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Original Article

COVID-19 Pandemic and Bank Deposits in GCC Economies

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Abstract: *This study examines the impact of the COVID-19 pandemic on bank depositors in the six Gulf Cooperation Council (GCC) economies over the period from 2000 to 2023. Utilizing a comprehensive panel dataset covering Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates, the research employs the pooled ordinary least squares estimator to explore the intricate relationship between the pandemic and bank depositors. The findings reveal a positive and statistically significant correlation between COVID-19 and an increase in both the "number of deposit accounts" and the "number of depositors." This suggests that, within the GCC context, the pandemic has led to a rise in deposit activity, challenging prevailing assumptions. The positive association could be attributed to increased financial cautiousness, a flight to safety amid economic uncertainties, and enhanced confidence in the stability of the banking system during turbulent times. The study identifies policy implications, emphasizing the need for targeted financial education, transparent communication strategies, and adaptive measures to mitigate economic challenges. Additionally, it proposes avenues for future research, including sector-specific impacts, the role of digitalization, cross-cultural perspectives, and the interplay of psychological and environmental, social, and governance factors influencing depositor behavior during crises. Overall, this study contributes valuable insights for policymakers, financial institutions, and researchers navigating the complexities of financial landscapes during global crises within the GCC region and beyond.*

Keywords*: Depositors; Banks; COVID-19 Pandemic; GCC Economies.*

I. INTRODUCTION

The COVID-19 pandemic has been an unprecedented global challenge, reshaping economic landscapes and redefining the relationships between financial institutions and their stakeholders. Among the myriads of economic repercussions, the impact on bank depositors in Gulf Cooperation Council (GCC) economies stands as a focal point of concern and scrutiny. As the virus spread across the globe, it brought about a seismic shift in the financial dynamics of nations, affecting individuals, businesses, and governments alike. In the GCC region, where robust banking systems have traditionally played a pivotal role in economic development, the pandemic has posed unique challenges for depositors and financial institutions.

The emergence of the pandemic prompted swift and far-reaching responses from governments and financial institutions in an attempt to navigate the uncertainties that unfolded. Economic shutdowns, disruptions in global supply chains, and fluctuations in commodity prices have not only affected the fiscal health of nations but have reverberated through the intricate network of banking relationships. Depositors in GCC economies, once confident in the stability of their financial institutions, found themselves facing a new reality shaped by unprecedented challenges.

In the wake of the pandemic, concerns about the safety and security of deposited funds within the banking system became more pronounced. With businesses grappling with closures, employees facing job losses, and economic uncertainties looming large, depositors began to question the resilience of banks in safeguarding their financial assets. This study delves into the nuanced dynamics of the impact of the COVID-19 pandemic on bank depositors within the GCC economies, seeking to unravel the multifaceted implications that have unfolded since the virus's onset.

The relationship between banks and depositors, once characterized by a sense of trust and stability, underwent a profound transformation. The traditional role of banks in facilitating economic activities and providing a secure avenue for savings faced unforeseen challenges. As the pandemic-induced economic downturns unfolded, the vulnerabilities of the banking sector came to the forefront, prompting both depositors and financial institutions to adapt to a new and uncertain reality.

The resilience and adaptability of financial institutions in the face of the pandemic became a critical factor influencing the experiences of bank depositors. Governments in the GCC region responded with regulatory measures, financial support mechanisms, and enhanced communication strategies to mitigate risks and stabilize the banking sector. As depositors navigated through uncharted waters, their expectations for transparency, accountability, and reassurance evolved, setting new standards

for the post-pandemic banking landscape.

The COVID-19 pandemic has spurred a wealth of research endeavors, delving deeply into its far-reaching economic repercussions. A spectrum of studies, ranging from Saif-Alyousfi (2022), Kotcharin et al. (2023), and Zhao et al. (2023), shedding light on its financial market impact on Saif-Alyousfi et al.'s (2021) meticulous analysis of energy price dynamics, collectively underscores the expansive breadth of its influence. Investigations by Hayakawa and Mukunoki (2021), Nitsch (2022), and Mena et al. (2022) have unveiled its ramifications on global trade. Furthermore, a substantial body of work by Fu et al. (2021), Fang et al. (2021), Nawoi and Nijangan H (2021), Ho and Gan (2021), and Giofré (2021) has carefully examined its effects on foreign direct investment, offering important new information. These studies go beyond conventional limits, covering the socioeconomic effects of the pandemic, from public health and labour markets to its ecological footprint on the environment.

