be observed that more than four-fifths of the export of Bangladesh is diverted to the distant US and Euro zone, while very minimal trade occurs with its neighboring Asian counterparts. Hence, it can be made out that trade costs, including tariffs have a role to play in the lack of export diversification that is evident from the export basket of Bangladesh. With Arvis, Duval, Shepherd and Utoktham (2013) stamping the fact that trade costs are a major hindrance for trade in the developing countries, trade cost have also been determined to be a dynamic foray in Bangladesh's trade. The current study employs gravity modeling to identify the brunt of trade cost on Bangladesh's exports.

The paper has been purposely divided into separate sections to keep tariff preference analysis, dealing with individual export products of the Bangladesh economy, separate from trade cost analysis, which examines Bangladesh's export on an aggregate level. In this respect, the rest of the paper is organised as follows. Section II discusses relevant literature as regards tariff preferences and trade cost in connection to the Bangladesh economy. Section III presents export performance trend of Bangladesh. Section IV discusses the methodology of both RPM and trade cost pertaining to the current analysis while Section V presents the empirical results. Section VI concludes with recommendations and way forward.

II. Review of Relevant Literature

Tariff Preferences

The theory put forward by Smith (1776) and Ricardo (1817) in favour of comparative advantage and specialisation does not hold appear to be relevant in the twenty-first century. In fact, it was after the Second World War that Prebisch (1950) and Singer (1950) argued that export diversification is necessary to stabilise export earnings and enhance economic growth. Given the former agenda, the developing countries would only be exporting primary commodities. In this regard, export diversification seems to contradict with theories of specialisation and comparative advantage. While some

proponents argue that specialisation permits better international competitiveness, others believe that constricted number of export flows increase volatility in export earnings and consequently, leading to declining terms of trade. Trade diversification, essentially, trade involving export of a variety of commodities with different price tendencies can help achieve sustainable stability in overall export performance.

Export diversification can be defined as “the change in the composition of a country’s existing export product mix or export destination” (Ali, Alwang and Siegel, 1991). Thinking otherwise, export diversification can also be defined as the evolution from traditional to non-traditional sectors. In this connection, there can be different dimensions of export diversification. The two common prevalent forms of export diversification include horizontal diversification and vertical diversification (Diagonal diversification refers to a change from importer input into secondary and tertiary sectors). Horizontal diversification refers to diversification “within the same sector (primary, secondary or tertiary), and entails adjustment in the country’s export mix by adding new products on existing export baskets within the same sector, with the hope to mitigate adverse economic (to counter international price instability or decline) and political risks” (Samen, 2010). Vertical diversification refers to a move from the primary sector to secondary and tertiary sectors. The latter category of diversification can develop prospects for raw materials together with greater price stability as compared to raw commodities.

The role of export diversification’s contribution in growth of the developing countries have been stressed for quite a number of decades now. During the 1950s to the 1970s, development strategies in the developing world and specifically countries in South Asia, Africa and Latin America was in support of import-substituting strategies and installation of restrictive trade policies. However, this view was altered towards export promotion and outward orientation in the 1980s, 1990s and 2000s with the observable accomplishments of India, China and the East Asian countries (Samen, 2010). Bangladesh, too, residing in the South Asian counterpart, initiated the process of globalisation in early 1990s.

Exports play a major role in contributing to the long-run growth of economies. This is achieved through “supporting a virtuous cycle of investment, innovation and poverty reduction” (UNCTAD, 2008). In this connection, Bangladesh has predominantly transformed her economy from an exporter of primary products to a manufactured goods one. And accordingly, the associated externalities with such structural transformation has benefited the country with all merits. Export-oriented economies are generally prone to external economic shocks, with the scale impact depending on the degree of concentration of a country’s export basket. External shocks pertain to the developing economies more as such economies are heavily dependent on commodity exports. “The ability of LDCs to expand export earnings depends on growing world trade, market access and the ability to diversify export products” (Edo and Heal, 2013). Market access and diversification of products are hence crucial from the viewpoint of enhanced global and regional participation of trade as propos LDCs like Bangladesh.

Generally, LDCs have comparatively weaker bargaining capacities. Therefore, the WTO is a more preferred option for the LDCs because the WTO represents stands a multilateral trading system. Several multilateral trading systems are existent to cater to improved market access of the developing countries and the LDCs in particular. The majority of such trading arrangements focus on reducing tariffs to fashion favourable preferential margins for the underdeveloped nations. The European Union (EU) together with other developed countries offers preferential market access for the developing countries and LDCs. With the Generalised System of Preferences (GSP) already in effect from 1995, Everything but Arms (EBA) initiative (introduced in 2005) provides duty free and quota free (DFQF) access for all products from the LDCs (but arms).

India and China, developing country themselves, provides DFQF access to the LDCs. India’s Duty Free Tariff Preference (DFTPI-LDC) arrangement was effective from 2008. While at the outset it preferential arrangements might seem lucrative, but Engel (2009) argues that “potential welfare benefits are mitigated both through limitations in the product coverage and administrative specifications, as well as through the uncertainty of their sustained access”.

The apparently dismal state of the WTO agreements and regional and bilateral trade arrangements taking preference over WTO agreements has become a common practice. In this respect, the Ninth Ministerial Conference of the WTO in 2013 installed a new ray of hope for the LDCs. While multilateral trading arrangements benefit LDCs with “a rule-based policy platform to negotiate flexibilities, waivers and special and differential treatment” (Rahman, 2014) this agenda was rather unobtainable due to non-reciprocity practice of existing bilateral or plurilateral trade negotiations. It should be noted that broadening of the export base is a very challenging assignment for the LDCs. While the WTO trade negotiations were meant to cater to the LDCs by means of better integration into world markets, but the case appears to be driven by political decisions of key players of the advanced economies. In this connection, it should be stressed that structural transformation of the developing economies will require firm commitment from the international community, together with efforts from the developing country themselves.

Trade cost

Trade cost, amongst other determinants of the volume of trade, plays a significant role in determining the amount of trade of a nation. Components of trade cost would include “transportation costs (both freight costs and time costs), policy barriers (tariffs and non-tariff barriers), information costs, contract enforcement costs, costs associated with the use of different currencies, legal and regulatory costs and local distribution costs” (De, 2007). Arvis, Duval, Shepherd and Utoktham (2013) calculated trade costs of agriculture and manufactured goods in 178 countries to show that “trade costs are strongly declining in per capita income”. However, the authors make a distinct observation that the rate of decline of trade costs is far quicker in the developed countries than in the developing ones. As a result relative isolation between the developed and developing countries is getting higher by the day. Maritime connectivity and logistics performance have been further found to be very imperative determinants of bilateral trade, together with trade policies such as market entry barriers and regional integration agreements (Free Trade Agreements (FTAs), Preferential Trade Agreements (PTAs) and other Regional Trade Arrangements (RTAs)) (Arvis, Duval, Shepherd and Utoktham, 2013). The following diagram (Figure 1), adopted from De (2007), would best demonstrate the components of trade cost which influences trade

cost landscape. It can be observed from the figure that tariffs fall under the category which is 'costs imposed by policy'. Direct policies in conjunction with non-tariff barriers, affects trade to a great extent.

