An Analysis of Regional GDP through Short Run and Long Run Approaches – A Case Study on Mymensingh and Jamalpur District, Bangladesh

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Abstract

Regional GDP framework analysis is the fundamental concern of regional planning. Regional GDP evaluates the regional economic structure. Regional economic structures can be conducted through short-run and long-run approaches. The study aimed to analyze the Mymensingh and Jamalpur districts' economic structure in the short run and long run. The study interpreted the region's overall economic structure through basic and non-basic activities, and also showed the contribution of the current regional GDP to the national GDP, and simulated the scenario. Traditional methods, e.g. Location Quotient and Shift-share analysis were blended to form a hybrid methodological structure to assess a local economic structure. National and regional aggregated data of GDP at constant prices between two fiscal years, 1995-96 and 1999-2000 was equipped as the basis for analyzing the economic structure. The study found the national share was positive (+29407.30349) for all the sectors and industries (+1005.901448) in those regions that were nationally fast-growing. As the magnitude of regional shift means the region was negative (-1658.204939), industries in this region were considered regionally lagging industries. The overall trend line analysis of the multiplier showed that the region's basic activity is increased from its base to terminal year but with the change of year, the scenario fluctuates. The article finally explained the scenario through sector theory. The paper will be helpful to take any initiatives nationally and also helpful for the policy maker, urban planner, economist, other scholars, and researchers to make any decision over the area.

Keywords: Gross domestic product (GDP); Location Quotient; Shift-share; Multiplier; Economic Structure.

INTRODUCTION

One of the most important and fascinating disciplines of economics is economic growth (Todaro & Smith, 2020). There were probably slight differences between the richest and poorest countries in the world when Adam Smith laid many of the bases of contemporary economics (Angus, 2001). Christaller (1933) and Losch (1954) offer a pioneering method for

designating an area. Due to increases in local output to support rising local per capita incomes and the rise of new businesses serving export markets, regions' economies diversify as they expand. Regions tend to "lose their identity as regions" over time (North, 1955). Farm revenue is affected by the comparatively low-lying areas being submerged more frequently during floods (Nguyen et al., 2021). The Ganges, Brahmaputra, and Meghna combine to create the largest delta in the world, which is located in Bangladesh(Fafchamps, 2003). Bangladesh is a developing nation in South Asia that is overpopulated. Its economy is divided into three sectors: agriculture, industry, and services (Manik, 2023). Since Bangladesh is an agrarian nation, its economic activities are primarily agro-based; however, as the industrial revolution progressed, the proportion of agriculture in GDP changed. Gross domestic product, or GDP, is one of the most significant indicators of a nation's economic activity that specifically reflects the size and performance of an economy (Chowhana et al., 2023). The majority of households commute to work in the area, and most commodities sold are consumed there as well, in a functional economic area (Fox & Krishna Kumar, 1965).

The study selects Mymensingh and Jamalpur districts (Figure 1) which are in the Mymensingh Division which is the northern part of the Dhaka Division. Mymensingh district lies between 24°15' and 25°12' north latitudes and in between 90°04' and 90°49' east longitudes and the Jamalpur district is located between 24°34' and 25°26' north latitudes and between 89°40' and 90°12' east longitudes. Soil fertility, availability of agricultural land, temperature, precipitation, and other environmental conditions make both districts renowned as jute-friendly regions. The district of Jamalpur has a largely agricultural economy. Even though agricultural operations are the main driver of growth in this district, non-farm holdings are crucial to the local economy (FSRJEZ 2017).

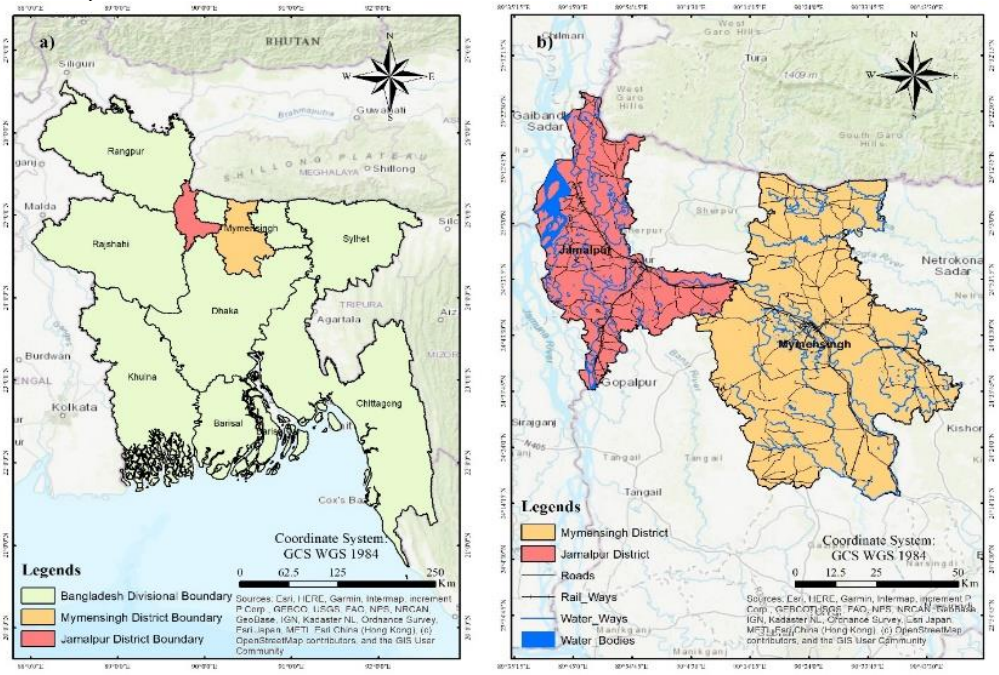

Figure 1: a) Study Area in Bangladesh, b) Study Area

The central region of Bangladesh, Mymensingh, regularly experiences monsoon floods, flash floods in Haor (a basin that is prone to flash floods since it is located beneath the northeastern Himalayan foothills) areas, and severe rains(Sarker et al., 2014). To take advantage of the resource potential of Jamalpur and other nearby districts and to promote economic growth in this area, the government has deliberately suggested the creation of an economic zone in Jamalpur (FSRJEZ 2017). To understand changes in economic growth at the national, sectoral, and regional levels, Dunn (1960) first presented the shift-share analysis as a statistical technique. The regional shift component aims to quantify the region's comparative performance in a certain industry. The relative locational advantage of the region for that industry could then be linked to positive shifts, and vice versa (Stevens & Moore, 1980). Many researchers and scholars focus on short-run and long-run approaches for different purposes. Numerous numbers of researchers used the approaches to assess the regional economic structure. This study used both approaches for two homogenous regions combinedly. The location quotient, multiplier, and shift-share analysis interpret the regional economic structure tremendously in the study.
The study considers the economic base multiplier for short-run analysis and in this context to identify the basic and non-basic activity, use the Location Quotient Method. A major benefit of the shift-share technique is its simplicity that is used and does not require primary data collection(Shi & Yang, 2008). That is why industrial structure analysis has been done using shift-share tools for long-run regional change analysis. The GDP at a constant price has been considered a variable. The study considers 1995-96 as the base year and 1999-2000 as the terminal year for analyzing the change. The objective of the study is to analyze the economic structure of Mymensingh and Jamalpur districts both in the short-run and long-run analysis.

