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S.M.H.G. Rathnasiri and H.J.R. Buddhika

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The Impact of Product Diversification and Insurance Activity to Insurance Industry Performance: Moderating Effect of Insurance Penetration: Evidence from India, Pakistan, and Sri Lanka

Rathnasiri S.M.H.G.^a and Buddhika H.J.R.^b

^{a,b} Department of Finance, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka.

ABSTRACT

Purpose: The research focused on the insurance industry performance of India, Pakistan & Sri Lanka were supposed to find the impact of product diversification and Insurance activity towards industry performance measured by ROE. Further insurance penetration is considered a moderating variable and objectives same as mentioned above. Product diversification and Insurance activity are key indicators of the insurance industry and insurance penetration is a key indicator of country performance measurement.

Methodology: This quantitative study considered countries of Sri Lanka, India, and Pakistan in the South Asian Region and considered the period data from 2012 -2022. The highest developed first three countries were considered for evaluation purposes and diversified (companies operating in both Life & General) insurance companies from each country.

Findings: Both product diversification and insurance activity exhibit negative correlations with insurance industry performance, indicating that increasing either factor may result in lower financial performance for insurers in these countries. Furthermore, insurance penetration significantly moderates the relationship between product diversification and insurance industry performance. The three hypotheses formulated and stated that impact is negative for product diversification and insurance activity. Further stated that insurance penetration moderated the insurance industry's performance.

Conclusion: The findings underscore the importance of prudent strategic planning and management for diversified insurance companies in India, Pakistan & Sri Lanka. Diversified insurance firms are advised to carefully weigh the trade-offs between diversification and profitability. While diversification can mitigate risk, it may also lead to diminishing the returns in long run.

KEYWORDS

Product Diversification;
Insurance Penetration,
Insurance Activity,
Performance,
Diversification

JEL CLASSIFICATION

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I. Introduction

Insurance companies play a crucial role in economic development, offering specialized financial services that mobilize significant funds for long-term investments and underwrite risks inherent in economic entities. A well-developed insurance industry, as highlighted by Charumathi (2012), becomes an economic development asset, providing long-term funding for infrastructure development.

Diversification, a strategy explored by companies, carries both benefits and costs.

Teece (1980) emphasized that joint production in manufacturing, often linked to concentration, reduces costs compared to producing each product individually. Contracting et al., (2001) highlighted the benefits of diversification stemming from effective internal governance structures. Diversification is broadly defined as a business strategy involving expanding operations into new areas for additional revenue from new products/services and new markets (Oyekanle Oyewobi et al., 2013). Krivokapic et al., (2017) underscored the importance of diversity, asserting that

CONTACT a S.M.H.G. Rathnasiri hasankagayan99@gmail.com, Department of Finance, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka.  <https://orcid.org/0009-0005-5319-0631> | b H.J.R. Buddhika buddhikar@kln.ac.lk, Department of Finance, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka.  <https://orcid.org/0000-0001-9857-0113>



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businesses can attain financial rewards by strategically diversifying to meet both internal operational requirements and external market demands.

Product diversification, a subset, introduces theoretical inconsistencies regarding its impact on firm performance. Teece (1980) examined two circumstances; (1) In instances where the production of two or more products is contingent upon the utilization of the same proprietary knowledge base, and there exists a requirement for recurrent exchanges. (2) when a specialized indivisible asset is a common input into the production of two or more products. Multiproduct organization will prove to be an efficient mode of organization under circumstances (1) and (2). In contrast, Stulz, (1990) and Rajan et al., (2000) contend that diversification leads to inefficient capital allocation and incurs agency costs (Harris et al., 1982); (Aron, 1988). The empirical question of the net effect of product diversification has spurred extensive literature, comparing the performance of diversifiers and specialized firms across countries (Comment & Jarrell, 1995); (Berger & Ofek, 1995); (Servaes, 1996); (Cummins et al., 2010); (Laeven & Levine, 2007); (Schmid & Walter, 2009). Further Insurance activity is a significant variable in measuring insurance firm performances Berry-Stölzle et al., (2012). The calculation is performed based on the life insurance premium earned divided by the total premium earned and limited articles found relating to specific areas.

In this article, the focus is twofold. Mainly, it examines the impact of diversification and insurance activity on the performance of insurance companies across a broad range of economies, specifically in South Asian Region Countries. Secondly, it explicitly explores their insurance penetration moderating influence on the diversification 7 insurance activity-performance.

Problem Identification and Justification

Previous research extensively explored diversification, focusing on the scope of economies and risk reduction benefits for corporations (Teece, 1980); (Cummins et al., 2014); (Cummins & Trainar, 2009). However, additionally, Harris et al., (1982) presented several unexplored dimensions indicating that diversification might elevate agency costs and result in an inefficient allocation of capital among the divisions of a diversified firm, as posited by Stulz (1990); Rajan et al., (2000).

These diverse viewpoints create ambiguity regarding the impact of product diversification on firm performance. The study identifies an empirical gap in existing literature, noting a lack of rigorous research. Prior studies often focused on cross-country analyses, including 76 countries and excluding Sri Lanka, and used property rights, capital market development, and competition indexes as moderator variables (Berry-Stölzle et al., 2012). This research aims to fill this gap by providing a new investigation into the impact of product diversification & insurance activity on the insurance industry performance in South Asian Region countries: India, Pakistan, and Sri Lanka.

