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Ahmed Hassan Elgayar

Lecturer, Business Administration Department, Faculty of Commerce, Tanta University, Tanta, Egypt

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*Corresponding author: Ahmed_Elgayar@commerce.tanta.edu.eg

Navigating the Egyptian Commercial Banks' Profitability: The Interplay of Geopolitical (GP) and Uncertainty (U) Risks

Ahmed Hassan Elgayar
Lecturer, Business Administration Department, Faculty of Commerce, Tanta University, Tanta, Egypt

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Abstract

This study investigates the intricate relationship between geopolitical (GP) risks, uncertainty (U) risks, and the profitability of Egyptian commercial banks, focusing on data spanning from 2010 to 2022. Using panel data regression analysis, the research integrates the Caldara-Iacoviello Geopolitical Risk (GPR) Index and the World Uncertainty Index (WUI) to quantify external risks and examine their combined effects on bank profitability. Return on Average Assets (ROAA) is employed as the dependent variable, reflecting managerial efficiency and overall financial performance. The analysis incorporates key control variables, including capitalization risk, liquidity risk, and credit risk, to capture bank-specific dynamics. The sample is based on data from 11 Egyptian commercial banks, selected based on size and financial performance criteria.

The findings reveal that both GP and U risks individually exert significant negative impacts on profitability, disrupting operational efficiency, reducing investor confidence, and increasing exposure to financial shocks. However, the interaction between these risks exhibits a positive moderating effect, indicating that Egyptian banks adaptively respond to compounded challenges through resilience and strategic innovations. Additionally, capitalization risk positively influences profitability, underscoring the importance of maintaining robust capital buffers. Conversely, high credit risk negatively affects financial performance, while effective liquidity management contributes to profitability.

This research fills a critical gap in the literature on banking resilience in emerging markets, particularly in Egypt, where political and economic volatility is pervasive. The study provides actionable insights for policymakers and banking professionals, recommending enhanced risk management frameworks, strategic adaptability, and targeted regulatory interventions to mitigate the adverse effects of external shocks and sustain financial stability.

Keywords: *Geopolitical Risk; Uncertainty Risk; Bank Profitability; Egyptian Commercial Banks; Panel Data Regression; Risk Management;Emerging Markets; Financial Resilience.*

1. INTRODUCTION

Commercial banks are the lifeblood of any economy and a fundamental pillar of the financial system, particularly in emerging markets, where they rank among the most dynamic financial institutions (ĆJovković *et al*., 2021). These banks play a crucial role in economic development by mobilizing financial resources, such as deposits of various types, and channeling them into productive projects (Levine, 2005). Additionally, they act as key intermediaries within the payment system, facilitating sustainable economic growth through their financing activities.

By bridging the gap between entities with surplus funds (savers) and those with deficits (borrowers), banks not only stimulate investment but also generate demand for various financial products, thereby fostering economic activity and fortifying the financial system (Raghavendra, 2011; Allen & Carletti, 2013). Their profitability—a critical indicator of their ability to generate earnings relative to their assets—is influenced by a combination of internal factors, such as operational efficiency and capital adequacy, and external conditions, including economic cycles and policy changes (Dietrich & Wanzenried, 2014). To enhance profitability, banks often diversify their activities, optimize financial services, and expand their range of products to attract additional deposits (Demirgüç-Kunt & Huizinga, 1999).

However, globalization and the integration of financial markets have heightened the exposure of commercial banks to external risks. Geopolitical (GP) risks, characterized by political instability, international conflicts, and economic sanctions, and uncertainties (Us), arising from shifts in government policies and macroeconomic volatility, have emerged as significant challenges (Caldara & Iacoviello, 2018; Triki & Maatoug, 2020). These risks can disrupt banking operations and profitability, particularly in regions prone to political and economic turbulence, such as emerging markets (Mishkin, 1999).

While extensive research has explored the effects of GP and U risks on banking systems in regions like the Gulf Cooperation Council (GCC), Turkey, and China (Alfadli & Salim, 2024; Şanlısoy *et al*., 2016; Chiang *et al*., 2019), Egypt has received comparatively little attention despite its unique geopolitical and economic characteristics. As a pivotal emerging market, Egypt faces distinct challenges, including frequent political transitions, dependence on government debt, and exposure to regional uncertainties, which collectively influence the performance of its banking sector (Selim, Zaki, & Hanafy, 2021).

This study aims to address this gap by examining the interplay of GP and U risks in determining the profitability of Egyptian commercial banks. Utilizing the Caldara-Iacoviello Geopolitical Risk (GPR) Index and the World Uncertainty Index (WUI), this research will provide insights into how these risks impact the Egyptian banking sector and contribute to a broader understanding of the challenges faced by financial institutions in high-risk environments. The findings will not only enhance the academic discourse on the determinants of bank profitability but also offer practical

implications for policymakers and bank managers seeking to navigate the complexities of an increasingly uncertain global financial landscape.

2. PROBLEM STATEMENT

Profitability is a crucial indicator of the performance and stability of commercial banks, reflecting their operational efficiency and financial soundness (Levine *et al.*, 2000). In Egypt, commercial banks face increasing challenges as their profitability becomes progressively influenced by external factors, particularly the interplay between geopolitical (GP) and uncertainty (U) risks.

Geopolitical risks—including political instability, wars, and international conflicts—can destabilize financial systems by disrupting economic conditions, financial flows, and revenue streams. These risks pose significant operational challenges, especially for banks operating in regions like Egypt, where political and economic turbulence is a recurring reality (Triki & Maatoug, 2020). Simultaneously, uncertainty risk—stemming from unpredictable government decisions, regulatory changes, and macroeconomic volatility—intensifies the adverse effects of GP risks by heightening market volatility and eroding confidence in financial systems.

The interconnected nature of global financial systems further amplifies the impact of these risks, exposing banks to compounded vulnerabilities. This dynamic creates a precarious operating environment for Egyptian commercial banks, which must navigate the dual challenges of GP and U risks while striving to sustain profitability and financial stability.

This study seeks to explore the following research question:

"How does the interplay between geopolitical (GP) and uncertainty (U) risks impact the profitability of commercial banks operating in Egypt?"

By analyzing the combined influence of GP and U risks, this research aims to uncover the mechanisms through which these external shocks affect the financial performance of Egyptian commercial banks. The findings will enhance the understanding of risk management in high-risk environments and provide actionable insights for policymakers and banking professionals seeking to mitigate the adverse effects of such risks.