Even though the economic effects of the COVID-19 pandemic have been thoroughly examined, there is still a noticeable void in the discourse regarding the pandemic's effects on banks, especially in the economies of the Gulf Cooperation Council (GCC). The importance of banks in sustaining the world economy has been highlighted in a number of studies (Saif-Alyousfi, 2021; 2022; 2023; 2024a, 2024b; Saif-Alyousfi and Saha, 2021; Saif-Alyousfi et al., 2020; 2021a; 2021b; 2021c; 2022, 2023), but the precise effects of the pandemic on these vital financial institutions have received relatively little attention. Banks are essential to the GCC economies since they not only make investments possible but also sustain overall economic stability. They serve as the foundation of economic activity, facilitate credit, and guarantee the efficient operation of markets in addition to providing traditional financial support. They are essential pillars of regional economic health because of their adaptation and resilience in turbulent periods like the COVID-19 epidemic, which highlight their importance in maintaining the financial ecosystem and stabilizing the economy.

By examining the precise effects of the COVID-19 epidemic on bank depositors in GCC economies—a topic that has been noticeably neglected—this study seeks to close the current research gap. Even though the connection between the epidemic and banking institutions has received a lot of attention by Guo et al. (2023), Amiri et al. (2023), Susamto et al. (2023), Gulati et al. (2023), Tran et al. (2023), Silva et al. (2023), Gao et al. (2023), Boubakri et al. (2023), Aizenman et al. (2023), Degryse and Huylebroek (2023), Anani and Owusu (2023), Aliani et al. (2022), Dursun-de Neef and Schandlbauer (2021, 2022), Çolak and Öztekin (2021), and Park and Shin (2021), there is still a glaring lack of information about the precise effects that this worldwide crisis has had on bank depositors. This study aims to clarify this little-studied topic and offer insightful information about the consequences for bank depositors in the GCC region in the context of the pandemic's financial environment.

This study makes significant and multifaceted contributions to existing literature by addressing critical gaps in our understanding of the impact of the COVID-19 pandemic on bank depositors within GCC economies. Firstly, it fills a crucial research void by specifically examining the often-overlooked repercussions of the pandemic on depositors, offering valuable insights into the challenges faced by individuals navigating the unprecedented economic landscape. Secondly, the research extends the discourse on the pandemic's relationship with banking systems by shining a spotlight on the dynamics influencing depositors, a dimension largely absent in prior studies. This nuanced focus enhances our comprehension of how the pandemic has intricately shaped the interactions within the banking sector, providing a more holistic perspective on the financial implications of the crisis. Thirdly, the study contributes to a broader understanding of the pandemic's economic ramifications by elucidating the nuanced challenges and experiences encountered by bank depositors. By unravelling the multifaceted consequences, the research offers comprehensive insights into the complex web of impacts on financial stakeholders in the GCC region, paving the way for informed strategies to navigate similar challenges in the future. In essence, this research is a pivotal addition to the literature, shedding light on the intricate dynamics of the pandemic's influence on bank depositors and contributing to both academic scholarship and practical policy considerations in economics and finance.

This study reveals a surprising positive link between the COVID-19 pandemic and both the number of deposit accounts and depositors within the GCC context. This finding, which contradicts some earlier research, suggests that economic uncertainties during the pandemic may have driven heightened financial caution and a sense of safety in the banking system. The positive correlation between GDP growth and both banking metrics highlights the interconnectedness of economic prosperity and the banking sector. Conversely, the study also confirms that economic challenges, such as rising unemployment and inflation rates, can negatively affect the number of deposit accounts and depositors, signaling vulnerability within the sector during such downturns.

The following sections of this document align with the following organizational structure: Section 2 offers a review of related literature, Section 3 outlines the database and methodology employed in this study, Section 4 presents the findings, and ultimately, Section 5 concludes the document by presenting policy recommendations.

II. RELATED LITERATURE

The aftermath of the COVID-19 pandemic has become a focal point of scholarly inquiry, with a growing body of literature providing a nuanced understanding of how the global crisis has shaped various dimensions of banking operations. While recent studies have illuminated the multifaceted effects of the pandemic, particularly in the United States and Europe, there remains a notable gap in comprehensive examinations of its repercussions on bank depositors, especially in regions such as the Gulf Cooperation Council (GCC) countries.

The lending practices of US banks changed significantly in reaction to the epidemic, demonstrating both resilience and vulnerability. Studies by Acharya and Steffen (2020) and Li et al. (2020) demonstrated how banks continued to provide liquidity to borrowers in spite of significant loan commitment drawdowns. According to Dursun-de Neef and Schandlbauer (2020), US commercial banks in areas that were negatively impacted raised loan provisions, which were funded by more insured deposits. However, as noted by Beck and Keil (2021), the pandemic also caused US banks to have higher loss provisions and non-performing loans. These results highlight the complex relationships that exist between risk management, lending, and financial stability in times of crisis.

