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Bangladesh LDC Graduation and Impact on Export Subsidies

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Summary

Export subsidy reform is a crucial policy debate for many developing countries. This study analyses the impact of eliminating export subsidies for Bangladesh using a computable general equilibrium framework. Our simulations indicate that the partial removal of export subsidies positively affects the gross domestic product (GDP). If we reduce export subsidies by 50 per cent and transfer this funding from the government to the targetted seven low-income household groups, real GDP may increase by about 0.81 per cent. Government transfers to the households lead to an increase in real income for all seven targetted households, especially rural households where incomes rise on average by 2.5 per cent. This study indicates that there are significant opportunity costs associated with export subsidies, and household income could be enhanced by redirecting the spending to more productive channels.

Introduction

Export subsidies are a key policy intervention tool used in many developing countries that offer incentives for exporters in international markets. Export promotion strategies are trade policy tools that have a long tradition of providing export subsidies to increase exports. Export subsidies may increase domestic production and exports, but they are often criticised for inefficiencies and high costs to consumers in the subsidising economy. Bangladesh is planning to graduate from the least developed countries (LDCs) status to a developing country (DC) status by 2026, following which it will lose all preferential market access under the World Trade Organization (WTO) framework. In addition, Bangladesh must eliminate its domestic trade-restrictive policies, especially export subsidies.

Bangladesh has been using different instruments to support its export sector. Total exports were about US$47 billion (S$62.75 billion) in 2019, of which 87 per cent were accounted for by apparel products, with Bangladesh being the world's second-largest ready-made garments (RMG) exporting country. The three main support measures are duty drawback, a bonded warehouse, and a cash subsidy which comprised about 3.7 per cent of GDP in 2018.[1] As Bangladesh's main export sector is RMG, most of this export subsidy goes to the apparel sector.

As Bangladesh is set to graduate from the LDC to a DC status, export subsidies, especially for industrial products, have to be eliminated after graduation. The WTO prohibits most direct export subsidies, except for the LDCs. Other WTO members could – if subsidies are not eliminated – act against Bangladesh under Article 4 of the Subsidies and Countervailing Measures of the WTO and ask for the withdrawal of the subsidy.

[1] Bangladesh Bank, "Economic data", 2020, https://www.bb.org.bd/index.php (old version).

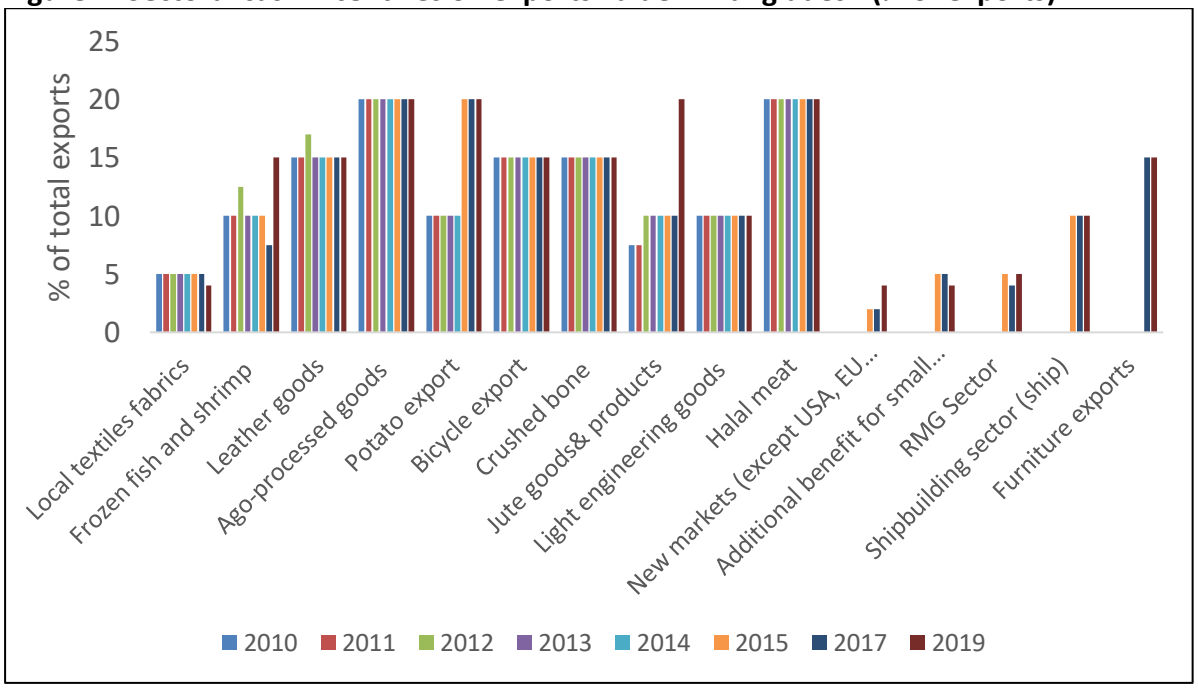
Against this background, our study's primary research question revolves around the likely impact of eliminating export subsidies, especially on the macroeconomy and household income distribution in Bangladesh. To answer this question, we deploy the MyGTAP model framework developed by Walmsley & Minor,[2] an extension of the standard static GTAP model.[3] This MyGTAP framework allows us to incorporate country specific information to investigate the impacts of trade policies on different household groups.[4]

A brief structure of Bangladesh's export subsidies is discussed in the following section. The section thereafter explains the MyGTAP methodology and how we incorporate the Bangladesh social accounting matrix (SAM) into the GTAP framework. We then present the findings from simulations in the fourth section before turning to some conclusions.

Export Subsidies of Bangladesh

Over the past decade, Bangladesh's export boom, particularly in the apparel sector, has helped Bangladesh to achieve significant economic growth. Bangladesh has been using different supporting instruments to boost its exports. The main mechanisms are the bonded warehouse facilities, duty drawbacks, direct export cash incentives, various tax concessions, tax holiday schemes and export credits.

