Export-Oriented Industrialization and Unemployment in Bangladesh: An Econometric Analysis

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Abstract

The escalating unemployment crisis in Bangladesh poses a grave threat to the country's socio-economic stability and progress, with the unemployment rate reaching an all-time high of 6.91% in November 2022, as reported by the nation's bureau of statistics. This study seeks to investigate the intricate relationship between trade and unemployment in Bangladesh, shedding light on how unemployment impacts the country's trade performance. Employing annual data from WDI spanning 32 years (1990 to 2021), this research scrutinizes how the country's terms of trade influence the unemployment rate and its overall economic impact, both in the short and long run. Additionally, the study explores the repercussions on GDP, inflation, and trade openness. This research is pioneering in its focus on an emerging market economy like Bangladesh and contributes valuable insights into the interplay between trade policies and labor market dynamics. As the nation grapples with this pressing challenge, this research aims to provide a nuanced understanding of the dynamics at play, offering potential policy recommendations to mitigate the unemployment crisis and enhance socio-economic stability.

Keywords: Socio-economic Stability, Unemployment Rate, Inflation, Trade, GDP, Emerging Market Economy

Introduction

The rising unemployment crisis in Bangladesh poses a significant threat to the country's socio-economic stability and progress. According to the latest report from the national statistics bureau, the unemployment rate hit an all-time high of 6.91% in November 2022. To address this issue, it is crucial to examine the complex relationship between trade and unemployment, as trade policies can impact employment opportunities and contribute to economic growth.

This paper aims to explore the unemployment-trade nexus in the Bangladeshi economy and determine how the unemployment issue has impacted the country's trade performance. To achieve this, we analyzed 32 years of annual data from the World Development Indicators (WDI), covering the period from 1990 to 2021. Our study provides insights into how changes in the country's terms of trade affect the unemployment rate and how this impacts the economy, including its Gross Domestic Product (GDP), inflation, and trade openness.

As far as we know, this is the first study to examine how trade and unemployment intersect in an emerging market economy like Bangladesh. Our findings can help policymakers make informed decisions and design effective policies to address unemployment and promote sustainable economic growth. Ultimately, our study emphasizes the importance of taking a human-centered approach to trade policies to ensure that they benefit the people and communities that they serve.

Objectives

The main objective of this paper is to investigate the relationship between trade and unemployment in Bangladesh and determine the impact of unemployment on the country's trade performance. Specifically, the paper aims to:

- Review the unemployment-trade nexus in the Bangladeshi economy using annual data from the World Development Indicators.
- Examine how changes in the country's terms of trade have affected the unemployment rate and the economy in both the short and long run.
- Investigate the effects of unemployment on GDP, inflation, and trade openness in Bangladesh.
- Provide insights into the impact of unemployment on an emerging market economy like Bangladesh and suggest potential policy implications.

Overall, the paper seeks to contribute to the existing literature on the relationship between trade and unemployment in developing countries and provide a better understanding of the challenges facing Bangladesh in addressing its unemployment crisis.

Methodology

This study examines trade and unemployment in Bangladesh using quantitative research. Data from the World Development Indicators over 32 years (1990-2021) is analyzed. Variables analyzed: unemployment rate, terms of trade, GDP, inflation, and trade openness. Policy implications and study limitations are discussed. This study's method rigorously analyzes Bangladesh's trade and unemployment relationship and the dynamic relationship between variables over time.

Literature Review

Nwaka, I. D., Uma, K. E., & Tuna (2015) used vector error correction methodology to examine the empirical relationship between trade policy and unemployment in Nigeria. Long-term increases in real output and income per capita are associated with a decline in unemployment, whereas trade liberalization policy is associated with an increase in unemployment. Muinelo-Gallo & Roca-Sagalés (2013) analyzed the effects of four distinct measures of trade openness and globalization on unemployment rates in the G7 (Canada, France, Germany, Italy, Japan, the United Kingdom (UK), and the United States (US)) countries. In addition to economic indicators and market size, the estimation results indicate that all measures of trade openness and globalization are substantially and negatively related to the unemployment rate.

Halit (2013) investigates the relationship between trade liberalization and sectoral employment growth rates in developed and developing nations. The estimation results indicate that trade openness in the form of high trade volume has been effective in producing jobs in developing nations. In addition, they discover that increased trade volumes have a negative impact on industrial employment in developed nations. In addition, while trade barriers have a positive impact on employment growth in manufacturing and services in developing nations, they have a negative impact on employment growth in services in developed nations. Felbermayr et al., (2011) find that higher trade openness is causally associated with a reduced structural unemployment rate over the long term. In addition, they indicated that openness influences unemployment primarily via its effect on TFP and that labor market institutions do not appear to condition the effect of openness. Long-term trade liberalization has a significant negative effect on unemployment in labor-abundant nations. Additionally, inflation rate and institutional quality have a negative and substantial effect on unemployment. In labor-abundant nations, population growth is positively and substantially associated with unemployment. Long-term trade liberalization has a significant positive effect on unemployment in countries with abundant capital. Unemployment is negatively and significantly impacted by inflation (Anjum N, 2016). Regardless of a nation's level of capital or labor abundance, the researchers' study refutes the H-O prediction and supports the Ricardian prediction that trade openness and unemployment have a negative relationship. This finding highlights the importance of considering different theoretical frameworks when analyzing the relationship between trade and unemployment (Dutt et al., 2008).

Iqbal Hossain et al., (2018) finds that trade openness and unemployment are significantly interdependent. Frequent public expenditure on education is associated with a decline in unemployment over the long term, whereas trade liberalization policies are associated with an increase in unemployment. However, short-term dynamics indicate that the initial impact of openness is also accompanied by an increase in unemployment, whereas public expenditure on education has no immediate effect on the national unemployment rate. Again, further analysis reveals that the short-term disruption is restoring equilibrium, and trade openness is the most effective response to restore equilibrium. However, education expenditures have had no effect on restoring equilibrium. Trade openness correlates with unemployment, according to Iqbal. Public education spending reduces unemployment over time, whereas trade policy increases it. Short-term dynamics reveal that openness initially increases unemployment, while public spending on education does not. Further study shows that the short-term shock is restoring equilibrium, and trade openness is the best way to do it. Education spending has not restored equilibrium (Hossain et al., 2018).

