



Nexus between Insurance Sector Development and Economic Growth in South Asian Countries

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Abstract

Purpose: This study examines the impact of insurance sector development on economic growth in South Asian countries.

Design/methodology/approach: Using annual data from five South Asian countries over 31 years (1990-2020) and comprising 137 observations, this study draws data from the Global Financial Development Database (2023). The unit root test, cointegration test, and vector error correction model are employed to test stationarity, long-run relationships, and short-run and long-run dynamics, respectively, in South Asian countries.

Findings: The findings are significant, revealing that long-term dynamics prevail between the LNGDP and LIPTGDP for five South Asian countries. The coefficient value of ECT_{t-1} is $-.765$, indicating that deviation from the long-run relationship is corrected at 76.5% in the present period. This study further reveals long-term dynamics between the LNGDP and NLIPTGDP for five South Asian countries. The coefficient value of ECT_{t-1} is $-.654$, implying that deviation from the long-run relationship is corrected at 65.4% in the present period. Similarly, this study reveals long-term dynamics between the LNGDP and TPC for five South Asian countries. The coefficient value of ECT_{t-1} is $-.765$, implying that deviation from the long-run relationship is corrected at a rate of 76.4% in the present period. While no short-run dynamics are observed between the LNGDP and LIPTGDP, between the LNGDP and NLIPTGDP, and between the LNGDP and TPC.

Conclusion: The results showed that the LNGDP and TPC had long-term relationships in five South Asian countries. However, no short-run dynamics prevail between the LNGDP and LIPTGDP, between the LNGDP and NLIPTGDP, and between the LNGDP and TPC.

Implications: Policymakers can use these findings to promote economic growth by implementing effective regulatory policies, educating the public and SMEs about insurance benefits, providing tax incentives for insurance uptake, and encouraging financial openness for foreign investors to improve consumer choice and quality.

JEL Classification: G22, O12, O40

Introduction

The insurance sector can significantly stimulate the nation's economic development (Fang & Jiang, 2014). As part of the financial system, the insurance sector mobilizes savings from surplus units to deficit units. Apart from this, it provides financial stability, grants loans to entrepreneurs, encourages more savings to savers by offering varieties of insurance products, allocates domestic capital efficiently in productive sectors, and helps to reduce losses and thus helps to enhance economic growth (Pradhan et al., 2019). Insurance companies collect insurance premiums from policyholders and mobilize these scarce resources to productive sectors by investing in securities issued by government and corporate houses. Furthermore, the insurance company also provides loans to individuals. It is interesting to note that the



insurance sector is flourishing because the insurance premiums collected from policyholders are relatively more stable. However, the mortality rate has significantly declined (Andersson et al., 2010) over a long period, and improved technology for construction, modern highway facilities, increased health consciousness, improved safety measures for work, and so on have reduced the cost-to-premium collection ratio. In addition, the development of the insurance sector is related to income growth. The increase in per capita income in South Asian countries promoted the advancement of the insurance sector because mortality is inversely related to the economic status of policyholders (Kim et al., 2012), and insurance sector expansion is positively related to economic status. Similarly, the demand for life insurance products is greater than that for the other saving products offered by different financial institutions because they provide tax exemption facilities for insurance premiums.

The insurance sector motivates entrepreneurs to take more risk on risky ventures, promote innovation, increase employment opportunities, and enhance economic activities through efficient capital allocation in productive industries and risk mitigation (Adams et al., 2009). Furthermore, insurance companies provide debt capital to entrepreneurs and loans to businesses to expand their businesses and enhance overall financial stability during the crisis. Similarly, insurance industries can promote financial inclusion, fostering economic growth through capital accumulation, increased investment and technological advancement (Yap et al., 2024).

Theoretical explanations and empirical studies have presented a rich variety of hypotheses on the relationship between insurance premiums and economic growth. The supply-leading hypothesis suggests that insurance sector development is a catalyst for economic growth, while the demand-following hypothesis posits that economic growth drives the expansion of the insurance sector. The feedback hypothesis proposes a mutually beneficial relationship, with insurance sector development stimulating economic growth, and economic growth providing fertile ground for the insurance sector. In contrast, the neutrality hypothesis takes a more reserved stance, suggesting that insurance sector development and economic growth may not be significantly related. The findings of Peleckiene et al. (2019), Siminescu and Ulbinaite (2021), Adams et al. (2009), Horng et al. (2012), and Pradhan et al. (2014) support the supply-leading hypothesis, while the findings of Peleckiene et al. (2019) align with the demand-following hypothesis.