METHODS

Research design

A quantitative descriptive design is used in the study to analyze the regional economic structure of the chosen districts by combining short- and long-term economic assessments. By using statistical methods like shift-share analysis and the Location Quotient (LQ) method, this design makes it easier to assess economic activity. The research technique was in accordance with the study objectives by using secondary data sources to analyze trends in both basic and non-basic activities across time. Additionally, the design uses a comparative method that makes it possible to distinguish between patterns of economic growth at the regional and national levels.

Participants and Sampling

In order to concentrate on two homogeneous districts that represent important agricultural and forestry economic activity, the study used purposive sampling. Their benefits for the environment, location, and soil fertility were the basis for the selection. As a requirement of the inclusion criterion, the regions had to demonstrate unique economic activity appropriate for both short- and long-term study. The exclusion criteria included places where secondary data was found to be insufficient or untrustworthy. Every significant economic sector in the chosen locations was included in the sample size. To provide a thorough depiction of the regional economic structure, employment data from 2001–2000 (the terminal year) and 1995–

96 (the base year) were used. The sample size was justified by the validity and relevance of the data source. Two districts in an area with a mix of agricultural and non-agricultural activity served as the study's locations. Numerous economic opportunities, such as those in manufacturing, transportation, and agriculture, are available in the selected location and are essential to the goals of the study.

Instrument

The main tools for gathering secondary data were academic literature, regional economic reports, and government publications. Important factors like employment rates, GDP contributions by sectors, and regional economic indicators were taken out and analyzed. Statistical Package for Social Sciences (SPSS), Geographic Information System (GIS), Microsoft Excel were also used for the calculations to analysis the economic growth of the study area. By utilizing reliable sources like regional economic growth reports and national statistical agencies, the data's authenticity was guaranteed. Triangulation, which compares several secondary sources to verify consistency, was used to cross-verify the credibility of the data. Statistical tools such as shift-share analysis for long-term evaluation and the LQ method for short-term analysis were used to process the data. Standardized formulas were used for calculations, and trends in both basic and non-basic activities were identified by interpreting the data.

Data collection

The Bangladesh Bureau of Statistics (BBS), government websites, official publications, and other pertinent papers were the only secondary sources from which the data for this study was gathered, guaranteeing its validity and dependability. These resources gave the analysis thorough and validated datasets. By exclusively acquiring data from publicly accessible and approved sites, ethical issues were closely followed, ensuring compliance with copyright and data protection laws. Informed consent was not applicable because there was no direct contact with participants or main data collection in this study. Nonetheless, to guarantee the ethical use of secondary data, all sources were appropriately cited.

Data analysis

Short-run analysis:

Location Quotients (LQ) Method:

A location quotient (LQ) is a statistical measure of the industrial specialization of a place in relation to a wider geographic area. An LQ is calculated by dividing the industry's share of the national total for a particular economic statistic by the proportion of the industry in the regional total for that same data. The LQ method is conducted to calculate the short-run growth of our study area.

$$LQ = \frac{\text{Percentage of Regional employment in an industry}}{\text{Percentage of National employment in an industry}}$$

(Source: (Glasson, 1974))

LQ value:
LQ > 1.00, the amount of output from industry exceeds local consumption.
LQ = 1.00, local production meets the local demand
LQ < 1.00, the industry produces less than is locally consumed.

Basic employment in industry, i = $\frac{(LQ-1)}{LQ} * E_i$ (Source: McCann, n.d.)

Here, E_i = Regional employment in the industry i
The following formula is used to determine an economic base multiplier:

Economic Base Multiplier = $\frac{\text{Total regional employment } (E_t)}{\text{Total basic employment } (E_b)}$ (Source: (Glasson, 1974))

Long run analysis:

Shift share is a common technique for regional analysis that seeks to differentiate between the proportion of regional job growth that can be attributable to national trends and that comes from specific area variables. Shift-share analysis, also known as industrial structure analysis, is a disaggregated method for evaluating the long-term regional growth of a region that is selected to be the focus of the study. Employment is the determinant of this growth, and the overall regional employment growth is estimated by employing two distinct "shift" and "share" components.

National Share:

The national growth effect describes how much of the regional industries' growth is responsible for the way the overall national economy is doing.

$NS_j = E_{j_0} * (\frac{E_t - E_0}{E_0})$ (Source: (Glasson, 1974))

Proportionately Shift Component:

The industrial mix impact is the portion of regional industry growth that can be explained by changes in the industry, region, or employment at the national level. This amount is calculated by subtracting the national growth rate of the entire economy from the national growth rate of the particular industry and then applying this growth percentage to the local employment in that industry.

$PS_j = \sum(\frac{E_{i_t} - E_{i_0}}{E_{i_0}} - \frac{E_t - E_0}{E_0}) * E_{ij_0}$ (Source: (Glasson, 1974))

Differential Shift Component:

The differential shift component calculates the net regional shift as a result of certain industrial sectors growing more rapidly or slowly locally than they do nationally according to locational variables.

$DS_j = \sum(\frac{E_{ij_t} - E_{ij_0}}{E_{ij_0}} - \frac{E_{i_t} - E_{i_0}}{E_{i_0}}) * E_{ij_o}$ (Source: (Glasson, 1974))

Here, E_j = Total employment in region 'j'
E = Total national employment
0 = Base year of the study period and
T = Terminal year of the study period
i = Industry subscript

RESULTS

Short Run Analysis

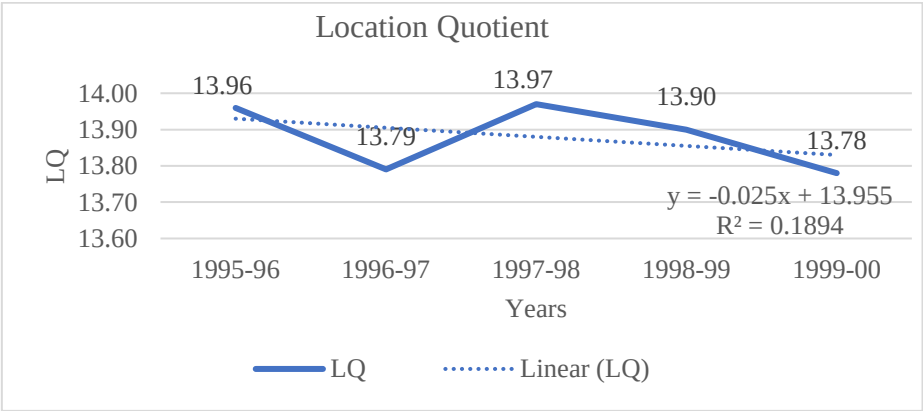

Figure 2: Location Quotient

The location quotient (LQ) for each of the industries finds the basic and non-basic industries. The agriculture and forestry, fishing, construction, real estate, renting and business activities, education, health, and social works, community, social and personal services industries show the basic activity and the mining and quarrying, manufacturing, electricity, gas, and water supply, wholesale and retail trade, hotel and restaurants, transport, storage and communication, financial intermediations, public administration, and defense shows the non-basic type of activity (Figure 2).