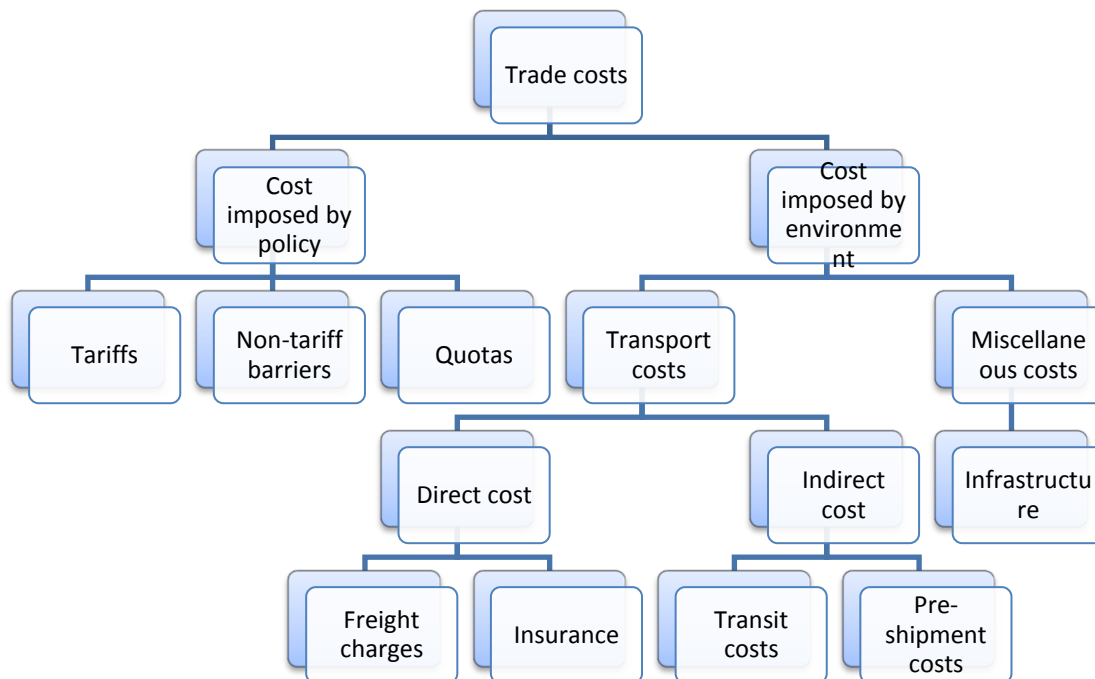


Figure 2.1: Trade cost and its components

Rahman (2009) employed gravity models (panel data) to analyze the determinants of import in the Bangladesh economy. Results of the study show that Bangladesh's imports are influenced by inflation rate, per capita income and openness of trading partners of Bangladesh (exchange rate was determined as non-influential in the analysis). The author found that neighboring countries have greater authority on Bangladesh's imports, together with Bangladesh-India border having a major impact. The author recommended import of capital goods to be encouraged, which would in turn, complements the export capacity.

Employing the gravity model approach, Rahman (2003) analyzed Bangladesh's bilateral trade with her major trading partners with an aim to make available a theoretical justification. Estimating an aggregate (sum of exports and imports) gravity model together with disaggregated models of export and import, the study finds that Bangladesh's trade is positively influenced by per capita Gross National Product (GNP),

the dimension of partner economies, openness and income differential of the trading partners. Furthermore, exchange rates, openness of the Bangladesh economy and import demand of partner countries' were determined as the primary determinants of Bangladesh's exports (positive impact). Concluding exchange rate as insignificant, Rahman (2003) decided on inflation rates, per capita income differentials and openness of partner countries as the major determinants of Bangladesh's imports. Additionally, transport cost was found to be a significant factor in impacting Bangladesh's trade negatively. More innovative results include the fact that multilateral resistance factors affect Bangladesh's trade (specifically exports) positively and that her imports are greatly influenced by border trade with India.

Results of Rahman and Dutta (2012) have been found to be very similar to those of Rahman (2003). Rahman and Dutta (2012) employ a generalized gravity model (panel data estimation) to analyze Bangladesh's bilateral trade. Results of the study indicate that per capita Gross Domestic Product (GDP) differential, size of economies and openness of partner countries influence Bangladesh's trade in an optimistic manner. Exports are positively determined by its own GDP, openness and import demand of partner countries and negatively affected by domestic inflation and partner country's GDP. On the other hand, imports are positively impacted by GDP and openness of partner countries and hindered by inflation in the destination country.

With the aid of a gravity model, Roy and Rayhan (2011) investigated into the factors of trade flows which contribute to the Bangladesh economy. Contradicting findings of Rahman (2003) and Hossain (2009), the authors concluded that regional dummy variables including SAARC and the contiguity factor border variable are significant (SAARC dummy is significant with a negative coefficient).

III. Dynamics of Export Sector in Bangladesh

Since her independence in 1971, Bangladesh went through a wide ranging changes in her trade and industrial policies. Over the past four decades or so, the economy experienced a major shift from a predominantly import-substituting trade and industrial strategy towards export-promotion and private sector oriented trade and industrial strategy. As mentioned before, major changes in trade and industrial policy were initiated from the beginning of the 1990s. During this period, Bangladesh took significant measures to promote her export. These measures included duty-free import of machinery and intermediate inputs, subsidised interest rates on bank credit, cash compensation schemes, and exemption from income tax and other taxes on selective basis. Indeed, during the last four decades following the move towards liberalisation, Bangladesh has been experiencing a rapid pace of global integration. In FY⁵1991, trade-GDP ratio in Bangladesh was equivalent to about 16.8 per cent of Bangladesh's GDP but by FY2013, this has increased to 49.9 per cent (Table 3.1). During the time, export earnings increased by about 15.7 times. As a share of GDP, exports increased from 5.5 per cent in FY1991 to 21.0 per cent in FY2013. Indeed, export earnings increased at a faster pace compared to her import payments. Exports as per cent of imports increased from 49.5 per cent in FY1991 to 72.5 per cent in FY2013. The surge in export earnings helped Bangladesh to emerge as a trade-led economy from an aid dependent one.

Table 3.1: Importance of Export in Bangladesh economy

Indicator	FY1991	FY2001	FY2010	FY2011	FY2012	FY2013
Exports (billion USD)	1.7	6.5	16.2	22.9	24.3	27.0
Trade as % of GDP	16.8	33	39.8	50.5	51.5	49.9
Export as % of GDP	5.5	13.5	16.1	20.5	20.9	21.0
Export as % of Import	49.5	69.3	68.3	68.1	68.4	72.5
ODA as % of Exports	99.1	472.5	748.8	1290.0	1194.7	970.1

Sources: Estimated on the basis of Bangladesh Economic Review, various years.

The trends in export-related correlates signifies the importance of exports for Bangladesh's economy. Besides, the change of trade volume and trading pattern, the trade structure has also undergone significant changes. Rahman et al. (2011) observed

⁵ Bangladesh's fiscal year starts in July and ends in June.

that trade orientation did not take place at the same pace in most of the sectors. Over these years, Ready Made Garments (RMG) has emerged as the single-most export earning product of the country, replacing the traditional jute and jute products. A number of other products (e.g., leather goods, footwear, pharmaceuticals, melamine, battery, plastic goods etc.) have been added to Bangladesh's export basket. However, their contribution to total export earnings remains very insignificant. Indeed, a large part of export rise over the past three decades was related to only one sector, – RMG (World Bank, 1999). The share of RMG export was about 50 per cent of total in FY1991. The share increased to about 80 per cent in FY2013.