Similarly, the findings of Si et al. (2018), Das et al. (2018), and Apergis and Poufina (2020) bolster the feedback hypothesis, and the findings of Pradhan et al. (2017) and Hou et al. (2012) support the neutrality hypothesis in the short run. Some recent studies have even unveiled a nonlinear insurance-growth nexus (for instance, Dawd & Benlagha, 2023), further adding to the complexity. In theories and empirical studies, there is a clear lack of consensus on the insurance-growth nexus, underscoring the need for further research and understanding.

Previous studies have extensively examined the role of the banking sector and stock market development in economic development due to the easy availability of data because the central bank and government strictly regulate these sectors. Previous studies have not extensively studied the potential impact of insurance sector development and economic growth (Vadlamannati, 2008; Dawd & Benlagha, 2023). In addition, a few studies have been conducted in developed and emerging economies. The literature is not found in the context of South Asian countries. Hence, this study is devoted to examining the impact of insurance sector development on economic

growth by taking total life premiums, life insurance premiums, and nonlife insurance premiums as predictor variables.

The remainder of the paper is structured logically and clearly. The second section introduces the theoretical and empirical evidence and hypothesis development. The third section explains the research methods, and clearly describes how the data were collected and analyzed. The fourth section presents the findings, followed by the fifth section, which is dedicated to discussion. The paper concludes with the sixth section, which includes the conclusion, implications, limitations, and scope of future studies.

Literature Review

Theoretical Review

Patrick (1980) has made a significant contribution to developing two popular theories—demand-following theory and supply-leading theory—by analyzing the nexus between financial advancement and economic development. Demand-following theory states that favorable economic growth positively impacts financial advancement. In other words, as an economy grows and becomes more complex, the demand for financial services increases, leading to the development and expansion of financial institutions and markets. A higher income level arises from economic prosperity, which demands more complicated financial service products such as insurance, banking, and investment. Furthermore, higher economic prosperity leads to more complex trade, investment, consumption, and a higher level of saving that needs to be managed, invested, and allocated efficiently, promoting the development of financial institutions. Hence, this theory hypothesizes that economic growth positively impacts financial development.

On the other hand, supply-leading theory states that efficient financial markets positively impact economic growth by encouraging savers to hold their savings in financial assets, ensuring efficient investment allocation to productive uses, and providing incentives for increased saving, investment, and production (Patrick, 1980). In addition, a variety of financial instruments help to manage risk through diversification and insurance, encouraging entrepreneurs to invest more and gather and disseminate information about investment opportunities and economic conditions, facilitating better decision-making. Hence, this theory hypothesizes that financial development positively impacts economic growth. These abovementioned theories are complementary, supporting the view “more eggs, more chickens and more chickens, more eggs,” suggesting a bidirectional relationship between financial development and economic growth. From one perspective, the development of the insurance sector presents fresh opportunities for entrepreneurs to invest in fixed assets, thereby fostering economic activities and outputs. This, in turn, leads to an upswing in property insurance. On the other hand, a higher level of economic expansion enhances the wealth of individuals and corporate entities. As individuals’ income levels rise, their demand for more consumer durable products increases, necessitating insurance. Similarly, corporate entities allocate more capital to fixed assets, thereby increasing their insurance requirements (Li & Li, 2020). Thus, the development of the insurance sector and economic growth are intricately linked, with insurance playing a crucial role in mitigating risks and ensuring economic stability.

Empirical Review

The nexus between insurance premiums and economic progress has been highlighted more prominently in the contemporary era. Findings from prior research have primarily indicated four key findings: one-way causation from the advancement of the insurance sector to economic expansion, endorsing the theory of supply-led growth; one-way causation from economic advancement to the development of the insurance sector, advocating the theory of demand-driven growth; two-way causation linking the development of the insurance sector and economic progress, supporting feedback theory; and the absence of a causal connection between the development of the insurance sector and economic advancement, bolstering neutrality theory.

In this context, Pradhan et al. (2017) investigated the interconnection between financial development and economic growth by taking G-20 countries as a sample from 1980 to 2014 using VAR and Granger causality tests. An empirical study revealed that development of the insurance sector positively influences the economic growth in G-20 countries in the long run. However, this study found no confirmed nexus between insurance sector development and economic growth in the short run, suggesting that it differs by country and phase of insurance sector development. Similarly, Pradhan et al. (2020) examined the causal link between banking rivalry, equity market development, and insurance sector development and economic development using Granger causality from 1996 to 2016 in the context of Europe. The study findings revealed that insurance sector development positively affects economic growth in Europe in the long run. However, in the short run, there is no clear causal nexus between insurance sector development and economic growth. Muye and Hassan (2016) reached the same conclusion (positive impact of insurance activities on economic growth) using a different GMM estimator in Asian and GCG countries from 2004 to 2012.