Figure 1: Sectoral cash incentives on exports value in Bangladesh (% of exports)



Source: Authors' compilation from Bangladesh Bank Various SRO (2015, 2016, 2017, 2018,2019, 2020) and Bangladesh Trade Portal (2020), Ministry of Commerce

[2] Peter Minor and Terrie Walmsley, "MyGTAP: A Program for Customizing and Extending the GTAP Database for Multiple Households, Split Factors, Remittances, Foreign Aid and Transfers", *GTAP Working Papers*, No. 4321, (Center for Global Trade Analysis, Department of Agricultural Economics, Purdue University, 2013).

[3] Thomas Warren Hertel, *Global Trade Analysis: Modelling and Applications*, (Cambridge and New York: Cambridge University Press, 1997).

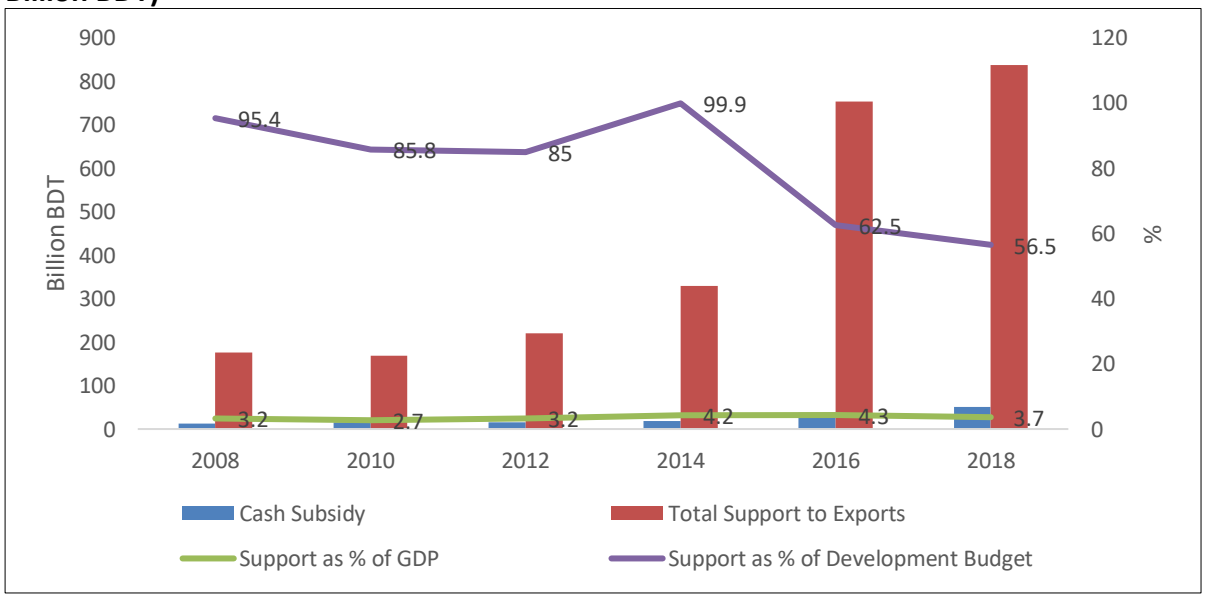
[4] Peter Minor and Terrie Walmsley, "MyGTAP: A Program for Customizing and Extending the GTAP Database for Multiple Households, Split Factors, Remittances, Foreign Aid and Transfers", op. cit.

Figure 1 shows different export incentives ranging from five per cent to 20 per cent on export values in various sectors over the last decades, with little change over time. The Bangladesh Bank announced cash incentives for the 2020 fiscal year for the export of products under 36 categories, including a two per cent additional special incentive for RMG products.[5]

The three main support measures to exports are duty drawback, bonded warehouse facilities, and cash subsidies, which cost about 3.7 per cent of GDP in 2019 and accounted for 22.5 per cent of the government revenue budget, along with 56.5 per cent of the development budget (Figure 2).

It is worth noting that most of the beneficiaries of such export incentives are the business elite and lobby groups which significantly influence the government. There are also colossal leakages and misuse of export subsidies and incentives. These large expenditures could be used for more productive sectors or development programmes.

Figure 2: Bangladesh export subsidies relative to GDP and the development budget (in Billion BDT)



Source: Authors compilation from National Board of Revenue (NBR, 2019) and Bangladesh Economic Review Archive (2015, 2016, 2017 & 2018), Ministry of Finance.

Modelling Framework

The GTAP computable general equilibrium (CGE) model is the most comprehensive model and dataset for estimating the nationwide impacts of trade policy. The detailed structure of the GTAP database, assumptions, model, equations, closures, elasticity, and parameters, are presented in Hertel (1997).[6] Gilbert et al. (2018)[7] provide a detailed systematic literature

[5] Bangladesh Bank, "Economic data", op. cit.

[6] Thomas Warren Hertel, *Global Trade Analysis: Modelling and Applications*, op. cit.

[7] John Gilbert, Taiji Furusawa, and Robert Scollay, "The economic impact of the Trans-Pacific Partnership: What have we learned from CGE simulation?", *The World Economy* 41, no. 3 (2018): 831-865, https://doi.org/10.1111/twec.12573.

review of CGE and discuss the strengths and limitations of CGE models in the context of international trade models. The GTAP framework structure includes regional households, governments, different sectors and their nests, and global sectors across countries, including how they are linked.

In this paper, we use the MyGTAP model developed by Walmsley & Minor (2013),[8] a customised version of the standard GTAP model by Hertel (1997).[9] This MyGTAP model allows us to incorporate country-specific data and is able to investigate the impacts of different domestic policies on the household level, which is essential for country-specific analysis. The model allows for incorporating income from remittances, foreign aid, foreign capital, and government income. In the MyGTAP framework, the government collects income from taxes, duty revenue and foreign aid. This income is then spent on public consumption outlays, transfers to households, foreign aid outflow, and subsidies. Similarly, private households receive and accumulate their income from factors of production, transfers from the government, other households, and foreign remittances. This accumulated income could be spent on different sectors, including consumption, transfers, remittances outflow and savings.

