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The Mediating Role of Investment Actuaries in the Relationship between Banking Sector Risks and Geopolitical Risks

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A B S T R A C T

The study aimed to identify the relationship between the investment actuary, geopolitical risks, and banking risks by applying to the Sudanese banking sector, through a survey study on selected sample of private Sudanese banks, and test whether the investment actuary mediates the relationship between geopolitical risks and banking risks. The study found the presence of the investment actuary in the banking sector supports improving performance, assists in predicting risks and creating a balance between returns and risks, it efficiently contributes to improving the management of investment portfolios in the face of uncertainty caused by geopolitical risks, also the study revealed there is strong statistically significant relationship that confirms the investment actuary's mediating role in the relationship between geopolitical risks and banking sector risk

Keywords: Investment Actuary - Geopolitical Risk - Banking risk

INTRODUCTION:

In many countries the economic sector faces various risks and basic threats that hinder the work of development and openness to global markets, as these risks have become a basic feature of third world countries, these risks affect all sectors of the economy, and the most affected sector is the banking because of its significant contribution to economic activity, as it is the main channel for the flow of capital from financiers, clients and beneficiaries. Among these services, as well as employing and accumulating savings and directing them towards investment in various economic projects in a manner consistent with achieving mutual benefits. Therefore, evaluating the performance of the banking sector and verifying its efficiency has become a strategic issue in order to enhance the effectiveness and flexibility of the financial system as a whole, especially in the face of financial and economic shocks. This vital sector is fraught with increasing risks due to complex and ongoing geopolitical obstacles, especially in a country like Sudan that constantly suffers from geopolitical fluctuations that have created a turbulent economy that suffers from these fluctuations.

These geopolitical risks contributes to creating severe economic fluctuations that paralyzed the Sudanese economy and prevented it from developing and continuing to grow. We find that many researchers have indicated that geopolitical risks are a way to study and understand the geographical and political variables that are consistent with foreign policy and predict international behavior and relations between countries, which may be represented by climate changes. Politics and frankness between Baddan and international crises, (Wade 2019), (Caldara and Iacoviello 2019), Khalid, W.E.O. (2020), Biswal (2016) Khalid, W.E., et al. (2023), Yang (2021).

In light of these geopolitical risks and fluctuations, which become a basic nucleus of banking risks, we find that the banking sector essentially seeks to rely on strategies that help it deal with these risks and fluctuations, and the most prominent of these strategies is relying on actuarial science. Which is often considered to be a portion of the business field, which encompasses a wide range of fields that are interconnected such as mathematics, economics, statistics, accounting, finance, and probability. (Jugu, 2015). with another side we find an investment actuary according to Sharma (2019), he is defined as a financial expert who relies on actuarial and financial principles to manage or analyze investment portfolios and assets, taking into account the liabilities and financial risks or contingencies, he also enhances the predictive roles of risks and identifies the negative effects that they can have. (Reynolds, 2021), (Johnson, 2002), (Khalid, W.E.O. 2020), and (Khalid, W.E., et al. 2023).

While another hand when we discuss on banking risk in the context of this study, we found there is no concept of banking risk has a single accepted definition, so we can define the Risks in banking as mentioned Sîrbulescu, C. (2016) a chance wherein an outcome or investment's actual return differs from the expected returns. As a complex of events with adverse consequences for the bank, an outcome or investment's actual return differs from the expected returns.

This study attempts to shed light on the contributions made by actuarial science in enhancing dealing with banking risks, by identifying the role of the investment actuary in dispelling fears about risks and helping to predict them. Therefore, the study seeks to identify the roles that the investment actuary can provide in light of these risks, which are clearly represented by banking risks and geopolitical risks, and how to increase investor confidence

and rationalize their decisions under these circumstances, so researchers are trying to answer the following question: Do the roles provided by the investment actuary mediate the relationship between banking risks and geopolitical risks in the banking sector, by applying it to A sample of Sudanese banks.

