Article

Efficiency of Macroeconomic Variables to Explain Economic Growth in the BIMSTEC Region

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Abstract

This article has examined the impact of selected macroeconomic variables on economic growth in the Bay of Bengal Initiative for Multi-sectoral, Technical and Economic Cooperation (BIMSTEC). Thus, quarterly data have been considered over a period from 2000 to 2021. The study has taken into consideration the Cobb–Douglas production function as a model specification to examine the above issue. It has been found that agricultural production is an important macroeconomic determinant to justify economic growth in BIMSTEC and its members. However, foreign direct investment is a significant macroeconomic factor for economic growth in BIMSTEC and also in India. Moreover, GDP in Bhutan, Sri Lanka and Thailand is positively and significantly affected by the balance of trade.

Keywords

AGP, BIMSTEC, EMP, FDI, BoT

JEL Classification: Q1, J2, F1, F21

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Introduction

The evolution of a sub-regional cooperation among South and South East Asian nations was first initiated in June 1997 by establishing BIST-EC (Bangladesh,

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India, Sri Lanka and Thailand Economic Cooperation). Myanmar joined this organization in December 1997, and it became BIMST-EC. In 2004, Nepal and Bhutan became members and subsequently BIMST-EC became BIMSTEC (Bay of Bengal Initiative for Multi-sectoral, Technical and Economic Cooperation). This sub-regional group came into existence with an aspiration towards India's look East and Thailand's look West policies for deeper cooperation in the region. The BIMSTEC region provides a unique similarity like rich historical and cultural linkages that helps to promote deeper cooperation in the region. BIMSTEC brings together 1.68 billion people (22%) of the world population with a combined GDP of US$3.697 trillion (2021). BIMSTEC focuses on 14 priority sectors for cooperation and integration: (i) transport and communication, (ii) tourism, (iii) environment and disaster management, (iv) counter-terrorism and transnational crimes, (v) trade and investment, (vi) cultural cooperation, (vii) energy, (viii) agriculture, (ix) poverty alleviation, (x) technology, (xi) fisheries, (xii) public health, (xiii) people-to-people contract and (xiv) climate change. According to Batra (2010), these priority sectors for cooperation have been clearly identified keeping in view harmonizing and establishing adequate infrastructure facilities such as road, rail, air and shipping in the member countries. In February 2004, BIMSTEC signed an agreement for a Free Trade Area (FTA) in order to strengthen economic, trade and investment cooperation among the member countries. During the global financial turmoil in 2008, BIMSTEC was less affected as compared to other regional treaties (SAARC, ASEAN, SAFTA, NAFTA, EU, APEC and OPEC). In 2018, BIMSTEC reaffirmed in its fourth summit declaration in Kathmandu, Nepal, with a strong commitment to make it a dynamic, effective and result-oriented regional organization that will promote peace, prosperous and sustainable economic growth in the Bay of Bengal Region through meaningful cooperation, deeper integration and collective efforts. The fourth summit recognized the need for poverty alleviation in the region and expressed its firm commitment to work together for the implementation of a sustainable development agenda by 2030. BIMSTEC is a more powerful and active regional cooperation that enhances inter-linkages and interdependence within the region and provides greater opportunities to advance regional cooperation. It has been well established that a significant volume of trade is covered by the regional trading arrangements and its importance is increasing in the present era. However, South Asian countries are not successful in the world to form unbeaten regional trading arrangements next to sub-Saharan African countries (Bhattacharya, 2007). In 2007, Banik opined that BIMSTEC is purely guided by economic interest rather than political and, thus, more successful as compared to SAFTA.

A limited number of studies have focused on the probable impact of BIMSTEC-FTA. However, few studies have applied (Bhattacharya, 2007; Kabir & Selim 2010) quantitative techniques to examine the possible impact of BIMSTEC-FTA. On the other hand, a significant number of studies have examined the impact of macroeconomic variables on economic growth. However, very few studies have explored the above relationship in BIMSTEC. Therefore, a more extensive study is required to explore BIMSTEC properly. Against this backdrop, this study tries to examine the probable impact of macroeconomic indicators on economic growth in BIMSTEC.

The rest of the article has been organized as follows: After a brief introduction in Section 1, Section 2 extensively discusses the literature review and identifies the research gap. Section 3 depicts the data and the study period. Similarly, Section 4 has shown the theoretical linkage of economic growth with the macroeconomic variables followed by hypothesis formulation. Section 5 deals with methodological aspects. Section 6 explains the outcomes. Finally, the conclusion and recommendation have been given in Section 7.

Literature Survey

Various studies have established the relationship between economic growth and macroeconomic variables in developed countries (Grossman & Helpman, 1992; Lucas, 1988; Solow, 1956). Similarly, in developing countries, many studies have dealt with the same issue (Das et al., 2009; Sarma et al., 2005). On the other hand, a significant number of studies have developed many economic theories and statistical approaches and many of them have empirically examined the above issue by applying various econometric tools and techniques. A quite number of studies have shown a clear connection between economic growth and the macroeconomic variables and some of them have shown opposite outcomes. Therefore, this economic debate has given immense importance to the academic and professional communities for hunting new knowledge and linkages and, as a result, new evidence is added to the existing literature. Therefore, social scientists are interested in examining the impact of macroeconomic variables (foreign direct investment (FDI), export, import, foreign exchange, inflation, oil price, equity market, etc.) on economic growth from the very beginning.

Theoretical Perspective

Both theoretical and empirical growth researchers have recognized that macroeconomic factors can affect economic growth but with little agreement. The economic growth theory is extensively focused on neoclassical and endogenous growth theories. Solow (1956) has opined that importance is given to factors such as physical capital accumulation and human capital growth (Lucas, 1988). On the other hand, many economic growth contributors (Easterly & Wetzel, 1989; World Bank, 1990) have preferred growth theories. Solow-Swan (1956) has developed the neoclassical growth theory (endogenous growth model), where it has been stated that physical capital accumulation is an input of short-run economic growth while technology is the principal determinant of long-term economic development. Further, neoclassical theory has considered human capital stock as the central driving factor of economic growth (Islam, 1995; Mankiw et al., 1992). Oppositely, the proponents of endogenous growth theory have given attention to efficiency (Aghion & Howitt, 1992b; Grossman & Helpman, 1991; Lucas, 1988). It is well recognized that every country tries to accumulate human capital stock, physical capital and productivity factors for economic development (Aghion et al., 1991a; Frankel, 1962; Grossman & Helpman, 1992; Lucas, 1988; Mankiw et al., 1992; Solow, 1956). According to Easterly and

Wetzel. (1989), savings and investment have been considered indispensable economic growth factors (Fischer, 1992). Further, these factors became popular in the 1990s by focusing on macroeconomic stability, the efficacy of an economic institutional system and the regulatory environment for the market. Fischer (1992) opines that economic growth depends on macroeconomic stability that has been affected by economic uncertainty. Similarly, economic uncertainties are caused by policies that reduce the market mechanism's capacity. Similarly, another type of economic uncertainty is caused by the investors' holding on assets which is very temporal. However, this kind of economic uncertainty affects the capital market badly because there is a chance of capital flight if it is not controlled (Pindyck & Somalino, 1993; World Bank, 1990). Many studies have considered a variety of macroeconomic variables with little agreement on their effects on economic growth (e.g., Barro & Sala-i-Martin, 2004; Boserup, 1996; Bruno et al., 1998; Burnside & Dollar, 2000; Fischer, 1983; Knight et al., 1993; McKinnon, 1973; Mundell, 1963; Shaw, 1973; Solow, 1956). Many growth economists have considered time-series data to examine the effect of macroeconomic factors on economic growth (Ciccone & Jarocinski, 2010; Sala-i-Martin et al., 2004). Few studies have claimed that consideration of many macroeconomic determinants enhances the model efficiency (Bayraktar & Wang, 2006; Doppelhofer et al., 2004) but it behaves differently when pooled together and, thus, the policymakers become confused sometimes when they develop country-specific economic policies. Antwi et al. (2013) have considered a large number of macroeconomic factors to study economic growth. Thus, from the above theoretical discussion, we can get an idea about the origin and development of many theories and different kinds of macroeconomic variables.