Bangladesh's export continues to suffer from lack of market diversification. World Bank (1999) observed that a large part of the export rise in Bangladesh originated from preferential market access in developed countries. The preferential market access to Bangladesh came in the form of GSP facilities provided by developed and some transitional countries outside the WTO mechanism. From this perspective, Bangladesh needs to diversify her exports. GSP is a system whereby preferential treatment by way of a reduced or duty-free tariff rate is granted by developed countries to eligible products imported from the developing countries. This preferential treatment is granted without any reciprocal obligation on the part of the developing countries. The main purpose of the above tariff concession scheme is: (a) to increase the export earnings of the preference receiving countries; (b) to promote their industrialisation; and (c) to accelerate their role of economic growth. Under the GSP, Bangladeshi products currently receive preferential market access from a number of tariff areas, including Australia, Belarus, Bulgaria, Canada, the EU, Japan, New Zealand, Norway, Switzerland, the Russian Federation, and the United States of America (USA)⁶. In recent years, the combined share of the EU, the USA, and Canada in total export of Bangladesh has been about 90 per cent.

The perspective plan of Bangladesh for the period 2010-2021 aimed a 5.8 times increase in export earnings of Bangladesh between FY2009 and FY2021 (GED 2010). The ongoing Sixth Five Year Plan in Bangladesh identifies a number of strategies towards this end: i) product diversification through creating supply-side capacities for

⁶ The GSP facility offered by the US is put on hold at present.

new products which would enhance the export basket, ii) geographical diversification by widening the range of destined markets for exports, iii) diversification beyond export of goods, into services, by seeking opportunities to expand non-merchandise exports, and iv) intermediate goods diversification (GED 2011).

To attain the stated goal, over the coming years, Bangladesh will certainly need to enhance her supply-side capacities, promote trade facilitation and improve her competitiveness. Concurrently, Bangladesh will also require to strategise in a manner that enables her to realize the advantages originating from its participation in the WTO and various bilateral and regional agreements. As an LDC, Bangladesh receives preferential market access in most of the developed countries. WTO also has several provisions for preferential treatment of goods and services originating from LDCs. In view of the slow progress as regard realizing the DFQF agenda as per the DDR, countries around the world are becoming keen towards participating in bilateral, regional and plurilateral trade negotiations.

In the above context, product and market diversification in Bangladesh also call for full utilisation of provisions of various regional arrangements. Bangladesh is a Member of several regional trading arrangements: the South Asian Preferential Trading Arrangement (SAPTA), which is being strengthened with the establishment of South Asian Free Trade Area (SAFTA) in 2006 and the Asia Pacific Trade Agreement (APTA), previously known as the Bangkok Agreement. Bangladesh also participates in the Bay of Bengal Initiative for Multi Sectoral Technical and Economic Cooperation (BIMSTEC). A sub-regional initiative called BCIM (Bangladesh, China, India and Myanmar) is now in the process of negotiation among the mentioned Asian countries. Regrettably, thus far, effectiveness of these RTAs cannot be considered encouraging.

A slow progress in effectively forging Regional Trade Agreements (RTAs) led the member countries to be interested on signing more Bilateral Trade Agreements (BTAs) with intra and extra regional member countries. For example, India has signed a number of bilateral trade agreements with its neighbouring countries, such as Bhutan, Nepal, and Sri Lanka. Again, Bangladesh has made very little progress towards forming Bilateral Free Trade Agreement (BFTA) with her major trade partners. Under these

circumstances, Bangladesh is facing considerable preference erosion as result of higher tariff barriers in the export destinations.

IV. Data and Methodology

Tariff Preference

To evaluate market access conditions of Bangladeshi exports, the paper utilises bilateral trade data at the 6-digit level of the HS⁷ classification. Export of Bangladesh has been employed against exporting partners (all importing partners has been considered, although the number of importing partners would differ according to the product in consideration). Products have been considered at the HS 6-digit level if total value of export for that product exceeded USD 10,000 for that particular year⁸. The UN COMTRADE database has been employed for bilateral trade data and UNCTAD TRAINS for obtaining tariff data. Data for other indicators were gathered from World Development Indicator (WDI), World Bank and UNCTADSTAT, UNCTAD. The current study adopts similar methodology to that of Nicita and Rollo (2013) and Debaere and Mostashari (2010).

Since the study predominantly examines changes in trade and trade policy, two points in time, 2003 and 2013, have been considered. As mentioned before, trade values less than USD 10,000 were ignored. The data has been categorised into three broad categories⁹ namely, primary, intermediate and final products. The list of primary merchandises include 576 HS 6-digit products, the intermediate list contains 2863 HS 6-digit products and the final goods list contains 1782 products. The classification has been done principally to categorise possible differential trends in the broad groups.

Analysis also follows from three different type of trade flows: new flows, surviving flows and disappearing flows. Each type of flow¹⁰ indicates new products together with newly accessed export destinations. New flow represents firsthand export flows in 2013,

⁷ 2002 HS code classification has been employed.

⁸ This was done to avoid products which are exported at minimal levels. Inclusion of such products would entail biasedness as such products do not represent a significant proportion of total exports.

⁹ Primary, intermediate and final goods classification has been categorized according to the Broad Economic Categories (BEC) classification

¹⁰ Product-destination combination have been considered while calculating each of the flows.

which were non-existent in 2003. Alternatively, disappearing flow indicates export flows which were present in 2003 but were missing in 2013. Surviving flow specifies export flows which were present in 2003 and continued in 2013¹¹.

Market access conditions are captured by two variables - “the first variable captures direct market access conditions (the tariff faced by exports), and the second variable captures relative market access conditions (the tariff faced by an exporter relative to the tariff faced by foreign competitors)” (Nicita and Rollo, 2013). While the first measure is bilateral applied tariff, the relative market access condition is measured by RPM (Hoekman and Nicita, 2011; and Fugazza and Nicita, 2013). RPM considers preferential rates given to a particular country, although lower than MFN rates, and takes into account that even such rates could penalise the exporting country given that other competing countries could benefit from even lower preferential margins. The RPM is calculated as “the difference, in tariff percentage points, that a given good faces when exported from a given country relative to being exported from any other” (Nicita and Rollo, 2013).

$$RPM_{g,jk} = \frac{\sum_v tv_{g,vk} \tau_{g,vk}}{\sum_v tv_{g,vk}} - \tau_{g,jk}, v \neq j$$

where j denotes the exporter

k denotes the importer

g denotes the product (HS 6-digit)

τ is bilateral tariff

v denotes countries competing with country j in exporting to country k

tv is export value

The measure of preferential margin could be positive, negative or equal depending on the advantage or disadvantage that the exporting country faces (Bangladesh in this case) as compared to other exporting nations. A negative preferential margin indicates that Bangladesh faces tariffs which are higher than those of her competitors. On the other hand, a positive preferential margin signifies preferential treatment (considering

¹¹ However, surviving flows cannot confirm the continuity of the flows throughout the years. This analysis considers points in time and not trend over the years.

the MFN tariff rates) for Bangladesh. Preferential margin is zero when there is no discrimination, implying identical tariffs across all trading partners.

Trade Cost

The trade cost analysis employs the gravity model with a focus on examining the impact of trade cost for Bangladesh's export. The *raison d'être* for the consideration of the gravity model and which makes this model more attractive than other methodologies is – the intuitive appeal of the model, the model fitting important stylized facts, real data employment with ease to explain trade flows in relation to the policy factors and that the model is estimated using OLS regression. With an aim to establish the intuitive gravity model, Tinbergen (1962) and Pöyhönen (1963), the forerunners of the gravity model, utilized the basic concept to explain the volume of bilateral trade flow between countries. Recent times have witnessed gravity models incorporating variables beyond the traditional measures such as regulatory and institutional policies together with infrastructure characteristics. In this connection, Leamer and Levinsohn (1995) stated that the gravity model has generated “some of the clearest and most robust findings in empirical literature” of trade.