Data Extension and Aggregation to MyGTAP

The main features of the MyGTAP framework allow us to incorporate country-specific data on household and factors endowment. We incorporate the Bangladesh SAM data from the households' income and expenditure survey with the GTAP Version 10 dataset[10] by applying the MyGTAP programme.[11] The latest available Bangladesh SAM is for 2012 and updated for 2014.

We aggregate the 141 regions in the GTAP 10 dataset into 15 regions and the 65 sectors into 10 aggregate sectors (Appendices 1A and 1B). Our regional aggregation emphasises countries that are the leading trading partners of Bangladesh, including the United States, the European Union, China and India. We also aggregate the 65 GTAP sectors into 10 sectors considering the Bangladesh SAM. The detailed sectoral and regional aggregations are presented in Appendices 1A and 1B.

A complete mapping is required between the sectors of the Bangladesh SAM with the corresponding GTAP sectors and the aggregated regions. We then use the 10 different rural and urban households' income, consumption and ownership weights acquired from the SAM (2014) to incorporate into the MyGTAP model. A summary of the Bangladesh social accounting matrix and database used in this study is described in Figure 3.

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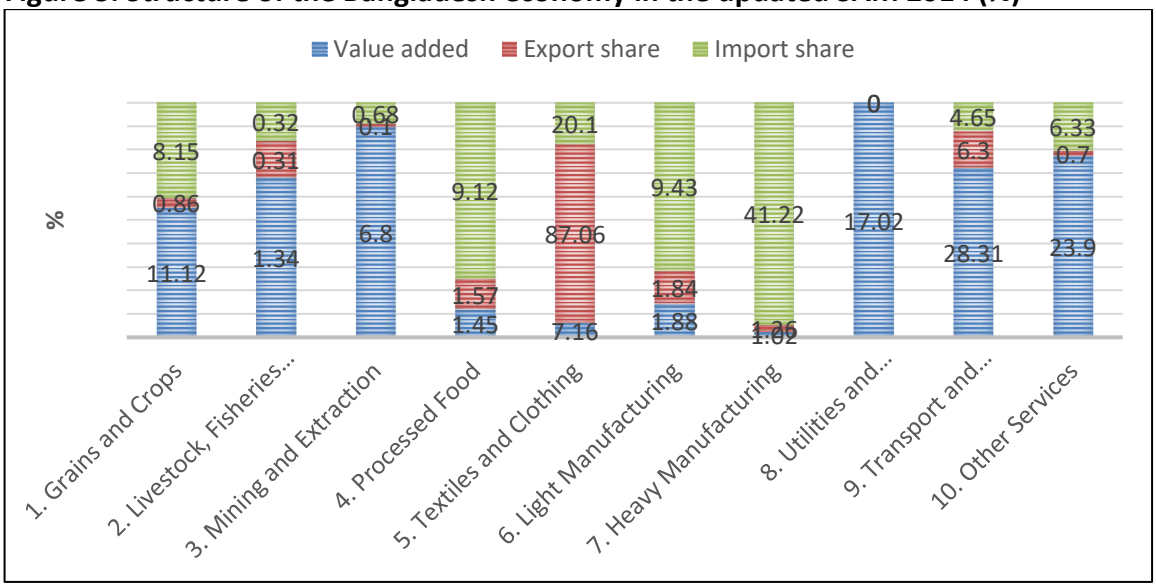
8 Peter Minor and Terrie Walmsley, "MyGTAP: A Program for Customizing and Extending the GTAP Database for Multiple Households, Split Factors, Remittances, Foreign Aid and Transfers", op. cit.

9 Thomas Warren Hertel, *Global Trade Analysis: Modelling and Applications*, op. cit.

10 Angel Aguiar, Maksym Chepeliev, Erwin L. Corong, Robert McDougall, and Dominique Van Der Mensbrugghe. "The GTAP data base: version 10", *Journal of Global Economic Analysis* 4, no. 1 (2019): 1-27.

11 Peter Minor and Terrie Walmsley, "MyGTAP: A Program for Customizing and Extending the GTAP Database for Multiple Households, Split Factors, Remittances, Foreign Aid and Transfers", op. cit.

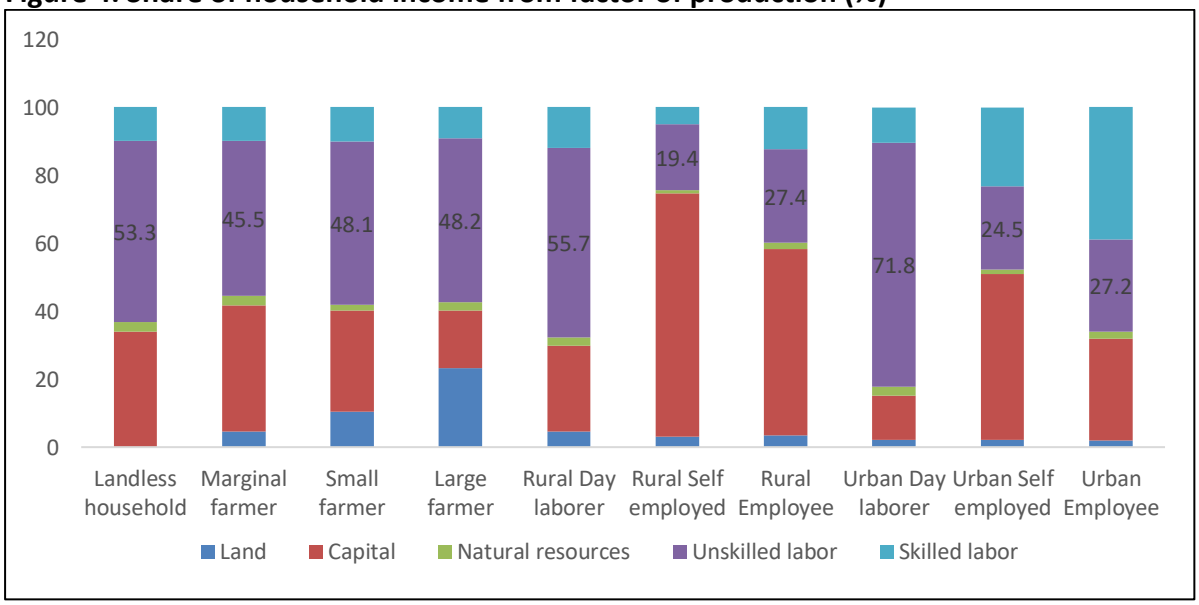
Figure 3: Structure of the Bangladesh economy in the updated SAM 2014 (%)



