Journal of
Risk and Financial Management

Article

Insurance Penetration and Institutional Spillover on Economic Growth: A Dynamic Spatial Econometric Approach on the Asian and Europe Region

Kurukulasuriya Dinesh Udana Devindra Fernando [1], Thambawita Maddumage Nimali Tharanga [1], Narayanage Jayantha Dewasiri [1], Kiran Sood [2,3], Simon Grima [3,4] and Eleftherios Thalassinos [3,5,]*

1. Department of Accountancy and Finance, Sabaragamuwa University of Sri Lanka, Belihuloya 70140, Sri Lanka; kdudfernando@mgt.sab.ac.lk (K.D.U.D.F.); tharanga@mgt.sab.ac.lk (T.M.N.T.); jayantha@mgt.sab.ac.lk (N.J.D.)
2. Chitkara Business School, Chitkara University, Rajpura 140401, Punjab, India; kiran.sood@chitkara.edu.in
3. Department of Insurance and Risk Management, Faculty of Economics, Management and Accountancy, University of Malta, MSD 2080 Msida, Malta; simon.grima@um.edu.mt
4. Faculty of Business, Management and Economics, University of Latvia, LV-1586 Riga, Latvia; simon.grima@lu.lv
5. Faculty of Maritime and Industrial Studies, University of Piraeus, 18534 Piraeus, Greece

* Correspondence: thalassinos@ersj.eu

Citation: Fernando, Kurukulasuriya Dinesh Udana Devindra, Thambawita Maddumage Nimali Tharanga, Narayanage Jayantha Dewasiri, Kiran Sood, Simon Grima, and Eleftherios Thalassinos. 2023. Insurance Penetration and Institutional Spillover on Economic Growth: A Dynamic Spatial Econometric Approach on the Asian and Europe Region. *Journal of Risk and Financial Management* 16: 365. https://doi.org/10.3390/jrfm16080365

Academic Editors: Krishna Reddy, Sanjeev Acharya and Thanasis Stengos

Received: 13 July 2023
Revised: 1 August 2023
Accepted: 4 August 2023
Published: 10 August 2023

Abstract: The contemporary environment is interrelated, and interactions between markets, countries, and international actors at different levels exist in every corner of the globe. Amid this, the failures of the free-market system have paved the way for institutionalism, which proposes minimising transaction costs, substantial property rights, and enabling proper contract enforcement. Studies on institutions and insurance development spillover concerning growth relationships are rare and a critical area needing exploration. This study explores the behaviour of economic development in terms of potential spatial dependencies and spatial institutional and insurance development spillover on economic growth. To measure insurance development by the life insurance and non-life insurance penetration, economic growth by per capita gross domestic product (GDP), and indicators of good governance for institutions in the nations. The study explored the spatial impact between countries using panel data of 56 countries between 2002 and 2020 representing the Asian and European regions. We did this by using dynamic spatial econometric modelling (DSEM) on institutional and insurance development and seeing the spatial implications and the spatial institutional impact moderated by insurance development on growth. Results indicate that developing the life insurance and non-life insurance of surrounding countries creates a spillover impact on the local countries' economies. In contrast, institutions have created a reverse spatial spillover impact on local countries. However, life insurance development, moderated through accountability and government effectiveness, has created a spatial spillover between countries. Both life and non-life penetration moderated by the control of corruption and overall institutions have shown a reverse spillover on countries' economies. This suggests that global governance is a positive-sum game, and monitoring and governance structures have failed at the international level concerning separate countries. Therefore, it is seen that to prevent institutional failure at the state level, good governance and links with the global governance structure could disrupt or energise local institutions.

Keywords: institutions; insurance development; dynamic spatial econometric modelling; spillover effect

1. Introduction

Globalisation has resulted in beneficial and harmful effects on the world, with goods and services being provided to meet the demands of people from different nations. Consequently, the world has come to a stage where opening borders for free commerce and finance can increase everyone's well-being and create vulnerabilities and uncertainty. A nation's growth usually occurs due to free trade, financial problems, and spillovers from nearby regions. In this case, the inherent risk to human life and society concerns business operations. Moreover, with a globalised economy and the financial integration of the world, the impact of one country's monetary policy on other countries' economies cannot be avoided, which means that one region's growth depends on its adjacent regions' growth (Benos et al. 2015). Among all financial markets, the insurance business is crucial to the long-term success of economies (Din et al. 2017) and becomes a shield against possible hazards while bolstering financial intermediation. However, institutional evidence indicated that global governance could help generate productive results for institutions and insurance development because the insurance industry and institutions of the local countries fail to create a positive growth impact on the surrounding countries.

As a means of risk transfer and indemnification, insurance has emerged as an essential financial instrument that supports maintaining people's peace of mind and society's ability to deal with uncertainty (Lester 2009; Outreville 2015; Sood et al. 2022b). Moreover, prudent people would rather avoid the risk and cover these risk eventualities (Din et al. 2017). Most of the time, more solutions would be needed to cover unforeseen losses, depleting already scarce resources. Due to the more significant resource allocation for the contingencies in these situations, society may lose resources that may improve society's well-being. Additionally, risk-transfer mechanisms like insurance may lower stress and dissatisfaction and sustainably boost innovation, creativity, and self-assurance for economic activities (Billah 2016; Shashi et al. 2021). Insurance takes the top spot among other financial instruments used to protect against and indemnify losses, which is essential since it lowers the volatility and unpredictability of the economic situation (Lee and Lin 2016). Moreover, insurance affects economies directly and indirectly throughout the nations (Sharma et al. 2023).

When insurance is used to protect international trade through maritime insurance, it has significantly reimbursed the interruptions of the global supply chain by billions of dollars, smoothing out international trade and promoting its direct and indirect advantages across the nations (Weisbart 2018). According to the World Trade Organization (2022), the importance of insurance has increased substantially due to the insurance premiums on freight transport services in 2021, which increased by 30 percent compared to 2019. The trade value of manufactured products was projected to be USD 14.8 trillion, while the trade value of goods and services was USD 27.3 trillion. On the other hand, reinsurance is used for financial management to transfer risks from the insurer to the reinsurer and force insurers to cede in order to manage capital needs and economic conditions. Then, insurers may offer more coverage to various businesses while protecting local businesses. But, when the reinsurance mechanism began, premiums and claim payments were distributed among the nations where the reinsurers were based. So, in this situation, money flows are also invested in various financial markets worldwide. However, a pattern suggests that while industrialised countries sharply cut their insurance contributions, emerging nations have increased their attention and contributions to the insurance system (Guo et al. 2021).

In-depth research on the consequences and causes of institutions, financial development, and economic progress has been conducted throughout the past few decades. Numerous studies on the relationship between institutions and finance were conducted (Acemoglu et al. 2001; Eldomiaty et al. 2020; Gani and Rasul 2020; La Porta et al. 1997), as well as on the relationship between institutions and growth (Colagrossi et al. 2020; Levine 1998; Zergawu et al. 2020). Further, studies have examined the link between insurance and growth (Bayar et al. 2021; Lee et al. 2016; Peleckienė et al. 2019; Ward and Zurbruegg 2000; Grima et al. 2021; Sood et al. 2022a).

How do institutions spillover the expansion of the insurance sector if the interaction of economies produces costs and advantages among countries and if economies are assumed to be independent? No nation or region lives in isolation; they always have a dynamic link (Amidi and Fagheh Majidi 2020). The price variations and volatility of financial assets in one country might directly or indirectly affect neighbouring states or those outside its boundaries. Evidence shows that developing economies have been severely influenced by economic shocks in affluent countries (Tanaka and Fukuda 2019). This growth effect is shifted from local nations to neighbours in the event that there is geographical dependence between institutions (Ganau 2017; Hall and Ahmad 2012; Zallé 2017). It has been discovered that the dissemination of institutions, which is a geographical phenomenon, affects the institutions of neighbouring nations (Kelejian et al. 2013). Some research (Ran et al. 2020; Zhong and Li 2020; Zhou et al. 2019) has examined financial development's geographical effects on various development.

Additionally, a person's legal experience significantly affects how comfortably and safely they may conduct financial transactions, ensuring they stay within the law's boundaries. This institutionally pushes market-oriented financial institutions to function well in support of economic growth on a worldwide scale as a complex network. Given that the relationship between institutions, insurance, and growth is a spatial process, early research has yet to identify the spatial connection between these nexuses (Acemoglu and Robinson 2006).

This study attempts to investigate how institutions and insurance affect the growth nexus in terms of geographical spillover effects and how economic development behaves in terms of potential spatial dependencies. Several econometric models, including level and interaction terms, have been developed for the study, using global panel data from 56 nations from 2002 through 2020. Since most conventional panel data estimations are biased and inconsistent due to the model's endogeneity, models are evaluated using DSEM. The structure of the paper is as follows: a review of the literature is provided in Section 2, followed by discussions of the methodology and techniques in Section 3, data analysis and discussion in Section 4, and suggestions in Section 5.

2. Review of Literature

According to formal and informal institution rules, some criteria interact with economic and political institutions (North 1992). Additionally, researchers looked at how a nation's socio-political instability may reduce investment and economic progress (Zallé 2017). Whatever their designation, institutions play a crucial role in every socio-economic and political situation. Since such institutions interact with one another, they are not run in a vacuum. Spillover happens when the institutions interact while the nations or geographical areas are close to one another. Tobler (1970) discussed spatial complexity and explained that according to the rule of geography, everything is connected to everything else but that closer items are more important than further ones. Although some scholars argued that spillover had occurred as localised externalities caused by cultural, political, and institutional differences rather than geographical proximity, others argued that the idea of spillover or diffusion had taken place due to the localised externalities caused by the proximity with adjoining entities, technology and specialisation, and resource mobility (Grossman and Helpma 1991; Sala-i-Martin 1996; Juliana et al. 2022; Jindal and Chavan 2023; Trivedi and Malik 2022). According to the Domino Democracy Theory, when a democratic country interacts with others, it spreads to neighbouring countries and may do so in a way that is distinct from how it expands internally (Leeson and Dean 2009). Regional spatial dependence, however, might be viewed from a different angle in this context. According to the idea of new economic geography, a region's economic growth is influenced by the economies of its neighbouring areas (Fujita et al. 2001). For example, poor areas near poor neighbours experience lower growth, while those near affluent neighbours experience higher growth. A country's political instability has been shown to influence not only its economic growth but also the economic growth of its neighbours (Zallé 2017).

On the other hand, LeSage (2008) notes that the insufficiency of the linear regression model while adhering to the assumptions was emphasised by econometricians. Due to failing to consider the explanatory factors' spatial correlation with the variable of interest, the results might be skewed. The Solow (1956) neoclassical growth model emphasised that a country's economic development benefits from accessibility to technology while it also enjoys equal access to capital and labour. The various knowledge externalities do, however, cross entities. However, Mankiw et al. (1992) tested whether developing nations grow more quickly than affluent countries using the Solow model of the standard of life. While taking into account externalities, it was shown that nations converge when population growth and capital accumulation remain constant, which may be used to explain why the disparities between highly developed and developing countries do not become smaller over time. Economic growth depends on financial development because it generates and disseminates better and more reliable information about lucrative investments and encourages optimal capital allocation since it increases the reliability of contract execution and transaction execution. Additionally, expanding financial access spurs economic dynamism, which brings about fundamental changes through innovation and advantages for the entire economy. Investment growth and technological advancement are critical in connecting financial development and economic expansion (Levine 1997; Manohar et al. 2020; Arora et al. 2022).

