

Financial Development, International Trade and Economic Growth Nexus (1971-2016): Examining Bangladesh Perspective

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ABSTRACT

Studies have examined economic growth mostly without inspecting the combined effect of international trade (IT) and financial development (FD). Considering Bangladesh's perspective, this study investigates the nexus of IT, FD, and economic growth. Time-series econometric data covering 1971-2016 are used. Econometric techniques that are used to meet the objectives are mainly the “Augmented Dickey-Fuller” for unit root test, “Johansen and Juselius” test for co-integration and popular VECM for checking long-run equilibrium relation and causality test. The exploratory findings of this study show that a long-run equilibrium relationship exists among the IT, FD and the growth of the economy. This study also finds unidirectional or one-way long-run causality from IT and FD to the economy's growth, and in the short-run, bidirectional causality is running from IT to Economic growth and Economic Growth to IT. Policies related to further FD and trade openness are suggested for accelerating the growth of Bangladesh economy.

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Introduction

The degree of trade openness and the level of financial development (FD) are of high priority variables in the growth of countries (Beck, 2002b; Sachs, Warner, Åslund, & Fischer, 1995). Both have been playing a crucial role in accelerating or fostering economic growth. An economy with open trade and the developed

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financial sector can quickly transfer knowledge and technology for promoting economic growth. International trade (IT) creates an opportunity for the local or domestic producers to access the massive global market. “Endogenous growth theory” emphasizes the crucial role of trade, mainly the export, on economic growth; economic growth can be enhanced by trade through innovations and research and development (Edwards, 1992; Lucas, 1998; Romer, 1986).

Bangladesh makes many policies to foster growth like trade preference and other relevant factors such as tariff rate, interest rate, Foreign Direct Investment (FDI) inflow, etc. Bangladesh's economy started its journey in 1971, but the economy grew very slowly (Uddin, Uddin & Ullah, 2019). It is trying to grow up day by day. From its beginning, Bangladesh has been a potential country, especially in the production of jute, and the jute industry has earned recognition for this country in the world market. Bangladesh has adopted export-led growth (ELG) to achieve economic acceleration and sustainable economic growth by emphasizing export. It has increased the productivity of the local economy and created employment opportunities that accelerate the higher consumption in a particular economy (Jung & Marshall, 1985).

Trade openness has both positive and significant effects on economic growth because of physical capital accumulation and technology transfer. Bangladesh has been taking structural adjustment policy (SAP) initiatives since the 1990s that open a new window for IT and FDI. By the name of SAP, Government diminished the trade barriers, taxes and duties on import and export of the raw materials, readymade garments and cottage industry instruments. Several barriers and constraints also distract from the line of IT. Bangladesh offered the infrastructural facility for the foreign investors, and it successfully drew the investors' attention, which increased FDI inflow in Bangladesh over time (Faisal, 2020). Because of the openness of trade, the economy of Bangladesh started to drive its way (Islam, 2001; Manni & Afzal, 2012).

Bangladesh is a densely populated country. Extreme poverty and lack of technical education make its labour cheaper than most other countries in the world (Ara, Shahed, Rahman, Ahmad, & Das, 2020). Although Bangladesh has an energy crisis, the government always arranges its best efforts to facilitate the FDI and boost the manufacturing sector. Many export processing zones with all necessary facilities like communication, energy facility, infrastructural facility, safety and security, and less complexity in the transportation and establishing world-class ports (sea and air) can be examples of positive government efforts. Some domestic owners of the garments industry also started their business as sub-contractors of large companies, which also positively affected the growth of Bangladesh's economy.

After the openness of trade, the economy of Bangladesh started to improve its growth rates, so financial institutions needed to develop over time. Many empirical studies (Çetinkaya, Acet, & Erdoğan, 2011) found a positive correlation between FD and economic growth, though (Singh, 1997) argues that macroeconomic instability increased by FD; hence, economic growth decreased. However, the financial restricted structure of the developing countries lag behind from having

full advantage of the transfer of technology; thus, some of the countries jumped from the "world production frontier" (Aghion, Howitt, & Mayer-Foulkes, 2005). The financially underdeveloped countries are trapped in a vicious circle, where poor developed economic acceleration leads to poor financial structure and poor financial structure leads to poor economic acceleration (Fung, 2009). "Endogenous growth theory" proved that for fostering the economic acceleration, the crucial factors are: long-run economic growth, technological innovation, and transmission (Bencivenga & Smith, 1991; Greenwood & Jovanovic, 1990).

The reason for examining the relationship among FD, IT and GDP of Bangladesh lies in the empirical findings. While observing the trend of the variables, the following Figure 1 illustrates a relatively positive trend. Eventually, it is important for both academic and policy purposes to evaluate the relationship among these three economic indicators.