Source: GTAP 10 & SAM (2014)

Figure 3 shows the structure and share of different economic sectors in Bangladesh in 2014, as shown in the SAM. Grains and crops are the leading category in the agriculture sector, contributing 11.3 per cent of value added. On the other hand, in the industry sector, textile and clothing is the leading category that contributes a 7.6 per cent share of the economy. The apparel sector is also highly export-oriented. About 87 per cent of Bangladesh's exports come from the textiles and clothing sectors, while imports by this sector are about 20 per cent, as shown in the SAM. Bangladesh is heavily dependent on importing in the heavy manufacturing sectors, about 41 per cent of total imports, especially intermediate capital goods.

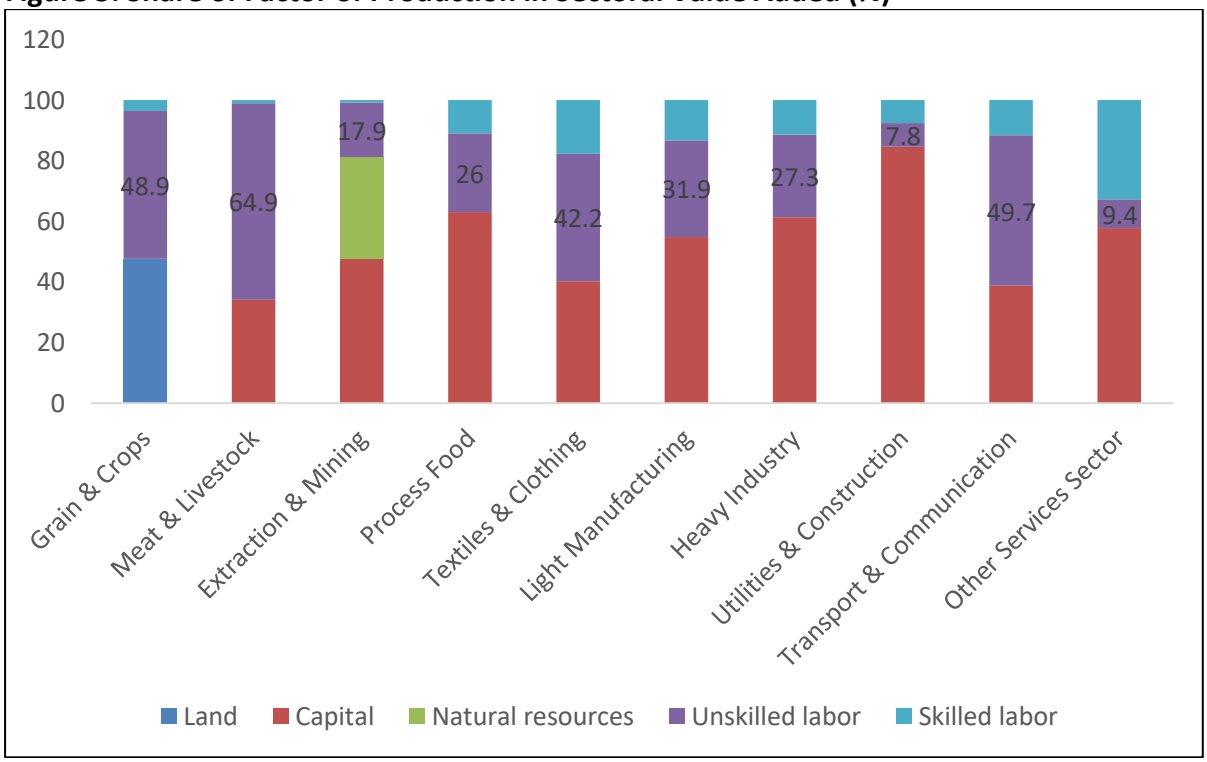
Figure 4: Share of household income from factor of production (%)



Source: Bangladesh 2014 SAM

Figure 4 shows factor ownership by rural and urban households. In contrast, Figure 6 demonstrates how these factors of production are employed in different sectors and where the income comes from these 10 households.

Figure 5: Share of Factor of Production in Sectoral Value Added (%)



Source: Bangladesh 2014 SAM

Unskilled labour is largely employed in the agricultural sector, as shown in Figure 5. The Figures depict that urban day labourers get most of their income from unskilled employment, and about 42 per cent of value added is unskilled labour in the textile and apparel sector.

Simulations Scenarios

We simulate the following three different scenarios to evaluate the potential impact of export subsidies for Bangladesh:

- Complete elimination of the export subsidies under scenario one. This simulation reflects that Bangladesh will graduate from an LDC to a developing country by 2026 and all export subsidies must be eliminated under the WTO framework.

- Under scenario two, we introduce a partial removal that is a 50 per cent reduction of export subsidies to all sectors and at the same time, including the transfer of funds to seven poor rural households' categories using savings accumulated from the subsidy removal. This allows us to assess the production and exports, and their implication on different households' incomes.