Trade (exports, imports or a combination of both) between two countries is determined by their economic sizes (GDP and/or GNP) and is inversely related to the distance between them. This forms the basis of the gravity model and would typically take the following form:

$$X_{ij} = C \frac{Y_i Y_j}{t_{ij}}$$

where X_{ij} = trade (exports and/or imports) from i to j

C = constant

$Y_i Y_j$ = economic mass of the respective countries (GDP)

t_{ij} = distance between i and j

An intuitive gravity model follows from the above-mentioned equation in a linear outline (this is the basic form of a gravity model):

$$\log X_{ij} = C + \beta_1 \log Y_i + \beta_2 \log Y_j + \beta_3 \log t_{ij} + \varepsilon_{ij}$$

The linear intuitive model, or the basic gravity model, demonstrates two stylized facts of international trade for a generalized economy: (1) Countries with higher economic masses trade more and (2) Countries which are distant encompass lower trade. This aspect of the basic gravity model has been documented in Shepherd (2012), WTO (2012) and every text describing or analysing the gravity concept. However, the basic intuitive gravity model is not sufficient to incorporate more inclusive and critical concepts. Taking reference from Shepherd (2012), it can be observed that the basic model would be void if countries enter into a PTA, which will unambiguously affect a third country engaged in trade with the recently PTA adopted countries. Additionally, the model would also be inaccurate if two countries share common border and/or share a common language. Another example contradicting economic theory is observed when transport cost is reduced across each and every region and route. With the basic gravity model indicating that trade would be enhanced as a result of decrease in trade costs, this would not actually be the outcome in this case as relative prices would remain unchanged across countries and markets.

Advanced concepts were developed together with the innovation of theoretical constructs. Anderson (1979) provided the initial attempt to provide a theoretical basis for gravity models. Assuming the Armington assumption, Anderson (1979) developed a model where goods were differentiated by country and consumers had differentiated preferences. The theory implied that a country would consume at least some of the products from each partner country (regardless of the price) and each country would not be producing in terms of their comparative advantage only (WTO, 2012). Alternative theoretical foundations of the gravity model were presented by Krugman (1979), Helpman and Krugman (1985), Bergstrad (1985, 1990), Deardorff (1998) and Anderson and Mercouiller (1999). With Anderson (1979) taking up the initiative to motivate a theoretical gravity model, it was Anderson and Wincoop (2003) who formulated the modern day theory-backed gravity model. The authors included two additional variables, namely, outward multilateral resistance and inward multilateral resistance. Outward multilateral resistance captures the fact that exports from country i to j depends on trade cost across all possible markets. Alternatively, inward multilateral resistance essentially captures the dependence of imports of country i coming from country j on trade cost relating to all possible suppliers. Since the basic gravity model

does not incorporate these variables, there is effectively the problem of omitted variable bias. Hence, this model is ought to have significant implications, even though the resistance terms cannot be included in the model as data points. Together with the model devised by Anderson and Wincoop (2003), other theoretically sound gravity models would include Chaney (2008), Eaton and Kortum (2002) and Helpman et al. (2008).

A typical Anderson and Wincoop (2003) model would take the following form:

$$\log X_{ij} = \log Y_i + \log E_j - \log Y + (1 - \sigma)[\log \tau_{ij} - \log \omega_i - \log P_j]$$

$$\omega_i = \sum_{j=1}^c \left\{ \frac{\tau_{ij}}{P_j} \right\}^{1-\sigma} \frac{E_j}{Y} \quad Y = \sum_{i=1}^c Y_i$$

$$P_j = \sum_{i=1}^c \left\{ \frac{\tau_{ij}}{\omega_i} \right\}^{1-\sigma} \frac{Y_i}{Y}$$

$$\log \tau_{ij}^k = b_1 \log \text{distance}_{ij} + b_2 \text{contig} + b_3 \text{comlang}_{\text{off}} + b_4 \text{colony} + b_5 \text{comcol}$$

where X is exports indexed over countries (i and j)

Y is GDP

E is expenditure (not necessarily similar to GDP on a sectoral basis)

$Y = \sum_{i=1}^c Y_i$

σ is the intra-sectoral elasticity of substitution

and τ_{ij} is trade cost

The current paper, in an attempt to evaluate trade cost and its relatedness to the Bangladesh economy, employs a range of gravity models. Firstly, the paper employs the OLS estimation. OLS is a logical estimation to start with because OLS is econometric equivalent to a hypothetical line of best fit incorporating an association between trade, GDP, distance and other related variables. For OLS to be an consistent, unbiased and efficient estimator, the error term would have to have a mean of zero and be uncorrelated to the regressors (the orthogonality assumption), the error term would have to be independently drawn from a normal distribution with a fixed variance (the homoskedasticity assumption) and none of the explanatory variables should be a linear combination of the other variables (the assumption of full rank) (Shepherd, 2012). Hence, robust measures are incorporated in the following regressions to accommodate

any pattern of heteroskedasticity and orthogonality in the data. Together with other standard measures, the OLS estimator is corrected for by using heteroskedasticity-consistent (hc3) standard error estimator according to the Davidson and MacKinnon (1993) methodology. Another measure, which is very common in the gravity literature, is an adjustment which allows for the correlation of the error term within specific groups to be defined by a specific variable. Moulton (1990) states that failure to account for the clustering in data with multiple levels of aggregation can result in biased understated standard errors. A typical variable to take up the role of the clustering variable would be 'distance'.

To ensure the robustness of the results obtained from OLS estimations, the Poisson Pseudo¹²-Maximum Likelihood Estimator (PPML) have been estimated¹³. The PPML estimator has been used for gravity analysis because, apart from providing consistent estimates of the nonlinear model, the PPML is also consistent in the presence of fixed effects and the model automatically include observations for which the observed trade value is nil (which are dropped in OLS estimations). The latter is one of the striking and important features of this model because it is the case that not all partners would trade all products with all their counterparts (Haveman and Hummels, 2004).

¹² It is not necessary that the data be distributed as Poisson.

¹³ The existence of multiplicative error term in a non-linear gravity model can be accounted through the Poisson Pseudo-Maximum Likelihood Estimator (Silva and Tenreyro, 2006).

The augmented gravity model for export that would be employed for the current analysis is as follows¹⁴:

$$\ln_{EX_{ij}} = \alpha + \beta_1 \ln_{GDP_j} + \beta_2 \ln_{TC_{ij}} + \beta_3 \ln_{dist} + \beta_4 \text{infra} + \beta_5 \text{contig} + \beta_6 \text{gsp} + \beta_7 \text{rta_pta} + \epsilon_{ij}$$

where i and j are country of origin and destination respectively

$\ln_{IM_{ij}}$ represents log of import of country i from country j (at current USD)

\ln_{GDP_j} represents log of GDP of the partner countries (at current USD)

TC_{ij} is ad-valorem trade cost between country i and j (ESCAP-World Bank Trade Cost Database)¹⁵

\ln_{dist} represents the log of distance between country i and j

infra represents infrastructure quality of the partner countries

contig is a dummy variable equal to unity for countries which share a common border

rta_pta is a dummy variable equal to unity if the country pairs share bilateral or regional trade agreements

gsp is a dummy variable equal to unity if the importing country offers GSP (Generalised System of Preference) to the exporting nation (Bangladesh in this case)

$\ln_{EX_{ij}}$ represents the aggregate exports of Bangladesh at current prices. Although the basic gravity model states that both the reporting and partner country's GDP is likely to influence bilateral trade, but it is the case that only Bangladesh's partner (all the exporters when Bangladesh is importing and all the importers when Bangladesh is exporting) countries' GDP have been taken into account at the current juncture. This is because the current study specifically wants to concentrate on Bangladesh's exporting partners and their characteristics, and not vice versa. In this respect, Bangladesh's GDP can be considered to be constant throughout the sample period.

