

# **Impact of Natural Barriers on Export Competitiveness of Fruits and Vegetables**

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## **Background**

The proposed research is planned to estimate export potential of selected agricultural exportable products (Fruits/Vegetables) by estimating protection and competitiveness of these products in the international market.

Natural barrier can be defined as transaction cost incorporating both implicit and explicit cost.

By incorporating this cost in the estimating protection (nominal and effective) and in Policy Analysis Matrix (PAM), the research will show relative importance of both natural and policy barrier in export.

## **Background(Cont'd)**

Agricultural export constitutes an insignificant portion of total export from Bangladesh. The country is basically a net importer of agricultural commodities such as food grains, live animals, edible oil, sugar, fruits, onion, lentil, milk and milk products, etc.

In addition to traditional agricultural export items such as raw jute and jute manufactures, frozen shrimp, frog legs and fish, etc.; the country is also exporting different types of fruits, vegetables and flowers. The policy makers are also emphasizing the rice export, particularly since last couple of years.

## Objectives

The broad objective of this research is to identify the impact of different barriers (policy and natural) on competitiveness of Bangladeshi exportable fruits/vegetables and suggest policy options to reduce existing barriers. The specific objectives are as follows:

- To identify and estimate the different policy and natural barriers faced by the selected Bangladeshi agricultural products (fruits/vegetables) in export market
- To estimate the effect of both natural and policy level barriers on competitiveness of agricultural products (fruits/vegetables) exported from Bangladesh
- To examine the policy level support available for fruits/vegetables export from Bangladesh

**Related hypotheses can be written as follows:**

What are the policy barriers faced regarding the fruits/vegetables exports in international market?

What are the sources of natural barriers for fruits/vegetables in export market?

Do the natural and policy barriers affect competitiveness of Bangladeshi fruits/vegetables in international market?

What are the policy supports available for the Bangladeshi exporters and what need to be done for promoting export?

## **Literature Review**

Milner (2002) stated that most recent work related to measurement of effective protection has been inspired by pressures for trade liberalisation, and the resulting desire to measure pre-reform and post-reform protection

Kirchner and Picot(1987) argued that determinants of transaction costs in the distribution system factors influencing transaction costs will change traders' opportunity sets and will also lead to structural changes in the distribution system.

Waters (1970) mentioned that extension of the theory of effective protection to include transport costs is straightforward. The existence of freight costs causes divergence between domestic and foreign prices hence a difference in domestic value-added from what it would be in a world without transport costs.

## **Fruits/Vegetables Export in Bangladesh**

About more than 100 types of fruits and vegetables are exported from Bangladesh to more than 40 countries in the world.

Export of fresh fruits and vegetables from Bangladesh are increased from 46.41 million \$ in FY2004-05 to 209.38 million\$ in FY2013-14. Fresh fruits and vegetables export and export growth from FY2004-05 to FY2013-14 are shown in Table 1.

**Table 1: Export Performance of Fresh Fruits and Vegetables in Bangladesh**

<b>Fiscal Year</b>	<b>Quantity Exported (MT)</b>	<b>Export Value (in Million US\$)</b>	<b>Export Growth</b>
2004-05	29100	46.41	-
2005-06	19460	39.59	(-) 14.69
2006-07	19805	40.53	(+) 2.37
2007-08	33626	69.12	(+) 70.54
2008-09	24670	50.71	(-) 26.63
2009-10	29370	64.21	(+) 26.62
2010-11	48428	109.41	(+) 70.39
2011-12	59573	134.59	(+) 23.01
2012-13	80660	182.23	(+) 35.39
2013-14	92679	209.38	(+) 14.89

*Source: Export Promotion Bureau (EPB), Bangladesh*



The Table 2 and 3 show area, production and yield of vegetables in Bangladesh and export statistics of Bangladesh respectively. Although there is fluctuation in per acre yield from 2004-05 to 2010-11, the volume of exported vegetables has been increasing day by day, as the quantity of vegetable exported is 17218 MT in 2005-2006 and 75435 MT in 2013-14.