Statement of Problem

Insurance companies play a crucial role in risk management by offering insurance contracts where the insurer guarantees payment for unforeseen future events, and the insured pays premiums for protection. These companies vary in the products they offer, with some exclusively providing life insurance, others focusing on non-life insurance, and some offering both. In response to market dynamics, insurers have pursued diversification not only across life and non-life insurance but also within these categories. Diversification, defined by Ramanujan and Varadarajan (1989), involves entering new sectors through acquisition or internal expansion, broadening the scope of business activity

beyond existing ventures (Cannon and Hillebrandt, 1989).

This article specifically defines product diversification as insurers engaging in both life and non-life insurance businesses. The goal is to establish a framework for understanding how the performance of diversified insurers in South Asian life and non-life insurance impacts the overall industry performance. While previous studies have explored diversification and firm performance globally, such as Fauver et al., (2003), investigating nonfinancial firms across 35 countries, limited evidence exists

regarding diversification in the South Asian insurance industry. The study acknowledges the heterogeneity of diversification effects across industries, as found by Santalo & Becerra (2008); Hennart (2007). However, the focus is on filling the gap in understanding diversification within the South Asian insurance sector.

The table below illustrates India, Pakistan, and Sri Lanka's respective contributions to GWP and market shares in 2021 for sole life insurance companies, sole general insurance businesses, and insurance companies doing both life and general insurance business.

Table 1. GWP and market shares in 2021 for sole life insurance company, sole general insurance business, and insurance companies operating both life and general insurance business in India, Pakistan, and Sri Lanka

	Sole Life Insurance Business	Sole Non-Life Insurance Business	Both operating Life and Non-life Insurance business
India			
GWP (INR')	5,456,747	1,682,023	1,135,683
Market Share (%)	66%	20%	14%
Pakistan			
GWP (PKR')	161,789	35,021	180,671
Market Share (%)	43%	9%	48%
Sri Lanka			
GWP (LKR')	60,754	24,465	134,928
Market Share (%)	28%	11%	61%

Source: Developed by Author; evidence from Annual Report published by Insurance Regulatory Authority in India, Pakistan, and Sri Lanka

According to the preceding analysis, diversified insurers (those that operate both life and non-life insurance companies) have a significant impact on the insurance market. This is because they offer a wide range of life and non-life insurance products to the customer base.

By providing insights into how diversified insurers in this region influence overall industry performance, the article aims to contribute valuable knowledge to this specific context, offering a nuanced understanding of diversification's impact on the South Asian insurance industry.

Despite research suggesting that product diversification negatively affects the insurance industry, diversified insurance companies play a crucial role, earning higher gross written premiums than their specialized counterparts. Wan & Hoskisson (2003) and Wan (2005) argue that high diversification levels enhance firm performance, even in underdeveloped institutional environments. The study recognizes the negative impact of product diversification on the entire insurance industry highlighted by previous research

but emphasizes the pivotal role of diversified insurers.

Diversified insurance businesses contribute to the industry by extending underutilized assets into additional areas, resulting in scope economies. Moreover, diversification allows companies to establish and leverage a substantial internal capital market, promoting efficiency compared to external capital markets due to knowledge asymmetry. Given the strategic importance of diversification and the keen interest of scholars and managers in its relationship with economic performance, the research aims to analyze how product-diversified insurance companies influence the insurance industry.

The study narrows its focus to the impact of product diversification on firm performance rather than geographic diversification. While international business literature explores the effects of geographic diversification across countries on firm performance, this research centers on the South Asian region, specifically Sri Lanka, Pakistan, and India. Utilizing datasets from these countries, the thesis investigates the moderating role of country characteristics on the relationship between product diversification and firm performance within each nation. By delving into the intricacies of product diversification's influence on firm performance in specific South Asian countries, the research aims to contribute nuanced insights into the dynamics of the insurance industry within this regional context.

Research Questions

The following research questions have been developed to address the research gap.

- What is the impact of product diversification & Insurance Activity on the Insurance Industry performance in India, Pakistan, and Sri Lanka?
- What is the moderating impact of insurance penetration on the relationship between product diversification and

Insurance Industry performance in India, Pakistan, and Sri Lanka?

Research Objectives

- To find the impact of product diversification on Insurance industry performance in India, Pakistan, and Sri Lanka.
- To find the impact of Insurance activity on Insurance Industry performance in India, Pakistan, and Sri Lanka.
- To find the moderated effect of Insurance penetration on product diversification/ Insurance Activity and Insurance Industry performance in India, Pakistan, and Sri Lanka.

Through a meticulous analysis of the correlation between product diversification and key performance indicators, including overall performance, the study aims to furnish discerning insights into efficacious business strategies for insurance entities. This study aspires to augment the existing body of knowledge about product diversification, offering valuable insights for academia and fostering the groundwork for future research endeavors. In essence, the research endeavors to provide a comprehensive understanding of the intricate interplay between product diversification strategies and the performance dynamics of the insurance industry in South Asian countries (India, Pakistan & Sri Lanka).