To determine the districts' basic and non-basic industries state of development, the economic base multiplier was calculated from the basic and total Regional GDP. The loss of agricultural production and fishing due to the unpredicted flood in the years 1996-97 and 1998-99 shows less basic activity than the previous fiscal year but the overall basic activity scenario is improved from the base year to the terminal year which is good for a region that indicates the region's productivity is improved and the region is self-sufficient and also exports its product to another. This development is based on its overall agriculture and fishing production and the export of jute as a golden fiber encourages basic activity (Figure 3). Figure 4 shows the regional total basic GDP that is increased from the base to the terminal year. The graph shows that the

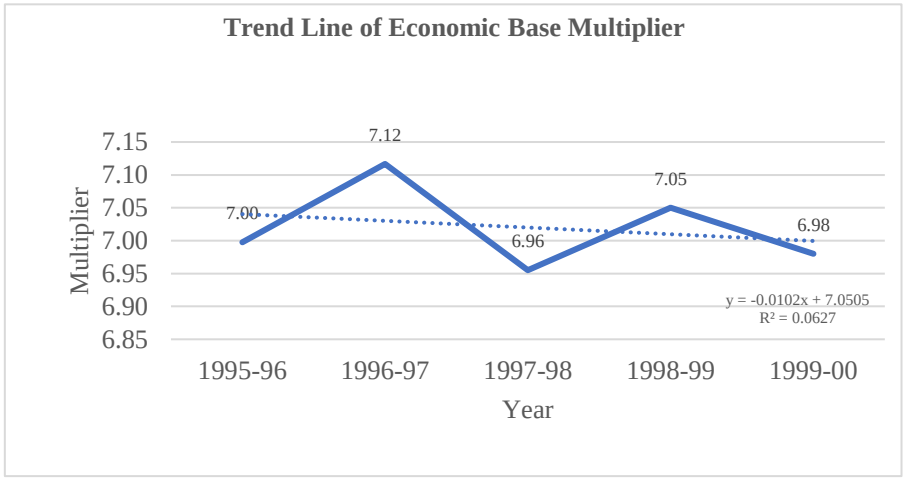

Figure 3: Trend Line of Economic Base Multiplier

the increased rate is approximately 1050.7 million BDT per year. The basic GDP increased rate indicates the growth of basic activity sectors' productivity improvement. The region is basically well-known for its agricultural production. The regions are jute friendly and the jute is one of the well-known cash crops to earn foreign exchange which is highly produced in the area. As a consequence, the region's overall total basic GDP is increasing day by day. The graph shows the regional GDP for the five fiscal years. As Mymensingh and Jamalpur have good soil fertility, people rely on agriculture mostly. The regional GDP of these areas mainly depends on agricultural production. It is seen that regional GDP increased for the observed 5 years.

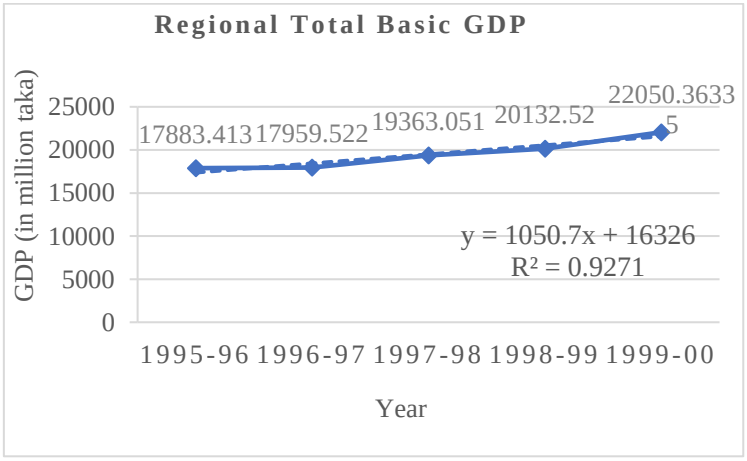

Figure 4: Regional Total Basic GDP

The regional GDP is increased at a rate of 7163.8 million BDT per year (Figure 5). On the other hand, Figure 7 represents the contribution of basic GDP to regional GDP. The graph

indicates that the regional GDP progress has a 14.33% dependency on the basic GDP or the basic GDP has a 14.33% contribution on regional GDP. So, the northern part of the Dhaka division has less dependency on its basic activity. Here, the graph Figure 6 illustrates the national GDP of Bangladesh. It demonstrates that the national GDP has increased over the

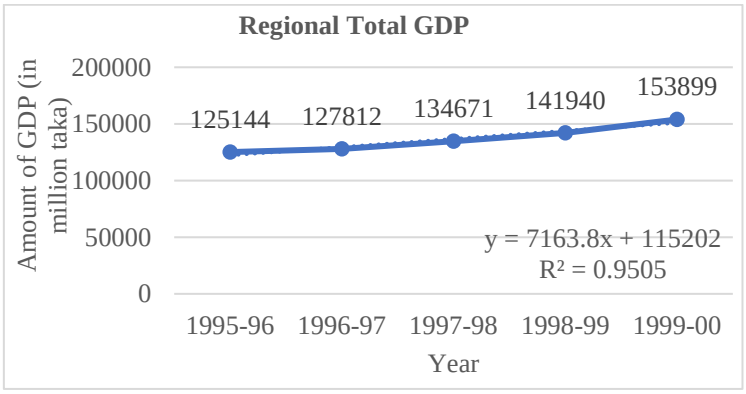

Figure 5: Regional Total GDP

years. National GDP has increased over the study period by around 23.50% (Figure 6) whereas regional GDP has increased by about 22.98% (Figure 5) which means regional economic growth is less than national economic growth for both districts. Hence, regional growth was