3. OBJECTIVES OF THE STUDY

The primary objective of this study is to investigate and quantify the impact of the interplay between geopolitical (GP) and uncertainty (U) risks on the profitability of commercial banks in Egypt. Specifically, the study aims to:

1. Analyze the direct effect of geopolitical (GP) risks on the profitability of commercial banks in Egypt.
2. Examine how the interaction between geopolitical (GP) rand uncertainty (U) risks influences bank profitability.

3. Identify the mechanisms through which GP and U risks affect the financial performance of commercial banks.
4. Offer actionable recommendations for policymakers and bank managers to mitigate the adverse effects of these risks and strengthen financial resilience.

4. SIGNIFICANCE OF THE STUDY

This study is significant both theoretically and practically, as it investigates the interplay between geopolitical (GP) and uncertainty (U) risks and their impact on the profitability of commercial banks in Egypt. Profitability is a cornerstone of banking performance, supporting financial system stability and fostering economic growth (ĆJovković *et al.*, 2021). In regions characterized by political and economic instability, such as Egypt, geopolitical risks and uncertainty risks pose significant challenges, affecting not only individual bank operations but also the broader financial ecosystem.

From a theoretical standpoint, this research contributes to the literature by addressing gaps in empirical evidence regarding the combined effects of GP and U risks on bank profitability, particularly within the Egyptian context. Although previous studies have examined these risks in other regions, Egypt's unique geopolitical and economic dynamics remain underexplored. By incorporating tools such as the Caldara-Iacoviello Geopolitical Risk (GPR) Index and the World Uncertainty Index (WUI), the study provides new insights into the mechanisms by which these external risks impact financial performance.

Practically, the findings aim to assist policymakers and bank managers in developing effective strategies to mitigate the adverse effects of these risks. Recommendations from the study will support the creation of robust financial policies, enhance risk management frameworks, and bolster investor confidence in the banking sector. Additionally, the research offers practical insights for strengthening the resilience of Egyptian commercial banks, ensuring sustainable profitability in an increasingly uncertain global financial environment.

By bridging theoretical understanding with practical application, this study has the potential to advance academic discourse and inform real-world decision-making, ultimately contributing to the stability and growth of Egypt’s financial system.

5. LITERATURE REVIEW

Commercial banks play an indispensable role in the global financial ecosystem, acting as crucial engines of economic growth and stability. Their ability to allocate capital efficiently and foster economic productivity makes them integral to the development of national economies (Levine, 1997; Beck, Demirgüç-Kunt, & Levine, 2000). Consequently, the determinants of bank profitability have been a significant focus of academic inquiry, with scholars investigating both internal drivers, such as operational efficiency (Athanasoglou, Brissimis, & Delis, 2008), and

external influences, such as macroeconomic conditions (Dietrich & Wanzenried, 2011). However, in recent years, geopolitical (GP) risks—characterized by political instability, international conflicts, and economic sanctions—have introduced additional complexities that influence banking operations and profitability. These risks are further compounded by rising uncertainties (Us) risks, presenting new challenges for banks, particularly in emerging markets like Egypt (Caldara & Iacoviello, 2018; Baker, Bloom, & Davis, 2016).

Early studies have highlighted the profound impacts of political risks on bank profitability. Şanlısoy *et al*., (2016) examined Turkish banks, utilizing the International Country Risk Guide (ICRG) indicators, and revealed that political instability disproportionately affects public banks compared to private ones. Their findings pointed to factors such as government stability, corruption, and social unrest as primary disruptors of public banking operations. Similarly, Belkhir *et al*., (2019) provided a comparative analysis of Islamic and conventional banks, showing that the risk-sharing principles of Islamic banks made them more resilient to political uncertainties than conventional banks, which are heavily reliant on interest-based mechanisms. These studies underscore the critical role of institutional structures in shaping banks' responses to external shocks, aligning with earlier work that emphasized the importance of governance and institutional quality in financial performance (Barth, Caprio, & Levine, 2004; La Porta *et al.*, 1998).

Beyond political risks, the intersection of geopolitical factors with macroeconomic variables has also been explored. Chiang *et al.,* (2019) focused on oil price volatility and its interplay with political risks, particularly in Chinese banks. Their study highlighted that oil-importing countries, such as China, experienced profitability declines due to rising oil prices, which fueled inflation and economic stagnation. Conversely, oil-exporting nations faced more complex outcomes. Although higher oil revenues provided some financial stability, the overall impact of oil price fluctuations remained a double-edged sword, creating both opportunities and risks for banks. This dual nature of resource dependency was further examined by Alsagr and Hemmen (2020), who compared the effects of geopolitical risks on oil-dependent and non-oil-dependent economies. Their findings revealed that while oil revenues mitigated some of the adverse effects of geopolitical risks in oil-exporting nations, resource dependency introduced long-term vulnerabilities tied to fluctuating global oil markets. These findings are consistent with earlier studies on the resource curse and its implications for financial stability (Ross, 1999; Sachs & Warner, 2001).

Emerging markets, with their distinctive financial systems, have been particularly vulnerable to geopolitical and economic uncertainties. Lu *et al.,* (2020) studied how geopolitical risks influence financial development in these markets, using the Caldara-Iacoviello Geopolitical Risk (GPR) Index. Their research demonstrated that increased geopolitical tensions restricted credit availability, hindering financial growth. Similarly, Alfadli and Salim (2024) provided critical insights into the Gulf Cooperation Council (GCC) context by examining 39 commercial banks over a 15-year period. Their findings revealed a nuanced relationship between GP and U risks, showing that economic

policy uncertainty amplified the negative effects of geopolitical risks on profitability. Notably, GCC banks demonstrated resilience due to their strategic position in global energy markets and access to substantial natural resource revenues. However, the study also highlighted the compounded challenges banks face in navigating the dual pressures of GP and U risks, emphasizing the importance of strategic adaptation in high-risk environments(Huang *et al.*, 2015; Nguyen & Bui, 2019).

Despite the rich body of literature on the relationship between GP and U risks and banking profitability, significant gaps remain. While extensive research has been conducted in regions such as Turkey, China, and the GCC, little attention has been paid to Egypt, a country of strategic geopolitical and economic importance. Egypt's financial sector is uniquely characterized by political transitions, macroeconomic volatility, and high levels of government debt (Selim, Zaki, & Hanafy, 2021). Moreover, while indices like the Global Economic Policy Uncertainty (GEPU) index and the World Uncertainty Index (WUI) have been widely applied in other contexts (Ahir, Bloom, & Furceri, 2018; Baker *et al.*, 2016), their utilization in Egypt has been limited. The WUI, with its country-specific granularity, is particularly well-suited for investigating the Egyptian context and provides an opportunity to address this research gap.

