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Does Insurance Promote Economic Development? Evidence from Bangladesh

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Abstract

Purpose: The study strives to explore whether insurance companies contributes to the economic development of Bangladesh.

Methodology: To achieve the objective, this study employed time series data for the period of 1984-2021. FMOLS and DOLS analysis techniques along with granger causality test have been employed to investigate whether insurance can contribute to economic development.

Findings: This study found that insurance sector induces economic development of Bangladesh. Findings also indicate that gross capital formation, trades openness, and total debt have statistically significant positive impact while real interest rate, exchange rate, and population growth have significant negative effects on economic growth. Granger causality test reveals bidirectional causal affiliation between insurance and economic development.

Practical Implications: Findings of this research suggests that policy-makers and governments should make efforts to increase, encourage, and ensure the services to insurance policyholders which will lead to better financial performance of insurance industry that in turn will promote economic development of the country.

Originality/Value: This study explored the positive impacts of insurance industry on the economic development. No in-depth study was conducted in Bangladesh, particularly on exploring the positive effects of insurance industry.

Key Words: Insurance; Economic growth; Granger causality; Bangladesh

Introduction

Insurance industries work as risk transfer mechanism for hazard controllers from a couple of decades and mostly impacting economic growth of countries (Peleckienė, et al., 2019). The insurance industries are usually used as a precaution against the risk of monetary losses both small and big damage in one's life and insured property that are caused by third-party unwillingly. Although the fundamental objective of insurance industry is to protect and share responsibility by common co-authority in ensuring an individual against unexpected risk, the growth of insurance companies has an important impact on economic development.

By providing appropriate risk shifting application, vibrant and robust insurance segment contributes to preserve an economy to abbreviate the financial shock. Robust insurance

segment is one of the largest chunks of investable fund supplier in an economy through using advantages of insurance contingent character of accountability instead of on demand feature. Ali (2020) and Mall (2018) argued that insurance industries are the remarkable parts of financial markets that contribute to country's economic progress by providing role of intermediary, provider of financial services, and distinguishing risk move from the society. By defending the poor against security vulnerabilities, risks to their way of life, and catastrophic losses, insurance industries also combat poverty. The poor, on the other hand, have the ability to use riskier methods to boost income and consumption as well as amass assets. Due to have such features of insurance policy, insurance companies are getting familiarity in Bangladesh. Bangladesh is a huge nation with a sizable population that lives in extreme poverty, making the penetration of insurance an urgent necessity. By encouraging a culture of saving among a significant portion of the rural population and contributing to economic development on their own, insurance companies' inclusion expands the financial system's resource base. After the independence of the country, two nationalized insurance companies emerged in the country, and later on, private sectors of insurance companies entered into the market and got expanded. Bangladesh belongs to 44 non-life insurance (Sadharan Bima) businesses where total number of insurance industries is 78 (Bangladesh Bank, 2019). Additionally, Bangladesh's economy consists of a huge population, frequent natural disasters, and low income per capita. Being a developing economy, insurance policies are required as a safeguard to avoid financial loss of Bangladesh's peoples and organizations. However, unparalleled development chance is remaining in insurance segment allowing for its animated extension, underinsured economy, and anticipated industrial revolution that will be directly led to economic expansion of Bangladesh.

Economic significance of vibrant insurance industry is alike other financial sectors, for example stock market and the banking sectors in Bangladesh. Due to inherit risk in every economic and social activity, the economic necessities of insurance industry cannot be denied such as insurance provides financial securities on individuals and companies' properties at a micro-level. Along with this, at a macro level, insurance assist government to minimize the financial losses, success in business endeavours which in turn stabilize economic growth of the country (Babbuli and Bello, 2018). From an economic viewpoint, insurance encourages people, enterprises and industrialists so that they can keep away from the need of freezing money to prepare different possibilities because of reimbursing fixed contribution and financial protection risk is guaranteed. In addition, insurance allows businesses, industries, and numerous different associations to work for huge scope. Moreover, chunk of insurance

funds is invested into industrial and government securities, which in turn meets the financial demand of business and government that flourishes country's economic growth.