Another study finds that, along with macroeconomic indicators and market size, all the measures of trade openness and globalization are significantly and negatively associated with the unemployment rate. This suggests that countries with more open and globalized economies tend to have lower unemployment rates, which could be due to increased economic activity and job opportunities. However, it is important to consider the potential negative effects of globalization on certain industries and workers (Gozgor, 2014).

Data and Empirical Analysis

The main objective of our study is to examine the relationship between unemployment and trade in Bangladesh. Previous research suggests that trade can have an impact on economic growth and productivity, which in turn affects employment levels. However, it is important to carefully analyze the data available for each country in order to determine how trade specifically affects unemployment within that country's unique context. Therefore, our study aims to investigate the specific impact of trade on unemployment in Bangladesh.

Econometric Model:

$$\boldsymbol{LnUNEMP = \gamma_0 + \gamma_1 LnTOPEN + \gamma_2 LnTOT + \gamma_3 LnINFLAT + \gamma_4 LnDOMINVS + \mu_t (1)}$$

Where:

LnUNEMP: National Unemployment rate
LnTOPEN: Trade Openness, measured as the sum of total imports and exports as a ratio of the GDP
LnTOT: Terms of trade, measured as the percentage ratio of the export unit value indexes to the import unit value indexes, calculated relative to the base year 2000.
LnINFLAT: Annual consumer price index inflation rate.
LnDOMINVS: Domestic Investment proxied by real gross capital formation measured as percent of the GDP.

To accomplish our research objective, we utilized two primary trade performance indicators, trade openness (TOPEN) and terms of trade (TOT). Trade openness is a widely recognized metric in trade research that provides insight into trade policy performance and reflects the degree to which an economy is open to international trade. Additionally, Lutz, M. A., & Singer (1994) noted that terms of trade should also be considered when assessing trade liberalization issues. In our study, we also considered the level of domestic investment as it typically has significant effects on unemployment in most economies. Domestic investment is expected to have a multiplier effect not only on output but also on overall employment levels. Finally, we included annual inflation rates (INFLAT) in our model. We sourced relevant secondary data from the National Bureau of Statistics (NBS) and the World Bank World Development Indicators (WDI).

Findings

1. Unemployment and Trade Growth in Bangladesh:

1.1. *National Unemployment rate and Trade openness:*

Actually, there are several ways that trade openness influences the unemployment rate. However, there is ongoing debate regarding the relationship between trade openness and the unemployment rate (Felbermayr et al., 2011). Costs and benefits of trade openness or free trade are stated. Better resource usage, more economic activity, technological innovation, and a more productive workforce are some of the benefits (Onifade, S. T., Alege, P. O., & Ogundipe, 2020).

It increases efficiency, promotes resource allocation, and increases the competitiveness of domestic producers (Felbermayr et al., 2011). Basically, Short-term job turnover is accelerated by trade liberalization when workers are transferred from contracting to growing industries. There is evidence, based on some empirical research and studies, that trade openness and unemployment are, on the whole, positively correlated.

Along with these advantages, trade openness also has substantial drawbacks, such as the closing of young firms in the nation of origin because they cannot compete with low-cost imported goods, which increases unemployment (Pierce, J. R., & Schott, 2016). In addition, trade openness increases the relative return on capital because of the cheap cost of capital-intensive goods, which increases capital demand and, consequently, unemployment in a country with abundant capital (Dutt et al., 2008; Onifade, S. T., Alege, P. O., & Ogundipe, 2020). It is less obvious how trade liberalization or openness will affect the equilibrium rate of unemployment in the long run, but structural unemployment will not increase as a result of trade openness. Therefore, it can be demonstrated with certainty that trade liberalization has a negative impact on the structural rate of unemployment.

There is evidence that trade liberalization has helped Bangladesh's export-driven garment industry flourish, resulting in the creation of millions of jobs and a decline in unemployment rates. There are concerns that some communities have been left behind and that the benefits of trade have not been distributed equitably. In addition, it is not always obvious how trade affects unemployment rates due to other variables, such as changes in productivity, technological advancements, and general economic conditions. Therefore, despite the possibility of a relationship between Bangladesh's trade openness and national unemployment rates, it is essential to consider the broader context and other variables that may be influencing the relationship. The World Bank anticipates that Bangladesh's unemployment rate will approach 4.2% by 2021. It is essential to keep in mind that this number may vary based on a variety of factors, including geographic region, educational attainment, and industry.

Over the years, Bangladesh has increasingly liberalized its economy in terms of trade and implemented numerous policy reforms to encourage trade and investment. According to the World Bank, Bangladesh's trade openness score for 2019 was 47.2, indicating a moderate level of openness. The United States, the European Union, and China are among the nation's most important trading partners. According to the perspective of the developing country, on the one hand, trade openness can promote economic growth, generate new jobs, and reduce unemployment rates by increasing demand for products and services, encouraging investments, and opening up new export markets. This can be especially true for developing nations with abundant natural resources, inexpensive labor, and a comparative advantage in industries such as agriculture, textiles, and manufacturing.

Therefore, to ensure that trade openness benefits all segments of society and reduces unemployment rates, it is essential to implement policies that support workers and industries that may be adversely affected by trade. These policies may include investments in education and training, social safety nets, and measures to promote the development of competitive and diversified industries.

Overall, there is a rationality to carefully balancing the benefits of trade openness with measures that protect workers and industries that may be affected by trade, to ensure that the gains from trade are widely distributed and contribute to sustainable economic growth and lower unemployment rates.

1.2. National Unemployment rate and Terms of Trade:

In fact, there is a growing level of public concern regarding the impact of changes in trade terms on unemployment. Numerous studies have been conducted on the effects of trade disruptions on the economy, but little is known about the relationship between these fluctuations and domestic unemployment. Essentially, changes in trade terms will not only affect employment by altering the employment reallocation across sectors, as in traditional trade models, but will also affect sectoral search unemployment by altering the expected income of employed workers by affecting their reservation productivity in both traded and non-traded sectors.