Similarly, the causal nexus between insurance and economic development was examined by Peleckiene et al. (2019) in the context of European countries by taking data spanning from 2004 to 2015. In particular, this study used the Granger causality test to examine the insurance-growth nexus. The findings showed mixed results; for instance, insurance positively impacts economic growth in Luxembourg and Denmark, while this relationship was negative in Austria and Belgium. In addition, the findings revealed unidirectional causality running from GDP growth to insurance in Luxembourg and supported a demand-following theory. In contrast, the unidirectional causality from insurance to GDP growth shown in the Netherlands, Malta, and Estonia supports a supply-leading theory. A bidirectional nexus is shown in Austria, supporting feedback theory. However, this study found no evidence to support the neutrality hypothesis. Si et al. (2018) investigated the insurance-growth nexus in China; and produced several key findings. The study, based on quarterly data from 1999 to 2015, revealed a bidirectional causality between insurance and economic growth. This was established through a rolling-window causality test, thereby supporting a feedback hypothesis. Notably, the majority of the results align with a supply-leading hypothesis. A particularly significant finding was the greater role of nonlife insurance in enhancing economic growth, surpassing that of life insurance.

Using panel regression models, a more recent study by Siminescu and Ulbinaite (2021) found that economic growth positively affects insurance consumption—insurance premiums, density, and penetration—both at the country level and across countries, supporting the supply-leading hypothesis. Similarly, Pradhan et al.

(2014) examined the interconnection between insurance, banking, and economic development in G-20 countries using data from 1990 to 2012. They found that insurance sector development positively and significantly stimulates the economic growth rate. In addition, two regression models—FMOLS and DOLS—revealed that economic growth and banking sector development positively impact the life insurance premium to GDP, nonlife insurance premium to GDP, and total insurance premium to GDP, supporting the supply-leading hypothesis.

Dawd and Benlagha (2023) explored the insurance-economic growth nexus in OECD countries, from 2009 to 2020 using the panel GMM approach. Their research revealed a nonlinear relationship between insurance and economic growth. Notably, life insurance premiums were found to have a positive impact on economic growth, offering a ray of optimism. In contrast, nonlife insurance was found to negatively impact economic growth. However, total insurance premiums were found to have a positive impact on economic growth. This study's key finding was the confirmation of a U-shaped relationship between insurance premiums and economic development, suggesting that the growth of the insurance sector would be beneficial up to a certain threshold point, beyond which it would not stimulate economic growth. Hemrit and Benlagha (2020) reached the same conclusion (nonlinear nexus between insurance and non-oil GDP growth) using a nonlinear ADRL estimator in Saudi Arabia from 2005 to 2017.

Using a dynamic panel GMM estimator and Granger causality test, Apergis and Poufinas (2020) investigated the insurance-economic growth nexus across 27 OECD countries from 2006 to 2016. The study's key findings were that the total premiums, life insurance premiums, and nonlife insurance premiums all had a positive impact on economic growth in these countries. The study also revealed a bidirectional causal nexus between total insurance premium and economic growth, and life insurance premium and economic growth, supporting the feedback hypothesis. However, the relationship between economic growth and non-life insurance premium was unidirectional, in line with the supply-leading hypothesis. In conclusion, the study's findings underscore the positive role of insurance sector development in driving economic growth in 27 OECD countries.

Using pooled mean group and Granger causality, Din et al. (2020) examined the short-run and long-run insurance-growth nexus from 1980 to 2015. The findings showed a direct short-term and long-term relationship between life insurance and economic growth and between nonlife insurance and economic growth, supporting the supply-leading hypothesis. Similarly, Sare et al. (2023) undertook a rigorous investigation into the impact of insurance industry growth on economic growth in Ghana, employing proxies for life insurance and nonlife insurance from 1989 to 2022. The use of the ADRL method, a widely accepted and robust approach, ensured a thorough examination of this nexus. The findings, therefore, carry significant weight, indicating that life insurance has a consistently positive impact on all three economic sector growth areas: the service sector, industry sector, and agriculture sector. Interestingly, nonlife insurance, while also having a positive impact on the industry and agriculture sectors, does not demonstrate a significant association with the service sector. Recently, Mushunje and Mashasha (2024) investigated the insurance-growth nexus in South Africa from 2000 to 2018 using nighttime light (NTL) data. Their findings showed that the development insurance sector has a favorable impact on economic growth. These findings align with the previous studies of Cristea et al. (2014) and Muye et al. (2016). This study proposes the following three research hypotheses based on diverse empirical findings.

H_1 : Life insurance premiums significantly positively impact economic growth in South Asian countries.

H_2 : Nonlife insurance premiums significantly positively impact economic growth in South Asian countries.

H_3 : Total insurance premiums significantly positively impact economic growth in South Asian countries.