However, there is scarcity of the empirical studies on the impact of insurance growth on economic development in Bangladesh. Even, those scarce researches observed mixed evidences on impacts of insurance industry on economic development. Some found positive impacts (Peleckiene et al. 2019), some found adverse impacts (Zouhaier, 2014) while some found no impacts (Chang et al. 2013) of insurance on economic development. These mixed evidences create an avenue for the researcher to establish the role of insurance on economic development. In addition, insurance impacts on economic growth vary from countries to countries. In the context of Bangladesh, studies on insurance sector is scarce, even those studies are descriptive in nature (Ali, 2020). This study aims to fill these research gaps and this is where the novelty and originality of this work lies. Hence, the effort to this research study is to find out influence of insurance industries growth on economic development of a developing country. The research question arises as whether and how does the growth of insurance industry impact on economic development? Therefore, novel contribution of the study is diverse. Firstly, this study will establish a link between insurance industries growth and economic development of developing countries. Secondly, this study will generate knowledge for the researchers, and will add to literatures of the issue of connection between growth of insurance industries and economic development. Thirdly, results of this paper will help policy-makers to pay attention on insurance policy and services that will increase good financial performance which in turn will increase economic growth as well.

Literature Review

Theoretical Framework

Growth Theory for Insurance: The term economic growth can be defined by aggregating the level of production of a country for a specific period that is dignified by GDP. Growth theory mainly emphasizes standard quality of life and rise of production capacity (Adamopoulos, 2010). Endogenous growth theory denotes that economic growth is possible if investments are made in innovation, knowledge, and human capital. Also, the theory describes that every person is risk-averse. Therefore, absence of insurance industry has the tendency to underproduction. As each financial activity has a specific degree of vulnerability, organizations may be averse to accept the business risk. Also, in the event of unanticipated damages for probable redistribution of labor and capital, organizations become unable to

evaluate risk (Emamgholipour *et al.*, 2017). As an insurance company is a financial institution, it transforms random and unpredictable losses by premium. Due to have risk-sharing nature of insurance companies, it increases level of self-reliance of investors. In addition, risk-sharing nature permits organizations to undertake risky business which in turn improves economic development. Moreover, businesses will be capable of employing their premiums in final products. In short, risk-taking behaviours in the society of insurance industry indicate the precondition for all economic deeds (Olayungbo and Akinlo, 2016).

Finance-Growth Nexus Theory: According to the finance-growth nexus theory, financial development, which channels saving into investment, capital productivity, saving rate, and technological innovation, is what causes economic growth (Levine, 1997). In comparison to other financial intermediaries, insurance serves a variety of economic functions. For example, insurance industry, among others, plays a substantial part in the financial system's operation as a risk management tool. By issuing policies, they collect money from people and then transfer it to the deficit economy for investment. In their capacity as risk indemnifiers, they stabilize the financial system by covering the costs of those people and businesses who sustain a loss. As a result, more products and services are purchased by consumers, which boost output, employment, and ultimately economic growth. To put it another way, it fosters economic growth by creating a climate that is more secure for investment and innovation.

Previous Studies: Arena (2008) used a time-series dataset of 56 nations for the period of 1976-2004 and found that insurance industry positively co-related with economic development. The authors also observed that non-life insurance has a larger influence on developed nations than developing nations. Using data from 1980-1996, Webb *et al*. (2002) observed the influence of insurance business on economic development and concluded that life insurance business is positively co-related whereas no relationship exists between non-life insurance and economic development.

In the context of European economies, Peleckiene *et al.* (2019) employed a panel dataset of 2004-2015 and detected that the insurance penetration has a positive link with economic development. Authors also observed the positive impacts of insurance penetration on developed countries' economic growth. In a similar study, using cross countries data of 2000-2012, Phutkaradze (2014) examined the impact of insurance company penetration on the economic development of post-transition nations and found that insurance penetration has an insignificant negative influence on economic development. Employing panel data of 1970-2013 of African countries, Olayungbo and Akinlo (2016) observed a dynamic link between insurance penetration and economic development. The authors observed short-run negative as

well as long-run positive relations for South Africa, Kenya as well as Mauritius. Using time-series data of 2003-2008, Ndalu (2016) examined the influence of insurance penetration on economic development of Kenya and found that insurance penetration positively stimulates economic development of the country.

Employing data from 1990-2017, Mdanat *et al.* (2019) inspected effects of insurance activity on per capita GDP in Southern Mediterranean countries. Authors found that insurance activity, measured by investment, has a negative impact on that countries' per capita GDP. Using panel data of 1967-2014, Lee *et al.* (2018) investigated the influence of insurance on economic growth in 123 nations of the globe. Authors found that insurance development has significant causal impacts on economic growth. Insurance development has an indirect impact on economic development because development of insurance relies on insurer's investment performance. Also, authors argued that development of insurance industries and their impact on economic growth is varied from country to country due to different locations and initial income levels. These findings encourage further research to re-examine the relationship between insurance and economic development.