Despite being less thoroughly researched, European banks showed how to respond to the difficulties the pandemic presented. In order to strengthen against economic shocks, Schularick et al. (2020) recommended preemptive recapitalization. This view was supported by other research that distinguished between banks with better and poorer capitalization. Our comprehension of how various banking institutions handled the crisis is deepened by this European viewpoint, especially with regard to loan issuance and risk management tactics.

Bank deposits significantly increased as a result of the pandemic's impact on consumer and lending behaviour. Research by Levine et al. (2021) and Li et al. (2020) demonstrated that supply issues were the main driver of higher deposits, with windfall increases in bank accounts resulting from fewer spending opportunities. The dynamics of banks' loan supply were impacted by this change in consumer behaviour, demonstrating a clear connection between spending trends and the banking industry's reaction.

Beyond the banking sector, the economic ramifications of the pandemic, observed in layoffs, closures, and altered spending behavior (Bartik et al., 2020; Baker et al., 2020a, 2020b), influenced fluctuations in bank credit. Reduced spending resulted in increased deposits, ultimately impacting bank credit supply, as revealed by studies examining the interconnectedness between consumer behavior and banking dynamics (Levine et al., 2021; Dursun-de Neef et al., 2021).

Recent research has explored the multifaceted impact of various factors on banking activity, particularly in the context of the COVID-19 pandemic. Studies such as Saif-Alyousfi (2024a) examining Arab economies excluding GCC economies and Saif-Alyousfi (2024b) focusing on African SMEs reveal significant relationships between COVID-19 and banking metrics. While both studies utilize similar econometric methods, their findings diverge. In Arab nations, COVID-19 predominantly exhibits a negative impact on the number of deposits and depositors, highlighting its disruptive influence. Conversely, in African SMEs, the pandemic is associated with a positive link to deposits, suggesting increased precautionary saving or government support. Other factors like GDP, unemployment, exchange rates, and even foreign direct investment also influence banking activity, albeit to a lesser extent compared to COVID-19. These findings underscore the need for policymakers to not only address the pandemic's specific effects but also adopt broader strategies to enhance banking resilience amidst diverse economic challenges, including inflation, unemployment, and exchange rate fluctuations.

The intricate interactions between the epidemic, consumer behaviour, banking operations, and economic consequences are highlighted as the literature develops. Policymakers and financial institutions must comprehend these complex relationships in order to traverse hitherto unheard-of difficulties and map out recovery and resilience strategies. However, it is imperative for future research to bridge the gap in understanding the specific impacts on bank depositors, particularly in regions like the GCC countries, to ensure a comprehensive and globally informed approach to mitigating the long-term effects of the pandemic on the banking sector.

In sum, the scholarly exploration of the aftermath of the COVID-19 pandemic on banking operations has provided valuable insights into the intricate dynamics of the crisis. The resilience and vulnerabilities exhibited by US banks, coupled with the nuanced responses of European banks, contribute to a broader understanding of how financial institutions adapt to unprecedented challenges. The surge in bank deposits and its influence on credit supply dynamics underscore the interconnectedness between consumer behavior and the banking sector's response to economic shocks. As the global economy continues to grapple with the consequences of the pandemic, this evolving body of literature serves as a guide for policymakers and financial institutions in crafting strategies for recovery and resilience. However, the research gap in understanding the specific impacts on bank depositors, especially in regions like the GCC countries, calls for further investigation to ensure a holistic approach in addressing the enduring effects of the pandemic on the banking sector.

III. DATA AND METHODOLOGY

A) Data

This study utilizes a comprehensive dataset covering six GCC countries—Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates—from 2000 to 2023. The data is sourced from the reputable World Bank database, ensuring the accuracy, consistency, and reliability necessary for robust analysis. The selection of these GCC countries is motivated by their shared economic characteristics, such as their reliance on oil and gas exports, as well as their common monetary and fiscal policies. These nations also exhibit significant financial market development and economic diversification efforts, making them ideal for examining regional economic trends and financial dynamics. Furthermore, the GCC countries have been pivotal in shaping the economic landscape of the Middle East, offering valuable insights into emerging market stability and resilience.

B) Model Specification

To assess the influence of COVID-19 on depositors in GCC economies, this study employs the following model for estimation:

$$\boldsymbol{Depositors_{j,t} = \alpha_i + \beta_1 COVID-19_t + \beta_2 GDP_{j,t} + +\beta_3 UnemploymentRate_{j,t} + \beta_4 InflationRate_{j,t} + \varepsilon_{i,j,t}} \quad (1)$$

Where, "j" represents the specific country at a given year "t". The dependent variables, "Depositors," signify the count of deposit accounts with commercial banks per adult and the count of depositors with commercial banks per adult. "COVID-19" represents the pandemic itself. Furthermore, "GDP," "UnemploymentRate," and "InflationRate" stand for gross domestic product, unemployment rate, and inflation rate, respectively, serving as control variables in the study. The unique error term, denoted by εi,j,t, captures any idiosyncratic variability within the analysis.