2. LITERATURE REVIEW:

The urgent need for actuarial knowledge appears due to the increasing severity of economic risks in general and banking risks in particular, given that this sector is one of the vital sectors that influences the overall economy. With regard to investment actuarial, we find that many studies shed light on, measuring and managing it, as Gurden, 2017, pointed out. Whereas, the actuarial approach focuses specifically on understanding how risks affect the economy and how to measure their positive and negative effects, while the (EC) paper, International Actuarial Association, 2013, addressed the role it plays in enhancing the confidence of beneficiaries of the services provided by financial institutions, by Through his contribution to how to evaluate the company's level of risk tolerance, the limits of risks, their types and limits, and how to deal with and predict them. Panama Sharma (2019) went into more detail in the actuary's with the risks of interest rate and liquidity, and their assessment of these risks and how they seek to reduce and hedge those risks. He also pointed out how to evaluate the minimum capital requirements and the financial solvency ratio according to the requirements under Basel III using actuarial modeling techniques. Luchik et al. (2018) also pointed out the roles of the investment actuary in encouraging and attracting investment for local institutions through actuarial financial reports that can provide information to real and potential investors. While Nawab, et al (2020) enumerated the strategic risks that investment economists can deal with, such as investment risks, insurance risks, market risks, liquidity risks, and operational risks. He pointed out the need to deal with these risks with caution because they may generate severe economic fluctuations in public stocks, and cause major repercussions in the markets and banks, which may lead to reducing the ability of companies to respond effectively to market events. In a related context, Lu, Z., Gozgor, et al. (2020) examined the impact of geopolitical risks on financial development (measured by domestic private sector credit) in emerging markets over the period 1985-2018. The study concluded that increased geopolitical risks lead to a decrease in the level of domestic credit to the private sector. While Wade (2019) and Yang (2021) also discussed the impacts and implications of geopolitical risks on financial markets, which is a negative impact. On stock market returns in all advanced economies and on capital flows. This increases investor anxiety and raises potential risk levels in the event of a development. Conflicts and their continuation will have an impact on how well the economy as a whole performs due to economic volatility considerations. Also Khalid, W.E.O,(2020) also mentioned that there is a clear and significant relationship between economic fluctuations in general and the roles played by the actuary, and he stressed the necessity of the banking sector adopting actuarial accounting policies and methods.

Regarding the issue of the consequences of geopolitical fluctuations and their impact on banking performance, we find that these fluctuations have obvious effects and contribute significantly to the construction of banking risks as well as disturbing its performance, many studies have raised these issues, Caldara and Iacoviello (2022) recently examined the GPR and showed that exogenous changes in the GPR can lead to a significant decline in economic activity and stock market returns, and that these risks have significant implications at the macroeconomic and financial level: as Carney, (2016) that these risks have a direct impact on the banking sector as they are one of the obstacles that stand in the way of investment.

Many studies have addressed the relationship between geopolitical risks and banking risks. Miah and Uddin (2017) state that geopolitical risks directly affect the efficiency and stability of banks, while other studies indicate that political risks increase earnings volatility, reduce credit growth, increase liquidity risk, increase the probability of default, and increase banking fragility (Pawlowska, 2016; Bitar et al., 2017). Tabak et al., 2012). Also Al-Shboul, M., et al (2020) referred to that the geopolitical risk which generally supports the financial fragility hypothesis. Regarding liquidity risk, it is seen as the potential loss to a bank arising from its inability either to meet its obligations or to fund increases in assets as they fall due without incurring unacceptable costs (IFSB, 2005)\ Almaqtari et al. (2018), extent of deterioration of local currency as compared to other foreign currencies may be a reason.

Regarding the repercussions of geopolitical risks on Sudan, we found that this country continued to suffer from a number of obstacles and geopolitical issues that formed the bleak picture of its stability. Cinnar, H.Y., & Adem, Ö. Z. E. R. (2023) has divided issues into with a geopolitical dimension in Sudan into internal and external factors, where the internal factors were: internal conflicts over power, ethnic divisions, economic disparities, governance challenges, and external factors that intertwined and perpetuated cycles of conflict and fragility. Such as issues of Sudan's foreign policy, water resources, disputes, border disputes, the secession of South Sudan, the policies of regional actors, and the economic sanctions imposed by the United States of America on Sudan. While the study of Elhussein, N. H. A. E., & Osman, O. E. E. O. (2019) dealt with exchange rate fluctuations and its impact on banking performance in Sudan. The study concluded that there is a causal relationship between the exchange rate and bank performance, and the study attributed this fluctuation to one of the elements of geopolitical fluctuations that it is experiencing. Sudan: The severe economic blockade that Sudan was subjected to since the end of the nineties of the last century, which isolated the country from the international financial system, which negatively affected the ability of the banking system to engage in international financial activities. Mustafa, O. A. O. (2023) also stated that the Sudanese banking sector is unable to withstand sudden shocks and economic crises due to its lack of commitment to applying the Basel II regulatory standards. This made the banking sector unable to absorb shocks.