Using data of 2002-2017, Singhal et al. (2021) investigated the effect of insurance markets growth on economic growth in 37 Asian nations. Authors estimated that growth of insurance industries has casual relation with economic development. Using data of 2006-2016, Apergis et al. (2020) examined the affinity between insurance industries and economic growth of OECD economies. Authors found that there is no significant association between insurance and economic growth. Employing data from 1990-2017, Devarakonda (2016) inspected effects of insurance penetration activity on economic growth in India and observed that linear relationship exists between the issues. Similarly, Dash et al. (2018) employed a time-series dataset of 1980-2014 and examined affinity between insurance market penetrations on Eurozone nation's economic growth and found a bio-direction causality connection between the issues, though these outcomes are non-uniform across the Eurozone economies.

Contrary to the positive findings, there are some studies examined adverse impacts of insurance on economic development. According to Haiss and Sümegi (2008) insurance impede economic progress in any nation due to morale and moral hazard issues among covered people. Using a Fixed Effect Model, Zouhaier (2014) investigated the connection between insurance sector growth and economic development of 23 OECD nations. Author found that total insurance has an adverse impact on economic growth. Using panel data from 2004-2014 of 8 African countries, Asongu and Odhiambo (2020) observed that increases in both life and non-life insurance have detrimental overall impacts on economic expansion.

Yet, some studies found no impact of insurance on economic development. Using time series data of 1997-2012, Cristea et al. (2014) examined causal relationship between insurance and economic growth in Romania and found that there is no association between insurance and economic growth. Similarly, employing panel data from 1979-2006, Chang et al. (2013) investigated insurance activity and economic growth of 10 OECD nations and found that there is no causal link between insurance and economic growth for Belgium, Canada, Italy, and Sweden. Employing time series data from 1970-2008 in Nigeria, Omoke (2012) examined the relationship between insurance and economic growth and found that there is no correlation between the issues.

Above literatures suggest that there are mixed evidences on impacts of insurance industry on economic development. Some found positive impacts, some found adverse impacts while some found on impacts of insurance on economic development. These mixed evidences create an avenue for the researcher to establish the role of insurance on economic development. In addition, insurance impacts on economic growth vary from countries to countries. In the context of Bangladesh, studies on insurance sector is scarce, even those studies are descriptive in nature. For instance, Ali (2020) theoretically pointed out the challenges, prospects role of insurance in Bangladesh. Mamun (2016) described the problems and prospects of insurance companies in Bangladesh. Thus, to the best of the knowledge of the researcher, in the context of Bangladesh, no studies have found to examine empirically the impacts of insurance industry on economic development of Bangladesh. Therefore this study aims to fill these important research gaps.

Data and Methodology

Data Description and Their Sources: In this study, time series data for the period 1984-2021 of Bangladesh have been employed. The dependent variable of interest is economic growth which is measured by GDP percentage, for which data are obtained from World Development Indicators (WDI). In case of independent variable, this study considered insurance growth which refers to a country's level of insurance industry's development. Thus, this study considered total number of insurance institutions, for which available data of 1984-2021 are obtained from, Bangladesh Insurance Association (BIA) and Federal Reserve Economic Database (FRED).

Along with these, this study used some control variables, for instance, gross capital formation (percentage to GDP), trade openness, total debt, real interest rate, exchange rate,

and total population, for which data are obtained from World Development Indicators (WDI). A list of employed variables, their measurements, legends and data sources are given Table 1.

Table 1. List of employed variables, their measurements, legends, and sources.

Variables	Measurement	Legend	Data source
Economic Development	GDP (annual percentage)	ED	WDI
Insurance Growth	Total Number of Insurance Institutions	IN	FRED
Control variables	Gross Capital Formation (Percentage to GDP)	GCF	WDI
	Trade openness (Sum of Export +Import) Percentage	TO	WDI
	Total Debt (Percentage to GDP)	TD	WDI
	Real Interest rate (annual Percentage)	INT	WDI
	Exchange Rate (USD)	EXC	WDI
	Total Population	POP	WDI

Source: Prepared by the author

Variables Selection

Dependent Variable: Economic growth, dependent variable of this study, refers to an increase in national income and level of production in a given period. Kitov (2009) defined economic development as the long-term expansion of economic efficiency. A number of authors used GDP as a proxy of economic development in their studies (Kitov, 2005; Kira, 2013). Arguing similar, GDP percentage has been used as a proxy measure of economic development in the present study.

