Implications of the global economic crisis for the Bangladesh economy

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IMPLICATIONS OF THE GLOBAL ECONOMIC CRISIS FOR THE BANGLADESH ECONOMY[1]

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Abstract

There is no denying the fact that the recent global economic crisis has profound implications for the developing countries like Bangladesh. This paper has explored the impacts of global economic crisis on the economy of Bangladesh in a general equilibrium framework. The CGE model for Bangladesh economy is developed with a Social Accounting Matrix for the year 2007 as the database. Analysis of the trend and pattern of the global economic crisis suggests that global economic crisis led to some negative impacts on the Bangladesh economy through two major channels: slumps in exports and remittances growths. Three simulations have been conducted considering export and remittance shocks and their short term and long term effects are explored under different factor market closures. The results of the simulations suggest that during the global economic crisis the growth in total exports was much lower than those during pre-crisis periods and the export growth was mainly driven by the growth in non-RMG sectors. Under the export simulation, the woven and knit RMG sectors would experience contraction and there would be some expansions of the non-RMG export oriented sectors. Because of the reduced rates of growth in overall exports as well as much slower growth in knit and woven RMG sectors, there would be some negative impacts on the economy in terms of falls in consumption, exports, imports and households' consumption and welfare. The poorer households would suffer more as a result of negative export shock during the global economic crisis. Furthermore, the reduced rate of growth in remittances during the global economic crisis would contribute to the fall in household income and real consumption. Demand for goods would decline and, as a result, domestic demand and import would decrease. Due to the fact that reduction in inflow of remittance would contribute to depreciation of the real exchange rate, there would be a positive impact on the growth of exports. All household categories would encounter fall in real consumption and welfare. The households with higher initial endowments of remittance incomes would experience larger fall in real consumption and welfare. The scenario depicting the combined effects of the export and remittance shocks suggests that the negative effects would aggravate under this scenario. In all cases, however, the short term negative effects would be larger than the long term negative effects. The upshots of the above discussion point us to the fact that the economy of Bangladesh was affected during the global economic crisis, when growth in exports and remittances slowed down by great margins and the economy suffered.

Several policy implications may emerge from the aforementioned analysis of the simulation results. It is evident from the aforementioned analysis that there was a very low growth of exports of woven and knit RMG from Bangladesh during the economic crisis. This resulted in low growth in total exports. The effects on consumption and welfare of the households were negative. There is a fear of continuation of this sluggish growth in exports of woven and knit RMG in the future. Therefore, there is a need for the policy makers to take necessary steps to enhance exports from these two sectors. These export oriented sectors suffer from serious supply side bottlenecks, such as lack of backward linkages, weak physical infrastructure, lack of skilled manpower, lack of access to capital, high lead time, high cost of doing business, etc. There is a need to bring down these supply side constraints which can enhance the competitiveness of these sectors. It is also true that the export basket of Bangladesh is highly concentrated in favor of the woven and knit RMG. There is a need to diversify the export basket so that the reliance on only a few sectors is reduced and the economy becomes less vulnerable to any external shock. The simulation results in this paper have convincingly suggested the strong welfare enhancing effects of remittance in Bangladesh. The growth rate of remittance inflow reduced quite drastically during the global economic crisis. Also, looking at the trend of annual migration from Bangladesh it appears that there is a high risk of further reduction in inflow of remittances. Therefore, there is a need to take necessary measures for encouraging larger inflow of remittances and greater outward migration. Measures such as reducing the hassles of sending remittances through formal channels and providing appropriate guidance and support for channeling the remittance money to productive investment could be very useful. Also, government needs to negotiate both multilaterally (at WTO) and bilaterally for the enhancement of export of manpower from Bangladesh.

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I. INTRODUCTION

The world economy has changed dramatically since September 2008. It began with a slump in the US housing sector, and then it fell into a global crisis, affecting both rich and poor economies. This appears to be the worst financial and economic crisis since the Great Depression of the 1930s. The triggers of the present global financial crisis were in the US subprime mortgage market the crumple of which engulfed the global financial markets leading to a painful recession of the world economy. Bangladesh, though not so much financially integrated with the world, depends significantly on foreign trade. More specifically, Bangladesh's exports, including readymade garments, shrimps, leather, etc. are heavily dependent on the demand of the consumers in the developed countries. Therefore, falling employment and hence the declining income of the average consumers in North America and Europe are likely to have serious implications on her export potentials. Also there are concerns with respect to inflows of remittances. Against this backdrop the purpose of this research is to explore the possible impacts of the global economic crisis during 2008 and 2010 through different channels on the economy of Bangladesh.

Understanding the effects of the global economic crisis on the economy of Bangladesh is very important for the economists and the policy makers in Bangladesh. Some preliminary assessments suggest that Bangladesh economy has been hurt by the global economic crisis in terms of slowing down of the growth rates in exports and remittance earnings. During fiscal years 2009 and 2010 growth in exports of major export items slowed down quite significantly. Also, the growth rate in remittance inflow, though positive, came down to the lowest in the preceding five years. Therefore, the effects of the global economic crisis were felt through slower growth rates in exports and remittance inflows.

This research employs a general equilibrium approach to address the research questions. The advantage of using a general equilibrium methodology is that it helps understand the economy wide effect of any policy scenario. The outcome of general equilibrium modeling

exercise can be elaborated for macro, sectoral, welfare and poverty effects. The macro results would tell the effects on major macro variables, including consumer price index, exports, imports, and aggregate consumption. Under the sectoral results, the effects on sectoral prices and sectoral volumes are presented. Sectoral prices include domestic price, purchaser price, value-added price and FOB export price, whereas the sectoral volumes include exports, imports, domestic sales and composite goods. Furthermore, the effects on the consumption and incomes of the households are explored.

The organization of this paper is as follows: Section II explores the patterns and trends in exports and remittances, as far as the economy of Bangladesh concerned, during the global economic crisis; Section III elaborates on the methodology of the study; Section IV provides the designing of the simulations; Section V presents the simulation results; and finally Section VI concludes.

II. GLOBAL ECONOMIC CRISIS AND BANGLADESH ECONOMY: CHANNELS OF IMPACTS

In order to understand the impact of the global economic crisis on the economy of Bangladesh it is important to identify the channels through which the economic crisis is likely to have the impacts. As pointed out earlier, the impact via the financial channel is likely to be minimal given Bangladesh's weak financial integration with the global economy. It appears that export and remittance are the two major channels through which Bangladesh economy is being affected by the global economic crisis. Therefore, a detailed analysis of these two channels warrants much importance.