Ward and Zurbruegg (2000) analysed the short-run and long-run dynamic linkages for OECD nations to investigate the connection between the expansion of the insurance business and economic growth. Each nation's real GDP and insurance premiums were used as the observational variables from 1961 to 1996. The data's causation tests revealed that although certain nations may discern an influence from the expansion of the insurance sector on economic growth, other countries do not. The development of the insurance industry and economic growth are also moderated by some fundamental qualities of a nation (Malhotra et al. 2022).

A response to whether the insurance industry matters for economic growth was found by (Bayar et al. 2021). For 19 years, from 1998 to 2016, they analysed a sample of 14 post-transition Central and Eastern European (CEE) nations. The results showed that while non-life insurance had a beneficial impact on economic growth in both the panel and individual nations, life insurance had no appreciable impact on economic growth in either the panel or respective countries. They discovered these results based on freshly established panel econometric methodologies with cross-section dependency and structural breakdowns.

Han et al. (2010) used GMM models on a dynamic panel data set of 77 economies from 1994 to 2005 to investigate the link between insurance development and economic growth. The insurance density variable was used to measure the growth of insurance. They concluded that the rise of insurance positively correlates with a country's economic prosperity. Additionally, the study's sample was split into developed and developing economies, and the results crucially discovered that life and non-life insurance play essential roles in eco-developing economies, just as they do in developed ones.

Peleckienė et al. (2019) have added to the points already made on the known links between insurance and economic growth by utilising yearly data from 2004 to 2015 to examine a sample of European Union countries that are members of the European Insurance Federation. The variable of insurance penetration was used to gauge the growth of insurance. They used descriptive data to draw their conclusions and found that the development of the insurance industry is higher in economically developed nations like the UK, the Netherlands, Denmark, Finland, Ireland, and France. The insurance industries are the least developed in Romania, Bulgaria, Latvia, and Estonia. These nations also fall under the category of those with relatively little economic growth.

H. Lee (2019) also noted the influence of a country's baseline GDP per capita and continent on the association between insurance-related activities and economic growth. A static panel model and a dynamic panel model with 123 nations from 1967 to 2014 were included with the panel data for the study. He discovered a substantial causal connection between insurance expansion and economic development and noted how this connection varied among nations, localities, and baseline income levels. In addition, it has been discovered that the development of insurance indirectly affects a nation's economic growth since it depends on insurers' investment success.

To determine the relationship between life insurance development and the economic growth of 41 chosen nations between 1979 and 2007, Lee et al. (2013) looked for a correlation between life insurance premiums and GDP. The development of life insurance markets and economic growth shows long-run and short-run bidirectional causalities, showing a positive relationship between the variables. They used panel data analysis to obtain the conclusion (Ouedraogo et al. 2016).

From 1996 to 2011, Sawadogo et al. (2018) examined the association between life insurance and economic development in 86 developing nations. They investigated the diverse impact of life insurance on economic growth and found that it has a beneficial effect on GDP per capita, albeit they also noted that this impact varies depending on the structural peculiarities of each nation. The marginal beneficial effect of life insurance expansion on economic growth was affected negatively by the levels of deposit interest rates, bank loans to the private sector, and stock market transactions. However, it was positively influenced by high-quality institutions.

In his study, Alhassan (2016) examined the causal link between insurance penetration and economic growth in eight particular African nations, adding his results from the same phenomenon. On yearly time-series data from 1990 to 2010, the auto-regressive distributed lags-bound technique to cointegration was used to evaluate the causal link between insurance development and economic growth in Algeria, Gabon, Kenya, Madagascar, Mauritius, Morocco, Nigeria, and South Africa. The ratio of life and non-life insurance premiums to the GDP was used as a proxy for the insurance market's growth. Out of the eight nations he chose, he discovered a long-term association between the development of insurance and economic growth in Kenya, Mauritius, Morocco, Nigeria, and South Africa.

3. Methodology

According to scholars, the social interactions and economic and political structures of other countries affect the economic development of one particular country (Bosker and Garretsen 2009). In fact, various variables, including territorial breakdown decisions and spillover, may influence endogenous, exogenous, and geographically dependent errors (Dewasiri et al. 2018). Anselin (2002) was adamant that the economic growth of an area was not only tied to itself but also impacted by the geographical spillover of neighbouring entities. The availability of spatial autocorrelation in error terms and spatial heterogeneity, which is the departure from the preexisting link between observations at the geographical level, are both unavoidable when aggregate data from many nations are used in the regression analysis.

When considering the spatial regression techniques, which enable scientists to identify the relationships between observations since data are gathered spatially rather than from a single place, it is somewhat dependent since the sample data are not independent (LeSage 2008). This situation often demonstrates that values in one area are comparable to those in surrounding locations. Therefore, theoretical economics specifically emphasises how one economic agent interacts with a different type of economic agent (Baltagi and Li 2004). Furthermore, it is contended that the dependent variable's reported fluctuation may result from unrecognised impacts; as a result, latent influences adapt slowly when cross-regional effects are taken into consideration. Cross-section or panel data presume that observations or areas are independent of one another in accordance with standard regression models. However, making such an assumption would lead to biased and contradictory outcomes, and doing so would be unreasonable. The dependency between data would be taken into account, and the nearest neighbours would be identified using spatial econometric methods instead (Anselin 2002).

Since three different types of interaction effects may explain why observation relates to a specific location which may be dependent on the observation of other locations ($\eta\sum_{j=1}^{N} W_{ij}\ EG_{jt}$), there are endogenous interaction effects where the particular unit A behaviour depends on the decision taken by another unit B $(\partial_3 \sum_{j=1}^{N} W_{ij}\, INS_{jt}, \partial_5 \sum_{j=1}^{N} W_{ij}(IND_{it} * INS_{it}))$; exogenous interaction effects explain the specification of an equilibrium outcome of a spatial in which the value of the dependent variable for one unit is jointly determined with that neighbouring unit and exogenous interaction effects where the decision of a particular unit to behave in some way depends on independent explanatory variables of the decision taken by the other units (Elhorst 2009; Youssef et al. 2022).

3.1. Spatial Weighted Matrix

As a result of the connectedness between units, a spatial matrix or W matrix depicts spatial relationships (Bivand and Wong 2018). The connectedness between each pair of units, i and j, is shown by the components of the W_{ij}, a $N \times N$-dimensional matrix.

$$W = \begin{bmatrix} w_{11} & w_{12} & \cdots & w_{1n} \\ w_{21} & w_{22} & \cdots & w_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ w_{n1} & w_{n2} & \cdots & w_{nn} \end{bmatrix} \tag{1}$$

The diagonal elements of the matrix are $W_{ij} = w_{11}, w_{22}, \ldots\ldots, w_{nn}$. The entities are the nations, including the islands, and the distance-based weighted matrix is generated in accordance with the nature of the data. This matrix details 56 countries that are geographical neighbours of one another in the Asian and European continents. This matrix may be described as W_{ij}, where it displays how geographically connected the observations i and j are to one another. The matrix is created in two ways depending on proximity or distance, with each row being standardised. The distances between the nations are used to generate the matrix in this study.

Initially, the spatial weighted matrix has created the assumption that the spatial weighted matrix is a non-stochastic matrix with zero mean. Then, the assumption for the error component is devised that the relevant disturbances are i.i.d across and t with zero mean and finite variance, and their higher than fourth moment exists. Then, the regressors X_t are non-stochastic and have full rank, and N is large while T can be infinite or large.

The best spatial model among the m"ny s'atial models is used for the geographic dependencies in the following phase in accordance with the findings about the visibility of the spatial autocorrelation. The spatial Durbin model (SDM), the spatial autoregressive model (SAR), the spatial error model (SEM), and the spatial autocorrelation model (SAC) are all examples of spatial models (LeSage 2008). This research uses spatial econometric estimations to examine how institutions and financial development affect economic growth. It is evident that a nation's economy is continually growing, and this expansion is dynamic. The effect of diverse elements from the present and the past on the present's development has been demonstrated practically and theoretically.

3.2. Dynamic Spatial Durbin Model (DSDM)

Using spatial econometrics methodologies, the study compares the influence of institutions with and without moderation on insurance growth. The study employed the DSDM to analyse spatial dependence utilising the spatial model (Amidi and Fagheh Majidi 2020). However, this model deals with omitted variable bias and externalities, making it more useful than previous models (Belotti et al. 2017). An econometric model is selected based on the geographic dependencies between variables and the kinds of spatial interaction effect. The DSDM, a theoretically acknowledged model, is the best modelling option for this investigation. However, some diagnostic testing on various interactions is required. The best model is picked initially based on the theoretical basis. Then, when the test statistics reject the null hypothesis, SDM is chosen as the best model among the alternatives. The S.D.M. is the optimal model when the test statistics indicate that the null hypothesis is not supported. Finally, the SAC model and SDM are compared to determine the best model using the Akaike Information Criteria (AIC) and the Bayesian Information Criteria (BIC) criteria. SDM was chosen based on the results derived. Last but not least, the DSDM was picked among the static SDM, with a comparison of the R^2 of both models and an emphasis on the model that suited the data better. The adjusted R^2 estimated the best models' goodness of fit, and from that, dynamic models were suitable for the final analysis.