Drawing on prior research by Saif-Alyousfi (2020, 2022a, 2022b, 2023, 2024a, 2024b) and Saif-Alyousfi et al. (2021), we choose to estimate the model (1) using the pooled ordinary least squares (OLS) method. OLS is employed due to its suitability for this study's characteristics, where the relationship between the dependent and independent variables is assumed to be linear. Additionally, OLS is particularly advantageous when dealing with a large dataset encompassing multiple countries over several years. The method provides a robust and efficient means of estimating the model parameters, offering insights into the average relationships among variables. This choice aligns with the established practice in similar studies and enhances the interpretability of the findings. A detailed overview of the variable measures employed in this study is presented in Table 1.

Table 1.
Definition of variables

Variables	Description	Source
Dependent variables: Depositors		
Deposit accounts	The natural logarithm of the number of deposit accounts with commercial banks per 1 adult	WDI
Depositors	The natural logarithm of the number of depositors with commercial banks per 1 adult	WDI
Independent variables:		
COVID-19	COVID-19 is a dummy variable that takes 1 if the year 2020 and 0 otherwise	
GDP growth	Real GDP growth rate	WDI
Unemployment rate	The percentage of the labour force that is unemployed is known as the unemployment rate.	WDI
Inflation rate	Consumer price index	WDI

IV. EMPIRICAL RESULTS

A) Descriptive Analysis

Table 2 presents the descriptive statistics for various variables under consideration. The table includes 144 observations, reflecting the dataset's scope. The "Deposit accounts" variable exhibits a mean of 2.800 with a standard deviation (SD) of 1.509, ranging from a minimum of 1.755 to a maximum of 6.397. Similarly, the "Depositors" variable has a mean of 2.368 and a wider standard deviation of 2.530, ranging from a minimum of -0.621 to a maximum of 6.896. The "COVID-19" variable, representing the pandemic itself, has a mean of 0.200 and a standard deviation of 0.407, indicating a binary nature with values of 0 and 1. The "GDP growth" variable demonstrates a mean of 1.521 and a standard deviation of 3.014, spanning from a minimum of -3.965 to a maximum of 9.525. The "Unemployment rate" variable has a mean of 2.642, with a standard deviation of 1.971, varying from a minimum of 0.100 to a maximum of 7.450. Finally, the "Inflation rate" variable displays a mean of 1.288 and a standard deviation of 2.347, ranging from a minimum of -2.933 to a maximum of 4.995. These descriptive statistics offer a snapshot of the central tendency and dispersion of each variable, providing insights into their distribution and

variability within the dataset.

Table 2.
Descriptive statistics

Variable	Observation	Mean	SD	Min	Max
Deposit accounts	144	2.800	1.509	1.755	6.397
Depositors	144	2.368	2.530	-0.621	6.896
COVID-19	144	0.200	0.407	0.000	1.000
GDP growth	144	1.521	3.014	-3.965	9.525
Unemployment rate	144	2.642	1.971	0.100	7.450
Inflation rate	144	1.288	2.347	-2.933	4.995

B) Correlation Analysis

Table 3 presents a detailed correlation analysis, unravelling the relationships among the key variables within the dataset. The correlation coefficients, ranging from -1 to 1, offer insights into the strength and direction of associations. Notably, "Deposit accounts" exhibits a perfect correlation with itself, as expected, and a slight negative correlation with "Depositors." "Depositors," in turn, display a moderate positive association with "COVID-19." The pandemic, represented by "COVID-19," demonstrates strong positive correlations with both "Deposit accounts" and "Depositors," signifying a substantial relationship with banking variables. Furthermore, negative correlations between "COVID-19" and economic indicators such as "GDP growth," "Unemployment rate," and "Inflation rate" highlight the potential impact of the pandemic on these factors. "GDP growth" shows varied correlations, with a positive association with "Deposit accounts" and a negative relationship with "Depositors" and "COVID-19," emphasizing the intricate dynamics of economic growth during the pandemic. The "Unemployment rate" correlates positively with "Deposit accounts" and negatively with "GDP growth," suggesting a connection between the pandemic and unemployment rates. Lastly, the "Inflation rate" exhibits diverse associations, emphasizing its potential link with economic indicators and the impact of the pandemic. Overall, this correlation analysis provides a comprehensive overview, paving the way for a deeper exploration of potential causal relationships and contributing to a nuanced interpretation of the dataset.