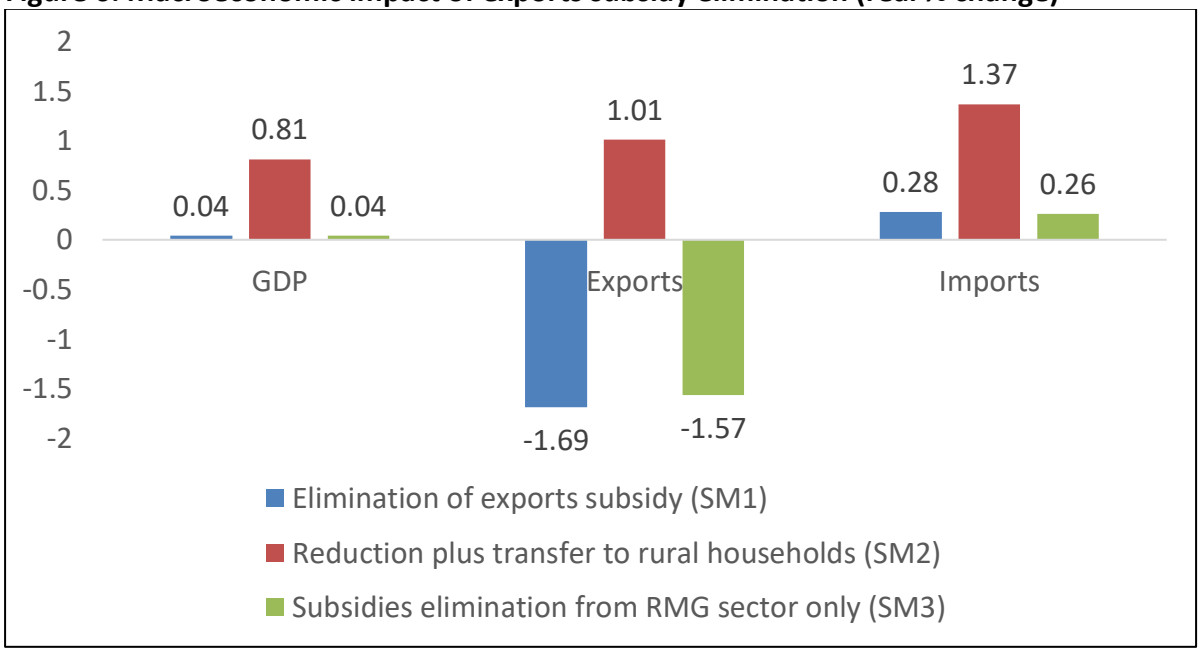
- In scenario three, we introduce an elimination of export subsidies only in the apparel sector to analyse the impact. Reducing export subsidies, especially textiles and clothing, may hurt production and employment as Bangladesh is the second-largest apparel exporter in the world. This sector encompasses about 87 per cent of Bangladesh's total exports.

Analysis of the Simulations Results

Gross Domestic Product

The impact of removing export subsidies can be investigated at both the macroeconomic and household level. This section presents the results showing the simulated impacts on GDP, industrial output, trade, household income and consumption. The overall macroeconomic impact of removing export subsidies is presented in Figure 6. The results show that the full elimination of export subsidies has a slightly positive impact on GDP due to the improvement of overall economic efficiency. Subsidy elimination increased export prices, but import prices did not change, which led to a decline in export. But at the same time, there are some positive impacts due to increased allocative efficiency. It is worth mentioning that the import tariffs of Bangladesh are relatively high; therefore, eliminating export subsidies does not improve allocative efficiency significantly.

Figure 6: Macroeconomic impact of exports subsidy elimination (real % change)



Source: Authors' simulations

Overall, export subsidy elimination has no negative effect on GDP. However, suppose we eliminate export subsidies on the RMG sector under scenario three. In that case, the real GDP may increase by 0.04 per cent, which is the same compared to the full elimination of export subsidies by all sectors. The contribution of the RMG sector to the GDP is about seven per cent, which indicates that an elimination of export subsidies in the apparel sector does not have any negative impact on the GDP.

In contrast, if we reduce the export subsidy by 50 per cent and transfer this funding from the government to target seven poor rural household groups, real GDP may increase by more than 0.81 per cent. A key factor of such a significant increase in GDP is the rapid increase in output of the agriculture and manufacturing sectors. As shown in Figure 9, overall production is likely to increase in all sectors except apparel outputs. A substantial increase in sectoral outputs influences household income and consumption due to the

transfer of funds to rural households. As real GDP is determined by the sum of household consumption, investment, government expenditure and net exports, a significant increase in household consumption results in a significant increase in real GDP.