Independent Variable: *Insurance growth:* Economic development is dependent on investments that are made with saved money. People's savings are mobilized through insurance into investments for economic expansion. They bolster the nation's capacity for taking risks and provide long-term funding for the infrastructure of development. Additionally, insurance facilitates trade and commercial activity promotion, loss mitigation, and financial stability, all of which contribute to economic development. Moreover, insurance companies aid in lowering borrowing costs that enable larger investments, lower tax rates for citizens, and support job growth and economic development by purchasing and holding municipal bonds on behalf of state and local governments. Thus, positive link between insurance and economic growth is expected in this study.

Control Variables

Gross Capital Formation: *G*ross capital formation has been considered as a control variable in this study. For the purpose of producing goods and services, countries require capital goods to replace their outdated equipment. A country's output will suffer if it is unable to replace obsolete capital equipment. When an economy's capital formation is higher, it has a greater capacity to increase its total revenue more quickly. In addition, macroeconomic policy sees gross fixed capital formation, which is the largest component of domestic investment, as an important mechanism that could speed up economic growth. Reddy and Ramaiah (2020) found positive relationship between gross capital formation and economic growth. Likewise, this research expects positive sign of gross capital formation in economic development.

Trade Openness: Trade openness has consistently contributed, either slightly or significantly, to economic progress in both emerging and established nations. In light of this, trade openness makes it easier to allocate resources effectively through the use of comparative advantage, which raises income levels (Mallick & Behera, 2020). The neoclassical model of international trade enlightens that trade can benefit two nations with absolute and comparative cost advantages because each country specializes in producing the good that it can manufacture at a lower cost which leads to increase economic growth. Mallick and Behera (2020) stated that the degree of trade openness affects the transfer of new technologies, which helps advance technology and boost productivity. Hence, in this research, a positive relation is expected between trade openness and economic development.

Total debt: Total government debt is considered in this study as one of the control variables. To fund investments in public services like transportation and education, the government borrows money. It is feasible that the government debt will boost capacity for production and facilitate faster economic growth. According to the neoclassical growth theory, a higher level of debt is directly associated with a faster rate of economic expansion. This is due to the expectation that more investment will result from the usage of the borrowed funds. The public debt would appear to promote investment over time and this, in turn, would seem to indirectly boost economic development. This contribution to economic development has been considerable both directly and indirectly through its effect on investment (Saifuddin, 2016). Therefore, it is predicted that total government debt will have a positive impact on economic development.

Real Interest Rate: Interest rate is seen as a significant element influencing investing and saving. Interest rates are commonly acknowledged to have a substantial impact on a nation's capacity to save and invest. When interest rates go up, people tend to save more of their money because doing so increases their disposable income, which in turn increase economic growth. According to Moyo and Pierre (2019) interest rates do have a favourable effect on economic growth. Arguing similar, a positive relationship between real interest rate and economic development is expected in this study.

Exchange Rate: The relative level of economic development of a nation is significantly influenced by a variety of factors, including currency exchange rates. In foreign markets, a currency with a higher value makes imports less expensive and exports more expensive. Due to the unstable exchange rate, a number of industries, especially the banking industry, experience its consequences. However, according to the theory of optimum currency areas, a fixed exchange rate system can boost trade and output growth by depreciating the currency and lowering the risk premium, while also encouraging investment by decreasing monetary value with interest rates, resulting in rising economic growth. Berg et al. (2012) found that exchange rate negatively associated with economic growth. As such, exchange rate has been considered in the model and a negative sign of exchange rate on economic development has been expected.

Total Population: In less developed nations, economic stagnation is frequently attributed to rapid population increase. Due to an increase in the global population, capital is being diverted to non-productive areas, which leads to an economic undercapitalization (Crenshaw, 1997). Moreover, increased population in economically impoverished and technologically backward economies reduces production by lowering capital accessibility per capita. Thereby, this leads to decreasing production and decreasing outcomes. Easterlin (1967) observed a direct correlation between population expansion and a decrease in the amount of available natural resources, as well as a reduction in private and public capital formation. Therefore, total population has been incorporated and negative sign of population growth expects in this study.

The Model: This study is to investigate the effects of insurance growth on economic development of Bangladesh and employs fully modified ordinary least square (FMOLS) and dynamic least squares (DOLS) to achieve the objective. Based on literatures, this study develops the following model:

$$ED_t = \alpha(IN_t) + \beta X_t + \eta_t \quad (1)$$

In above equation (2), ED_{it} is dependent variable which presents economic development and IN_t is main independent variable, insurance growth and α is coefficient. X_{it} denotes control variables' vector i.e., GCF_t gross capital formation; TO_t signifies trade openness; TD_t implies total debt; INT_t signifies real interest rate; EXC_t denotes exchange rate; POP_t presents annual percentage of population growth; and η_t is residual error term; t denotes time index.