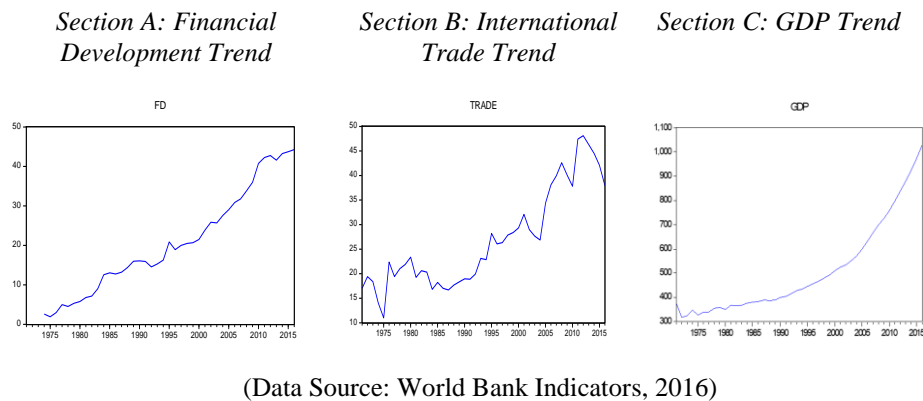


Figure 1: Financial Development, International Trade and GDP Trend of Bangladesh from 1971 to 2016

Section A of Figure 1 shows the financial development trend in Bangladesh where an upward trend was observed from 1971 to 2016. Some measures were taken by the government that laid the foundation of such a rising in Bangladesh's economy. For instance, Bangladesh liberalized its financial structure in 1980 and tried to boost its economy with the help of a liberalized financial structure. In the 1990s, they fully reformed their financial system after the trade openness for both domestic and international investors. A board was founded to regulate and facilitate the investors, named the Board of Investment (BOI). Later on, it was converted to Bangladesh Investment Development Authority (BIDA). It reformed the monetary policy for boosting up the financial structure. The government provided financial and non-financial subsidies for power generation; export-oriented industries got exemption from various import duty in the country, zero duty rate for importing machineries for 100% export-oriented industries. With the increase of Information Technology, capital formation by domestic credit was also

increased. Several numbers of banks and financial institutes and NGOs were established in the country, which provided credit to the investors in small, medium and cottage industries. The credit from this financial sector was increased in the country after the financial liberalization in 1980.

On the other hand, section B of Figure 1 shows the international trade trend of Bangladesh since liberalization where the volume of trade increased; however, in some years, trade volumes declined due to many economic and non-economic reasons such as natural disasters, political unrests, and volatility in the foreign exchange market. Besides, the GDP growth trend is depicted in section C of Figure 1. It is clear in the figure that after the reformation of financial structure in 1980 and the trade openness in 1990, the economic growth of Bangladesh increased at a higher rate.

The study is done aiming at three main objectives, which are: Investigating the impact of a) financial development (FD) on economic growth, b) international trade (IT) on economic growth and c) checking the causality among the variables. The following section in this study reviews the literature on the variables. The next section describes the study's methodology in detail followed by the empirical results and the discussion of the findings. In the last part of this investigation, we present the conclusion and recommendations for policy formulation.

2. Literature Review

We reviewed relevant literature to find out the effects of IT, FD, and economic growth. Most of the empirical studies on this topic check both IT impacts on economic growth and FD on economic growth. This literature demonstrates mixed results: though IT has a positive rapport or relation on economic growth, the rapport of FD is inconsistent with economic growth. A significant number of authors found a positive connection in their studies, but some also found negative connection.

The IT and GDP growth relationship is still debatable in the Bangladesh context. According to Begum, Salahuddin, Chowdhury, and Wahid (2018), FDI and economic growth are positively related, and a bidirectional causality exists. Siddiquee and Rahman (2021) examined how the economic growth of Bangladesh has been influenced by IT, FD, capital formation (CF), and the labor forces (LF) both in the short and long run. They trailed four techniques: time series unit root tests, Johansen maximum likelihood estimation test, the Dynamic Ordinary Least Squares (DOLS), and the variance decomposition analysis technique; they proposed a mixed result of FD but none for IT on IT GDP growth in the long run and short run. Some other studies, for instance, Asghar and Hussain (2014), also found similar results. On the other hand, Rahman and Shahbaz (2011) found that FDI have an inverse effect on growth in the long run; however, FD variable and the interaction term between FD and FDI (FD*FDI) have optimistic influence on GDP growth. Zobair (2021) showed that FDI has strongly influenced the Bangladeshi economy's growth.

A proper measure is necessary for the IT and the FD of Bangladesh for the policymakers. Practically this is an interest to examine how these indicators

(International Trade and Financial Development) affect the economic growth of Bangladesh. It creates the necessity to investigate the variables regardless of recent data of Bangladesh. J. Z. Shan, Morris, and Sun (2001) said that acute FD and economic growth is “an egg and chicken problem,” and both elements are highly related to each other. Several researchers have investigated the relationship between IT, economic growth, and FD in the last few years. For the reader's convenience, the literature review of FD and economic growth is arranged into two parts based on positive and negative findings.