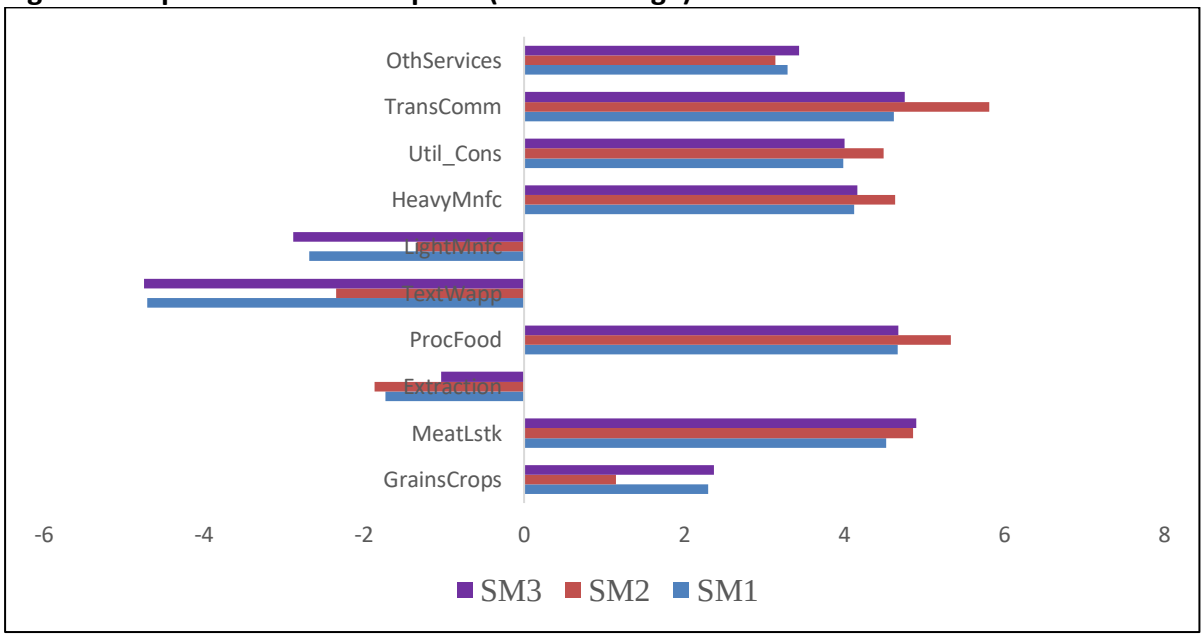
Trade

It is evident from the simulations that the elimination of export subsidies will drop exports under scenarios one and three. Total exports could be reduced by about 1.69 per cent and 1.57 under scenarios One and three respectively. However, under scenario two, both exports and imports show positive results increase relative to the reduction under scenarios one and three. Total imports may increase by 1.37 per cent due to an increase in the aggregated income at the household level; although import prices show no change, domestic prices show a slight increase. An increase in real imports is also driven by the rise in importing petroleum and other manufacturing sectors. Transferring to poor households does not hurt exports, as these still increase by about one per cent. It should be noted that despite a drop in net exports, real GDP increases because of the other components like consumption and investment of GDP. The analysis also indicates that the overall change in the balance of trade in Bangladesh is positive, and no significant impact is detected in terms of trade.

Sectoral Trade

Textiles and clothing are the main export items of Bangladesh, constituting about 87 per cent of Bangladesh's total exports in 2019. Therefore, the exports of the RMG sector could be affected adversely if the Bangladesh government eliminates export subsidies under all three scenarios (Figure 7). Exports of the RMG sector could be reduced by 4.7 per cent if we eliminate export subsidies only under scenario three. However, under scenario two, RMG export fall could be 2.4 per cent.

Figure 7: Impact on sectoral exports (real % change)



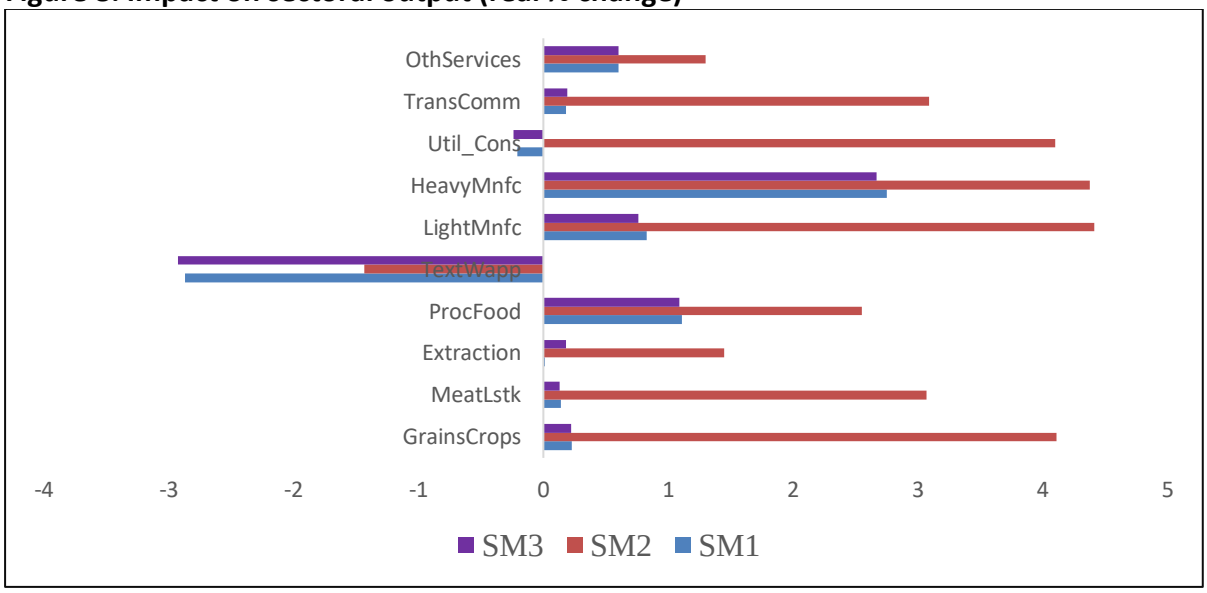
Source: Authors' simulations

At the same time, imports might decrease as exports decrease, especially intermediate inputs of the RMG sector, which constitute about 20 per cent of Bangladesh's total imports (Figure 4). However, removing export subsidies may positively impact exporting of all other sectors except RMG, which could be important for the export diversification strategy in Bangladesh. The removal of export subsidies also reduces imports in the light manufacturing sector. It is apparent that if we transfer the savings fund that accumulated from the removal of subsidies to the rural household, that will add to investment and increase GDP. However, this transfer to rural households leads to increased rural consumption, which helps to increase imports especially, intermediate goods.

Sectoral Output

The RMG industry has been enjoying various stimulus supports, including cash incentives, duty drawbacks, and bonded warehouse facilities over the decades. If we eliminate the export subsidies under all three different scenarios, apparel production would be affected negatively, as presented in Figure 8. Under scenario three, if we eliminate export subsidies for the apparel sector, the total production of textiles and clothing would be reduced by about three per cent, while scenario one has a similar negative impact, but under scenario two, output could fall by 1.5 per cent. However, the light and heavy manufacturing sectors are experiencing strong growth, and agricultural output is also increasing significantly. The analysis indicates that the removal of export subsidies may have a negative impact on the apparel sector but a positive effect on the output of other sectors.