This study seeks to fill this gap by examining the interplay of GP and U risks in determining the profitability of Egyptian commercial banks. By leveraging the WUI and employing robust econometric methods, the research aims to contribute to a deeper understanding of how financial institutions in emerging markets navigate complex external environments. Specifically, this study will explore how geopolitical tensions and economic uncertainties interact to shape the performance of Egyptian banks, offering insights that are both context-specific and globally relevant. Therefore, the 3 hypotheses of this study can be formulated as follows:

H1: There is a significant impact of Geopolitical (GP) risk on bank profitability.

H2: There is a significant impact of Uncertainty (U) risk on bank profitability.

H3: There is a significant impact of the interplay between geopolitical (GP) and uncertainty (U) risks on bank profitability.

6. METHODOLOGY

6.1 Data and Sample Selection

Egypt's national banks have long played a critical role in the country's economic stability, particularly during times of crisis. Beyond their traditional functions, public banks have become key drivers of development, reinforced by recent government initiatives promoting sustainable growth and finance. Leading this effort, the Central Bank of Egypt (CBE) actively supports sustainable finance by subsidizing loans for sectors such as SMEs, industry, agriculture, housing, and environmentally friendly projects aimed at reducing carbon emissions. Its directives, rooted in

six core principles, align banking practices with sustainable development goals (SDGs), focusing on environmental preservation, social responsibility, governance, and transparency (CBE, 2021).

Public banks, guided by the CBE, also engage in corporate social responsibility (CSR) programs targeting education, healthcare, housing, and empowerment for women and people with disabilities. While primarily humanitarian, these initiatives contribute indirectly to national development. Major institutions like the National Bank of Egypt, Banque Misr, and Banque du Caire align with the CBE's strategies, prioritizing financial inclusion and entrepreneurship, particularly through lending to SMEs. The COVID-19 pandemic further accelerated digital banking adoption, expanding access to financial services (CBE, 2021).

In addition to commercial banks, Egypt hosts public development institutions such as the National Investment Bank, Egyptian Agricultural Bank, and Nasser Social Bank, which operate on a smaller scale. However, government-owned commercial banks remain the primary drivers of development-focused initiatives. This study emphasizes three leading commercial banks in Egypt and other banks listed in the EGX30 index, a benchmark of the 30 most liquid and actively traded companies in the Egyptian market.

The EGX30 index, available in local currency and U.S. dollars since 1998, uses market capitalization and free float adjustments to determine the monthly performance of its listed entities. Among its constituents are eight prominent banks, including the Commercial International Bank, Egyptian Gulf Bank, QNB Alahli Bank, and others. From 2010 to 2022, this research analyzes annual financial data from three key commercial banks and the EGX30-listed banks. Financial statements from Thomson Reuters provide the basis for calculating dependent and control variables, while independent variables are sourced from the GPR Index (via Matteo Iacoviello's database) and the moderating variable, GUI, from the Federal Reserve Economic Data (FRED).

6.2 Variables and their Measurement Description

6.2.1 Dependent Variable

The study delves into navigating the profitability of Egyptian commercial banks by examining the interplay of geopolitical (GP) and uncertainty (U) risks. It uses Return on Average Assets (ROAA) as the dependent variable, which measures the profitability of the commercial banks in the sample. This indicator reflects the bank management's ability to generate profits from its assets. It is calculated as net income after tax, expressed as a percentage of the average total assets. ROAA is considered one of the most important accounting indicators and measures of managerial efficiency in profitability (Kafi & Khamis, 2018). Its aim is to maximize net wealth and reflects the bank's effectiveness in utilizing its assets to generate revenue. Since a bank’s income and expenses are closely linked to its assets, the higher this return, the more efficient and profitable the bank is, and the better it performs overall (Dietrich & Wanzenried, 2014).

6.2.2 Independent Variable

The independent variable, reflecting this timeframe, is the level of Geopolitical Risk (GPR), which quantifies the level of geopolitical instability. It was measured using the index proposed by Caldara and Iacoviello (2018), which assesses the occurrence of events, threats, and geopolitical conflicts influencing the world since 1985. This is done by analyzing keywords used in a series of newspapers that cover global events. They utilize words from the following groups: explicit references to geopolitical risks, geopolitical events, military tensions, nuclear tensions, war, and terrorist threats. The index is updated monthly and is calculated as the percentage of articles related to geopolitical risks out of the total number of news articles in 11 leading national and international newspapers.

The use of this measurement in much of the recent literature provides substantial support for the reliability of this index. Since the current study relies on balanced annual data for the banks under study, an annual geopolitical risk index (GPR) specific to this study was created. This was achieved by calculating the simple average of all months for each year separately and for all the study years. It is expected that there will be a negative relationship between the geopolitical risk index and the profitability of commercial banks, as represented by the return on average assets (ROAA).

6.2.3 Control Variables

The control variables used in this study are designed to account for and adjust the characteristics of the bank when examining the expected effects of geopolitical risks on the profitability of commercial banks. These include financial risk variables, which are expected to have a direct relationship with the profitability of commercial banks. These variables are represented as follows:

1. Capitalization Risk (CAR):

In the current study, this indicator is represented by the ratio of total capital to risk-weighted assets, serving as a measure that reflects the level of capitalization risk. This indicator demonstrates the bank's ability to handle financial shocks and absorb losses and threats, such as credit, market, and operational risks, all of which can impact the bank's performance (Rai *et al.*, 2018).

The higher this ratio, the more the bank enjoys a safety margin as a buffer against unfavorable conditions and risks. However, requiring banks to maintain high capital ratios and reserves leads to what is known as the opportunity cost, as these funds could be invested in other opportunities to generate higher returns. Maintaining mandatory capital ratios and high reserves increases operating costs and reduces potential profits.

Theoretically, there is an optimal level of the capital adequacy ratio for a bank. When a bank's capital ratio reaches this optimal level, its efficiency improves. This is primarily because well-

capitalized banks can access external financing at lower costs than banks with weak capitalization (Poshakwale & Qi, 2011).

Accordingly, it is expected that there will be a negative relationship between the above-mentioned indicator and the profitability of commercial banks, as measured by the return on average assets (ROAA).

2. Liquidity Risk (LR):

In the current study, this indicator is represented by the ratio of liquid assets to total assets, serving as a measure that reflects the level of liquidity risk. This ratio is considered one of the most important accounting measures of the availability of bank liquidity. It illustrates the bank's ability to meet its financial obligations in cases of expected or unexpected financial demands from customers.