Besides, similar findings are also found for other countries and regions. For instance, Yucel (2009) investigated the relationship of causality among trade openness, capital formation and economic growth in Turkey. The study found short-run Granger causality. The findings of the study show that there are strong evidences of the long-run relationship between financial development and economic growth in developing countries. There exists bi-directional causation between financial development and FDI. Furthermore, trade openness has an impact on financial development in all the countries, and this calls for the introduction of effective policy measures to promote trade between countries.

A bi-directional short-run causal association is found in the variables, where an economic policy for FD and trade openness significantly affects economic growth. Some believe that a complementary relationship exists between economic growth and FD, where a bi-directional causal relation is found between economic growth and FD (Blackburn, Bose, & Capasso, 2005; Blackburn & Hung, 1998). Moreover, homogeneity in the causal relation is found by Fowowe (2011) where a bi-directional causal relationship exists in FD and economic growth. The FD plays a vital role for stimulating the higher growth of the economy in sub-Sahara Africa (SSA). As study (Ahmed & Wahid, 2011a) reveals, FD is an ‘engine of growth’ for SSA. The study further found long-run associations between the two variables FD and economic growth by using data for 15 SSA countries (Ahmed & Wahid, 2011b). The world's 2nd largest economy (China) is investigated by Faisal, Muhammad, and Tursoy (2017) where the empirical result shows that a fundamental role is played by FD and economic growth in the fast-growing economy of China.

On the other hand, many studies proposed unidirectional causality from FD to trade liberalization for different regions. For instance, Sun, Tariq, Haris, and Mohsin (2019) estimated panel Autoregressive lag distribution (ARDL) model for SAARC countries and found unidirectional causality from FDI inflows to economic growth. Qamruzzaman, Karim, and Jianguo (2019) examined the asymmetry causality test of Bangladesh over the 1975-2017 period and found unidirectional causality between FD and economic growth, economic growth and FDI. Additionally, the symmetry causality test settles bidirectional causality between FD and economic growth and unidirectional causality running from FDI and inflation to economic growth.

Another research of Menyah, Nazlioglu, and Wolde-Rufael (2014) for 21 African countries found unidirectional causality from FD to trade liberalization in Sudan, Burundi, Senegal, Malawi, and Niger. Inverse causality runs from Trade

Openness to FD in Gabon. But remaining 16 countries have no causal relation in any direction to the variables and trade openness, which implies that trade openness and FD have no predictive effects on each other. Empirical findings of J. Shan (2005) showed that a well-managed and functioning and liberalized finance system did not match the potential economic growth of some South Asian countries, including Japan, Korea, and China. M. K. Hassan, Sanchez, and Yu (2011) also agree with Ahmed and Wahid (2011b) that FD and economic growth impact a negative result for South Asian countries where Gross Domestic Saving (GDS) explains 15% of GDP growth. So, they concluded that domestic credit provided by the financial sector (DCPS) is less critical than GDS.

Moreover, a possible causal association exists between FD and IT (Beck, 2002a). Law and Demetriades (2006) ran a panel data analysis from 43 developing countries. The result suggested that when a country opens the capital flow in both the domestic and international sector and also liberalizes the trade, it automatically enhances FD. This positive impact also falls into the economic growth of the country. Frankel and Romer (1999) also found the relationship between IT and the economic growth of a country. The long-run relationship is found in 12 countries out of 13 countries of sub-Saharan countries; a long-run causality is found among eight countries and bidirectional causal is found in six countries. Strong evidence was provided by them irrespective of FD and economic growth from sub-Sahara countries (Ghirmay, 2004).

The findings of the study also go through the “Ricardian theory” and popular “Heckscher-Ohlin (H-O) theory”. H-O theory shows evidence of a relationship between IT and economic growth. According to “Ricardian theory” IT makes an economy specialize in the sector where it has a comparative advantage, thus, leads to economic growth. According to the H-O model "a nation will export the commodity whose production requires the intensive use of the nation's relatively abundant and cheap factor and import the commodity whose production requires the intensive use of the nation's relatively scarce and expensive factor". Hossain (2011) investigated the variables CO₂ emission, trade openness, energy, urbanization, and GDP but in the investigation, the author found that there was no long-run relationship among the variables in the newly industrialized countries; unidirectional causality is found in the paper from trade to economic growth. In an investigation on Bangladesh perspective, Adhikary (2010) found a long-run relation among the variables GDP growth rate, capital formation, and FDI. Also, a negative degree of trade openness is shown but it has diminishing effects on GDP. Dogan and Turkekul (2016) also found the bidirectional causal relationship between the trade and FD, which matches with findings of the present study using Bangladesh economy's data. An examination for Tunisia gives a result using data from 1970-2008 and by applying the approach of bound testing where there is no causal relation in the short-run both trade to GDP and GDP to trade. An investigation was conducted by Al Mamun and Nath* (2005) where ECM was used to find the result; also the Granger co-integration was used in the paper with data 1976-2003. They found a unidirectional long-run causality between the growth and GDP of Bangladesh. A. K. Hassan and Islam (2007) argued that trade openness

and FD have no role in alleviating poverty in Bangladesh and there is no long-run relation from trade to GDP. They get short-run causality from FD to growth and vice-versa. The authors also predicted a potentiality in the variables if two mutuality affected each other. Nasreen (2011) found interestingly neutral hypotheses; a panel co-integration is employed for the result, using two important variables from 7 selected countries in Asia.