In reality, there is no distinct or consistent positive correlation between the unemployment rate and trade terms. In reality, the relationship between these two variables is frequently complex and subject to a number of variables. The terms of commerce are the ratio between export and import prices. When the terms of trade improve, a nation earns more for its exports relative to the cost of its imports, which can have a positive impact on economic growth and employment. Nonetheless, the relationship between trade terms and unemployment is complex. An increase in the terms of trade, for instance, could contribute to a rise in demand for a nation's exports, which in turn could increase production and employment. On the other hand, an improvement in the terms of trade could also result in an appreciation of the country's currency, which would make its exports more expensive and less competitive, thereby reducing demand and employment.

A decrease in terms of trade, which refers to a decline in export prices relative to import prices, could result in a decline in demand for a nation's exports, which could contribute to a decline in production and employment. However, a decline in terms of trade could also contribute to a depreciation of the country's currency, thereby making its exports more competitive and possibly increasing demand and employment.

Now, according to the perspective of Bangladesh, the relationship between the national unemployment rate and terms of trade can be complex and multifaceted.

The terms of trade are the ratio of export prices to import prices, and they can have a significant impact on the economic growth and development of a country. If a country's terms of trade strengthen, it indicates that its export prices are rising relative to its import prices. This can result in increased revenues and foreign exchange reserves, which can be used to finance investments, generate employment, and stimulate economic activity. There is no distinct or consistent negative relationship between the national unemployment rate and trade terms. As previously stated, the relationship between these two variables can be complex and dependent on a number of factors. A decrease in terms of trade, which refers to a decline in export prices relative to import prices, could lead to a decline in demand for a nation's exports, which could lead to a decline in production and employment. However, a decline in terms of trade could also lead to a depreciation of the country's currency, making its exports more competitive and potentially boosting demand and employment.

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However, the relationship between terms of trade and unemployment can also depend on a number of other factors, such as the structure of the economy, the level of education and skill of the workforce, and government policies related to trade, investment, and job creation.

In general, a positive correlation between terms of trade and employment can be observed. An increase in terms of trade, accompanied by an increase in exports, can lead to an increase in demand for labor in export-oriented industries. This can have a positive effect on overall employment levels in the country.

On the other hand, if the country relies heavily on imported inputs for its export industries, an increase in import prices may lead to higher costs and reduced competitiveness of exports. This can negatively impact the country's terms of trade and employment levels.
Additionally, if the country's labor market is not sufficiently skilled or educated to meet the demands of the export industries, the benefits of a favorable terms of trade may not be fully realized in terms of employment. In this case, efforts to improve the quality of education and training programs may be necessary to maximize the employment benefits of a favorable terms of trade.

Overall, the relationship between national unemployment rate and terms of trade in Bangladesh is complex and influenced by various factors. However, a positive correlation between terms of trade and employment can be observed, particularly in export-oriented industries, which can help to boost economic growth and development.

And finally, the relationship between national unemployment rate and terms of trade can vary depending on a number of factors such as the structure of the economy, the level of development, and the policies pursued by the government.
In general, a positive terms of trade shock (i.e., an increase in the price of a country's exports relative to its imports) can lead to increased employment in sectors that produce exports, as well as increased income and spending in the economy as a whole. This can lead to a reduction in the national unemployment rate.
Conversely, a negative terms of trade shock (i.e., a decrease in the price of a country's exports relative to its imports) can lead to decreased employment in export sectors, as well as decreased income and spending in the economy as a whole. This can lead to an increase in the national unemployment rate.
However, the impact of terms of trade on unemployment can be offset by a number of other factors such as the level of economic diversification, the degree of economic openness, and the effectiveness of government policies to promote job creation and economic growth (Karim, 2018).

In many developing countries, where the economy is often heavily reliant on exports of primary commodities, the impact of terms of trade on unemployment can be particularly significant. A

decline in commodity prices can lead to job losses and increased unemployment in the primary sector, which can have spill-over effects on other sectors of the economy.

Therefore, it is important for developing countries to pursue policies that promote economic diversification, reduce dependence on primary commodity exports, and create employment opportunities in other sectors of the economy. This can help to reduce the vulnerability of the economy to fluctuations in the terms of trade and mitigate the impact of external shocks on the national unemployment rate.

1.3. National Unemployment rate and Inflation rate:

The relationship between national unemployment rate and inflation rate can be complex and is subject to debate among economists. However, generally speaking, there is a negative relationship between the two variables, meaning that as unemployment decreases, inflation tends to increase and vice versa.

This relationship is often referred to as the Phillips curve, named after the economist A.W. Phillips, who first proposed the concept in 1958. The Phillips curve suggests that when unemployment is high, there is less upward pressure on wages and prices, as there is less competition for jobs. Conversely, when unemployment is low, workers have more bargaining power, which can lead to higher wages and prices.

In the case of Bangladesh, high inflation can lead to higher unemployment if it causes businesses to reduce their investments and hiring, as well as if it reduces the purchasing power of consumers, leading to a decrease in demand for goods and services. This can create a negative spiral in which businesses reduce their operations and employment, leading to further reductions in consumer demand, and so on.

On the other hand, if the government takes measures to control inflation and stabilize the economy, it may be able to mitigate the negative impact of inflation on employment. For example, if the government implements policies that encourage investment and promote economic growth, this can help to offset the negative impact of inflation on employment. Overall, the relationship between inflation and unemployment is complex and depends on a variety of factors, and the specific impact will vary depending on the context and policies in place.

In developing countries, the impact of inflation on unemployment can be particularly significant due to their weaker economic structures and limited policy options.
High inflation can lead to higher unemployment in developing countries if it reduces the profitability of businesses and discourages investment, leading to a contraction in economic activity and job losses. In addition, high inflation can reduce the purchasing power of consumers, leading to a decrease in demand for goods and services and a further contraction in economic activity.
Moreover, high inflation can also create social and political instability, which can negatively affect the business climate and further reduce investment and employment opportunities. This can lead to a vicious cycle of high inflation and high unemployment, which can be difficult to break out of.
The impact of inflation on unemployment can vary depending on the specific circumstances of

each developing country. For example, some countries may have natural resources or other factors that can offset the negative impact of inflation on employment. Additionally, policy responses to inflation can also play a crucial role in mitigating the negative impact on unemployment. For instance, the government can implement policies that promote investment, support small and medium-sized enterprises, and provide social safety nets for vulnerable populations.