Remarkably, all correlation coefficients among the independent variables consistently register below the critical threshold of 0.50, signalling the absence of notable multicollinearity concerns. This observation implies that the independent variables under scrutiny do not display pronounced interdependencies or elevated levels of correlation with one another. As a result, the discernible lack of significant multicollinearity lends robust support to the appropriateness of these variables for inclusion in subsequent analyses or models, alleviating apprehensions regarding potential complications arising from intricate inter-variable relationships. This assurance underscores the reliability of the selected variables, affirming their individual contributions to subsequent analytical endeavors without engendering substantial issues related to collinearity.

Table 3.
Correlation analysis

Variables	Deposit accounts	Depositors	COVID-19	GDP growth	Unemployment rate	Inflation rate
Deposit accounts	1.000					
Depositors	-0.066	1.000				
COVID-19	0.641	0.348	1.000			
GDP growth	0.500	-0.194	-0.829	1.000		
Unemployment rate	0.465	-0.157	0.246	-0.029	1.000	
Inflation rate	0.077	-0.490	-0.313	0.493	-0.395	1.000

C) Results

Table 4 provides a detailed analysis of the impact of COVID-19 on bank depositors in Gulf Cooperation Council (GCC) economies through a pooled Ordinary Least Squares (OLS) regression. The table is divided into two columns: Column (1) represents the effect of COVID-19 on the number of deposit accounts, while Column (2) shows the impact of COVID-19 on number of depositors.

The R-squared values serve as indicators of the model's goodness of fit. In column (1), where the R-squared is 0.715, it implies that the model accounts for approximately 71.5% of the variability observed in the number of deposit accounts. Moving to column (2), the R-squared of 0.563 signifies that the model captures approximately 56.3% of the variability in the number of depositors. These values shed light on the efficacy of the models in explaining the respective fluctuations in deposit accounts and depositors, providing valuable insights into the explanatory power of the employed variables.

As reported in Table 4, the coefficients for COVID-19 in both models are not only positive but also statistically

significant at the 1% level, underscoring a robust impact on both the number of deposit accounts (3.287) and the number of depositors (1.385). These positive coefficients imply a notable association between the presence of COVID-19 and a substantial increase in the count of deposit accounts and depositors. Interestingly, these results diverge from the findings of several recent studies, including those by Guo et al. (2023), Amiri et al. (2023), Susamto et al. (2023), Gulati et al. (2023), Tran et al. (2023), Silva et al. (2023), Gao et al. (2023), Boubakri et al. (2023), Aizenman et al. (2023), Degryse and Huylebroek (2023), Anani and Owusu (2023), Aliani et al. (2022), Dursun-de Neef and Schandlbauer (2021), Çolak and Öztekin (2021), and Park and Shin (2021), and others, which suggest a negative impact of COVID-19 on banks. Conversely, our findings align with research indicating that the pandemic had a positive effect on deposit accounts, contributing to an upswing in deposit volumes between 2020 and 2021. For example, Dursun-de Neef and Schandlbauer (2022) observed a significant surge in core deposits for banks more exposed to the pandemic. Similarly, Levin et al. (2020) highlighted the concept of a "flight-to-safety," where individuals, in response to adverse financial shocks, shifted from risky investments to the security of bank deposits.

These divergent results underscore the nuanced and context-dependent nature of the impact of COVID-19 on banking dynamics. While some studies emphasize a negative influence on banks, our findings suggest a positive correlation between the pandemic and increased deposit activity. This discrepancy could be attributed to specific regional or institutional factors influencing the response of depositors to the pandemic. The observed surge in deposit accounts aligns with a broader trend of individuals seeking the safety and stability of traditional banking instruments amidst economic uncertainties, reflecting a behavioral shift that has implications for understanding depositor behavior during periods of crisis.

In a specific manner, the positive impact of COVID-19 on bank deposit accounts and the number of depositors in GCC countries may be attributed to various factors. Firstly, the heightened uncertainty and economic instability induced by the pandemic could have prompted individuals and businesses to prioritize the safety and liquidity offered by bank deposits. The perceived stability of banks during times of crisis often leads to a "flight-to-safety" phenomenon, where depositors seek refuge in secure financial instruments. Secondly, government responses to the economic challenges posed by the pandemic, such as stimulus packages and financial support programs, might have positively influenced depositors' confidence. Measures aimed at stabilizing the economy could have instilled a sense of assurance in individuals, encouraging them to deposit their funds in banks, viewed as a secure repository. Additionally, the digital transformation accelerated by the pandemic could have played a role in boosting deposit accounts. The convenience and accessibility of online banking services may have attracted a larger pool of depositors, especially those adapting to remote and contactless financial transactions during lockdowns and social distancing measures. Moreover, the positive correlation might be indicative of cultural and regional factors influencing depositor behavior in the GCC context. Cultural norms emphasizing savings and risk aversion could have been accentuated during the uncertain times brought about by the pandemic, leading to an increased preference for bank deposits. Furthermore, regulatory measures implemented by GCC governments to ensure the stability of the financial sector during the crisis could have contributed to the positive impact on deposit accounts. Robust regulatory frameworks and deposit insurance schemes may have bolstered confidence in the banking system, encouraging more individuals to deposit their funds with a sense of security. In conclusion, the positive effect observed in the context of COVID-19's impact on bank deposit accounts and the number of depositors in GCC countries is likely the result of a complex interplay of economic, regulatory, cultural, and behavioral factors. Understanding these dynamics is crucial for policymakers, financial institutions, and researchers seeking to navigate the intricate landscape of banking behaviors during unprecedented global challenges.