2.1. Exports

When the global economy had been deepened with crisis, there was a consequent slump in developed country demand for exported goods from developing countries. Bangladesh's export performance during fiscal years 2009 and 2010 also experienced slow growth. The growth of exports during fiscal year 2009 was a respectable 10.3 percent (Table 1). However, this growth rate was much lower than the high growth rates of 15.6 percent and 15.9 percent in the previous two fiscal years. The major contribution to the moderate positive growth rate came from decent performance of apparels export, which contributes about three-quarters of

total export earnings. The growth rates of woven and knit RMG (readymade garments) exports were 13.2 percent and 17.4 percent respectively, compared to the previous fiscal year (2007-08). In contrast, some sectors, such as leather, other crops, shrimp and fishing experienced significant fall in exports. However, during fiscal year 2010, when the world economy had been experiencing the aftermath of the economic crisis, exports from Bangladesh encountered a very low growth rate (4.1 percent), lowest in the last two decades. Both Woven and Knit RMG exports registered extremely low growth rates, 1.6 percent and 0.84 percent respectively. However, exports of other crops, shrimp and fishing, leather and other industry increased with considerably high growth rates. It thus appears that during this period, mostly the high growth in non-RMG exports contributed to maintaining a positive growth in total exports in the face of very low growth rates in exports of woven and knit RMG.

Table 1: Export growth of Bangladesh's Major Commodities (%)

	2008-2009	**2009-2010**
Other Crop	-14.97	35.82
Shrimp Farming and fishing	-19.55	2.46
Leather Industry	-19.05	23.84
Woven RMG	13.20	1.60
Knit RMG	17.40	0.84
Other Industry	1.75	31.28
Total exports	**10.30**	**4.11**

Source: Calculated from EPB (2010)

2.2. Remittances

International remittance is an important source of foreign exchange income for Bangladesh. The remittance has become a focal issue in economic literature over two or more decades for its increasing volume and important role in poverty reduction. The huge amounts of remittances have macroeconomic effects which may be critical and important for a developing country like Bangladesh. Remittance flows contribute substantially to the economy, including household income and expenditure. Slowing growth in the countries importing labor from developing countries in Asia, due to the global crisis, could result in falling employment that might lead to job protection for local workers over imported labor. This might put the remittance flows at risk and the reduction in flows could be a significant blow to poverty reduction.

Despite the recession in the developed economies, remittance earnings for Bangladesh have registered positive growth rates over the past two years. Inflow of remittances recorded a growth rate of 22.4 percent during 2008-2009. However, the growth rate in remittance earnings during 2009-2010 slowed down and it was only 13.4 percent, which was the lowest during the last five years (Table 2). This also indicates to the possibility of a negative impact on Bangladesh economy because of reduced rate growth in remittance flows. It is also important to note from Table 2 that the annual number of people going abroad reduced quite drastically during 2008-09 and 2009-10, which might have important negative implications for the future flow of remittances into Bangladesh economy.

Table 2: Remittance inflow into Bangladesh and Overseas Migration

	Remittances		Migration	
Year	**Million US$**	**Growth Rate**	**Number of Persons going abroad**	**Growth Rate**
2001-02	2501.13	32.89	185534	-13.03
2002-03	3061.97	22.42	241425	30.12
2003-04	3371.97	10.12	272693	12.95
2004-05	3848.29	14.13	251699	-7.70
2005-06	4802.41	24.79	286381	13.78
2006-07	5978.47	24.49	563584	96.80
2007-08	7914.78	32.39	981102	74.08
2008-09	9689.26	22.42	650059	-33.74
2009-10	10987.4	13.40	427180	-34.29

Source: Compiled from BB (2010)

III. METHODOLOGY OF THE STUDY

3.1. Social Accounting Matrix for the Economy of Bangladesh

A Social Accounting Matrix (SAM) is a generalization of the production relations and extends this information beyond the structure of production to include: (a) the distribution of value added generated by production activities; (b) formation of household and institutional income; (c) the pattern of consumption, savings and investment; (d) government revenue collection and associated expenditures and transactions; and (e) the role of the foreign sector in the formation of additional incomes for household and institutions. In general, the accounting matrix of a SAM identifies the economic relations through six accounts: (1) total domestic supply of commodities; (2) activity accounts for producing sectors; (3) main factors of productions (e.g. labor types and capital); (4) current account transactions between main institutional agents such as households and unincorporated capital, corporate enterprises,

government and the rest of the world and the use of income by the indicated type of households; (5) the rest of the world; and (6) one consolidated capital account (domestic and rest of the world) to capture the flows of savings and investment by institutions and the rest of the world respectively.

Social accounting matrices can serve two basic purposes: (i) as a comprehensive and consistent data system for descriptive analysis of the structure of the economy and (ii) as a basis for macroeconomic modeling. As a data framework, a SAM is a snapshot of a country at a point in time. To provide as comprehensive a picture of the structure of the economy as possible, a particular novelty of the SAM approach has been to bring together macroeconomic data (such as national accounts) and microeconomic data (such as household surveys), within a consistent framework. The second purpose of a SAM is the provision of a macroeconomic data framework for policy modeling. The framework of a SAM can often help in establishing the sequence of interactions between agents and accounts which are being modeled. A SAM provides an excellent framework for exploring both macroeconomic and multi-sectoral issues and is useful starting point for more complex models. Table 3 provides a description of the SAM for the economy of Bangladesh for the year 2007.

Table 3: Description of Bangladesh SAM Accounts for 2007

Set	Description of Elements
Activities	
Agriculture (7)	Paddy Cultivation, Other Grain Cultivation, Other Crop, Livestock Rearing, Poultry Rearing, Shrimp Farming and fishing, Forestry
Industries (9)	Rice Milling, Grain Milling, Food Process, Leather Industry, Mill Cloth, Woven RMG, Knitting RMG, Chemical Industry, Other Industry
Service (1)	Services.
Institutions	
Households (7)	Rural: Landless, marginal farmers, small farmers, large farmers, non-farm Urban: low educated and high educated
Others (3)	Government, Firm, Rest of the World
Factors of production	
Labor (2)	labor unskilled and labor skilled
Capital (2)	Non-agriculture capital, and agricultural capital

Source: SAM 2007 of Bangladesh

The Social Accounting Matrix (SAM) 2007 for Bangladesh identifies the economic relations through the following accounts: (1) total domestic supply of 17 commodities; (2) activity accounts for 17 sectors (here commodities and activities are synonymous); (3) four factors of productions (two labor types and two capital categories); (4) household accounts for seven representative groups (five rural and two urban); (5) one government account; (6) one

account for firms; (7) one rest of the world account; (8) one consolidated capital account to capture the flows of savings and investment by institutions and the rest of the world respectively; and (9) one stock account.