The impact of inflation on unemployment in developing countries can be significant and complex, and requires careful policy responses to mitigate its negative effects. The impact of inflation on unemployment is not always straightforward, and can vary depending on the specific circumstances and policies in place. For instance, some level of inflation may be necessary for economic growth, and in some cases, higher inflation may lead to increased demand and production, which can lead to lower unemployment.

Overall, the relationship between inflation and unemployment is complex, and the rationality of their impact on each other depends on a variety of factors, such as the level of inflation, the structure of the economy, and the policy responses to inflation.

1.4. National Unemployment rate and Domestic Investment:

Domestic investment can have a significant impact on unemployment in Bangladesh. Bangladesh is a developing country with a large population, and unemployment is a major challenge in the country. However, domestic investment can help to create new job opportunities and improve the overall employment situation in the country.

The positive impacts of domestic investment on unemployment in Bangladesh are:

- *Job creation:* Domestic investment can lead to the creation of new businesses and the expansion of existing businesses, which can generate new job opportunities. This is particularly important in a country like Bangladesh where job creation is a key priority.
- *Increased demand:* Domestic investment can also lead to an increase in demand for goods and services, which can stimulate economic activity and create new jobs. This can have a multiplier effect on the economy, leading to increased employment in related industries such as transportation, logistics, and services.
- *Improved productivity:* Domestic investment can lead to the adoption of new technologies and improved production processes, which can increase productivity and competitiveness. This can help firms to expand their operations and generate new employment opportunities.
- *Skill development:* Domestic investment can also lead to the development of new skills and expertise, which can help to create a more skilled and productive workforce. This can increase the overall employability of workers and lead to higher wages and better working conditions.

However, it is also important to note that domestic investment can have negative impacts on unemployment in Bangladesh, particularly if it is not accompanied by measures to address the potential negative impacts. For example, if investment primarily involves the use of unskilled labor, it may not create enough high-quality job opportunities to offset the jobs lost due to automation or displacement.

The impact of domestic investment on unemployment can be rationalized in several ways.

- Domestic investment can lead to job creation as firms expand their operations or new businesses are established. This can create employment opportunities for both skilled and unskilled workers, reducing the level of unemployment in the country.
- Domestic investment can increase demand for goods and services, which can stimulate economic activity and create new jobs in related industries. For example, if a new factory is established, it may create jobs not only in the factory itself but also in transportation, logistics, and services.
- Domestic investment can lead to improvements in productivity and competitiveness, which can help firms to expand their operations and generate new employment opportunities. This can occur through the adoption of new technologies or improved production processes, which can increase efficiency and reduce costs.
- Domestic investment can lead to the development of new skills and expertise, which can help to create a more skilled and productive workforce. This can increase the overall employability of workers and lead to higher wages and better working conditions.
- Domestic investment can have a multiplier effect on the economy, leading to increased economic activity and job creation in other sectors. This can occur as the increased demand generated by domestic investment leads to increased economic activity in related industries.

Overall, the impact of domestic investment on unemployment can be rationalized by its ability to create new job opportunities, increase demand for goods and services, improve productivity and competitiveness, develop new skills and expertise, and have a multiplier effect on the economy.

2. Present Trade Scenario in Bangladesh

According to the World Bank, Bangladesh's trade sector has been growing steadily over the years, with the country's exports and imports increasing at a rate of 7.4% and 8.3%, respectively, in 2020 (“Bangladesh Overview,” 2021). The country's major trading partners include the United States, Germany, and China, with textile and garment products being the top exports (“Bangladesh,” 2021).

Despite the growth in the trade sector, Bangladesh still faces challenges such as inadequate infrastructure and insufficient skilled labor (“Bangladesh Overview,” 2021). Additionally, the COVID-19 pandemic has had a significant impact on the country's trade, with disruptions in global supply chains affecting the production and export of goods (“Bangladesh,” 2021).

In terms of trade policies, Bangladesh has made efforts to liberalize its trade regime by reducing tariffs and non-tariff barriers, as well as improving trade facilitation measures (“Bangladesh Overview,” 2021). The country has also been actively engaging in regional and bilateral trade agreements, such as the South Asian Free Trade Area (SAFTA) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) (“Bangladesh,” 2021).

Overall, Bangladesh's trade sector has been steadily growing, but there are still challenges that need to be addressed to further boost the country's exports and promote economic growth.

3. Unemployment Condition in Bangladesh

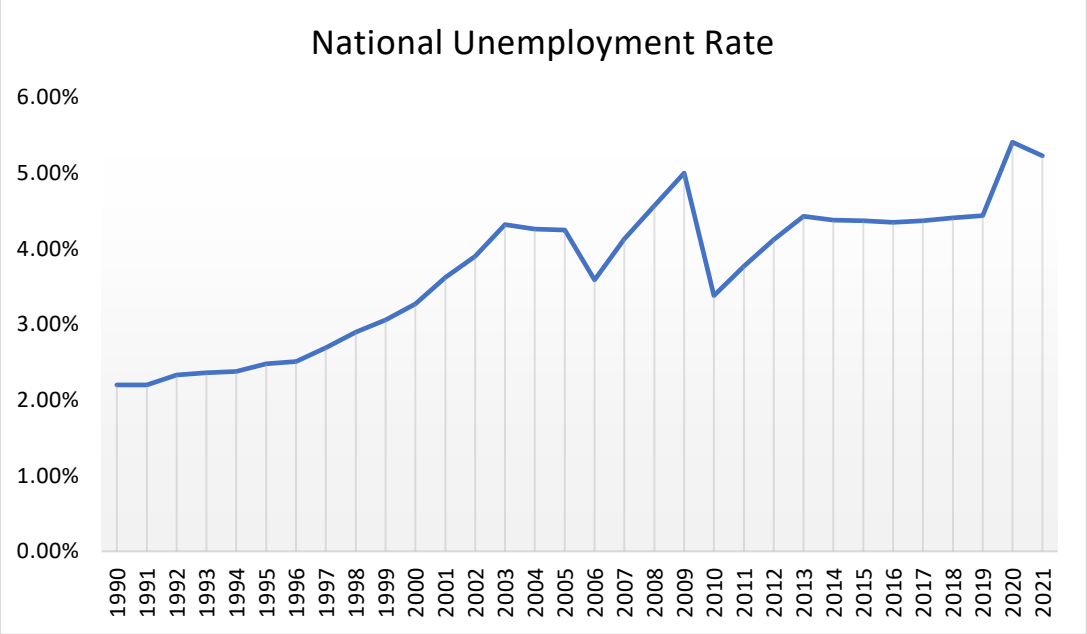
Unemployment remains a significant challenge for Bangladesh, with a large portion of the population being either unemployed or underemployed. According to the International Labour Organization (ILO), the country's unemployment rate was 4.2% in 2020, with youth unemployment at 10.7%.

