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Financial and Economic Determinants of Banks Financial Distress in MENA Region

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Abstract: This study investigates the influences of financial performance and economic determinants (inflation rate and economic growth) on financial distress (FD) in the MENA region in the context of the contagion effect theory and Minsky's financial instability theory. This paper examines the determinants of financial distress in the MENA region from 2002 until 2020 using pooled OLS, fixed effect, and GMM panel estimation models; then the results are used to estimate the effect over the long run. The results show that the things that cause financial distress are changing a lot between countries in the MENA region. This shows how important it is to separate the effects of economic and financial factors. The results show the significance of economic growth, ROA, ROE, inflation, and stock market profitability using fixed effects. The results changed when we used GMM, concluding that economic growth, ROA, ROE, and stock market profitability were significant, while inflation was not significant. Therefore, there is a significant and negative relationship between financial distress and economic growth in GCC-MENA as well as other MENA countries. Our results can be of importance to investors and regulators. The introduction of a more stable political environment and engagement in international economic and financial markets will decrease the negative impacts of financial distress and boost economic growth and its sustainability in the MENA region.

Keywords: financial distress; economic growth; MENA; ROA; GCC; inflation; banking sector

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1. Introduction

Banks may suffer a progressive deterioration in their financial condition due to several factors, including financial crises, competition, or inadequate management approaches. In particular, the occurrence of financial difficulties within the banking sector causes significant disruption to the whole economy, given the unique role that banks have within the financial system. Due to its adverse effects on both the microeconomic and macroeconomic levels, financial distress (FD) has garnered significant attention in the research. FD and its subsequent consequences accelerate distressed banks' growth (Antoniades & Calomiris, 2020; Muñoz-Izquierdo et al., 2020). Financial distress increased a risk to businesses' profitability and decreased their value (Ibrahim et al., 2024; Kazemian et al., 2017). Banking

institutions play a crucial role as the primary providers of money and financial investments in the MENA economy (Eid et al., 2023; Sghaier, 2021). The 2008 global financial crisis (GFC) and "The Arab Awakening" have resulted in economic turmoil in most countries in the MENA region, leading to a deterioration in companies' profits and increasing risk and instability (Antonia García-Benau et al., 2013; World Bank, 2016). The significant decline in the worldwide shortage of available funds has subjected a growing number of enterprises to financial instability (Galindo-Martín et al., 2021), thereby complicating their ability to attract and maintain capital and finance (Neaime, 2016). Researchers have conducted several studies to examine the impact of the crisis on the performance and stability of banks in the MENA region (Abd. Majid, 2018; Ramlan & Adnan, 2016; Zaiane & Moussa, 2021; Trad et al., 2017; Zarrouk et al., 2016) as well as the macroeconomic and bank factors that contribute to financial distress (Alam et al., 2024; Yasiru & Olajide, 2015; Ekanayake & Thaver, 2021; Supriyanto & Darmawan, 2018; Dewi et al., 2023).

The inability to pay existing debts because of liquidity problems is known as insolvency. A court-mandated disclosure of financial difficulty is necessary for company bankruptcy (Habib et al., 2020). In other words, a company experiencing financial difficulties has no choice but to file for bankruptcy (Volkov et al., 2017). Bankruptcy is a result of financial troubles; thus, in order to anticipate failure, it is preferable to categorize enterprises based on negative operating income, interest coverage ratio, and net income before special items. Due to the recent global financial crisis, bankruptcies are rising in many countries, spawning a new area of prediction literature. In terms of labor and macroeconomic conditions, a localized model fared better than a global one. Few studies predicted bankruptcy/distress worldwide or by area. Altman et al. (2017) conducted a global analysis of the original Z-score model and found that the inclusion of country-specific components increased the prediction accuracy in some countries. With 75% to 90% accuracy, the uniform model worked well in the majority of countries.

Although the factors of financial distress have been extensively examined in global banking contexts (Wasiuzzaman & Tarmizi, 2010; Muda et al., 2013; El-Chaarani et al., 2022), there is a paucity of studies addressing the particular issues encountered by banks in the MENA area. The MENA region's economy is distinctive due to its reliance on oil revenues, the presence of geopolitical concerns, and varying degrees of governmental regulation. This may influence the financial and economic variables that induce distress in manners not entirely reflected in studies from other regions (Al-Khatib & Al-Horani, 2011) (Kholisoh & Dwiarti, 2020). Much of the existing research has focused on developed economies or rising markets in Asia and Latin America. It has not examined the impact of governance structures, financial stability policies, and macroeconomic shocks on banks in the Middle East and North Africa (Trad et al., 2017). This disparity underscores the necessity to investigate whether traditional indicators of financial distress, including profitability, capital adequacy, and liquidity, function differently in the MENA region. Addressing this gap can furnish policymakers and financial institutions with customized strategies to bolster resilience and stability in the region's banking sector. Nevertheless, the majority of previous research focused on business failure models within MENA nations.

In summary, this study contributes to the existing literature by examining the determinants of banks' financial distress in the MENA region, unlike most of prior studies that focused on developed countries only. It is of significant interest to both policymakers and investors in terms of regional development policies and dedicated portfolio investment strategies in each emerging region, respectively. We used several ratios from the empirical literature on bank profitability, measured by return on assets (ROA) and return on equity (ROE). This study aims to address the existing gap in the literature by presenting empirical information on the effects of the crisis on the banking industry. Additionally, it seeks

to identify the primary factors that influence the stability of banks in the MENA region. The study analyzed the financial distress in the MENA region from 2002 to 2020. The results show the significance of economic growth, ROA, ROE, inflation, and stock market profitability using both fixed effects and the generalized method of moments (GMM). Thus, the introduction of a more stable political environment and engagement in international economic and financial markets will reduce the negative impacts of financial distress in the MENA region. By reducing political risks and enhancing participation in international economic and financial markets, the MENA region can create a more resilient economy, attract external investment, and leverage international support, all of which can help cushion the region from the adverse effects of financial distress.

This study helps MENA policymakers, investors, and banking regulators understand banks' financial distress by identifying key financial and economic factors. It improves risk assessment and early warning systems, guides regulatory reforms, supports investment decisions, promotes economic stability, tailors solutions to regional needs, and promotes sustainable banking. Policymakers can use the financial and economic determinants to create or improve early warning systems for bank financial problems. This helps fix issues quickly and reduces risks before they become systemic crises. The study also guides regulatory reforms to strengthen MENA banks' resilience, allowing central banks to tighten liquidity requirements or provide targeted liquidity support during economic downturns. The study helps investors understand regional banks' financial and economic risks, enabling them to allocate capital and identify banks with strong financial health and good risk management. The findings can help institutional investors work with bank management to improve governance and risk. The study's focus on MENA allows policymakers to tailor solutions to regional specifics, such as oil price fluctuations' effects on bank stability in oil-dependent economies. Sustainability can also encourage banks to diversify revenue streams, improve governance, and invest in digital transformation to build long-term resilience. By applying the study's findings, participants can better manage financial distress and support the MENA banking sector's long-term growth and stability.