**Table-2:Area,Production and Yield of Vegetable, in Bangladesh**

<b>Year</b>	<b>Area ('000 Acres)</b>	<b>Prod action ( '000 MT)</b>	<b>Per Acre Yield (Kg)</b>
2010-11	1116	3065	2746
2009-10	1098	3000	2732
2008-09	881	2909	3302
2007-08	869	2887	3322
2006-07	806	2678	2791
2005-06	740	2036	2747
2004-05	721	1880	2607
2005-06	46	131	2847
2004-05	44	122	2797

*Source: Yearbook of Agricultural Statistics of Bangladesh (2008, 2010, 2011), Statistical Yearbook of Bangladesh (2009, 2010)*

**Table-3:Export Statistics of Vegetables in Bangladesh**

<b>Fiscal Year (FY)</b>	<b>Quantity (in MT)</b>	<b>Export Growth Compared to Previous Year (in %)</b>	<b>Value (in Million US\$)</b>	<b>Export Growth Compared to Previous Year (in %)</b>
2005-2006	17218	-.	32.92	-
2006-2007	18277	(+) 06.15	35.64	(+) 08.26
2007-2008	30931	(+) 69.24	60.47	(+) 69.67
2008-2009	22791	(-) 26.32	44.67	(-) 26.13
2009-2010	23959	(+) 05.12	46.84	(+) 04.86
2010-2011	36672	(+) 53.06	71.73	(+) 53.14
2011-2012	39586	(+) 07.95	77.43	(+) 07.95
2012-2013	56411	(+) 42.50	110.34	(+) 42.50
2013-2014	75435	(+) 33.72	147.55	(+) 33.72

*Source: Export Promotion Bureau (EPB), Bangladesh*

The table 4 and 5 show area, production and yield of fruits in Bangladesh and export statistics of Bangladesh respectively. From 2004-05 to 2010-11, per acre yield has been increased from 6051 to 6076 with fluctuation. The volume of exported fruits has been increased over time. The quantity of fruits exported is 2242 MT in 2005-2006 and 27368 MT in 2013-14.

**Table 4 :Area, Production and Yield of Fruits in Bangladesh**

<b>Year</b>	<b>Area('000Acres)</b>	<b>Production('000 MT)</b>	<b>Per Acre Yield(KG)</b>
2010-11	209	1270	6076
2009-10	217	1312	6045
2008-09	221	1339	5872
2007-08	212	1328	6264
2006-07	222	1392	6270
2005-06	213	1301	6108
2004-05	208	1361	6051

*Source: Yearbook of Agricultural Statistics of Bangladesh (2008, 2010, 2011), Statistical Yearbook of Bangladesh (2009, 2010)*

**Table 5: Export Statistics of Fresh Fruits in Bangladesh**

<b>Fiscal Year (FY)</b>	<b>Quantity (in MT)</b>	<b>Growth (in %)</b>	<b>Value (in Million US\$)</b>	<b>Growth (in %)</b>
2005-2006	2242	-	6.67	-
2006-2007	1528	(-) 31.84	4.89	(-) 26.69
2007-2008	2695	(+) 76.34	8.65	(+) 76.89
2008-2009	5204	(+) 93.11	16.67	(+) 93.41
2009-2010	5411	(+) 4.00	17.37	(+) 3.83
2010-2011	11757	(+) 117.26	37.68	(+) 116.92
2011-2012	25300	(+) 115.19	57.16	(+) 51.70
2012-2013	31820	(+) 25.77	71.89	(+) 25.77
2013-2014	27368	(-) 14.00	61.83	(-) 14.00

*Source: Export Promotion Bureau (EPB), Bangladesh*

# Methodology

## *Data*

The study consists of several phases. In the first phase, a literature review of all relevant documents has been conducted. The first tract consists of analysis of secondary sources of data. An indicative list of the sources of secondary data is given below:

- Documents/reports regarding the issue
- Documents/reports of trade related national agencies/organizations
- Documents/reports of trade related international agencies/organizations

In the second phase, the study has collected quantitative and qualitative primary data through questionnaire survey, Key Informant Interviews, and discussion with different stakeholders(trade related agencies/organizations). In the following stage, the collected data will be analyzed to attain proposed research objectives.

**Questionnaire Survey(Quantitative Data):** The study mainly relies on quantitative data collected from exporters through structured questionnaires.

**Qualitative Survey (Qualitative Data):**

Key Informant Interview (KII) and case study have been used to know exporter's experiences in different stages of marketing.. The key respondents includes leaders of exporters' associations, trade related service providers and officials.