The basic structure of the 2007 Bangladesh SAM is summarized in Table 4. Tariff rates vary across the sectors and range from as low as 0 percent (paddy) to as high as 19.64 percent (grain milling). Chemical industry has the highest sectoral import penetration ratio (69.05 percent), followed by Other Grain Cultivation (45.01 percent). The highest share in total imports is for Other Industry (53.94 percent), followed by Services (11.85 percent). The sectoral export orientation ratio is the highest for Knit RMG (88.96 percent) followed by Woven RMG (86.78 percent). Together Woven and Knit RMG exports account for 68.02 percent of total exports. In the case of value addition, all the services sectors together account for 63.31 percent of total value added in the economy. The aggregated agricultural and the manufacturing sectors constitute 19.99 percent and 16.7 percent of the total value added respectively.

Table 4: Structure of SAM 2007 of Bangladesh

	tm (%)	M_i/Q_i	M_i/M	E_i/X_i	E_i/E	V_i/V
Paddy Cultivation	0.00	0.00	0.00	0.00	0.00	7.05
Other Grain Cultivation	4.05	45.01	2.53	0.00	0.00	0.39
Other Crop	3.08	21.24	7.75	3.73	1.84	4.54
Livestock Rearing	0.54	2.67	0.39	0.01	0.00	1.47
Poultry Rearing	9.86	0.42	0.04	0.00	0.00	0.95
Shrimp Farming and fishing	0.00	0.00	0.00	6.83	3.34	4.04
Forestry	0.00	0.00	0.00	0.00	0.00	1.54
Rice Milling	1.88	1.48	0.85	0.06	0.04	3.09
Grain Milling	19.64	0.89	0.07	0.00	0.00	0.36
Food Process	14.49	24.47	9.25	1.45	0.74	1.26
Leather Industry	18.59	0.63	0.03	35.14	2.45	0.34
Mill Cloth	4.73	22.32	6.27	0.00	0.00	1.74
Woven RMG	0.58	3.04	0.89	86.78	34.39	2.37
Knitting RMG	8.86	0.54	0.15	88.96	33.63	3.22
Chemical Industry	16.89	69.05	5.98	0.00	0.00	0.11
Other Industry	17.15	42.47	53.94	8.49	14.57	4.21
Services	0.00	3.29	11.85	1.85	9.00	63.31

Note: tm = Tariff Rate; M_i/Q_i = Import Penetration Ratio; M_i/M = sectoral import share; E_i/X_i = export orientation ratio; E_i/E = export share; V_i/V = value addition share,

Source: SAM 2007 of Bangladesh.

The income composition of households, which is derived from SAM 2007, is presented in Table 5. It appears that all the seven household categories receive most of their income from factor remunerations. For the poorer households, such as landless, marginal farmers, rural non-farm households, and urban low educated households, unskilled labor appears to be either the primary or a major source of their income. In contrast, urban high educated households receive most of their incomes from non-agricultural capital and skilled labor. Rural non-farm households also receive major part of their income from non-agricultural capital. For the large farmers, earning from land is the principal source of their income. It also appears that rural small farmer and urban low-educated households derive larger proportion of their incomes from remittances than other categories of households. These considerable differences in sources of income for different households are expected to generate varying income and welfare effects when different policy shocks are introduced in the model.

Table 5: Shares of Household Incomes by Source

	Unskilled labour	Skilled labour	Capital	Land	Government Transfer	Remittance	Total
Rural landless	32.13	26.59	30.82	0.00	5.17	5.29	100.00
Rural marginal farmer	27.62	21.17	34.00	5.96	4.10	7.15	100.00
Rural small farmer	27.50	20.55	25.70	12.64	2.60	11.00	100.00
Rural large farmer	27.39	18.85	14.50	27.93	2.39	8.94	100.00
Rural non-farm	17.99	14.80	52.58	4.45	1.66	8.51	100.00
Urban low educated	56.35	20.16	7.63	1.71	2.42	11.73	100.00
Urban high educated	10.77	41.03	35.94	2.34	1.95	7.96	100.00

Source: SAM 2007 of Bangladesh.

3.2. A CGE Analysis for the Bangladesh Economy

A CGE model examines the consequences of policy reforms within a constrained optimization framework. Computable general equilibrium models capture the detailed accounts of the circular flows of receipts and outlays in an economy. It satisfies general equilibrium conditions in various markets simultaneously. Such models are useful to analyse associations between various agents of the economy. In line with most of CGE models, the model used in this study has been solved in comparative static mode and it provides an

instrument for controlled policy simulations and experiments. The model is calibrated to the SAM to exactly reproduce the base year values[3].

The Bangladesh CGE model is built using the PEP standard static model.[4] In the Bangladesh CGE model representative firm in each industry maximizes profits subject to its production technology. The sectoral output follows a Leontief production function. Each industry's value added consists of composite labour and composite capital, following a constant elasticity of substitution (CES) specification. Different categories of labour are combined following a constant elasticity of substitution (CES) technology with imperfect substitutability between different types of labour. Composite capital is a CES combination of the different categories of capital. It is assumed that intermediate inputs are perfectly complementary, and are combined following a Leontief production function.

Household incomes come from labour income, capital income, and transfers received from other agents. Subtracting direct taxes yields household's disposable income. Household savings are a linear function of disposable income, which allows for the marginal propensity to save being different from the average propensity.

Corporation income consists of its share of capital income and of transfers received from other agents. Deducting business income taxes from total income yields the disposable income of each type of business. Likewise, business savings are the residual that remains after subtracting transfers to other agents from disposable income.

The government draws its income from household and business income taxes, taxes on products and on imports, and other taxes on production. Income taxes are described as a linear function of total income, whether it be for households or for businesses. The current government budget surplus or deficit (positive or negative savings) is the difference between its revenue and its expenditures. The latter consist of transfers to agents and current expenditures on goods and services.