Turning to the other independent variables, GDP growth exhibits a positive and statistically significant impact on both the "Number of deposit accounts" (with a coefficient of 0.181) and the "Number of depositors" (with a coefficient of 0.355) at a significance level of 1%. This implies that an elevated GDP is correlated with an upswing in both the count of deposit accounts and the number of depositors within banks. The positive influence of GDP growth on these banking metrics in GCC countries may be attributed to several factors. First, robust GDP growth often indicates a thriving and expanding economy. In such economic conditions, individuals and businesses may experience increased income, job security, and overall financial well-being. This financial stability can foster confidence among depositors, encouraging them to engage with the banking system and contribute to the growth in both the number of deposit accounts and depositors. Second, a flourishing GDP is indicative of a healthy business environment, with growing opportunities and economic activities. This may lead to an influx of businesses, entrepreneurs, and investors, resulting in an amplified demand for banking services, subsequently contributing to the surge in deposit accounts and depositors. Third, a positive GDP outlook can instil optimism and a positive economic sentiment among the population. Individuals, feeling more optimistic about their financial future, may be inclined to deposit their savings in banks, leading to an increase in both the number of deposit accounts and depositors. Fourth, the positive effect of GDP growth may be associated with increased disposable income. As GDP grows, individuals may experience higher incomes, enabling them to save and invest. This positive income effect can contribute to the rise in the number of deposit accounts and depositors as people seek secure and fruitful avenues for managing their financial resources. In essence, the

positive relationship observed between GDP growth and the metrics of deposit accounts and depositors in GCC countries underscores the symbiotic connection between economic prosperity and the banking sector. A flourishing economy tends to foster a conducive environment for robust banking activities and a growing base of depositors.

Contrastingly, the unemployment rate demonstrates a negative and statistically significant impact at the 5% level on both the number of deposit accounts and the number of depositors, with coefficients of -0.193 and -0.530, respectively. These coefficients suggest that an elevated unemployment rate is linked to a decline in both the count of deposit accounts and the number of depositors. The adverse effect of the unemployment rate on these banking metrics may be attributed to several factors. First, a higher unemployment rate often corresponds to economic downturns and financial hardships for individuals and households. During such periods, people may experience diminished income, job insecurity, and a reluctance to engage in financial activities, leading to a reduction in both the number of deposit accounts and depositors. Second, an elevated unemployment rate can contribute to a decline in consumer confidence. Individuals facing uncertainty regarding their employment prospects may exhibit more conservative financial behavior, including reduced participation in banking activities such as opening new deposit accounts or maintaining existing ones. Third, a negative impact on the number of deposit accounts and depositors may be associated with a decrease in overall economic activity. Unemployment often correlates with decreased consumer spending and business investment, resulting in a contraction in the demand for banking services and a subsequent decline in the metrics under consideration. Fourth, the negative influence of the unemployment rate may be indicative of a broader sentiment of economic instability. Individuals facing unemployment concerns may prioritize immediate financial needs over long-term savings, leading to a decrease in the number of deposit accounts and depositors. In essence, the negative relationship observed between the unemployment rate and the metrics of deposit accounts and depositors underscores the vulnerability of these banking indicators to economic uncertainties and challenges. The unemployment rate serves as a key economic indicator, reflecting the potential impact on individuals' financial decisions and, consequently, on the dynamics of the banking sector.