Empirical Evidence

Lots of studies have empirically examined the association between economic growth and macroeconomic variables. In 1992, Fischer examined the relationship between macroeconomic stability and economic development in SSA and LAC countries over a period from 1970 to 1985 and depicted that economic development is positively affected by human capital, investment and budget surplus while initial real GDP, inflation and dummy variables have a negative impact. Here, the study has opined that economic growth largely depends on the stability of the macroeconomic determinants. Similarly, Knight et al. (1993) examined the same issue with a slight difference in respect of the selection of macroeconomic variables and the evidence is almost the same as observed by Fischer (1992). Similarly, Chen and Feng (2000) examined a similar issue in China and reported positive and negative associations between economic growth and macroeconomic indicators. Here, the study has identified (Knight, 1993; Roy, 2020; Seyfried, 2011) a few macroeconomic indicators (private business, foreign trade and education) that can promote long-term economic growth (Fischer, 1992; Knight et al., 1993) in China. Sharma and Panagiotidis (2005) examined the causal relationship between export and economic growth in India under the VAR environment. The study showed the presence of a co-integrating association between the variables where a causal relationship was absent.

However, the impulse response function has shown a positive response that runs from export to economic growth (Bakari, 2017; Kumar, 2016; Mathiyazhagan, 2005). Similarly, Dash (2009) applied the same technique to examine the causal relationship between Indian export and economic growth in post-liberalization period (1992–2007) where a short-run causal relationship was absent (Dritsaki & Stiakakis, 2014; Mukerji et al., 2014;). However, Elbeydi et al. (2010) have shown both short-run and long-run equilibrium relationships between export and economic development in Libiya and claimed that Libiya is an export-led country (Ali et al., 2018; Kaur et al., 2017). Das et al. (2009) have examined the impact of agriculture credit on agricultural production (AGP) in India (Golait, 2007) by applying the dynamic panel data approach proposed by Arellano and Bond (1991). Here, the study has reported that agricultural credit has a significant positive impact on agricultural output. However, there are many gaps in agricultural delivery and, thus, agriculture is not properly developed. Moreover, the study has recommended framing appropriate policy for the development of agriculture in the country (Pattanayak & Mallick, 2017). In 2010, Mawugnon et al. examined the association between FDI and economic growth in Togo over a period from 1999 to 2009 by applying the Granger causality test. The study has reported about presence of a unidirectional causal relationship runs from FDI to GDP, and it has also been observed that FDI has a significant positive impact on economic growth (Alagidede et al., 2011; Mehrara & Firouzjaee, 2011; Raghuram et al., 2020). Along with this, the study has focused on developing appropriate infrastructural facilities in the country with a view to attracting FDI into the country. In contrast, Chang and Mendy (2012) examine the relationship between trade openness and economic growth in African countries over a period from 1980 to 2009. Here, the study applied a panel data approach and reported a significantly positive association between trade openness and economic growth. However, the study has also depicted that (Acaravci & Ozturk, 2012; Hemzawi and Umutoni 2021; Sahni & Atri, 2012) domestic investment and gross national savings have negatively associated with economic growth. Moreover, Acaravci et al. have opined that FDI may be improved if the country promotes free trade zones, trade regime, tax incentives, human capital base, financial market regulations, financial system and infrastructure quality. Following the same notion, Manh et al. (2014) examined the dynamics between employment and economic growth in Vietnam. Here, the study has applied Cobb–Douglas production function to observe the above issue and reported that employment has a significantly positive impact on economic growth (Ajakaiye et al., 2015). Finally, the study has recommended for introducing vocational courses in the country for the improvement of labour productivity. Likewise, Ahmed et al. (2015) considered stock market and economic growth to check the econometrical association between them over a period from 1984 to 2013 in Nigeria under the VAR environment. The study has reported the presence of both long-run and short-run associations between the variables (Chaudhary et al., 2016; Farahmand & Ethem, 2020; Gokmenoglu et al., 2015; Ibrahiem, 2015; Khan & Khan, 2018; Nwaolisa & Chijindu, 2016; Yenipazarlı, A., & Yılmaz, 2016). On the other hand, Ali et al. (2016) have tried to forecast the bilateral trade between India and Bangladesh over a period from 1991 to 2014 by considering quarterly time-series data. Thus, the study developed ARIMA and

ARMA approaches and reported that the ARIMA model is superior to forecast bilateral trade as compared to ARMA and the study further opined that both the countries may benefit from bilateral trade that enables economic prosperity and cooperation. Bhattacharya and Gupta (2015) examined the association between the macroeconomic variables (food inflation, international prices, fuel inflation) and agricultural wages. Here, the study applied the SVAR and FEVD approaches and reported that fuel inflation affects both industrial growth and global food inflation. It has also been reported that a 14% variation in wage inflation occurred due to food inflation followed by the industrial sector. The study has argued that food and aggregate inflation are affected by increase in food inflation. Here, the study has identified agricultural wage growth, which is an important factor of food inflation, should be adjusted with productivity growth. In contrast, Kang and Dagli (2018) examined the dynamics between international trade and exchange rates in the context of the global financial crisis over a period from 2001 to 2015 in 72 countries. Thus, the study has applied the Fisher-type unit-root test and the Gravity model and reported that export is positively affected by real exchange rates (Jana et al., 2019). In 2019, Gokmenuglu et al. tried to establish the impact of carbon emissions on financial development and industrialization in Turkey by considering a long time period (1960–2010) under the VAR framework. The study reported the presence of a long-run equilibrium association between the variables and also confirmed the presence of a unidirectional relationship which runs from financial development to carbon emission (Jijian et al., 2021). The study has recommended to the policymakers regarding the framing of financial policy that can protect the environment from carbon emissions and promote environmental sustainability. In 2019, Sener et al. examined the causal association between competitiveness, innovation and foreign trade over a period range between 2007 and 2017. The study applied the Dumitrescu and Hurlin (2012) panel causality test and observed the presence of unidirectional causality that passes from GII to IDI and GCI. Moreover, the study has recommended developing R&D in collaboration with university, industry and government for the improvement of foreign trade in the country.

Now, it is observed from the extensive literature survey that a large number of studies have developed various theoretical and mathematical frameworks to examine the various economic issues and many of them have empirically examined the association between the macroeconomic variables and economic growth by applying various statistical and econometrical equations and shown diverse evidences which are quite natural due to countries' ideology, sentiment, internal and external geopolitical tension, economic and political environment. No doubt, those studies have contributed new insights to the existing literature. However, a very limited number of studies have focused on BIMSTEC.

Thus, with this economic intuition, this study examines the impact of macroeconomic determinants on economic growth in BIMSTEC. Many studies in the past have explored macroeconomic relationships but those are not adequate to explain the exact nature of the macroeconomic variables because the nature of the variables is changing over time. Thus, it is important to explore the economic association between them by considering a representative data set. Therefore, the study has considered a few selected macroeconomic variables to study the impact on

economic growth in BIMSTEC, and it is expected that this study will surely provide new insights.

Data and Study Period

The study has considered quarterly real GDP at factor price that represents economic growth, balance of trade (BoT), AGP, employment (EMP) and inflows of FDI of the BIMSTEC and its members (India, Bangladesh, Nepal, Bhutan and Sri Lanka, Myanmar and Thailand). Here, the selection of control variables has been guided by economic intuition and previous studies. The data have been obtained from the official website of the World Bank (www.worldbank.org) and cross-checked with various reports published by the central banks of the respective countries with a study period ranging between 2000 and 2021.

Theoretical Interpretation and Hypothesis Formulation: Foreign Trade (BoT) and GDP

Foreign trade refers to the exchange of goods and services from the domestic country to others and vice-versa. It helps to boost economic growth in diverse ways. A country is said to be export-led when it exports a large amount of goods and services to other nations and earns foreign currencies that promote economic growth. Similarly, imports of goods represent an outflow of funds from the domestic country that sometimes adversely affects economic growth but high imports of productive assets signify huge domestic demand for industrialization which is a good sign for economic growth in the long run. Hence, every country tries to maintain a healthy balance between export and import for economic development. The association between foreign trade and economic growth is recognized in the 18th century when David Ricardo and Adam Smith opined about the significance of foreign trade for economic growth (Awokuse, 2007; Baines, 2003; Chia, 2015;Frieden & Rogowski, 1996) and this opinion has been well accepted by the economists (Carbaugh, 2011; Lee 1995; Hachicha, 2003). With this notion, the following hypothesis has been formulated:

H_1: BoT has no effect on GDP.