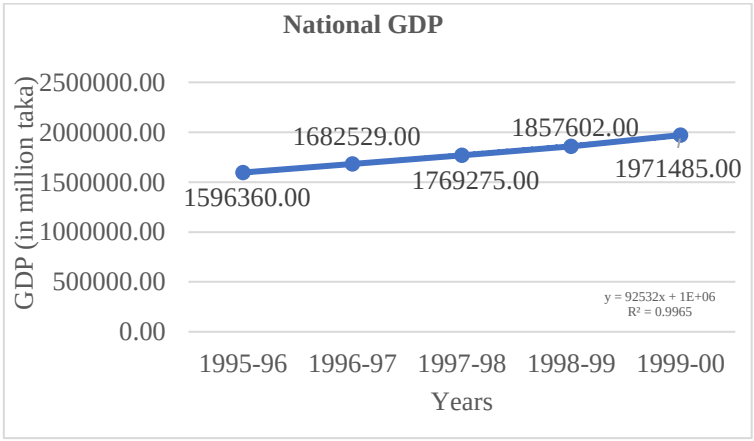

Figure 6: National GDP

less than national growth in that period. The graph shows that the national GDP has increased at a rate of 92532 million BDT per year. It was calculated that the regional GDP of the Mymensingh and Jamalpur districts contributed almost 8% of the total national GDP. The government of Bangladesh has already taken the initiative to create an economic market hub in both districts and that will promote the future contribution of national GDP from those districts. After all these analyses, three types of projection, linear regression analysis, projected base economic multiplier, and average base economic multiplier, were calculated to see the

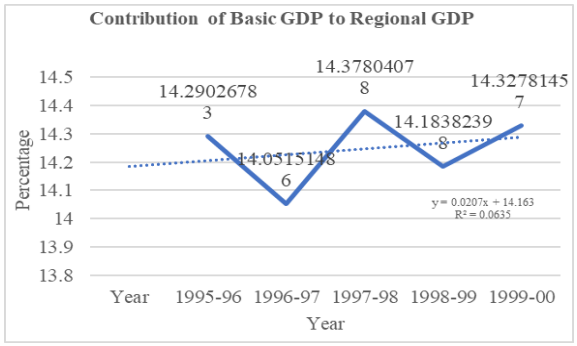

Figure 7: Basic GDP to Regional GDP

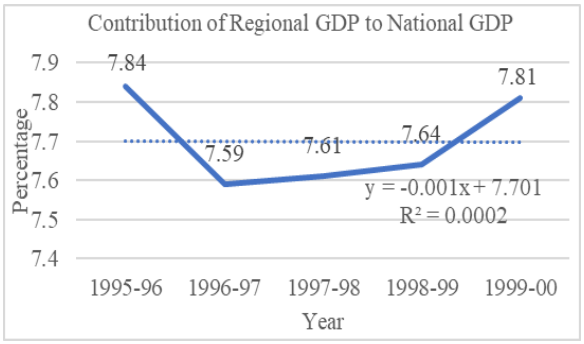

Figure 8: Regional GDP to National GDP

the future scenario of the Regional GDP after 10 fiscal years. From the comparison of the three methods, it is seen that the projected base and linear regression show almost the same result whereas the average-based multiplier shows a colossal distinction (Figure 9). A comparison was done to see the contribution to the national economic sectors in the base year (1995-96)

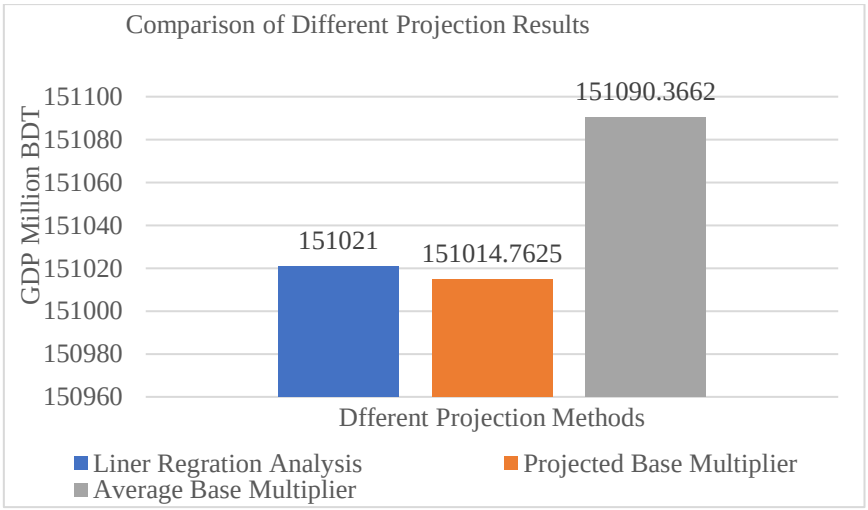

Figure 9: Comparison of Different Projection Results

and the terminal year (1999-2000) (Figure 10). The reasons behind the scenario might be because of declination of the jute industry due to the downturn of international jute markets in those days. Moreover, the flood of 1998 might affect both declining and inclining industries over the observed years. Figure 11 shows the growth comparison of basic and Figure 12 shows the non-basic industry sector respectively. The growth comparison of basic industry shows that the major industries agriculture and forestry increased from their base year (1995-96) to the terminal year (1999- 2000). Another major industry is fishing which almost remains the same. For the soil fertility; the increase in production shows the ultimate growth comparison scenario of the agricultural sector as a leading basic industry in the graph. On the other hand, the

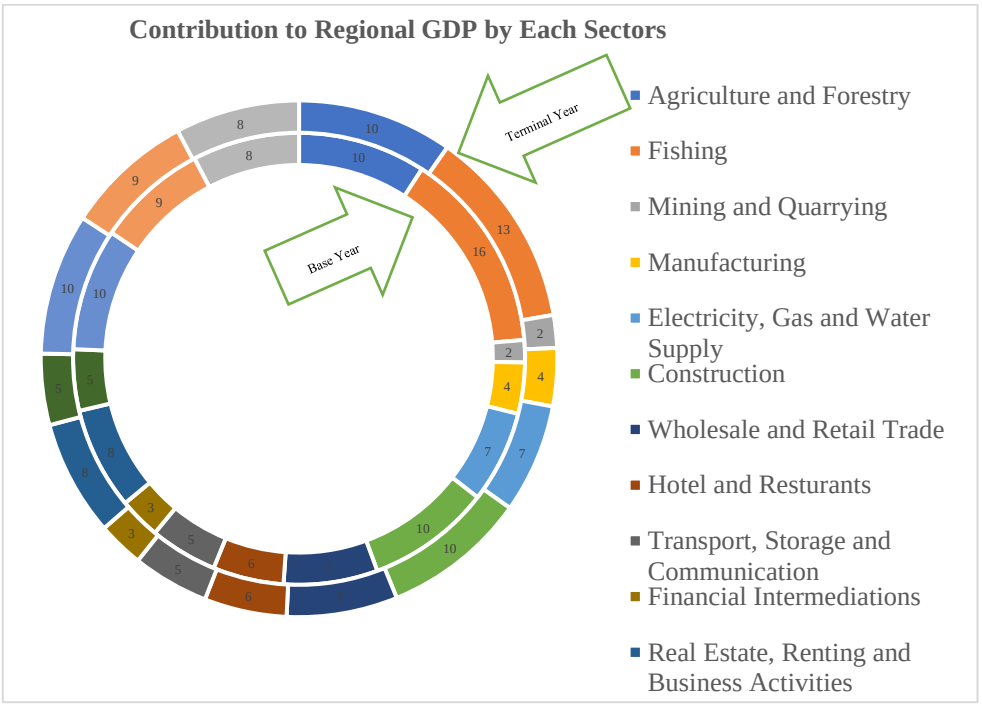

Figure 10: Contribution to Regional GDP by Each Sector

manufacturing industries are in the leading position of non-basic industries. The growth comparison shows that the manufacturing industries have increased from their base to the terminal year. The flourished manufacturing industries scenario may highly be influenced by