Methods

This study examines the nexus between insurance premium collection and economic growth in South Asian countries. The nexus between insurance premiums and economic development has been investigated using secondary data from the World Bank (2024) and the Global Financial Development Database (2023). The GDP growth rate is used as a proxy to measure economic growth. At the same time, life insurance premiums, nonlife insurance premiums, and total premium collection were taken as proxies for insurance sector development. These variables were also used in the previous studies of Vadlamannati et al. (2008). The GDP growth rate is transformed into a natural logarithm of the GDP growth rate. The South Asian Association for Regional Cooperation (SAARC) was used as the population for the study. Among the eight member countries of the SAARC, this study took five member countries as a sample.

Table 1 displays the sample countries, sample periods, and number of observations. This study includes five South Asian countries—Nepal, India, Pakistan, Sri Lanka, and Bangladesh—based on the data from the World Bank database (2024) and the Global Financial Development Database (2023). The relevant data on life insurance premiums, nonlife insurance, and total premiums in Afghanistan, Maldives, and Bhutan were not found in the Global Financial Development Database (2023). Hence, this study included only five South Asian countries.

Table 1: South Asian Countries, the Sample Period and the Number of Observations Under Study.

S. N.	Name of the Country	Period	Observations
1	Nepal	1991-2018	28
2	India	1992-2018	27
3	Pakistan	1995-2020	26
4	Bangladesh	1995-2020	26
5	Sri Lanka	1990-2019	30
6	Total		137

Note. Global Financial Development Database, (2023)

This study used descriptive statistics to analyze the descriptive characteristics of the study variables. The minimum value, mean, standard deviation, and maximum value explain the essential effects of insurance premiums on GDP growth rate. This study also computes Pearson's correlation coefficient to detect multicollinearity problems in the study variables. In addition, this study applied panel data on insurance premium collection and the GDP growth rate to investigate the nexus between both variables for five South Asian countries. This research utilized Levin-Lin-Shin test (LLC), the augmented Dicky-Fuller test (ADF), and the Phillips-Perron test (PP) for unit root tests. These tests were applied to check the unit root test of the time series data. "The scenario of nonstationary at the level and stationary at the first difference increases the likelihood of cointegration between

variables" (Mussaiyib & Pradhan, 2024, p.3). After the unit root test, this study used Johansen's cointegration test to examine the long-run relationships between variables for all five South Asian countries. Finally, the Akaike information criterion (AIC) and Schwarz criterion (SC) are used for appropriate lag selection.

Model Specification

This study investigated the meticulous process of developing panel vector autoregressive (PVAR) models and a panel vector error correction model (PVCEM). The choice between PVAR and PVCEM is based on the results of Johansen's cointegration tests. PVAR models, developed in the absence of cointegration among the variables, allow us to examine short run dynamics. Conversely, PVCEM models, developed in the presence of cointegration, enable to understand the long run dynamics. In this study, we developed models 1, 2, and 3 for the PVAR and models 4, 5, and 6 for the PVCEM. These models were then used to examine the short run and long run dynamics prevailing among variables in South Asian countries.

$$\Delta \text{LNGDP}_t = \beta_1 + \beta_2 \sum_{i=1}^{p-1} \Delta \text{LNGDP}_{t-i} + \beta_3 \sum_{i=1}^{p-1} \Delta \text{LIPTGDP}_{t-i} + \epsilon_t \dots (1)$$

$$\Delta \text{LNGDP}_t = \beta_1 + \beta_2 \sum_{i=1}^{p-1} \Delta \text{LNGDP}_{t-i} + \beta_3 \sum_{i=1}^{p-1} \Delta \text{NLIPTGDP}_{t-i} + \epsilon_t \dots (2)$$

$$\Delta \text{LNGDP}_t = \beta_1 + \beta_2 \sum_{i=1}^{p-1} \Delta \text{LNGDP}_{t-i} + \beta_3 \sum_{i=1}^{p-1} \Delta \text{ATPC}_{t-i} + \epsilon_t \dots (3)$$

$$\Delta \text{LIPTGDP}_t = \beta_1 + \beta_2 \sum_{i=1}^{p-1} \Delta \text{LNGDP}_{t-i} + \beta_3 \sum_{i=1}^{p-1} \Delta \text{LIPTGDP}_{t-i} + \text{ECM}_{t-1} + \epsilon_t \dots (4)$$

$$\Delta \text{NLIPTGDP}_t = \beta_1 + \beta_2 \sum_{i=1}^{p-1} \Delta \text{LNGDP}_{t-i} + \beta_3 \sum_{i=1}^{p-1} \Delta \text{NLIPTGDP}_{t-i} + \text{ECM}_{t-1} + \epsilon_t \dots (5)$$

$$\Delta \text{ATPC}_t = \beta_1 + \beta_2 \sum_{i=1}^{p-1} \Delta \text{LNGDP}_{t-i} + \beta_3 \sum_{i=1}^{p-1} \Delta \text{ATPC}_{t-i} + \text{ECM}_{t-1} + \epsilon_t \dots (6)$$