GDP and FDI

It has already been established that the inflow of FDI into the core sectors plays an important role as a source of capital, trade technology and management in transition economies that promotes economic development in the domestic economy (Caves, 1974, 1996; Kokko, 1994; Sahoo et al., 2002) and, thus, FDI is an important determinant for economic growth that affects the economy positively. Many studies have opined that FDI has a long-run association with economic growth (Sahoo & Mathiyazhagan, 2003). With this economic insight, the following hypothesis has been developed:

H_2: FDI has no effect on GDP.

GDP and Agricultural Production

It is well recognized that agriculture plays an important role in economic growth, particularly in labour-intensive countries where adequate agricultural land is available. The BIMSTEC region is well known for its agricultural richness and provides raw materials to the agricultural industry that promotes economic activities and development (Madi et al., 2020). Many authors have argued that economic growth generates agriculture when countries invest with large-scale farmers (Collier & Dercon, 2009; Maxwell, 2004; Reardon et al., 2006). In addition, productivity can transform agriculture into a growth-driven economy that leads to the formulation of the following hypothesis:

H_3: AGP has no impact on GDP.

GDP and Employment (EMP)

Economic growth and development are closely associated that generate employment (Mandloi & Bansal, 2014). On the other hand, the labour market can either promote or restrict economic growth (Boltho & Glyn, 1995; Herman, 2011; Phan, 2006). Similarly, employment is an important macroeconomic factor that reduces poverty and promotes economic growth simultaneously (Dopke, 2001; Kapos, 2005). Schmid (2008) talks about both extensive and intensive growth theories that help to create employment in the country. Thus, with this economic insight, the following hypothesis is formulated:

H_4: EMP has no effect on GDP.

From the above discussion, the relationship between GDP and the above-mentioned macroeconomic variables can be presented in a diagram (Figure 1).

Methodology

The study has been started by transforming the data of the macroeconomic variables into natural logarithm forms as follows:

$$\text{Log}\, Y = \log\left(\frac{Y_{t+1}}{Y_t}\right) \tag{1}$$

The pattern of time-series distribution has been examined by applying the Jarque–Bera (1980) test statistic as follows:

$$JB = \frac{n}{6}\left[S^2 + \frac{1}{4}(K-3)^2\right] \tag{2}$$

where n denotes the number of observations. S and K are the skewness and kurtosis, respectively.

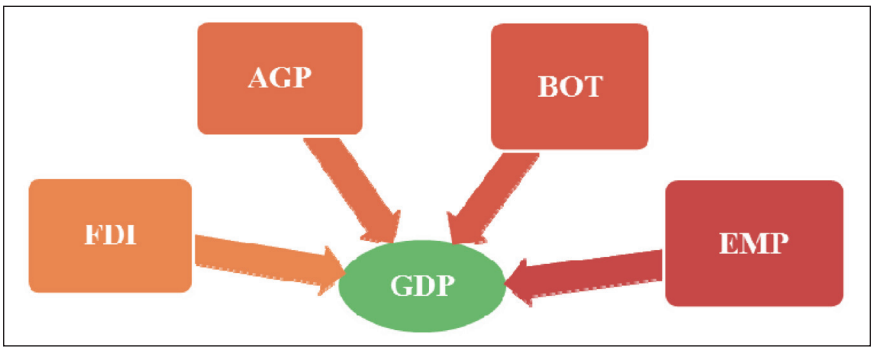

Figure 1. Relationship Between GDP and Macroeconomic Variables.

The distribution follows normality if the expected values of skewness and kurtosis are 0 and 3, respectively.

The outcome of descriptive statistics of the selected macroeconomic variables has been presented in Table 1. The mean FDI of Bangladesh, Nepal, Bhutan, Sri Lanka and Myanmar is negative, which means the above-mentioned countries were not in a position to attract FDI during the study period, which adversely affected the economy. It has also been found that Bhutan has a negative average BoT, which means the country was not in a position to export goods and services to its members and it may be for its heavy internal demand. The table also shows that the computed J-B statistic of EMP in Bangladesh, Nepal, Sri Lanka and Myanmar is statistically insignificant, which means the time-series observation follows a normal distribution. Moreover, the normality assumption is true for FDI in Thailand.

Thereafter, the study applied augmented Dickey–Fuller (ADF) and Philips–Pherron (P-P) tests to examine the stationarity of the time-series observation and, thus, the following equation has been considered:

$$\Delta Y_t = \alpha + \delta Y_{t-1} + \sum_{i=1}^{m} \gamma_i \Delta Y_{t-i} + e_t \tag{3}$$

Similarly, the P-P test (1988) is the modification of the ADF test that considers AR(1) process as follows:

$$\Delta Y_t = \alpha + \delta Y_{t-1} + e_t \tag{4}$$

Table 2 shows the outcome of the unit-root test based on two test statistics. It has been found that the time-series observations are non-stationary at their levels but become stationary when the first difference operator has been used.

The classical, neoclassical and modern growth theories have identified those determinants which are expected to be effective for economic growth (Antwi et al., 2013). Here, the study has considered Cobb–Douglas production function as the model

Table 1. Descriptive Statistics.

Variable	OB	Mean	Median	Max	Min	Std. Dev.	Skew.	Kurt.	JB	Prob.
INDIA										
logGDP	88	15.7224	15.7635	16.5057	14.8014	0.6045	−0.1097	1.4366	9.1383**	0.0103
logBOT	88	12.8488	13.3493	14.1702	10.2147	1.2174	−0.9979	2.6267	15.1176**	0.0005
logFDI	88	11.4617	11.7951	13.3551	9.2167	1.2839	−0.5313	1.9601	8.1058**	0.0173
logAGP	88	19.0991	19.4072	19.8262	16.6060	0.7720	−1.5200	5.4331	55.5964**	0.0000
logEMP	88	19.9164	19.9386	19.9949	19.7713	0.0596	−1.1206	3.2112	18.5908**	0.0000
BANGLADESH										
logGDP	88	4.7715	4.6885	5.9239	3.9371	0.6640	0.3829	1.7929	7.4933**	0.0235
logBOT	88	1.8962	1.8968	3.1367	0.8197	0.7334	0.0436	1.7069	6.1584**	0.0459
logFDI	88	−0.2107	0.2190	1.0402	−2.9957	1.1312	−0.9842	3.0412	14.2136**	0.0008
logAGP	88	16.4455	16.4945	17.3416	15.6837	0.5073	−0.0497	1.6589	6.6306**	0.0363
logEMP	88	17.8587	17.8596	18.0529	17.6418	0.1207	−0.0413	2.0236	3.5204	0.1720
NEPAL										
logGDP	88	2.6317	2.6629	3.5319	1.6154	0.6534	−0.1365	1.5206	8.2981**	0.0157
logBOT	88	0.9616	1.2547	2.4440	−1.0498	1.0654	−0.3475	1.8138	6.9298**	0.0312
logFDI	88	−2.8921	−2.4079	−1.6094	−4.6051	0.9632	−0.7828	2.2804	10.8866**	0.0043
logAGP	88	15.4513	15.6518	16.1096	14.5607	0.5497	−0.3488	1.5007	10.0264**	0.0066
logEMP	88	16.4588	16.4698	16.6366	16.2896	0.0980	−0.0007	2.0326	3.4055	0.1821
BHUTAN										
logGDP	88	0.1786	0.3226	0.9321	−0.9162	0.6200	−0.4668	1.7857	8.6026**	0.0135
logBOT	88	−1.5053	−1.2678	−0.5447	−3.5065	0.8735	−0.7760	2.5152	9.6955**	0.0078
logFDI	88	−4.1832	−4.6051	−2.5257	−4.6051	0.6171	1.4845	4.3591	39.0982**	0.0000
logAGP	88	12.4866	12.6225	13.1158	11.4754	0.5417	−0.7849	2.2416	11.1465**	0.0037
logEMP	88	12.6370	12.6755	12.7822	12.3881	0.1123	−0.7951	2.5465	10.0263**	0.0066