$$\begin{gathered} EG_{it} = \partial_0 + \partial_1 EG_{it-1} + \eta \sum_{j=1}^{N} W_{ij} EG_{jt-1} + \rho \sum_{j=1}^{N} W_{ij} EG_{jt} + \partial_2 INS_{it} + \\ \partial_2 IND_{it} + \partial_3 \sum_{j=1}^{N} W_{ij} INS_{jt} + \partial_4 \sum_{j=1}^{N} W_{ij} IND_{jt} + \sum_{k=1}^{K} \beta_k x_{ikt} + \\ \sum_{k=1}^{K} \left(\theta_k \sum_{j=1}^{N} W_{ij} x_{ikt} \right) + \mu_i + \xi_t + \varepsilon_{it} \end{gathered} \tag{2}$$

$$\begin{gathered} EG_{it} = \partial_0 + \partial_1 EG_{it-1} + \eta \sum_{j=1}^{N} W_{ij} EG_{jt-1} + \rho \sum_{j=1}^{N} W_{ij} EG_{jt} + \partial_2 INS_{it} + \\ \partial_2 IND_{it} + \partial_2 (IND_{it}{*}INS_{it}) + \partial_3 \sum_{j=1}^{N} W_{ij} INS_{it} + \partial_4 \sum_{j=1}^{N} W_{ij} IND_{it} + \\ \partial_5 \sum_{j=1}^{N} W_{ij} \left(IND_{it}{*}INS_{it} \right) + \sum_{k=1}^{K} \beta_k X_{ikt} + \sum_{k=1}^{K} \left(\theta_k \sum_{j=1}^{N} W_{ij} x_{ikt} \right) + \mu_i + \xi_t + \\ \varepsilon_{it} \end{gathered} \tag{3}$$

where EG_{it} is the country's economic growth, which is the dependent variable of the model I (=1, . . ., N) at the time t (=1, . . ., T). Then, EG_{it-1}, $\sum_{j=1}^{N} W_{ij}EG_{it}$, and $\sum_{j=1}^{N} W_{ij}EG_{it-1}$ are the temporal, spatial, and spatiotemporal lag of the economic growth, respectively; ∂, ρ, and η are the corresponding parameters of the given variables' spatial and spatiotemporal autoregressive coefficients. Here, the W_{ij} Represents the element of an N × N spatial weighted matrix. As mentioned earlier, N represents the 56 countries, which is the study sample containing the 56 × 56 matrix. Then, the K represents the number of control variables, which is eight. INS is the institutional variable, while IND means the insurance development, which is represented by life insurance (LI) and non-life insurance (NL). X represents the control variables, trade openness (TO), inflation (INF), human capital (HC), government expenditure (GE), investment (INV), and financial openness (FO). Then μ_i and ε_{it} are individual fixed effects, time-fixed effects and error terms, respectively. Further, INS is replaced by its six indicators. Initially, INS is replaced with the composite governance index. In addition to the above identification, model (3) IS included the insurance development moderated by the institutions, where $(IND_{it}{*}INS_{it})$.

The partial derivative interpretation is the foundation of DSDM since there may be a feedback effect; it is only effective when it requires the computation of direct, indirect, and total impacts (LeSage 2014). In this case, the endogenous interaction impact of the IND or INS on the EG at a specific time will likewise play a role as a dependent variable of that unit. The model's direct effect calculates the effect on a country's EG of one unit of INS or IND changes. The indirect influence may then be illustrated by examining how one unit change in the INS or IND in nation j will impact the EG in country i. Finally, the total impact is taken as the direct and indirect impact sum (Table 1).

3.3. Principal Component Analysis (PCA)

PCA develops estimates to cover the institutional environment features introduced by Kaufmann and Zoido-lobato'n (1999). Effective institutional excellence is represented by this composite variable (Globerman 2002). The PCA employs an orthogonal transformation to convert the collection of correlated variables ($X_1 \ldots X_P$) into a set of values of linearly uncorrelated variables ($PC_1, \ldots, PC_K$). There are three parts in this procedure: building a correlation matrix, extracting factor loading, and figuring out similarities (Nayak 2022). The following is an expression for the expected model:

$$\begin{gathered} INS_{it} = PC_{CC} \times CC_{it} + PC_{VA} \times VA_{it} + PC_{RL} \times RL_{it} + PC_{RQ} \times RQ_{it} \\ + PC_{PS} \times PV_{it} + PC_{GE} \times GE_{it} \end{gathered} \tag{4}$$

Table 1. Variables for the Spatial Econometric.

Variables	Measured by	Source
Life insurance development (LIND)	Life insurance penetration	Beck et al. (2000)
Non-life insurance development (NLIND)	Non-life insurance penetration	Beck et al. (2000)
Economic growth (EG)	Per capita GDP (constant 2010 USD)	World Development Indicators, World Bank (2023a)
Human capital (HC)	Secondary school enrolment (% gross)	World Development Indicators, World Bank (2023a)
Investment (INV)	Gross capital formation (% of GDP)	World Development Indicators, World Bank (2023a)
Financial openness (FO) inflation (INF)	Foreign direct investment, net inflows (% of GDP), consumer price index (2010 = 100)	World Development Indicators, World Bank (2023a)
Government Expenditure (GE)	General government expenditure (% of GDP)	World Development Indicators, World Bank (2023a)
Trade openness (TO)	Total of imports and exports of goods and services/GDP (constant 2010 USD)	World Development Indicators, World Bank (2023a)
Accountability	Estimates of countries' scores range from −2.5 to +2.5	Kaufmann and Zoido-lobato'n (1999) and World Governance Indicators, World Bank (2023a)
Political stability and absence of violence/terrorism	Estimates of countries' scores range from −2.5 to +2.5	Kaufmann and Zoido-lobato'n (1999) and World Governance Indicators, World Bank (2023b)
Government effectiveness	Estimates of countries' scores range from −2.5 to +2.5	Kaufmann and Zoido-lobato'n (1999) and World Governance Indicators, World Bank (2023b)
Regulatory quality	Estimates of countries' scores range from −2.5 to +2.5	Kaufmann and Zoido-lobato'n (1999) and World Governance Indicators, World Bank (2023b)
The rule of law	Estimates of countries' scores range from −2.5 to +2.5	Kaufmann and Zoido-lobato'n (1999) and World Governance Indicators, World Bank (2023b)
Control of corruption	Estimates of countries' scores range from −2.5 to +2.5	Kaufmann and Zoido-lobato'n (1999) and World Governance Indicators, World Bank (2023b)

Source: Authors' compilation.

4. Analysis and Discussion

Outliers in the data set would produce inappropriate estimations, causing unreliable results. Scholars have advised us to check the outliers to prevent intervention effects.

However, we could find a few outliers using the interquartile range, and the data sources are very reliable. Therefore, we treated the data as received in the same format.

Table 2 shows the summary statistics of the variable employed in the study. LI and NL show the insurance penetration value, which are ratios, while the INS represents the descriptive statistics of the compositive index. EG represents the dependent variable of the study in log form. Then, TO, HC, FO, GE, and INV are shown in ratios, while INF variables are represented as ratios and percentages.

Table 2. Summary statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
LI	1064	3.281	5.013	−0.454	48.266
NL	1064	1.931	1.213	−2.307	8.062
EG	1064	9.627	1.163	6.52	11.63
INS	1064	0	2.253	−4.881	3.76
TO	1064	0.936	0.612	−.202	3.665
HC	1064	94.94	28.315	−39.122	163.935
INF	1064	104.292	36.99	32.59	719.482
FO	1064	5.148	11.403	−57.532	138.215
GE	1064	17.306	5.112	5.023	30.003
INV	1064	25.388	6.749	6.059	58.151

Source: Authors' compilation.

Below Table 3 shows the correlation matrix among the variables. As expected, LIND, NLIND, and EG confirm their positive and higher correlation with the INS.

Table 3. Pairwise correlation.

Var	LI	NL	EG	INS	TO	HC	INF	FO	GE	INV
LI	1.000									
NL	0.343	1.000								
	(0.000)									
EG	0.375	0.573	1.000							
	(0.000)	(0.000)								
INS	0.390	0.600	0.842	1.000						
	(0.000)	(0.000)	(0.000)							
TO	0.498	0.259	0.359	0.413	1.000					
	(0.000)	(0.000)	(0.000)	(0.000)						
HC	−0.099	0.084	−0.012	−0.039	−0.045	1.000				
	(0.001)	(0.006)	(0.692)	(0.203)	(0.141)					
INF	−0.041	−0.050	−0.066	−0.165	−0.022	0.099	1.000			
	(0.184)	(0.103)	(0.032)	(0.000)	(0.474)	(0.001)				
FO	0.256	0.023	0.085	0.125	0.337	−0.022	−0.062	1.000		
	(0.000)	(0.453)	(0.006)	(0.000)	(0.000)	(0.474)	(0.044)			
GE	−0.183	0.081	−0.054	−0.034	−0.191	0.588	0.064	−0.106	1.000	
	(0.000)	(0.008)	(0.078)	(0.271)	(0.000)	(0.000)	(0.036)	(0.001)		
INV	−0.013	−0.054	−0.028	−0.008	0.135	−0.096	0.024	0.065	−0.285	1.000
	(0.666)	(0.079)	(0.364)	(0.797)	(0.000)	(0.002)	(0.439)	(0.034)	(0.000)	

Source: Authors' compilation.

When initially processing the data, the correlation between independent variables was tested for multicollinearity using the variance inflationary factor (VIF). According to the results of the VIF, it can be confirmed that there is no multicollinearity problem between independent variables.

Results on the Spatial Impact of Institutions and Non-Life Insurance Development on Economic Growth

As per the results in Tables 4 and 5, the rho value indicates that the spatial autocorrelation coefficient of economic development (EG) in all the models is positive and significant at a five percent level. Results confirmed that EG depicts a positive spatial spillover impact, indicating that the EG of countries in the current period has driven the EG of its surrounding countries. Further, coefficients of the L.EG of all models are positive and significant, highlighting that the early year EG of local countries became a significant influencer of the current year EG of the local countries. Then, the coefficients of the W.LEG of models in LI and NL are negatively significant at the five percent level. The global scenario of the EG behaviour depicts that the early period of the EG of the local countries has discouraged the EG of the surrounding countries in the current period. Findings showed that there was a hindering effect on economic interaction among countries. The possible reason may be that capital, technology, human capital, and natural resources were subjected to the "siphon effect" at the country level since the countries with higher capacity and development have absorbed such elements from neighbouring countries for their growth process because such a scenario depicts that it will negatively impact the future EG of the close and distant neighbouring countries. Further, the impact has created a "Matthew effect" since the richer became richer while widening the inequality and poverty gap (Liu et al. 2021).

Table 4. Spatial impact of institutions and life insurance, and institutional moderation of life insurance on economic growth—I.