¹⁴ Other variables were also considered to be included as regressors to the gravity models - these would include remoteness, Global Competitiveness Index (GCI) index, weighted applied tariff and dummies for landlocked countries, countries sharing a common colonial background and for Asian countries. However, for the reason of better fit of the model, correcting for the problem of autocorrelation and multicollinearity and presenting an overall rationale, the variables have been excluded from the present regressions. Additionally, disaggregated measures of infrastructure variables (road density, rail density, passengers carried by air, air freight, electric power consumption, internet users, container port traffic, mobile cellular subscription and landline usage) were also considered. However, this leaves scope for taking up a more detailed research at a future date.

¹⁵ Methodology and data of Duval and Uthoktham (2012) has been followed

Quantifying trade costs is a common predicament in gravity literature. Almost every quantification has led the author concluding that the methodology might not have been inclusive and there might have been variables left out of the practice (expectedly influencing trade cost). The measure of trade cost is a new dimension in the field of gravity modelling, which follows from Duval and Uthoktham (2012). The authors have compiled inclusive components of trade cost, creating an index to represent the overall causality. The bilateral trade cost measure is comprehensive in the view that “it includes all costs involved in trading goods internationally with another partner (i.e. bilaterally) relative to those involved in trading goods domestically (i.e., intranationally)” (ESCAP-WB, 2013). The measure not only incorporates transport costs across the border and tariffs, but also other direct and indirect components of trade cost including costs associated with differing languages, currencies together with cumbersome import or export procedures. The basic assumption for this bilateral trade cost indicator is such that it assumes, for a particular country pair, trade cost is same in both direction¹⁶.

Distance is the next variable in the model. Although there are criticisms in literature regarding the consideration of nominal distance, however this measure is effective in capturing the remoteness of a country relative to its counterparts. The distance variable captures geo-distance (or air distance). Distance has been accounted for from the CEPII database, a database extensively pursued in gravity literature. Infrastructure variable is an infrastructure index estimate based on a perception study regarding a country’s quality of trade related infrastructure (ports, rails, roads, information technology and the like). Data ranges from one (lowest) to five (highest) and has been derived from World Development Indicators (WDI), World Bank.

Contig, GSP, RTA_PTA are dummy variables, taking a value of unity (or zero otherwise), representing the sharing of a common border, GSP provisions between the reporting and partner countries and the presence of RTAs and PTAs (including GSP) between counterparts respectively.

¹⁶ It would not be unwise to presume that such an assumption may inflate criticism.

The current analysis takes the route of a cross-sectional analysis for the Bangladesh economy. A light form of gravity database is used for the purpose of the analysis. All the feasible indicators¹⁷ were averaged over a period of 2003 and 2007 to transform the database to a cross-sectional panel from an unbalanced one. The data has been deliberately kept at this juncture because this period is an apt point in time to capture trade cost and its implications on Bangladesh trade. This is so because the period marks a decade of the implementation of trade related policy changes (in terms of opening up of the economy) of Bangladesh and also because data from 2008 onwards would be intermingled with the effects and after-effects of the global financial crisis. Data are included in the regression estimates for only the partners with whom Bangladesh has trading statistics (even for a single year over the study timeframe). This procedure effectively includes the effectual traders of Bangladesh economy and restricts the zero trade problem at a minimum level. This course of action may also partially account for the vastly known multilateral resistance term setback.

V. Empirical Results

Role of Tariff Preference

As was mentioned in Section 3, Bangladesh's exports are highly concentrated in a handful of developed countries. According to BEC classification, in 2013 about 97.3 per cent of export earnings of final products of Bangladesh originated from the developed economies¹⁸ (Table 4.1). Share of export of primary commodities to developed countries was also very high – about 95.7 per cent. Exports of intermediate commodities were relatively diversified. About 85.5 per cent Bangladesh's earnings from export of intermediate commodities in 2013 was received from developed countries. The aforementioned statistics confirm that Bangladesh's export of all three groups are highly concentrated in developed economies' markets.

¹⁷ Based on recent gravity literatures

¹⁸ The definitions of developing and developed countries were adopted from the World Bank country group classification.

Table 4.1: Share of Exports from Bangladesh in 2013

Country Group	Primary	Intermediate	Final
Developing countries	4.3%	14.5%	2.7%
Developed countries	95.7%	85.5%	97.3%

Source: Authors' estimation from the UN COMTRADE data.

On a positive note, over the last ten years (2003-2013), exports from Bangladesh have achieved higher growth in the developing country group. For example, exports of primary commodities in the developed market group grew by 2.2 times during the reference period (Table 4.2). On the other hand, primary commodities exports to developing nations increased by about 3.8 times over the comparable period. Similar trends are also observed for intermediate and final commodities. This implies, albeit slow, Bangladesh during the period 2003-2013 made progress towards market diversification. Curiously, it appears that Bangladesh also managed to diversify its export commodities basket. As is seen from table 4.2, between 2003 and 2013, exports of intermediate products registered the highest growth (3.7 times) among the three product groups, followed by primary products (3.1 times) and final products (2.4 times). It is however pertinent to take cognisance of the fact that Bangladesh's export basket is highly dependent on final products. About 97 per cent of total export earnings were received from final product exports while the shares of intermediate and primary products groups were 2 per cent and 1 per cent respectively.

Table 4.2: Growth of export earnings from Bangladesh, 2003 to 2013

Country Group	Primary	Intermediate	Final
Developed countries	213.7%	196.4%	159.1%
Developing countries	380.0%	444.1%	326.3%
Total	307.9%	368.9%	235.7%

Source: Authors' estimation from the UN COMTRADE data.

The extent of export diversification in terms of both product and market can be better understood from analysis of export flow trends. Export flow comparison between 2003 and 2013 reveals that Bangladesh experienced both new flows and disappearing flows. Among all the commodities, in 2013, about 46.2 per cent export flows survived from that of 2003. As is seen from table 4.3, among the three product categories (according to BEC classification), intermediate category registered the highest amount of new flows (2309), followed by final product category (1388) and primary product category (299). However, it may be highlighted that a large number of intermediate exports flows could cater only a small proportion of export earnings. Overall, among 6918 export flows in

the year 2013, 3996 flows were not present in 2003. It is also to be noted that, a high number of flow also disappeared (3489) over the two referred period. Overall, the number of export flows increased by only 507 (7.3 per cent) between the two periods.

Table 4.3: Number of product-destination export flows for Bangladesh, 2003 to 2013

Product Category	Flow Category	Number of Products (HS 6 digit)
Primary	New flows	299
	Surviving flows	187
	Disappearing flows	248
Intermediate	New flows	2309
	Surviving flows	2044
	Disappearing flows	2025
Final	New flows	1388
	Surviving flows	1198
	Disappearing flows	1216
Total	New flows	3996
	Surviving flows	3429
	Disappearing flows	3489

Source: Authors' estimation from the UN COMTRADE data.

The ratio of new to disappearing flows (1.1) also confirms Bangladesh's slow progress towards export diversification (Table 4.4.). This ratio is almost equal for all product categories. On the other hand the ratio of new to surviving flow also found to be small (1.2).

Table 4.4: Ratio of different categories of product-destination export flows for Bangladesh, 2003 to 2013

Product Category	New to Disappearing flows ratio	New to Surviving flows ratio
Primary	1.2	1.6
Intermediate	1.1	1.1
Final	1.1	1.2
All Products	1.1	1.2

Source: Authors' estimation from the UN COMTRADE data.