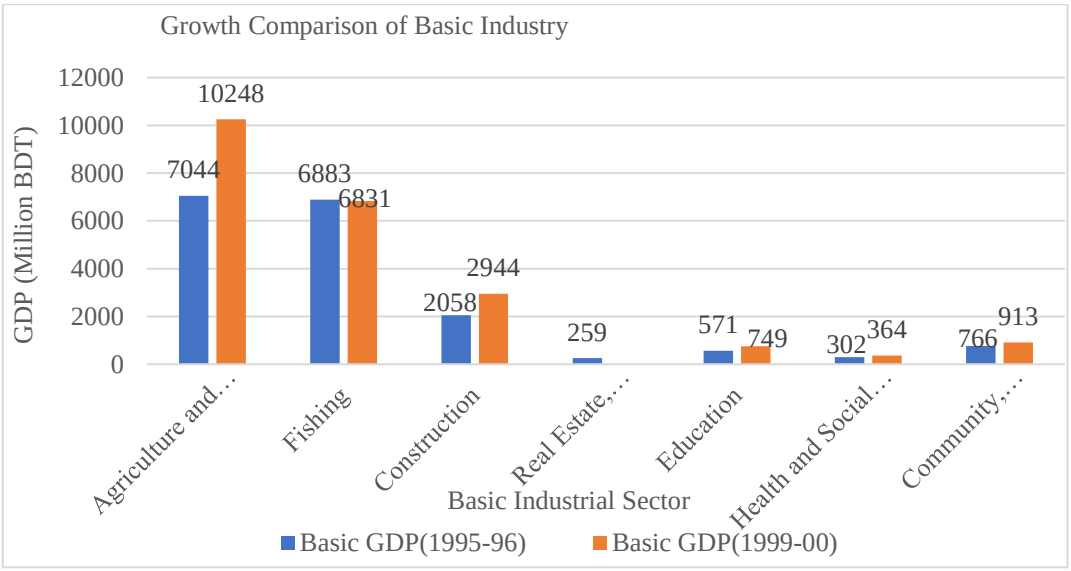

Figure 11: Growth comparison of basic industry

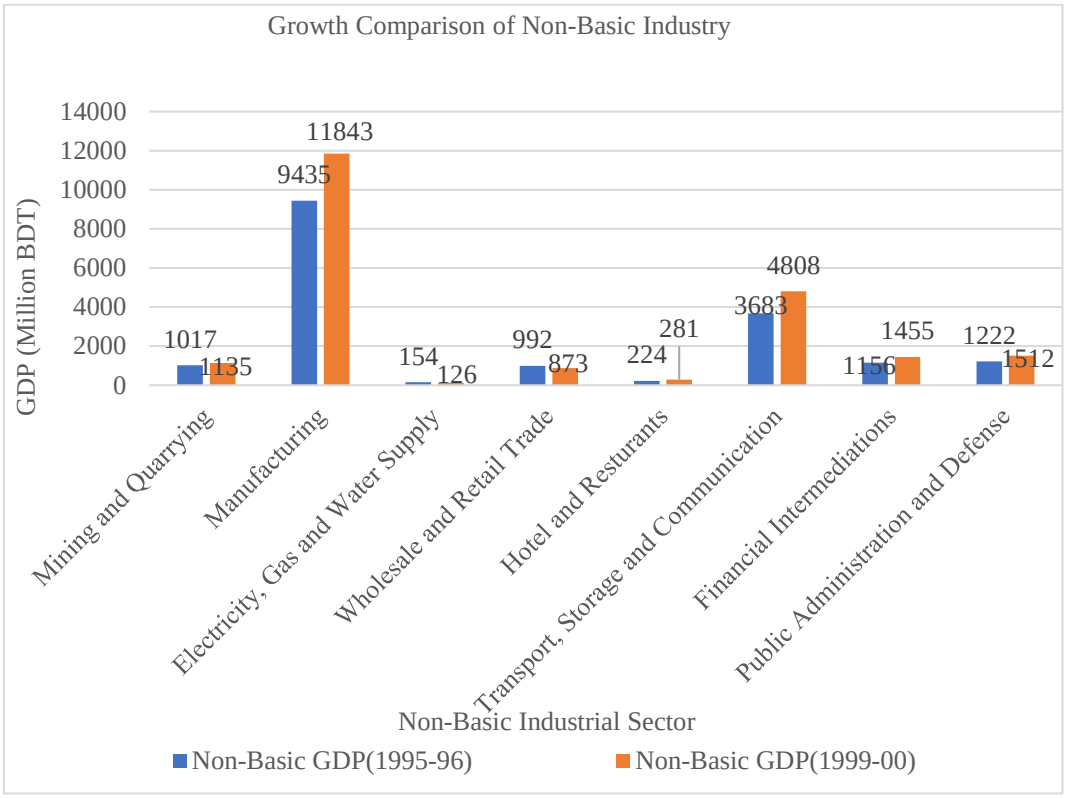

Figure 12: Growth comparison of non-basic industry

the transport system and graph Figure 12 shows that transport, storage, and communication are developed for the time being. This development accelerates the manufacturing industry's incremental scenario also day by day.

Long Run Analysis

Table 1: Shift Share Components

	Sign	Magnitude
National Share	(+)	29407.30349
Industrial Mix	(+)	1005.901448
Regional Shift	(-)	-1658.204939

Table 1 shows that national share is positive for all the sectors that have the potential to grow and also industries in those regions are nationally fast growing. As the magnitude of regional shift means the region is negative, industries in this region are considered regionally lagging industries.

Table 2 shows the national share, industrial mix, and regional shift. National share is positive for all sectors which means every sector has the potential to grow as it had grown at the national growth rate over the fiscal year of 1995-95 to 1999-90. The positive and negative value of the

industrial mix indicates the nationally fast and slow-growing industries respectively. The national fast-growing industries contribute to national growth. Regional shift determines the regionally leading and lagging industries which means its positive and negative value.