INS		INS	INS × LI	COC	COC × LI	VAC	VAC × LI	ROL
Main	L.EG	1.0403 ***	1.0034 ***	1.0143 ***	0.9990 ***	1.0368 ***	1.2233 ***	1.0110 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	L.WEG	−0.7830 ***	−0.6677 ***	−0.6895 ***	−0.6434 ***	−0.6582 ***	−1.1665 ***	−0.6490 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	LI	−0.0020 ***	−0.0022 **	−0.0021 ***	−0.0021 ***	−0.0017 **	−0.0009	−0.0021 ***
		(0.0047)	(0.0260)	(0.0026)	(0.0020)	(0.0179)	(0.2254)	(0.0035)
	INS	0.0046	0.0106 ***	0.0238 ***	0.0263 ***	0.0016	−0.0501 ***	0.0167 **
		(0.1811)	(0.0021)	(0.0001)	(0.0000)	(0.8381)	(0.0000)	(0.0296)
	LI × INS		0.0001		0.0019		−0.0136 ***	
			(0.7569)		(0.3098)		(0.0000)	
	TO	0.0327 ***	0.0386 ***	0.0348 ***	0.0349 ***	0.0289 ***	0.0253 ***	0.0323 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0008)	(0.0000)
	FO	0.0003 ***	0.0003 ***	0.0003 ***	0.0003 ***	0.0003 ***	0.0004 ***	0.0003 ***
		(0.0002)	(0.0003)	(0.0004)	(0.0007)	(0.0003)	(0.0001)	(0.0004)
	INF	−0.0001 ***	−0.0001 **	−0.0001 **	−0.0001 **	−0.0001 ***	−0.0002 ***	−0.0001 ***
		(0.0044)	(0.0163)	(0.0365)	(0.0453)	(0.0008)	(0.0000)	(0.0035)
	GE	0.0004	0.0002	0.0003	0.0003	0.0007	−0.0001	0.0007
		(0.4945)	(0.7096)	(0.6207)	(0.5860)	(0.2960)	(0.9241)	(0.2886)
	INV	0.0001	−0.0001	0.0001	−0.0001	−0.0002	0.0011 ***	−0.0002
		(0.6602)	(0.7632)	(0.8241)	(0.7105)	(0.4711)	(0.0000)	(0.4199)
	HC	0.0003 ***	0.0003 **	0.0003 **	0.0002 *	0.0002 **	0.0004 ***	0.0003 **
		(0.0097)	(0.0145)	(0.0218)	(0.0574)	(0.0492)	(0.0001)	(0.0238)
Wx	LI	0.0097 ***	0.0203 ***	0.0098 ***	0.0099 ***	0.0104 ***	0.0120 ***	0.0104 ***
		(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0000)
	INS	−0.0156	−0.0105	−0.0621 ***	−0.0617 ***	0.0592 ***	0.0645 ***	−0.0063
		(0.1662)	(0.3525)	(0.0006)	(0.0008)	(0.0047)	(0.0022)	(0.8054)
	LI × INS		−0.0045 ***		0.0038		0.0260 ***	
			(0.0008)		(0.4882)		(0.0001)	
	TO	0.1879 ***	0.1227 ***	0.1593 ***	0.1282 ***	0.1236 ***	0.4887 ***	0.1201 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	FO.	−0.0007 **	−0.0005	−0.0007 **	−0.0007 **	−0.0006 **	−0.0011 ***	−0.0007 **
		(0.0193)	(0.1226)	(0.0298)	(0.0272)	(0.0453)	(0.0008)	(0.0274)
	INF	0.0002	−0.0001	−0.0000	−0.0001	0.0000	0.0013 ***	−0.0001
		(0.1563)	(0.6205)	(0.8673)	(0.3202)	(0.9320)	(0.0000)	(0.6968)
	GE	−0.0010	−0.0019	−0.0011	−0.0019	−0.0040 **	0.0032 **	−0.0033 **
		(0.5316)	(0.2118)	(0.4781)	(0.2180)	(0.0104)	(0.0376)	(0.0312)
	INV	0.0012 **	0.0016 ***	0.0014 **	0.0012 **	0.0007	0.0013 **	0.0010 *
		(0.0279)	(0.0075)	(0.0122)	(0.0430)	(0.1970)	(0.0248)	(0.0807)
	HC	0.0010 **	0.0011 ***	0.0012 ***	0.0012 ***	0.0011 ***	0.0008 **	0.0009 **
		(0.0104)	(0.0044)	(0.0016)	(0.0027)	(0.0047)	(0.0386)	(0.0149)

Table 4. *Cont.*

INS		INS	INS × LI	COC	COC × LI	VAC	VAC × LI	ROL
Spatial	rho	0.4486 ***	0.4666 ***	0.4293 ***	0.4554 ***	0.4471 ***	0.2105 ***	0.4526 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Variance	sigma	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SR_Dir	LI	−0.0014 *	−0.0009	−0.0015 **	−0.0015 **	−0.0010	−0.0005	−0.0014 *
		(0.0559)	(0.3950)	(0.0328)	(0.0327)	(0.1563)	(0.4492)	(0.0506)
	INS	0.0038	0.0102 ***	0.0209 ***	0.0232 ***	0.0050	−0.0492 ***	0.0166 **
		(0.3013)	(0.0060)	(0.0007)	(0.0002)	(0.5237)	(0.0000)	(0.0407)
	LI × INS		−0.0002		0.0022		−0.0131 ***	
			(0.6151)		(0.2434)		(0.0000)	
SR_Ind	LI	0.0155 ***	0.0358 ***	0.0153 ***	0.0164 ***	0.0170 ***	0.0151 ***	0.0168 ***
		(0.0007)	(0.0000)	(0.0005)	(0.0008)	(0.0003)	(0.0000)	(0.0004)
	INS	−0.0233	−0.0113	−0.0874 ***	−0.0911 ***	0.1081 ***	0.0658 **	0.0053
		(0.2781)	(0.5920)	(0.0096)	(0.0068)	(0.0056)	(0.0104)	(0.9157)
	LI × INS		−0.0083 ***		0.0090		0.0291 ***	
			(0.0022)		(0.3804)		(0.0004)	
SR_Tot	LI	0.0141 ***	0.0349 ***	0.0138 ***	0.0149 ***	0.0159 ***	0.0145 ***	0.0153 ***
		(0.0045)	(0.0001)	(0.0039)	(0.0045)	(0.0017)	(0.0001)	(0.0027)
	INS	−0.0196	−0.0011	−0.0665 *	−0.0680 *	0.1131 ***	0.0166	0.0219
		(0.3985)	(0.9614)	(0.0669)	(0.0635)	(0.0058)	(0.5352)	(0.6868)
	LI × INS		−0.0085 ***		0.0111		0.0161 *	
			(0.0033)		(0.3056)		(0.0635)	
R^2		0.982	0.992	0.988	0.990	0.992	0.947	0.992
N		1008	1008	1008	1008	1008	1008	1008
CODE		56	56	56	56	56	56	56

Source: Authors' compilation. (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$).

Table 5. Spatial impact of institutions and life insurance, and institutional moderation of life insurance on economic growth—II.

INS		ROL × LI	RGL	RGL × LI	PSV	PSV × LI	GOE	GOE × LI
Main.	L.EG	0.9962 ***	0.9923 ***	0.9870 ***	1.0019 ***	1.0027 ***	1.5828 ***	1.0254 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	L.WEG	−0.6185 ***	−0.6240 ***	−0.6145 ***	−0.6086 ***	−0.6081 ***	−2.1198 ***	−0.6605 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	LI	−0.0022 ***	−0.0020 ***	−0.0020 ***	−0.0018 ***	−0.0019 ***	0.0003	−0.0018 **
		(0.0024)	(0.0037)	(0.0035)	(0.0085)	(0.0081)	(0.7027)	(0.0107)
	INS	0.0199 ***	0.0246 ***	0.0267 ***	0.0054	0.0079	−0.1009 ***	.0014
		(0.0097)	(0.0001)	(0.0000)	(0.2088)	(0.1137)	(0.0000)	(0.8162)
	LI × INS	0.0002		−0.0014		0.0015		0.0021
		(0.9452)		(0.4813)		(0.3037)		(0.2629)
	TO	0.0328 ***	0.0330 ***	0.0337 ***	0.0300 ***	0.0304 ***	0.0304 ***	0.0328 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0000)
	FO	0.0003 ***	0.0003 ***	0.0003 ***	0.0003 ***	0.0003 ***	0.0005 ***	0.0003 ***
		(0.0005)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0000)	(0.0005)
	INF	−0.0001 ***	−0.0001 ***	−0.0001 ***	−0.0001 ***	−0.0001 ***	−0.0003 ***	−0.0001 ***
		(0.0071)	(0.0049)	(0.0048)	(0.0033)	(0.0023)	(0.0000)	(0.0007)
	GE	0.0007	0.0005	0.0005	0.0006	0.0007	−0.0010	0.0007
		(0.2773)	(0.4107)	(0.4697)	(0.3195)	(0.3070)	(0.1250)	(0.3012)
	INV	−0.0003	−0.0003	−0.0003	−0.0003	−0.0003	0.0036 ***	−0.0001
		(0.2611)	(0.1677)	(0.1579)	(0.1943)	(0.2046)	(0.0000)	(0.6657)
	HC	0.0002 **	0.0002 *	0.0002 *	0.0002 *	0.0002 *	0.0012 ***	0.0003 **
		(0.0331)	(0.0815)	(0.0950)	(0.0732)	(0.0823)	(0.0000)	(0.0250)

Table 5. *Cont.*

INS		ROL × LI	RGL	RGL × LI	PSV	PSV × LI	GOE	GOE × LI
Wx	LI	0.0103 ***	0.0101 ***	0.0101 ***	0.0097 ***	0.0098 ***	0.0114 ***	0.0089 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0004)
	INS	−0.0024	0.0250	0.0228	0.0121	0.0131	−0.2005 ***	−0.0609 ***
		(0.9258)	(0.2645)	(0.3140)	(0.3751)	(0.4014)	(0.0000)	(0.0018)
	LI × INS	−0.0023		0.0054		0.0012		0.0090
		(0.7410)		(0.4528)		(0.8166)		(0.1322)
	TO	0.0990 ***	0.1133 ***	0.1090 ***	0.0822 ***	0.0853 ***	1.1764 ***	0.1317 ***
		(0.0001)	(0.0000)	(0.0000)	(0.0010)	(0.0007)	(0.0000)	(0.0000)
	FO.	−0.0006 **	−0.0007 **	−0.0007 **	−0.0006 **	−0.0007 **	−0.0016 ***	−0.0006 **
		(0.0420)	(0.0227)	(0.0227)	(0.0399)	(0.0360)	(0.0000)	(0.0453)
	INF	−0.0001	−0.0001	−0.0001	−0.0002	−0.0002	0.0029 ***	−0.0002
		(0.3938)	(0.4692)	(0.4296)	(0.2163)	(0.1886)	(0.0000)	(0.2747)
	GE.	−0.0037 **	−0.0033 **	−0.0032 **	−0.0039 ***	−0.0038 **	0.0190 ***	−0.0031 **
		(0.0155)	(0.0262)	(0.0287)	(0.0099)	(0.0102)	(0.0000)	(0.0427)
	INV	0.0010 *	0.0006	0.0006	0.0007	0.0007	0.0029 ***	0.0005
		(0.0798)	(0.2608)	(0.3148)	(0.1876)	(0.2455)	(0.0000)	(0.3458)
	HC	0.0010 **	0.0009 **	0.0009 **	0.0010 ***	0.0011 ***	0.0022 ***	0.0014 ***
		(0.0168)	(0.0131)	(0.0266)	(0.0062)	(0.0051)	(0.0000)	(0.0007)
Spatial	rho	0.4637 ***	0.4553 ***	0.4596 ***	0.4836 ***	0.4834 ***	0.1354 ***	0.4726 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0038)	(0.0000)
Variance	sigma	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SR_Dir	LI	−0.0015 **	−0.0014 *	−0.0014 *	−0.0012	−0.0012	0.0002	−0.0012
		(0.0413)	(0.0535)	(0.0528)	(0.1065)	(0.1028)	(0.7516)	(0.1011)
	INS	0.0200 **	0.0266 ***	0.0286 ***	0.0063	0.0088 *	−0.0990 ***	−0.0026
		(0.0152)	(0.0001)	(0.0000)	(0.1614)	(0.0890)	(0.0000)	(0.7023)
	LI × INS	0.0001		−0.0011		0.0016		0.0028
		(0.9799)		(0.6079)		(0.2896)		(0.1599)
SR_Ind	LI	0.0173 ***	0.0165 ***	0.0169 ***	0.0166 ***	0.0171 ***	0.0101 ***	0.0153 ***
		(0.0006)	(0.0004)	(0.0007)	(0.0009)	(0.0011)	(0.0000)	(0.0027)
	INS	0.0098	0.0671	0.0614	0.0291	0.0300	−0.1671 ***	−0.1145 ***
		(0.8352)	(0.1113)	(0.1216)	(0.2909)	(0.3056)	(0.0000)	(0.0043)
	LI × INS	−0.0033		0.0092		0.0038		0.0192
		(0.7985)		(0.4977)		(0.7032)		(0.1074)
SR_Tot	LI	0.0158 ***	0.0151 ***	0.0155 ***	0.0154 ***	0.0159 ***	0.0103 ***	0.0141 ***
		(0.0035)	(0.0030)	(0.0035)	(0.0043)	(0.0047)	(0.0000)	(0.0097)
	INS	0.0298	0.0938 **	0.0900 **	0.0354	0.0388	−0.2661 ***	−0.1170 ***
		(0.5656)	(0.0341)	(0.0324)	(0.2316)	(0.2196)	(0.0000)	(0.0083)
	LI × INS	−0.0032		0.0081		0.0054		0.0219 *
		(0.8148)		(0.5766)		(0.6107)		(0.0866)
R^2		0.993	0.994	0.994	0.995	0.995	0.884	0.992
N		1008	1008	1008	1008	1008	1008	1008
CODE		56	56	56	56	56	56	56