Figure 8: Impact on sectoral output (real % change)



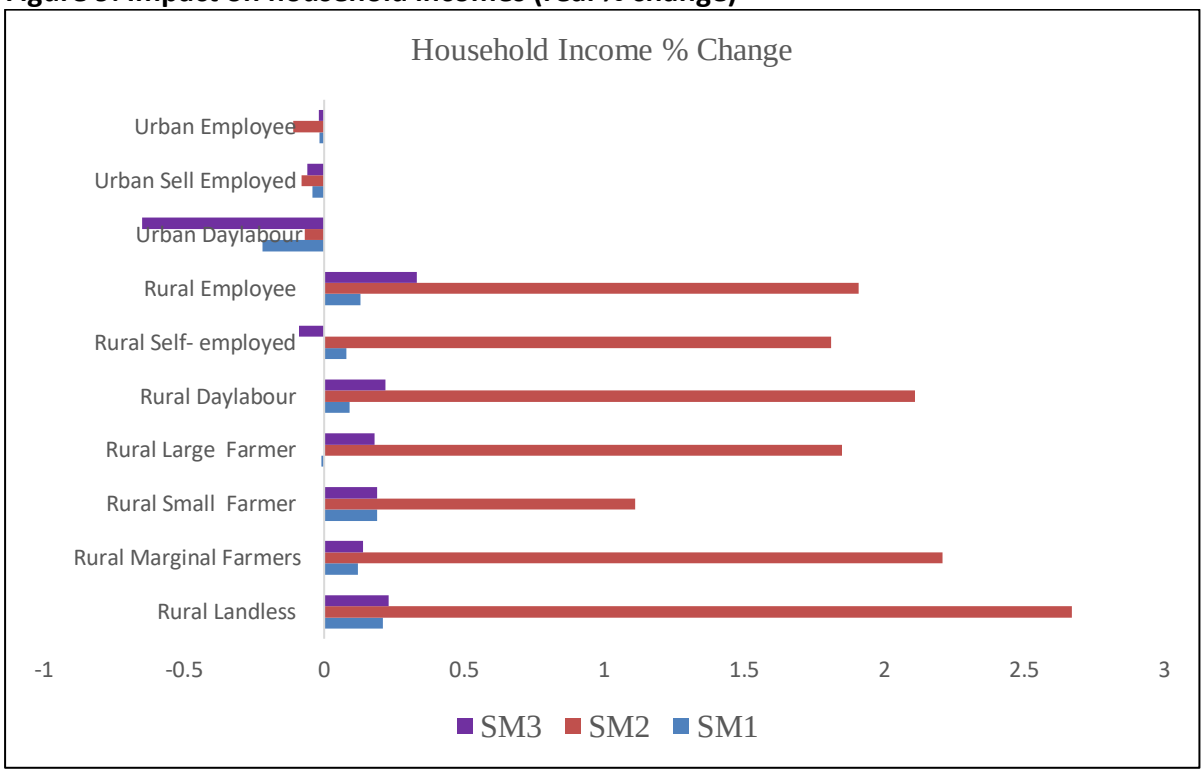
Source: Authors' simulations

Impact on Households

Distributional analysis of households is an important supplement to the macro-economic analysis, particularly for a developing country such as Bangladesh. The estimated change in Bangladesh's household incomes is shown in Figure 9. The simulation results reveal that the real household income declines only for the urban households but increases for other small

rural households under scenario one. In scenario two, which includes a government transfer to poor households, the household income increases across all rural household groups. Changes in the sources of household income show that households benefit from a government transfer with an increase on average of 2.5 per cent for rural households but a slight decrease in the urban household income.

Figure 9: Impact on household incomes (real % change)

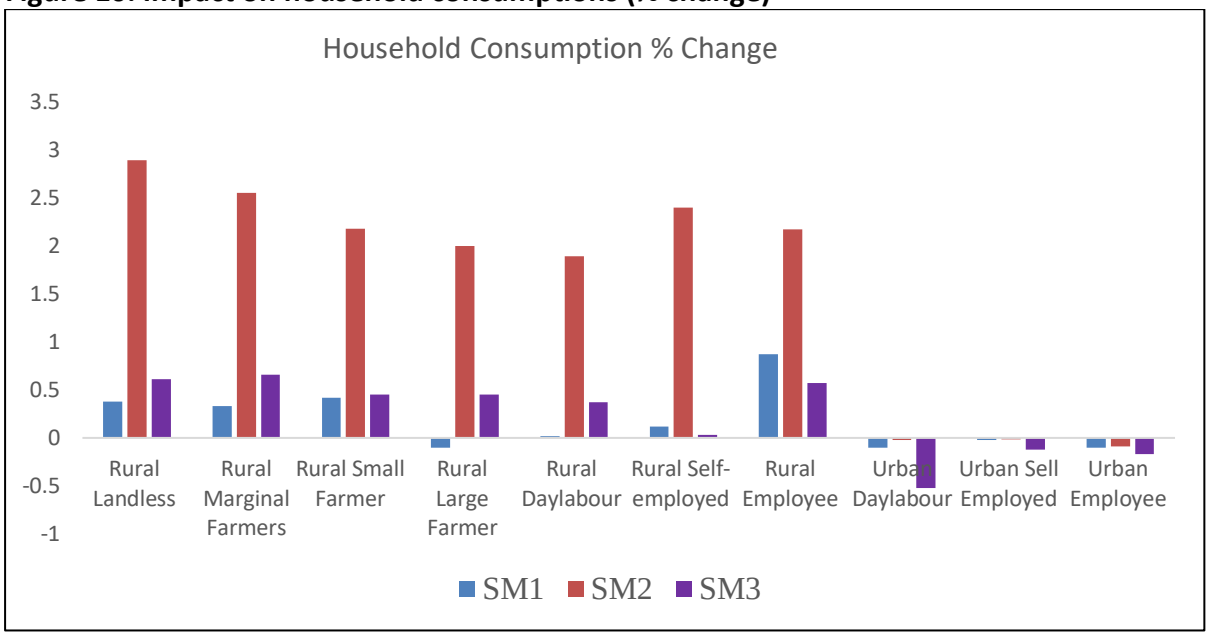


Source: Authors' simulations

Table 3 shows the contribution of the apparel sector to GDP is about 7.16 per cent. About 42 per cent of value added in the garment industry is urban unskilled households who are directly affected due to the lower output that leads to lower exports in the apparel sector. According to Haque and Bari (2021), about 4.2 million workers are employed in the apparel sector in Bangladesh, about 26 per cent of urban employees. Therefore, the incomes of urban households could decline due to a fall in RMG productions and exports, which will directly affect urban unskilled household income.