Results and Analysis

This section reports the results of descriptive statistics, Pearson's correlation coefficients, the unit root test, including intercept and intercept and trend, Johansen's cointegration test, the vector error correction model (VCEM), and the stability test in five South Asian countries. Table 2 displays the basic descriptive characteristics of the GDP growth rate, life insurance premium to GDP ratio, nonlife insurance premium to GDP ratio, and total life insurance premium to GDP of aggregate of five South Asian countries—Nepal, India, Pakistan, Sri Lanka, and Bangladesh—over the period from 1990 to 2020. The findings revealed that the minimum, mean, SD and maximum values of the GDP growth rate are -4.625, 5.103, 2.188, and 8.977, respectively, suggesting that the value of the SD does not highly deviate from the mean value. However, the range between the minimum and maximum values was comparatively higher, which might be the cause of the inclusion of COVID 19 data. Similarly, the minimum, mean, SD, and maximum value of life insurance premiums are .071, .832, .972, and 4.432, respectively, indicating that the difference between the maximum and minimum values is significantly higher. The minimum, mean, SD, and maximum values of the nonlife premium to GDP ratio are .069, .399, .183, and .798, respectively, suggesting that this variable's range is relatively lower than that of the life insurance premium to GDP ratio. Finally, the descriptive results of the total life insurance premium to GDP ratio are of particular interest. The minimum, mean, maximum, and maximum values are .143, 1.231, 1.062, and 4.931, respectively. These values provide a comprehensive overview of the distribution of the total life insurance premium to GDP ratio, which is a key indicator in this analysis.

Table 2: Summary Statistics

Variable	Mean	SD	Minimum	Maximum
GDP growth rate	5.103	2.188	-4.625	8.977
LIPTGDP	.832	.972	.071	4.432
NLIPTGDP	.399	.183	.069	.798
TPC	1.231	1.062	.143	4.931

Table 3: Correlation Matrix

Variables	GDP growth rate	LIPTGDP	NLIPTGDP	TPC
GDP growth rate	1			
LIPTGDP	.371*** (.000)	1		
NLIPTGDP	.111 (.196)	.420** (.000)	1	
TPC	.309*** (.000)	.988*** (.000)	.557*** (.000)	1

Note. *** denotes that $p < .01$.

Table 3 presents the outcomes of Pearson’s correlation between the GDP, life insurance premium (LIPTGDP), nonlife insurance premium (NLIPTGDP), and total life insurance premium (TPS). The correlations between GDP and LIPTGDP, between GDP and NLIPTGDP, between GDP and TPS, between LIPTGDP and NLIPTGDP, and between

Table 4: Unit Root Test

Variables Levels		LLC		ADF		PP	
		Difference	Levels	Difference	Levels	Difference	
LNGDP	Intercept	-5.090***	-12.227***	53.971***	114.670***	55.551***	101.049***
	Intercept and trend	-5.012***	-10.298***	52.873***	102.165***	61.039***	825.255***
LIPTGDP	Intercept	964	-3.837***	999	27.186***	990	27.563***
	Intercept and trend	872	-4.805***	771	26.069***	969	26.044***
NLIPTGDP	Intercept	-982	-11.616***	24.684***	93.728***	20.697**	93.751***
	Intercept and trend	-1.557*	-9.595***	23.315***	83.008***	18.730*	89.352***
TPC	Intercept	1.651	-2.877***	4.244	18.276*	5.268	43.176***
	Intercept and trend	2.228	-2.865***	3.637	12.767	2.926	35.691***

Note(s). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively

Table 5 presents the results of Johansen’s cointegration test for the LNGDP and LIPTGDP for all five South Asian countries. The results confirmed the cointegration between the LNGDP and LIPTGDP, implying that there is no problem with using the vector error correction model (VCEM) to examine the short-run and long-run relationships. The first null hypothesis, none, which suggests that none of the variables are cointegrated, is rejected. The second hypothesis, that at least one cointegration prevails, is accepted.

Table 5: Johansen’s Cointegration Test Outcome of Series LNGDP and LIPTGDP

Max. Rank	Eigenvalue	Trace statistics	Critical value at 5%	p-value
None*	.168	21.740	15.495	.005
At most 1	.005	.629	3.841	.428

LIPTGDP and TPS, are all positive and statistically significant. However, the correlation between LIPTGDP and TPS showed a multicollinearity problem. This nexus indicated that we could not run a vector error correction model (VCEM), including both variables, LIPTGDP and TPS, in a single model.