Source: Authors' compilation. (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$).

As per Table 4, the LI and the spatial interaction (W × LI) coefficients show a significant negative and positive impact, respectively. Results indicate that increasing the LI in local countries has decreased the EG of the local countries, while increasing the LI index of sur- rounding countries increased the EG of local countries. If the results are considered, the negative effect of LI on local economies may be a reason substitution effect between life insurance and stock markets and banking sectors where the lower development of the life insurance market or LI is effective only up to a threshold due to its curve shape behaviour (Beck et al. 2000; Chang and Lee 2012). Further, evidence indicates that financial market inefficiency and instability will bring negative consequences due to high transaction costs, information asymmetries, and low levels of competition (Blejer 2006). The LI of surrounding countries has positively influenced local economies due to the benefits of life insurance, which have flowed to local countries' economic development. Studies provide evidence that premium drain can occur in some cases, particularly in countries with less developed insurance markets, and that it can have negative implications for economic growth and sometimes the regulatory environment, the level of economic development, and the structure of the insurance market (Eling and Luhnen 2010). Then, the coefficients of the INS of local countries depict that though the overall INS of local countries did not enhance the EG of such lands, COC, ROL, and RGL have improved the EG of local countries by 2.4 percent, 1.8 percent, and 2.5 percent while GOE has decreased the EG by 10 percent. The responsiveness of economic growth to life insurance development depends on the level of institutional quality and legal environment Beck and Webb (2003).

Moreover, (W $\times$ INS) INS results show that the COC and GOE of surrounding countries have discouraged the EG of local countries by 6.2 percent and 20 percent when VAC has only enhanced the EG by 5.9 percent. According to the results, the moderating impact of INS on LI of local countries had only depicted significant results when the VAC was moderated by LI, which also discouraged the EG of the same region by 1.4 percent.

Furthermore, the institutional moderating impact on life insurance of cross-country results shows that surrounding regions' institutional life insurance impact had decreased the EG of local countries by 0.4 percent when a combination of VAC and LI increased the EG of local countries. Political instability and weak governance can lead to a lack of trust in government institutions, including those responsible for regulating the insurance industry towards the economies (Acemoglu and Robinson 2006), while such impact has spilled over across countries. Mega financial institutions and the globalisation of risk diversification, the evolution of insurance products with a higher level of sophistication, the influence of the supranational organisations, and substantial regional and national heterogeneity still exist and have a significant influence on the insurance markets and the economies globally (Cummins and Venard 2008).

Methodically, however, it is said that explanatory variables' coefficients of the SDM models may not directly bring the marginal impact on the dependent variable (J. P. LeSage 2008) since the interpretation of the indirect, which is spillover, and direct and total impact would reflect more unbiased results. All models' coefficients of the explanatory variables' short-run direct and indirect effects on EG indicate essential results. The short-run direct impact of LI and INS on EG shows positive and negative results, respectively. Results confirmed that LI had decreased the EG by 0.14 percent in the overall model, while COC, ROL, and RGL models have directly discouraged EG by 0.15 percent, 0.14 percent, and 0.14 percent, respectively. Moreover, INS has directly impacted EG by 2.1 percent, 1.6 and 2.7 percent for COC and ROL, while GOE has decreased the EG by 9.9 percent. The moderate impact by VAC on LI depicts only a significant negative impact on EG by 1.3 percent. LI has spatially spilled over across the countries when considering the indirect short-run impact. Results indicate that spatial spillover impact by LI on INS, COC, VAC, ROL, RGL PSV, and GOE models was 1.5 percent, 1.5 percent, 1.7 percent, 1.7 percent, 1.6 percent, 1.7 percent, and 1.0 percent, respectively. The impact of INS showed that COC, VAC, and GOE had created a reverse spillover impact on EG by 8.7 percent, 10.8 percent, and 16.7 percent. Then, INS moderation on LIND has created a reverse spillover impact of 0.83 percent from COC, while there was spillover on EG by 2.9 percent from ROL (Acemoglu and Johnson 2005; Kelejian et al. 2013). The total short-run impact of LI showed a significant positive impact in all models, while INS recorded a significant negative impact in COC, VAC, and RGL models. Overall, the short-run impact of LI moderated by INS was negatively significant in the COC model, while it was positively significant in ROL and GOE models.

The results in Tables 5–7 depict the behaviour of non-life insurance and institutions on economic growth across countries. Results confirmed that NL of local countries has only shown a significant positive impact on EG in the PSV model, which is 3.3 percent. The findings imply that high-income countries see a greater impact from non-life insurance than developing nations (Arena 2008). However, the impact of INS in local countries showed that COC and RGL had enhanced the EG of local countries by 2.0 percent and 2.1 percent, while PSV decreased the EG by 3.3 percent, respectively (Acemoglu and Johnson 2005; Fernando 2021). Results of the non-life insurance industry moderated by institutions have shown a significant negative impact on EG by 0.5 percent only in the PSV model. The results depicted that NL of surrounding countries has improved the EG in local countries in INS, COC, ROL, PSV, and GOE models by 1.5 percent, 1.9 percent, 1.3 percent, 2.2 percent, and 1.5 percent, respectively. NL moderated by ROL in surrounding countries has decreased the EG of local countries by 2.1 percent as the only significant result. Due to inappropriate policies, the non-life insurers' financial insolvency and lower profitability may discourage the companies' growth (Siddik et al. 2022; Pavia et al. 2021).

Table 6. Spatial impact of institutions and non-life insurance, and institutional moderation of non-life insurance on economic growth—I.

INS		**INS**	**INS × NL**	**COC**	**COC × NL**	**VAC**	**VAC × NL**	**ROL**
Main	L.EG	1.0244 ***	1.0056 ***	1.0075 ***	0.9923 ***	1.0221 ***	1.0084 ***	1.0093 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	L.WEG	−0.7264 ***	−0.6644 ***	−0.6617 ***	−0.5993 ***	−0.6283 ***	−0.5918 ***	−0.6383 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	NL	−0.0012	−0.0010	−0.0012	0.0006	−0.0019	−0.0022	−0.0017
		(0.5078)	(0.5829)	(0.4806)	(0.7920)	(0.2809)	(0.2599)	(0.3405)
	INS	0.0042	0.0089 **	0.0201 ***	0.0274 ***	0.0008	0.0035	0.0097
		(0.2304)	(0.0195)	(0.0009)	(0.0000)	(0.9235)	(0.6864)	(0.2019)
	NL × INS		−0.0009		−0.0024		−0.0000	
			(0.2634)		(0.1381)		(0.9874)	
	TO	0.0344 ***	0.0352 ***	0.0368 ***	0.0368 ***	0.0302 ***	0.0306 ***	0.0327 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0000)
	FO	0.0003 ***	0.0003 ***	0.0003 ***	0.0003 ***	0.0003 ***	0.0003 ***	0.0003 ***
		(0.0015)	(0.0023)	(0.0025)	(0.0030)	(0.0016)	(0.0020)	(0.0023)
	INF	−0.0001 **	−0.0001 **	−0.0001 *	−0.0001 *	−0.0001 ***	−0.0001 ***	−0.0001 ***
		(0.0144)	(0.0254)	(0.0715)	(0.0750)	(0.0036)	(0.0060)	(0.0071)
	GE	0.0009	0.0008	0.0007	0.0007	0.0011	0.0011 *	0.0011
		(0.1752)	(0.2350)	(0.2441)	(0.2917)	(0.1004)	(0.0956)	(0.1055)
	INV	0.0001	0.0001	0.0001	0.0000	−0.0001	−0.0002	−0.0001
		(0.6361)	(0.8066)	(0.6588)	(0.9255)	(0.5396)	(0.3462)	(0.6378)
	HC	0.0003 **	0.0003 **	0.0003 **	0.0002 *	0.0002 *	0.0002 *	0.0002 **
		(0.0129)	(0.0154)	(0.0220)	(0.0576)	(0.0598)	(0.0771)	(0.0355)
Wx	NL	0.0148 *	0.0148 *	0.0194 **	0.0284 ***	0.0084	0.0091	0.0127 *
		(0.0542)	(0.0672)	(0.0144)	(0.0085)	(0.2797)	(0.3449)	(0.0955)
	INS	−0.0221 *	−0.0186	−0.0763 ***	−0.0475 **	0.0545 **	0.0625 **	−0.0009
		(0.0583)	(0.1500)	(0.0001)	(0.0489)	(0.0117)	(0.0363)	(0.9715)
	NL × INS		−0.0022		−0.0141		−0.0038	
			(0.6111)		(0.1124)		(0.7459)	
	TO	0.1742 ***	0.1401 ***	0.1621 ***	0.1221 ***	0.1113 ***	0.0845 ***	0.1253 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0012)	(0.0000)
	FO	−0.0005	−0.0004	−0.0004	−0.0003	−0.0003	−0.0003	−0.0004
		(0.1312)	(0.1917)	(0.1711)	(0.3212)	(0.2827)	(0.3037)	(0.1697)
	INF	0.0001	0.0000	−0.0000	−0.0002	−0.0000	−0.0001	−0.0000
		(0.3557)	(0.8640)	(0.8498)	(0.2453)	(0.8507)	(0.4547)	(0.8072)
	GE	−0.0019	−0.0030 *	−0.0016	−0.0032 *	−0.0045 ***	−0.0050 ***	−0.0037 **
		(0.2240)	(0.0731)	(0.2935)	(0.0514)	(0.0045)	(0.0020)	(0.0185)
	INV	0.0012 **	0.0011 *	0.0015 **	0.0013 **	0.0008	0.0007	0.0009
		(0.0337)	(0.0604)	(0.0107)	(0.0283)	(0.1775)	(0.2082)	(0.1068)
	HC	0.0009 **	0.0008 **	0.0010 ***	0.0008 **	0.0010 **	0.0010 **	0.0008 **
		(0.0258)	(0.0442)	(0.0091)	(0.0417)	(0.0122)	(0.0124)	(0.0402)