Despite the relatively low unemployment rate, the quality of employment remains a concern. Many workers are employed in the informal sector, which often offers low wages and poor working conditions. The COVID-19 pandemic has also had a significant impact on employment, with many workers losing their jobs due to the economic downturn.

The government of Bangladesh has taken several measures to address the issue of unemployment, including promoting investment and entrepreneurship, as well as implementing skills development programs ("Bangladesh Labour Market Profile," 2020). However, more needs to be done to create job opportunities and improve the quality of employment for the country's workforce.

Discussion & Analysis:

Figure 1: National Unemployment Rate



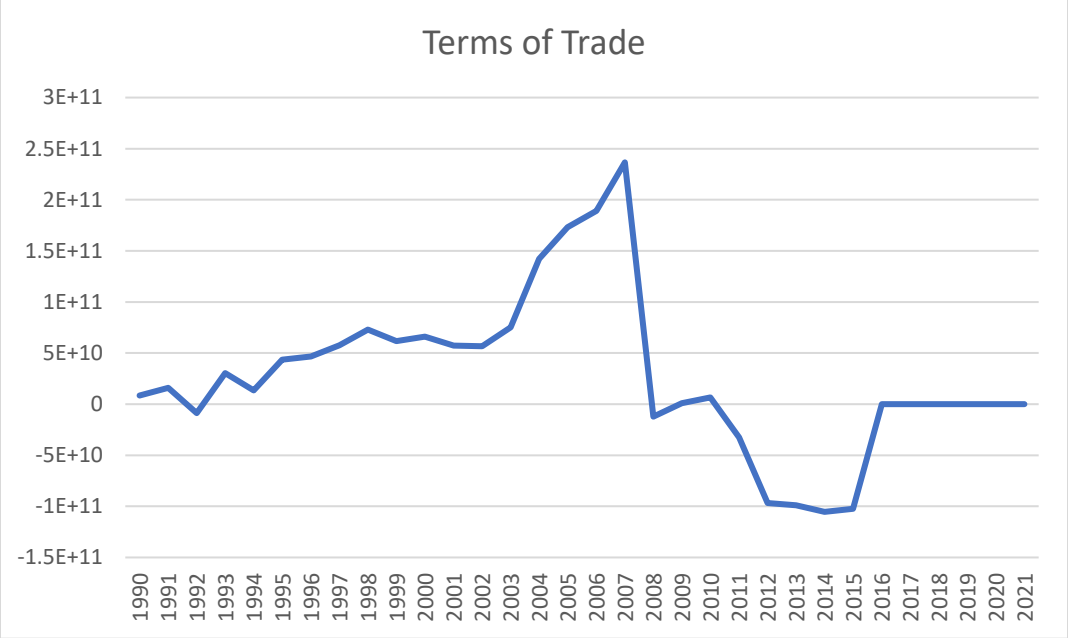
Source: World Development Indicator

The above diagram which shows a complete picture of national unemployment in Bangladesh over 32 years from 1990 to 2021.

According to the graph, from 1990 to 2000 the national unemployment rate was less than 3.00%. After 2000 the rate of unemployment increased and it was continued till 2005 from 3.00% to

4.00%. Then in 2006, the rate of unemployment decreased significantly and which was at 3.00%. The reasons for decreasing the rate were in 2005-2006 the labor force increased to 49.9% which was in 2002-2003 at 46.3%. And the number of employed populations also increased to 47.4 % which was in 2002-2003 at 44.3%. Now according to the figure, we can see that after 2008 the highest unemployment rate was recorded at 5% in 2009. And it happened because the recession was going on the whole economy. After the recession, the rate of unemployment decreased again to 3.00% in 2010. After 2010, the unemployment rate increases again till 2013 when it was 4.00%. After that the rate of unemployment was decreasing slowly in 2017,2018,2019 it was 4.00% respectively. Then in 2020 -2021, the rate of unemployment increased again and it was 5.00%. And it was increased mainly due to the covid-19 pandemic which created a crisis in the labour market globally.