Results and Discussion

Descriptive Statistics: Table 2 exhibits the summary statistics of employed variables. In this study, dependent variable is economic development (ED), measured by GDP annual growth rate and main independent variable of interest is insurance, measured by number of insurance industry. In case of dependent variable, ED, a mean of 5.275 with a maximum of 7.882 and minimum of 2.416 along with lower standard deviation have been observed which indicates a lower variability. For repressors variable, IN, this study observed a mean 44.184 value of with a maximum 81 and minimum of 3. In case of GCF, average of 23.622 with a maximum of 32.214, minimum of 15.473, and lower level of standard deviation have been found. For TO, average of 29.720 with a maximum of 48.111, minimum of 16.688, and low level of variability have been found. Similarly, a lower standard deviation of TD, which consisted to average of 13.636 with a maximum of 38.538, minimum of 4.636 and lower-level variability of INT which mean of 5.359 with a maximum of 13.741, minimum of -13.642 have been found. For EXC, this study observed average of 57.104 with a maximum of 85.084, minimum of 25.354, and low level of variability. Similarly, current study observed lower standard deviation of POP, which consisted to average of 8.109 with a maximum of 8.225, minimum of 7.947.

Table 2. Descriptive statistics of employed variables.

Variable	Obs.	Mean	Std. Dev.	Min	Max
ED	38	5.275	1.340	2.416	7.882
IN	38	44.184	25.433	3.000	81.000
GCF	38	23.622	5.438	15.473	32.214
TO	38	29.720	9.371	16.688	48.111
TD	38	13.636	9.957	4.636	38.538
INT	38	5.359	4.839	-13.642	13.741
EXC	38	57.104	19.603	25.354	85.084
POP	38	8.109	0.082	7.947	8.225

Source: Author's calculation based on time series data of 1984-2021

Multicollinearity Test: This study conducted correlation analysis to observe dependency among variables applied in this study. Wooldridge (2015) suggested that correlation value should be less than 0.7. As shown in Table 3, this study found lower correlation coefficient for all variables which signifies low level of multicollinearity. These findings shows that there have very low multicollinearity and thus it is not a vivacious issue for the current study.

Table 3. Results of multicollinearity test

	ED	IN	GCF	TO	TD	INT	EXC	POP
ED	1.000							
IN	0.531	1.000						
GCF	0.638	0.616	1.000					
TO	-0.633	-0.518	-0.536	1.000				
TD	0.651	0.699	0.529	-0.599	1.000			
INT	-0.163	-0.227	-0.191	0.069	-0.016	1.000		
EXC	0.638	0.636	0.684	-0.512	0.578	-0.153	1.000	
POP	0.619	0.616	0.680	-0.569	0.572	-0.106	0.682	1.000

Source: Author's calculation

Unit Root Test: To test the data stationarity, Elliott, Rothenberg, and Stock (ERS) time series unit root analysis have been conducted. The ERS test, which proposes a modified version of the ADF unit-root test, was used to check the data's stability (Elliott et al. 1996). Authors further show that when there is no intercept, the *t* statistic generated from the generalized least square demeaned data has the same limiting representation as the traditional Dickey-Fuller t statistic; however, in the case of a linear trend, the limiting form is different. Table 4 displays the result of ERS unit root test.

Table 4. Results of ERS unit root analysis

Variable	Level		1st Deference	
	Intercept	Intercept + Trend	Intercept	Intercept + Trend
(1)	(2)	(3)	(4)	(5)
ED	2.082***	5.586***	4.473*	9.105*
IN	29.259*	6.455*	1.541***	29.259*
GCF	10.641*	11.193***	4.193*	7.300*
TO	18.097*	22.792***	1.384	4.831***
TD	16.511*	16.074*	1.589	6.077**
INT	1.482	5.300***	3.383**	8.175*
EXC	11.354*	10.858*	0.744	2.333***
POP	14.391*	12.654*	3.687**	7.300*

Source: Author's calculation; ***, **, * signify 1%, 5% and 10% level of significance

In column (2) and (3) of Table 4, it can be seen that all variables, including intercept and time trend and intercept, are sharply rejected null hypothesis and variables are stationary at 1 percent level of significant, consistently. In contrast, in column (4) and (5) of Table 4 exhibits

result of ERS unit root analysis including intercept plus time trend and intercept. All series have strongly rejected the null hypothesis at 1%, 5% and 10% level of significant. These findings present that series are stationary with same order.