Table 6. *Cont.*

INS		INS	INS × NL	COC	COC × NL	VAC	VAC × NL	ROL
Spatial	rho	0.4354 ***	0.4433 ***	0.4118 ***	0.4376 ***	0.4495 ***	0.4666 ***	0.4409 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Variance	sigma	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SR_Dir	NL	−0.0002	0.0000	−0.0001	0.0025	−0.0013	−0.0015	−0.0008
		(0.9137)	(0.9949)	(0.9563)	(0.3081)	(0.4811)	(0.4879)	(0.6458)
	INS	0.0030	0.0080 **	0.0166 ***	0.0255 ***	0.0040	0.0075	0.0099
		(0.4174)	(0.0486)	(0.0089)	(0.0004)	(0.6182)	(0.4099)	(0.2248)
	NL × INS		−0.0010		−0.0033 **		−0.0003	
			(0.2119)		(0.0484)		(0.8782)	
SR_Ind	NL	0.0244 *	0.0261 *	0.0310 **	0.0510 ***	0.0128	0.0161	0.0203
		(0.0695)	(0.0855)	(0.0194)	(0.0097)	(0.3561)	(0.3980)	(0.1267)
	INS	−0.0345	−0.0275	−0.1116 ***	−0.0635	0.0996 **	0.1148 **	0.0084
		(0.1207)	(0.2300)	(0.0018)	(0.1433)	(0.0155)	(0.0366)	(0.8648)
	NL × INS		−0.0042		−0.0262		−0.0066	
			(0.5917)		(0.1062)		(0.7646)	
SR_Tot	NL	0.0242 *	0.0261	0.0309 **	0.0535 **	0.0115	0.0146	0.0194
		(0.0926)	(0.1051)	(0.0293)	(0.0108)	(0.4398)	(0.4709)	(0.1722)
	INS	−0.0315	−0.0194	−0.0950 **	−0.0380	0.1036 **	0.1222 **	0.0182
		(0.1894)	(0.4334)	(0.0137)	(0.4171)	(0.0168)	(0.0364)	(0.7325)
	NL × INS		−0.0052		−0.0295 *		−0.0070	
			(0.5256)		(0.0837)		(0.7656)	
R^2		0.986	0.990	0.988	0.992	0.995	0.997	0.993
N		1008	1008	1008	1008	1008	1008	1008
CODE		56	56	56	56	56	56	56

Source: Authors' compilation. (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$).

Table 7. Spatial impact of institutions and non-life insurance, and institutional moderation of non-life insurance on economic growth—II.

INS		ROL × NL	RGL	RGL × NL	PSV	PSV × NL	GOE	GOE × NL
Main	L.EG	1.0010 ***	0.9942 ***	1.0446 ***	1.1937 ***	1.4260 ***	1.0085 ***	1.0102 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	L.WEG	−0.5955 ***	−0.6378 ***	−0.7839 ***	−1.1700 ***	−1.8343 ***	−0.6249 ***	−0.6403 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	NL	−0.0001	−0.0024	0.0017	0.0033 *	0.0120 ***	−0.0018	0.0003
		(0.9628)	(0.1755)	(0.5180)	(0.0620)	(0.0000)	(0.3065)	(0.9062)
	INS	0.0152 *	0.0214 ***	0.0163 **	−0.0332 ***	−0.0685 ***	0.0028	0.0058
		(0.0739)	(0.0011)	(0.0292)	(0.0000)	(0.0000)	(0.6529)	(0.4271)
	NL × INS	−0.0018		−0.0026		−0.0048 **		−0.0018
		(0.3526)		(0.1791)		(0.0199)		(0.3501)
	TO	0.0337 ***	0.0351 ***	0.0331 ***	0.0217 ***	0.0105	0.0349 ***	0.0359 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0055)	(0.1787)	(0.0000)	(0.0000)
	FO	0.0003 ***	0.0003 ***	0.0003 ***	0.0004 ***	0.0005 ***	0.0003 ***	0.0003 ***
		(0.0022)	(0.0021)	(0.0010)	(0.0000)	(0.0000)	(0.0025)	(0.0023)
	INF	−0.0001 **	−0.0001 **	−0.0001 ***	−0.0002 ***	−0.0003 ***	−0.0001 ***	−0.0001 ***
		(0.0105)	(0.0141)	(0.0035)	(0.0000)	(0.0000)	(0.0041)	(0.0071)
	GE	0.0010	0.0009	0.0006	0.0008	0.0004	0.0011 *	0.0009
		(0.1267)	(0.1637)	(0.3561)	(0.2036)	(0.5193)	(0.0924)	(0.1510)
	INV	−0.0001	−0.0002	0.0002	0.0009 ***	0.0023 ***	−0.0001	0.0000
		(0.5573)	(0.4577)	(0.3754)	(0.0002)	(0.0000)	(0.7730)	(0.9040)
	HC	0.0002 **	0.0002 *	0.0003 **	0.0003 ***	0.0005 ***	0.0003 **	0.0003 **
		(0.0480)	(0.0552)	(0.0143)	(0.0027)	(0.0000)	(0.0257)	(0.0207)

Table 7. *Cont.*

INS		ROL × NL	RGL	RGL × NL	PSV	PSV × NL	GOE	GOE × NL
Wx	NL	0.0285 **	0.0112	0.0110	0.0227 ***	0.0421 ***	0.0155 **	0.0198
		(0.0120)	(0.1355)	(0.3530)	(0.0034)	(0.0000)	(0.0410)	(0.1278)
	INS	0.0316	0.0271	0.0400	0.0163	0.0489 **	−0.0685 ***	−0.0658 ***
		(0.2957)	(0.2314)	(0.1129)	(0.2455)	(0.0180)	(0.0004)	(0.0054)
	NL × INS	−0.0212 *		0.0028		−0.0135		−0.0030
		(0.0532)		(0.7647)		(0.1860)		(0.7708)
	TO	0.1119 ***	0.1365 ***	0.2372 ***	0.4946 ***	0.9888 ***	0.1128 ***	0.1356 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	FO	−0.0003	−0.0005	−0.0006 *	−0.0008 ***	−0.0012 ***	−0.0003	−0.0003
		(0.3103)	(0.1341)	(0.0611)	(0.0087)	(0.0001)	(0.2663)	(0.2561)
	INF	−0.0001	−0.0000	0.0004 ***	0.0012 ***	0.0029 ***	−0.0002	−0.0001
		(0.5574)	(0.9678)	(0.0062)	(0.0000)	(0.0000)	(0.1606)	(0.4507)
	GE.	−0.0052 ***	−0.0034 **	−0.0016	0.0032 **	0.0115 ***	−0.0035 **	−0.0034 **
		(0.0019)	(0.0249)	(0.3376)	(0.0329)	(0.0000)	(0.0204)	(0.0324)
	INV	0.0008	0.0007	0.0008	0.0015 ***	0.0021 ***	0.0007	0.0008
		(0.1501)	(0.2121)	(0.1762)	(0.0093)	(0.0002)	(0.1883)	(0.1376)
	HC	0.0007 *	0.0008 **	0.0007	0.0005	−0.0002	0.0013 ***	0.0012 ***
		(0.0828)	(0.0366)	(0.1081)	(0.2377)	(0.5512)	(0.0025)	(0.0060)
Spatial	rho	0.4360 ***	0.4293 ***	0.3674 ***	0.2593 ***	0.0182	0.4688 ***	0.4434 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.7066)	(0.0000)	(0.0000)
Variance	sigma	0.0009 ***	0.0009 ***	0.0009 ***	0.0009 ***	0.0010 ***	0.0009 ***	0.0009 ***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SR_Dir	NL	0.0018	−0.0017	0.0025	0.0041 **	0.0121 ***	−0.0007	0.0018
		(0.5020)	(0.3619)	(0.3517)	(0.0183)	(0.0000)	(0.6978)	(0.5419)
	INS	0.0175 *	0.0233 ***	0.0184 **	−0.0330 ***	−0.0685 ***	−0.0015	0.0023
		(0.0584)	(0.0004)	(0.0158)	(0.0000)	(0.0000)	(0.8197)	(0.7709)
	NL × INS	−0.0032		−0.0026		−0.0049 **		−0.0021
		(0.1216)		(0.1699)		(0.0150)		(0.2903)
SR_Ind	NL	0.0506 **	0.0169	0.0194	0.0310 ***	0.0419 ***	0.0265 *	0.0368
		(0.0150)	(0.1893)	(0.3233)	(0.0024)	(0.0000)	(0.0599)	(0.1352)
	INS	0.0647	0.0641	0.0698 *	0.0111	0.0481 **	−0.1227 ***	−0.1123 **
		(0.2401)	(0.1166)	(0.0743)	(0.5791)	(0.0181)	(0.0032)	(0.0145)
	NL × INS	−0.0383 *		0.0026		−0.0127		−0.0072
		(0.0556)		(0.8644)		(0.2248)		(0.7131)
SR_Tot	NL	0.0523 **	0.0152	0.0219	0.0351 ***	0.0540 ***	0.0258 *	0.0386
		(0.0179)	(0.2695)	(0.2940)	(0.0013)	(0.0000)	(0.0875)	(0.1407)
	INS	0.0821	0.0874 **	0.0882 **	−0.0219	−0.0204	−0.1242 ***	−0.1100 **
		(0.1694)	(0.0416)	(0.0311)	(0.3077)	(0.3424)	(0.0063)	(0.0277)
	NL × INS	−0.0415 **		−0.0000		−0.0176 *		−0.0093
		(0.0487)		(0.9995)		(0.0971)		(0.6513)
R^2		0.994	0.993	0.983	0.951	0.902	0.993	0.992
N		1008	1008	1008	1008	1008	1008	1008
CODE		56	56	56	56	56	56	56

Source: Authors' compilation. (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$).