(Table 1 continued)

(Table 1 continued)

Variable	OB	Mean	Median	Max	Min	Std. Dev.	Skew.	Kurt.	JB	Prob.
SRI LANKA										
logGDP	88	3.7377	3.8888	4.4768	2.7511	0.6603	−0.3207	1.4582	10.2245**	0.0060
logBOT	88	1.2433	1.5264	2.1540	−0.0202	0.7028	−0.5304	1.8473	8.9978**	0.0111
logFDI	88	−0.7016	−0.6223	0.4762	−1.7719	0.6976	−0.1788	1.7682	6.0324**	0.0489
logAGP	88	14.9058	15.1007	15.5428	14.1932	0.4689	−0.2701	1.4222	10.1974**	0.0061
logEMP	88	15.9059	15.8992	15.9847	15.8493	0.0367	0.5166	2.2954	5.7354	0.0568
MYANMAR										
logGDP	88	3.2179	3.5076	4.3685	1.7298	0.9724	−0.3130	1.4070	10.7419**	0.0046
logBOT	88	1.9951	2.7221	2.7738	0.00000	0.6688	−1.7664	5.2987	65.1390**	0.0000
logFDI	88	−0.1704	−0.0142	1.5686	−1.8971	1.1054	−0.1126	1.5609	7.7787**	0.0204
logAGP	88	16.4455	16.4945	17.3416	15.6837	0.5073	−0.0497	1.6589	6.6306**	0.0363
logEMP	88	16.9583	16.9534	17.0185	16.8868	0.0370	−0.1262	1.9962	3.9278	0.1403
THAILAND										
logGDP	88	5.6249	5.7534	6.2990	4.7899	0.5039	−0.4112	1.7044	8.6346**	0.0133
logBOT	88	2.6036	2.5477	4.0402	−0.2484	1.0635	−0.7605	3.5392	9.5491**	0.0084
logFDI	88	1.8880	1.8330	2.7688	0.9042	0.5021	−0.0030	2.2214	2.2229	0.3290
logAGP	88	17.0934	17.3100	17.7071	16.2491	0.4883	−0.5986	1.8201	10.3607**	0.0056
logEMP	88	17.3496	17.4731	17.5102	15.1772	0.4788	−4.3048	1.7137	12.077**	0.0000
BIMSTEC										
logGDP	88	15.7224	15.7636	16.5058	14.8014	0.6045	−0.1097	1.4366	9.1383**	0.0103
logBOT	88	12.8488	13.3493	14.1702	10.2148	1.2174	−0.9979	2.6266	15.1169**	0.0005
logFDI	88	11.4617	11.7951	13.3551	9.2167	1.2839	−0.5313	1.9601	8.1058**	0.0173
logAGP	88	19.2231	19.4956	19.9317	17.2763	0.6883	−1.0555	3.5458	17.4348**	0.0001
logEMP	88	20.0806	20.0995	20.1743	19.9287	0.0659	−0.8891	2.8543	11.6734**	0.0029

Note: **Significant at the 5% level.

Table 2. Test of Stationarity.

	ADF Test				P-P Test			
	Level		1st Diff.		Level		1st Diff.	
Var.	t-stat.	Prob.	t-stat.	Prob.	t-stat.	Prob.	t-stat.	Prob.
INDIA								
logGDP	0.0660	0.9613	−10.217**	0.0000	0.2712	0.9755	−10.398**	0.0001
logBOT	−2.1085	0.2419	−9.9617**	0.0000	−2.5991	0.0970	−9.9619**	0.0000
logFDI	−0.5541	0.8740	−3.6672**	0.0063	−0.9157	0.7789	−9.8461**	0.0000
logAGP	−1.4543	0.5517	−7.6416**	0.0000	−2.3789	0.1506	−9.1831**	0.0000
logEMP	−2.6584	0.0859	−8.6284**	0.0000	−3.5526	0.0688	−9.6660**	0.0000
BANGLADESH								
logGDP	0.5280	0.9868	−24.0291**	0.0001	1.3602	0.9988	−12.3896**	0.0001
logBOT	−0.5883	0.8668	−9.5503**	0.0000	−0.5372	0.8777	−9.5687**	0.0000
logFDI	−1.4997	0.5292	−9.2333**	0.0000	−1.4997	0.5292	−9.2333**	0.0000
logAGP	0.1655	0.9689	−9.9053**	0.0000	0.4638	0.9845	−10.0494**	0.0000
logEMP	−1.3296	0.6124	−23.9656**	0.0001	−1.3764	0.5903	−16.7639**	0.0001
NEPAL								
logGDP	−0.9984	0.7507	−3.1537**	0.0265	−0.9678	0.7616	−11.1189**	0.0001
logBOT	−1.6724	0.4414	−2.9951**	0.0394	−3.4697	0.0111	−10.9743**	0.0001
logFDI	−2.6242	0.0920	−9.1654**	0.0000	−2.8349	0.0576	−9.1654**	0.0000
logAGP	−1.2338	0.6564	−3.2792**	0.0190	−1.2115	0.6665	−10.2591**	0.0000
logEMP	−1.5958	0.4802	−17.1732**	0.0001	−1.3362	0.6095	−10.7019**	0.0001
BHUTAN								
logGDP	−2.1239	0.2360	−3.0643**	0.0332	−2.5471	0.1081	−10.6520**	0.0001
logBOT	−1.6280	0.4640	−9.2067**	0.0000	−1.6394	0.4582	−9.2067**	0.0000
logFDI	−1.4885	0.5343	−6.4443**	0.0000	−1.5261	0.5145	−6.4352**	0.0000
logAGP	−1.4441	0.5570	−3.0598**	0.0336	−1.4456	0.5563	−9.4524**	0.0000
logEMP	−2.2776	0.1817	−11.4851**	0.0001	−2.2481	0.1971	−11.5123**	0.0001

(Table 2 continued)

(Table 2 continued)

	ADF Test				P-P Test			
	Level		1st Diff.		Level		1st Diff.	
Var.	t-stat.	Prob.	t-stat.	Prob.	t-stat.	Prob.	t-stat.	Prob.
SRI LANKA								
logGDP	−2.3213	0.1679	−7.8666**	0.0000	−1.1557	0.6903	−10.3251**	0.0000
logBOT	−1.5504	0.5035	−9.2591**	0.0000	−1.5504	0.5035	−9.2591**	0.0000
logFDI	−1.5223	0.4669	−9.1955**	0.0000	−1.6223	0.4669	−9.1955**	0.0000
logAGP	−0.4335	0.8977	−9.4704**	0.0000	−0.4051	0.9027	−9.4807**	0.0000
logEMP	−1.2743	0.6384	−9.1975**	0.0000	−1.2743	0.6384	−9.1975**	0.0000
MYANMAR								
logGDP	−0.8010	0.8134	−11.0109	0.0001	−0.9805	0.7572	−10.4068	0.0000
logBOT	−1.6545	0.4506	−9.1673	0.0000	−1.7156	0.4199	−9.167317	0.0000
logFDI	−1.1694	0.6846	−9.2544	0.0000	−1.1694	0.6846	−9.2544	0.0000
logAGP	0.1655	0.9689	−9.9053	0.0000	0.4638	0.9845	−10.0494	0.0000
logEMP	−1.9857	0.2926	−9.3445	0.0000	−1.9975	0.2875	−9.2914	0.0000
THAILAND								
logGDP	−1.6279	0.4639	−16.5645	0.0001	−1.0858	0.7184	−10.3005	0.0000
logBOT	−2.1935	0.2102	−9.1665	0.0000	−2.2963	0.1755	−9.1665	0.0000
logFDI	−2.1099	0.2414	−6.4105	0.0000	−2.0597	0.1547	−9.1656	0.0000
logAGP	−1.3887	0.5843	−3.1241	0.0286	−1.3885	0.5844	−9.5450	0.0000
logEMP	−0.4251	0.8988	−7.5859	0.0000	−3.9245	0.0028	−9.1653	0.0000
BIMSTEC								
logGDP	−0.8086	0.8115	−10.4276	0.0000	−0.8232	0.8073	−10.7162	0.0001
logBOT	−2.1085	0.2419	−9.9617	0.0000	−2.5990	0.0970	−9.9619	0.0000
logFDI	−0.5541	0.8740	−3.6672	0.0063	−0.9157	0.7789	−9.8461	0.0000
logAGP	−1.2414	0.6530	−7.5410	0.0000	−2.0062	0.2837	−9.1963	0.0000
logEMP	−2.2770	0.1819	−8.9842	0.0000	−3.8200	0.0039	−9.8749	0.0000