II. Literature Review

Theoretical Review

Modern Portfolio Theory

Harry Markowitz introduced the "Modern Portfolio Theory" (MPT) in 1952, emphasizing the optimization of expected returns through diversified portfolios allocated according to different risk levels. Markowitz found that institutions can construct portfolios that maximize

anticipated returns while maintaining an acceptable risk level. MPT focuses on strategically selecting asset proportions to optimize portfolio profits, ensuring a balance between maximizing returns and minimizing risk at specific projected return levels (Fabozzi et al., 2002).

Ansoff's Market Growth Theory

The Ansoff Product-Market Growth model, proposed by Ansoff in 1957, is a strategic marketing tool enabling managers to explore avenues for organizational growth. The matrix offers four product/market combination options: market penetration (existing products and markets), aiming to boost sales to existing clients or find new buyers; market development (existing products and new markets), adapting products for new missions; product development, enhancing current products with new qualities to improve mission performance; and diversification, involving a simultaneous departure from the current product line and market structure. Diversification stands out by requiring new talents, techniques, and facilities, leading to significant organizational changes and a departure from prior business experiences.

Agency Theory

The agency hypothesis, introduced by Jensen and Meckling in 1976, suggests that the separation of management and corporate ownership establishes an agent-principal relationship, requiring effective management for enhanced performance. Conflicting viewpoints between management and shareholders may lead companies to employ diversification strategies. To ensure a favorable financial position, businesses incur agency expenses to align the objectives of management and shareholders. Agency theory asserts that the impact of diversity on financial performance depends on managerial authority and governance efficacy.

Performance Maximization Theory

Performance Maximization Theory, advocated by Koetter in 2004, emphasizes achieving optimal performance by selecting effective price and production levels to maximize returns. While advantageous for a business, adopting this model may impact consumers if higher product prices are used to maximize profits. Studies by Hughes in 2000 and De Young in 2001 focused on cost-management benchmarks and maximizing profits for effective cost management. Both studies demonstrated that aligning operating expenses with revenue creation enhances organizational performance, striking a balance between risks and rewards. Mueller's 1990 study explored persistent performance, highlighting the insurance industry's monopolistic characteristics impacting the relationship between competition and monopoly. It discussed the tendency of insurance companies to create fraudulent demand and concluded that increased earnings are achievable through alternative means in the cost-return tradeoff.

Transaction Cost Theory

The transaction cost theory is advantageous for organizing new operations within a company and optimizing resource allocation among different business units. This theory suggests that corporations can enhance market power by impeding rivals and vertically integrating via diversification. Miller (2009) argues that reducing prices in diverse enterprises can deter new rivals or force existing competitors out of the market. The theory assists insurance companies in evaluating transactions for cost efficiency, whether conducted in the market or within the organizational structure. Hill et al. (2014) emphasize the consideration of expenses related to bargaining, overseeing, and implementing transactions involving two or more parties. The above-mentioned theories further prove that diversification strategies are significant and focal for business organizations to improve firm performance.

Literature Review

Kang et al. (2010) proposed the product diversity method, a potential double-edged sword for companies. While it can lead to success, it may also incur proportional expenses. Firms diversify globally or across products to attain economies of scale, scope, and market share (Teece, 1982); (Markides & Williamson, 1996), optimizing resources (Markides & Williamson, 1994); (Wiersama & Bowen, 2008) and mitigating risks (Lubatkin & Chatterjee, 1994); (Berger & Ofed, 1995). Numerous studies, including Carter (1977); Grant et al. (1988); Rhoades (1973) highlighted a positive correlation between diversification and performance. Myers and Read (2001); Meador et al. (2000); Hotta (1996) and Takao (1987) also supported the link between product diversification and performance.

Efficiency-based theories, such as those (Teece, 1980), suggest that multiproduct firms are efficient when economies of scope rely on proprietary know-how or specialized assets. Transaction cost theory (Teece, 1982); (Williamson, 1975) proposes that diversified firms may deploy assets more efficiently.

Khanna & Palepu (2000) found that diverse Indian business groups impact Tobin's q measurements.

Schoar (2002) studies plant-level data from the Longitudinal Research Database and concludes that conglomerates perform better than stand-alone enterprises in terms of productivity.

Singh et al. (2010) report an inverted U-relationship between product diversification and SME performance. While diversification can yield benefits, it requires careful management to stay within the firm's scope. Chen-Ying (2016) emphasizes that diversification minimizes business risk and bankruptcy probabilities, benefiting managers concerned about financial losses in case of a collapse. The findings imply that there is a complex relationship between performance and diversity that is impacted

by an insurance undertaking's size. More specifically, diversity has a major effect on the success of only smaller businesses and study Dutch property-liability (P&L) insurance industry for the period 2007–2018 (Beveran et al., 2022). According to the study's findings, diversification was a wise strategic move that would improve the insurance industry's performance. Top-level managers are advised by the study to implement diversification methods to enhance performance (Gachoki et al., 2022). The purpose of this study was to determine how diversification tactics affected Kenyan insurance companies' financial performance. In Kenya, there was a census and a five-year financial data collection on all 55 insurance businesses that were registered and licensed.