Table 4 displays the outcome of the unit root test. This study employed Levin-Lin-Shin (LLC), ADF—Fisher chi-square (ADF), and PP—Fisher chi-square tests for unit root tests. The unit root tests are also performed at the level and first difference in the intercept and intercept-and-trend. The results showed that the response variable, LNGDP, is stationary at levels, which is statistically significant at the 1% level ($p < .01$). Similarly, the predictor variable, NLIPTGDP, is stationary at a level that is statistically significant at the 1% level ($p < .01$). However, the LLC test results revealed that the NLIPTGDP is not stationary at levels, but majority test results, that is, the ADF and PP tests revealed that the NLIPTGDP is stationary at levels. In contrast, LIPTGDP and TPC are not stationary at level but stationary at levels. Finally, the results showed that all the variables are stationary at first difference. This study also checked the lag length based on Akaike’s information criteria (AIC) and Schwarz’s criterion (SC) to determine the appropriate lag length. These two criteria—AIC and SC—suggested the two lags for all the study variables. However, this study did not report the outcomes.

Table 6 displays the results of Johansen’s cointegration test for the LNGDP and NLIPTGDP for all five South Asian countries. The results confirmed the cointegration between the LNGDP and NLIPTGDP, implying that there is no problem with using the vector error correction model (VCEM) to examine short-run and long-run relationships. The first null hypothesis, none, which suggests that none of the variables are cointegrated, is rejected. The second hypothesis, that at least one cointegration prevails, is accepted.

Table 6: Johansen’s Cointegration Test Outcome for the LNGDP and NLIPTGDP Series

Max. Rank	Eigenvalue	Trace statistics	Critical value at 5%	p-value
None*	.168	21.740	15.494	.005
At most 1	.005	.629	3.841	.428

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Table 7 displays the results of Johansen's cointegration test for LNGDP and TPC for all five South Asian countries. The results confirmed the cointegration between LNGDP and TPC, implying that there is no problem with using the vector error correction model (VCEM) to examine the short-run and long-run relationships. The first null hypothesis, none, which suggests that none of the variables are A

Table 7: Johansen's Cointegration Test Outcome of Series LNGDP and TPC

Max. Rank	Eigenvalue	Trace statistics	Critical value at 5%	p-value
None*	.192	25.070	15.495	.001
At most 1	.005	.591	3.841	.442

Table 8 presents the findings of the VCEM for LNGDP and LIPTGDP for five South Asian countries. The findings revealed that long-term dynamics prevailed between LNGDP and LIPTGDP for five South Asian countries. The coefficient value of ECT_{t-1} is $-.765$, implying that deviation from the long-run relationship is corrected at a rate of 76.5% in the present period. Additionally, outcomes showed that unidirectional causality runs from the LIPTGDP to the LNGDP but not from the LNGDP to the LIPTGDP. Hence, this study concluded that a one-way causality runs from the LIPTGDP to the LNGDP. In contrast, the findings revealed that no short-run dynamic prevails between the LNGDP and LIPTGDP because all the coefficients of lagged term of the dependent and independent variables are not statistically significant at the 5% significance level.

Table 8: VCEM Outcomes (GDP and Life Insurance Premium Collection)

Variables	Δ LNGDP	Std. Err.	Δ LIPTGDP	Std. Err.
ECM_{t-1}	$-.765^{***}$	.151	.003	.038
Δ LNGDP(-1)	-.108	.129	.006	.032
Δ LNGDP(-2)	-.137	.105	.006	.027
Δ LIPTGDP(-1)	-.032	.384	$.500^{***}$	.097
Δ LIPTGDP(-2)	-.275	.386	.036	.097
Constant	.018	.051	.017	.013

Note. *** denotes that $p < .01$

Table 9 reports the findings of the VCEM for the LNGDP and NLIPTGDP for five South Asian countries. The findings revealed that long-term dynamics prevailed between the LNGDP and NLIPTGDP for five South Asian countries. The coefficient value of ECT_{t-1} is $-.654$, implying that deviation from the long-run relationship is corrected at the rate of 65.4% in the present period. Additionally, outcomes showed that unidirectional causality runs from the NLIPTGDP to the LNGDP but not from the LNGDP to the NLIPTGDP. Hence, this

study concluded that one-way causality runs from the NLIPTGDP to the LNGDP. In contrast, the findings revealed that no short-run dynamic prevails between the LNGDP and NLIPTGDP because all the coefficients of lagged terms of the dependent and independent variables are not statistically significant at the 5% level.