The above discussion on the existing literature gives diversified conclusions across the globe on the nature of the relationship among GDP growth, FDI and IT. Studies related to Bangladesh using time series data and VECM have not been found. However, different studies revealed heterogeneous results regarding Bangladesh and that requires a new investigation using the latest available data.

3. Methodology

3.1. Econometrical Model

Ricardian and “Heckscher-Ohlin” models are very common in the literature. This paper uses these models to examine the variables as the following function:

$$GDP_t = f(Trade_t, FD_t) \quad (1)$$

By adding a constant (β_0) and transfer data into logarithm and adding error correction term (ε_i) the function is converted into an econometric model as follows:

$$LGDP_t = \beta_0 + \beta_1 LTrade_t + \beta_2 LFD_t + \varepsilon_t \quad (2)$$

Where GDP is used to measure economic growth, trade measures International Trade, and FD measures domestic credit provided by the financial sector (Abidin, Haseeb, Azam, & Islam, 2015; Duarte, Kedong, & Xuemei, 2017; Menyah et al., 2014). Log transformation is used here to measure the elasticity as well. In FD, the data measure all the credit provided from the bank and other financial institutions which invest in a country. All the variables are converted into a natural logarithm to remove the heteroscedasticity problem of residual series. All the data are collected from World Development Indicators data from 1971 to 2016.

3.2 Data and Data Sources

In this study, three variables are used to perform the empirical result. The data are used from the World Development Indicator (WDI) from 1971 to 2016.

Table 1: Source and definitions of the variable

Variables	Definition	Source
GDP	Per capita (constant 2010 US\$)	World Development Indicators
FD	Domestic credit provided by financial sector % of GDP	World Development Indicators
Trade	Trade % GDP	World Development Indicators

After transposing data into logarithm, they are:

$$\begin{aligned}
\text{LGDP} &= \log \text{GDP (Gross Domestic Product)} \\
\text{LFD} &= \log \text{FD (Financial Development)} \\
\text{LTrade} &= \log \text{Trade (International Trade)}
\end{aligned}$$

3.3. Econometrical Process

This paper uses modern econometrical approaches to examine the correlation among GDP, IT and FD. For doing this, firstly, we find out whether each variable has a unit root or not. The second step is checking whether the long-run relation between the variables exists or not. If a long-run relationship is found between the variables, then the VECM (Vector Error Correction Model) is used to check the relationship in the long run and short run among the variables. The software EViews is used in this analysis for empirical findings. After finding long-run cointegration, it is permitted to run the VECM model for short-run and long-run causality tests. The equations are used as the model for GDP, Trade and FD on VECM as follows:

$$\Delta \text{LGDP}_t = \alpha_1 + \sum_{i=1}^k \lambda_{1i} \Delta \text{LGDP}_{t-i} + \sum_{i=1}^k \delta_{1i} \Delta \text{LFD}_{t-i} + \sum_{i=1}^k \hat{\partial}_{1i} \Delta \text{LTrade}_{t-i} + \sigma_1 \varepsilon_{t-i} + \xi_{1t} \quad (1)$$

$$\Delta \text{LTrade}_t = \alpha_2 + \sum_{i=1}^k \lambda_{2i} \Delta \text{LTrade}_{t-i} + \sum_{i=1}^k \delta_{2i} \Delta \text{LGDP}_{t-i} + \sum_{i=1}^k \hat{\partial}_{2i} \Delta \text{LFD}_{t-i} + \sigma_2 \varepsilon_{t-i} + \xi_{2t} \quad (2)$$

$$\Delta \text{LFD}_t = \alpha_3 + \sum_{i=1}^k \lambda_{3i} \Delta \text{LFD}_{t-i} + \sum_{i=1}^k \delta_{3i} \Delta \text{LGDP}_{t-i} + \sum_{i=1}^k \hat{\partial}_{3i} \Delta \text{LTrade}_{t-i} + \sigma_3 \varepsilon_{t-i} + \xi_{3t} \quad (3)$$

where \mathcal{E}_{t-1} refers to the error correction term which derived from long run cointegrating association.