We also add a measure of insurance activity in our regression models to help separate the impact of diversification from potential performance variations between the life and non-life insurance companies. To quantify each insurer's position along the continuum from pure life insurance to pure non-life insurance underwriting, more precisely, the ratio of life insurance premiums earned to total premiums earned Berry-Stolzle et al. (2010).

Furthermore, a fast growth strategy greatly enhances profitability for insurance companies operating in emerging regions with low insurance penetration, according to Berry-Stolzle et al., (2010). In contrast to saturated markets where growth can only come at the expense of other firms' market share, economies with low insurance penetration should benefit more from diversification since widely diversified insurance companies are better positioned to seize growth opportunities in whatever business line they present themselves in. Therefore, Insurance Penetration is considered a moderating variable for this study to prove the arguments brought by previous scholars.

Overall, diversification's potential advantages include economies of scale, resource efficiency, skill transfer, and

synergies, but effective management is crucial to mitigate associated risks. In conclusion, while many studies focus on measuring the average effect of diversification on the performance of all firms in their sample, few directly address how the diversification-performance link varies across countries. The fundamental point emerging from the literature is that diversification and for supporting argument insurance activity is considered as the independent variable and insurance penetration as moderating variables as per the arguments built by previous scholars.

III. Methodology

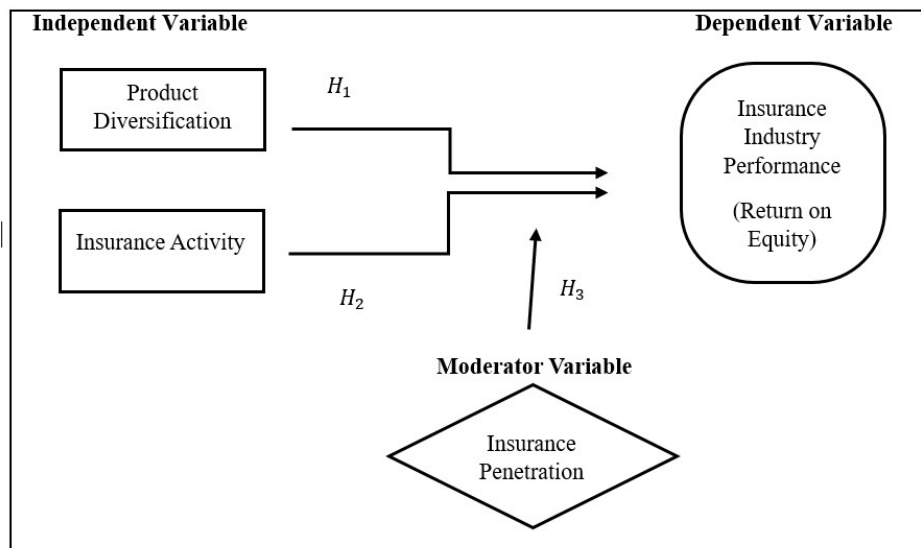
Research Design

The research investigates the impact of product diversification on the insurance industry, the impact of insurance activity on the insurance industry, and the moderating impact providing empirical evidence and

ultimately favoring positivism over social constructivism as the preferred research philosophy. The research employs a deductive approach, beginning with a general hypothesis about the varying effects of diversification on firm performance in different nations, rooted in an existing theory. This study opts for a quantitative approach, as its variables are measurable using statistical methods and calculations, aligning to obtain precise and numerical insights.

Utilizing company-level data from Sri Lanka, India, and Pakistan, the study excludes Nepal, Bhutan, Bangladesh, and Afghanistan due to their classification as least-developed countries by the United Nations Conferences on Trade and Development (UNCTAD, 2021). Additionally, Maldives was excluded due to the unavailability of data from published sources.

Conceptual Framework



Source: Author Compiled (2023)

Figure 1. Conceptual framework

Based on the conceptual framework 03 hypotheses were formulated and the

operationalization table was designed based on scholarly findings relating to past years.

Operationalization**Table 2.** Operationalization

Measurement Item	Operationalization	Source
Dependent Variable		
Return on Equity	$\frac{\text{Profit Before Tax}}{\text{Total Shareholder Equity}}$	Berry-Stölzle et al. (2012)
Independent Variable		
Product Diversification	$1 - \left[\frac{\text{Life premiums earned} - \text{Non Life premiums earned}}{\text{Total Premiums earned}} \right]$	Laeven & Levine (2007), Berry-Stölzle et al. (2012)
Insurance Activity	$\frac{\text{Life insurance premiums earned}}{\text{Total premiums earned}}$	Berry-Stölzle et al. (2012)
Moderator Variable		
Insurance Penetration	$\frac{\text{Total Life insurance} + \text{Total nonlife insurance}}{\text{GDP of Country}}$	Das et al., (2016)

Source: Author Compiled (2023)

In insurance literature, return on equity (ROE) is a preferred metric for performance measurement due to comparability challenges with return on assets (ROA) in joint analyses. ROE is calculated as net income before taxes divided by total shareholder equity. Return on equity (ROE) and return on assets (ROA) are the two metrics that are frequently used to assess accounting performance in insurance literature. Although both metrics may be used in research that is solely focused on property-liability or life insurers (Browne et al., 200; Greene and Segal, 2004; Liebenberg and Sommer, 2008), Because life and non-life insurers' asset structures and, consequently, their ROA, are not similar, we are unable to employ ROA in our joint analysis of pure life insurers, pure non-life insurers, and insurers operating in

both market sectors. Consequently, insurer performance is gauged by ROE. Consequently, divide net revenue before taxes by equity capital as displayed on the balance sheet to determine each insurer's return on equity (ROE). Diversification is gauged using a continuous measure, ranging from 0 (solely nonlife or life policies) to 1 (50% life and 50% non-life), following Hoyt & Trieschmann (1991), Berger et al. (2000), and Cummins, Weiss, and Zi (2003). Higher scores denote greater diversification. Regression models consider an insurance activity measure, ensuring the separation of diversification advantages from potential sector-specific performance disparities. Insurer positions on the life-nonlife continuum are determined by total premiums divided by the ratio of life insurance premiums earned.