The paper is divided into six main sections, beginning with the introduction. Then Section 2 reviews the relevant literature on the relationships between financial distress and several economic and financial banks, and develops the research hypotheses. Section 3 describes the research sample and research methodology. Section 4 discusses the results of the statistical analysis. Section 5 provides an additional robustness analysis and discussion. Finally, Section 6 concludes the paper.

2. Literature Review

Financial distress research has gained attention in recent decades (Altman, 1968; Taffler, 1983) as a means to improve measurements and models for predicting which enterprises may face bankruptcy and insolvency. The aim is to predict distress, assess loan security, assess auditors, measure portfolio risk, monitor financial institutions, and determine prices for credit-exposed instruments like bonds and derivatives (Scott, 1981). Financially disrupted firms lack the liquidity to satisfy financial commitments and debt interest payments (Gilson, 1990). Chen et al. (2020) define distress as a scenario where a firm's present worth is less than its creditors' claims. (Baldwin & Mason, 1983) define it as a firm's inability to satisfy contractual debt commitments due to lower cash flows than financial obligations. Therefore, the literature review will be divided into two main sections. The first will be theoretical in nature, explaining the main theories related to economic growth and financial distress. The second section will be divided into three main subsections: the first will deal with financial distress in the non-financial sector, the second

subsection will examine financial distress in the banking sector, while the last subsection will study the relationship between economic growth and financial distress.

2.1. The Main Theories

There are many theories that study the relationships between macroeconomic factors (those that affect economic growth) and financial distress, and two of them will be presented in this section.

2.1.1. Contagion Effect Theory

A contagion effect is closely linked to a financial crisis. It occurs when there is a notable increase in cross-market connectivity between nations during or following a crisis. The contagion effect is quantified by calculating the proportion of a nation's asset prices that shift according to the same trend during a crisis as opposed to when there is no crisis. Herding behavior and the spillover effect are the two conceptually separated causes of the contagion effect (Fauzi & Wahyudi, 2016). The link between real and financial economic activity across nations often results in the spillover effect, a spreading shock effect that typically affects stock markets. An example of the herding tendency is when irrational investors panic and pull their money out due to lack of transparency or irrational economic policies (Khan & Park, 2009). The use of contagion theory is very applicable in the study of financial distress as the MENA region is an area in which a single effect is likely to become contagious across all countries, as seen in the political effects of the Arab Spring.

2.1.2. Minksy's Financial Instability Theory

According to Minsky, speculative euphoria arises during fortunate periods when corporate cash flow exceeds the amount required to pay off debt. Shortly after, debts surpass the amount that borrowers can pay off with their incoming earnings, leading to a financial crisis (Taylor & O'Connell, 1985). The connection between the time pattern of cash obligations and the time pattern of expected cash flows lies at the core of Minsky's theory of what constitutes a strong or unstable financial structure. Since the company can satisfy its obligations with its own resources, it is said to be involved in "hedge" finance if its cash flows exceed its cash commitments for each future period. In addition to anticipating the need to refinance the principal at maturity, so-called "speculative" financial arrangements also forecast cash flows that exceed interest payments on outstanding debt. This puts the company at risk if the refinancing turns out to be unanticipated, costly, or perhaps unachievable (Nasica, 2010). Financial stability is one of the main indicators that affect developing countries as they suffer from fragile financial systems and structures in addition to the inefficient use of their resources. This is the main idea that Minsky tried to apply to developing countries such as MENA.

2.2. Empirical Literature

2.2.1. Financial Distresses in the Non-Financial Sector

Numerous studies have produced conflicting findings about the primary factors influencing financial sectors in both industrialized and emerging countries. A multitude of studies have investigated FD and its underlying factors and determinants. This analysis integrates firm-specific indicators, such as current ratio, quick ratio, asset turnover, debt ratio, financial leverage, and return on assets, along with macroeconomic variables like economic growth, exchange rate, GDP, and inflation rate. In the study conducted by (Ceylan, 2021), the variable of interest, comprising the current ratio, quick ratio, asset turnover, debt ratio, financial leverage, and return on assets, was shown to have had a statistically significant positive influence on the risk of financial distress in Turkey from

2010 to 2019. This study concluded that the inflation rate was the only factor that had a negative relationship with financial distress.

Idrees and Qayyum (2018) attribute the high concentration of financial risk and the inability to identify it to insufficient management and industry performance. As a result of poor performance and low profitability, the company accumulated substantial debt, which hindered its capacity to meet its obligations and resulted in the scenario of bankruptcy. The majority of financial crises arise in either emerging or established economies characterized by the presence of high inflation rates, low growth rates, low GDP, and poor bank performance (Idrees & Qayyum, 2018; Ehigiamusoe et al., 2019).

Campbell (2011) examined the primary causes of business failure in a sample of U.S. enterprises from 1963 to 2003. The research indicates that companies with lower profitability, market capitalization, leverage, prior stock returns, cash holdings, volatility, market–book ratios, and share prices are more likely to declare bankruptcy. Leverage and firm size increase financial distress (Alfaro et al., 2019). A financial crisis hurts company profits (Du & Lai, 2018). Al-Tamimi (2010) studied 1996–2008 UAE Islamic and conventional bank performance metrics. GDP, bank size, concentration, liquidity, financial development indicators, operating expenditures, and branch count were analyzed. Concentration and liquidity damaged traditional banks' ROA and ROE.

Jahur and Quadir (2012) studied the causes of financial distress in 20 SMEs in Bangladesh during 2004–2008. The study utilized the Altman Z-score and varimax rotation factor analysis to assess and identify the FD of SMEs. Empirical data indicate that financial strain was caused by factors such as a poor accounting system, susceptibility to government policy changes, productivity and profitability, fund management and credit crunch, liquidity, macroeconomic factors, management succession, and financial control. Zaki et al. (2011) studied financial distress in UAE commercial and Islamic banks from 2000 to 2008, focusing on bank-specific factors such as cost–income ratio, equity to total assets, asset growth, and loan loss reserve to gross loans ratio. They found no evidence of macroeconomic factors' impact. In a similar vein, Maricica and Georgeta (2012) examined financial ratio forecasts for 2009 and 2010. Financial measures from Altman's model were applied to 63 listed Romanian enterprises, including size, return and margin, liquidity, financial position, cash flow, profits, indebtedness and capital structure, credit back payment, and interest payment capability. The t-test showed disparities in profitability, return, financial position, indebtedness, and capital structure across the enterprises. According to Mokhova and Zinecker (2013), the life cycle of small and medium-sized firms in the Czech Republic from 2006 to 2010, including the financial crisis years, affected their likelihood of bankruptcy. Additionally, they suggest a substantial negative correlation between liquidity and financial difficulty. Yazdanfar and Öhman (2020) examined the causes of financial distress in non-financial SMEs from 2008 to 2015. A panel data set of 3865 Swedish SMEs was analyzed with multiple binary logistic regression using macroeconomic dummy factors, firm-specific variables, and industry-specific variables. Their analysis revealed that macroeconomic factors (global financial crisis) and firm-specific characteristics (performance, financial leverage, and delayed FD) affected financial distress.