The higher this ratio, the greater the bank's liquidity and safety margin, and vice versa. However, a high liquidity ratio may reduce the bank's profitability. Banks often forgo investment opportunities (opportunity cost) in pursuit of higher profits when they retain a significant portion of liquid assets (Olalere *et al.*, 2017).

Accordingly, it is expected that there will be a negative relationship between the above-mentioned indicator and the profitability of commercial banks, as measured by the return on average assets (ROAA).

3. Credit Risk (CR):

In the current study, this indicator is represented by the ratio of non-performing loans to total loans, serving as a measure that reflects the level of credit risk. This indicator is related to the probability of losses arising from a borrower's inability to meet their obligations (Petria *et al.*, 2017).

The higher this ratio, the greater the level of credit risk, which in turn leads to a decline in the bank's profitability, and vice versa. Accordingly, it is expected that there will be a negative relationship between the above-mentioned indicator and the profitability of commercial banks, as measured by the return on average assets (ROAA).

6.2.4 Moderating Variable

The researcher uses Uncertainty (U) risk as a moderating variable and employs the World Uncertainty Index (WUI) for Egypt, as it provides a more specific measure of economic and policy uncertainty for individual countries (Ahir, Bloom, & Furceri, 2018). While the Global Economic Policy Uncertainty (GEPU) index is widely utilized to capture global trends (Baker, Bloom, & Davis, 2016), the WUI offers more targeted insights by incorporating country-specific data, which is particularly relevant for examining the economic dynamics within Egypt.This choice is consistent with previous research that has emphasized the importance of country-level uncertainty

in understanding national economic outcomes (Ahir, Bloom, & Furceri, 2022). The following table (1) summarizes the major differences between the two indices, as follows:

Table 1: World Uncertainty Index (WUI) Vs. Economic Policy Uncertainty Index (EPUI)

Feature	World Uncertainty Index (WUI)	Economic Policy Uncertainty Index (EPU)
Focus	Broad uncertainty (economic + political)	Economic policy-related uncertainty
Geographic Coverage	Global (140+ countries)	Country-specific (20+ countries, mainly G20)
Data Source	Economist Intelligence Unit (EIU) country reports	Newspaper archives, policy data
Frequency	Quarterly	Monthly
Context	General uncertainty tracking	Policy decision-related risk
Use in Research	Cross-country comparisons, global trends	Effects of policy uncertainty on markets

Source: Adapted by the researcher from Ahir *et al.* (2018) and Baker *et al.* (2016).

The WUI index is hypothesized to interact with GPR, amplifying its adverse effects on profitability (Antonakakis, Chatziantoniou, & Filis, 2014).

6.3 Analytical framework

Given the nature of the data, the study employs Panel data. It refers to datasets where observations are collected over time for the same individuals, units, or entities, allowing for longitudinal analysis. It is a multidimensional dataset widely used in disciplines like social sciences and econometrics to examine data across multiple periods for the same entities (Adefemi, 2017). This study uses secondary panel data from 2010 to 2022 and applies three statistical techniques: descriptive analysis, unit-root tests for stationarity, and panel data regression analysis.

6.3.1 Descriptive Analysis

Descriptive analysis is a method used to summarize sample or population data by examining its characteristics and distribution. This involves techniques like tables, graphs, frequency distributions, and calculating measures such as means, medians, and standard deviations to understand central tendencies and variability (Anggraeni *et al.*, 2021). It provides insights into the fundamental features and patterns of the data, offering a foundational understanding of the sample or population (Mendenhall *et al.*, 2017).

6.3.2 Panel Data Unit-Root (Stationarity) Tests

Unit-root tests are essential in panel data analysis to ensure data stability and avoid spurious regressions. These tests, developed by Lin and Levin (1992, 1993, 2002), are based on Dickey and Fuller's work for time series analysis. The key tests include:

1. Levin, Lin, and Chu t-test
2. Im, Pesaran, and Shin W-stat
3. ADF-Fisher Chi-square test
4. PP-Fisher Chi-square test

The null hypothesis for all tests assumes non-stationarity, while the alternative suggests stationarity (Baltagi, 2014). The stability of study variables is assessed based on the majority of test outcomes (Kadi & Belkour, 2017). Maddala and Wu (1999) found that the ADF-Fisher and PP-Fisher tests are easier to use and generally more effective for assessing unit roots, while Hoang and Cnown (2005) identified ADF-Fisher as the most robust for unit-root analysis.

6.3.3 Panel Data Regression Analysis

The basic panel data regression model is expressed as:

$$\mathbf{Y_{it} = a + bX_{it} + \varepsilon_{it}}$$

Where:

- ✓ $\mathbf{Y_{it}}$ represents the dependent variable,
- ✓ $\mathbf{X_{it}}$ represents the independent or explanatory variable,
- ✓ **a** and **b** are coefficients to be estimated,
- ✓ **i** and **t** are indices for individuals and time, respectively,
- ✓ $\boldsymbol{\varepsilon_{it}}$ represents the error term.

Panel data regression can be done using three models:

1. **Independently Pooled OLS Regression**: This simple model assumes constant regression coefficients across all periods and units. However, it may ignore differences across units and time, leading to biased estimates (Ramadan, 2017). It assumes homogeneity of the coefficients, which can oversimplify relationships in the data and result in unreliable conclusions (Greene, 2012).

2. **Fixed Effects Model**: This model accounts for individual-specific intercepts, which remain constant over time. It controls for time-invariant factors that may bias results (Amer, 2015). By focusing on within-unit variation, it corrects for unobserved heterogeneity and is often used when there are individual-specific effects that could distort pooled regression analyses (Baltagi, 2005).

3. **Random Effects Model**: The random effects model incorporates differences across units into the error term, assuming these differences are random rather than fixed. It allows for the estimation of average effects across the sample while accommodating variations across both units and time (Amer, 2015). Random effects are useful when the units are drawn

from a larger population, and assumptions about random sampling hold (Hausman & Taylor, 1981).

Model Comparison

To determine the most appropriate model, two common tests are used:

1. **Correlated Random Effects (CRE) Hausman Test**: This test compares fixed and random effects models by evaluating the consistency of the coefficient estimates. If the p-value is less than 0.05, the fixed effects model is preferred, suggesting significant individual effects (Hausman, 1978).
2. **Wald Test**: The Wald test compares the Fixed Effects model with the Pooled OLS regression model. If the p-value is less than 0.05, the Fixed Effects model is preferred, indicating that at least one coefficient in the model differs significantly from zero (Wald, 1943).