3. HYPOTHESES *:*

To answer of the study questions the research tests the following

Main hypotheses:

H1: The roles an investment actuary mediate the relationship between banking risks and geopolitical risks in the Sudanese banking sector .

Sub-hypothesis：

1-1. The roles an investment actuary mediate the relationship between. Banking credit risk and geopolitical risks in the Sudanese banking sector .

1-2. The roles an investment actuary mediate the relationship between Liquidity risk and geopolitical risks in the Sudanese banking sector .

1-3. The roles an investment actuary mediate the relationship between. Exchange rate risk and geopolitical risks in Sudanese banking sector.

4. RESEARCH MODEL

This model was prepared depended on previous studies, as their independent variable study dealt with different points of view and different dimensions. Also showed of an investment actuary as the (mediates variable) on the relationship between geopolitical risks as (independent variable) and banking sector risks as (dependent variable) of this study.

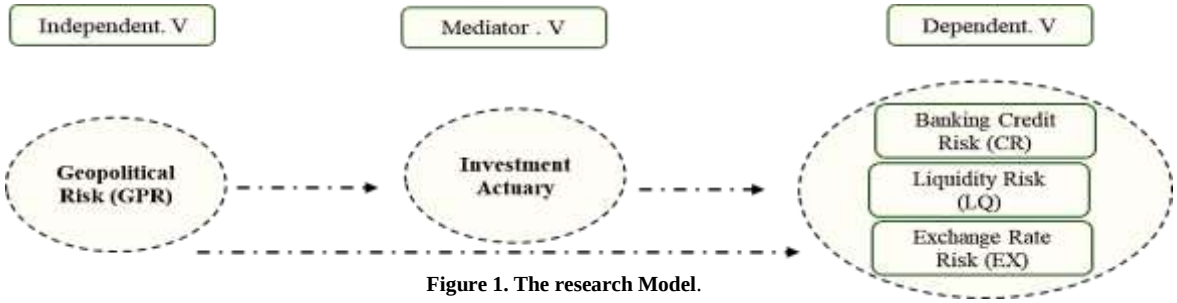

Figure 1. The research Model.

MEASUREMENTS:

Research Methodology

An exploratory research was designed to achieve the main objective of the study, by applying it to a selected sample of private Sudanese banks. The researcher relied on the questionnaire (closed) that specified the responses to be obtained from a specific category through intentional sampling. In this study, the researchers relied on data gathering methods such as questionnaires because they are low-cost and easy to use. In addition to the paucity and difficulty of getting reliable actuarial data, the study sample consisted of individuals who worked mostly in banking practice, actuaries, financial analysts, and auditors. See Table (1).

The survey was also available from a period from Sep 2022 to Mach 2023 via email, WhatsApp Groups. Were rated on five-point Likert-type scales, from (strongly disagree to strongly agree), the measurement in this study will be five items evaluating on five -point scale where (1= strongly disagree), (5= strongly agree). Identify the items that used to measure the study in the questionnaire used by previous studies in refereed journals and periodicals. A total of 212 respondents through a structured questionnaire, in light of the mediating role of investment actuaries in the relationship between banking sector risks and geopolitical risks.

Table 1: Descriptive Statistics

Demographic Factors	**Count**	**Percentage**
Major		
Accounting	77	36.3
Management	27	12.7
Banking & Financial Studies	63	29.7
Actuarial Science	17	8.0
Other	28	13.2
Total	212	100.0
Profession		
Actuary / Investment Actuary	3	1.4
Actuarial practitioners	17.0	8.0
Branch / Department manager	21	9.9

Account analyst	56	26.4
Assistant controller	33	15.6
Banker	82	38.7
Total	212	61.3
Professional qualifications		
CFA Chartered Financial Analyst	41	19.3
fellowship actuarial	3	1.4
Fellowship of Accountants	42	19.8
Other	45	21.2
N/A	81	38.2
Total	212	100.0

Source: The researchers, Survey data (2023).