Co-integration Test: A cointegrating relation between the variables must be formed in order to employ the FMOLS technique for estimation purpose (Evans, 2019). As a result, the co-integration test for Hansen parameter instability is used to check for cointegrating correlations. Table 5 demonstrates that the cointegrating test accepts the co-integration null hypothesis for the model. This implies that the variables in the model have long-term relationships with one another.

Table 5. Results of Hansen Parameter Instability test cointegration test

Variables	Lc statistic	Prob.
ED, IN, GCF, TO, TD, INT, EXC, POP	0.208	0.2

Source: Author's calculation

Analysis of Regression Results: The fully modified ordinary least square (FMOLS) and dynamic least squares (DOLS) are the data analysis techniques that have been used in this study. Firstly, FMOLS is an ideal estimator of regressions and a semi-parametric method (Evans, 2019). The method is resistant to endogeneity and serial correlation. As a result, the estimates are reliable and consistent. Additionally, FMOLS can be used on any set of variables, whether they are entirely stationary, non-stationary, or mixed (Phillip and Hansen, 1990). Secondly, a reliable approach, particularly for small samples, is dynamic OLS. It can eliminate the bias caused by the explanatory factors occurring simultaneously (Stock and Watson, 1993). By adding lagged and lead values of the change in the repressors, dynamic OLS addresses the possibility of multi-collinearity and limited sample bias among the explanatory factors (Stock and Watson, 1993). The results of the both model is shown in Table 6.

Table 6. Results of FMOLS and DOLS

Variable	Dependent variable: ED					
	FMOLS			DOLS		
	Coef.	Std. Error	Prob.	Coef.	Std. Error	Prob.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
IN	0.035	0.006	0.000***	0.035	0.008	0.006***

GCF	0.352	0.074	0.000***	0.207	0.316	0.000***
TO	0.020	0.011	0.004***	0.087	0.023	0.009***
TD	-0.032	0.016	0.528	0.064	0.032	0.091*
INT	0.011	0.012	0.276	0.407	0.049	0.002***
EXC	0.048	0.023	0.165	-0.207	0.068	0.023**
POP	-1.309	6.117	0.072*	-7.468	8.222	0.001***
C	9.637	48.363	0.061*	6.566	5.551	0.001***
R-squared	0.601			0.823		
Adjusted R-squared	0.506			0.762		
Long-run variance	0.210			0.375		

Source: Author's calculation; ***, **, * signify 1%, 5% and 10% level of significance, respectively

As can be seen from Table 6, significant positive impact of insurance on economic development of Bangladesh have been observed, in case of both models, at 1% level of significance. In Table 6, column (2) to column (4) presents results for FMOLS and column (5) to column (7) presents results for DOLS. It is shown that if there is a 1 % increase in insurance, economic development of Bangladesh will increase by 0.035 % in case of both FMOLS DOLS and both the result is significant at a 1 % level of significance. The logic behind the result is when insurance activities increases, it contributes to the economic development by converting accumulated savings into profitable investments and mobilizing domestic savings. By increasing 1 % of the gross capital, the economic development is increased by 0.305% in case of FMOLS and 0.207% according to DOLS and the result is significant at 1% in both cases. Similarly it is observed that 1% increase of trade openness causes an increase of economic development of Bangladesh by 0.020% in case of both FMOLS and 0.087% in case of DOLS and the result is significant at 1%. Total debt has significant positive impacts on economic development. A 1% increase in total debt causes a 0.064% increase in economic development according to DOLS and the result is significant at 10% level of significance. Real interest rate has been found to have significant positive impacts on economic development of Bangladesh. Specifically, A 1% increase in real interest rate causes a 0.470% increase in per capita GDP in case of according to DOLS and the result is significant at 1% level of significance. It is found that a 1% increase of exchange rate causes a 0.207% decrease in economic development of Bangladesh in case of DOLS and the result is significant at 5%. Population also found to have negative effects on economic development of Bangladesh. A 1% increase of population reduce economic development by 1.309% in case of FMOLS and 7.468% according to DOLS and the results are significant at 10% and 1% level of significance respectively. The value of R^2 is 0.601 in case of FMOLS;

that is, the explanatory variables explained about 60.1 % variation of the dependent variable, economic development, in case of DOLS, R^2 is 0.823 which means the explanatory variables explained about 82.3 % variation of the dependent variable, economic development. In this background, the association between explained and explanatory variables follows the theoretical and empirical results.