[3] In calibration procedure, most of the model parameters are estimated endogenously keeping the various elasticity values fixed.
[4] See www.pep-net.org

The rest of the world receives payments for the value of imports, part of the income of capital, and transfers from domestic agents. Foreign spending in the domestic economy consists of the value of exports, and transfers to domestic agents. The difference between foreign receipts and spending is the amount of rest-of-the-world savings, which are equal in absolute value to the current account balance, but of opposite sign.

The demand for goods and services, whether domestically produced or imported, consists of household consumption demand, investment demand, demand by government, and demand as transport or trade margins. It is assumed that households have Stone-Geary utility functions (from which derives the Linear Expenditure System). Investment demand includes both gross fixed capital formation (GFCF) and changes in inventories. .

Producers' supply behaviour is represented by nested CET functions: on the upper level, aggregate output is allocated to individual products; on the lower level, the supply of each product is distributed between the domestic market and exports. The model departs from the 'pure' form of the small-country hypothesis. A local producer can increase his share of the world market only by offering a price that is advantageous relative to the (exogenous) world price. The ease with which his share can be increased depends on the degree of substitutability of the proposed product to competing products; in other words, it depends on the price-elasticity of export demand. Commodities demanded on the domestic market are composite goods, combinations of locally produced goods and imports. The imperfect substitutability between the two is represented by a constant elasticity of substitution (CES) aggregator function. Naturally, for goods with no competition from imports, the demand for the composite commodity is the demand for the domestically produced good.

The system requires that there is equilibrium between the supply and demand of each commodity on the domestic market. The model is solved into two different closures related to factor markets. In the first closure ("short term") the wage rates are held fixed and there is an excess labour supply in such a way that the sum of sectoral labour demand is always satisfied. . Also the capital is made sector specific. In the second closure ("long term") the wage rates are made flexible and labour supply is made exogenous. The capital is allowed to move freely across sectors. Total investment expenditure must be equal to the sum of agents' savings. The sum of supplies of every commodity by local producers must be equal to domestic demand for that commodity produced locally. And finally, supply to the export

market of each good must be matched by demand. The current account balance is held fixed both in the short and long term.

IV. SIMULATION DESIGN

With a view to analyzing the effects of global economic crisis, three simulations have been considered. These simulations are based on the percentage change in exports and remittances as depicted in Tables 1 and 2 respectively. The first simulation considers the scenario of an export shock, the second simulation considers the scenario of a remittance shock, and finally the third scenario considers the export and remittance shocks together.

In line with the percentage changes in sectoral export demand, depicted in Table 1, the export simulation is considered. This simulation considers percentage point changes in sectoral export demand during fiscal years 2009 and 2010. Table 7 depicts the size of the export shocks for different sectors.

Table 7: Export Simulation

Export sectors	**% change in export demand between 2008 and 2009**
Other Crop	50.80
Shrimp Farming and fishing	22.01
Leather Industry	42.89
Woven RMG	-11.60
Knitting RMG	-16.56
Other Industry	29.53

Source: Calculated from Table 1

The major features of Simulation 1 are that are under this scenario the key driving force behind the overall positive growth in exports is the high growth in export demand of other crop, shrimp and fishing, leather and other industry, whereas woven and knit RMG experienced negative growth

In line with the percentage changes in remittances, shown in Table 2, the remittance simulation is considered. This simulation considers percentage point change in remittances during fiscal years 2009 and 2010. Between these two fiscal years remittance growth fell by 9.02 percentage points. Since there is no information whether different household categories experienced varying degree of reductions in remittance receipts, it is assumed that the

aggregate drop in remittances is allocated between the different household categories with each household category keeping the base share in remittances.

Finally, the third simulation, a 'combined' simulation, considers the sectoral export changes depicted in Table 7 and the remittance fall by 9.02 percent.

V. SIMULATION RESULTS

5.1. Results of Export Demand Simulation

The short term and long term macroeconomic impacts of export demand simulation are reported in Table 8. Both the short and long term impacts are negative as far as impacts on consumer price index, consumption, export and imports are concerned. The impacts appear to be more pronounced in the short term, since there would be little scope for adjustments in the economy. The exports and imports would fall by 6.3 percent and 6.9 percent respectively. Also consumption would fall by 4.2 percent. However, in the long term, with sufficient time allowed for reallocation of resources, the negative impacts on exports, imports and consumption would subside.

Table 8: Macroeconomic Effects of Export Demand Simulation (% change from the base year value)

Variable	Short term impact	Long term impact
Consumer Price Index (CPI)	-1.98	-4.06
Consumption	-4.18	-1.25
Imports	-6.92	-6.01
Exports	-6.31	-1.87

Note: Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors
Source: CGE Simulation results

The impacts of the export simulation on sectoral prices and sectoral quantities are reported in Tables 9 and 10 respectively. Under this simulation, the domestic sales price and price of composite goods for all sectors would fall. In general, in the short term the manufacturing sectors would experience higher fall in value-added prices. Both woven and knit RMG sector also experience substantial fall in value-added prices. Much of the falls in value-added prices have been reflected in the fall in the FOB export prices of these two sectors. The fall in export demand for woven and knit RMG accounts for reduction in the exports from these two sectors. This also leads to a contraction in the sectors which have strong linkages with woven

and knit RMG sectors, such as mill cloth. Also because of the contraction of woven and knit RMG sectors, the demand for imported raw materials decline which contributes to the fall in import demand. Also, import of agricultural products and food grains decline because of the fall in income of the country (as shown in Table 8). As a result of the rise in export demand for other crop, shrimp farming and fishing, leather industry and other industry, export from these sectors would rise. In the short term, only leather sector would experience rise in production, and production in all other sectors would fall. The negative impacts on the exports of woven and knit RMGs would be lessened in the long term and also the positive impacts on the exports of other export oriented sectors would be higher in the long term. There will be rise in production in the Other Grain Cultivation, Other Crop Cultivation, Livestock Rearing, Shrimp Farming and fishing, Food Process, Leather Industry, Mill Cloth and Chemical Industry in the long term.