Note: **Significant at the 5% level.

specification with a view to establishing economic association between economic growth and the selected macroeconomic variables as follows:

$$Q = f(L_1, C_2) \tag{5}$$

where output (Q) is a function of labour (L) and capital (C), respectively. The above production function can be written as:

$$Q = \alpha_0 L^{\beta_1} C^{\beta_2} \Rightarrow \log Q = \alpha_0 + \beta_1 \log L + \beta_2 C \tag{6}$$

Equation (6) is a double log functional form that cannot be estimated through OLS due to economic uncertainty and, thus, the above equation can be rewritten as follows:

$$\log Q = \alpha_0 + \log \beta_1 L + \log \beta_2 C + \varepsilon_t \tag{7}$$

Thus, the movement of Q depends on L and C that means if L and C change 1%, then Q will react β_1 and β_2 percent assuming other things remain constant. It means that the impact of labour variation (L) on production (Q) decreases when L gets larger or vice-versa, and it holds true for C. Therefore, change in production depends on labour and capital. The present study has developed the functional form based on the assumption of Cobb–Douglas production function as follows:

$$GDP = f(BoT, FDI, AGP, EMP) \tag{8}$$

The above functional form can be written as follows:

$$\begin{aligned} &GDP = \alpha_0 BoT^{\beta_1} FDI^{\beta_2} AGP^{\beta_3} EMP^{\beta_4} \\ &\Rightarrow \log GDP = \alpha_0 + \beta_1 \log BoT + \beta_2 \log FDI + \beta_3 \log AGP + \beta_4 EMP \end{aligned} \tag{9}$$

In the same way, equation (9) has encountered the same problem as explained in equation (6). Therefore, to remove this problem, equation (9) can be rewritten as follows:

$$\begin{aligned} \Delta \log GDP = \alpha_0 + \beta_1 \Delta \log BoT + \beta_2 \Delta \log FDI + \\ \beta_3 \Delta \log AGP + \beta_4 \Delta \log EMP + \varepsilon_t \end{aligned} \tag{10}$$

where α is the intercept term. β values s are the slope coefficients to be estimated. Δ is the difference operator and ε is the error term with 0 mean and constant standard deviation. Equation (10) has been estimated through the OLS technique.

The study applied the Brock–Dechert–Scheinkman (BDS) independence test to examine the non-linear pattern of the residual distribution that has been derived from equation (10). According to Brock et al. (1996), a sample of independently and identically distribution (i.i.d.) $\{x_t: t = 1, 2, 3, \ldots, n\}$ can be written as follows:

$$BDS = \sqrt{n-m+1}\,\frac{b_{m,n}(d)}{\sigma_{m,n}(d)} \rightarrow \mathrm{N}(0,1) \tag{11}$$

where $b_{m,n}(d) = C_{m,n}(d) - \mathrm{C}_{1,n-m+1}(d)^m$, $C_{m,n}(d)$ and $C_{1,n-m+1}(d)^m$ are the correlation integrals. $\sigma_{m,n}(d)$ is the standard error of $b_{m,n}(d)$. d is the distance and m is the dimension. Here, it is assumed that $d = 0.7$ and $m = 2$ to 6, which means for a given d and $m > 1$ then $C_{m,n}(d) - \mathrm{C}_{1,n-m+1}(d)^{\mathrm{m}} = 0$.

Finally, the CUSUM test has been applied to check the parameters' stability of the regression equation (10).

Result and Analysis

The outcome of equation (10) has been presented in Table 3 and the estimated coefficients of AGP are found to be positively significant in BIMSTEC and its member countries, which means a 1% change in AGP, GDP changes accordingly. Thus, AGP is recognized as a significant determinant that has the power to influence GDP in this case. Additionally, the BIMSTEC countries are efficient in agricultural activities due to their geographical location, good weather conditions, fertile agricultural land, advanced technology, credit facilities and government support towards farmers. Similarly, the coefficient of FDI in India has been found to be positively significant, which means economic growth in India is positively affected by FDI, but Bangladesh has been found to be negatively significant, which means if FDI is increased by 1%, economic growth will decrease by 10.96%. Thus, policymakers should take necessary measures to correct this situation. But, it is surprising that the coefficient of FDI in BIMSTEC is positively significant, which signifies that economic growth in the BIMSTEC region is favourably affected by FDI. Likewise, the coefficient of EMP in Bangladesh, Nepal, Bhutan, Sri Lanka and Myanmar is positive and significant, which implies that GDP is significantly and favourably influenced by EMP, and this evidence is also true in BIMSTEC. However, GDP in Thailand has been found to be statistically significant and negative. But in the case of India, the effect of EMP on GDP has been found to be insignificant. Similarly, the BoT has a significant positive impact on GDP in Bhutan, Sri Lanka and Thailand, which is a good sign. However, BoT has no significant impact on GDP in BIMSTEC, India, Bangladesh and Nepal. Moreover, the estimated F-statistic has been found to be significant and positive in BIMSTEC and its members, which means the macroeconomic variables can jointly and significantly influence GDP. In addition, it has been found that economic growth in BIMSTEC has been significantly and positively affected by FDI, AGP and EMP. Therefore, it may be opined that these macroeconomic factors have the power to justify economic growth in BIMSTEC except BoT. Thus, there is ample opportunity to enhance trade and cooperation in BIMSTEC and its member countries that can promote sustainable economic growth.

Table 4 has reported the outcome of the Pearson correlation matrix for checking multicollinearity. According to Gujrati (2004) and Hair et al. (2011), the problem of multicollinearity takes place when the Pearson correlation coefficient exceeds 0.90. The table shows that the correlation coefficient between the

Table 3. Outcome of Equation (10).

Ind. Var.	β Coef.	t-stat.	Prob.	F-Statistic	Probability
INDIA					
ΔlogBOT	0.0239	0.3318	0.7408	202.4135**	0.0000
ΔlogFDI	0.2871	6.3001**	0.0000		
ΔlogAGP	0.2067	5.6929**	0.0000		
ΔlogEMP	1.1027	0.8710	0.3863		
BANGLADESH					
ΔlogBOT	0.0731	0.9005	0.3705	658.2275**	0.0000
ΔlogFDI	−0.1096	−4.5860**	0.0000		
ΔlogAGP	0.5549	4.7868**	0.0000		
ΔlogEMP	3.6033	7.8752**	0.0000		
NEPAL					
ΔlogBOT	0.0957	1.0905	0.2787	1860.112**	0.0000
ΔlogFDI	0.0167	1.6570	0.1013		
ΔlogAGP	0.6066	6.1494**	0.0000		
ΔlogEMP	2.1890	3.9452**	0.0002		
BHUTAN					
ΔlogBOT	0.0870	4.8046**	0.0000	709.1069**	0.0000
ΔlogFDI	0.0354	1.7245	0.0884		
ΔlogAGP	0.2612	3.6930**	0.0004		
ΔlogEMP	3.7231	11.2442**	0.0000		

(Table 3 continued)

(Table 3 continued)

Ind. Var.	β Coef.	t-stat.	Prob.	F-Statistic	Probability
		SRI LANKA			
ΔlogBOT	0.2169	3.3708**	0.0011	960.1650**	0.0000
ΔlogFDI	0.0429	0.7542	0.4529		
ΔlogAGP	0.8014	10.7622**	0.0000		
ΔlogEMP	3.2748	4.4285**	0.0000		
		MYANMAR			
ΔlogBOT	0.0572	1.5647	0.1215	759.3152**	0.0000
ΔlogFDI	0.0909	1.7028	0.0924		
ΔlogAGP	1.2129	11.6586**	0.0000		
ΔlogEMP	8.0063	6.6740**	0.0000		
		THAILAND			
ΔlogBOT	0.0864	7.1380**	0.0000	448.4118**	0.0000
ΔlogFDI	0.0114	0.4282	0.6696		
ΔlogAGP	0.9306	34.5282**	0.0000		
ΔlogEMP	−0.0678	−2.5835**	0.0116		
		BIMSTEC			
ΔlogBOT	−0.0155	−1.0230	0.3093	234.6500**	0.0000
ΔlogFDI	0.2048	4.8541**	0.0000		
ΔlogAGP	0.3707	6.3764**	0.0000		
ΔlogEMP	3.3884	2.9271**	0.0044		

Note: **Significant at the 5% level.