Granger Causality Analysis: The Toda-Yamamoto technique has used in this study to determine the direction of insurance and economic development. Comparing this method to the standard Granger causality analysis, it is more sophisticated (Granger, 1969). The Vector Auto-regression (VAR) methodology with Granger causality is the most practical way for time series data, which is one of the benefits of the Toda-Yamamoto approach causality method (Siddik et al, 2021). Furthermore, the time domain model is eliminated, the variables do not need to be stationary, and the variables do not need to be co-integrating (Toda & Yamamoto, 1995).

Table 7. Results of Granger Causality (Toda-Yamamoto Approach)

	χ^2	Prob >χ^2
IN ⟶ GDP	49.283	0.000***
GD ⟶ PIN	30.696	0.000***

Source: Author's calculation; *** indicates 1% level of significance

This study estimated the long-run results and then causality test has been conducted based on the Toda Yamamoto Granger causality test estimation (see Table 7). In line with Kaushal and Ghosh (2018), current study observed bi-directional causal relationship between insurance and economic development at 1% level of significance which implies insurance and economic development influence each other. In short, based on theory, the outcome suggests both insurance and economic development of country influence on each other.

Robustness Check: In order to check robustness, present study used total insurance premium as the proxy measure of insurance, in exchange for total number of institutions, which have been used in original model. This research assumed an increase in total insurance premium will lead to increase economic growth. The outcomes are shown in Table 8.

Table 8. Results of robustness check

Variable	Dependent variable: ED					
	FMOLS			DOLS		
	Coeff.	Std. Error	Prob.	Coeff.	Std. Error	Prob
OD	0.797	5.619	0.002***	2.328	8.743	0.610
GCF	0.086	0.074	0.003***	1.877	0.123	0.012**

TO	0.092	0.059	0.000***	0.034	0.097	0.583
TD	0.12	0.096	0.000***	0.049	0.159	0.345
INT	0.030	0.226	0.245	0.136	0.374	0.088*
EXC	-0.133	0.086	0.000***	-0.150	0.134	0.157
POP	44.254	5.285	0.249	-42.496	8.607	0.016**
c	-62.943	54.36	0.000***	34.906	70.196	0.015**
R-squared	0.446			0.978		
Adjusted R-squared	0.315			0.875		
Long-run variance	0.137			0.258		

Source: Author's calculation; ***, **, *signify 1%, 5% and 10% level of significance, respectively

Robustness check results indicates that insurance growth, measured by total insurance premium, positively impacts the economic growth of Bangladesh which is similar the findings of original model. This outcome suggests better financial performance of insurance industry has tendency to raise economic growth. Hence, these results imply that the main findings in this study robust and conclusive.

Discussions

Findings from Co-Integration Tests: Co-integration test has been performed to examine the long-run relationships between variables. Findings indicate that the variables in the model have long-term relationships with one another. Thus, we conclude that in the insurance industry has long run positive impacts on the economic development of Bangladesh.

Findings from Regression Results: Fully modified ordinary least square (FMOLS) and dynamic least squares (DOLS) are the data analysis techniques have been performed to achieve the objective. In those regression, economic growth is positively influenced by insurance industry, gross capital formation, trade openness, total debt, and negatively influenced by real interest rate, exchange rate and total population. According to the study's findings, insurance stimulates the economy by converting accumulated savings into profitable investments and mobilizing domestic savings. Insurance industry aids in the mobilization of national savings and the closing of emerging economies' investment deficit. Additionally, insurance industry serve as crucial long-term institutional investors and, as a result, act as financial middlemen that help match savers and borrowers. Insurance offers loss mitigation, financial stability, and commerce and trade activity promotion, all of which contribute to economic development to restore financial stability to businesses, individuals, and the government. Insurance industry, in their capacity as institutional investors, support the growth of a healthy capital market by making significant investments in a variety of assets.

Additionally, insurance industries play a bigger institutional character in financial market by providing pension and mutual funds. The available insurance services are essential for a stable economy by accepting intensified risks from the business participants. Insurance industries pool premium plus structure reserve funds by taking claims. Therefore, insurance industry contribute to economic development of the country by pooling large funds that place on capital markets, which increases cash flow for industries.

Similar to the findings of Reddy and Ramaiah found (2020), this study found that gross capital formation positively induces economic growth in both models. The real methods of capital accumulation are highly associated with ensuring sustained economic development. The corresponding process not only establishes the foundation for a constant renewal of the production process and a rise in the goods and services offered by economies around the globe, but it also models the purviews and methods of action of players at the economic and social stage. The process of accumulating capital is the outcome of intricate interactions between many elements of the status of the productive system, characteristics of the social model, economic mechanism, directions of technical advance, and degree of openness of the national economies to outside flows.