From 2003 to 2011, Charalambakis and Garrett (2019) investigated the main financial distress risk factors for 31,000 Greek private enterprises. A multiperiod logit model was used to find that firms' financial distress was based on their size, profitability, leverage, retained earnings to total assets, size, liquidity ratio, an export dummy variable, dividend payout, and real GDP growth. Additionally, other studies have examined the financial distress risk of enterprises of different sizes, particularly industrial firms, in the UK, Malaysia, Australia, Turkey, Indonesia, Nigeria, and China. According to Yazdanfar and Öhman (2020), the Global Financial Crisis and other factors such as leverage, performance, and

past financial distress caused financial distress in Swedish SMEs between 2008 and 2015. Distressed enterprises have weaker liquidity, solvency, profitability, financial leverage, and repayment capacity. Researchers found a negative correlation between bank distress and failure and the liquidity holdings ratio, which is proxied by the net stable funding ratio, in financial institutions. Zhang and Xu (2021) investigated how the life cycle affects China's debt maturity structure. According to their argument, corporations have short-term loans during the launch and recession, whereas growing enterprises have higher debt ratios. Companies in recession have negative growth, resulting in reduced operational cash flow and less access to long-term loans due to increased financial distress costs.

2.2.2. Banking Sector Financial Distress

Naceur et al. (2010) utilized 1989–2005 bank-level data from 10 MENA nations. Bank efficiency was measured by three metrics: cost of intermediation, operational performance, and bank profitability. They observed that bank capitalization and credit risk increased profits significantly. In addition, regulatory and institutional factors affected bank performance. Corruption enhanced cost-efficiency and net-interest margins. The law and order variable reduced efficiency cost without compromising performance. Beyond financial issues, company traits mattered, researchers found. Size, leverage, and profitability are key determinants in business financial problems, according to research. The literature discusses firm size, leverage, and profitability. Based on data from 12 countries in MENA and Southeast Asia (70 conventional banks and 47 Islamic banks), Louati et al. (2015) analyzed the capital adequacy ratio behavior of Islamic and conventional banks in various competitive conditions. The empirical findings showed that the funding ratio affected conventional and Islamic bank behavior. Competition (measured by the Lerner Index) did not alter the weighted asset ratio or Islamic bank behavior. The authors determined that Islamic banks used their own theoretical models and behaved differently from conventional banks. Selassie et al. (2016) employed the Altman Z-score to analyze the financial healthiness of 30 Wolaita-based SMEs in manufacturing, commerce, and services in 2015. The findings showed that three services, one manufacturing, and three trade SMEs were financially distressed.

In its global economic estimates, the World Bank (2016) lists political and economic turmoil, falling oil prices, and reform obstacles in the MENA region. Its characteristics set it apart from other regions and wealthy countries. Political turmoil in Arab nations began in Tunisia in 2010 and spread rapidly. The GCC, which experienced less impact from the Arab Spring, now feels this influence. Political and military instability in the area, along with financial problems, make countries in the MENA region disposed to financial instability and a weak financial sector. The World Bank anticipates political instability will persist for years, which will harm the economies of these countries by reducing direct foreign investments and visitors. Investment in MENA nations is fragile due to ineffective bankruptcy and insolvency rules (Belkhir et al., 2016).

The civil wars in Syria, Iraq, Libya, and Yemen are destroying lives and infrastructure. However, political instability and security concerns have reduced GDP, raised unemployment rates, and damaged tourism elsewhere, notably in Egypt and Tunisia. The GCC countries, Arab oil exporters, are also suffering from low oil prices, which hurt their economies. To address these issues, MENA countries are implementing many reforms to boost economic stability, development, and growth (Celiku et al., 2018). Governmental financial issues, the COVID-19 epidemic, and inflationary pressures have plagued MENA over the last decade. These events have exacerbated the financial crisis in several countries in the region, emphasizing the importance of understanding its financial and economic causes. Therefore, the main

objective of our research is to analyze several financial and macroeconomic determinants of MENA region banks and their impact on the banks' stability.

The fragility and vulnerability of financial institutions against a strengthened situation of MENA region banks (MRBs) during the global financial crisis of 2007–2008 was considered an important subject that raised a wide controversy (Parashar & Venkatesh, 2010). The subprime crisis, according to some researchers, had a significant impact on the MRBs, as evidenced by the collapse of numerous banks, including Lehman Brothers, the largest American bank. However, the partisans of Islamic finance proved that MRBs, especially Islamic banks, were not only more efficient but also more stable, with a high capacity to absorb shocks (Akmal et al., 2024; Ftiti et al., 2013; Khediri et al., 2015). In the aftermath of the 2008 financial crisis, the question of how the macroeconomic and financial characteristics of MRBs influenced the financial crisis's impact on stability has gained significant attention. To this end, various studies began in 2008, analyzing how differences in banks' internal profitability and macroeconomic factors such as inflation, GDP, exchange rate, and growth enable banks to identify potential risks.

However, most prior studies examined business failure models in MENA countries (Distinguin et al., 2010; Calice, 2014; Mateev et al., 2021), taking only economic and political factors into account, or focusing on specific countries (Al-Khatib & Al-Horani, 2011; Kholisoh & Dwiarti, 2020; Dianova & Nahumury, 2019; Moradi-Motlagh & Babacan, 2015) or a part of the region. This paper fills a research gap by examining the financial and economic factors of financial distress of listed banks in the MENA region. Other research has shown inconsistent outcomes on bank-specific and macroeconomic factors, as well as bank stability and risk. The results are all unclear and inconclusive (Bourkhis & Nabi, 2013; Louati et al., 2015; Trad et al., 2017; Fayad, 2013; Ashraf et al., 2022). In addition to bank features, the macroeconomic framework in which banks operate is a country-specific variable and a significant external element affecting bank performance. Bourkhis and Nabi (2013) and Ftiti et al. (2013) are among numerous researchers who have used external measures to study bank performance and found different outcomes. Rajhi and Hassairi (2012) examined the financial stability of 16 bank groups in the MENA region from 2000 to 2008. They employed the Z-score to measure bank stability. They found that macroeconomic factors, particularly GDP, positively and significantly affected all banks' Z-scores. Inflation is a major contributor to the instability of large South Asian banks. Muda et al. (2013) and El-Chaarani et al. (2022) indicated that real GDP affects international banks' profitability. Inflation has a significant impact on national and international bank profits. (Wasiuzzaman & Tarmizi, 2010) found that the two macroeconomic indices boost bank profitability. GDP favorably correlates with the two profitability metrics, whereas the inflation rate negatively affects only ROA.