Table 4. Outcome of Pearson Correlation Matrix.

		INDIA		
Variable	ΔlogBOT	ΔlogFDI	ΔlogAGP	ΔlogEMP
ΔlogBOT	1.0000	0.7412	0.6817	0.8812
ΔlogFDI	0.8745	1.0000	0.6810	0.7354
ΔlogAGP	0.6817	0.6810	1.0000	0.6311
ΔlogEMP	0.7915	0.8945	0.6311	1.0000
		BANGLADESH		
ΔlogBOT	1.0000	0.8687	0.8680	0.8658
ΔlogFDI	0.8687	1.0000	0.8803	0.8460
ΔlogAGP	0.8680	0.8803	1.0000	0.8610
ΔlogEMP	0.8658	0.8460	0.8610	1.0000
		NEPAL		
ΔlogBOT	1.0000	0.4268	0.8836	0.7850
ΔlogFDI	0.4268	1.0000	0.4758	0.4536
ΔlogAGP	0.8836	0.4758	1.0000	0.8549
ΔlogEMP	0.7850	0.4536	0.8549	1.0000
		BHUTAN		
ΔlogBOT	1.0000	0.0621	0.6692	0.6634
ΔlogFDI	0.0621	1.0000	0.3742	0.3191
ΔlogAGP	0.6692	0.3742	1.0000	0.8488
ΔlogEMP	0.6634	0.3191	0.8488	1.0000
		SRI LANKA		
ΔlogBOT	1.0000	0.8422	0.8368	0.7072
ΔlogFDI	0.8422	1.0000	0.7343	0.8208
ΔlogAGP	0.8368	0.7343	1.0000	0.8473
ΔlogEMP	0.7072	0.8208	0.8473	1.0000
		MYANMAR		
ΔlogBOT	1.0000	−0.5391	−0.4192	−0.6480
ΔlogFDI	−0.5391	1.0000	0.8366	0.8900
ΔlogAGP	−0.4192	0.8366	1.0000	0.8465
ΔlogEMP	−0.6480	0.8900	0.8465	1.0000
		THAILAND		
ΔlogBOT	1.0000	−0.1422	0.2401	−0.2419
ΔlogFDI	−0.1422	1.0000	0.3424	−0.2729
ΔlogAGP	0.2401	0.3424	1.0000	−0.0817
ΔlogEMP	−0.2419	−0.2729	−0.0817	1.0000
		BIMSTEC		
ΔlogBOT	1.0000	0.8356	0.7544	0.8637
ΔlogFDI	0.8356	1.0000	0.7588	0.8372
ΔlogAGP	0.7544	0.7588	1.0000	0.7392
ΔlogEMP	0.8637	0.8372	0.7392	1.0000

independent variables lies between 0.3191 and 0.8945, which means the absence of multicollinearity.

The outcome of the BDS test has been presented in Table 5. The BDS test statistics of BIMSTEC and its member countries are statistically significant at the distance chosen distance (d = 0.7) and dimensions (m = 2–6), which means the standardized residuals series are not independently and identically distributed (i.i.d.).

Finally, the study has applied the CUSUM test to examine the parameters' stability and the outcome has been presented in Figure 2. The figure shows that the position of cumulative sums of scaled recursive residuals (blue line) lies in between two red lines, which means the parameters of equation (10) are stable and, thus, the estimated regression model is adequate.

Table 5. Outcome of BDS Independence Test.

Dimension	BDS Statistic	z-statistic	Normal Prob.	Bootstrap Prob.
INDIA				
2	0.1639	12.9549**	0.0000	0.0000
3	0.2680	13.1454**	0.0000	0.0000
4	0.3292	13.3652**	0.0000	0.0000
5	0.3610	13.8519**	0.0000	0.0000
6	0.3867	15.1558**	0.0000	0.0000
BANGLADESH				
2	0.1614	18.4004**	0.0000	0.0000
3	0.2617	18.7151**	0.0000	0.0000
4	0.3179	19.0298**	0.0000	0.0000
5	0.3428	19.6242**	0.0000	0.0000
6	0.3604	21.3269**	0.0000	0.0000
NEPAL				
2	0.1435	20.6244**	0.0000	0.0000
3	0.2239	20.3381**	0.0000	0.0000
4	0.2613	20.0238**	0.0000	0.0000
5	0.2690	19.8760**	0.0000	0.0000
6	0.2776	21.3723**	0.0000	0.0000
BHUTAN				
2	0.1560	24.1001	0.0000	0.0000
3	0.2524	24.3582	0.0000	0.0000
4	0.3073	24.7423	0.0000	0.0000
5	0.3327	25.5326	0.0000	0.0000
6	0.3435	27.1635	0.0000	0.0000
SRI LANKA				
2	0.1456	15.1745	0.0000	0.0000
3	0.2303	15.0583	0.0000	0.0000
4	0.2722	14.9105	0.0000	0.0000
5	0.2845	14.9147	0.0000	0.0000
6	0.2847	15.4336	0.0000	0.0000

(Table 5 continued)

(Table 5 continued)

MYANMAR				
2	0.1665	19.0033	0.0000	0.0000
3	0.2701	19.4189	0.0000	0.0000
4	0.3288	19.8799	0.0000	0.0000
5	0.3581	20.7994	0.0000	0.0000
6	0.3666	22.1082	0.0000	0.0000
THAILAND				
2	0.1412	14.9237	0.0000	0.0000
3	0.2187	14.4629	0.0000	0.0000
4	0.2558	14.1353	0.0000	0.0000
5	0.2704	14.2567	0.0000	0.0000
6	0.2737	14.8799	0.0000	0.0000
BIMSTEC				
2	0.1568	14.7945	0.0000	0.0000
3	0.2529	14.8350	0.0000	0.0000
4	0.3051	14.8475	0.0000	0.0000
5	0.3257	15.0163	0.0000	0.0000
6	0.3446	16.2678	0.0000	0.0000

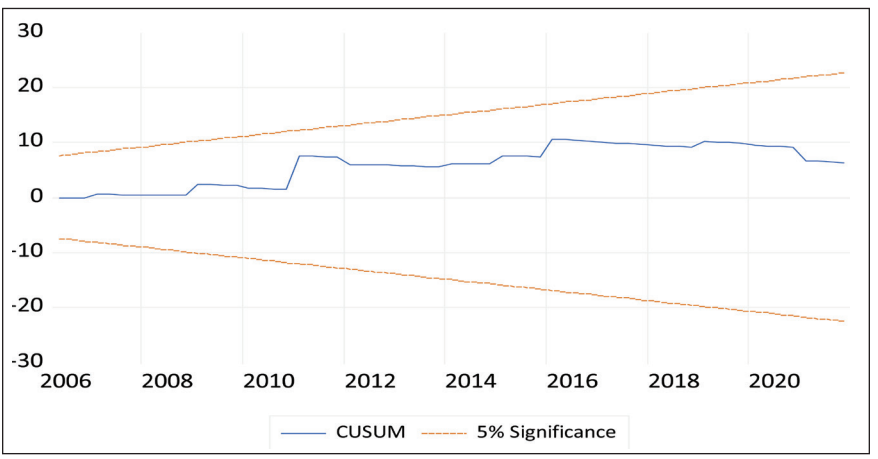

Figure 2. CUSUM Test.