Data analysis and discussion the hypotheses of the study:

Measurements were taken using previously studied scales. Revisions were made to ensure that they were complete and appropriate for the context of this study. The study data were analysed using SPSS V 23. A pre-test was conducted to determine the specific dimensions used to measure. The following factors are used to analyse investment actuaries' mediating function in the relationship between banking sector risks and geopolitical risks. See Table 2.

To fulfil the study's aims, the questionnaire was divided into five sections: one for demographic data, and four for study variables, each with 20 items.

Table 2: Dimensions Measurements

Variables	Dimension	Items	Measured by
Geopolitical risks (GPR)		4	KHALID, W. E., et al.(2023), Caldara, D. and Iacoviello, M., (2022).
Banking risks (BR)	Banking credit / BC	4	(Mohammed E. M., et al, 2022). Miah and Uddin (2017) , Almaqtari et al. (2018),
	Liquidity risk / LQ	4	
	Exchange rate EX	4	
Investment actuary (IVA)		4	Khalid, W. E. O. (2020), KHALID, W. E., et al.(2023), Sinkis, Peter & Scott, Nick. (2013)

Source: The researchers, SPSS. V. 23, (2023).

RESEARCH TOOLS:

To achieve the objectives of this study, the questionnaire included 20 items. To ensure adequate sampling, Kaiser-Meyer-Oklin (KMO) and Bartlett's test of Spherity were performed. The value of KMO (0.83) and Bartlett's test of Spherity ($\chi 2 = 354.45$, df = 156, and $p \leq 0.000$) represented the adequacy of sampling for further analysis. Cronbach's alpha for all factors scale was 0.873 which exceeded the minimum standard of 0.7 recommended by Nunnally, 1978, and Peterson 1994 for scale reliability, (Sulayman,T, et al 2021),using SPSS V 23.

Table: (3): Reliability Test for the pilot sample

Type	**Variables**	**Dimension**	**items**	**Cronbach's Alpha**	
Independent	Geopolitical risks (GPR)		4	0.805	
Dependent	Banking risks (BR)	Banking credit / BC	4	0.763	0.803
		Liquidity risk / LQ	4	0.811	
		Exchange rate EX	4	0.781	
Mediator	Investment actuary (IVA)		4	0.856	

Source: The researchers, SPSS. V. 23, (2023).

The results in Table (00000) showed the reliability of the respondents and the Alpha-Cronbach's value, which indicated that the reliability coefficients for the dimensions of Banking risks (BR) ranged between (0.763 - 0.811), while the reliability coefficients for Geopolitical risks (GPR) and Investment actuary (IVA) ranged between (0.805 - 0.856), respectively, these values are considered acceptable for the purposes of this study.

Test of simple regression variables:

In this study, the study hypotheses were tested using simple regression to test the following variables: significant level, standardized coefficient (βeta) value, un-standardized coefficient (β), Durbin-Watson (D.W.), F-Test value, and relationship levels (weak and strong).

Table 4: Test of Simple Regression Variables

Variables	βeta	Sig	R Square (R2)	Adjusted R Square (R2)	Change R Square (R2)	Durbin-Watson	F-value	Sig
GPR	.901	.000	.910	.818	.818	1.821	1271.073	.000
BC	.763	.000	.780	.690	.690	2.083	411.573	.000
LQ	.817	.000	.840	.734	.734	2.101	633.927	.000
EX	.721	.000	.721	.638	.638	2.077	457.573	.000
IVA	.807	.000	.807	.724	.724	2.117	1071.022	.000

Source: The researchers, SPSS. V. 23, (2023).

Table (4) showed the test and results of simple regression of the relationship between (GPR) and Banking risks (BR) Dimension (BC, LQ, and EX): there is positive and significant relationship between (GPR) and (BR) dimensions, on the standardized coefficient level, as the table show that all (βeta) factors are significant on (Sig 0.000), and that reflect there is positive and significant relationship between the dependent and the independent variables. Table (4) also showed that there is a relationship between the mediating variable IVA and the dependent and independent variables.