4. Empirical Results and Discussion

4.1. Descriptive statistics

Table 2 shows the descriptive statistics of the study. Maximum value, minimum value, mean and standard deviation followed by the skewness of each variable are analyzed here. For instance, maximum, minimum, and mean and standard deviation values for GDP are 6.93, 5.76, 6.17 and 0.33, respectively. For FD, they are 3.79, 0.65, 2.78 and 0.36 respectively. On the other hand, Trade has a minimum value of 2.39 and a maximum value of 3.87 with a mean value of 3.23 and a standard deviation of 0.36. The skewness of GDP, FD and Trade are shown as 2.42, -0.83 and 0.16, respectively.

Table 2: Descriptive statistics

Characteristic	GDP	FD	Trade
Max	6.93	3.79	3.87
Min	5.76	0.65	2.39
Mean	6.17	2.78	3.23
Std. Dev	0.33	0.82	0.36
Skewness	2.42	-0.83	0.16

4.2. Unit root test: Augmented Dickey-Fuller (ADF)

A condition to get the result in VECM is that all the variables must be stationary at the first difference, so ADF is used to check the variables either stationary or non-stationary (Dickey & Fuller, 1979).

$$\begin{aligned} H_0: & \text{Variables have a unit root} \\ H_1: & \text{Variables have no unit root} \end{aligned}$$

Variables under ADF are found stationary at a level with constant and trend at the 10% level of significance except for LGDP, which is insignificant at the 10% significant level. Still, all the variables are stationary at 1% level of importance in the first difference, which may also be denoted by the sign I (1) in Table 3.

Table 3: Results of unit root test

Variable	AT LEVEL		AT 1 ST DIFFERENCE	
	constant and Trend	p value	constant and Trend	p value
LGDP	-1.921138	0.6271	-13.27024	0.0000
LTRADE	-3.421015	0.0613	-8.240360	0.0000
LFD	-3.489643	0.0535	-9.780760	0.0000

4.3 Co-integration test

In this paper, the Johansen Cointegration test is used to detect whether GDP per capita, International Trade (TRADE), Financial Development (FD) are cointegrated or not (Johansen, 1988).

H₀: No cointegration

H₁: At most cointegration exist

Table 4: Results of cointegration test

<i>Hypothesized No of CE</i>	<i>Trace Statistics</i>	<i>Critical Value 0.05</i>	<i>Probability</i>
<i>None*</i>	31.15355	29.79707	0.0347
<i>At most 1</i>	13.18099	15.49471	0.1083
<i>At most 2</i>	3.360097	3.841466	0.0668
<i>Hypothesized No of CE</i>	<i>Max-Eigen Statistics</i>	<i>Critical Value 0.05</i>	<i>Probability</i>
<i>None</i>	17.97255	21.13162	0.1309
<i>At most 1</i>	9.820898	14.26460	0.2240
<i>At most 2</i>	3.360097	3.841466	0.0668

In the result given in Table 4, the cointegration shows that the variable has a long-run relationship. Though trace statistics show long-run relationships among the variables, here trace statistics value is 31.15355, which is greater than critical value 29.79707 also significant at 5% probability value, so the null hypothesis is rejected. At most 1, or at most 2-trace statistic is not significant at 5% probability value, so the null hypothesis is not rejected. But Max-Eigen statistics show there is no long-run relationship among the three variables; we cannot reject the null hypothesis because the probability value is more than 5%. Here, 4 lags interval are used to find out the Johansen Cointegration test under VECM.

4.4. VECM Findings

4.4.1. Long-run equilibrium relation

VECM reveals that there exists a long-run equilibrium relationship among the variables. Bojanic (2012a) found a long-run equilibrium relation by investigating data from Bolivia in the same variable; a large amount of data from 1940 to 2010 are taken as a sample for that investigation. The coefficient of LTRADE, LFD are negative as expected, which means that when trade increases by 1%, it increases GDP by 3.28% and GDP increases by 0.70% when FD (FD) increases by 1%. Here, 6.950 is the intercept of the model.

$$LGDP_t = 6.950 + (3.279)LTrade_t + (0.701)LFD_t + \varepsilon_t \quad (6)$$

The VECM model findings are presented below in Table 5.

Table 5: Results of VECM

Dependent Variables	ECT (coefficient)	P Value
D(LGDP)	-0.022056	0.0067
D(LTRADE)	0.045033	0.5945
D(LFD)	-0.023006	0.7423

4.4.2. Long-run causality checking under VECM

Long-run causality under VECM checks whether there exist any causal relations or not. The criteria are to make significant results, which means the casual long-run relation from independent to dependent variable, the Error Correction term (ECT) coefficient has to remain in -1 to 0 and the probability value less than 0.05. Table 5 depicts the ECT coefficient of the model where the dependent variable's (LGDP) coefficient is -0.022056, which is negative and significant at a 5% significant level. It shows the long-run unidirectional causality from TRADE, FD to GDP. Atif, Jadoon, Zaman, Ismail, and Seemab (2010) also found the same result for Pakistan. When the dependent variable is LTRADE, the ECT coefficient of this model is 0.045033, which is positive and the p-value is more than 5%. So, it is concluded that there is no long-run causality or causal relation between the independent variables and the dependent variable. In the third model, when LFD is the dependent variable, the ECT is negative, but it is not significant at the 5% significant level and so it is true that there is no causality among the GDP, TRADE and dependent variable FD.