## **Sample Selection:**

The primary required to attain the objectives of the study is collected from the fruit and vegetable exporters. A total of 30 fruits and vegetable exporters are randomly selected from the list of exporters collected from the Bangladesh Fruits, Vegetables and Allied Products Exporters Association (BFVAPEA). The exporters are approached for detailed information about their three shipments. Thus the survey is targeted to collect information about 90 export shipments from 30 exporters.

## The Empirical Model

### Identifying and estimating the policy level barriers and transaction cost as natural barrier

The producer price for exportables would be related to the border prices as follows:

$$P_i = P_i^w E_o (1-t_i) - C_i \text{ -----(1)}$$

where,  $P_i$  = denote producer price,  $P_i^w$  = world price at border (f.o.b.) in foreign currency,  $E_o$  = nominal official exchange rate,  $t_i$  = export tax or subsidy depending on whether  $t_i < 0$  or  $> 0$ , and  $C_i$  = adjustment for differences in quality, location (transport), time (storage), transaction cost and other marketing costs. The export tax may be explicit or implicit when export quotas exist or when output is procured below market prices, etc.

When there is no intervention in the market, the producer price bears the following relationship to the border price:

$$P_i = P_i^w E_o - C_i \text{ -----(2)}$$

## **Measuring Economic Efficiency and Competitiveness**

Policy Analysis matrix (PAM) framework will be utilized to measure economic efficiency and competitiveness of selected fruits and vegetables.

Transaction costs imply all the resources that have to be sacrificed in order to arrive at a mutually acceptable agreement for the exchange of goods or services between two or more parties. They comprise, e.g., four different types of costs: (1) contact costs (search of information), (2) contracting costs (negotiation, formulation of contract), (3) monitoring costs (checking of quality, quantity, prices, deadlines, secrecy), (4) adaptation costs (changes during the validity of agreement).

## **Ratio Indicators**

### ***Nominal Protection Coefficient on Output (NPCO)***

This ratio shows the extent to which domestic prices for output differ from international reference prices. If NPCO is greater than 1, the domestic farm gate price is greater than the international price of output and thus the system receives protection.

### ***Nominal Protection Coefficient on Input (NPCI)***

This ratio shows how much domestic prices for tradable inputs differ from their social prices. If NPCI exceeds 1, the domestic input cost is greater than the comparable world prices and thus the system is taxed by policy. If NPCI is less than 1, the system is subsidized by policy.

### ***Effective Protection Coefficient (EPC)***

EPC is the ratio of value added in private prices to value added in social prices. An EPC value of greater than 1 suggests that government policies provide positive incentives to producers, while values less than 1 indicate that producers are not protected through policy interventions on value added

### ***Domestic Resource Cost (DRC) Ratio***

The DRC was brought into common use by Bruno (1972) specifically for the purpose of measuring comparative advantage. Since minimizing the DRC is equivalent to maximizing social profits, if the DRC ratio is less than 1, the system uses domestic resources efficiently. If the DRC ratio is greater than 1, then the system shows inefficiency in domestic resource use and possesses a comparative disadvantage.

### ***Private Cost Ratio (PCR)***

PCR is the ratio of factor costs to value added in private prices. This ratio measures the competitiveness of a commodity system at the farm level. The system is competitive if the PCR is less than 1.

## **Estimation**

- Border price measured at farmgate (export parity)
- Transaction cost at different stages of marketing
- The nominal rate of protection (NRP)
- The indirect nominal protection rate (INPR)
- The total nominal rate of protection (TNRP)
- Policy Analysis matrix (PAM) and related ratio indicators (Nominal Protection Coefficient on Output (NPCO), Nominal Protection Coefficient on Input (NPCI), Effective Protection Coefficient (EPC), Domestic Resource Cost (DRC) Ratio and Private Cost Ratio (PCR))

## Result

**Table 6: Policy Analysis Matrix (PAM)**

Vegetable /Fruit	Domestic Resource Cost (DRC)	Nominal Protection Coefficient on Output (NPCO)	Nominal Protection Coefficient on Input (NPCI)	Effective Protection Coefficient (EPC)	Private Cost Ratio (PCR)
Brinjal	0.2691	0.0383	0.4895	0.499	0.53
Bitter gourd	0.2053	0.02	0.51	0.3772	0.5442
Potato	0.141227	0.0177	0.4449	0.1795	0.7865
Pineapple	0.48	0.0820	0.37	0.96	0.4971
Mango	0.3131	0.1207	0.60	0.61	0.51

Table 6 shows detailed calculation of DRC for Brinjal, Bittergourd, Potato, Pineapple and Mango. The calculated DRC (export parity) for Brinjal, Bittergourd, Potato, Pineapple and Mango. are 0.27, 0.20, 0.14, 0.48 and 0.31 respectively. These results argue for Bangladesh to have comparative advantage in producing Brinjal, Bittergourd, Potato, Pineapple and Mango.