In addition, we found that the test and results of simple regression of (R2) Adjusted R Square (R2) ,It swings between 0.70 to 0.90 as the all variables and Dimensions that mean the impact and the change in the (GPR) variables was explained by (BR) Dimension (BC, LQ, and EX) variables around (70% - 80%) percentage and the remain of percentage returned to other factor as result on random mistake, also the table showed F-test values that the simple regression model is Significant (0.000), additionally the Durbin-Watson (D.W) was used and Significant at the (0.05) level are swings between (1.8 - 2.1) it explain that there is no-relationship between mistake random of using Durbin-Watson, the result of regression showed that (all factors) are Significant, according to showed results the model approve .This proves that there is a statistically clear role for the mediating variable, and that the investment actuaries mediator the relationship between banking risks and geopolitical risks.

Table 5: Hypothesis Testing

Hypothesis		Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	
H1	The roles an IVA mediate the relationship between *BR* and *GPR*	0.690	0.690	0.045	15.533	0.000	*Supported*
H1.1	The roles an *IVA* mediate the relationship between *BC* and *GPR*	0.029	0.034	0.060	0.488	0.623	*Supported*
H1.2	The roles an *IVA* mediate the relationship between *LQ* and *GPR*	-0.150	-0.151	0.058	2.612	0.009	*Supported*
H1.3	The roles an *IVA* mediate the relationship between *EX* and *GPR*	0.164	0.161	0.075	2.183	0.029	*Supported*

Source: The researchers, SPSS. V. 23, (2023).

In the present study, several hypotheses have been examined to determine the relationships between investment actuaries as a mediator variable and relationship between banking sector risks and geopolitical risks, as shown in table 6. Results were significant with hypothesis-specific values. The roles an IVA mediate the relationship between BR and GPR (H1, p = 0.000, T = 15.533), also the roles an IVA mediate the relationship between BC and GPR (H1.1, p = 0.623, T = 0.488). In contrast, the roles an IVA mediate the relationship between LQ and GPR (H1.2, p = 0.009, T = 2.612) and the roles an IVA mediate the relationship between EX and GPR (H1.3, p = 0.029, T = 2.183). These exact values indicate how investment actuaries, banking sector risks, and geopolitical risks models and views relate and perspectives interact.

DISCUSSION OF FINDINGS:

Based on the results of the study hypotheses, which statistically concluded that there is a significant relationship between the investment actuary as a mediating variable and geopolitical and banking risks as independent and dependent variables, proving that the investment actuary mediates the relationship between geopolitical and banking risks, we conclude that the study is correct. Some studies, such as the (Khalid et al 2023) study, have underlined the importance of investment actuaries in the banking industry, and how their presence helps to improve performance during crises caused by geopolitical volatility. Furthermore, we discover that the number of actuarial experts in the banking sector is limited, as (Khalid 2020) stated in his study that there are only three actuarial experts in Sudan who are fully qualified actuaries, and there are many practitioners of the actuarial profession who are partially qualified, and we did not find any specialized investment actuaries based on the responses of respondents.

The findings also confirmed that, according to the survey's phrases, the responses showed a link between investment actuaries and enhanced investor confidence in the face of geopolitical volatility. The investment sector has a close association with external risks, these risks continually demand actuarial guidance that boosts investor trust. This is consistent with both studies (YK, 2019)) (Khalid, 2020), also makes them feel somewhat safe because of the analytical ability he possesses in reading reality and providing advice, and it also reassures stakeholders about the facility's ability to overcome financial crises. This is supported by a study (Sinkis & Scott, 2013; Jugu, 2015). (Sharma 2019).

CONCLUSIONS*:*

The study aimed to identify the relationship between the investment actuary, geopolitical risks, and banking risks by applying to the Sudanese banking sector, through a survey study on selected sample of private Sudanese banks , and thus to test whether the investment actuary mediates the relationship between geopolitical risks and banking risks, and the presence of the investment actuary in the banking sector supports improving performance, as the analytical ability that the investment actuary possesses, along with his clear understanding of events, assists in predicting risks. In addition to creating a balance between returns and risks, it efficiently contributes to improving the management of investment portfolios in the face of uncertainty caused by geopolitical risks, and the study found a strong statistically significant relationship that confirms the investment actuary's mediating role in the relationship between geopolitical risks and banking sector risk.

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