Furthermore, multiple discriminant analyses have revealed that sales ratio, working capital, and EBIT significantly influence SMEs' financial health. Trad et al. (2017) examined how the global financial crisis affected MENA banks. The sample included 77 Islamic and 101 conventional banks in 13 countries during 2006–2013. The GMM technique revealed that bank-specific factors affected conventional and Islamic bank performance and stability. Size hurt both types of institutions. However, liquidity ratios only improved traditional bank performance, suggesting that liquidity may help to avoid bank failure. According to empirical data, inflation also hurt Islamic banks and helped conventional banks. When the dependent variable was ROA, the growth rate was positive (negative), but when it was ROE, it was negative. Research by Huy et al. (2021) identifies accounting, market, and macroeconomic factors as major predictors of financial distress in Vietnamese enterprises during 2003–2016. Financial distress was negatively correlated with liquidity, solvency, asset productivity, profitability, and stock market value, whereas inflation and short-term

treasury bill interest rates were positively correlated. In the MENA region, a number of studies have examined how the Arab Spring affected bank performance and risk. By preserving a sample of 12 MENA banks from 2000 to 2012, Ghosh (2018) examined how the Arab Spring affected ROA and NIM. Bank profitability, as assessed by ROA, decreased and banking risk increased significantly after the Arab Spring. Political disputes lowered profitability and increased bank risk, according to credible empirical criteria. Bitar et al. (2016) examined regulatory capital ratios and bank performance risk. They employed the bank cost-to-income ratio, net income to total assets, net interest margin, and net income to gross loans to evaluate 168 banks in 17 MENA countries from 1999 to 2013. The empirical data revealed that capital requirements had a greater influence on big banks, particularly in crises and in well-governed nations. Previous studies revealed that most GCC countries have benefited from oil profits and rapid economic expansion, while non-GCC countries are more vulnerable to political instability and financial problems. Political instability negatively impacts the profitability of GCC banks and the efficiency of MENA banks, leading to increased risk and financial distress, particularly during the COVID-19 pandemic. Therefore, most banks work toward having greater capital ratios, which boost bank efficiency, net interest margins, and profits. Banks with high capital ratios were more cautious and managed risk better, particularly amid political upheaval.

Numerous theories can be used to outline the characteristics of a firm in financial distress: liquid asset theory, liquid and profitability theory, balance sheet decomposition measure, cash management theory, and credit risk theory all serve to describe distressed firms and their functional forms (Hotchkiss et al., 2008). In liquid asset theory, net cash flows relative to current obligations explain financial strain, with positive cash flows enabling borrowing and negative ones causing default. Technical insolvency occurs when a business lacks liquidity and expects a negative profit or net cash flow to lead to bankruptcy (Altman & Hotchkiss, 2006). A firm's health is defined by its liquidity and profitability indexes, with poor indicators putting it at risk of insolvency. Enterprises use the balance sheet decomposition measure (BSDM) to detect financial distress by assessing major balance sheet changes over time (Adnan Aziz & Dar, 2006; Monti & Garcia, 2010).

2.2.3. Financial Distress and Macroeconomic Indicators

Khoja et al. (2019) studied the causes of financial crises in the GCC, UK, and US during 2004–2012. The study found that industrial characteristics and macroeconomic trends, such as inflation, interest rates, and oil prices, significantly impact FD in dynamic situations. A recent study by ElBannan (2021) examined the main determinants of financial distress in 11 MENA countries from 2006 to 2015, controlling for the Arab Spring and using many robustness tests. She discovered that mature, profitable, liquid, small firms with high market-to-book ratios and low asset growth were less likely to experience financial distress. Well-developed financial markets in low-corruption nations reduce financial suffering. The findings include increasing earned capital and cash holdings, avoiding overinvestment, and diversifying risk. Mature enterprises also have significant cash flows to avoid capital market risk. These reasoning and research expectations strongly support the influence of the life cycle theory on company FD, as evidenced by the empirical data. This research also claims that company maturity, liquidity, profitability, market-to-book ratio, asset growth, firm size, and institutional factors, such as financial market developments and government corruption, indicate a financial crisis. Mature, profitable, liquid, small-sized enterprises with high market-to-book ratios and limited asset growth are less likely to be in financial crisis.

Unpredictable shifts in a firm's asset and liability composition increase the likelihood of losing equilibrium and facing financial difficulties. Liquidity risk theories measure

the risk of a borrower defaulting on a bank loan, with the probability depending on macroeconomic factors such as unemployment, interest rates, GDP, government spending, foreign currency rates, and aggregate savings (Alifiah & Tahir, 2018).

As shown by earlier research, corporations take enormous efforts to avoid bankruptcy when they detect financial difficulties. Their options include asset and liability restructuring, asset sales, capital expenditure reduction, and/or bank debt restructuring. Companies in financial trouble may receive independent banking treatment. Financially distressed enterprises may get additional funding, defer principal and interest payments, or cancel contracts from certain banks. Some banks accelerate principal and interest payments, reduce lending limits, and increase collateral for companies. In times of crisis, corporations can liquidate assets, although industry characteristics or performance levels may limit them.

Despite comprehensive research, a consensus on the factors influencing financial distress in MENA banks remains unclear. Although bank-specific factors like size, leverage, and liquidity are essential, the influence of macroeconomic and political variables necessitates additional investigation. This study investigates the financial and economic factors influencing the stability of banks in the MENA region, offering new perspectives on the interaction between internal and external determinants as shown in the Table 1 that summarizes the most of literatures

Table 1. Summary of literature.

Literature	Application	Model	Time Framework	Variables	Results
(Rachdi & Ben Mbarek, 2011)	10 OECD countries and 6 MENA countries	Static GMM	1990–2006	CPI, private domestic credit, government consumption to GDP, liability to GDP, GDP per capita	+
(Cevik et al., 2013)	Bulgaria, the Czech Republic, Hungary, Poland, and Russia	VAR	February 2005 till January 2010	stock market index, the foreign exchange rate, international reserves, sovereign bond spreads, external debt, Z-score and real GDP	-
(Van Roye, 2014)	Germany	Threshold VAR	February 1970—December 2012	Exchange rate volatility rate, money market spread, bank return volatility relative to overall volatility, bank equity, the spread on bank securities, lending conditions expected by German banks, excess liquidity, corporate bond spread, credit default swaps on DAX30 non-financial corporations, annual stock market returns and financial distress index	-
(Alimi, 2015)	Sub-Saharan Africa	Static and dynamic GMM	1981–2013	Real GDP, private domestic credit to GDP, real interest rate, FDI	No relation
(Trad et al., 2017)	13 MENA countries 77 Islamic and 101 conventional banks	Generalized method of moments (GMM)	2006–2013	Performance, stability, GMM in system, conventional banks	+
(Guru & Yadav, 2019)	5 BRICS countries	GMM	1993–2014	Number of financial intermediaries, credit to deposit ratio, private domestic credit, stock turnover ratio, value of stock traded, inflation rate, enrollment in secondary schools, exports	+
(Arilyn, 2020)	Firms listed on the Indonesia Stock Exchange	Stepwise logit analysis	2003–2018	Financial ratios, macroeconomics variables, financial distress.	+
(Chandio & Anwar, 2020)	Nigeria	Fixed and random effects	2015–2020	Z-score, inflation, cash/debt, ROE, total debt/total assets	+
(Ekanayake & Thaver, 2021)	138 developing countries	FMOLS	1980–2018	GDP per capita, inflation rate, gross capital formation, government expenditure share of GDP, trade openness, and population growth rate	+
(Farooq et al., 2023)	214 non-financial listed on the Pakistan stock exchange l firms	Panel data analysis	2010–2018	Financial distress, short term debts, interest exchange, interest coverage	-
(Rawal & Gopalkrishnan, 2024)	31 banks operating in India	Panel data analysis	2016–2020	Financial distress, Z-score, dividend payout, debt/equity ratio	+

3. Methodology

This paper examines the main economic and financial determinants that affect financial distress in the MENA region. The financial distress was measured in different ways as some studies depend on distance to default measures, financial distress indexes, or Z-scores in the banking sectors of different nations. We used the Z-score as it is the only tool that was not previously used to measure the financial distress and macroeconomic determinants in the MENA region.