Table 9: VCEM Outcomes (GDP and Non-Life Insurance Premium Collection)

Variables	Δ LNGDP	Std. Err.	Δ NLIPTGDP	Std. Err.
ECM_{t-1}	$-.654^{***}$	.143	-.001	.010
Δ LNGDP(-1)	-.147	.127	.001	.009
Δ LNGDP(-2)	.168	.105	.009	.008
Δ NLIPTGDP (-1)	1.614	1.327	.069	.095
Δ NLIPTGDP (-2)	.911	1.310	.037	.093
Constant	.006	.051	.004	.004

Note. *** denotes that $p < .01$

Table 10 presents the findings of the VCEM for the LNGDP and TPC for five South Asian countries. The findings revealed that long-term dynamics prevailed between the LNGDP and TPC for five South Asian countries. The coefficient value of ECT_{t-1} is $-.765$, implying that deviation from the long-run relationship is corrected at a rate of 76.4% in the present period. Additionally, the outcomes showed that unidirectional causality runs from the TPC to the LNGDP but not from the LNGDP to the TPC. Hence, this study concluded that one-way causality runs from the TPC to the LNGDP. In contrast, the findings revealed that no short-run dynamic prevails between LNGDP and TPC because all the coefficients of the lag terms of the dependent and independent variables are not statistically significant at the 5% significance level.

Table 10: VCEM Outcomes (GDP and Total Premium Collection)

Variables	Δ LNGDP	Std. Err.	Δ TPC	Std. Err.
ECM_{t-1}	$-.764^{***}$	.151	-.002	.041
Δ LNGDP(-1)	-.102	.130	.0136	.036
Δ LNGDP(-2)	-.136	.105	.020	.029
Δ TPC (-1)	.072	.348	.437	.097
Δ TPC(-2)	-.332	.349	.052	.097
Constant	.018	.051	.021	.014

Note. *** denotes that $p < .01$

Figure 1 shows the stability conditions of the panel VCEM. The root of the companion matrices shows that all of the eigenvalues fall within the unit circle, suggesting that the panel VCEM is stable.

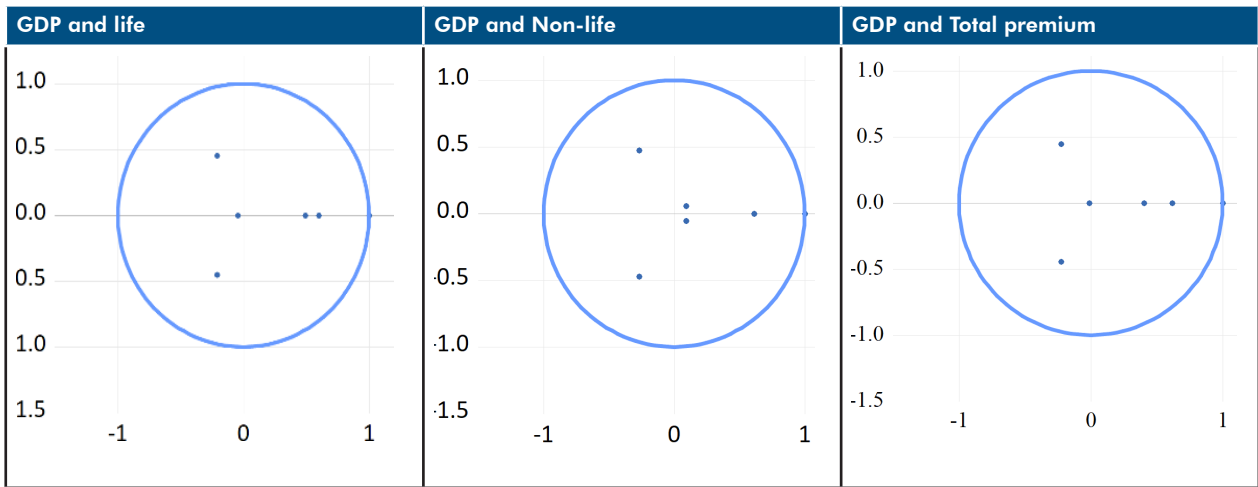


Figure 1: Roots of the Companion Matrix

Discussions

The results showed that there were long-term relationships between LNGDP and LIPTGDP for five nations in South Asia. Furthermore, the results revealed that there is a one-way causal relationship run from the LIPTGDP to the LNGDP but not from the LNGDP to the LIPTGDP. However, the results showed that there is no immediate relationship between the LNGDP and LIPTGDP. These findings are in line with the findings of Pradhan et al. (2017) and Pradhan et al. (2020) but contradict the findings of Apergis and Ponfinas (2020) and Din et al. (2020). This study supports the supply-leading hypothesis, which shows the impact of insurance growth on economic growth, is consistent with the findings of Pradhan et al. (2014) and Din et al. (2020). The most compelling explanation for the present findings is that the insurance sector mobilizes savings from surplus to deficit units, provides financial stability, grants loans to entrepreneurs, encourages saving, allocates capital efficiently, reduces losses, and thus enhances economic growth.