Figure 1 shows the main empirical model used to test the 3 hypotheses of this research, as shown below:

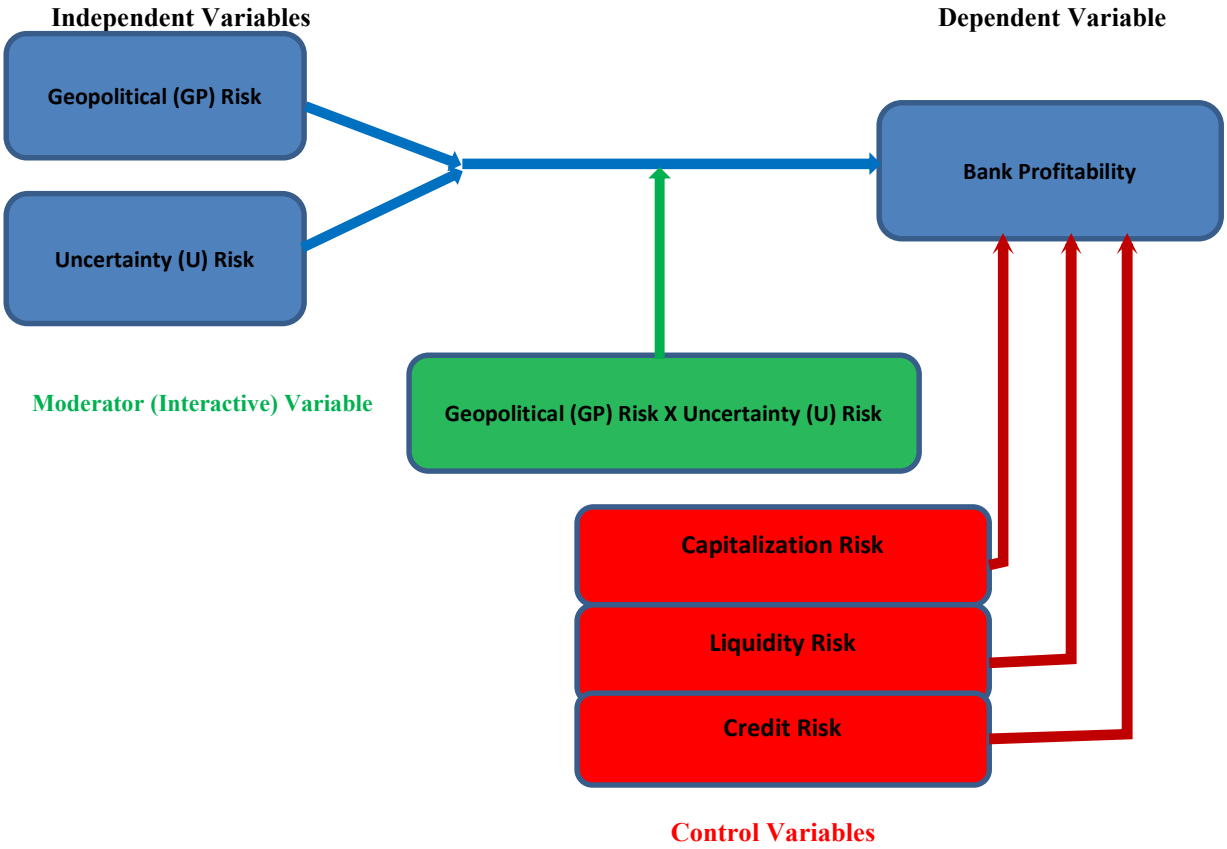

Figure 1: The General Empirical Model
Source: prepared by the researcher

7. RESULTS AND DISCUSSION

7.1 Descriptive Analysis

The descriptive statistics presented in Panel A highlight key characteristics of the research variables. Profitability exhibits a low mean (0.01048) and a small standard deviation (0.00956), indicating modest levels of profitability across the sample and minimal variability. The median value (0.00954) being slightly below the mean suggests a slightly skewed distribution. Geopolitical Risk (GP) shows a moderate mean (0.18231) with a higher median (0.13000), pointing to a wide distribution of GP risk levels among the banks. Similarly, Uncertainty Risk (U) has a mean of 0.18899, higher than its median (0.13622), reflecting greater prevalence and higher variability, as evidenced by the standard deviation (0.25624). The interaction term (GP × U) has a low mean (0.04010) but a large standard deviation (0.06888), indicating significant differences in how these risks interact across the sample.

The control variables present an interesting dynamic. Capitalization Risk has the highest mean (1.94316) and a substantial standard deviation (3.77994), signaling considerable variation in how banks approach capitalization. Liquidity Risk has a lower mean (0.33106) and moderate variability, suggesting relatively consistent practices across banks. Credit Risk shows a low mean (0.07462) and minimal variability, indicating limited exposure to credit risk within the sample.

In Panel B, the correlation matrix reveals notable patterns. Profitability has weak negative correlations with Geopolitical Risk (-0.07623), Uncertainty Risk (-0.09279), and their interaction (-0.09427), implying that these risks have a minor adverse impact on profitability. However, a strong positive correlation between Profitability and Capitalization Risk (0.692626) underscores the critical importance of capitalization in supporting profitability. Geopolitical and Uncertainty Risks show a moderate positive correlation (0.210315), suggesting that these risks often increase together, albeit not perfectly aligned. The interaction term exhibits very high correlations with both GP Risk (0.417909) and Uncertainty Risk (0.959325), indicating that it is significantly influenced by these individual components.

The control variables also reveal intriguing relationships. Capitalization Risk is negatively correlated with Liquidity Risk (-0.47505), suggesting a trade-off between maintaining capital reserves and liquidity levels. Additionally, Credit Risk positively correlates with Capitalization Risk (0.506135), indicating that higher capitalization may come with increased credit risk exposure. Liquidity Risk's negative correlation with Profitability (-0.30573) suggests that excessive liquidity could constrain profitability.

Importantly, the correlations between each independent, moderating, and control variable and the dependent variable are all below 0.80, suggesting that multicollinearity is not a concern among the variables (Gujarati, 2003). The correlations display varying signs, some of which may agree with or contradict existing theories and literature. However, it is crucial to recognize that correlation merely indicates a linear association between two variables, not a causal relationship (Ratner, 2009). Thus, our attention turns to the regression coefficients within the regression model employed, which will reveal the correct directional impacts of the results.