Moreover, the Z-score helps investors in predicting financial crises and bankruptcies (Elewa, 2022). Altman created the Z-score model in 1968, and its strong statistical basis and straightforward applicability across many industries have led to its extensive use as a predicted indicator of financial and economic distress. It integrates many financial statistics to evaluate a company's probability of insolvency, offering an extensive perspective on financial well-being. This model incorporates profitability, liquidity, solvency, and efficiency criteria, rendering it especially suitable for assessing organizations' overall financial stability. Its sustained prominence in academia and practice arises from its experimentally substantiated precision and versatility across various economic contexts (Altman, 1968). This study employs the Z-score owing to its proven reliability and significance in analyzing financial distress. The justification for employing the Z-score in this research is based on its empirically validated predictive efficacy, with the first studies indicating accuracy rates of up to 95% in forecasting bankruptcy one year before failure (Altman, 1968). The model's versatility across many industries and its integration of market-based metrics for public enterprises render it pertinent for evaluating financial distress in multiple scenarios (Altman et al., 2017).

In contemporary settings, the Z-score is particularly relevant for identifying financial instability arising from internal inefficiencies or external shocks, such as economic recessions or global crises (Altman & Hotchkiss, 2006). The Z-score's lasting relevance guarantees its status as one of the most employed and referenced models in financial distress literature.

The reason for choosing these countries is their variety in the following areas:

- Inflation rates in this region vary from 29% in Egypt to the lowest one in Qatar that is −2.5%.
- The banking sector in MENA is characterized by high growth rates and the use of technology, especially digital banking and artificial intelligence (AI), with wide use of the most advanced technologies in the Saudi and Emirati banking sectors.
- These countries witnessed high growth rates with high dependence of labor and capital in most countries.
- The political stability varies among them as the gulf countries such as Saudi Arabia, the United Arab Emirates, Qatar, Oman, and Bahrain are the most stable countries compared to other unstable countries such as Palestine, Libya, Yemen, and Iraq.

The model began with the main diagnostic test for correlation and heteroskedasticity. Then the stationarity test was conducted using the unit root test depending on augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) statistics at level and first difference. This was examined after checking stationarity at level. If there is no stationarity at level, the first difference should be checked (Phillips & Perron, 1988). The use of the unit root test with panel data was applicable for the following reasons (Choi, 2001):

1. It was assumed that there are many kinds of stochastic and non-stochastic components in each group of panel data.
2. It was believed that each group has a distinct time series span.

Moreover, the model estimation was carried by pooled OLS, panel estimation using fixed effects, and GMM. The authors chose the fixed and random effects as they measure the heterogeneity between variables and across countries.

When dynamic endogeneity is prevalent in panel data settings, GMM is especially helpful. For example, GMM can produce reliable estimates by employing lagged values as instruments when the present values of independent variables are impacted by previous values of the dependent variable. This is essential in domains where dynamic linkages are prevalent, such as international business studies (Li et al., 2021).

In summary, while OLS is a straightforward method for regression analysis, it falls short in the presence of endogeneity. GMM, on the other hand, offers a robust alternative that can effectively address these issues through the use of instruments and moment conditions.

Furthermore, the Hausman test was used to test the significance of the fixed and random models. This helped to test the relationships between exogenous and endogenous variables, as each country or region has special characteristics (Bollen & Brand, 2010).

In order to determine the most appropriate model, the authors used the GMM that was supported by Inekwe et al. (2018), Saleem et al. (2020), and Pham et al. (2021). This can be explained by the following model (1):

$$Zscore = a_0 + a_1\ ROE + a_2 ROA + a_2 GDP + a_3 INF + a_4 STOCK + a_5 ER + \varepsilon \quad (1)$$

Then the GMM model was developed into the following Equation (2):

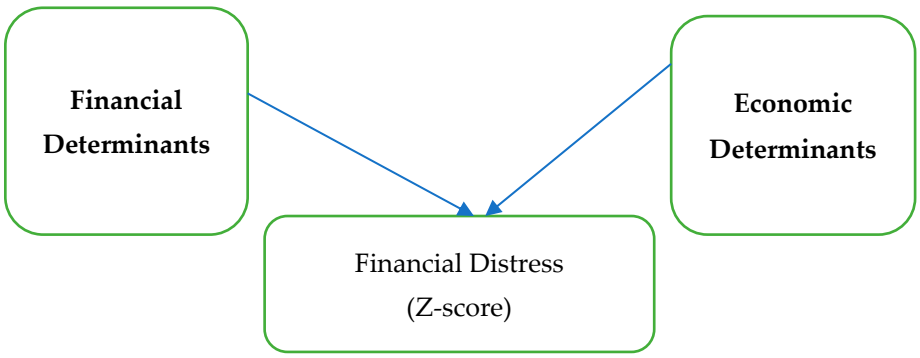
$$\begin{gathered} Zscore = a_0 + \sum_{k=1}^{q1} a_1\ ROE + \sum_{k=2}^{q2} a_2\ ROA + \sum_{k=3}^{q3} a_1\ GDP + \\ \sum_{k=4}^{q4} a_1\ INF + \sum_{k=5}^{q5} a_1\ STOCK + \sum_{k=6}^{q6} a_1\ ER + \varepsilon \end{gathered} \quad (2)$$

The GMM model was used in order to control any endogeneity that may appear and because it is more appropriate for cross-sectional data that are greater than time (Blundell & Bond, 1998; Kruiniger, 2009). Theoretically, this model is shown in Figure 1 below, which shows the research model that was used. The validity of the model was assessed by testing the endogeneity, the serial correlation, and the independence of the variables. This was examined by using the Breusch–Godfrey LM test and the Sargan test for instrumental validity and the Breusch–Pagan–Godfrey test. Therefore, the use of diagnostic tests to examine the reliability of the model estimates was as follows:

- The use of the Breusch–Godfrey LM to test if there was no second-order serial correlation between residuals.
- The Sargan test has been an important tool used in the literature depending on the GMM model to test the independence between the variables in panel data and to examine if they are overidentified or not.
- The Breusch–Pagan–Godfrey test was used to test the heteroskedasticity.

Figure 1 explains the relationship between financial and economic variables and the Z-score, as it is suggested in the literature that financial and economic determinants should affect the Z-score.