Population and Sample Selection

Table 3. Population and Sample Selection

Countries	Life Insurance Business	Non-Life Insurance Business	Both operating Life & Non-Life Insurance Business (Diversified Insurer)
India	18	28	6
Pakistan	1	19	6
Sri Lanka	6	3	9
Total	24	50	21

Source: Author Compiled (2023)

The table above provides information on the diversified insurers that operate both life and non-life insurance businesses (21) in the three South Asian nations examined in this

study. The study considered only insurance companies that operate both life and general insurance businesses based on the highest market capitalization.

Table 4. Diversified Insurers in the South Asian Region

India	Pakistan	Sri Lanka
Bajaj Allianz Insurance Co.Ltd	Adamjee Insurance Co. Ltd	Allianz Lanka Ltd
Bharti AXA Insurance Co. Ltd	Askari Insurance Co. Ltd	Amana PLC
Future Generali India Insurance Co. Ltd	Eastern Federal Union (EFU) Insurance company	Ceylinco Insurance Ltd
Kotak Mahindra Insurance Co. Ltd	International General Insurance Company (IGI)	Cooperative Insurance PLC
SBI Insurance Co. Ltd	Jubilee Insurance company	HNB Insurance PLC
Shriram Insurance Co. Ltd	TPL Insurance Co. Ltd	LOLC Insurance Ltd
		MBSL Insurance Company Ltd
		Sanasa Company PLC
		Sri Lanka Insurance Corporation Ltd

Source: Developed by Author (2023)

Analysis of Data

This research assesses the impact of insurer diversification on performance using standard regression specifications (Lai and Limpaphayom, 2003; Liebenberg and Sommer, 2008).

$$ROE_{i,t} = \alpha + \beta_1 Diversification_{i,t} + \beta_2 Insurance Activity_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $ROE_{i,t}$ is the return on equity for insurer i in year t ,

$Diversification_{i,t}$ is the premium diversity measure defined in the previous equation.

$Insurance Activity_{i,t}$ denotes the ratio of life insurance premiums to total premiums.

Additionally, interaction variables reflecting insurance penetration's moderating effect on

diversification are incorporated into the model for a comprehensive analysis;

$$ROE_{i,t} = \alpha + \beta_1 Diversification_{i,t} \times moderator_{c,t} + \beta_2 Insurance Activity_{i,t} \times moderator_{c,t} + \varepsilon_{i,t} \quad (2)$$

Hypotheses Development

Hypothesis 01

Diversified insurance firms may experience a discounted Return on Equity (ROE) performance, as demonstrated by the link between corporate diversification and ROE (Berry-Stölzle et al., 2012). This discount is consistent across various financial service activities, excluding specific combinations (Schmid & Walter, 2009).

$H_1 =$ There is a significant impact of product diversification on the Insurance

Industry performance in India, Pakistan, and Sri Lanka.

Hypothesis 02

The coefficient on the insurance activity variable is used to separate the effect of diversification from potential performance variations between the life insurance and non-life insurance businesses. (Berry-Stölzle et al., 2012)

H_2 = There is a significant impact of the Insurance activity on the Insurance Industry performance in India, Pakistan, and Sri Lanka.

Hypothesis 03

Berry-St, Hoyt, and Wende (2010) propose that insurance businesses in emerging economies with low insurance penetration can benefit significantly from diversification. In such markets, diversification is more valuable for growth, offering a broad range of products and services to capture opportunities in any industry.

Descriptive Statistics

Table 5. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
ROE	231	0.134	0.115	-0.088	0.337	-0.171	2.396
Product Diversification	231	1.040	0.515	-0.016	1.985	-0.554	2.552
Insurance Activity	231	0.423	0.247	0.000	1.008	0.382	2.755
Prod. Diversification* Ins Penetration	231	1.743	1.441	0.465	3.764	0.931	2.639
Ins. Activity*Ins Penetration	231	0.850	0.945	0.119	2.127	1.116	2.870

Source: STATA output

Furthermore, the investigation showed that the product diversification had a mean value of 1.0 and ranged from -0.02 to 1.9. Certain insurance companies appeared to be more interested in ensuring a life insurance business than a non-life insurance business, as indicated by a Product Diversification of -0.02. Subsequent analysis revealed that the Gross Written Premium (GWP) from the non-life insurance business, which came to a negative sum of Rs. 511,793 from MBSL

H_3 = Insurance Penetration moderated the relationship between product diversification, Insurance Activity and Insurance Industry performance in India, Pakistan, and Sri Lanka.

