Global Value Chains and Public Policy Dilemma in Covid Times: Evidences from Bangladesh

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1. Introduction

- Bangladesh, like many other countries around the world, has recently been hit by an unprecedented pandemic – the Covid-19.

- The age-old policy of lockdowns and shutdowns gained momentum throughout the world.

- From an economic point of view, this presented a dilemma for the governments
  - On the one hand, there was the need to restrict the spread of the pandemic through lockdowns
  - On the other hand, restricting economic activities led to anticipations of economic downturns in the near future.

1. Introduction (cont'd.)

- One major issue in Bangladesh (and some other countries) was the apparent anomaly in the enforcement of strict restrictions, especially on export oriented garments factories.

- Also, there have been pandemics in the world before; but the one thing that is different in the contemporary world is the existence of global value chains (GVCs) and segmented production along the value chain.

- The aim of this study is to provide a snapshot using GVC theory and data currently available to understand the following issues:
  - The apparent anomaly in imposing strict restrictions to curtail the effects of the pandemic
  - Effect of a country's level of operation in the global value chain on how it dealt with Covid.

2. GVCs and their Governance

- The literature related to Global Value Chains (GVCs) have always focused on the dilemmas faced by sellers operating at the lower end. Here, 'lower end' refers to the manufacturing end of the value chain, where sellers produce according to buyers' prescriptions and has little bargaining power.

- Commonly, Global Value Chains (GVCs) are defined as international production sharing, where the operations are spread across national borders (instead of being confined to the same location) and the products made are complex (UNIDO, 2021).

- However, one important issue here is the 'governance' of these value chains, which consists of the 'inter-firm relationships and institutional mechanisms' (Humphrey and Schmitz, 2002)

2. GVC's and their Governance (cont'd.)

- In buyer-driven GVC operations, governance is generally considered 'central' (Humphrey and Schmitz, 2002; Morrison et al., 2006, among others).

- Generally, four basic 'parameters' are set by the 'lead' firms: what to produce, how to produce, when to produce and how much to produce. They also suggest that price may be added as a 'fifth parameter'.

- Firms have to tackle competing pressures of maintaining high quality while lowering costs, and suppliers can choose between a 'low road', characterized by economic upgrading and social downgrading, and a 'high road', involving economic and social upgrading; however, those taking a high-road approach have the fear of losing price competitiveness (Barrientos, Gereffi and Rossi, 2010).

3. Firm's dilemma at lower ends of GVCs

- Theoretically, the primary motive of any firm is profit maximization; hence, firms have a general inclination towards 'economic upgrading'. This is a 'process' through which firms 'move from low-value to relatively high-value activities in global production networks' (Gereffi, 1999) conditional upon higher risk-adjusted returns from upgrading (USAID, 2016).

- In buyer-driven value chains, buyers and brands provide the designs for products to be produced, while manufacturers have little control over the price of the product.