The data were extracted from 2002 until 2020 as data were not available after 2020. Only the stock market return lagged in the data due to the huge gap between the maximum and minimum values. Thus, the variables used are shown in Table 2 and were extracted from the World Bank. All the variables used were in percentages except exchange rates. These data were applicable to some countries only due to the lack of data. The applicable countries were Egypt, Saudi Arabia, United Arab Emirates, Israel, Oman, Morocco, Tunisia, Qatar, Turkey, and Jordan.



Source: created by the authors

Figure 1. Research model.

Table 2. List of variables.

Variable	Symbol	Definition	Unit	Source
Dependent variable				
Z-score (dependent)	Z-score	It is one of the indicators of bank stability and risk, estimated by the following equation: Z-score $= \frac{ROE+\left(\frac{equity}{assets}\right)}{standard\ deviation\ of\ ROE\ to\ ROA}$	percentage	World Bank
Economic variables (independent variables)				
Exchange rate	ER	Average of the official exchange rate to US dollars on an annual basis	US $	World Bank
Inflation rate	INF	It is calculated by using the consumer price indices as follows: Inflation rate $= \frac{CPI\ new-CPI\ old}{CPIold} \times 100$	percentage	World Bank
GDP growth rate	GDP	GDP growth rate $= \frac{GDPnew-GDPold}{GDPold} \times 100$	percentage	World Bank
Profitability variables (independent variables)				
Return on assets	ROA	ROA $= \frac{Net\ income\ after\ taxes}{total\ assets}$	percentage	World Bank financial data
Return on equity	ROE	ROE $= \frac{Net\ income\ after\ taxes}{total\ equity}$	percentage	World Bank financial data
Stock market return	Log_STOCK	The growth rate of the annual average stock market index	percentage	World Bank

Thus the study examines the following hypotheses:

Studies have demonstrated a substantial negative relationship between economic growth and financial distress. Robust economic growth enhances credit conditions, bolsters consumer confidence, and increases borrower repayment abilities, thereby alleviating financial distress (Wasiuzzaman & Tarmizi, 2010). Bourkhis and Nabi (2013) assert that economic downturns, which decrease GDP growth, increase financial distress by decreasing asset values and elevating bank default rates. El-Chaarani et al. (2022) find that banks' financial stability enhances during economic expansion due to increased lending revenues and decreased non-performing loans. Nevertheless, certain researchers, including Fayad (2013), Louati et al. (2015), and Ashraf et al. (2022), contend that quick and unsustainable economic expansion may precipitate credit bubbles and financial crises over time. When looking at how economic growth affects financial distress, it is important to take into account things that are unique to each country, the rules that govern them, and how strong the banks are. This conflict makes this point clear. Thus the first hypothesis was developed as follows:

H1. *There is a negative and significant relationship between economic growth and financial distress.*

Previous studies have analyzed inflation and financial distress from various perspectives. Boyd et al. (2001) assert that elevated inflation diminishes the real value of financial assets and heightens uncertainty, leading to inefficient resource allocation and financial instability. According to Ehigiamusoe et al. (2019), inflation increases transaction costs and diminishes borrower credit quality, thereby heightening financial instability. Numerous studies indicate that moderate and stable inflation may exert a neutral or even beneficial impact on the economy by fostering predictable financial conditions and consistent economic growth. Ekanayake and Thaver (2021) argue that hyperinflation or high price volatility has historically caused banking crises and financial instability. Trad et al. (2017) assert that inflation indirectly influences financial distress by increasing interest rates, thereby increasing borrowing costs for both firms and individuals. The different points of view show how complicated the link is between inflation and financial distress. More research is needed to find out how inflation's effects may be different in countries with different economic conditions and institutional structures. Thus the second hypothesis was developed as follows:

H2. *The inflation rate has a significant relationship with financial distress.*

Institutions' financial health depends on profitability, and many researchers have studied its relationship with financial distress. In his fundamental Z-score model, Altman (1968) identified profitability as a key predictor of financial distress, arguing that firms with higher profitability can better meet their financial obligations and avoid distress. Beaver et al. (2006) noted that profitability indicates a firm's ability to cover expenses and avoid default. According to Antonia García-Benau et al. (2013), low profitability indicates financial distress due to operational inefficiencies and low earnings potential. However, Bitar et al. (2016), Calice (2014), and El-Chaarani et al. (2022) argue that profitability is important, but leverage and liquidity may mitigate its effect. Profitability may also delay financial distress because firms may use short-term financing in order to conceal problems, according to Das et al. (2024). These different points of view show how important profitability is in times of financial trouble, especially when looked at with other financial and operational indicators. Thus, the third hypothesis was developed.

H3. *Profitability has a significant relationship with financial distress.*

4. Results

The main determinants of financial distress were investigated using the GMM model. This was carried out depending on several tests, the first being the analysis of the descriptive data and validity of the data using the diagnostics tests. The second was the integration and multicollinearity of data, while the third examined the GMM model. Finally, a robustness test was conducted.

4.1. Descriptive and Diagnostics Results

In order to estimate the results, descriptive data were collated in Table 3 for 200 observations over 20 years in 10 countries. The Z-scores averaged 27.265667 with standard deviation of 12.62972; the lowest Z-score was 0.2 in Turkey and the highest was 66.27002 in Jordan. This shows the huge variation between banks in the MENA region. Regarding ROE, the mean was 12.47828 with a maximum of 31.62065 and a minimum of −7.204117. Furthermore, the difference between the mean and standard deviation was very narrow for the stock market return, exchange rate, GDP growth rate, inflation rate, and return on

assets. The significant standard deviations in both Z-score and ROE when interpreting these data set the tone for the regression study, in which we examined how these factors contribute to short-term growth and their diminishing long-term returns.

Table 3. Descriptive data.

	Z-Score	Log_STOCK	ER	GDP	INF	ROE	ROA
Mean	27.26567	2.335148	3.852769	4.211648	4.267115	12.47828	1.388016
Std. dev	12.62972	1.302789	3.272135	4.207495	5.567157	5.600596	0.8043568
Max	66.27002	5.134698	17.78253	26.17025	44.96412	31.62065	3.983963
Min	0.2	−2.599947	0.3845	−8.591826	−4.863278	−7.204117	−0.922874
No	200	200	200	200	200	200	200

Source: authors' calculations.

Moreover, Table 4 shows the functionality of the model in terms of the heteroskedasticity and serial correlation. There was no serial correlation between the data, as shown in the results. Also, the results of Sargan test on the instrumental variables were insignificant, which indicates that there was no endogeneity between variables.

Table 4. Diagnostics results.

Test	t-Statistic	Result
Breusch–Godfrey serial correlation LM	126.4136 ***	No serial correlation
Sargan test for instrumental validity	85.687	no overidentified
Breusch–Pagan–Godfrey test	282.4447 ***	No heteroskedasticity

*** significant at 1%, Source: authors' calculations.

4.2. Correlation Results

The correlation test results are depicted in Table 5, showing that the highest correlation was between the Z-score and ROE and the Z-score and the inflation rate, which indicates the lack of multicollinearity between variables. The Z-score was negatively and significantly correlated with ROA, ROE, STOCK, and INFL. But there was a positively insignificant relation between the Z-score and GDP, which implies a need to conduct unit root tests and panel regression methods (see Sections 4.3 and 4.4).