Table 9: Effect on Prices of Export Demand Simulation (% change from the base year value)

	Short term impact				Long term impact			
	PC	**PE_FOB**	**PL**	**PVA**	**PC**	**PE_FOB**	**PL**	**PVA**
Paddy Cultivation	-2.29		-2.29	-2.40	-4.56		-4.56	-4.72
Other Grain Cultivation	-0.90		-1.67	-2.12	-1.93		-3.55	-4.53
Other Crop Cultivation	-1.89	10.21	-2.42	-1.47	-3.97	7.58	-5.07	-4.43
Livestock Rearing	-2.30	-0.67	-2.37	-2.77	-4.73	-2.66	-4.85	-5.59
Poultry Rearing	-3.20	-0.85	-3.22	-4.73	-4.29	-2.09	-4.31	-5.59
Shrimp Farming and fishing	-2.21	4.50	-2.21	-1.11	-5.98	1.66	-5.98	-5.63
Forestry	-5.93		-5.93	-11.07	-5.00		-5.00	-5.63
Rice Milling	-2.39	-0.17	-2.43	-3.12	-4.70	-2.24	-4.77	-5.59
Grain Milling	-1.81		-1.83	-3.02	-3.70		-3.74	-5.60
Food Process	-1.44	-0.20	-2.00	-2.40	-3.13	-2.53	-4.32	-5.61
Leather Industry	-3.33	5.98	-3.37	9.12	-10.61	-0.56	-10.72	-5.59
Mill Cloth	-1.35		-1.76	-1.54	-3.53		-4.56	-5.59
Woven RMG	-0.93	-2.45	-1.20	-3.39	-2.86	-4.72	-3.66	-5.59
Knitting RMG	-1.08	-3.13	-1.14	-4.28	-3.11	-5.00	-3.27	-5.60
Chemical Industry	-0.34		-1.79	-1.92	-0.82		-4.17	-5.62
Other Industry	-0.63	-8.15	-1.45	-5.29	-1.22	-9.85	-2.81	-5.61
Services	-2.29	-0.14	-2.37	-2.52	-4.80	-2.48	-4.96	-5.61

Note: PC = Purchaser price of composite commodity i (including all taxes and margins), PE_FOB = FOB price of exported commodity x (in local currency), PL = Price of local product i (excluding all taxes on products), PVA = Price of industry j value added (including taxes on production directly related to the use of capital and labour)

Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors

Source: CGE Simulation results

Table 10: Effect on Volumes of Export Demand Simulation (% change from the base year value)

	Short term impact					Long term impact				
	XS	IM	DD	EX	Q	XS	IM	DD	EX	Q
Paddy Cultivation	-4.01		-4.01		-4.01	-0.65		-0.65		-0.65
Other Grain Cultivation	-2.27	-5.51	-2.27		-3.79	3.01	-4.18	3.01		-0.38
Other Crop Cultivation	-1.21	-7.23	-2.56	24.31	-3.62	3.04	-8.44	1.59	30.46	-0.72
Livestock Rearing	-2.08	-6.66	-2.08	1.35	-2.20	0.82	-8.73	0.82	5.53	0.55
Poultry Rearing	-3.09	-9.22	-3.09	1.72	-3.12	-0.35	-8.76	-0.35	4.32	-0.39
Shrimp Farming and fishing	-1.20		-2.17	11.72	-2.17	2.16		0.96	18.04	0.96
Forestry	-2.80		-2.80		-2.80	-0.23		-0.23		-0.23
Rice Milling	-4.13	-8.73	-4.14	0.34	-4.21	-0.72	-9.96	-0.72	4.63	-0.86
Grain Milling	-4.66	-8.12	-4.66		-4.70	-1.54	-8.77	-1.54		-1.62
Food Process	-3.10	-7.02	-3.18	0.41	-4.28	1.49	-7.17	1.41	5.25	-1.08
Leather Industry	13.67	-1.17	5.85	27.32	5.76	26.83	-7.08	16.57	44.61	16.28
Mill Cloth	-4.88	-8.20	-4.88		-5.66	0.50	-8.46	0.50		-1.64
Woven RMG	-6.83	-6.96	-4.69	-7.10	-5.20	-2.39	-7.61	-0.46	-2.63	-2.09
Knitting RMG	-8.52	-7.30	-5.15	-8.94	-5.26	-4.95	-8.17	-1.86	-5.34	-2.18
Chemical Industry	-1.36	-4.86	-1.36		-4.21	7.00	-1.74	7.00		-0.11
Other Industry	-6.11	-6.61	-3.84	-16.47	-5.42	-1.73	-4.78	0.80	-13.28	-2.41
Services	-4.06	-8.64	-4.15	0.28	-4.31	-0.01	-9.78	-0.12	5.16	-0.46

Note: XS = Industry j production of commodity i, IM = Quantity of product m imported, DD = Domestic demand for commodity i produced locally, EX = Quantity of product x exported by sector j, Q = Quantity demanded of composite commodity i

Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors

Source: CGE Simulation results

Table 11 provides the simulation results for changes in real consumption and nominal incomes of the households. Under this simulation real consumption of all household categories would decline. However, rural landless households and urban low educated households would experience larger fall in real consumption. It is also observed that nominal incomes of all household categories would fall and the poorer households such as rural landless and urban low educated households would experience larger fall in nominal incomes than other categories of households. This is because, both rural landless and urban low educated households derive income primarily from labour income and the returns to both skilled and unskilled labour would decline more than the decline in returns to capital and land. Comparison of the fall in CPI (reported in Table 8) with those of nominal incomes of the households suggests that for all household categories, the fall in nominal incomes are higher than that in CPI, which lead to fall in real consumption and thus the welfare for all household categories. The poorer households would, however, experience larger fall in welfare than the richer households. It thus appears that the poorer households would suffer more as a result of negative export shock during the global economic crisis. In the long term the negative impacts would however be subsided.

Table 11: Effect on Nominal Income and Real Consumption of Export Demand Simulation (% change from the base year value)

	Short term impact		Long term impact	
	Real Consumption	**Nominal Income**	**Real Consumption**	**Nominal Income**
Rural landless	-4.59	-6.52	-1.40	-5.41
Rural marginal farmer	-4.22	-6.16	-1.27	-5.29
Rural small farmer	-3.99	-5.93	-1.07	-5.13
Rural large farmer	-3.76	-5.69	-0.81	-4.87
Rural non-farm	-3.92	-5.86	-1.31	-5.35
Urban low educated	-4.84	-6.75	-1.22	-5.27
Urban high educated	-4.45	-6.36	-1.37	-5.43

Note: Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors
Source: CGE Simulation results

5.2. Results of Remittance Simulation

It is clearly understood from Table 5 that remittance constitutes important shares in household incomes in Bangladesh. Also, poorer households are more dependent on remittance income than the richer households, which is likely to have varying impacts of any remittance simulation on different categories of households.