The slow progress of Bangladesh towards obtaining new export flows may be a result of unfavourable market access conditions. The analysis based on RPM estimation shows that, in 2013, about 51.9 per cent of all export products of Bangladesh faced negative tariff preferences in her export destinations (Table 4.5). This share is the highest for the final product group; about 54.1 per cent of which competed against negative preference margin. However, about 21.6 per cent of final products also enjoyed positive

preferences. Share of products which faced negative tariff preference margin was low for primary product group (17.9 per cent). Indeed, about 71.6 per cent of the primary export products from Bangladesh received equal preferences. Intermediate product exports enjoyed the highest share of positive preferences, although the number was limited to only 26.9 per cent.

Table 4.5: State of tariff preference faced by the Bangladesh's exports according to RPM (All Products)

	Primary	Intermediate	Final	Total
Negative	12	40	1738	1790
Equal	48	82	779	909
Positive	7	45	695	747
Total	67	167	3212	3446
<i>Share of total (%)</i>				
Negative	17.9	24.0	54.1	51.9
Equal	71.6	49.1	24.3	26.4
Positive	10.4	26.9	21.6	21.7

Source: Authors' estimation from the UN COMTRADE data.

RMG is the single largest export commodity for Bangladesh. All RMG products belong to the final commodity group. It can be seen from Table 4.6 that, about 55.5 per cent of RMG commodities faced negative tariff preferences in 2013. Thus, although the products under RMG category cater to the bulk of the exports earnings, their destination is limited to certain tariff areas only.

Table 4.6: State of tariff preference faced by the Bangladesh's exports according to RPM (RMG)

RPM Status	Primary	Intermediate	Final	Total
Negative	0	0	1537	1537
Equal	0	0	658	658
Positive	0	0	575	575
Total	0	0	2770	2770
<i>Share of total (%)</i>				
Negative	N/A	N/A	55.5	55.5
Equal	N/A	N/A	23.8	23.8
Positive	N/A	N/A	20.8	20.8

Source: Authors' estimation from the UN COMTRADE data.

As all the primary and intermediate products fall under the non-RMG category, the state of tariff preference countered non-RMG export products was relatively better in 2013

compared to the RMG category. Even then, about 45.5 per cent of non-RMG final products faced negative tariff preferences.

Table 4.7: State of tariff preference faced by the Bangladesh's exports according to RPM (Non-RMG)

RPM Status	Primary	Intermediate	Final	Total
Negative	12	40	201	253
Equal	48	82	121	251
Positive	7	45	120	172
Total	67	167	442	676
<i>Share of total (%)</i>				
Negative	17.9	24.0	45.5	37.4
Equal	71.6	49.1	27.4	37.1
Positive	10.4	26.9	27.1	25.4

Source: Authors' estimation from the UN COMTRADE data.

Trade Cost

A complete model and a reduced model have been observed for each of the estimation techniques (OLS and PPML) to compare any distinctive distortion arising from omitted variable bias.

Table 4.8 presents the impact of the regressors over Bangladesh's export (log of the dependent variable). Models 1 and 2 present the complete models for OLS and PPML estimations respectively and models 3 and 4 present the reduced-form models for OLS and PPML. With the number of observations remaining identical for each of the estimations, the R^2 is very impressive and stands at above 86 per cent. This indicates that the fit¹⁹ of the models have been satisfactory. The model F-test is highly statistically significant, and this also indicates that the model is performing robustly.

Table 4.8 reveals that importer's GDP, trade cost and GSP provision are the only significant variables. Importer's GDP (positive coefficient) and trade cost (negative coefficient) are significant at 1 per cent level for each of the estimations. GSP provision, on the other hand, is significant at 5 per cent level with the exception of the PPML estimation employing the complete model (significant at 10 per cent level) (Model 7).

¹⁹ Controlling for the heteroskedastic complexity of error terms, the models are found to be robust and provides goodness of fit.

Regardless of the level of significance, it can be observed that these regressors impact volume of export for different estimation techniques as well as different combination of regressors. Additionally, PPML estimation of complete model (Model 3) suggests the contiguity factor to be significant at 10 per cent level of significance. This notion of negative contiguity factor border variable's impact on Bangladeshi export may require attention to enhance the potential of export opportunity regarding her proximities.

Table 4.8: Regression results of the impact of trade cost on Bangladesh's exports

Dependent variable: ln_EX

Regressors	OLS				PPML			
	Model 1		Model 2		Model 3		Model 4	
	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error
ln_GDP	0.50***	0.10	0.51***	0.10	0.03***	0.01	0.03***	0.01
ln_TC	-3.00***	0.54	-2.99***	0.53	-	0.03	-	0.03
ln_dist	-0.11	0.22	-0.10	0.22	-0.01	0.01	-0.01	0.01
infra	0.25	0.28	0.25	0.27	0.01	0.02	0.01	0.02
contig	-0.23	0.33			-0.03*	0.02		
gsp	0.68**	0.34	0.70**	0.33	0.04*	0.02	0.04**	0.02
rta_pta	0.05	0.25			0.01	0.02		
constant	19.66***	4.10	19.52***	4.16	3.09***	0.26	3.06***	0.26
R ²	0.8619		0.8618		0.8631		0.8619	
Observations	112		112		112		112	

Note: *** represents significance at the 1% level

** represents significance at the 5% level

* represents significance at the 10% level

Nevertheless, trade cost, as an explanatory variable, keeps a high intensity of negative impact across each of the models observed. On the other hand, other regressors of the model namely, geographic distance, infrastructure condition of partner countries or regional associations like different RTAs (and/or FTAs, PTAs) do not affect Bangladeshi export significantly. In this respect, an insignificant 'distance' variable yields indirect conclusions in the sense that Bangladesh does not trade more with neighbouring countries and/or trade less with distant countries. This would violate the gravity concept and imply that other factors are impacting trade further than geographic distances. Considering price indices and other macro-economic indicators to be constant, it can be inferred from the analysis that trade cost is one of the major determinants of export volume in the Bangladesh context.

VI. Conclusion and Recommendation

The present paper makes an attempt to assess how market access in terms of tariff preferences in the export destinations influenced the performance of Bangladesh as regards export diversification between 2003 and 2013. The paper highlights a number of key findings. First, although export of Bangladesh is highly concentrated in terms of both product basket and markets, she made slow progress towards export diversification. Second, the attained progress was possible due to the fact that Bangladesh registered a higher exports growth in the non-traditional markets (developing markets). Growth of non-traditional products (primary and intermediate) was also higher compared to the traditional products. Third, the number of export flows between 2003 and 2013 increased only by an insignificant margin (7.3 per cent). Fourth, most of the Bangladesh's exports faced negative tariff preferences at the export destinations. Finally, the negative tariff preferences faced by Bangladesh are much higher for the products which she has a higher competitive advantage (RMG).

The above findings indicates that tariff preferences still can play a strong role as regards export performance of a LDC like Bangladesh which is constrained by her relatively weaker capacity as regards export diversification. Characterised by low per capita income, lack of basic necessities and amenities, weak infrastructural arrangements predominantly involving energy issues and connectivity and fragile institutional and legal arrangements, Bangladesh would have to diversify their exportability in order to move towards a higher growth trajectory which can also offer gainful employment to her large population. To attain the goals of fostering a diversified export sector it is perhaps pertinent to take the needed measures which can enhance her export competitiveness and strengthen her supply-side capacities. However, it is also to be recognised, as can be found from the analysis of this paper, slow progress of global trade negotiation at the WTO is also keeping a country like Bangladesh at bay. It is thus important to ensure an early harvest of promised DFQF market access in the developed countries in a meaningful way.