Figure 2: Terms of Trade



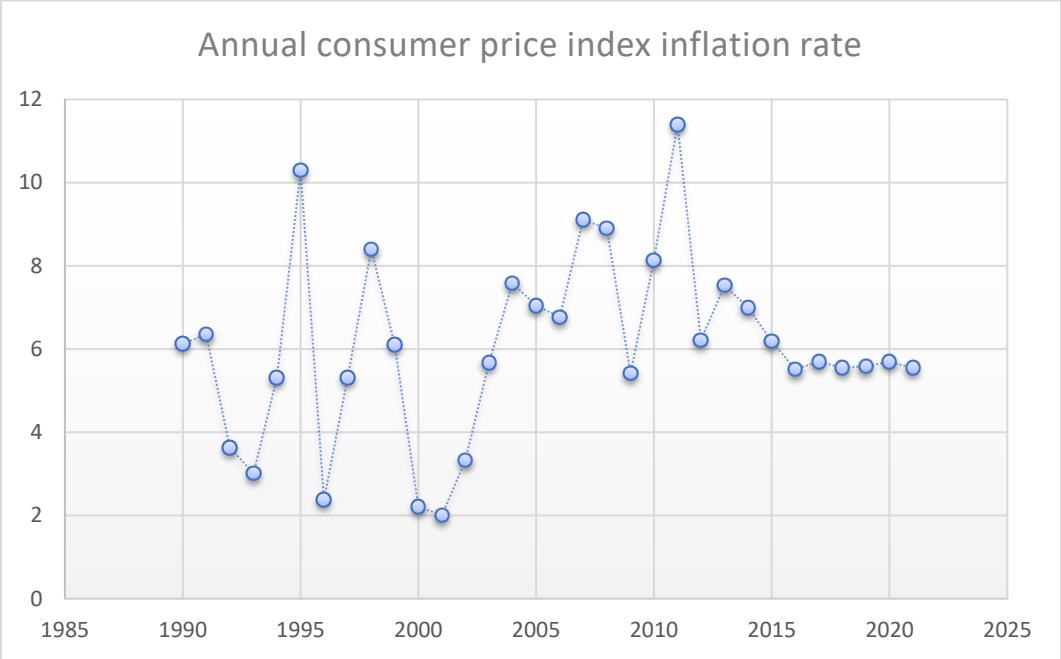
Source: World Development Indicator

This graph shows the terms of trade in Bangladesh over 32 years from 1990 to 2021.

According to the graph, from 1990 to 1992 the situation of the terms of trade was negative which means the value of exports was less relative to the value of imports. After 1992 the value of exports of Bangladeshi goods was increasing. Therefore, the terms of trade also being positive gradually till 2002. And then the highest rate of terms of trade was recorded in 2006 because at that moment the number of the labor force, and employed population increased significantly therefore the quantity and value of exports increased relative to the value of imports. That means the country could afford to buy more imports with the revenue from its exports. After 2006, the rate of terms of trade was negative again till 2008. And from 2008 to 2010 the rate of terms of trade was at zero and after that, it was negative again till 2012. And from 2012- 2015 the rate of terms of trade was

in the same negative situation. From 2015 to 2016 the negative situation reduced and from 2016-2021 it was in the same situation at zero.

Figure 3: Annual consumer Price index inflation rate



Source: World Development Indicator

The above figure shows the annual consumer price index inflation rate of Bangladesh over 32 years from 1990-2021.

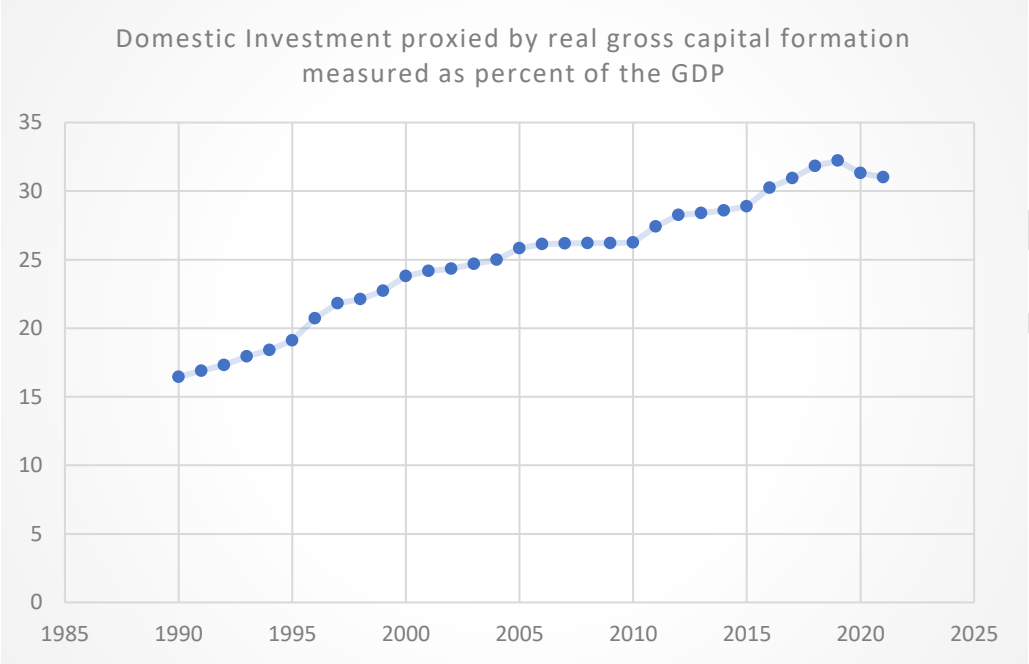
From the graph, in 1990-1995 the rate of inflation was ups and downs and it was respectively 6.13%,6.36%,3.63%,3.01%,5.31% and 10.30% which shows a significant increase in the inflation rate. After that, in 1996 the rate of inflation dramatically reduced to 2.38% and then it was increasing gradually till 1998 it was respectively, 5.31% and 8.40%. After 2000 the lowest inflation rate was 2.01% in 2001. And then the rate of inflation again increased gradually till 2005. It was respectively 3.33%,5.67%,7.59%, and 7.05%. After 2010 the highest inflation rate was 11.40% in 2011. After 2011 the rate of inflation decreased again till 2021 when it was 5.55%.

Figure 4 shows the domestic investment proxied by real gross capital formation measured as the percentage of the GDP of Bangladesh over 32 years from 1990-2021.

The above figure shows the gradually increasing trend of domestic investment in Bangladesh from 1990-2021.

From 1990-1995 the amount of domestic investment increased from 15%-20% and it continued till 2000 when it was 24%. After 2000 it was slowly increased till 2004 when it was 26% and it almost the same till 2010. After 2010, the gradually increased rate of domestic investment started to grow till 2015 when it was 29%. After 2015, the highest rate of domestic investment was recorded in 2019, it was 33%. And after that, it slightly decreased by 31% from 2020-2021.