Conclusion and Recommendation

AGP has played a significant role in the economic growth of BIMSTEC and its members. It has been observed that BIMSTEC is rich in its agricultural activities and added significant contributions to the region. Similarly, FDI has been considered as an important macroeconomic determinant for economic development in BIMSTEC and also in India, whereas other members are not. Likewise, employment is an essential macroeconomic factor for economic growth in BIMSTEC and

its members such as Bangladesh, Nepal, Bhutan, Sri Lanka and Myanmar. Similarly, BoT has also been recognized an important macroeconomic determinant for economic growth in BIMSTEC and its members such as Bhutan, Sri Lanka and Thailand.

Therefore, the outcome of this study is significant and helpful for policymaking. Policymakers may urge the BIMSTEC leaders for the improvement of trade cooperation among the members that will help to establish strong cooperation and peace among the members, and as a result, all member countries can gain competitive economic benefit. The study has also been suggested to develop a common platform for FDI in the region where the developed members can extend their FDI support to the less developed members and can grow in the future.

Thus, there is ample opportunity for future research in BIMSTEC in various dimensions the researchers can explore.

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References

Acaravci, A., & Ozturk, I. (2012). Foreign direct investment, export and economic growth: Empirical evidence from new EU countries. *Romanian Journal of Economic Forecasting*, *2*(2), 52–67.

Aghion, P., & Howitt, P. (1991a). Growth and unemployment. *The Review of Economic Studies, 61*(3), 477−494.

Aghion, P., & Howitt, P. (1991b). A model of growth through creative destruction. *Econometrica, 60*(2), 323−351.

Ajakaiye, O., Jerome, A. T., Nabena, D., & Alaba, O. A. (2015). Understanding the relationship between growth and employment in Nigeria. *WIDER Working Paper,* No. 2015/124.

Alagidede, P., Panagiotidis, T., & Zhang, X. (2011). Causal relationship between stock prices and exchange rates. *The Journal of International Trade and Economic Development*, *20*(1), 67–86.

Ali, A. A., Ali, A. Y. S., & Dalmar, M. S. (2018). The impact of imports and exports performance on the economic growth of Somalia. *International Journal of Economics and Finance*, *10*(1), 110–119.

Ali, M. M., & Medhekar, A. (2016). Bilateral trade through official channel between India and Bangladesh: An analysis with the use of Time series forecasting models. *Journal of Economic Cooperation and Development*, *37*(3), 135.

Antwi, S., Mills, E. F., & Zhao, X. (2013). Impact of macroeconomic factors on economic growth in Ghana: A cointegration analysis. *International Journal of Academic Research in Accounting, Finance and Management Sciences, 3*(1), 35–45.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies, 58*(2), 277−297.

Awokuse, T. O. (2007). Causality between exports, imports and economic growth: Evidence from transitional economies. *Economics Letters, 94*, 389−395.

Baines, D. (2003). Economic history in the 20th century. *London School of Economics and Political Science, University of London, United Kingdom.*

Bakari, S. (2017). The long run and short-run impacts of exports on economic growth: Evidence from Gabon.

Banik, N. (2007). The BIMSTEC-FTA and its relevance. *CSIRD Discussion Paper,* No. 36. Centre for Studies in International Relations and Development.

Barro, R. J., & Sala-i-Martin, X. (2004). Determinants of economic growth in a panel of countries. *Annals of Economics and Finance, 4*, 231–274.

Batra, A. (2010). Asian economic integration and sub-regionalism: A case study of the BIMSTEC. *International Studies, 47*(1), 1–25.

Bayraktar, N., & Wang, Y. (2006). Banking sector openness and economic growth. *Policy Research Working Paper,* No. 4019, World Bank. https://openknowledge.worldbank.org/handle/10986/9273 License: CC BY 3.0 IGO

Bhattacharya, R., & Gupta, A. S. (2015). Food inflation in India: Causes and consequences. *National Institute of Public Finance and Policy, Working Paper*, No. *151*.

Bhattacharya, S. K. (2007). Does BIMSTEC–Japan economic cooperation promote intra-regional trade? The case for free trade agreement. *CSIRD Discussion Paper,* No. 23. Centre for Studies in International Relations and Development.

Boltho, A. & Glyn, A. (1995). Can macroeconomic policies raise employment? *International Labour Review, 134*(4–5), 451–470.

Boserup, E. (1996). Development theory: An analytical framework and selected application. *Population and Development Review, 22*(3), 505–515.

Bruno, M., & Easterly, W. (1998). Inflation crises and long-run growth. *Journal of Monetary Economics, 41*, 3–26.

Burnside, C., & Dollar, D. (2000). Aid, policies and growth. *The American Economic Review, 90*(4), 847–868.

Carbaugh, R. J. (2011). *International economics* (13th ed.). Cengage Learning. https://wyamK.files.wordpress.com/2019/08/international-economics_30.pdf

Caves, R. (1996). Multinational enterprise and economic analysis. *Cambridge University Press*.

Caves, R. E. (1974). Multinational firms, competition and productivity in host country markets. *Economica, 41*, 176–193.

Chang, C., & Mendy, M. (2012). Economic growth and openness in Africa: What is the empirical relationship? *Applied Economics Letters, 19*(18), 1903–1907.

Chaudhary, G. M., Hashmi, S. H., & Khan, M. A. (2016). Exchange rate and foreign trade: A comparative study of major South Asian and South-East Asian countries. *Procedia-Social and Behavioral Sciences*, *230*, 85–93.

Chen, B., & Feng, Y. (2000). Determinants of economic growth in China: Private enterprise, education and openness. A time series analysis. SOP Transaction on Economic Research. *China Economic Review, 11*(1), 1–15.

Chia, Y. E. (2015). Export-led growth hypothesis: Empirical evidence from selected sub-Saharan African countries. *Procedia Economics and Finance, 35*, https://core.uk/download/pdf/81974455.pdf

Ciccone, A., & Jarocinski, M. (2010). Determinants of economic growth: Will data tell? *American Economic Journal: Macroeconomics, 2*(4), 222–246.

Collier, O., & Dercon, S. (2009). African agriculture in 50 Years: Smallholders in a rapidly changing world. Paper presented at the 2009 Food and Agriculture Organization Expert Meeting on "How to feed the world in 2050." ftp://ftp.fao.org/docrep/fao/012/ak983e/ak983e00.pdf

Das, A., Senapati, M., & John, J. (2009). Impact of agricultural credit on agriculture production: An empirical analysis in India. *Reserve Bank of India Occasional Papers*, *30*(2), 75–107.

Dash, R. K. (2009). Revisited export-led growth hypothesis: An empirical study on India. *South Asia Economic Journal*, *10*(2), 305–324.

Dopke, J. (2001). The employment intensity of growth in Europe. *Kiel Working Paper,* 1021. http://www.ifw-members.ifw.de/publications/theemployment-intensity-ofgrowth-in-europe/kap1021.pdf

Doppelhofer, G., Miller, R. I., & Sala-i-Martin, X. (2004). Determinants of long-term growth: A Bayesian averaging of classical estimates (BACE) approach. *OECD Economics Department Working Papers 266,* OECD Publishing.

Dritsaki, C., & Stiakakis, E. (2014). Foreign direct investments, exports, and economic growth in Croatia: A time series analysis. *Procedia Economics and Finance*, *14*, 181–190.

Dumitrescu, E., & Hurlin, C. (2012). Testing for Granger non-causality in heterogeneous panels. *Economic Modelling*, *29*(4), 1450–1460.

Easterly, W. R., & Wetzel, D. L. (1989). Policy determinants of growth: Survey of theory and evidence. *Policy, Planning and Research Working Papers Series No. 343,* World Bank*,* 1–41.

Elbeydi, K. R., Hamuda, A. M., & Gazda, V. (2010). The relationship between export and economic growth in Libya Arab Jamahiriya. *Theoretical and Applied Economics*, *1*(1), 69.

Farahmand, M. A., & Ethem, E. S. E. N. (2020). The relationship between trade and economic growth: The case of Afghanistan. *Ekonomik ve Sosyal Araştırmalar Dergisi*, *16*(1), 81–97.

Fischer, K. W. (1983). Illuminating the process of moral development: A commentary. *Monographs of the Society for Research in Child Development, 48*, 97–107.

Fischer, S. (1992). Macroeconomic stability and growth. *Cuadenos de Economica, 29*(87), 171–186.

Frankel, M. (1962). The production function in allocation and growth: A synthesis. *The American Economic Review, 52*(5), 996–1022.