Moving to the second episode of the paper, where it was analysed whether trade cost affected Bangladesh's exports by utilising the WB-ESCAP estimates, it was found that trade cost, including a number of components including tariff, transport cost, cultural components and trade facilitation issues, influence Bangladesh's exports together with positive correlation with the economic condition of partner countries, measured by GDP and GSP facilities. Curiously, RTAs and PTAs do not influence Bangladesh's export.

Such findings of the study bring forward a number of central policy recommendations for Bangladesh. First, it is learned from the study that higher trade cost leads to lower trade volume for Bangladesh. In the context of Bangladesh, it is often the case that difficulties in the implementation of policies arise from their non-binding nature, lack of coordination and interlinkage of policies, inability to employ trade policies for the betterment of domestic-market oriented and import-substituting industries and the lack of initiative towards strengthening of trade promoting and trade diplomacy associated institutional bodies (Moazzem et al., 2011). In this backdrop, a rethinking of the trade-related policies of Bangladesh is essential, to benefit from the changing scenario of both the domestic and global grounds. To ensure maximum possible welfare for the country, trade policies of Bangladesh should immediately reflect her priorities and developmental needs. Second, the RTAs and/or PTAs with which Bangladesh are associated are largely ineffective, at least until 2007. The major limitation lies in the quiescent SAARC Preferential Trade Arrangement (SAPTA), SAFTA and SAARC negotiations. Bangladesh should try to influence its partners in these RTAs and/or PTAs to make these platforms more trade-friendly.

In conclusion, progression towards the reduction of trade costs would lead towards diversification of her exports together with the accessibility of diverse markets. At the same time the emerging economies should also consider a faster market for exports from LDCs like Bangladesh. Although the nation has come a long way from resolving numerous bottlenecks of trade cost including the key factor of non-transparency in customs procedures²⁰, however, Bangladesh should take the road towards enhanced

²⁰ Complex nature of customs documentation, requirement of longer spans of time in releasing and clearing goods from ports and corrupt customs personnel have been documented as major hurdles for carrying out trade in Bangladesh (Bhattacharya and Hossain, 2006).

human and financial resources, better infrastructure facilities and apposite political support from the part of the politicians. For a low-income developing country²¹ like Bangladesh, it is hence recommended that she balance the cost and benefit aptitude of trade facilitation and act in view of that. Hence, the need of the day is the integration of inclusive and effective trade-related policies.

²¹ Bangladesh is categorised as a Least Developed Country (LDC).

References

- Ali, R., Alwang, J. and Siegel, P. B. (1991). Is export Diversification the best way to achieve export growth and Stability? A look at three African Countries. World Bank Working Papers No. 729. World Bank Working Paper Series.
- Anderson, J. (1979). A Theoretical Foundation for the Gravity Model. *American Economic Review*, 69 (1), 106-116.
- Anderson, J. E., and Marcouiller, D. (1999). Trade, location and security: An empirical investigation. NBER working Paper No 7000.
- Anderson, J. E., and Wincoop, E. V. (2003). Gravity with Gravitas: A Solution to the Border Puzzle. *American Economic Review* , 93 (1), 170-192.
- Arvis, J-F., Duval, Y., Shepherd, B., and Utoktham, C. (2013). Trade Costs in the Developing World. 1995-2010. World Bank Policy Research Working Paper 1309. The World Bank Poverty Reduction and Economic Management Network.
- Besedes, T. and Prusa, T. (2006). Ins, outs, and the duration of trade. *Canadian Journal of Economics*, 39, 266–295.
- Bergstrand, J. H. (1985). The gravity equation in international trade: Some microeconomic foundations and empirical evidence. *Review of Economics and Statistics*, 67 (3), 474–481.
- Bergstrand, J. H. (1990). The Heckscher-Ohlin-Samuelson model, the Linder hypothesis, and the determinants of bilateral intra-industry trade. *Economic Journal*, 100 (4), 1216–1229.
- Chaney, T. (2008). Distorted Gravity: The Intensive and Extensive Margins of International Trade. *American Economic Review*, 98 (4), 1707-1721.
- Davidson, R., & MacKinnon, J. G. (1993). *Estimation and Inference in Econometrics*. New York: Oxford University Press.
- Deardoff, A. (1998). Determinants of bilateral trade: Does gravity work in a neoclassical world? In: J. A. Frankel (Ed.), *The regionalization of the world economy*. Chicago: University of Chicago Press.
- Debaere, P. and Mostashari, S. (2010). Do tariffs matter for the extensive margin of international trade? An empirical analysis. *Journal of International Economics*, 81, 163–169.
- Duval, Y. and Utoktham, C. (2012). Trade Costs in Asia and the Pacific: Improved and Sectoral Estimates. Trade and Investment Division, ESCAP Staff Working Paper 05/11. UNESCAP.

Eaton, J. and Kortum, S. (2002). Technology, Geography, and Trade. *Econometrica*, 70 (5), 1741-1779.

Edo, P. J. M. and Heal, A. (2013). Duty-Free, Quota-Free Trade for Asia-Pacific Least Developed Countries: Overview and Update. Asia-Pacific Research and Training Network on Trade (ARTNeT)) Policy Brief no. 36. Bangkok: UNESCAP.

ESCAP-WB. (2013). ESCAP-WB Trade Cost Database: Explanatory Note for Users. Retrieved 10 15, 2013, from ESCAP: <http://www.unescap.org/tid/artnet/db/usernote-2013.pdf>

Engel, J. (2009). Assessing the Chinese and Indian LDC Preference Schemes – Initial Observations. Working draft. Retrieved from <http://www.tulane.edu/~dnelson/PEBricsConf/Engel-BRICS%20Prefs.pdf>

Fugazza, M. and Nicita, A. (2013). The direct and relative effects of preferential market access. *Journal of International Economics*, 89, 357-368.

GED. (2010). Outline Perspective Plan of Bangladesh 2010-202: Making Vision 2021 A Reality. Dhaka: Planning Commission, Ministry of Planning, Government of Bangladesh (GoB).

GED. (2011). Sixth Five Year Plan FY2011-FY2015: Accelerating Growth and Reducing Poverty (Part 1). Dhaka: Planning Commission, Ministry of Planning, Government of Bangladesh (GoB).

Haveman, J. and Hummels, D. (2004). Alternative Hypotheses and the Volume of Trade: The Gravity Equation and the Extent of Specialization. *Canadian Journal of Economics*, 37 (1), 199-218.

Helpman, E. and Krugman, P. (1985). Market structure and foreign trade. Cambridge: MIT Press.

Helpman, E., Melitz, M. and Rubinstein, Y. (2008). Estimating Trade Flows: Trading Partners and Trading Volumes. *Quarterly Journal of Economics*, 103 (2), 441-487.

Hoekman, B. and Nicita, A. (2011). Trade Policy, Trade Costs, and Developing Country Trade. *World Development*, 39, 2069–2079.

Hossain, S. M. (2009). South Asian Free Trade Area: Implications for Bangladesh. MPRA Paper No. 18517.

Krugman, P. (1979). Scale economies, product differentiation, and the pattern of trade. *American Economic Review*, 70 (5), 950-9.

Leamer, E. and Levinsohn, J. (1995). International Trade Theory: The Evidence. In G. Grossman and K. Rogoff (eds.), *Handbook of International Economics*. Amsterdam: Elsevier.

Moazzem, K. G., Ahmed, N., Manzur, S. N. and Chowdhury, M. I. (2011). Framework for the Proposed Comprehensive Trade Policy 2012-2017. Dhaka: Centre for Policy Dialogue (CPD).

Moulton, B. (1990). An Illustration of the Pitfall in Estimating the Effects of Aggregate Variables on Micro Units. *Review of Economics and Statistics*, 72 (2), 334-338.