The macroeconomic impacts of the remittance simulation are reported in Table 12. In the short term, the consumer price index would fall and the aggregate consumption would also decline. The aggregate imports would fall while that of exports would rise. The rise in exports is linked to the model closure of fixed current account balance. The reduction of remittances also leads to depreciation of the real exchange rate, which provides an incentive for exports. Since in the short term, there are rigidities in the factor markets, such positive impact on exports would be limited. However, in the long term, with flexible wage rates and free mobility of capital, the positive impact on exports would be higher.

Table 12: Macroeconomic Effects of Remittance Simulation (% change from the base year value)

Variable	**Short term impact**	**Long term impact**
Consumer Price Index (CPI)	-0.91	-1.39
Consumption	-2.22	-1.15
Imports	-3.02	-2.43
Exports	0.54	2.54

Note: Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors
Source: CGE Simulation results

The impacts of remittance simulation on sectoral prices and sectoral quantities are reported in Table 13 and Table 14 respectively. Since, remittance is a direct transfer to the household, a fall in remittance would lead to fall in household income. It appears that, under this simulation a fall in household income would lead to fall in demand for most of the goods and services in the economy. This would result in fall in domestic prices of all goods and services. However, because of fall in factor prices the FOB export prices would fall for all export-oriented activities both in agricultural and manufacturing sectors. Also the real exchange rate would depreciate. These would result in some expansion of the export-oriented sectors. In the short term, production in woven and knitting RMG sectors would increase. However, except these export-oriented sectors, all other sectors would experience contraction. Also, there is a fall in demand for imports for all importing sectors. The long term price impacts are higher than the short term impacts. In terms of quantity, the short term negative impacts on sectoral production, imports, domestic demand and composite goods are more pronounced than the long term impacts. However, the long terms positive impacts on sectoral exports are higher than the short term impacts. Also, in the long term, production in woven and knitting RMG sectors would increase more than the short term and the short term negative effects on production in other sectors would be lessened in the long term.

Table 13: Effect on Prices of Remittance Simulation (% change from the base year value)

	Short term impact				Long term impact			
	PC	**PE_FOB**	**PL**	**PVA**	**PC**	**PE_FOB**	**PL**	**PVA**
Paddy Cultivation	-1.15		-1.15	-1.26	-1.75		-1.75	-1.88
Other Grain Cultivation	-0.45		-0.83	-1.11	-0.76		-1.41	-1.90
Other Crop Cultivation	-0.73	-0.26	-0.94	-0.94	-1.35	-1.06	-1.74	-1.91
Livestock Rearing	-1.20	-0.29	-1.23	-1.75	-1.57	-0.68	-1.61	-1.81
Poultry Rearing	-1.48	-0.39	-1.49	-2.18	-1.44	-0.61	-1.45	-1.81
Shrimp Farming and fishing	-1.14	-0.23	-1.14	-1.15	-1.75	-0.75	-1.75	-1.80
Forestry	-2.60		-2.60	-4.93	-1.62		-1.62	-1.80
Rice Milling	-1.17	-0.04	-1.18	-1.63	-1.68	-0.61	-1.70	-1.80
Grain Milling	-0.83		-0.84	-1.58	-1.26		-1.27	-1.80
Food Process	-0.65	-0.01	-0.91	-1.33	-1.02	-0.62	-1.42	-1.80
Leather Industry	-1.24	-0.30	-1.25	-0.44	-2.07	-1.11	-2.10	-1.80
Mill Cloth	-0.45		-0.59	-0.27	-1.14		-1.48	-1.80
Woven RMG	-0.95	-0.37	-1.22	0.27	-1.81	-1.43	-2.33	-1.80
Knitting RMG	-1.38	-0.28	-1.45	0.15	-2.64	-1.43	-2.78	-1.80
Chemical Industry	-0.13		-0.69	-0.61	-0.26		-1.35	-1.80
Other Industry	-0.39	-0.14	-0.91	-0.84	-0.63	-0.90	-1.47	-1.80
Services	-0.94	-0.07	-0.98	-1.01	-1.57	-0.76	-1.62	-1.80

Note: PC = Purchaser price of composite commodity i (including all taxes and margins), PE_FOB = FOB price of exported commodity x (in local currency), PL = Price of local product i (excluding all taxes on products), PVA = Price of industry j value added (including taxes on production directly related to the use of capital and labour)

Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors

Source: CGE Simulation results.

Table 14: Effect on Volumes of Remittance Simulation (% change from the base year value)

	Short term impact					Long term impact				
	XS	IM	DD	EX	Q	XS	IM	DD	EX	Q
Paddy Cultivation	-2.12		-2.12		-2.12	-0.96		-0.96		-0.96
Other Grain Cultivation	-1.19	-2.83	-1.19		-1.96	0.56	-2.25	0.56		-0.76
Other Crop Cultivation	-0.78	-2.71	-0.84	0.52	-1.27	0.80	-2.74	0.74	2.14	-0.05
Livestock Rearing	-1.32	-3.73	-1.32	0.58	-1.38	-0.50	-3.68	-0.50	1.38	-0.59
Poultry Rearing	-1.43	-4.34	-1.43	0.78	-1.44	-0.48	-3.34	-0.48	1.22	-0.50
Shrimp Farming and fishing	-1.25		-1.37	0.46	-1.37	-0.38		-0.52	1.51	-0.52
Forestry	-1.24		-1.24		-1.24	-0.37		-0.37		-0.37
Rice Milling	-2.18	-4.48	-2.18	0.09	-2.21	-0.99	-4.33	-0.99	1.23	-1.04
Grain Milling	-2.46	-4.09	-2.46		-2.48	-1.32	-3.81	-1.32		-1.35
Food Process	-1.73	-3.55	-1.77	0.02	-2.28	-0.32	-3.16	-0.36	1.25	-1.16
Leather Industry	-0.61	-3.74	-1.29	0.61	-1.32	0.96	-3.91	0.25	2.27	0.20
Mill Cloth	-0.87	-2.03	-0.87		-1.14	1.36	-1.62	1.36		0.66
Woven RMG	0.56	-3.36	-0.96	0.74	-1.51	2.71	-3.61	1.04	2.91	-0.02
Knitting RMG	0.31	-4.60	-1.77	0.57	-1.92	2.61	-5.38	0.11	2.92	-0.17
Chemical Industry	-0.43	-1.80	-0.43		-1.54	2.18	-0.57	2.18		-0.05
Other Industry	-0.99	-3.07	-1.28	0.27	-2.30	0.87	-2.27	0.66	1.82	-1.02
Services	-1.65	-3.59	-1.69	0.13	-1.75	-0.18	-3.42	-0.21	1.54	-0.32