The overall composition of rural households' expenditure is mainly on food which is about 80 per cent of poor households' spending on their total consumption. This implies that a rise in domestic demand causes a rise in endowment factor prices and contributes to an overall increase in the price level. Due to the elimination of export subsidies initially, domestic prices may increase due to higher production costs, which leads to lower exports. Thus, a lower export leads to higher supply in the domestic market, which leads to a lower domestic price. Therefore, eliminating export subsidies affects the domestic price fall and helps to increase some households' income. Nevertheless, it is noticed that the domestic price increases by 0.80 per cent due to money transfers from the government to poor households.

Figure 10: Impact on household consumptions (% change)



Source: Authors' simulations

Figure 10 demonstrates the changes in consumption for different household groups. We find that the average consumption level may increase on an average by about 3.5 per cent, mostly in the rural area under scenario two. Urban households are expected to experience a decrease in consumption under scenarios one and three. The main reason for this is that urban households depend on the apparel and light manufacturing sectors whereas rural households mostly depend on their agricultural production. This study indicates that there is a substantial opportunity cost of export subsidies and welfare could be enhanced by redirecting the spending to more productive channels.

Conclusion

This paper uses the MyGTAP program and model developed by Walmsley and Minor (2013)[12] to investigate the impacts of different domestic policies at the household level. We combine the Bangladesh social accounting matrix data with the GTAP version 10 database using the MyGTAP model. We incorporate both rural and urban regional household incomes, consumptions, and ownership weights in the MyGTAP model collected from the Bangladesh social accounting matrix.

We then simulate the three different scenarios to evaluate the potential economic impact of the removal of export subsidies in Bangladesh which is a complete elimination of the export subsidies under scenario one. Under scenario two, we introduced a partial removal which is a 50 per cent reduction of export subsidies to all sectors and, at the same time transfer direct funds to poor households that save from the subsidy to assess the income implication of different families. Also, we explore the impact of the elimination of export subsidies on the textiles and clothing sector only.

[12] Peter Minor and Terrie Walmsley, MyGTAP: A Program for Customizing and Extending the GTAP Database for Multiple Households, Split Factors, Remittances, Foreign Aid and Transfers, op. cit.

The simulations show that the elimination of export subsidies has a positive impact on GDP due to the improvement of overall economic efficiency. But both exports and imports will drop if we eliminate the export subsidies. While if we reduce the export subsidy by 50 per cent and transfer the accumulated savings from the government to the targetted seven household groups, real GDP may increase by about 0.81 per cent. However, the removal of export subsidies will affect the RMG sector substantially.

The removal of export subsidies may drop the real household income for urban households but increase income for rural households. Government transfer to poor households leads to increased income for all different rural household groups. The real income may increase due to a rise in the return of wages and profits from the factor of production. Changes in household income sources show households benefit from a government transfer increasing by 2.5 per cent for rural households. This analysis indicates that there is a substantial opportunity cost of export subsidies, and welfare could be increased by redirecting the spending to more productive channels. Supporting export industries is compelling Bangladesh to spend a large amount, which could be used for various development programs that may bring more significant benefits to the country.

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Appendices

Appendix 1A: Sectoral Aggregation

Sector	Sector Description
Grains & Crops	Paddy rice, wheat, cereal grains, vegetables, fruit, nuts oil seeds, Sugar cane, sugar beet, plant-based fiber crops
Livestock, Fisheries & Meat Products	Cattle, sheep, goats, horses, animal products, meat, raw milk wool, silk-worm cocoons
Mining & Extraction	Forestry, fishing, coal, oil, gas, minerals
Processed Food Items	Vegetable oils and fats, dairy products, processed rice, sugar, food products, beverages, and tobacco products
Textiles & Clothing	Textiles & clothing sector
Light Manufacturing	Leather products, wood products, paper products, publishing, motor vehicles and parts, transport equipment, manufacturers, metal products
Heavy Manufacturing	Electronics items, machinery and equipment, petroleum, coal, products, chemical, rubber, plastic products, mineral products, ferrous metals, metals, and chemical products
Utilities & Construction Service	Electricity, gas manufacture and distribution, water and construction service
Transport & Communication Services	Trade, transport, land transport, sea transport, air transport communication, accommodation and food service, Warehousing and support activities
All Other Services	Financial Services, Insurance, Business Services, Recreation, and other services, Pub Admin, defence, health, education, dwellings, real estate activities

Source: GTAP version 10

Appendix 1B: Regional Aggregation

Aggregated Region	Comprising GTAP Countries/Regions
Oceania	Australia, New Zealand
Bangladesh	Bangladesh
India	India
China	China
The United States	The United States
Japan	Japan
East Asia	Japan, Hong Kong, Korea, Mongolia, Taiwan, Rest of East Asia
Southeast Asia	Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Thailand, Viet Nam, Rest of Southeast Asia
South Asia	Nepal, Pakistan, Sri Lanka, Rest of South Asia
North America	Canada, Mexico, Rest of North America
Latin America	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela, rest of South America, Costa Rica, Guatemala
EU28	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Norway, the United Kingdom, Switzerland
MENA and the Middle East	Rest of Western Asia, Egypt, Morocco, Tunisia, Rest of North Africa
Sub-Sahara	Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana, Guinea, Nigeria, Senegal, Togo, Rest of Western Africa, Central Africa, South Central Africa, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Tanzania, Uganda, Zambia, Zimbabwe, Rest of Eastern Africa
Rest of the World	Rest of the European Free Trade Association, Albania, Bulgaria, Belarus, Croatia, Romania, Russian Federation, Ukraine, Rest of Eastern Europe, Rest of Europe, Kazakhstan, Kyrgyzstan, Rest of Former Soviet Union

Source: GTAP version 10