IV. Findings and Discussion

The study employs product diversification and insurance activity as independent variables, Return on Equity (ROE) as the dependent variable, and insurance penetration as a moderating variable. The research time frame spans from 2012 to 2022 as panel data across 21 diversified insurance companies in India, Pakistan, and Sri Lanka.

Insurance Ltd. in Sri Lanka was the main cause of the negative value.

In contrast, the maximum Product Diversification of 1.98 indicated that certain diversified insurance companies largely underwrote non-life insurance businesses. Furthermore, a larger degree of product diversification within insurance companies was deduced from higher values of product diversification. A modest degree of diversification across life and non-life

insurance firms is indicated by the mean Product Diversification of 1.04. A significant standard deviation of 0.515 highlights significant differences in the product diversification levels between the observations.

As a gauge of each insurer's place on the spectrum between pure life insurance and pure non-life insurance underwriting, the Insurance Activity reported the ratio of the total premium earned from the life insurance business to the total premium earned. The minimum value of 0 indicated that some insurance businesses were only non-life insurance companies at first and had not moved into the underwriting life insurance business. But after a few years, these businesses switched to underwriting both life and non-life insurance. Nonetheless, the highest value of 1.00 suggested that diverse insurance providers generally exhibited a propensity for writing life insurance policies as opposed to non-life policies.

The univariate differences offer some proof that an insurance company's performance is favorably correlated with its size. To

investigate whether insurance penetration influences performance directly on diversification and insurance activity as well as moderating it, moderator dummies representing insurance penetration were used in the estimation process. Code the insurance penetration dummies about each country's GDP, as the analysis focuses on elements at the national level and their impact on the relationship between insurance activity performance and diversification (Berry-Stölzle et al., 2012).

Testing Normality (Skewness and Kurtosis Analysis)

Skewness and Kurtosis Analysis Table 6 below shows that the ROE variable is not normally distributed as the skewness value is less than -2 and the kurtosis values are more than 5. However, the independent variables $\overline{PD_GWP}$ (Product Diversification) and $\overline{IA_GWP}$ (Insurance Activity) are normal. To establish the normality of the ROE variable, the researcher utilized winsorizing as a means of analyzing the data.

Table 6. Skewness and Kurtosis Analysis

Variables	Obs	p1	p99	Skew.	Kurt.
ROE	231	-.356.	.41	-6.786	65.561
PD GWP	231	0	1.925	-.554	2.552
IA GWP	231	0	.984	.382	2.755

Source: STATA output

Regression analysis for this study illustrates the mathematical relationship between the dependent variable (ROE) and independent variables and presents regression estimates of the equation coefficient. That is, when the independent variable is changed by one percentage point, the effect on the dependent variable is considered, and in the regression analysis, the Fixed Effect model and the Random Effect model are constructed by the researcher. Also, the Hausman test is carried out by the researcher and its goal is to select the best model to better define the purpose of the analysis.

The Hausman test serves to examine the appropriateness of employing the Random Effects model (RE) as opposed to the Fixed Effects model (FE) in the context of a specific dataset. In this analysis, the calculated Chi-square test statistic is determined to be 3.044, resulting in an associated p-value of 0.218. Interpretation of these statistical measures reveals that the observed p-value of 0.218 surpasses the conventional significance threshold of 0.05 commonly employed in social science research. Therefore, based on the findings derived from the Hausman test, it is

ascertained that the utilization of the random effects model is more pertinent when compared to the fixed effects model for the

present dataset. The result is obtained in Table 7.

Table 7. Hausman (1978) Specification Test

	Coef.
Chi-square test value	3.044
P-value	.218

Source: STATA output

Multicollinearity

The VIF values of 1.510 suggest a moderate level of multicollinearity. Typically, VIF values exceeding 10 indicate a problematic level of multicollinearity, while values below 5 are generally considered acceptable.

In this case, the VIF values are relatively low, indicating that while some correlation between the predictors may exist, it is not excessive enough to severely impact the model's interpretability and predictive power.

Table 8. Multicollinearity

VIF	1/VIF
1.510	0.664
1.510	0.664
1.510	

Source: STATA output

The reciprocal of VIF (1/VIF) values provided is 0.664, indicating the inverse relationship of VIF values. These values suggest that there is not a severe issue with multicollinearity and that the predictors are not highly interdependent.

Testing for heteroscedasticity in random-effects models is essential, and the recommended approach involves utilizing the Wald-test statistic with the LM test, typically executed through the 'xtreghet' command in STATA software.

Test for Heteroscedasticity

Table 9. Test for Heteroscedasticity

Ho: Panel Homoscedasticity	Ha: Panel Groupwise Heteroscedasticity
Likelihood Ratio LR Test = 83.7727	P-Value > Chi2(20) 0.0000

Source: STATA output

When the Wald test produces a p-value below 0.05, it signifies robust evidence for rejecting the null hypothesis of homoscedasticity, thereby indicating the presence of heteroscedasticity within the

model. This observation suggests that the variability of errors demonstrates non-uniformity across the observed data points, potentially compromising the reliability of the model's predictions and the accuracy of

the statistical inferences drawn from the analysis.