Table 6: Results of causality test

	CHI-SQUARE (WALD TEST STATISTIC)	P VALUE
$\Delta LTRADE \rightarrow \Delta LGDP$	10.94384	0.0272**
$\Delta LFD \rightarrow \Delta LGDP$	3.826810	0.4300
$\Delta LGDP \rightarrow \Delta LTRADE$	8.067659	0.0891***
$\Delta LFD \rightarrow \Delta LTRADE$	1.231652	0.8729
$\Delta LGDP \rightarrow \Delta LFD$	4.241273	0.3743
$\Delta LTRADE \rightarrow \Delta LFD$	1.458506	0.8340

denotes significant at 5% level, *denotes significant at 10% level

4.4.3 Short-run causality checking under VECM

The VECM model also checks the short-run causality whether there is short-run causality among the variables or not (see table 6). Wald test (Dolado & Lütkepohl, 1996) is used to find the result of the short-run causality among the variables. The

criteria to detect short-run causality are that F-statistic has to be significant at a 5% significant level. Here it shows a bidirectional causality between the TRADE and GDP, which means that trade has a short-run causal relation with GDP per capita. In the meantime, we can see that another short-run causality runs from GDP to Trade at a 10% significant level. There is no other causality shown in the report; the variables are not caused by each other except GDP and TRADE at 5% or 10% significant level. It means that bidirectional short-run causality is found in the variables Trade to GDP and GDP to Trade in Bangladesh. Many studies are in the same line as our study. For instance, a unidirectional causality is found by Shahbaz, Khan, and Tahir (2013) that investigated data from the Chinese economy at a 5% significant level. It is also found in studies conducted for several countries using data from Bolivia, examining the data from 21 African countries rejecting non-causality, a null hypothesis from IT to GDP (Bojanic, 2012b; Menyah et al., 2014; Shahbaz et al., 2013).

4.5 Discussion on Findings

Johansen Cointegration Test suggested that the variables are cointegrated or have a long-run relation using trace statistic. But Max-Eigen statistics show there is no long-run relationship among the three variables; we cannot reject the null hypothesis because the probability value is more than 5%. This result is consistent with the study on Bangladesh (Adhikary, 2010). Eventually, the result of the Johansen cointegration test permits VECM to check the existence of long-run equilibrium relationships and the causality among the variables. This study finds that IT, FD, and economic growth have a long-run equilibrium relationship with GDP, different from previous studies (Menyah, Nazlioglu et al., 2014). However, Atif, Jadoon, Zaman, Ismail, and Seemab (2010) also found the same result for Pakistan. Since Bangladesh is a developing country, as per the Keynesian economic theory, international trade positively affects growth (Keynes, 1937).

The underlying mechanism is that a higher volume of international trade can be interpreted into a more inflow of foreign currencies through exports (Sun & Heshmati, 2010). Moreover, imports of capital goods positively impact export (Lee, 1995). In addition, financial development has positive impacts on economic growth, and for Bangladesh as a developing country, it is more valid. It is evident that After China, Bangladesh is the world's second-largest garment exporter. Eighty percent of export earnings come from knitwear and hosiery; other items include jute goods, home textiles, footwear, and frozen shrimps and fish. In the causality checking, we see trade and FD have a long-run causal relation with economic growth because the error correction term is negative and significant at the 5% level. In the short run, there is a bidirectional causal relation of Trade to GDP and GDP to Trade. In the context of Bangladesh, such findings reveal some historical facts as well as the theoretical justifications. A rise in GDP positively affects exports (Mehmood, 2012) through several channels. Moreover, GDP growth leads to increased demand for foreign goods and services. Likewise, international trade also positively impacts GDP (Hussain, Siddiqi, & Iqbal, 2010; Yucel, 2009).

5. Conclusion

The study checks the unit root of the variables and checks the long-run relation between variables. In the unit root test, we get stationary data at the 1st difference with the trend and intercept. The famous “Augmented Dickey-Fuller” test investigates the stationary or non-stationary. Following the unit-root test, the study investigates the long-run effects and the causal relationship between the variables; IT, FD and economic growth with data from Bangladesh from 1971-2016. So, the empirical result properly measures the acuteness that happened before and after imposing the zero-transaction cost in the FD and into the trade of the Bangladesh economy. The study finds a long-run equilibrium relationship between the variables IT, FD, and Bangladesh's economic growth by Johansen co-integration test and VECM. It reveals the long-run causality running from IT and FD to GDP. This means that the increase and decrease of trade and FD cause the increase or decrease of GDP in the long run. This study also identified a bidirectional short-run causality running from IT to GDP and GDP to IT in Bangladesh. The result shows that IT is a significant variable for the GDP growth of Bangladesh.