In both models, contrast with Zahonogo (2016) and similar to the findings of Mallick and Behera (2020) this research found a favourable relationship between trade openness and economic growth. This result demonstrates that trade openness provides domestic businesses with more market opportunities, higher productivity, and innovation spurred by competition. It contributes to the abolition of poverty, wage increases, the geopolitical benefits of greater economic integration, and even on a personal level, more freedom and choice for each person. Also, economies of scale and scope, as well as enhanced competitiveness, are made possible by trade openness, allowing for more effective resource allocation. It allows production patterns that encourage technological advancement and increase efficiency as well as information transmission, all of which have an impact on prices. Overall, economic growth is impacted by trade openness, which is defined as an economy's neutrality, for example, increased income and aggregate demand lead to an increase in imports.

Opposite to the findings of Zouhaier and Fatma (2014), this study found that total government debt has a positive impact on economic growth. This outcome is consistent with Saifuddin (2016). It is clear from this result that government debt can both speed up economic growth by funding productive investment. It is possible to increase the level of living in a country through the use of public debt if used effectively. Building new highways and bridges, improving educational opportunities, and providing retirement benefits are all

made possible by this tax. This encourages people to spend more money now rather than save for the future. These expenses serve as fuel for additional economic growth.

Similar to the findings of Moyo and Pierre (2018), this study discovered a positive correlation between real interest rates and economic growth. According to these results, higher interest rates tend to swell economic expansion. An increase in interest rates will entice more loanable funds to be deposited, which will enhance financial development, investment, and economic expansion. The equilibrium interest rate assures savings and capital accumulation that support stable output growth. As a consequence, there is a long-term output potential that meets demand without putting the economy under pressure.

Consistent with the findings of Berg et al. (2012) current study found that exchange rate negatively induces economic growth. A rising exchange rate can stifle economic growth because exports are more costly and there is less of a demand for exports. Due to the lower cost of imports, there is a greater demand for them. Moreover, imports and exports will be affected by currency exchange rates, which in turn affects the economy's aggregate demand. Many companies, but particularly banks, have challenges as a result of fluctuating exchange rates.

In line with Yao et al. (2013), this research found negative impacts of population growth on economic development. This finding suggests that high birth rates and rapid population growth in developing countries would divert scarce resources away from savings and investment, thereby slowing economic growth. Therefore, more resources must be used by larger families to support more children. Less money is available for saving and investing in actions that foster growth. Additionally, it reduces the costs associated with maximizing each child's economic potential. The challenge of achieving social and economic advancement is exacerbated by sustained, rapid population growth, which also raises the cost and labor requirements to ensure that no one is left behind. Population growth makes it more challenging for low-income and lower middle-income countries to provide for the needs of their citizens in terms of reducing poverty and eradicating hunger and malnutrition.

Findings from Robustness Test: In order to check the robustness of regression results, total insurance premium has been employed as the proxy measure of insurance. FMOLS and DOLS have been performed. Findings of robustness check are very similar to the findings of main model. Hence, the findings from descriptive, empirical analysis and robustness checks comply with the flow of theory and the field.

Conclusion

With a view to testing linear relationships and addressing the research question, this study employed 1984-2021 data of Bangladesh. FMOLS and DOLS techniques have been performed. This study's outcomes describe significant positive influence of insurance on economic development of Bangladesh. This research also measured additional determinants of economic development. The results are consistent and robust. Bio-direction casual relation between insurance and economic development observed by using Toda-Yamamoto Granger causality analysis, which implies that insurance and economic development influence each other. This observation directs that insurance industry increases economic development of Bangladesh. When an insurance industry performs better financially, it generates profits of its shareholders, attracts, and encourages to investors to invest, and creates job opportunity for unemployed that positively induces economic development of the country. Also, other factors such as gross capital formation, trade openness, total government debt, positively induce economic development in Bangladesh while significant negative effect of real interest rate, exchange rate, and population on the economic growth in Bangladesh have been observed. Therefore, insurance is considered as one of the major drivers for rising economic development because these are working as financial mechanisms that are appropriate for both business and individual. Insurance sectors are held in high esteem in developed nations. Bangladesh's economy has the potentiality to reach same level if proper activities are propagated.

However, this study has some limitations. Considering the influence, due to data scarcity, there is an insufficient sample size considered in this study. To overcome these limitations, more studies can be conducted on life plus non-life insurance businesses' performance and economic progress of different cultural contexts to confirm the outcomes.

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