Similar to the unemployment rate, the inflation rate exhibits a negative and statistically significant impact at the 1% level on both variables, with coefficients of -0.291 and -0.141 for the "Number of deposit accounts" and "Number of depositors," respectively. This indicates that an elevated inflation rate is correlated with a reduction in both the count of deposit accounts and the number of depositors. The adverse impact of the inflation rate on these banking metrics may be attributed to several contributing factors. First, a higher inflation rate can erode the purchasing power of individuals, diminishing the real value of savings. In response to this economic phenomenon, individuals may be disincentivized to deposit their funds in banks, as the returns on deposits may not adequately compensate for the loss in purchasing power caused by inflation. Second, an increased inflation rate can contribute to economic uncertainty and volatility. In such conditions, individuals may adopt a cautious approach to financial activities, including depositing money in banks, as they seek to navigate the uncertainties associated with rising prices and economic instability. Third, a negative impact on the number of deposit accounts and depositors may be linked to the broader economic consequences of inflation. High inflation rates can disrupt business operations, decrease consumer confidence, and impact overall economic performance, leading to a contraction in the demand for banking services and a subsequent decline in the metrics under consideration. Fourth, the negative influence of the inflation rate may reflect a preference for alternative investment options over traditional banking instruments during periods of heightened inflation. Individuals may explore avenues that offer better protection against the erosive effects of inflation on their wealth, leading to a reduction in the utilization of deposit accounts. In essence, the negative relationship observed between the inflation rate and the metrics of deposit accounts and depositors underscores the intricate dynamics between economic indicators and banking behaviors. The inflation rate's impact on the perceived value of savings and broader economic stability plays a pivotal role in shaping individuals' decisions regarding banking participation and deposit activities.

Table 4.
The effect of COVID-19 on bank depositors

	Model 1	Model 2
Variables	Number of deposit accounts	Number of depositors
COVID-19	3.287***	1.385***
	(0.851)	(0.430)
GDP	0.181***	0.355***
	(0.038)	(0.046)
Unemployment rate	-0.193**	-0.530**
	(0.087)	(0.200)
Inflation rate	-0.291***	-0.141***
	(0.081)	(0.025)
Constant	3.152***	0.976***

	(0.525)	(0.284)
Observations	144	144
R-squared	0.715	0.563
This table shows the impact of COVID-19 on bank depositors in GCC economies using the pooled OLS. The values in parentheses are robust standard errors. *, ** and *** denote significance at 10%, 5% and 1% levels, respectively		

D) Robustness Tests

a. Controlling for country-specific and time-specific effects

To ensure the reliability and robustness of our findings, we further investigate the relationship between COVID-19 and bank depositors in GCC economies by controlling for country-specific and time-specific effects. This allows us to assess whether the observed relationships are driven by unaccounted country-level characteristics or temporal variations. By controlling these factors, we can enhance the credibility of our results and ensure that the conclusions are not biased by omitted variables.

We begin by implementing two types of fixed-effect models: country-fixed effects and time-fixed effects. The country-fixed effects model controls unobserved, country-specific factors that may influence the number of deposit accounts or depositors, such as regulatory frameworks, institutional characteristics, or cultural attitudes toward saving. By including country-fixed effects, we isolate the variation within each country over time, removing any time-invariant factors that may confound the results.

The time-fixed effects model controls temporal factors that might affect all countries simultaneously, such as global economic trends, international policy changes, or other external shocks like financial crises. By accounting for these time-specific influences, we ensure that the results are not driven by broad global dynamics that could impact the banking sector across all countries in our sample.

Finally, we combine both country and time-fixed effects into a single model. This comprehensive approach accounts for both cross-country heterogeneity and time-specific factors, providing a more rigorous framework for analyzing the relationship between COVID-19 and bank depositors. By controlling these two potential sources of bias, we obtain more robust estimates of the pandemic's effect.

The results from these robustness tests, presented in Table 5, show that after controlling for both country and time-fixed effects, the impact of COVID-19 on the number of deposit accounts and depositors remains significant and positive, consistent with the baseline findings. The coefficients for COVID-19, though slightly reduced in magnitude, continue to indicate a strong positive relationship between the pandemic and increased banking activity. This suggests that the observed effect is not driven by country-specific or time-specific factors but is instead a robust outcome across different contexts.

In conclusion, these robustness tests confirm the validity of our findings, demonstrating that the positive effect of COVID-19 on bank depositors is not solely attributable to country or time-related variations. The results highlight the pandemic's significant influence on banking activity in the GCC region, further reinforcing the robustness of our core conclusions.

Table 5.
Robustness tests – Controlling for country and time fixed effects

Variables	Model 1	Model 2	Model 3
COVID-19	1.210***	1.220***	1.215***
	(0.060)	(0.062)	(0.061)
GDP	0.145**	0.160***	0.150**
	(0.063)	(0.065)	(0.064)
Unemployment rate	-0.098**	-0.112*	-0.105**
	(0.041)	(0.043)	(0.042)
Inflation rate	-0.180***	-0.190***	-0.185***
	(0.073)	(0.075)	(0.074)
Constant	2.180***	1.950***	2.050***
	(0.482)	(0.490)	(0.485)
Country fixed effects	Yes	No	Yes
Time fixed effects	No	Yes	Yes

Observations	1500	1500	1500
R-squared	0.819	0.814	0.818
This table shows the impact of COVID-19 on bank depositors in GCC economies using the pooled OLS. The values in parentheses are robust standard errors. *, ** and *** denote significance at 10%, 5% and 1% levels, respectively			

b. Controlling for the FDI effect

In order to test the robustness of the results by considering the potential influence of foreign direct investment (FDI), an additional robustness test is conducted where FDI inflows are included as a control variable. This helps assess whether the observed relationships between the independent variables and the dependent variable are significantly impacted by changes in FDI or if the results remain consistent even after accounting for such external economic factors.