Frieden, J. A., & Rogowski, R. (1996). The impact of the international economy on national policies: An analytical overview. *Internationalization and Domestic Policies,* 15.

Gokmenoglu, K. K., Amin, M. Y., & Taspinar, N. (2015). The relationship among international trade, financial development and economic growth: The case of Pakistan. *Procedia Economics and Finance*, *25*, 489–496.

Golait, R. (2007). *Current issues in agriculture credit in India: An assessment*. Reserve Bank of India.

Grossman, G. M., & Helpman, E. (1991). Quality ladders in the theory of growth. *The Review of Economic Studies, 58*(1), 43–61.

Grossman, G. M., & Helpman, E. (1992). Innovation and growth in the global economy. *International Journal of Industrial Organization, 10*(2), 323–324.

Gujarati, D. N. (2004). *Basic econometrics* (4th ed.). Tata McGraw-Hill Publishing Company Limited.

Hachicha, N. (2003). Exports, export composition and growth: A simultaneous error-correction model for Tunisia. *International Economic Journal, 17*(1), 101–120.

Hair, J. F., Black, W. C., & Babin, B. J., Anderson, R. E., & Tatham, R. L. (2011). *Multivariate data analysis* (6th ed.). Pearson.

Hemzawi, B. A., & Umutoni, N. (2021). Impact of exports and imports on the economic growth: A case study of Rwanda from 2006 to 2020. Master Thesis, Department of Business Administration, Jonkoping University, pp. 1–63.

Herman, E. (2011). The impact of economic growth process on employment in European Union countries. *Romanian Economic Journal, 14*(42), 47–67.

Ibrahiem, D. M. (2015). Renewable electricity consumption, foreign direct investment and economic growth in Egypt: An ARDL approach. *Procedia Economics and Finance*, *30*, 313–323.

Islam, N. (1995). Growth empirics: A panel data approach. *The Quarterly Journal of Economics, 110*(4), 1127–1170.

Jana, S. S., Sahu, T. N., & Pandey, K. D. (2019). Foreign direct investment and economic growth in India: A sector-specific analysis. *Asia-Pacific Journal of Management Research and Innovation*, *15*(1–2), 53–67.

Jijian, Z., Twum, A. K., Agyemang, A. O., Edziah, B. K., & Ayamba, E. C. (2021). Empirical study on the impact of international trade and foreign direct investment on carbon emission for belt and road countries. *Energy Reports*, *7*, 7591–7600.

Kang, J. W., & Dagli, S. (2018). International trade and exchange rates. *Journal of Applied Economics*, *21*(1), 84–105.

Kaur, G., Sarin, V., & Dhami, J. K. (2017). Causality between exports and GDP: An empirical evidence from BIMSTEC region. *Current Issues in Economics and Finance,* 77–94.

Khan, J., & Khan, I. (2018). The impact of macroeconomic variables on stock prices: A case study of Karachi stock exchange. *Journal of Economics and Sustainable Development*, *9*(13), 15–25.

Knight, M., Loayza, N., & Villanueva, D. (1993). Testing the neoclassical theory of economic growth: A panel data approach. *Staff Papers (International Monetary Fund), 40*(3), 512–541.

Kokko, A. (1994). Technology, market characteristics and spillovers. *Journal of Development Economics, 43*(2), 279–293.

Lee, J. W. (1995). Capital goods imports and long-run growth. *Journal of Development Economics, 48*, 91–110.

Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics, 22*, 3–42.

Madi, A. S. M., Gong, J., & Tozo, W. K. (2020). Impact of agricultural productivity on economic growth and poverty alleviation in ECOWAS countries: An empirical analysis. *Journal of Scientific Reports, 2*(1), 97–125.

Mandloi, A., & Bansal, M. (2014). Inclusive economic growth with employment generation and poverty reduction. *International Journal of Management and International Business Studies, 4*(1), 109–116.

Manh, H. P., Ngoc, V. N., & Dao, T. T. H. (2014). Relationship between economic growth and employment in Vietnam. *JED No. 222,* 40–50.

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics, 107*(2), 407–437.

Mathiyazhagan, K. M. (2005). Impact of foreign direct investment on Indian economy: A sectoral level analysis. *ISAS Working Paper,* No. 6.

Mawugnon, A. K., & Qiang, F. (2011). The relationship between foreign direct investment and economic growth in Togo (1991–2009). *Proceedings of the 8th International Conference on Innovation and Management, 7*, 1269–1273.

Maxwell, S., (2004). Launching the DFID consultation: New directions for agriculture in reducing poverty. *Department of International Development.* http://dfid-agriculture-consultation.nri.org/launchpapers/simonmaxwell.html

McKinnon, R. I. (1973). *Money and capital in economic development*. The Brookings Institution.

Mehrara, M., & Firouzjaee, B. A. (2011). Granger causality relationship between export growth and GDP growth in developing countries: Panel cointegration approach. *International Journal of Humanities and Social Science*, *1*(16), 223–231.

Mundell, R. (1963). Inflation and real interest rate. *Journal of Political Economy, 71*(3), 280–283.

Nwaolisa, E. F., & Chijindu, A. A. (2016). The relationship between index of industrial production and stock market liquidity: A co-integration evidence from Stock exchange of Nigeria's value of stock traded ratio. *Frontiers of Accounting and Finance*, *1*(1). http://dx.doi.org/10.20936/FAF/160104

Pattanayak, U., & Mallick, M. (2017). Agricultural production and economic growth in India: An econometric analysis. *Asian Journal of Multidisciplinary Studies, 15*(3), 62–66.

Phan Thúc Huân (2006). *Kinh tế phát triển, Hà Nội.* Thống Kê Publisher.

Pindyck, R. S., & Somalino, A. (1993). Economic stability and aggregate investment. *NBER Macroeconomics Annual, 8*, 259–318.

Reardon, T., Berdegue, J., Barrett, C. B., Stamoulis, K., Haggblade, S., & Hazell, P. (2006). Household income diversification into rural nonfarm activities. In Steven Haggblade, Peter Hazell, & T. Reardon (Eds.), *Transforming the rural nonfarm economy.* Johns Hopkins University Press.

Roy, S. (2020). Causal relationship between stock market and macroeconomic variables: Indian evidence. *EuroEconomica, 39*(3), 227–247.

Sahni, P., & Atri, V. N. (2012). Export-led growth in India: An empirical investigation. *International Journals of Marketing and Technology*, *2*(7), 283–298.

Sahoo, D., & Mathiyazhagan, M. K. (2003). Economic growth in India: Does foreign direct investment inflow matter? *The Singapore Economic Review, 48*, 151–171.

Sahoo, D., Mathiyazhagan, M. K., & Parida, P. (2002). Is foreign direct investment an engine of growth? Evidence from the Chinese economy. *Savings and Development, 4*, 419–439.

Sala-i-Martin, X., Doppelhofer, G., & Miller, R. I. (2004). Determinants of long-term growth: A Bayesian averaging of classical estimates (BACE) approach. *American Economic Review, 94*(4), 813–835.

Schmid, G. (2008). *Full employment in Europe: Managing labour market transitions and risks.* Edward Elgar.

Sener, S., & Delican, D. (2019). The causal relationship between innovation, competitiveness and foreign trade in developed and developing countries. *Procedia Computer Science*, *158*, 533–540.

Seyfried, W. (2011). Examining the relationship between employment and economic growth in the ten largest states. *South Western Economic Review*, *32*, 13–24.

Sharma, A., & Panagiotidis, T. (2005). An analysis of exports and growth in India: Co-integration and causality evidence (1971–2001). *Review of Development Economics*, *9*(2), 232–248.

Shaw, E. S. (1973). *Financial deepening in economic development*. Oxford University Press.

Solow, R. M. (1956). A contribution to the theory of economic growth. *Oxford Review of Economic Policy, 23*(1), 3–14.

World Bank (1990). *Adjustment lending policies for sustainable growth*. Policy and Research Series.

Yenipazarlı, A., & Yılmaz, H. (2016). Exports, economic growth and currency depreciation: An empirical study on Turkish economy (2003–2015). *International Journal of Business and Management Studies, 5*(1), 97–104.