First Findings

First, the net effect of product diversification using conventional performance regression specifications without using the moderate

variable of Insurance penetration According to the Hausman test the proper method for investigation was the Random Effect (RE) model and after rebutting multicollinearity, heteroscedasticity, and autocorrelation the result statement is shown in the below.

Table 10. Regression Results – Random-Effects

ROE	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Product Diversification	-.033	.014	-2.41	.026	-.062	-.004	**
Insurance Activity	-.078	.034	-2.26	.035	-.15	-.006	**
Constant	.202	.01	20.48	0	.181	.222	***
Mean dependent var		0.135	SD dependent var			0.115	
R-squared		0.035	Number of obs			231	
F-test		23.339	Prob > F			0.000	
Akaike crit. (AIC)		-570.910	Bayesian crit. (BIC)			-564.034	

*** p<.01, ** p<.05, * p<.1

Source: STATA output

The analysis reveals significant insights into the impact of product diversification and insurance activity on Return on Equity (ROE) in the South Asian insurance industry. The coefficient for product diversification is -0.033 ($p=0.026$), signifying a notable negative association with ROE. This suggests that, with other factors held constant, a unit increase in product diversification leads to a 0.033-unit decrease in ROE. Similarly, the coefficient for insurance activity is -0.078 ($p=0.035$), indicating a substantial negative impact on ROE. The constant term is found to be statistically significant ($p=0$), with a coefficient of 0.202, representing the expected value of ROE when all independent variables are zero. Furthermore, the model's R-squared value of 0.035 suggests that approximately 3.5% of the variation in ROE is explained by the included variables. The F-test value of 23.339 with a p-value of 0.000 highlights the overall statistical significance of the model. The Akaike Criterion (AIC) and

Bayesian Criterion (BIC) further confirm the robustness of the model's fit.

Including the standard deviation of the return on equity (SDROE) variable as a control is imperative to identify other insurer-level and country-level characteristics that can effectively capture the variations in risk among the insurance companies in the sample. Additionally, researchers should incorporate a measure of insurer size into the model. Holding all other factors constant, larger risk pools are expected to yield less volatile claim payments and a reduced likelihood of insolvency (Cummins et al., 1995; Grace et al., 1998). Consequently, larger risk pools are typically better positioned to command higher prices compared to their smaller counterparts (Sommer, 1996). In line with this expectation, numerous empirical studies have consistently demonstrated a positive correlation between insurer size and performance (Browne et al., 1999; Cummins J.D. & Nini G.P., 2002) As a result, it is recommended to incorporate the natural

logarithm of total assets as the size variable in the model.

Discussion

The first hypothesis states that,

$H_1 =$ There is a significant impact of product diversification on the Insurance Industry performance in India, Pakistan, and Sri Lanka.

Table 11. Correlation, t statistic, P values

Independent Factor		Correlation coefficient	Statistics t	P
Product Diversification (PD_GWP)		-.033	-2.41	.026

Source: STATA output

The analysis reveals a statistically significant negative correlation ($r = -0.033$, $t = -2.41$, $p = 0.026$) between 'Product Diversification (PD_GWP)' and 'Return on Equity' in the context of the impact of product diversification on the insurance industry performance in the South Asian Region. The findings suggest that an increase in product diversification is associated with a corresponding decrease in Return on Equity, underscoring the importance of prudent strategic planning to optimize Return on Equity amidst product

diversification endeavors within the South Asian insurance market. This result is consistent with the findings of most recent studies of the value of diversification for firms in the United States (Schmid & Walter, 2009).

The second hypothesis states that,

$H_2 =$ There is a significant impact of the Insurance activity on the Insurance Industry performance in India, Pakistan, and Sri Lanka.

Table 12. Correlation, t statistic, P values

Independent Factor		Correlation coefficient	Statistics t	p
Insurance Activity (IA_GWP)		-.078	-2.26	.035

Source: STATA output

The analysis indicates a statistically significant negative correlation ($r = -0.078$, $t = -2.26$, $p = 0.035$) between 'Insurance Activity (IA_GWP)' and 'Return on Equity' in the context of the impact of product diversification on the insurance industry performance in the South Asian Region. The findings suggest that an increase in insurance activity is associated with a corresponding decrease in Return on Equity, emphasizing the importance of strategic management to mitigate the potential adverse effects of heightened insurance activity on the financial performance of the insurance sector in the South Asian region. Further, this result is also consistent with the

Berry-Stölzle et al. (2012). Finally, the mathematical model can be described as follows.

$$ROE_{i,t} = 0.202 - 0.033Diversification_{i,t} - 0.078 Insurance Activity_{i,t} + \varepsilon_{i,t} \quad (3)$$

Second Findings

Second, include insurance penetration interaction terms that control the effect between diversification and insurance industry performance. To examine the moderating influence of insurance penetration, two independent variables were constructed by multiplying the variance of insurance penetration with product diversification and insurance activities

separately. Additionally, dummy variables were employed to represent the country factor within the model, enabling the identification of country-specific effects. The specific methods used include Descriptive statistics, Correlation analysis,

and Panel data regression analysis. Descriptive statistics establish a baseline, correlation analysis uncovers potential relationships, regression analysis quantifies the impact, and panel data analysis accounts for the longitudinal nature of the data.