Table 1: Describing Research Variables

Panel A: Descriptive Statistics

Descriptive Statistics/ Variables	*Profitability*	*Geopolitical Risk*	*Uncertainty Risk*	*Geopolitical Risk X Uncertainty Risk*	*Control Variables*		
					Capitalization Risk	*Liquidity Risk*	*Credit Risk*
Mean	0.01048	0.18231	0.18899	0.04010	0.07462	1.94316	0.33106
Median	0.00954	0.13000	0.13622	0.01533	0.07315	0.89300	0.18731
Standard Deviation	0.00956	0.10548	0.25624	0.06888	0.04407	3.77994	0.49512
Count	143	143	143	143	143	143	143

(Source: Excel 2019)

Panel B: Correlations Matrix

Variable		*Profitability*	*Geopolitical Risk*	*Uncertainty Risk*	*Geopolitical Risk X Uncertainty Risk*	*Control Variables*		
						Capitalization Risk	*Liquidity Risk*	*Credit Risk*
Profitability		1						
Geopolitical Risk		-0.07623	1					
Uncertainty Risk		-0.09279	0.210315	1				
Geopolitical Risk X Uncertainty Risk		-0.09427	0.417909	0.959325	1			
Control Variables	**Capitalization Risk**	0.692626	0.006595	0.011196	0.011538	1		
	Liquidity Risk	-0.30573	0.040949	0.01654	0.019127	-0.47505	1	
	Credit Risk	0.182838	-0.05115	-0.00537	-0.01259	0.506135	-0.18749	1

(Source: Excel 2019)

7.2 Panel Data Unit-Root (Stationarity) Tests

Table 2: Unit Root Tests

Variables/ Tests		Levin, Lin & Chu t	Im, Pesaran and Shin W-stat	ADF – Fisher Chi-square	PP – Fisher Chi-square
Significance/ Probability Level (Before Differencing)					
Profitability		0.0154	**0.3085**	**0.6523**	**0.9939**
Geopolitical Risk		0.0037	**0.1504**	**0.3865**	0.0003
Uncertainty Risk		0.0000	0.0204	0.0656	0.0001
Geopolitical Risk X Uncertainty Risk		0.0000	0.0041	0.0147	0.0000
Control Variables	Capitalization Risk	**1.0000**	**0.3376**	**0.6904**	**1.0000**
	Liquidity Risk	**0.9998**	**0.9975**	**1.0000**	**0.9983**
	Credit Risk	0.0025	**0.4531**	**0.8132**	**0.4839**
Significance/ Probability Level (After Differencing (1st. Difference))					
Profitability		0.0000	0.0000	0.0001	0.0000
Geopolitical Risk		0.0000	0.0000	0.0000	0.0000
Control Variables	Capitalization Risk	0.0000	0.0157	0.0483	0.0028
	Liquidity Risk	0.0000	0.0000	0.0000	0.0000
	Credit Risk	0.0000	0.0014	0.0050	0.0000

(Source: EViews 13)

Table 2 shows that several variables, such as profitability, geopolitical risk, capitalization risk, liquidity risk, and credit risk, exhibit significance levels greater than 5% in multiple tests or across all tests. On the other hand, other variables display significance levels below 5% in all four tests conducted. However, when the first differences are applied to the variables that showed significance levels above 5% in all tests, their significance shifts from insignificant to significant across all tests. This shift demonstrates the robustness of the final panel data for all dependent, independent, and control variables, as confirmed by most of the tests.

7.3 Panel Data Regression Analysis

Shifting to the Panel Data Regression Analysis models presented in Table 3, which cover the entire period from 2010 to 2022, it is clear that the random effects model is the appropriate choice. All the explanatory variables utilized by the researchers significantly impact the profitability dependent variable. The findings of this study uncover significant relationships between geopolitical risk (GPR), uncertainty, and the profitability of Egyptian commercial banks, all at a 0% level of significance. Additionally, the analysis highlights the impact of key control variables, offering a comprehensive understanding of profitability dynamics.

1. Geopolitical Risk

The results indicate that geopolitical risk has a significant negative impact on profitability. This finding aligns with prior research, including Bouri *et al.,* (2018) and Caldara and Iacoviello (2022), which emphasize that heightened geopolitical risks disrupt economic stability, increase operational costs, and adversely affect financial performance. In emerging markets like Egypt, geopolitical tensions amplify uncertainty, reduce investor confidence, and constrain banks' operational efficiency, ultimately eroding profitability. Supporting this perspective, Abosedra *et al.*. (2016) highlight how geopolitical instability fosters volatile financial

conditions, diminishing returns for businesses and financial institutions. Similarly, Chen *et al.,* (2020) argue that geopolitical risks lead to market disturbances, impeding firms' ability to generate consistent revenues.

2. Uncertainty

Uncertainty also demonstrates a significant negative effect on bank profitability. Elevated uncertainty in macroeconomic, regulatory, or political conditions complicates decision-making, hampers long-term planning, and increases exposure to non-performing loans. This finding is consistent with Knight's (1921) theoretical framework, which differentiates between risk (where probabilities are known) and uncertainty (where probabilities are unknown), highlighting the unique challenges of managing uncertain environments. Empirical evidence further corroborates this relationship. Nguyen and Schinckus (2020) reveal that heightened uncertainty undermines profitability in banking institutions by restricting lending and reducing revenue streams. Similarly, Bernanke (1983) notes that uncertainty delays investment decisions, leading to inefficiencies and diminished firm performance. In the context of financial institutions, Altavilla *et al.* (2015) show that increased uncertainty negatively affects credit allocation, reducing lending activity and weakening profitability.

3. Interaction Between Geopolitical Risk and Uncertainty

Interestingly, the interaction between geopolitical risk and uncertainty presents a significant positive moderating effect on profitability. While both factors individually harm profitability, their interplay appears to drive banks to develop adaptive strategies and dynamic capabilities that mitigate the compounded risks. This aligns with Wernicke *et al.,* (2015), who suggest that challenging environments often inspire organizations to exhibit resilience and innovation, transforming adverse conditions into opportunities for stability and growth. Similarly, Teece *et al.,* (1997) highlight the importance of dynamic capabilities in enabling firms to adapt to turbulent conditions, maintain competitiveness, and achieve stability. In emerging markets where uncertainty and geopolitical risks are prevalent, institutions often adopt flexible strategies to navigate volatility. For instance, Hitt *et al.,* (2000) argue that organizations in such contexts leverage resource-based strategies to counteract external threats and sustain profitability.

4. Control Variables

The study also examines key control variables, revealing their substantial influence on bank profitability, all at a 0% level of significance:

1. Capitalization Risk (CAR): A positive relationship between capitalization risk and profitability suggests that higher capital adequacy enhances financial performance. This aligns with the "buffer theory of capital," which posits that well-capitalized banks enjoy greater financial stability and lower funding costs due to increased stakeholder trust. Poshakwale and Qi (2011) argue that strong capitalization allows banks to secure external financing more favorably, bolstering profitability. Furthermore, the ability of higher capitalization to absorb financial shocks likely outweighs the opportunity costs of maintaining large reserves, especially in contexts where risk reduction is prioritized.