Note: XS = Industry j production of commodity i, IM = Quantity of product m imported, DD = Domestic demand for commodity i produced locally, EX = Quantity of product x exported by sector j, Q = Quantity demanded of composite commodity i
Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors
Source: CGE Simulation results**.**

Under the remittance simulation real consumptions of all household categories would fall, and the households with higher initial endowments of remittance incomes, such as small farmers and urban low educated households, would experience larger fall in real consumptions (Table 15). All the household categories would also experience fall in nominal incomes. However, as reported in Table 12, the CPI would fall, and the fall nominal incomes are higher than the fall in CPI, which would result in fall in welfare of the households. Again, small farmers and urban low-educated households would experience larger welfare loss. The negative impacts on real consumption are subsided in the long term.

Table 15: Effect on Nominal Income and Real Consumption of Remittance Simulation (% change from the base year)

	Short term impact		Long term impact	
	Real Consumption	Nominal Income	Real Consumption	Nominal Income
Rural landless	-2.01	-2.93	-0.83	-2.23
Rural marginal farmer	-2.07	-3.00	-0.99	-2.40
Rural small farmer	-2.40	-3.31	-1.34	-2.74
Rural large farmer	-2.23	-3.14	-1.19	-2.59
Rural non-farm	-2.08	-3.00	-1.12	-2.52
Urban low educated	-2.74	-3.62	-1.41	-2.79
Urban high educated	-2.21	-3.10	-1.08	-2.46

Note: Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors
Source: CGE Simulation results

5.3. Results of Combined (Exports + Remittance) Simulation

The macroeconomic impacts of the combined simulation are reported in Table 16. The combined effects of the exports and remittance shocks would aggravate the short and long

term negative effects. However, in the long term the exports would still rise because of the larger positive effect of the depreciation of the real exchange rate generating from the remittance shock.

Table 16: Macroeconomic Effects of Combined Simulation (% change from the base year value)

Variable	Short term impact	Long term impact
Consumer Price Index (CPI)	-2.94	-5.44
Consumption	-6.41	-2.40
Imports	-9.89	-8.34
Exports	-5.77	0.70

Note: Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors
Source: CGE Simulation results

The sectoral price and volume impacts of the combined simulation are reported in Table 17 and Table 18 respectively. The combined effect of the export and remittance shocks would depress the domestic prices further and the long term price effects would be larger than the short term effects. In the case of effects of volumes, in the long term there would a small positive effect on the export of woven RMG and leather, which would make the overall export change positive.

Table 17: Effect on Prices of Combined Simulation (% change from the base year value)

	Short term impact				Long term impact			
	PC	PE_FOB	PL	PVA	PC	PE_FOB	PL	PVA
Paddy Cultivation	-3.50		-3.50	-3.73	-6.28		-6.28	-6.56
Other Grain Cultivation	-1.37		-2.54	-3.28	-2.70		-4.94	-6.39
Other Crop Cultivation	-2.65	9.91	-3.40	-2.42	-5.33	6.41	-6.78	-6.30
Livestock Rearing	-3.55	-0.98	-3.64	-4.56	-6.28	-3.36	-6.44	-7.36
Poultry Rearing	-4.74	-1.27	-4.76	-6.98	-5.71	-2.71	-5.74	-7.36
Shrimp Farming and fishing	-3.38	4.24	-3.38	-2.27	-7.70	0.85	-7.70	-7.38
Forestry	-8.55		-8.55	-15.99	-6.59		-6.59	-7.39
Rice Milling	-3.62	-0.23	-3.67	-4.82	-6.34	-2.85	-6.44	-7.35
Grain Milling	-2.68		-2.71	-4.68	-4.95		-5.00	-7.36
Food Process	-2.13	-0.23	-2.96	-3.78	-4.16	-3.16	-5.73	-7.36
Leather Industry	-4.55	5.61	-4.60	8.86	-12.58	-1.83	-12.71	-7.35
Mill Cloth	-1.83		-2.38	-1.82	-4.68		-6.02	-7.34
Woven RMG	-1.93	-2.84	-2.48	-3.11	-4.70	-6.12	-5.99	-7.35
Knitting RMG	-2.53	-3.43	-2.66	-4.13	-5.75	-6.39	-6.04	-7.35
Chemical Industry	-0.49		-2.52	-2.53	-1.09		-5.50	-7.38
Other Industry	-1.04	-8.28	-2.40	-6.21	-1.87	-10.67	-4.26	-7.37
Services	-3.28	-0.22	-3.39	-3.59	-6.34	-3.25	-6.55	-7.37

Note: PC = Purchaser price of composite commodity i (including all taxes and margins), PE_FOB = FOB price of exported commodity x (in local currency), PL = Price of local product i (excluding all taxes on products), PVA = Price of industry j value added (including taxes on production directly related to the use of capital and labour)
Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors
Source: CGE Simulation results.

Table 18: Effect on Volumes of Combined Simulation (% change from the base year value)