When considering the short-run direct impact of NL across countries on EG, there was a direct impact by PSV, which is 4.1 percent. The results on INS evidenced that COC and RGL have enhanced the EG by 1.65 and 2.3 percent, respectively, while PSV has decreased the EG by 3.3 percent. The impact of NL moderation of INS on EG was 0.3 percent and 0.4 percent in COC and PSV models. Short-run impact indicates that NL has spilled over across EG of the countries in INS, COC, PSV, and GOE models by 2.4 percent, 3.1 percent, 3.1 percent, and 2.6 percent, respectively. Then, INS showed a reverse spillover impact on EG of local countries by way of COC and GOE by 11.1 percent and 12.2 percent, while VAC has spilled over by 9.9 percent, similar to the findings of Acemoglu and Johnson (2005) and Kelejian et al. (2013). The only significant result of NL moderation by ROL in the short-run impact was a negative significance of 3.8 percent, a reverse spillover impact. However, the total short-run effect displayed that NL was positively significant in INS, COC, PSV, and GOE models. At the same time, INS had given the total impact on EG in VAC and RGL models when it became negatively significant in COC and GOE models. Further, NL moderated by the INS total short-run impact showed negatively significant results in COC, ROL, and PSV models. It is found that both life and non-life insurance highly impact the financial sectors' economies in developed countries and not the developing ones due to a "siphon effect" at the country level since the countries with higher capacity and development would have absorbed such elements from neighbouring countries, especially when the developing countries' institutional frameworks are weak (Din et al. 2017; Lee and Chang 2012).

5. Conclusions

The results of the above models explain the spatial impact of institutions and insurance development and its institutional moderation on economic growth. EG was the dependent variable in all models, and the significant rho value indicated its spatial spillover behaviour across countries (Benos et al. 2015). The results for early-year economic growth for local countries show that this discourages the economic growth of surrounding countries in the current period, indicating a "siphon effect"—countries with higher capacity (probably developed nations) have absorbed the capacity of neighbouring countries. Furthermore, the evidence implied that future economic growth would harm the nearby, distant, neighbouring countries in such a scenario. In reality, the global mechanism sees capital, technology, human capital, and natural resources flowing into developed countries, creating a "Matthew effect": the rich become richer while widening the inequality and poverty gap (Liu et al. 2021). LI and NL's impacts on local countries' EG are negative and significant, while the positive impact is on the surrounding areas' economies.

The negative effect of LI on local economies may be the reason for providing social expenditure instead of the insurance business. At the same time, the moral hazard problem of the insured exists, or maybe LI is effective only up to a threshold due to its curve-shape behaviour. Then, the LI of surrounding countries has positively influenced local economies due to the benefits of life insurance having flowed to local countries' economic development. The financial development of the local fast-growing financial industries has hindered economic growth (Cecchetti and Kharroubi 2012), or it may be that financial development is favourable only up to a certain point (Hofmann and Takáts 2015). The other reason may be that the exogenous improvement in financial development has reduced total factor productivity; the financial development benefits have gone disproportionately to higher collateral, lower productivity projects.

Furthermore, the increased tendency toward cross-border financing has created vulnerabilities and risks for other countries' growth in the financial crisis and economic slowdown. As expected, the impact of institutions of local countries on their local economies became positive and significant in some models. At the same time, the surrounding areas' institutional qualities have discouraged the surrounding countries' economic growth in both LI and N models. More importantly, the moderating impact of institutions of local countries has discouraged growth in local countries' economies and the economies of the surrounding nations, with the exception of one model in LI where the moderating of VAC on LI has improved the surrounding economies.

From the perspective of institutions, this would be a significant contribution to the insurance industry and the global economy, which would effectively be focused on growth by pursuing the insurance industry better. Spatial spillover exists between nations when institutions moderate the insurance industry's impact. In this scenario, surrounding countries' institutional–insurance nexus increased local growth. This institutional evidence indicates that global governance could help generate practical results for institutions and insurance development. On the other hand, when such variables behave on growth individually, the whole insurance industry and local institutions fail to create a positive growth impact on the surrounding countries. Furthermore, the finding of this study has been mainly focused on the good governance perspective rather than the pure institutional perspective in the political economy, which may therefore need to be studied further.

Author Contributions: All authors contributed equally to this article. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: The data can be obtained by sending and email to jayantha@mgt.sab.ac.lk.

Conflicts of Interest: The authors declare no conflict of interest.

References

Acemoglu, Daron, and James A. Robinson. 2006. *Economic Origins of Dictatorship and Democracy*. Cambridge: Cambridge University Press, pp. 50–80.

Acemoglu, Daron, and Simon Johnson. 2005. Unbundling institutions. *Journal of Political Economy* 113: 949–95. [CrossRef]

Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2001. The Colonial Origins of Comparative Development: An Empirical Investigation. *The American Economic Review* 91: 1369–401. [CrossRef]

Alhassan, Abdul Latif. 2016. Insurance market development and economic growth: Exploring causality in 8 selected African countries. *International Journal of Social Economics* 43: 321–39. [CrossRef]

Amidi, Sahar, and Ali Fagheh Majidi. 2020. Geographic proximity, trade and economic growth: A spatial econometrics approach. *Annals of GIS* 26: 49–63. [CrossRef]

Anselin, Luc. 2002. Under the hood Issues in the specification and interpretation of spatial regression models. *Agricultural Economics* 27: 247–67. [CrossRef]

Arena, Marco. 2008. Does insurance market activity promote economic growth? A cross-country study for industrialised and developing countries. *The Journal of Risk and Insurance* 75: 921–46. [CrossRef]

Arora, Meenal, Anshika Prakash, Amit Mittal, and Swati Singh. 2022. Moderating role of resistance to change in the actual adoption of HR analytics in the Indian banking and financial services industry. In *Evidence-Based HRM: A Global Forum for Empirical Scholarship*. (No. ahead-of-print). Bingley: Emerald Publishing Limited.

Baltagi, Badi H., and Dong Li. 2004. Prediction in the panel data model with spatial autocorrelation. In *Advances in Spatial Econometrics: Methodology, Tools, and Applications*. Edited by Luc Anselin, Raymond J. G. M. Florax and Sergio J. Rey. Berlin/Heidelberg: Springer, pp. 283–95.

Bayar, Yilmaz, Dan Gavriletea Marius, and Danuletiu Dan Constantin. 2021. Does the insurance sector really matter for economic growth? Evidence from central and eastern European countries. *Journal of Business Economics and Management* 22: 695–713. [CrossRef]

Beck, Thorsten, and Ian Webb. 2003. Economic, demographic, and institutional determinants of life insurance consumption across countries. *The World Bank Economic Review* 17: 51–88. [CrossRef]

Beck, Thorsten, Demirgüç Kunt, and Ross Levine. 2000. A New Database on the Structure and Development of the Financial Sector. *The World Bank Economic Review* 14: 597–605. [CrossRef]

Belotti, Federico, Gordon Hughes, and Andrea Piano Mortari. 2017. Spatial panel-data models using Stata. *The Stata Journal* 17: 139–180. [CrossRef]

Benos, Nikos, Stelios Karagiannis, and Sotiris Karkalakos. 2015. Proximity and growth spillovers in European regions: The role of geographical, economic and technological linkages. *Journal of Macroeconomics* 43: 124–39. [CrossRef]

Billah, Muhammad Masum. 2016. *Effects of Insurance on Maritime Liability Law*. New York: Springer, pp. 20–40.

Bivand, Roger, and David Wong. 2018. Comparing implementations of global and local indicators of spatial association. *Test* 27: 716–48. [CrossRef]

Blejer, Mario. 2006. Economic growth and the stability and efficiency of the financial sector. *Journal of Banking and Finance* 30: 3429–32. [CrossRef]

Bosker, Maarten, and Harry Garretsen. 2009. Economic development and the geography of institutions. *Journal of Economic Geography* 9: 295–328. [CrossRef]

Cecchetti, Stephen, and Enisse Kharroubi. 2012. *Reassessing the Impact of Finance on Growth (No. 381)*. Basel: Bank for International Settlements.

Chang, Chi-Hung, and Chien-Chiang Lee. 2012. Non-linearity between life insurance and economic development: A revisited approach. *The Geneva Risk and Insurance Review* 37: 223–57. [CrossRef]

Colagrossi, Marco, Domenico Rossignoli, and Mario Maggioni. 2020. Does democracy cause growth? A meta-analysis (of 2000 regressions). *European Journal of Political Economy* 61: 101824. [CrossRef]

Cummins, David, and Bertrand Venard. 2008. Insurance market dynamics: Between global developments and local contingencies. *Risk Management and Insurance Review* 11: 295–326.

Dewasiri, Narayanage Jayantha, Yatiwella Koralalage Weerakoon Banda, and Athambawa Abdul Azeez. 2018. Mixed methods in finance research: The rationale and research designs. *International Journal of Qualitative Methods* 17: 1–17.

Din, Ui Sajid Mohy, Arpah Abu-Bakar, and Angappan Regupathi. 2017. Does insurance promote economic growth: A comparative study of developed and emerging/developing economies? *Cogent Economics and Finance* 5: 1390029.

Eldomiaty, Tarek, Rasha Hammam, and Rawan El Bakry. 2020. Institutional determinants of financial inclusion: Evidence from world economies. *International Journal of Development Issues* 19: 217–28.

Elhorst, J. Paul. 2009. Spatial Panel Data Models. In *Handbook of Applied Spatial Analysis*. Edited by Manfred M. Fischer and Arthur Getis. Berlin: Springer Science and Business Media.

Eling, Martin, and Michael Luhnen. 2010. Efficiency in the international insurance industry: A cross-country comparison. *Journal of Banking and Finance* 34: 1497–509. [CrossRef]

Fernando, Kurukulasuriya Dinesh Udana Devindra. 2021. Institutional spillover on financial development and economic growth: Threshold and mediator impact analysis on global evidence. *International Journal of Economic Policy in Emerging Economies*. in press. [CrossRef]

Fujita, Masahisa, Paul Krugman, and Anthony Venables. 2001. *The Spatial Economy: Cities, Regions, and International Trade*. Cambridge: MIT Press.

Ganau, Roberto. 2017. Institutions and economic growth in Africa: A spatial econometric approach. *Economia Politica* 34: 425–44. [CrossRef]

Gani, Azmat, and Tareq Rasul. 2020. The institutional quality effect on credits provided by the banks. *International Advances in Economic Research* 26: 249–58. [CrossRef]

Globerman, Steven. 2002. Global foreign direct investment flows: The role of governance infrastructure. *World Development* 30: 1899–919. [CrossRef]

Grima, Simon, Murat Kizilkaya, Kiran Sood, and Mehmet ErdemDelice. 2021. The perceived effectiveness of blockchain for digital operational risk resilience in the European Union insurance market sector. *Journal of Risk and Financial Management* 14: 363.

Grossman, Gene, and Elhanan Helpma. 1991. Trade, knowledge spillovers, and growth. *European Economic Review* 35: 517–26. [CrossRef]

Guo, Jessie, Lauren Kasahara, Stephen Kwan, Carol Liao, Rajeev Sharan, Ayush Uchil, and Doris Zou. 2021. Reinsurance for Financial Management in Asia: A Primer (Tech. Rep.). Swiss Re Institute). Available online: https://www.swissre.com/institute/research/topics-and-risk-dialogues/economy-and-insurance-outlook/expertise-publication-reinsurance-financial-management-asia.html (accessed on 1 June 2023).