It is found from Table 2 that seven industries are nationally fast growing out of fifteen industries. All fast-growing industries are not basic industries. Out of fifteen industries, eight industries are nationally slow-growing. The shift analysis of the industrial mix shows that the different sectors of the industrial economy were fast or slow-growing nationally. On the other

Table 2: Sector Wise Shift Share Components

Serial	Sectors	NS	IM	RS	Interpretation
1	Agriculture and Forestry	(+)	(-)	(+)	Nationally slow-growing industry and regionally leading industry.
2	Fishing	(+)	(+)	(-)	Nationally fast-growing industry and regionally lagging industry.
3	Mining and Quarrying	(+)	(-)	(+)	This cannot serve nationally but regionally leading industry.
4	Manufacturing	(+)	(-)	(-)	Nationally and regionally cannot meet up the demands.
5	Electricity, Gas, and Water Supply	(+)	(-)	(+)	This has regional-level advantages but is nationally slow growing.
6	Construction	(+)	(+)	(+)	Both nationally and regionally, this sector has contribution.
7	Wholesale and Retail Trade	(+)	(+)	(+)	This sector has the contribution to grow and has national and regional level advantages.
8	Hotel and Restaurants	(+)	(+)	(+)	Nationally fast-growing industry and regionally leading industry.
9	Transport, Storage, and Communication	(+)	(+)	(-)	This has national-level benefits but a regionally lagging industry.
10	Financial Intermediations	(+)	(-)	(-)	Nationally and regionally, this sector cannot serve the demand.
11	Real Estate, Renting, and Business Activities	(+)	(-)	(-)	Nationally slow-growing industry and regionally lagging industry.
12	Public Administration and Defense	(+)	(+)	(+)	This sector has national and regional level advantages.
13	Education	(+)	(+)	(-)	This sector has national-level benefits but regionally lagging.
14	Health and Social Works	(+)	(-)	(-)	Both nationally and regionally slow-growing and lagging industries.
15	Community, Social, and Personal Services	(+)	(-)	(+)	This sector has more regional advantages than national-level growth.

hand, the shift analysis of the regional shift shows that the different sectors of the industrial economy were leading or lagging in position regionally. In the major case, the scenario is

completely different from the national scenario. Where the agriculture and forestry sector are nationally slow growing but the sector is regionally leading the regional economy. A region with locational advantages, such as good resources would have a positive differential shift component, whereas a region with locational disadvantages would have a negative component. Both Mymensingh and Jamalpur districts have good soil fertility and the occupation of these people is based on agriculture. That is why agriculture is the regionally leading industry though it is nationally slow growing.

Comparison of Shift Component of Basic Industries: The graph (Figure 13) demonstrates share component comparison between basic industries. By comparing industrial mix share and regional shift of basic industries of both Mymensingh and Jamalpur districts, only three basic

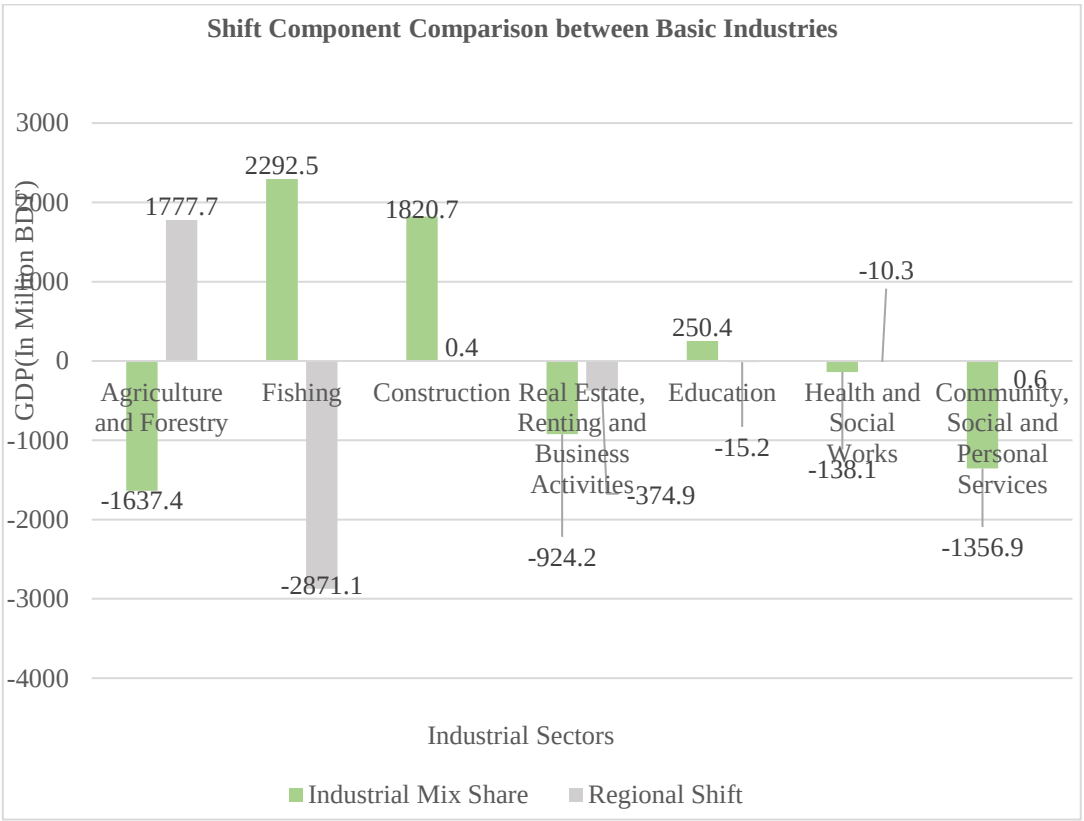

Figure 13: Shift Component Comparison between Basic Industries

industries such as fishing, construction, and education sector are nationally fast-growing. On the other hand, agriculture is the regionally leading industry as these regions are more environment friendly and favorable for agriculture as plenty of lands in Mymensingh and Jamalpur districts are used for agricultural production, real estate sector needs more time to develop.

Comparison of Shift Component of Non-Basic Industries: The graph (Figure 14) illustrates