Figure 4: Domestic Investment proxied by real gross capital formation measured as percent of the GDP

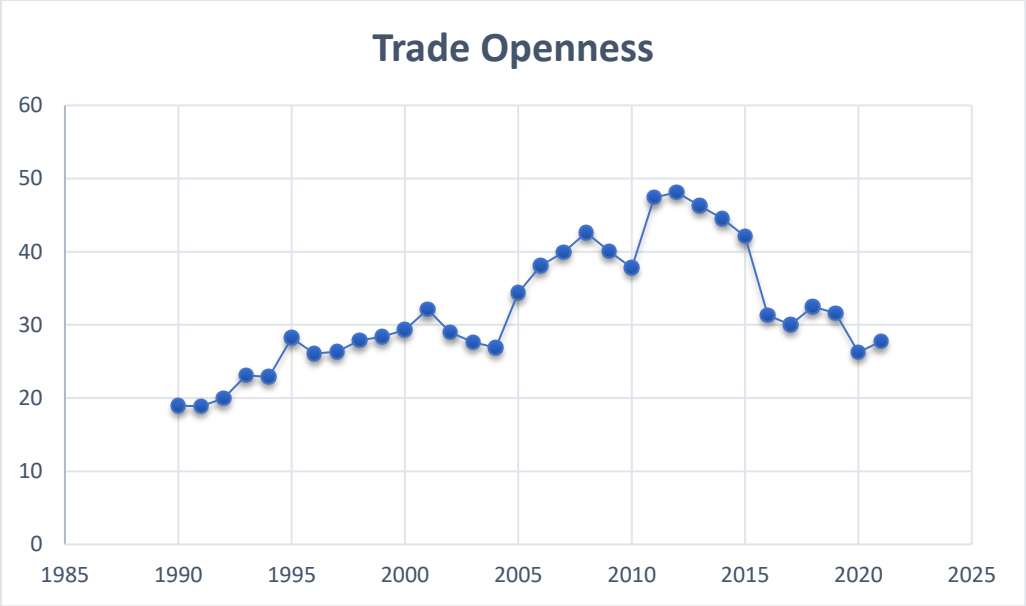


Source: World Development Indicator

Figure 5 shows the situation of trade openness in Bangladesh over 32 years from 1990-2021. This figure explains the degree of integration with the global economy in terms of international trade.

In 1990, Bangladesh's trade openness was relatively low it was 20%. However, after 1990, it started to grow steadily in the trade openness of Bangladesh till 2000 due to the country's adoption of trade liberalization policies and its participation in regional and global trade agreements and the rate was 29% in 2000. According to the figure from 2000 to 2001, Bangladesh's trade openness continued to rise, reflecting its increasing integration into the global economy and it happened because the country's export-oriented garment industry played a significant role in this growth, with the sector accounting for a significant portion of the country's total exports when the rate was 32%. After 2001, the trade openness of Bangladesh decreased significantly till 2004 and the rate was,29%,28%, and 27%. Then from 2004-2008, the rate of trade openness increased respectively when it was 42%. After that till 2010 the rate decreased again it was 38%. After 2010, the highest rate of trade openness in Bangladesh was recorded at 49% in 2013 and the lowest rate of trade openness was 27% in 2020. It describes a significant decrease in trade openness in Bangladesh. And then in 2021, this rate increased slightly to 28%.

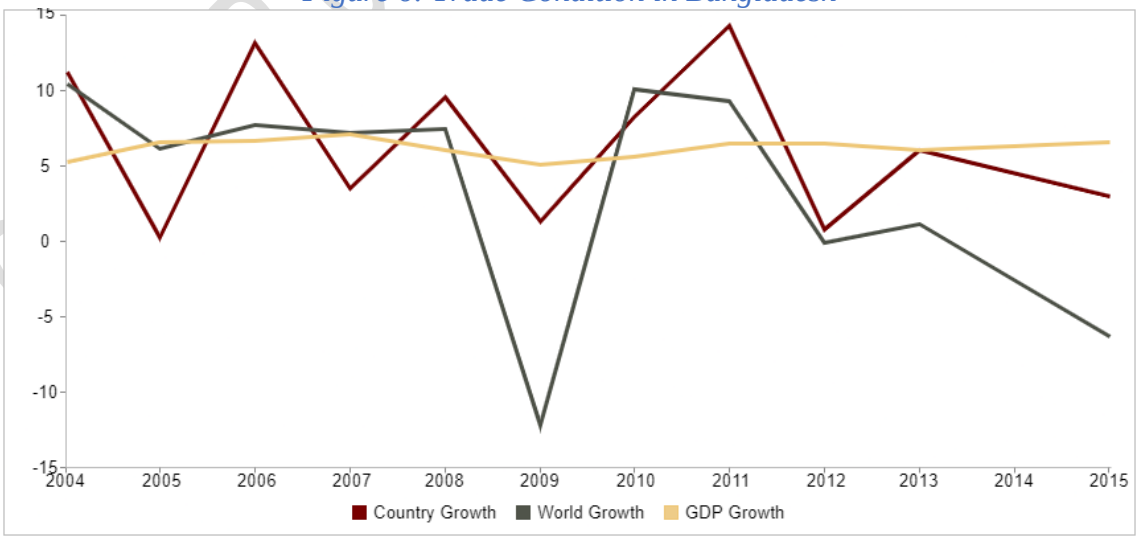
Figure 5: Trade Openness



Source: World Development Indicator

Table-6 shows us that, Bangladesh's total exports were valued at $31,734,162.42 thousand, while its total imports were $48,058,710.04 thousand, resulting in a negative trade balance of -$16,324,547.62 thousand. The country's Effective Applied Tariff Weighted Average (customs duty) is 11.82%, and the Most Favored Nation (MFN) Weighted Average tariff is 12.32%. Despite the negative trade balance, Bangladesh experienced a trade growth rate of 2.98%, while the world experienced a growth rate of -6.30%. The country's current GDP is $324,239,176,765.05 in US dollars. In terms of services, Bangladesh's service exports and imports were valued at $6,308,793,484.76 thousand and $8,405,884,326.20 thousand, respectively, in the Balance of Payments (BoP) and in current US dollars. The country's exports of goods and services as a percentage of GDP is 12.18%, while imports of goods and services as a percentage of GDP is 18.58%.