2. Liquidity Risk (LR): The positive association between liquidity risk and profitability suggests that Egyptian banks effectively manage their liquid assets to support financial performance. While high liquidity is often associated with forgone investment opportunities (Olalere *et al.*, 2017), these banks appear to leverage liquidity to seize short-term opportunities or maintain a robust safety margin, instilling confidence among customers. This finding may reflect specific characteristics of the Egyptian banking sector, where maintaining higher liquidity can mitigate economic and financial instabilities, ultimately benefiting profitability.

3. Credit Risk (CR): The negative relationship between credit risk and return on average assets (ROAA) is consistent with existing literature, which emphasizes that higher levels of non-performing loans (NPLs) adversely affect profitability. Increased credit risk raises loan-loss provisions and reduces funds available for productive activities, weakening financial performance (Petria, Capraru, & Ihnatov, 2015). Moreover, elevated credit risk reflects poor credit quality and ineffective risk management practices, further eroding profitability.

The R-square and adjusted R-square values of 0.967 and 0.966, respectively, indicate that the independent, moderator and control variables explain 96.7% and 96.6% of the variation in profitability. The remaining percentage is attributed to factors or variables beyond the scope of this study.

These findings underscore the intricate relationships between geopolitical risk, uncertainty, and profitability, while also highlighting the critical role of effective capitalization, liquidity management, and credit risk mitigation. Egyptian banks appear to operate under specific conditions that allow them to offset traditional opportunity costs, offering avenues for further research into sector-specific dynamics. By contributing to the literature on emerging markets, this study emphasizes the importance of resilience, strategic responses, and adaptive capabilities in addressing compounded risks. It also provides practical insights for policymakers and practitioners aiming to enhance profitability within challenging environments.

Table 3: Panel Data Regression Analysis Models (2010: 2022)

Variables/ Tests		Random Effects			Fixed Effects			Pooled Effects		
		Coefficient	T	Sig. T	Coefficient	T	Sig. T	Coefficient	T	Sig. T
C		-0.016513	-16.15494	0.0000	-0.016513	-16.15494	0.0000	-0.016513	-48.52889	0.0000
Geopolitical Risk		-0.004394	-9.248469	0.0000	-0.004394	-9.248469	0.0000	-0.004394	-27.78208	0.0000
Uncertainty Risk		-0.002988	-5.026018	0.0000	-0.002988	-5.026018	0.0000	-0.002988	-15.09798	0.0000
Geopolitical Risk X Uncertainty Risk		0.021535	9.237062	0.0000	0.021535	9.237062	0.0000	0.021535	27.74782	0.0000
Control Variables	Capitalization Risk	0.210846	43.24361	0.0000	0.210846	43.24361	0.0000	0.210846	129.9023	0.0000
	Liquidity Risk	0.016003	11.30758	0.0000	0.016003	11.30758	0.0000	0.016003	33.96757	0.0000
	Credit Risk	-0.003380	-7.639791	0.0000	-0.003380	-7.639791	0.0000	-0.00338	-22.94967	0.0000
R^2		0.967925			0.967925			0.967925		
Adjusted R^2		0.966510			0.963852			0.967756		
F		684.0169			237.6456			5718.583		
Sig. F		0.000000			0.000000			0.000000		
Sig. Hausman test		1.0000								
Appr. Model		Random Effects Model								

(Source: EViews 13)

8. CONCLUSION, RECOMMENDATIONS, & SUGGESTIONS FOR FUTURE RESEARCH

8.1 Conclusion

The findings of this study reveal significant relationships between geopolitical risk (GPR), uncertainty, and the profitability of Egyptian commercial banks. First, the study shows that geopolitical risk has a significant negative effect on profitability. This result aligns with previous research, such as Bouri *et al.,* (2018) and Caldara and Iacoviello (2022), which demonstrate that heightened geopolitical risks disrupt economic stability, increase operational costs, and adversely impact financial performance. Specifically, geopolitical tensions in emerging markets like Egypt amplify uncertainty, reduce investor confidence, and limit the operational efficiency of banks, ultimately eroding profitability. Supporting this perspective, Abosedra *et al.,* (2016) argue that geopolitical instability leads to volatile financial conditions, diminishing returns for businesses and financial institutions. Similarly, Chen *et al.,* (2020) emphasize that geopolitical risks create market disturbances, restricting the ability of firms to generate consistent revenues.

Second, uncertainty also demonstrates a significant negative effect on bank profitability. Uncertainty in macroeconomic, regulatory, or political conditions complicates decision-making, hinders long-term planning, and increases exposure to non-performing loans. This finding is consistent with Knight's (1921) theoretical framework, which distinguishes between risk (where probabilities are known) and uncertainty (where probabilities are unknown), highlighting the challenges of navigating uncertain environments. Empirical evidence further supports this relationship. Nguyen and Schinckus (2020) show that heightened uncertainty undermines profitability in banking institutions by constraining lending and reducing revenue streams. Similarly, Bernanke (1983) points out that uncertainty delays investment decisions, leading to inefficiencies and reduced firm performance. In the context of financial institutions, Altavilla *et al.,* (2015) argue that increased uncertainty affects credit allocation and weakens profitability by reducing lending activity.

Finally, the interaction between geopolitical risk and uncertainty presents a significant positive moderating effect on profitability. This suggests that while both factors individually harm profitability, their interplay may stimulate banks to develop adaptive strategies and dynamic capabilities, which help them mitigate the compounded effects of these risks. Supporting this view, Wernicke *et al.,* (2015) highlight that challenging environment often prompts organizations to exhibit resilience and innovation, turning adverse conditions into opportunities for stability or growth. Similarly, Teece *et al.,* (1997) emphasize the role of dynamic capabilities in enabling firms to adapt to turbulent conditions, maintain competitiveness, and achieve stability. In emerging markets, where uncertainty and geopolitical risks are prevalent, firms often develop flexible strategies to navigate volatility. For example, Hitt *et al.,* (2000) argue that institutions in such environments rely on resource-based strategies to counteract external threats and sustain profitability.

Overall, these findings underscore the intricate relationships between geopolitical risk, uncertainty, and profitability, offering insights into how Egyptian banks manage these challenges. The study also contributes to the literature by highlighting the importance of resilience and strategic responses in the face of compounded risks.