Table 13. Regression Results –Random-Effects

ROE	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Prod. Diversification* Ins Penetration	-.037	.015	-2.38	.017	-.067	-.006	**
Ins. Activity*Ins Penetration	-.032	.018	-1.83	.067	-.067	.002	*
Country: base India							
Pakistan	-.065	.052	-1.23	.218	-.168	.038	
Sri Lanka	-.09	.052	-1.71	.088	-.192	.013	*
Constant	.276	.049	5.60	0	.179	.372	***
Mean dependent var	0.135	SD dependent var		0.115			
Overall r-squared	0.084	Number of obs		231			
Chi-square	14.443	Prob > chi2		0.006			
R-squared within	0.030	R-squared between		0.123			

*** p<.01, ** p<.05, * p<.1

Source: STATA output

For the random effect model, researchers use the "robust" option to obtain robust standard errors, also known as Huber/White or sandwich estimators. The following table illustrates the data after the heteroscedasticity problem has been resolved.

The fixed-effect model investigates the impact of product diversification on the performance of the South Asian insurance sector, correcting for country-specific effects with dummy variables. The data show that both product diversification to insurance penetration and insurance activity to insurance penetration have statistically

significant negative effects on Return on Equity (ROE), as indicated by coefficients of -0.037 and -0.036, respectively. The model's low R-squared value of 0.084 indicates that it has weak explanatory power, implying the presence of unaccounted-for factors influencing ROE.

Discussion

The third hypothesis states that,

$H_3 =$ Insurance Penetration moderated the relationship between products diversification; Insurance Activity and Insurance Industry performance in in India, Pakistan, and Sri Lanka.

Table 14. Correlation, t statistic, P values

Interaction Term	Correlation coefficient	Statistics t	P
Product Diversification to Insurance Penetration (PD_IP)	-.037	-2.38	.017
Insurance Activity to Insurance Penetration (IA_IP)	-0.32	-1.83	.067

Source: STATA output

Using the insurance penetration variable as a moderator in the Random effect model and OLS regressions, discover that the interaction term (moderation effect) that exists with diversification is negative and significant for South Asian Region countries with product diversification. The finding is also consistent with the Berry-Stölzle et al. (2012).

Conclusion

This research explores the impact of product diversification on insurance firm performance in three South Asian countries, considering life and non-life operations. Results reveal a significant negative correlation between product diversification and Return on Equity (ROE), aligning with Berry-Stölzle et al.'s findings. Caution is advised for South Asian insurers as diversification may lead to decreased profitability. The study emphasizes the need for careful evaluation of costs and benefits before decisions are made. Further insurance activity significantly impacts the insurance firm's performance in three South Asian countries; India Pakistan and Sri Lanka. Results reveal a significant negative correlation between product diversification and Return on Equity (ROE), aligning with Berry-Stölzle et al.'s findings. It stated insurance activities may lead to a decrease in a firm's profitability and be cautious about the two variables of diversification & insurance activity.

Moreover, the moderating effect of insurance penetration on the relationship between product diversification; insurance activity, and firm performance is observed. The negative and significant interaction term suggests that in South Asian countries with substantial insurance penetration, diversification is linked to lower performance. Insurance penetration, reflecting industry competitiveness, is associated with increased competition and improved service quality, supported by Claessens & Laeven (2003) and Cummins & Weiss (2009). India exhibits the highest

penetration rate among Sri Lanka and Pakistan, indicating substantial improvement.

As competitive markets correlate with higher insurance penetration, companies may turn to product diversification for profitability. However, the moderating effect of insurance penetration in South Asian countries implies a careful balance between diversification and market competitiveness. This underscores the need for insurance companies to prioritize both diversification and penetration strategies for sustained performance in the dynamic South Asian market, encompassing India, Pakistan, and Sri Lanka.

Recommendations

The regression model concludes that product diversification in the South Asian insurance industry offers potential benefits in broadening customer bases and increasing market visibility. However, it emphasizes that diversification doesn't guarantee improved financial performance. Strategic diversification requires careful consideration of risk profiles, target markets, and business goals. Sri Lankan examples illustrate challenges faced by diversified insurers, reinforcing the need for strategic portfolio assessment, risk-adjusted diversification, and continuous performance monitoring. Implementing these recommendations can help South Asian insurers optimize their diversified portfolios, navigate complexities, and achieve sustainable growth and profitability.

Limitations of the study

The study acknowledges several limitations that impact the generalizability of its findings. First, the sample excludes least-developed countries like Bangladesh, Nepal, Bhutan, and Afghanistan, and the unavailability of data from the Maldives restricts the study's regional applicability. Moreover, the exclusion of control variables such as firm size, growth, and risk

introduces potential bias, impacting the study's accuracy.

Second, the study's specific timeframe may limit its relevance over time, as economic conditions, regulatory changes, and other factors can influence financial performance dynamically. The model doesn't fully account for external factors like economic, political, and regulatory changes, which can significantly affect insurance industry performance.

In summary, future research should strive to overcome the study's limitations by incorporating a larger, more diverse sample, considering additional influencing factors, and exploring the intricate relationships between product diversification, regulatory environments, and consumer behavior. These efforts can provide a more nuanced perspective on the impact of product diversification on the insurance industry in the South Asian region.

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