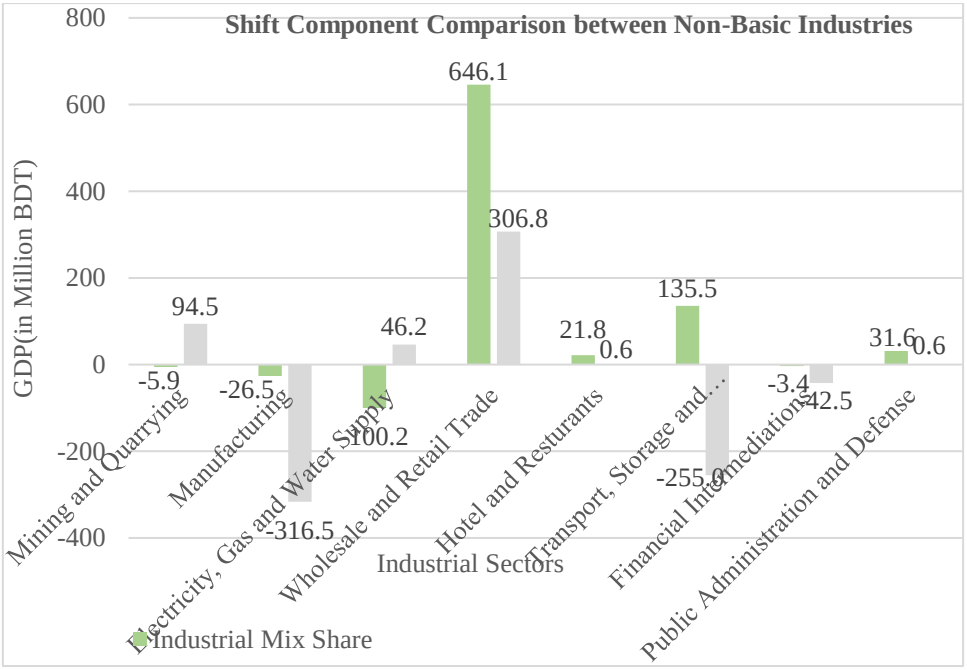

Figure 14: Shift Component Comparison between Non-Basic Industries

the share component comparison between non-basic industries. Non-basic industries of both Mymensingh and Jamalpur regions are regionally leading industries. By comparing both industry mix share and regional shift, five out of eight industries are regionally leading industries.

Analysis of net growth component: The net growth is the summation of national share,

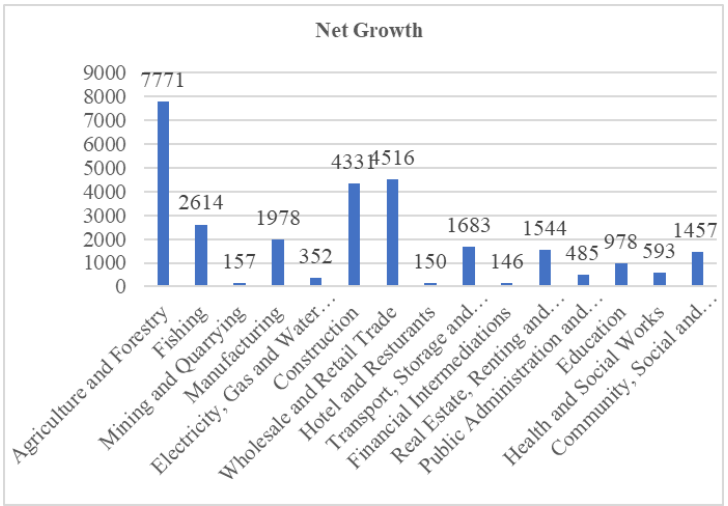

Figure 15: Net Growth

industrial mix, and regional shift. All the positive value of the net growth indicates that the region has the potential to grow which is positive (Figure 15). So, all the economic sectors of the regions have the potential to grow.

Analysis of net shift component: The proportionate and differential shift components are

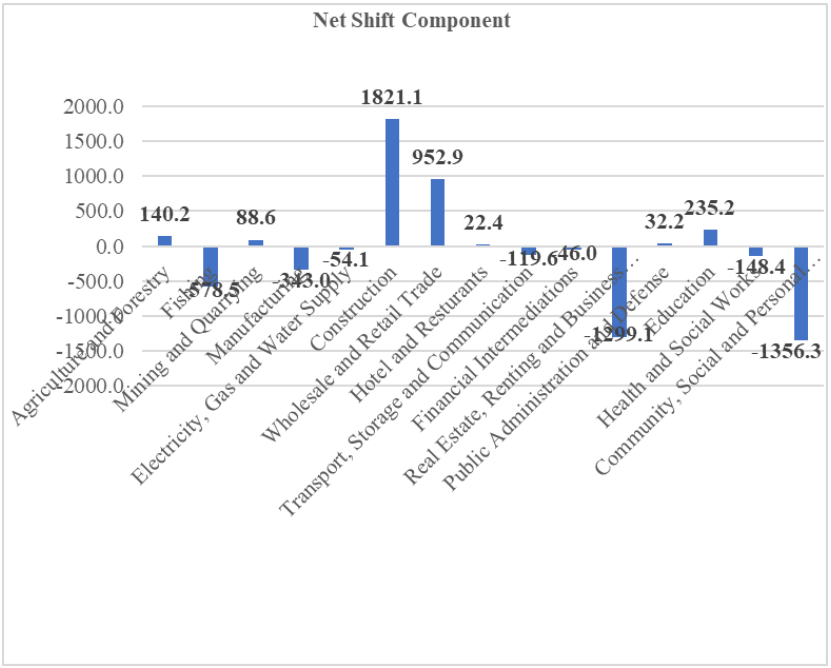

Figure 16: Net Shift Component

included to get the net shift component. It represents any variations in regional GDP growth from the national share. It is found that seven industries have the potential to grow as their net shift value is positive. Hence, agriculture, construction, wholesale and retail trade are the most lucrative investment region (Figure 16). The government of Bangladesh has already taken the initiative to create an economic market hub in both districts and that will promote the future contribution of national GDP from those districts. After all these analyses, three types of projection, linear regression analysis, projected base economic multiplier, and average base economic multiplier, were calculated to see the future scenario of the Regional GDP after the 2024-2024 fiscal year. From the comparison of the three methods, it is seen that the linear regression method is used because of the minimum percentage of model fit value.

Table 3: Projection by linear regression analysis

		Million BDT	Model Fit Value
Actual Value	(1999-2000 fiscal year)	153899	
Projection	Linear Regression	151021	0.03497%
	Projected Base Multiplier Method	151014.76	0.03512%
	Projected Average Base Multiplier Method	151090.36	0.03331%