	Short term impact					Long term impact				
	XS	IM	DD	EX	Q	XS	IM	DD	EX	Q
Paddy Cultivation	-6.15		-6.15		-6.15	-1.63		-1.63		-1.63
Other Grain Cultivation	-3.48	-8.33	-3.48		-5.76	3.58	-6.40	3.58		-1.14
Other Crop Cultivation	-1.99	-9.87	-3.43	25.01	-4.90	3.90	-11.07	2.33	33.34	-0.77
Livestock Rearing	-3.40	-10.31	-3.40	2.00	-3.59	0.34	-12.17	0.34	7.06	-0.01
Poultry Rearing	-4.53	-13.41	-4.53	2.59	-4.58	-0.85	-11.90	-0.85	5.64	-0.90
Shrimp Farming and fishing	-2.43		-3.55	12.28	-3.55	1.84		0.46	19.95	0.46
Forestry	-4.06		-4.06		-4.06	-0.61		-0.61		-0.61
Rice Milling	-6.33	-13.08	-6.33	0.47	-6.43	-1.72	-13.97	-1.73	5.95	-1.92
Grain Milling	-7.13	-12.09	-7.13		-7.18	-2.87	-12.33	-2.87		-2.97
Food Process	-4.85	-10.50	-4.96	0.46	-6.56	1.17	-10.19	1.05	6.63	-2.22
Leather Industry	13.24	-4.77	4.62	28.21	4.51	28.73	-10.60	17.33	48.38	16.99
Mill Cloth	-5.76	-10.19	-5.76		-6.80	1.88	-10.03	1.88		-0.97
Woven RMG	-6.28	-10.26	-5.65	-6.35	-6.70	0.34	-11.08	0.60	0.31	-2.09
Knitting RMG	-8.23	-11.81	-6.93	-8.39	-7.18	-2.41	-13.27	-1.75	-2.49	-2.35
Chemical Industry	-1.79	-6.67	-1.79		-5.76	9.40	-2.31	9.40		-0.14
Other Industry	-7.14	-9.64	-5.14	-16.22	-7.72	-0.91	-7.00	1.46	-11.68	-3.42
Services	-5.73	-12.13	-5.85	0.44	-6.07	-0.20	-12.97	-0.34	6.83	-0.78

Note: XS = Industry j production of commodity i, IM = Quantity of product m imported, DD = Domestic demand for commodity i produced locally, EX = Quantity of product x exported by sector j, Q = Quantity demanded of composite commodity i
Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors
Source: CGE Simulation results.

Under the combined simulation real consumptions and incomes of all household categories would fall, and in general the poorer households would suffer more than their richer counterparts (Table 19). The negative effects on consumption and incomes would be much higher in the short term than in the long term.

Table 19: Effect on Nominal Income and Real Consumption of Combined Simulation (% change from the base year)

	Short term impact		Long term impact	
	Real Consumption	Nominal Income	Real Consumption	Nominal Income
Rural landless	-6.62	-9.41	-2.24	-7.59
Rural marginal farmer	-6.29	-9.13	-2.27	-7.64
Rural small farmer	-6.39	-9.21	-2.41	-7.81
Rural large farmer	-5.98	-8.80	-1.99	-7.43
Rural non-farm	-6.02	-8.84	-2.43	-7.83
Urban low educated	-7.57	-10.31	-2.63	-7.98
Urban high educated	-6.66	-9.42	-2.44	-7.84

Note: Short term impact refers to the case with fixed wage rate and sector specific capital, and long term impact refers to the case with flexible wage rate and mobility in capital across sectors
Source: CGE Simulation results

VI. CONCLUSION AND POLICY IMPLICATIONS

There is no denying the fact that the recent global economic crisis has profound implications for the developing countries like Bangladesh. This paper has explored the impacts of global

economic crisis on the economy of Bangladesh in a general equilibrium framework. The CGE model for Bangladesh economy is developed with a Social Accounting Matrix for the year 2007 as the database. Analysis of the trend and pattern of the global economic crisis suggests that global economic crisis led to some negative impacts on the Bangladesh economy through two major channels: slumps in exports and remittances growths. Three simulations have been conducted considering export and remittance shocks. The results of the simulations suggest that:

- During the global economic crisis the growth in total exports was much lower than those during pre-crisis periods and the export growth was mainly driven by the growth in non-RMG sectors. Under the export simulation, the woven and knit RMG sectors would experience contraction and there would be some expansions of the non-RMG export oriented sectors. Because of the reduced rates of growth in overall exports as well as much slower growth in knit and woven RMG sectors, there would be some negative impacts on the economy in terms of falls in aggregate consumption, exports, imports and households' consumption and welfare. The poorer households would suffer more as a result of negative export shock during the global economic crisis.

- The reduced rate of growth in remittances during the global economic crisis would contribute to the fall in household income and real consumption. Demand for goods would decline and, as a result, domestic demand and import would decrease. Due to the fact that reduction in inflow of remittance would contribute to depreciation of the real exchange rate, there would be a positive impact on the growth of exports. All household categories would encounter fall in real consumption and welfare. The households with higher initial endowments of remittance incomes would experience larger fall in real consumption and welfare.

- The exports and remittance shocks together would aggravate the negative impacts both in the short and long terms. However, in the long term, the there would be some positive impacts on exports because of the larger positive effect of the depreciation of the real exchange rate generating from the remittance shock.

The upshots of the above discussion point us to the fact that the economy of Bangladesh was affected during the global economic crisis, when growth in exports and remittances slowed down by great margins and the economy suffered. Several policy implications may emerge from the aforementioned analysis of the simulation results:

- It is evident from the aforementioned analysis that there was a very low growth of exports of woven and knit RMG from Bangladesh during the economic crisis. This resulted in low growth in total exports. The effects on consumption and welfare of the households were negative. There is a fear of continuation of this sluggish growth in exports of woven and knit RMG in the future. Therefore, there is a need for the policy makers to take necessary steps to enhance exports from these two sectors. These export oriented sectors suffer from serious supply side bottlenecks, such as lack of backward linkages, weak physical infrastructure, lack of skilled manpower, lack of access to capital, high lead time, high cost of doing business, etc. There is a need to bring down these supply side constraints which can enhance the competitiveness of these sectors.

- It is also true that the export basket of Bangladesh is highly concentrated in favor of the woven and knit RMG. There is a need to diversify the export basket so that the reliance on only a few sectors is reduced and the economy becomes less vulnerable to any external shock. This study also shows that indeed during the global economic crisis, there were some sectors, other than woven and knitting RMG sectors, such as leather, other crop, shrimp and fishing, and food process which were positively affected by the crisis. Increasing the shares of these sectors in the export basket would make Bangladesh less vulnerable to the external shock.

- The simulation results in this paper, as well was some other studies (such as Khondker and Raihan, 2009; Raihan *et al* 2009), have convincingly suggested the strong welfare enhancing effects of remittance in Bangladesh. The growth rate of remittance inflow reduced quite drastically during the global economic crisis. Also, looking at the trend of annual migration from Bangladesh it appears that there is a high risk of further reduction in inflow of remittances. Therefore, there is a need to take necessary measures for encouraging larger inflow of remittances and greater

outward migration. Measures such as reducing the hassles of sending remittances through formal channels and providing appropriate guidance and support for channeling the remittance money to productive investment could be very useful. Also, government needs to negotiate both multilaterally (at WTO) and bilaterally for the enhancement of export of manpower from Bangladesh.

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