- Manufacturers in Bangladesh, for example, produce products according to buyers' prescriptions; hence, Bangladesh is basically considered to be at the lower end of the value chain.
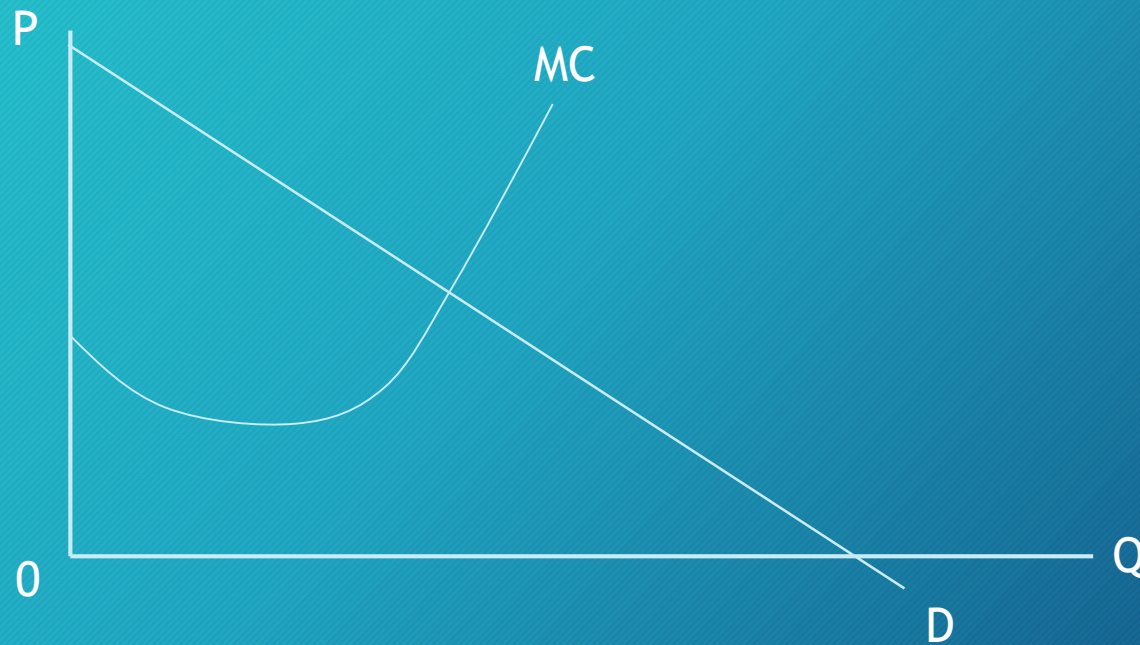
3. Firm's dilemma at lower ends of GVCs (cont'd.)
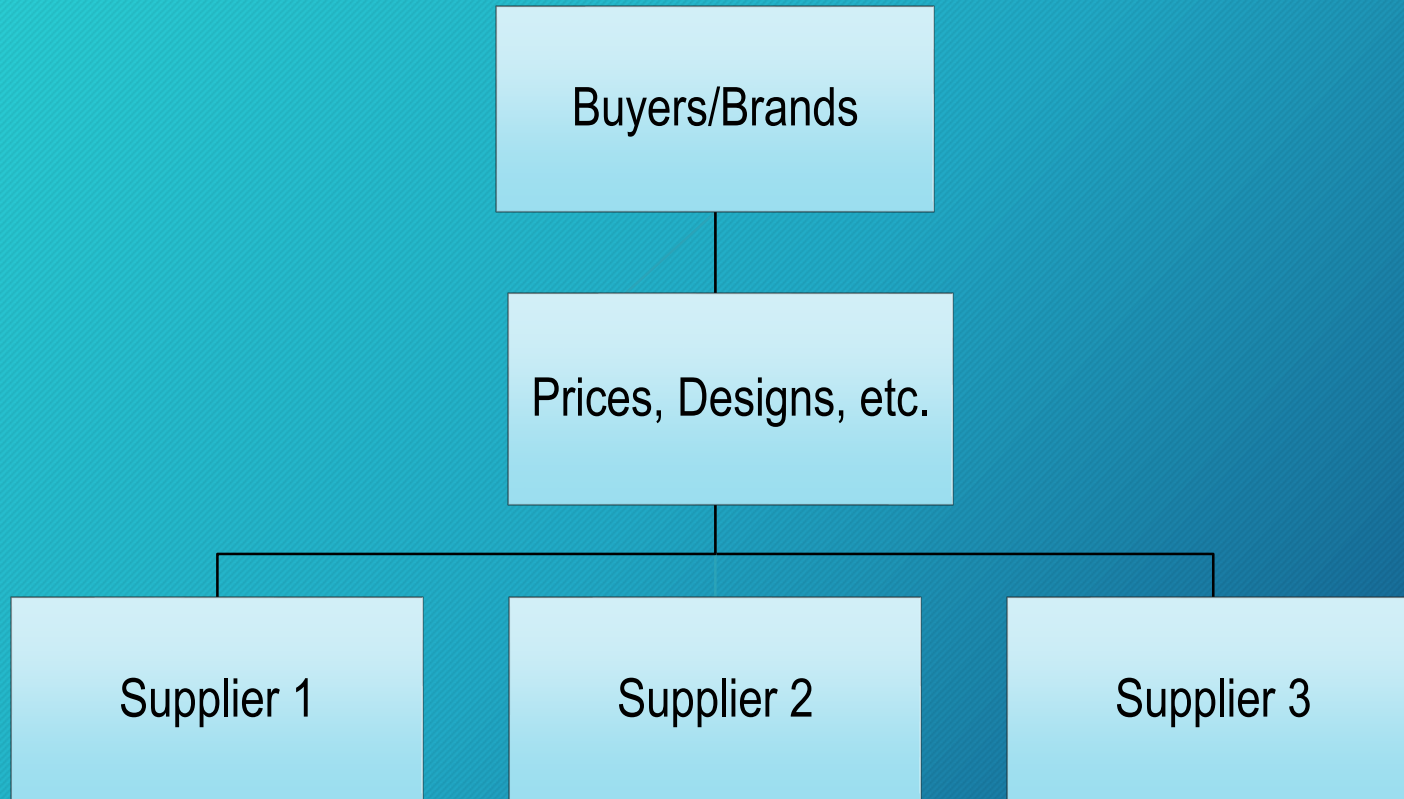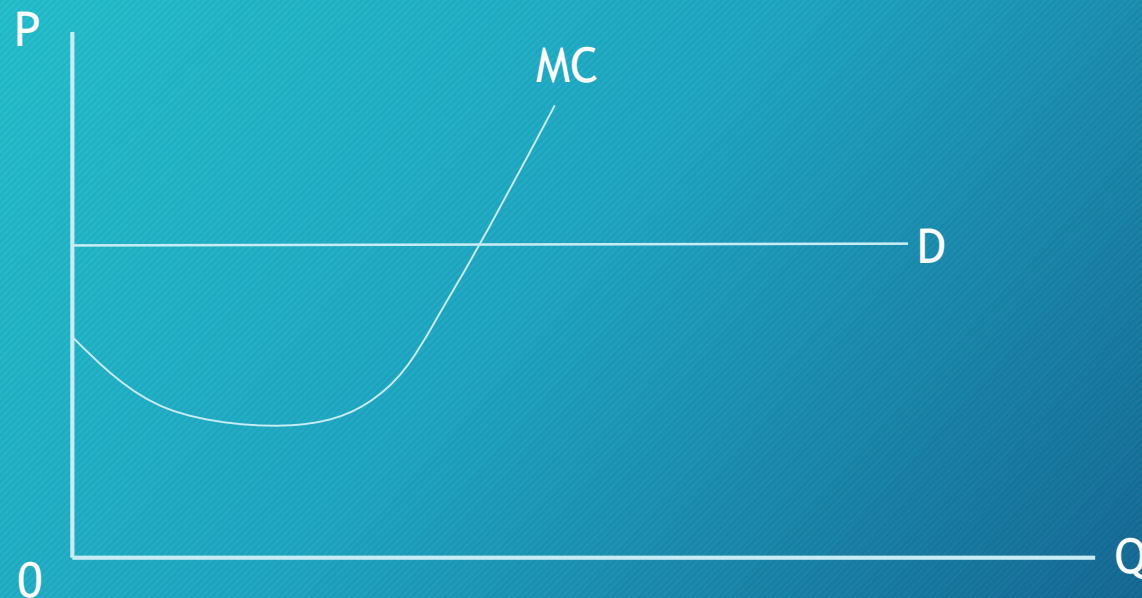
3. Firm's dilemma at lower ends of GVCs (cont'd.)