Table 5. Correlation results.

Correlation	Z-Score	ER	ROA	ROE	STOCK	INFL	GDP
Z-score	1						
ER	−0.047307	1					
ROA	−0.158779 **	−0.058077	1				
ROE	−0.242651 ***	0.182463 ***	0.866999 ***	1			
Log_STOCK	−0.171006 **	0.033659	0.004956	0.105665	1		
INFL	−0.295809 ***	0.173432 ***	0.012777	0.130868 *	0.130125 *	1	
GDP	−0.034195	0.023820	0.349154 ***	0.298798 ***	0.162814 **	0.240997 ***	1

*** significant at 1%, ** significant at 5% * significant at 10% Source: authors' calculations.

After conducting Pedroni panel cointegration and Kao integration tests, the variables were found to be significant in most tests at 10% or 5%—except rho and v statistics (see panel A of Table 6). Therefore, the null hypothesis, which assumed that there is no cointegration, was rejected—there is integration in the long run. Then, Kao integration was found to be significant (see Panel B) at 1% with long-run integration relationships.

Table 6. Pearson cointegration tests.

Panel A: Pedroni Panel Cointegration Test			
	Statistic (All Countries)		**Statistic (All Countries)**
Panel v statistic	−2.008787	Panel v statistic (weighted)	−2.081182
Panel rho statistics	2.284053	Panel rho statistics (weighted)	1.554250
Panel PP statistic	−2.854576 ***	Panel PP statistic (weighted)	−4.895711 ***
Panel ADF statistic	−2.647123 ***	Panel ADF statistic (weighted)	−1.697424 **
Group rho statistic	2.827199	Group ADF statistic	−0.600409
Group PP statistic	−4.564815 ***		
Panel B: KAO Integration Statistic			
statistic	−5.726189 ***		

*** significant at 1%, ** significant at 5%, Source: authors' calculations.

4.3. Unit Root Results

The stationarity of the data was examined using the unit root test. This was performed at the level and at the first difference using Dickey–Fuller and Phillips–Perron (PP) tests. The results collated in Table 7 show that the variables were significant in the long run more than the short run.

Table 7. Unit root tests.

Panel A: ADF Results				
	Level		**First Difference**	
	Constant	**Constant with Trend**	**Constant**	**Constant with Trend**
Z-score	36.5078 **	42.1329 ***	97.5002 ***	72.1759 **
ER	5.58331	6.7690	33.7025 ***	21.74497 **
ROA	47.2644 ***	67.6363 ***	106.504 ***	71.1917 ***
ROE	37.1886 **	60.7045 ***	95.7407 ***	65.6223 ***
Log_STOCK	49.5592 ***	44.0349 ***	131.161 ***	97.0456 ***
INF	31.0194 *	32.4364 **	96.0029 ***	68.8142 ***
GDP	42.3991 ***	50.0083 ***	113.052 ***	80.8820 ***
Panel B: PP Results				
	Level		**First Difference**	
	Constant	**Constant with Trend**	**Constant**	**Constant with Trend**
z-score	42.4052 ***	58.3316 ***	289.103 ***	116.604 ***
ER	8.86482	11.3986	53.4479 ***	37.4290 ***
ROA	54.6445 ***	68.7249 ***	193.535 ***	133.648 ***
ROE	44.7739 ***	54.9498 ***	197.667 ***	138.385 ***
Log_STOCK	78.1886 ***	71.2588 ***	765.211 ***	207.121 ***
INF	78.3756 ***	69.9276 ***	355.086 ***	168.068 ***
GDP	71.0250 ***	88.0908 ***	577.535 ***	162.723 ***

*** significant at 1%, ** significant at 5% * significant at 10% Source: authors' calculations.

4.4. Panel Data Estimations

Then, different regression methods were used (pooled OLS, fixed effect OLS, and random effects, see Appendix A), and the robustness of the data was tested to estimate the relationship between variables in the long run. The results in panel A of Appendix A show the significance of all variables with Z-scores, except stock market return and the inflation rate. This was not the same situation when comparing MENA-GCC oil-producing countries with other countries in the region, as the former showed significant relationships between

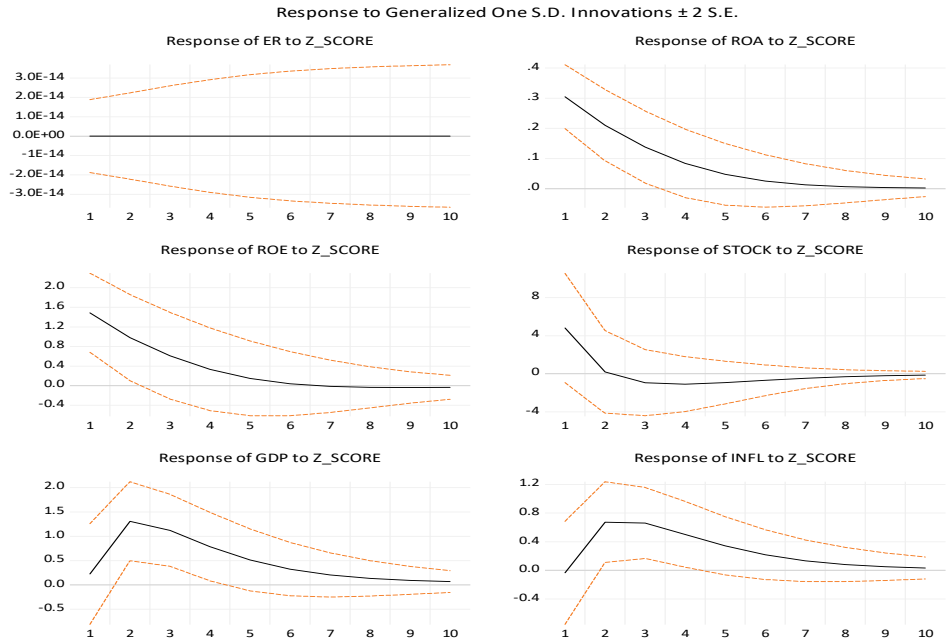
the Z-score and ROA and between ROE and the exchange rate compared to the latter category, which showed significant relationships between Z-score and all variables except stock market return. The situation was different in panel B, which shows the significance of the Z-score with all variables in the MENA region as a whole, with no significance for GDP per capita and exchange rate in MENA other countries and MENA-GCC oil ones. Finally, panel C shows the significance of financial distress and economic growth using the RE-OLS model. The results in Panel C show the significance of the relationship between GDP per capita and the Z-score in GCC oil-producing countries and in the other countries in the region.