8.2 Recommendations

1. **Strengthen Risk Management Frameworks**

Egyptian banks should enhance their risk management practices to mitigate the adverse effects of geopolitical risk and uncertainty on profitability. This includes adopting advanced risk assessment tools and real-time monitoring systems to better anticipate and respond to external shocks.

2. **Promote Capital Adequacy**

Banks should prioritize maintaining robust capital buffers in line with the "buffer theory of capital." Regulators could consider implementing policies that encourage banks to strengthen their capital base, which not only enhances profitability but also bolsters financial stability during turbulent periods.

3. **Optimize Liquidity Management**

Given the positive impact of liquidity risk on profitability, banks should continue to effectively manage their liquid assets. They should focus on balancing liquidity reserves with investment opportunities to ensure flexibility during economic uncertainties while maintaining customer confidence.

4. **Mitigate Credit Risk**

Banks should implement stricter credit evaluation processes to reduce non-performing loans (NPLs). This includes leveraging predictive analytics and improving borrower monitoring mechanisms to enhance credit quality and minimize loan losses.

5. **Develop Adaptive Strategies for Uncertainty and Geopolitical Risks**

Banks must foster resilience and innovation by developing dynamic capabilities to navigate uncertainty and geopolitical challenges. This could involve diversifying revenue streams, leveraging digital transformation, and forming strategic alliances to reduce dependency on volatile markets.

6. **Engage Policymakers**

Regulatory authorities should work closely with financial institutions to establish guidelines that promote financial stability in the face of geopolitical and economic risks. Policies could include stress-testing requirements and incentivizing the development of contingency plans for uncertain scenarios.

7. **Focus on Training and Development**

Bank employees should be trained in risk management, financial innovation, and strategic decision-making to better address the challenges posed by geopolitical and economic uncertainties.

8.3 Suggestions for Future Research

1. **Sectoral Analysis of Geopolitical and Uncertainty Risks**

Future studies could investigate the impact of geopolitical risk and uncertainty on profitability across different sectors of the economy beyond the banking sector, such as manufacturing, energy, or tourism. This would provide a broader understanding of risk dynamics in emerging markets.

2. **Exploration of Digital Transformation's Role in Risk Mitigation**

With the increasing adoption of financial technology (FinTech), future research could examine how digital transformation helps banks mitigate the impacts of geopolitical risk and uncertainty, as well as its influence on profitability.

3. **Cross-Country Comparisons**

Comparative studies involving other emerging markets or developed economies could provide insights into how geopolitical risk and uncertainty affect banks' profitability in different contexts. This could help identify best practices and universal risk mitigation strategies.

4. **Long-Term Impacts of Geopolitical and Economic Risks**

Future research could explore the long-term effects of geopolitical and economic uncertainties on profitability, including how banks adapt their strategies over extended periods.

5. **Role of Corporate Governance in Enhancing Resilience**

Investigating the role of corporate governance practices, such as board composition, executive decision-making, and transparency, in enhancing banks' resilience against geopolitical and economic risks would add valuable insights.

6. **Moderating and Mediating Factors**

Future studies could explore additional factors that may moderate or mediate the relationship between geopolitical risk, uncertainty, and profitability, such as regulatory policies, technological advancements, or cultural differences.

7. **Impact of Macroeconomic Variables**

Expanding the research to include other macroeconomic variables, such as inflation, exchange rates, and interest rates, would provide a more comprehensive view of their interaction with geopolitical and uncertainty risks on profitability.

8. **Behavioral Aspects in Risk Management**

Understanding the behavioral aspects of risk perception and decision-making within banks, especially under high uncertainty and geopolitical tensions, could reveal new dimensions of risk management strategies.

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المستخلص

تستعرض هذه الدراسة العلاقة المعقدة بين مخاطر الجيوسياسية (GP)، ومخاطر عدم اليقين (U)، وربحية البنوك التجارية المصرية، مع التركيز على البيانات الممتدة من عام 2010 إلى 2022. باستخدام تحليل الانحدار للبيانات المقطعية، يدمج البحث مؤشر مخاطر الجيوسياسية من كالدارا–ياكوفييلو (GPR) ومؤشر عدم اليقين العالمي (WUI) لقياس المخاطر الخارجية ودراسة تأثيراتها المشتركة على ربحية البنوك. يتم استخدام العائد على الأصول المتوسطة (ROAA)كمتغير تابع، مما يعكس الكفاءة الإدارية والأداء المالي العام. يتضمن التحليل بعض المتغيرات الرقابية الرئيسية، مثل مخاطر رأس المال، ومخاطر السيولة، ومخاطر الائتمان، للكشف عن الديناميكيات الخاصة بالبنك. كما تعتمد العينة على بيانات لـ 11 بنك تجاري مصري، تم اختيارهم بناءً على معايير الحجم والأداء المالي.

تكشف النتائج أن كلاً من مخاطر الجيوسياسية ومخاطر عدم اليقين تؤثران سلبًا بشكل كبير على الربحية، مما يعطل الكفاءة التشغيلية، ويقلل من ثقة المستثمرين، ويزيد من التعرض للصدمات المالية. ومع ذلك، يظهر التفاعل بين هذه المخاطر تأثيرًا إيجابيًا معدلاً، مما يشير إلى أن البنوك المصرية تستجيب بشكل تكيفي للتحديات المركبة من خلال المرونة والابتكارات الاستراتيجية. بالإضافة إلى ذلك، تؤثر مخاطر رأس المال بشكل إيجابي على الربحية، مما يبرز أهمية الحفاظ على احتياطيات رأس مال قوية. من ناحية أخرى، يؤثر الائتمان المرتفع سلبًا على الأداء المالي، في حين تساهم إدارة السيولة بشكل فعال في تعزيز الربحية.

تقوم هذه الدراسة بسد فجوة هامة في الدراسات السابقة المتعلقة بمرونة البنوك في الأسواق الناشئة، خاصة في مصر، حيث يسود التقلب السياسي والاقتصادي. تقدم الدراسة رؤى قابلة للتنفيذ لصانعي السياسات والمهنيين في القطاع المصرفي، موصيةً بتعزيز أطر إدارة المخاطر، والتكيف الاستراتيجي، والتدخلات التنظيمية المستهدفة للحد من الآثار السلبية للصدمات الخارجية والحفاظ على الاستقرار المالي.

الكلمات المفتاحية: *المخاطر* الجيوسياسية، مخاطر عدم اليقين؛ ربحية البنوك، البنوك التجارية المصرية؛ تحليل الانحدار للبيانات المقطعية؛ إدارة المخاطر؛ الأسواق الناشئة، المرونة المالية.