Nominal protection coefficient on tradable output: NPCO of 0.038, 0.02, 0.01, 0.08, and 0.12 for Brinjal, Bittergourd, Potato, Pineapple and Mango. are (Export promotion) shows that policies are decreasing the market price to a level 0.08, 0.02, 0.01, 0.08, and 0.12 (Export promotion) lower than the world price.



However, Nominal protection coefficient on tradable inputs: NPCI on inputs of 0.48, 0.51, 0.44, 0.37 and 0.60 for Brinjal, Bittergourd, Potato, Pineapple and Mango. are (Export promotion) shows that policies are required reducing input costs .

EPC less than 1 shows negative incentive effects (a tax on farmers). Effective protection coefficient of Brinjal, Bittergourd, Potato, Pineapple and Mango. are 0.49, 0.37, 0.17 , 0.96 and 0.61 respectively. EPC less than 1 shows negative incentive effects (a tax on farmers).

So it can be concluded that natural barrier has impact on export process but it is not highly significant.

## **Export Procedure (Fruits/Vegetables) in Bangladesh**

The main procedure of exporting fruits/vegetables is as follows:

➤ *Collecting Trade License*

➤ *Obtaining ERC*

- Copy of trade license
- Nationality certificate issued by Ward Commissioner or Union Parishad Chairman (for Bangladeshi nationals)
- Income tax payment certificate of the previous year (in applicable cases)
- Valid membership certificate from the Chamber of Commerce or Registered Trade Association
- Bank solvency certificate
- Partnership deed or Incorporation certificate
- Photograph – 2 copy.

## **Export Procedure (Fruits/Vegetables) in Bangladesh(cont'd)**

- *Receiving Export Order from Buyer*
- *Producing/Collecting Fruits/Vegetables*
- *Getting Inspection Certificate*
- *Collecting Letter of Credit (L/C)*
- *Reserving Space with Cargo Agent*
- *Obtaining Cargo Insurance for Inland Transportation*
- *Submitting Documents for Customs Approval*
- *Clearing Goods through Customs*

## ➤ *Export Documentation*

The following documents are commonly used in fruits and vegetable exporting; which of them are actually used in each case depends on the requirements of both Bangladesh government and the government of the importing country. Following documents are needed:

- Customs Export Declaration
- Certificate of Origin
- Commercial invoice
- Airway bill
- Inspection certification/Pre-shipment inspection (clean report of findings)
- Destination control statement
- Insurance certificate
- Export license (when needed).
- Export packing list

The total time required to complete this process is around 25/30 days and sometimes more which is long time compare to other developing countries. So policy barrier has impact on export process of fruits/vegetables.

On the basis of some KIIs, it is known that Bangladesh government formulates the Export Policy principally with a view to facilitate the exporters so as to develop and promote vegetable export of Bangladesh. The Export Policy highlights some special facilities and incentives.

- Cash incentives
- Duty Drawback
- Bonded Facilities
- Assistance in searching for foreign market
- Export Loan at lower rate of interest
- Awarding Commercially Important Person (CIP) status and National Export Trophy

## Case Study

Md. Khaledur Rahman (60 years old) is one of the pioneer fruits and vegetable exporters in Bangladesh. He has 24 years experiences in export service.

Initially, he started exporting to London, UK as he has many relatives who live in London. They requested to send Bangladeshi fruits and vegetables. Then he started to collect fruits and vegetables of good quality from local market and export the items. Then other Bangladeshi (living abroad) also requested him to send fruits and vegetables. Such a way his export-volume has been expanded. At the first stage, there was a problem of cargo space and loading so that he could send only 250 kg. exportable items. But now the problem has been solved and he can send (export) 500-1000 kg in each shipment. Basically, he collects items (fruits and vegetables) from various channels (local suppliers).He can not start contract farming due to shortage of land (unavailability of land).He informed that exporters are facing loss but they sustain for 20% incentives provided by Government.