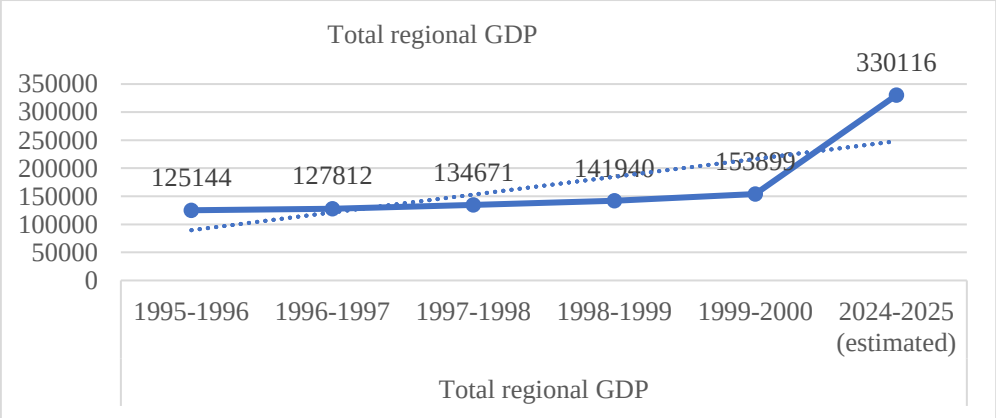

Figure 17: Total regional GDP

DISCUSSION

The notion that trade openness promotes economic growth and vice versa is generally supported by empirical research to date. Nonetheless, some research indicates that there is no direct link between the expansion of trade openness and GDP growth (Abhayaratne, 1996; Narayan & Smyth, 2005). Although Bangladesh's foreign commerce industry plays a significant role in the country's economy, the trade balance of the country is chronically negative. Bangladesh's trade balance with other nations, particularly those in the SAARC region, does not indicate that it will make the desired contribution to the nation's economic progress (Rahman, 2003). The various sectors of the industrial economy grew either quickly or slowly on a national level, according to the shift analysis of the industrial mix. The building industry contributes significantly to the national GDP, which indicates that development is accelerating or beginning in both districts initially. However, wetlands dominate the land cover because fishing is a high-priority scenario. However, the lack of development in the construction industry suggests that there is a lack of reservoir, dam, or river embankment building, which is why the region is unable to protect crops from seasonal flooding. The result could be that the forestry and agriculture sectors do not adequately contribute to the national GDP. The national GDP also includes contributions from other economic sectors, both positive and negative. The development of any nation depends heavily on its human capital, which is also a key component of economic progress (Chowdhury et al., 2018). Instead of a country's material, financial, and physical resources, its human capital is the most important component of its economic and social development. They discovered that human capital is comparable to "physical means of production" (Adeodu, 2020). Out of fifteen industries, seven have been identified as having rapid national growth. Not every rapidly expanding industry is a basic

industry. Although they are not core businesses, wholesale and retail, hotel and dining, transportation, storage, and communication, as well as public administration and military, are rapidly expanding on a national scale. This indicates that these industries are growing quickly at the rate of the national economy and have potential. Eight of the fifteen industries are seeing slow growth on a nationwide level. Some fundamental activities include forestry and agriculture, real estate, business, and health and social services, as well as community and personal services. In both districts, these industries are not expanding as much as anticipated at the national growth rate.

It has been argued that foreign direct investment (FDI) is essential for helping developing nations form capital, transfer technology and expertise, and create jobs, all of which may directly contribute to economic growth positively (Al-Iriani, 2007). The various industrial economic sectors were either leading or trailing in their respective regions, according to the shift analysis of the regional shift. The national scenario and the big case scenario are entirely different. Where the forestry and agriculture industries are driving the area's economy despite their modest growth on a national level. Additionally, fishing is a rapidly expanding industry on a national level, but it still accounts for a small portion of the regional economy. Additionally, the graph demonstrates that whereas the other sectors are area leaders, the fishing, manufacturing, transportation, storage, and communication, real estate, rental, and business sectors are regional lags. Bangladesh, however, is a developing nation with inadequate infrastructure (Ahmed, 2005; Islam, 2012; Khan, 2007; Rahman, 2015). Enhancing human and physical infrastructure as well as providing access to technological know-how depends heavily on foreign investment (Yamin & Sinkovics, 2009). Since the 1990s, Bangladesh's economy has grown quickly, but it is also severely short on agricultural land (Ali et al., 2015). Both the districts of Mymensingh and Jamalpur have fertile land, and agriculture is the main source of income for the local population. For this reason, despite its slow growth at the national level, agriculture is the most important industry in the region. Since the government has already taken the effort to develop these areas by establishing economic zones, other prominent industries are serving on a regional basis. Some industries, like fishing, transportation, storage and communication, and education, are rapidly expanding nationwide, but they are lagging behind in their own regions because they are unable to meet local demand. In its early years, Bangladesh's GDP was mostly reliant on agriculture; but, starting in 1990, governmental changes made it easier for the country's manufacturing sector to focus on exports, especially the ready-made clothing industry (Islam, 2019).

Although this study offers insightful information about the districts of Mymensingh and Jamalpur's economic structure, it should be noted that it has a number of shortcomings. First, the study only uses secondary data, which could have errors or discrepancies in the collecting and reporting of the original sources. Because the study uses older datasets (from 1995–96 to

1999–2000), it is less able to reflect current economic conditions or take recent trends and changes into account. Furthermore, the study mainly concentrates on GDP, employment, and sectoral growth, which might not fully account for other important elements like technical developments, social variables impacting the regional economy, or informal economic activity. Additionally, the analysis is limited by the availability of sector-specific data, which may result in the exclusion of some industries or activities that are important to the local economy. Finally, the analytical techniques, such as the Shift-Share Analysis and Location Quotient, inevitably entail assumptions and simplifications that might not adequately convey the complexity of regional economic dynamics. These restrictions draw attention to the necessity of additional studies that use complementary qualitative methods and more recent, detailed data.

CONCLUSION

Regional expansion may be generated by endogenous or exogenous variables that are regional or external from the region, or more commonly, by some combination of both. The theories can be further classified into those that are significantly aggregate and those that are relatively disaggregate, comparable to short-run analysis. The spatially abstract models in the aggregate make the appropriate from the theory of national economic growth. Since aggregate models are abstract models, they are simple to understand and characterize (Glasson, 1974).

The overall regression line shows that basic activities increased throughout the study period. For the first two fiscal years, basic activities were lower than non-basic activities. According to sector theory, due to an increase in non-basic industries in the first year, both labor productivity and income elasticity of demand increased. The demand for commodities supplied in the secondary (manufacturing) and tertiary (service) sectors increases more rapidly as income rises than the demand for primary (agricultural) products. These sectors expanded faster as a result. As a result, in the next fiscal year, the production of industries rises, and basic activities increase over non-basic activities. Due to the flood that occurred in those regions, the labor productivity and income elasticity of demand fell. In return, this resulted in a decrease in the demand for secondary and tertiary products and an increase in the market for primary commodities. Therefore, the last observed year had seen growth in basic industries.

The government has taken some initiatives to create an economic zone in both districts. The northern part of Dhaka division has great importance in the national economy. Especially, these regions are mostly favorable for agricultural productivity. Bangladesh is an agricultural country. The national economy of this country greatly depends on agriculture. Hence, the northern part of Dhaka division is leading a significant role in producing agricultural products. Future research aiming to examine regional economic structures and their dynamics can use this work as a starting point. Methodologies like shift-share analysis and location quotient can be expanded upon by researchers to look at different areas or industries. Comparative research on regional GDP contributions and their effects on national growth might be guided by the findings. This study can also be used by academics and policymakers to evaluate the effects of

particular economic activities, improve regional development plans, and investigate the long-term consequences of agricultural and industrial policies.

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Conflict of interest

The authors declare that the content is unique and never has been published yet. The authors also affirm that the study hasn't any financial interests or personal ties that would impact the work.

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