- Ideally, firms are supposed to face monopolistic competition with downward demand curve.

3. Firm's dilemma at lower ends of GVCs (cont'd.)

- But firms which operate at lower ends of value chain have virtually no control over price, and act as price takers.

3. Firm's dilemma at lower ends of GVCs (cont'd.)

- As buyers and brands have full control over branding and design of the product, they can control price.

- The prices buyers agree to purchase at depends solely on the demand of their products in the end market as well as other factors such as seasonality.

- Buyers also have leverage over manufacturers: they can shift away their production from countries at any given moment in time.

- This leads to the following issues:
  - If buyers start cancelling orders due to low demand in their countries, manufacturers need special incentives from the governments in their countries to survive.
  - If new orders are available, then sellers need to take advantage of those regardless of the situation of their home country.

3. Firm's dilemma at lower ends of GVCs (cont'd.)

- The recent pandemic is a good example of this apparent dilemma.

- When the pandemic hit the home countries of the buyers hard, they started cancelling orders; garments manufacturers in Bangladesh required special incentives.

- When new orders were available, garments factories had to take advantage of those, so they insisted on keeping their factories open at all costs.

- This led to a large policy dilemma for the government: enforce strict lockdown and lose buyers, thereby reducing exports; or keep factories open with the risk of the pandemic spreading all over the country.

- Hence, lockdown and shutdown policies in countries at the lower end of value chains (i.e. manufacturers mainly producing according to orders of foreign buyers) are expected to fluctuate a lot more than countries at higher ends.

4. The Response of Bangladesh to the Pandemic

- According to IMF, lockdown has been less strict allowing for public and private offices, and some industries to remain operational although transportation has been limited along with border control measures in place.

- When the pandemic hit the home countries of the buyers hard, they started cancelling orders; garments manufacturers in Bangladesh required special incentives. On March 31, the Ministry of Finance announced a Tk. 50 billion (about US$ 588 million) stimulus package for exporting industries to be channeled through Bangladesh Bank (BB) and distributed by the commercial banks at a 2 percent service charge. (IMF, 2021)

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis

- The basic motivation behind data analysis is finding whether the theoretical conclusions derived can be proved by analysis of data.

- To understand it, first of all, data on two main components was required:

  - Government stringency (i.e. how strictly the government pursued shutdown policies)

  - Participation of countries in GVCs

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

- The strictness of government policies to tackle the pandemic has been measured by the Stringency Index, which is a composite measure calculated by the Oxford Coronavirus Government Response Tracker (OxCGRT). It consists of nine response metrics:

  - school closures;
  - workplace closures;
  - cancellation of public events;
  - restrictions on public gatherings;
  - closures of public transport;

  - stay-at-home requirements;
  - public information campaigns;
  - restrictions on internal movements; and
  - international travel controls

- It is measured on a scale of 0-100, with 100 meaning that the strictest of measures were imposed.

- It is calculated on a daily basis, and daily data is available from the start of the pandemic till now.

- The daily variation in index value is higher for Bangladesh (standard deviation of around 6) compared to the sourcing countries like USA (standard deviation of around 4)..

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

Government Stringency in Bangladesh (April, 2020 – March, 2021)

Month	Stringency Index	% change in Stringency Index	Daily Covid Cases	% change in daily Covid Cases
April	87.04		3	
May	89.81	3.182444853	571	18933.33333
June	62.96	-29.89644806	2,381	316.9877408
July	74.54	18.39263024	3,775	58.54682906
August	80.09	7.445666756	2,199	-41.74834437
September	80.09	0	1,950	-11.32332879
October	80.09	0	1,508	-22.66666667
November	80.09	0	1,568	3.978779841
December	80.09	0	2,293	46.2372449
Jan, 2021	80.09	0	990	-56.82511993
Feb, 2021	81.02	1.161193657	443	-55.25252525
March, 2021	81.02	0	585	32.05417607

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

- As mentioned previously, a country like Bangladesh is expected to have a hard time sustaining strict policies for curtailing pandemics; so, variation is expected to be high.

- Therefore, the average monthly variation of the government stringency index, dating from April 2020 to March 2021, has been calculated. The standard deviation of the stringency index has been used to measure the average variation, using the following formula:

- $$\sigma = \sqrt{\frac{(S_i - \bar{S})^2}{n-1}}$$

- where, S shows the stringency index values at the end of each month; $\bar{S}$ shows the 12 month average of the monthly stringency index values; n shows the number of observations.

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

- The participation of countries in global value chains is generally measured by using a combination of domestic value added (used as a measure of forward participation, or as the behavior of the country as a buyer) and foreign value added (used as a measure of backward participation, which is used for identifying sourcing countries).

- However, the main focus of this study is on 'forward participation'. This basically means the extent to which a country acts as a buyer (Koopman et al, 2010).

- Domestic value added (as measured by the UNCTAD-EORA database) is generally used to measure forward participation.

- Since the exact magnitude of the effect needs to be focused, both absolute values and ratios of domestic value added to total exports have been used here.

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

- The main objective of the analysis is to find out whether groups of countries acting as buyers in the value chains have less average variation in the Stringency index compared to countries operating at lower ends.