Implications of the study

There are both theoretical and empirical implications of the study findings. The findings reveal that financial development and international trade can be enhanced to maintain growth. Through various fiscal measures, the government of Bangladesh can strengthen its financial sector. However, tariff and non-tariff restrictions can be revised to improve trade volume, and the monetary authority can monitor the floating exchange rate. Moreover, the domestic inflation and interest rate affecting the country's capital account can also be maintained to promote trade. Further, the government should take the initiative for promoting IT like ensuring energy availability, better working environment regulation and implementation, providing interest-free loan and low-interest rate credit facilities to readymade garments sector, tannery textile, etc. And the government of Bangladesh should be more open to the restriction of IT. It should take fiscal and monetary policy to emphasize export-led growth hypotheses to promote IT and economic growth. It should also take proper measures for promoting the FD in the country.

Limitations and future research

The study has several limitations that direct toward further research in the field. One of the major limitations is the lack of incorporation of new data in this research. Moreover, the study only focused on time series data in the case of Bangladesh. However, panel data modelling can be used for a robust theoretical contribution to test the relationship among the variables. Future research can also focus on the post-pandemic (COVID-19) situation of the economy using recent data.

References

- Abidin, I. S. Z., Haseeb, M., Azam, M., & Islam, R. (2015). Foreign direct investment, financial Development, international trade and energy consumption: Panel data evidence from selected ASEAN Countries. *International Journal of Energy Economics and Policy*, 5(3), 841-850.
- Adhikary, B. K. (2010). FDI, trade openness, capital formation, and economic growth in Bangladesh: a linkage analysis. *International Journal of Business and Management*, 6(1), 16.
- Aghion, P., Howitt, P., & Mayer-Foulkes, D. (2005). The effect of financial development on convergence: Theory and evidence. *The Quarterly Journal of Economics*, 120(1), 173-222.
- Ahmed, A. D., & Wahid, A. N. (2011a). Financial structure and economic growth link in African countries: a panel cointegration analysis. *Journal of Economic Studies*.
- Ahmed, A. D., & Wahid, A. N. (2011b). Financial structure and economic growth link in African countries: a panel cointegration analysis. *Journal of Economic Studies*, 38(3), 331-357.
- Al Mamun, K. A., & Nath*, H. K. (2005). Export-led growth in Bangladesh: a time series analysis. *Applied Economics Letters*, 12(6), 361-364.
- Asghar, N., & Hussain, Z. (2014). Financial development, trade openness and economic growth in developing countries: Recent evidence from panel data. *Pakistan Economic and Social Review*, 99-126.
- Atif, R. M., Jadoon, A., Zaman, K., Ismail, A., & Seemab, R. (2010). Trade liberalization, financial development and economic growth: Evidence from Pakistan (1980-2009). *Journal of International Academic Research*, 10(2), 30-37.
- Beck, T. (2002a). Financial development and international trade: Is there a link? *Journal of international Economics*, 57(1), 107-131.
- Beck, T. (2002b). IFinancial Development and International Trade: Is There a Link?, mJournal of International Economics.
- Begum, M., Salahuddin, M., Chowdhury, M., & Wahid, A. N. (2018). Foreign direct investment-growth nexus revisited: New evidence from Bangladesh. *International Journal of Economics and Financial Issues*, 8(3), 168.
- Bencivenga, V. R., & Smith, B. D. (1991). Financial intermediation and endogenous growth. *The Review of Economic Studies*, 58(2), 195-209.
- Blackburn, K., Bose, N., & Capasso, S. (2005). Financial development, financing choice and economic growth. *Review of Development Economics*, 9(2), 135-149.
- Blackburn, K., & Hung, V. T. (1998). A theory of growth, financial development and trade. *Economica*, 65(257), 107-124.
- Bojanic, A. N. (2012a). The impact of financial development and trade on the economic growth of Bolivia. *Journal of Applied Economics*, 15(1), 51-70.
- Bojanic, A. N. (2012b). The impact of financial development and trade on the economic growth of Bolivia. *Journal of Applied Economics*, 15(1).

- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association*, 74(366a), 427-431.
- Dogan, E., & Turkekul, B. (2016). CO2 emissions, real output, energy consumption, trade, urbanization and financial development: testing the EKC hypothesis for the USA. *Environmental Science and Pollution Research*, 23(2), 1203-1213.
- Dolado, J. J., & Lütkepohl, H. (1996). Making Wald tests work for cointegrated VAR systems. *Econometric Reviews*, 15(4), 369-386.
- Duarte, L. d. R. V., Kedong, Y., & Xuemei, L. (2017). The Relationship between FDI, Economic Growth and Financial Development in Cabo Verde. *International Journal of Economics and Finance*, 9(5), 132.
- Edwards, S. (1992). Trade orientation, distortions and growth in developing countries. *Journal of development economics*, 39(1), 31-57.
- Faisal, F., Muhammad, P. M., & Tursoy, T. (2017). Impact of Economic Growth, Foreign Direct Investment and Financial Development on Stock Prices in China: Empirical Evidence from Time Series Analysis. *International Journal of Economics and Financial Issues*, 7(1).
- Fowowe, B. (2011). The finance-growth nexus in Sub-Saharan Africa: Panel cointegration and causality tests. *Journal of International Development*, 23(2), 220-239.
- Frankel, J. A., & Romer, D. (1999). Does trade cause growth? *American economic review*, 379-399.
- Fung, M. K. (2009). Financial development and economic growth: convergence or divergence? *Journal of International Money and Finance*, 28(1), 56-67.
- Ghirmay, T. (2004). Financial Development and Economic Growth in Sub-Saharan African Countries: Evidence from Time Series Analysis. *African Development Review*, 16(3), 415-432.
- Greenwood, J., & Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *Journal of political Economy*, 98(5, Part 1), 1076-1107.
- Hassan, A. K., & Islam, M. R. (2007). Temporal causality and dynamics of financial development, trade openness, and economic growth in Vector Auto Regression (VAR) for Bangladesh, 1974-2003: Implication for poverty reduction. *Journal of Nepalese Business Studies*, 2(1), 1-12.
- Hassan, M. K., Sanchez, B., & Yu, J.-S. (2011). Financial development and economic growth: New evidence from panel data. *The Quarterly Review of economics and finance*, 51(1), 88-104.
- Hossain, M. S. (2011). Panel estimation for CO 2 emissions, energy consumption, economic growth, trade openness and urbanization of newly industrialized countries. *Energy Policy*, 39(11), 6991-6999.
- Islam, S. (2001). *The textile and clothing industry of Bangladesh in a changing world economy*: Egully. com.
- Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of economic dynamics and control*, 12(2-3), 231-254.

- Jung, W. S., & Marshall, P. J. (1985). Exports, growth and causality in developing countries. *Journal of development economics*, 18(1), 1-12.
- Law, S.-H., & Demetriades, P. (2006). Openness, institutions and financial development. World Economy and Finance Research Programme, Birkbeck, University of London.
- Lucas, R. E. (1998). On the mechanics of economic development. *Econometric Society Monographs*, 29, 61-70.
- Manni, U. H., & Afzal, M. N. I. (2012). Effect of trade liberalization on economic growth of developing countries: A case of Bangladesh economy. *Journal of Business Economics and Finance*, 1(2), 37-44.
- Menyah, K., Nazlioglu, S., & Wolde-Rufael, Y. (2014). Financial development, trade openness and economic growth in African countries: New insights from a panel causality approach. *Economic Modelling*, 37, 386-394.
- Nasreen, S. (2011). Export-growth linkages in selected Asian developing countries: evidence from panel data analysis. *Asian Journal of Empirical Research*, 1(1), 1-13.
- Qamruzzaman, M., Karim, S., & Jianguo, W. (2019). Revisiting the Nexus Between Financial Development, Foreign Direct Investment and Economic Growth of Bangladesh: Evidence from Symmetric and Asymmetric Investigation. *Journal of Sustainable Development Studies*, 12(2).
- Rahman, M. M., & Shahbaz, M. (2011). Foreign direct investment-economic growth link: the role of domestic financial sector development in Bangladesh. *Academy of Taiwan Business Management Review*, 7(2), 104-112.
- Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of political economy*, 94(5), 1002-1037.
- Sachs, J. D., Warner, A., Åslund, A., & Fischer, S. (1995). Economic reform and the process of global integration. *Brookings papers on economic activity*, 1995(1), 1-118.
- Shahbaz, M., Khan, S., & Tahir, M. I. (2013). The dynamic links between energy consumption, economic growth, financial development and trade in China: fresh evidence from multivariate framework analysis. *Energy economics*, 40, 8-21.
- Shan, J. (2005). Does financial development 'lead' economic growth? A vector auto-regression appraisal. *Applied Economics*, 37(12), 1353-1367.
- Shan, J. Z., Morris, A. G., & Sun, F. (2001). Financial Development and Economic Growth: An Egg-and-Chicken Problem? *Review of international Economics*, 9(3), 443-454.
- Siddiquee, M. N., & Rahman, M. M. (2021). Foreign direct investment, financial development, and economic growth nexus in Bangladesh. *The American Economist*, 66(2), 265-280.
- Singh, A. (1997). Financial liberalisation, stockmarkets and economic development. *The Economic Journal*, 107(442), 771-782.
- Sun, H.-p., Tariq, G., Haris, M., & Mohsin, M. (2019). Evaluating the environmental effects of economic openness: evidence from SAARC

- countries. *Environmental Science and Pollution Research*, 26(24), 24542-24551.
- Yucel, F. (2009). Causal relationships between financial development, trade openness and economic growth: the case of Turkey. *Journal of Social sciences*, 5(1), 33-42.
- Zobair, S. A. M. (2021). Nexus between foreign direct investment, foreign aid, foreign remittance and economic growth in Bangladesh: Analysis of association.