Figure 6: Trade Condition in Bangladesh



Source: World Development Indicator

Data Analysis:

OLS Estimation

Table-7: General OLS Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOT	2.24E-14	1.36E-14	1.641784	0.1127
TO	0.000132	0.000140	0.941189	0.3553
TIME	0.000992	0.000605	1.640509	0.1129
DOMINVS	-0.000161	0.001217	-0.132586	0.8955
INFLAT	-0.000396	0.000447	-0.887347	0.3830
C	-1.950841	1.183285	-1.648666	0.1112

R-squared	0.832819	Mean dependent var	0.037088
Adjusted R-squared	0.800669	S.D. dependent var	0.009449
S.E. of regression	0.004219	Akaike info criterion	-7.931229
Sum squared resid	0.000463	Schwarz criterion	-7.656404
Log likelihood	132.8997	Hannan-Quinn criter.	-7.840132
F-statistic	25.90409	Durbin-Watson stat	1.338024
Prob(F-statistic)	0.000000		

Heteroskedasticity Test

Table-8: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.559169	Prob. F(5,26)	0.7301
Obs*R-squared	3.106944	Prob. Chi-Square(5)	0.6835
Scaled explained SS	1.922354	Prob. Chi-Square(5)	0.8598

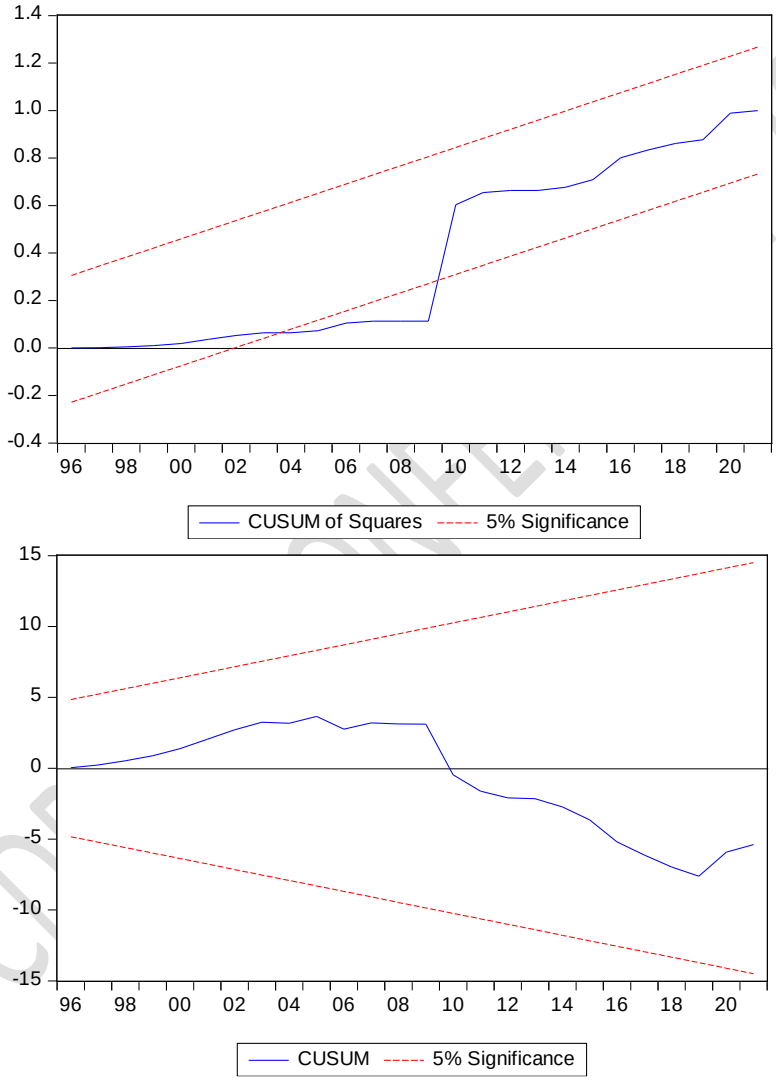
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.003807	0.005854	-0.650394	0.5211
TOT	8.03E-17	6.75E-17	1.190549	0.2446
TIME	1.94E-06	2.99E-06	0.647878	0.5227
TO	5.34E-07	6.94E-07	0.769409	0.4486
DOMINVS	-3.18E-06	6.02E-06	-0.527347	0.6024
INFLAT	-8.33E-07	2.21E-06	-0.377159	0.7091

R-squared	0.097092	Mean dependent var	1.45E-05
Adjusted R-squared	-0.076544	S.D. dependent var	2.01E-05
S.E. of regression	2.09E-05	Akaike info criterion	-18.54913
Sum squared resid	1.13E-08	Schwarz criterion	-18.27431
Log likelihood	302.7861	Hannan-Quinn criter.	-18.45804
F-statistic	0.559169	Durbin-Watson stat	1.240622
Prob(F-statistic)	0.730150		

Stability Test

Table 9 shows the CUSUM and CUSUM SQUARE tests indicate that we have verified the stability of the coefficients. Both can determine whether the coefficient has changed over time and when the change took place. CUSUM depicts the sum of recursive residuals and determines if the sum exceeds the critical limit. CUSUM square displays the sum of squared recursive residuals and determines if the sum exceeds the critical limit.

Table-9: Stability Test



Conclusion

The study has shown that there is a significant relationship between trade and unemployment in the Bangladeshi economy. The country's terms of trade were found to have a significant impact on the unemployment rate, indicating that when the terms of trade are favorable, it can lead to a decrease in unemployment. This study also found that there is a short-run and a long-run effect of

trade on unemployment. Additionally, the study highlights the importance of considering the effects of unemployment on other economic indicators such as GDP, inflation, and trade openness. The study has found a significant relationship between trade and unemployment in the Bangladeshi economy. The country's terms of trade were found to have a significant impact on the unemployment rate. This study has also found that there is a short-run and a long-run effect of trade on unemployment. Additionally, the study highlights the importance of considering the effects of unemployment on other economic indicators such as GDP, inflation, and trade openness. This study contributes to our understanding of how trade and unemployment affect emerging market economies like Bangladesh. The findings of this study have important implications for policymakers in Bangladesh. The study suggests that policies aimed at improving the terms of trade could help reduce unemployment in the country. Additionally, the study underscores the need for policymakers to consider the impact of unemployment on other economic indicators when designing policies. The study's findings can also be used as a basis for future research in this area.

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