- For that purpose, two groups of countries have been defined:
  - Group 1: Countries with higher than average level of domestic value added
  - Group 2: Countries with lower than average level of domestic value added

- The cutoff value for defining the two groups have been the average value of domestic value added.

- Group 1 includes countries such as United States, United Kingdom, Netherlands, other countries of EU etc. who act as major buyers for different products.

- Group 2 includes countries such as Bangladesh, Bhutan, Pakistan, Cambodia etc. which produce products for the buyers and brands.

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

Variation in Government Stringency

Analysis of Variance (ANOVA)					
Source	Sum of Squares	df	MS	F	Prob>F
Treatment	253.860154	1	253.860154	7.78	0.006
Error	4501.4257	138	32.6190268		
Total	4755.28586	139	34.2106896		

Countries were divided in two groups:
- Countries with above average Domestic Value Added (DVA)
- Countries with below average Domestic Value Added (DVA)

- In the sample, countries with higher levels of DVA have lower variation in Government stringency index (average being 4.89), while countries with lower DVA have higher variation (average being around 6).
- The ANOVA table clearly shows there is a statistically significant difference.
- This table reports results from using absolute values of domestic value added.

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

Variation in Government Stringency

Analysis of Variance (ANOVA)					
Source	Sum of Squares	df	MS	F	Prob>F
Treatment	190.586802	1	190.586802	5.76	0.0177
Error	4564.69906	138	33.0775294		
Total	4755.28586	139	34.2106896		

Countries were divided in two groups:

- Countries with above average Domestic Value Added (DVA)/Total Exports
- Countries with below average Domestic Value Added (DVA)/Total Exports

- Here, the ratio of domestic value added to total exports have been used, and here also, the ANOVA table clearly shows there is a statistically significant difference.

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

Variation in Restrictions on Internal Movements

Countries were divided in two groups:
- Countries with above average Domestic Value Added (DVA)
- Countries with below average Domestic Value Added (DVA)

Analysis of Variance (ANOVA)					
Source	Sum of Squares	df	MS	F	Prob>F
Treatment	0.403709516	1	0.40370952	4.31	0.0399
Error	12.5590818	134	0.09372449		
Total	12.9627913	135	0.09602068		

- The results show that level of restrictions on internal movements also differ among countries in higher ends of the value chain and countries with lower end of the value chain.
- Here also, the mean variation in movement restrictions is higher in countries in lower levels (0.7 approx.) than in countries at upper levels (0.5 approx.) in GVCs.

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

Analysis of Variance (ANOVA)					
Source	Sum of Squares	df	MS	F	Prob>F
Treatment	50.9468626	1	50.9468626	1.49	0.2236
Error	4704.339	138	34.089413		
Total	4755.28586	139	34.2106896		

Countries were divided in two groups:

- Countries with above average daily Covid-19 cases
- Countries with below average daily Covid-19 cases

- Like domestic value added, if countries are divided into two groups with above average and below average cases of Covid-19, the difference in average variation of Government stringency doesn't prove to be significant.

5. Government Stringency at Lower Ends of GVCs: Quantitative Analysis (cont'd.)

- Therefore, it is quite evident that the position of a country in the Global Value Chain has had a significant effect in separating countries in terms of strictness of policy measures to curtail the spread of the pandemic.

- This study was undertaken with a view to provide a snapshot on the apparent effect of GVCs on very recent and unexpected turn of events caused by the global pandemic, and there is scope of extending this study in line with the changing impacts of the pandemic in future, with the help of newly available firm level and country level data on government expenditures, revenue, etc and more rigorous methods such as panel fixed effects and other regression models.

6. Conclusion

- Bangladesh operates at lower ends of global value chains (GVCs), where the manufacturers take orders from brands and buyers and produce according to their quotas and prices.

- Due to the limited bargaining power of manufacturers, they constantly seek new orders; this leads to keeping factories operational regardless of the situation. They also need special incentives to keep running their factories when situation in buying countries worsens.

- In this situation, the government had to curtail the spread of the pandemic, as well as ensure good export performance; this led to a policy dilemma, resulting in lots of anomalies in decision making.

- Gradual increases in domestic value added coupled with economic upgrading along global value chains can help Bangladesh tackle these situations better in future.