5. Discussion

The results of the study are consistent with some previous studies (Cevik et al., 2013; Van Roye, 2014), which demonstrates the relationship between economic growth and financial distress in the MENA region. The results were divided into three main scenarios: the first devoted to all countries of MENA region, the second to the GCC oil-producing countries in the region, and the last one to the remaining countries in the region. The reason behind that division is the differences in income levels and political conditions that each country faces. Regarding the first scenario (the whole MENA region), the insignificant relationship between economic growth and financial distress depends on the Z-score as a dependent variable. Compared to the results of the FE-OLS and GMM methods, there is a significant and negative relationship between financial distress and economic growth in most scenarios. This can be explained by the different political and economic circumstances that the MENA region faces, such as political instability, the Arab Spring effect, and the high inflation rates in some countries that affect the region as a whole.

Regarding the GCC countries, the situation is totally different as those countries (the oil-producing ones) are characterized by political stability and high growth rates. The results of the panel regressions collated in Appendix A show the negative relationship between economic growth and financial distress in all countries besides the oil producing countries. This can be explained by low income levels, GDP per capita, and high population growth rates. Also, this relationship is characterized by levels of significance that range from no significance to 5%, and this is consistent with studies that relate financial distress in MENA to external or internal shocks (Elsayed & Yarovaya, 2019) or to the very loose integration between MENA countries that decreases the contingency effect (Neaime, 2016). Therefore, we conducted an impulse effect (see Figure 2) to test the results in the MENA region.

Figure 2 is consistent with the results computed from Appendix A as the exchange rate has a positive relationship with the Z-score in the fixed effects and GMM models. ROA and STOCK have negative relationships with the Z-score. Also, inflation has a positive relationship with the Z-score in the fixed effects and GMM models that reaches a steady state in the long run. Only GDP per capita has a positive relationship with the Z-score, which contradicts the results of the panel regression because of other factors that were ignored due to lack of data such as corruption rate (Song et al., 2021), political instability, and economic uncertainty (Das et al., 2024). These variables can be used in further studies whenever such data become available. Therefore the results support some hypotheses and reject others, as shown in Table 8.



Source: authors' calculations.

Figure 2. Impulse effect.

Table 8. Results of hypotheses.

Hypothesis	Result in MENA	Result in GCC OIL-MENA	Result in the Rest of MENA
H1. There is a negative and significant relationship between economic growth and financial distress	Accept	reject	accept
H2. The inflation rate has a significant relationship with financial distress	Reject	accept	accept
H3. Profitability has a significant impact on financial distress	Accept	accept	reject

6. Conclusions and Policy Implications

This study aimed to examine the relationship between financial distress, profitability, and macroeconomic indicators not only in the MENA region as a whole but also by comparing MENA-GCC oil-producing countries with other countries in the region. This was carried out using 10 countries only because of the political tensions that the region suffers from in many countries such as Sudan, Palestine, Syria, Lebanon, Yemen, Libya, and Iraq. One more reason to minimize the number of the countries to 10 was the unavailability of data from the banking sectors in Kuwait, Algeria, and Iran. The relationship between financial distress and economic growth was examined using a number of regression methods—OLS, FE, and static GMM—using data published by the World Bank from 2002 to 2020. The results are consistent with the previous literature (Cevik et al., 2013; Van Roye, 2014). This model is considered the first to use Z-scores as an indicator to measure financial distress, as most of the previous literature relied on a financial distress index (Cevik et al., 2013) or private domestic credit to GDP (Alimi, 2015; Rachdi & Ben Mbarek, 2011; Guru & Yadav, 2019).

Furthermore, measuring financial distress in the MENA region was not discussed in the previous literature, except by Rachdi and Ben Mbarek (2011), who compared MENA to the OECD without mentioning the main determinants that affect the relationship between financial distress and economic conditions in the MENA region. Our results have many implications in practical life as financial data should be available to all, especially in times of crises such as COVID-19 or financial crises. This is obvious in the MENA region as

the region suffers from many political, economic, and social tensions. Moreover, capital management should be conducted efficiently in order to cover expected and unexpected loan losses. Therefore, we propose some policy recommendations:

- There is a need for more improvement in the financial sector as there should be more awareness regarding the policies that promote a strong financial sector and enhance financial inclusion.
- The public sector needs to be restructured to decrease corruption and to increase the transparency of data and policies.
- There is a need to promote more credit resource allocation in all sectors of the economy.
- There is a need to align monetary and fiscal policy with policies that target inflation.

For further studies, it will be very beneficial to include all MENA countries and study them in terms of income, ranging from low-income countries to middle- and high-income ones. Also, incorporating the quality of corporate governance and corruption into future studies may reveal links to economic growth and economic development. The effect of elections and political factors can be incorporated into further studies.

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

Abbreviations

FD	financial distress
FE	fixed effect
FMOLS	fully modified ordinary least squares model
GFC	global financial crisis
GMM	generalized method of moments
MENA	Middle East and North Africa
MRB	MENA region banks
OECD	organization of economic cooperation and development
OLS	ordinary least squares model
ROA	return on assets
ROE	return on liability
ROI	return on investment
SMEs	small and medium enterprises
VAR	vector auto regression model

Appendix A

Table A1. Regression results.

	Panel A: Static Panel Regression (pooled OLS)		
Variables	**Statistic (All Countries)**	**Statistic (GCC-Oil Producing Countries)**	**Statistic (Other MENA Countries)**
ER	0.265001	1.687698 ***	0.2651554
ROA	−2.727512	10.59423 ***	11.2762 **
ROE	−0.0598682	−1.313006 ***	−1.403209 **
Log_STOCK	−1.598308 *	−0.0114681	−0.8805222
INF	−0.686425 ***	−0.032477	−0.8333628 ***
GDP	0.3199478	0.0519168	−1.332586 **
C	35.2253 ***	15.53617 ***	43.67618 ***
	Panel B: Static Panel Regression (FE OLS)		
	Statistic (All Countries)	**Statistic (GCC-Oil Producing Countries)**	**Statistic (Other MENA Countries)**
ER	0.2948784 *	0.568921	0.2082327
ROA	11.97984 ***	10.04718 ***	14.55605 ***
ROE	−1.176469 ***	−1.137099 ***	−1.286094 ***
Log_STOCK	−0.377678 *	0.2215798 *	−0.8259574 **
INF	0.1020422 *	−0.0536356	0.1876155 **
GDP	−0.1793483 *	−0.0053157	−0.1152506
C	24.62937 ***	18.78091 ***	28.27984 ***
	Panel C: Static Panel Regression (GMM)		
	Statistic (All Countries)	**Statistic (GCC-Oil Producing Countries)**	**Statistic (Other MENA Countries)**
ER	0.30691995 *	1.687698 ***	0.2651554
ROA	11.66203 ***	10.59423 ***	11.2762 **
ROE	−1.148273 ***	−1.313006 ***	−1.403209 **
Log_STOCK	−0.3946719 *	−0.0114681	−0.8805222
INF	0.916024	−0.0324777	−0.8333628 ***
GDP	−0.1714445 *	0.519168	−1.332586 **
C	25.23527 ***	15.53617 ***	45.65824 ***
Hausmen test	12.02 **	32.28 ***	63.43 ***

*** significant at 1%, ** significant at 5% * significant at 10% Source: authors' calculations.

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