Hall, Stephen, and Mahyudin Ahmad. 2012. Institutions-growth spatial dependence: An empirical test. *Procedia-Social and Behavioral Sciences* 65: 925–30. [CrossRef]

Han, Liyan, Donghui Li, Fariborz Moshirian, and Yanhui Tian. 2010. Insurance Development and Economic Growth. *The Geneva Papers on Risk and Insurance-Issues and Practice* 35: 183–99. [CrossRef]

Hofmann, Boris, and Előd Takáts. 2015. International monetary spillovers. *BIS Quarterly Review* 3: 105–18.

Jindal, Priya, and Lochan Chavan. 2023. Role of Blockchain Technology in Creating Blue Ocean Strategy for Banking Products and Services. In *Contemporary Studies of Risks in Emerging Technology, Part B*. Bingley: Emerald Publishing Limited, pp. 169–82.

Juliana, Amelda Pramezwary, Diena M. Lemy, Rudy Pramono, Arifin Djakasaputra, and Agus Purwanto. 2022. Hotel Performance in the Digital Era: Roles of Digital Marketing, Perceived Quality and Trust. *Journal of Intelligent Management Decision* 1: 36–45. [CrossRef]

Kaufmann, Daniel, and Pablo Zoido-lobato'n. 1999. Governance Matters. Available online: https://ssrn.com/abstract=188568 (accessed on 1 June 2023).

Kelejian, Harry, Peter Murrell, and Oleksandr Shepotylo. 2013. Spatial spillovers in the development of institutions. *Journal of Development Economics* 101: 297–315. [CrossRef]

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny. 1997. Legal determinants of external finance. *The Journal of Finance* 52: 1131–50. [CrossRef]

Lee, Chien-Chiang, and Chi-Hung Chang. 2012. Globalisation and convergence of international life insurance markets. *The Geneva Papers on Risk and Insurance-Issues and Practice* 37: 125–54. [CrossRef]

Lee, Chien-Chiang, and Chun-Wei Lin. 2016. Globalisation, political institutions, financial liberalisation, and performance of the insurance industry. *The North American Journal of Economics and Finance* 36: 244–66. [CrossRef]

Lee, Chien-Chiang, Chi-Chuan Lee, and Yi-Bin Chiu. 2013. The link between life insurance activities and economic growth: Some new evidence. *Journal of International Money and Finance* 32: 405–27. [CrossRef]

Lee, Chien-Chiang, Chun-Wei Lin, and Jhih-Hong Zeng. 2016. Financial liberalisation, insurance market, and the likelihood of financial crises. *Journal of International Money and Finance* 62: 25–51. [CrossRef]

Lee, HuiShan. 2019. Insurance development and economic growth. *Financial Statistical Journal* 4: 1–16. [CrossRef]

Leeson, Peter, and Andrea Dean. 2009. The democratic domino theory: An empirical investigation. *American Journal of Political Science* 53: 533–51. [CrossRef]

LeSage, James. 2008. An introduction to spatial econometrics. *Revue D'économie Industrielle* 123: 19–44. [CrossRef]

LeSage, James. 2014. What Regional Scientists Need to Know about Spatial Econometrics? Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2420725 (accessed on 6 August 2023).

Lester, Rodney. 2009. Introduction to the insurance industry. In *The International Bank for Reconstruction and Development*. Washington, DC: The World Bank.

Levine, Ross. 1997. Financial development and economic growth: Views and agenda. *Journal of Economic Literature* 35: 688–726.

Levine, Ross. 1998. The legal environment, banks, and long-run economic growth. *Journal of Money, Credit and Banking* 30: 596–613. [CrossRef]

Liu, Yun, Meng Liu, Gege Wang, Lulu Zhao, and Pan An. 2021. Effect of environmental regulation on high-quality economic development in China—An empirical analysis based on dynamic spatial Durbin model. *Environmental Science and Pollution Research* 28: 54661–78. [CrossRef]

Malhotra, Rupa Khanna, Chandan Gupta, and Priya Jindal. 2022. *Blockchain and Smart Contracts for Insurance Industry. Blockchain Technology in Corporate Governance: Transforming Business and Industries*. Hoboken: Wiley, pp. 239–52.

Mankiw, Gregory, David Romer, and David Weil. 1992. A contribution to the empirics of economic growth. *The Quarterly Journal of Economics* 107: 407–37. [CrossRef]

Manohar, Sridhar, Amit Mittal, and Sanjiv Marwah. 2020. Service innovation, corporate reputation and word-of-mouth in the banking sector: A test on multigroup-moderated mediation effect. *Benchmarking: An International Journal* 27: 406–29. [CrossRef]

Nayak, Jayanti Mala. 2022. Does financial development still a spur to economic growth in India? *Journal of Public Affairs* 22: e2328. [CrossRef]

North, Douglass. 1992. *Institutions, Institutional Change and Economic Performance*. New York: Cambridge University Press.

Ouedraogo, Idrissa, Samuel Guérineau, and Relwende Sawadogo. 2016. Life insurance development and economic growth: Evidence from developing countries. *Journal of Economic Development* 43: 1–28.

Outreville, François. 2015. The relationship between relative risk aversion and the level of education: A survey and implications for the demand for life insurance. *Journal of Economic Surveys* 29: 97–111. [CrossRef]

Pavia, Luke, Simon Grima, Inna Romanova, and Jonathan V. Spiteri. 2021. Fine Art Insurance Policies and Risk Perceptions: The Case of Malta. *Journal of Risk and Financial Management* 14: 66. [CrossRef]

Peleckienė, Valentina, Kęstutis Peleckis, Gitana Dudzevičiūtė, and Kęstutis Peleckis. 2019. The relationship between insurance and economic growth: Evidence from the European Union countries. *Economic Research-Ekonomska Istraživanja* 32: 1138–51. [CrossRef]

Ran, Maosheng, Liang Chen, and Wanli Li. 2020. Financial deepening, spatial spillover, and urban–rural income disparity: Evidence from China. *Sustainability* 12: 1450. [CrossRef]

Sala-i-Martin, Xavier. 1996. Regional cohesion: Evidence and theories of regional growth and convergence. *European Economic Review* 40: 1325–52. [CrossRef]

Sawadogo, Relwende, Samuel Guerineau, and Idrissa M. Ouedraogo. 2018. Life Insurance Development and Economic Growth: Ev-idence from Developing Countries. *Journal of Economic Development* 43: 1–28. Available online: https://econpapers.repec.org/article/jedjournl/v_3a43_3ay_3a2018_3ai_3a2_3ap_3a1-28.htm (accessed on 1 June 2023). [CrossRef]

Sharma, Aradhana, Dhiraj Sharma, and Rajni Bansal. 2023. Emerging Role of Blockchain in Banking Operations: An Overview. *Contemporary Studies of Risks in Emerging Technology, Part A*, 1–12, Emerald Studies in Fiance, Insurance and Risk Management Vol 8, Simon Grima, Kirand Sood and Ercan Ozen (ed). Available online: https://www.emerald.com/insight/content/doi/10.1108/978-1-80455-562-020231022/full/pdf (accessed on 1 June 2023).

Shashi, Piera Centobelli, Roberto Cerchione, and Amit Mittal. 2021. Managing sustainability in luxury industry to pursue circular economy strategies. *Business Strategy and the Environment* 30: 432–62. [CrossRef]

Siddik, Md. Nur Alam, Md. Emran Hosen, Md. Firoze Miah, Sajal Kabiraj, Shanmugan Joghee, and Swamynathan Ramakrishnan. 2022. Impacts of Insurers' Financial Insolvency on Non-Life Insurance Companies' Profitability: Evidence from Bangladesh. *International Journal of Financial Studies* 10: 80.

Solow, Robert. 1956. A contribution to the theory of economic growth. *The Quarterly Journal of Economics* 70: 65–94. [CrossRef]

Sood, Kiran, Baljinder Kaur, and Simon Grima. 2022a. Revamping Indian non-life insurance industry with a trusted network: Blockchain technology. In *Big Data: A Game Changer for Insurance Industry*. Bradford: Emerald Publishing Limited, pp. 213–28.

Sood, Kiran, Navneet Seth, and Simon Grima. 2022b. Portfolio performance of public sector general insurance companies in India: A comparative analysis. In *Managing Risk and Decision Making in Times of Economic Distress, Part B*. Bradford: Emerald Publishing Limited, pp. 215–30.

Tanaka, Mariko, and Shin-ichi Fukuda. 2019. Spillover Effects of Asian Financial Markets on the Global Markets. *Public Policy Review* 15: 151–74.

Tobler, Waldo. 1970. A computer movie simulating urban growth in the Detroit region. *Economic Geography* 46: 234–40. [CrossRef]

Trivedi, Sonal, and Reena Malik. 2022. Blockchain Technology as an Emerging Technology in the Insurance Market. In *Big Data: A Game Changer for Insurance Industry*. Bradford: Emerald Publishing Limited, pp. 81–100.

Ward, Damian, and Ralf Zurbruegg. 2000. Does insurance promote economic growth? Evidence from OECD countries. *Journal of Risk and Insurance* 67: 489–506. [CrossRef]

Weisbart, Steven. 2018. How Insurance Drives Economic Growth. Insurance Information Institute. Available online: https://www.iii.org/sites/default/files/docs/pdf/insurance-driver-econ-growth-053018.pdf (accessed on 1 June 2023).

World Bank. 2023a. *Worldwide Development Indicators.* Available online: https://databank.worldbank.org/source/world-development-indicators (accessed on 19 March 2023).

World Bank. 2023b. *Worldwide Governance Indicators.* Available online: https://info.worldbank.org/governance/wgi/ (accessed on 19 March 2023).

World Trade Organization. 2022. World Trade Statistical Review (Tech. Rep.). Bank of International Settlement). Available online: https://www.wto.org/english/res_e/booksp_e/wtsr_2022_e.pdf (accessed on 8 June 2023).

Youssef, Ahmed H., Mohamed R. Abonazel, and Ohood A. Shalaby. 2022. Spatial and Non-Spatial Panel Data Estimators: Simulation Study and Application to Personal Income in US States. *WSEAS Transactions on Mathematics* 21: 487–514. [CrossRef]

Zallé, Oumarou. 2017. The spatial effect of political risk on economic growth in Africa. *Modern Economy* 8: 1383–99. [CrossRef]

Zergawu, Yitagesu Zewdu, Yabibal M. Walle, and José-Manuel Giménez-Gómez. 2020. The joint impact of infrastructure and institutions on economic growth. *Journal of Institutional Economics* 16: 481–502. [CrossRef]

Zhong, Junhao, and Tinghui Li. 2020. Impact of financial development and its spatial spillover effect on green total factor productivity: Evidence from 30 Provinces in China. In *Mathematical Problems in Engineering*. London: Hindawi.

Zhou, Yingying, Yaru Xu, Chuanzhe Liu, Zhuoqing Fang, and Jiayi Guo. 2019. Spatial effects of technological progress and financial support on China's provincial carbon emissions. *International Journal of Environmental Research and Public Health* 16: e1743. [CrossRef] [PubMed]