The results showed that the LNGDP and NLIPTGDP changed over time in five South Asian countries. Additionally, outcomes showed that unidirectional causality runs from the NLIPTGDP to the LNGDP. The results, on the other hand, showed that there is no short-run relationship between the LNGDP and NLIPTGDP. These findings are in line with the findings of Pradhan et al. (2017) and Pradhan et al. (2020) but contradict the findings of Apergis and Ponfinas (2020) and Din et al. (2020). This study supports the supply-leading hypothesis, which shows the impact of insurance growth on economic growth, is consistent with the findings of Pradhan et al. (2014) and Din et al. (2020). The most persuasive explanation for the current findings is that the insurance sector transfers resources from surplus to deficit units, promotes financial stability, offers loans to entrepreneurs, stimulates savings, efficiently distributes capital, decreases losses, and boosts economic growth.

The results showed that there were long-term relationships between the LNGDP and TPC in five South Asian countries. Furthermore, the results indicated that there is a one-way causal relationship from

the TPC to the LNGDP. On the other hand, the results showed that there is no immediate relationship between LNGDP and TPC. These findings are in line with the findings of Pradhan et al. (2017) and Pradhan et al. (2020) but contradict the findings of Apergis and Ponfinas (2020) and Din et al. (2020). This study supports the supply-leading hypothesis, which shows that the impact of insurance growth on economic growth, is consistent with the findings of Pradhan et al. (2014) and Din et al. (2020). The most persuasive explanation for the current finding is that the insurance sector serves as an intermediary, reallocates resources from surplus to deficit units, enhances financial stability, provides debt services to entrepreneurs, encourages saving, efficiently distributes capital, reduces losses, and stimulates economic growth.

Conclusion and Implications

This study examines the short-run and long-run dynamics between (1) GDP growth rates and life insurance premiums, (2) GDP growth rates and nonlife insurance premiums, and (3) GDP growth rates and total premiums by using a panel dataset from 1990 to 2020 for five South Asian countries, Nepal, India, Pakistan, Sri Lanka, and Bangladesh. Using unit root tests, panel cointegration tests, and VCEM models, the findings revealed that long-term dynamics prevailed between the LNGDP and LIPTGDP for five South Asian countries. The coefficient value of ECT_{t-1} is $-.765$, implying that deviation from the long-run relationship is corrected at a rate of 76.5% in the present period. Similarly, other findings revealed that the long-term dynamics prevailed between LNGDP and NLIPTGDP for five South Asian countries. The coefficient value of ECT_{t-1} is $-.654$, implying that deviation from the long-run relationship is corrected at a rate of 65.4% in the present period. The findings revealed that long-term dynamics prevailed between the LNGDP and TPC for five South Asian countries. The coefficient value of ECT_{t-1} is $-.765$, implying that deviation from the long-run relationship is corrected at a rate of 76.4% in the present period. However, no short-run dynamics prevail between the LNGDP

and LIPTGDP, between the LNGDP and NLIPTGDP, and between the LNGDP and TPC.

The results of the study demonstrated how the expansion of the insurance industry promotes economic growth by lowering risk of loss, encouraging greater investment, advancing financial services, and boosting consumer and business confidence by offering a safety net. Furthermore, the expanding insurance sector may spur innovation in financial products, create jobs, and boost the economy as a whole. In addition, the insurance premium to GDP ratio is an essential indicator for developing government economic policies. A lower ratio suggests that the insurance industry needs to be reformed. As the insurance sector proliferates, more complex regulations might be required to protect consumers and ensure stability. Hence, policymakers can use these findings to promote economic growth by implementing effective regulatory policies, educating the public and SMEs about insurance benefits, providing tax incentives for insurance uptake, and encouraging financial openness for foreign investors to improve consumer choice and quality.

Limitation and Future Research

This study is limited to five South Asian countries and includes only three independent and single dependent variables. This study can be extended by adding more predictor variables such as the inflation rate, deposit rate, financial openness, national savings, rule of law, political stability, regulatory quality, and control of corruption, among others.

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The authors declare no conflicts of interest.

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Authors' Contributions

Prem Bahadur Budhathoki: Conceptualization, methodology, data curation, original draft preparation, software,

Ganesh Bhattarai: Validation, investigation, formal analysis, writing-review and editing, supervision, project administration

Ethical Statement:

This original article has not been submitted to other publications. In addition, this article fulfills all the required ethical considerations.

Data Deposition:

Data can be downloaded from this link: <https://data.mendeley.com/preview/d9zx4x4947?a=cec6a91d-27f7-4a1c-bae5-45e40fe36cf1>

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