Novy, D. (2011). Gravity Redux: Measuring International Trade Costs with Panel Data.

Nicita, A. and Rollo, V. (2013). Tariff Preferences as a Determinant for Exporters from Sub-Saharan Africa. Policy Issues in International Trade and Commodities Study Series No. 60. New York and Geneva: United Nations Conference on Trade and Development (UNCTAD).

Pöyhönen, P. (1963). A tentative model for the volume of trade between countries. *Weltwirtschaftliches Archiv* 90, 93-100.

Presbish, R. (1950). The Economic Development of Latin America and its Principal problems. New York: United Nations.

Rahman, M. M. (2003). A Panel Data Analysis of Bangladesh's Trade: The Gravity Model Approach. Retrieved 07 16, 2013, from <http://www.etsg.org/ETSG2003/papers/rahman.pdf>.

Rahman, M.M. (2009). The Determinants of Bangladesh's Imports: A Gravity Model Analysis under Panel Data. *Indian Journal of Economics*, 357.

Rahman, M. M. and Dutta, D. (2012). The Gravity Model Analysis of Bangladesh's Trade: A Panel Data Approach. *Journal of Asia-Pacific Business* , 13 (3).

Rahman, M. (2014). What does the Bali package mean for the LDCs? *WTO Bridges Africa*. Volume 3, Number 3. International Centre for Trade and Sustainable Development (ICTSD).

Rahman, M., Moazzem, K. G., Hossain, S. S., Iqbal, M. A. and Rahman, M. T. (2011). Bangladesh Labour and Social Trends Report 2010. Dhaka: Centre for Policy Dialogue (CPD) and International Labour Organization (ILO).

Ricardo, D. (1817). Principles of Political Economy and Taxation. New York: Penguin.

Roy, M. and Rayhan, M. I. (2011). Trade Flows of Bangladesh: A Gravity Model Approach. *Economics Bulletin* , 31 (1), 950-959.

Samen, S. (2010). A primer on Export Diversification: Key Concepts, Theoretical Underpinnings and Empirical Evidence. Growth and Crisis Unit. World Bank Institute.

Shepherd, B. (2012). The Gravity Model of International Trade: A User Guide. Bangkok: UNESCAP.

Silva, J. S. and Tenreyro, S. (2006). The Log of Gravity. *Review of Economics and Statistics*, 88 (4), 641-658.

Singer, H.W. (1950). The distribution of Trade between Investing and Borrowing Countries. *American Economic Review*, 40, 531-548.

Smith, A. (1776). *The Wealth of Nations*. London: Methuen.

Tinbergen, J. (1962). *Shaping the World Economy: Suggestions for an International Economic Policy*. New York: The Twentieth Century Fund.

UNCTAD. (2014). UNCTADSTAT. United Nations Conference on Trade and Development. Data Centre. Retrieved from http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en

World Bank. (1999). *Bangladesh Trade Liberalization: Its Pace and Impacts*. Report No. 19591- BD. Poverty Reduction and Economic Management Unit, South Asia Region. Retrieved from <http://siteresources.worldbank.org/INTSARREGTOPINTECOTRA/34004324-11204907-24746/20926224/TradeLiberalizationItsPaceandImpacts.pdf>

WTO. (2012). *A Practical Guide to Trade Policy Analysis*. World Trade Organisation.

Annex A

Table 4: RPM table for Bangladesh's Exports in 2013

Product	Negative	Equal	Positive	Total
30199	0	2	0	2
30389	1	7	1	9
30617	4	8	4	16
30624	0	2	0	2
70999	0	3	2	5
80290	1	3	0	4
120740	2	2	0	4
160521	0	3	3	6
170199	0	2	0	2
240110	1	1	1	3
240120	6	7	4	17
271012	0	1	0	1
271019	2	1	1	4
300490	8	21	0	29
391590	1	2	1	4
392321	2	1	5	8
392390	1	3	4	8
410419	1	2	2	5
410441	0	2	4	6
410449	2	2	2	6
410622	1	2	2	5
410712	0	2	2	4
410792	0	4	1	5
410799	2	5	1	8
420291	6	4	5	15
420292	15	6	6	27
520841	0	0	1	1
530310	1	11	1	13
530710	2	9	2	13
530720	5	16	3	24
531010	4	14	3	21
560790	5	6	7	18
610120	14	8	7	29
610130	16	9	7	32
610220	17	7	7	31
610230	16	8	8	32
610342	21	10	7	38
610343	17	6	7	30

Product	Negative	Equal	Positive	Total
610432	13	7	6	26
610433	13	5	6	24
610442	21	7	7	35
610443	19	6	7	32
610444	14	7	7	28
610452	19	7	7	33
610462	22	10	7	39
610463	16	8	7	31
610469	19	9	7	35
610510	27	11	7	45
610520	18	9	7	34
610610	26	9	7	42
610620	19	6	7	32
610711	20	9	6	35
610712	10	6	5	21
610721	17	10	7	34
610821	20	9	6	35
610822	18	8	6	32
610831	16	9	6	31
610832	13	7	6	26
610891	12	5	6	23
610892	10	6	6	22
610910	35	10	8	53
610990	27	13	8	48
611011	15	7	7	29
611012	6	7	6	19
611020	25	9	8	42
611030	23	8	8	39
611090	19	7	7	33
611120	24	11	7	42
611130	17	8	6	31
611211	16	6	7	29
611241	0	23	0	23
611420	17	6	7	30
611430	18	6	7	31
611595	16	7	7	30
620112	20	7	7	34
620113	16	5	7	28
620192	19	7	7	33
620193	18	7	7	32
620212	18	6	7	31
620213	19	7	7	33
620292	16	11	7	34
620293	18	6	8	32

Product	Negative	Equal	Positive	Total
620332	17	6	7	30
620333	14	6	7	27
620342	29	10	8	47
620343	22	10	7	39
620349	20	8	7	35
620432	15	6	7	28
620433	14	6	7	27
620442	22	8	7	37
620443	17	6	7	30
620452	23	7	8	38
620453	16	7	7	30
620462	27	8	8	43
620463	22	8	7	37
620469	24	7	7	38
620520	29	11	7	47
620530	23	8	7	38
620590	25	7	8	40
620630	24	11	8	43
620640	20	9	7	36
620690	18	5	7	30
620711	14	6	7	27
620721	11	8	6	25
620791	17	6	5	28
620821	13	8	6	27
620920	25	10	6	41
620930	18	8	6	32
621040	13	8	8	29
621050	14	6	7	27
621111	15	7	7	29
621132	18	8	7	33
621133	17	6	7	30
621142	20	8	7	35
621143	17	7	7	31
621210	19	7	7	33
621710	16	6	8	30
630221	8	2	7	17
630222	4	4	6	14
630231	7	2	7	16
630232	3	3	7	13
630260	10	3	6	19
630291	7	4	6	17
630391	3	1	6	10
630510	10	9	4	23
630532	3	3	2	8

Product	Negative	Equal	Positive	Total
630622	10	7	6	23
630710	5	5	3	13
630790	14	9	7	30
631010	0	10	0	10
631090	0	6	0	6
640291	8	3	4	15
640299	14	6	6	26
640391	20	6	6	32
640399	22	8	6	36
640419	15	6	6	27
640610	0	3	1	4
650500	20	8	7	35
670419	1	4	2	7
681291	1	0	1	2
691110	15	4	7	26
720918	2	1	0	3
740400	0	2	0	2
847690	0	1	0	1
871200	4	3	5	12
940430	2	5	5	12

Note: RPM has been calculated for products having a cumulative export figure of at least USD 10,000