He identified some problems regarding export. Freight/Airway charge is very high and Government does not take any initiative for this purpose. Some European countries ban Bangladeshi items (fruits and Vegetables) due to low quality and diseases (in fruits and vegetables).Ministry of Agriculture or concerned unit of Government do not take initiative for quality assurance or disease management. Exporters have to pay extra money in airport for each shipment. Some exporters do not follow business/export rule properly and they hamper other exporters (negotiate with buyers of other exporters etc.). The quality of items has been deteriorated in airport due to rough handling etc.

## **Problems Faced by the Fruits/Vegetable Exporter**

- The exporters have to pay a high rate of airfreight charge for the space in the airplanes, because Bangladesh has no special cargo planes.
- The comparative airfreight rates were higher for Bangladesh than other developing countries of the world.
- Delay in arrival of aircrafts at different destinations caused huge damage of vegetable exported.
- In Bangladesh, unnecessary and lengthy custom procedure made serious troubles for the exporter leading to failure of timely shipment which caused a great damage to the fresh vegetables exported.
- Packaging of Bangladeshi vegetables consisted on mainly round bamboo baskets and second hand cartons of different shapes. As a consequence, the vegetables are not properly positioned and become misshaped and damaged.
- The quality of Bangladeshi vegetables is not acceptable by the foreign buyers and some of the countries have stopped importing Bangladeshi vegetables because of poor quality standards.
- The domestic prices of the seasonal vegetables are often too high during the early part of the season making it unprofitable for the exporters.
- Bangladesh exporter cannot compete in the world market, as the modes of domestic transports are not especially designed for the carrying the vegetables from farm gate to export point.

## **Problems Faced by the Fruits/Vegetable Exporter(cont'd)**

- After collection of vegetables from the field, there is no appropriate system to make them reach direct to the airport or exporters go-down for which vegetables are often wasted.
- The exportable vegetables prices in major foreign markets depend on numerous day-today market factors whereas the exporters do not get any current market information on a regular basis on several marketing variables like price, quantity, promotion, distribution channels, consumer's choice, legal requirements and so on.
- Due to lack of sufficient cargo space of Airlines, the quantity of vegetables, which is returned to the exporters, has to be sold at a very low price in local market.
- Quality of the exported fresh fruits and vegetables is sometime questionable in respect of proper grading, post-harvest spoilage and contaminated with undesired materials.



### **Problems Faced by the Fruits/Vegetable Exporter(cont'd)**

- Sometimes exported packets of vegetable and fruit contained non-declared or prohibited items.
- Exporters cannot ensure to their buyers for continuous supply of the produces throughout the season.
- Some problems like natural calamities, the political situation, and protests by workers at the port are still present. Sometime different trading partners ask for different documents in the process of exporting the same product.
- Use of information and communication technology (ICT) in the overall business process is very limited.
- Most forms are completed manually (handwritten or typed).
- Exporters need to apply on paper to obtain certain certificates.
- Electronic versions of documents are not acceptable to banks.

## **Conclusion and Recommendations**

Transaction costs play a crucial role in determining the level of trade that occurs between countries. In spite of its importance, less attention has been paid in the literature on modeling and measuring its impact on trade between countries. Natural barrier has impact on export process but it is not highly significant. But policy barrier has impact on export process of fruits/vegetables. Thus, it may be useful to develop regional transportation system, taking initiative to reduce some implicit cost, and revise export process to enhance export of fruits and vegetables.

## **Conclusion and Recommendations (cont'd)**

Some suggestions/ recommendations can be made considering study survey for further improvement of the process. These include:

- To enter into the super markets in developed countries, quality of vegetables has to be improved by upgrading the packaging, handling, and grading and transportation system.
- It will be convenient if full automation exists in customs houses.
- To facilitate use of documents in electronic/digital format.
- Development of infrastructure at port areas
- Strengthening collaboration between government and business chambers to ensure a better business environment.

## **Conclusion and Recommendations (cont'd)**

- To establish a single window so that all the actors involved in the business process are linked together.
- Expedite the process of issuing inspection certificates.
- Strengthen collaboration between government and business chambers to ensure a better business environment.
- Form a National Trade Facilitation Task Force.
- Publish (including online) trade related information, rules, procedures, etc.
- Finally, the country would be able to earn huge foreign exchange if the Government introduces a cargo aircraft to carry vegetables items.

Thank You