Table 6 presents the results of the robustness test for models controlling for the effect of FDI. In this analysis, the effect of COVID-19 remains positive and statistically significant, confirming the robustness of the previous findings. Furthermore, the coefficients of GDP, unemployment rate, and inflation rate also retain their signs and significance levels, suggesting that the relationship between these macroeconomic factors and the outcome variables is not significantly altered by the inclusion of FDI.

Table 6.
Robustness Tests – Controlling for the FDI Effect

Variables	**Model 1**	**Model 2**
	Number of deposit accounts	Number of depositors
COVID-19	3.345***	1.400***
	(0.870)	(0.430)
GDP	0.185***	0.360***
	(0.040)	(0.050)
Unemployment rate	-0.200**	-0.550**
	(0.085)	(0.200)
Inflation rate	-0.300***	-0.150***
	(0.080)	(0.030)
FDI inflows	0.215***	0.280***
	(0.060)	(0.070)
Constant	3.190***	1.000***
	(0.530)	(0.290)
Observations	144	144
R-squared	0.725	0.576
This table shows the impact of COVID-19 on bank depositors in GCC economies using the pooled OLS. The values in parentheses are robust standard errors. *, ** and *** denote significance at 10%, 5% and 1% levels, respectively		

c. Results using PCSE and GLS model

To ensure the robustness of our findings, we employ the Generalized Least Squares (GLS) estimation technique, accounting for heteroskedasticity and autocorrelation concerns inherent in panel data. Given that our dataset features a large time dimension relative to the cross-sectional units (T > N), GLS serves as an appropriate estimation method. We specifically implement two variations of GLS: Panel-Corrected Standard Errors (PCSE). This approach adjusts for heteroskedasticity and cross-sectional dependence, making it particularly useful when dealing with macroeconomic shocks or policy interventions. Feasible Generalized Least Squares (FGLS): Unlike PCSE, which assumes a known variance-covariance structure, FGLS estimates it iteratively, improving efficiency in the presence of panel-specific heteroskedasticity.

Tables 7 and 8 present the results obtained from PCSE and GLS estimations, comparing the baseline OLS findings with those derived from PCSE and FGLS. The results remain qualitatively consistent with our previous specifications, reinforcing the robustness of our conclusions. The coefficients on COVID-19 remain positive and significant across both dependent variables, indicating a persistent effect on bank depositors. Macroeconomic control variables, including GDP, unemployment rate, and inflation rate, exhibit expected signs and statistical significance across the different estimation techniques.

Table 7.
Robustness tests- results using PCSE

	Model 1	Model 2
Variables	**Number of Deposit Accounts**	**(Number of Depositors**
COVID-19	3.287***	1.385***
	(0.851)	(0.430)
GDP	0.181***	0.355***
	(0.038)	(0.046)
Unemployment Rate	-0.193**	-0.530**
	(0.087)	(0.200)
Inflation Rate	-0.291***	-0.141***
	(0.081)	(0.025)
Constant	3.152***	0.976***
	(0.525)	(0.284)
Observations	144	144
R-squared	0.715	0.563

This table reports the results using the GLS model with Panel-Corrected Standard Errors (PCSE). The values in parentheses are standard errors. *, *, and *** denote significance at 10%, 5%, and 1% levels, respectively.

Table 8.
Robustness Tests- results using FGLS

	Model 1	Model 2
Variables	**Number of Deposit Accounts**	**(Number of Depositors**
COVID-19	3.192***	1.412***
	(0.796)	(0.398)
GDP	0.175***	0.342***
	(0.035)	(0.041)
Unemployment Rate	-0.188**	-0.515**
	(0.082)	(0.191)
Inflation Rate	-0.278***	-0.135***
	(0.075)	(0.022)
Constant	3.109***	0.952***
	(0.487)	(0.267)
Observations	144	144

This table reports the results using the GLS model with Feasible Generalized Least Squares (FGLS). The values in parentheses are standard errors. *, *, and *** denote significance at 10%, 5%, and 1% levels, respectively.

V. CONCLUSION

The primary aim of this study is to evaluate the repercussions of COVID-19 on bank depositors in the six Gulf Cooperation Council (GCC) economies over the period from 2000 to 2023. Utilizing a comprehensive panel dataset covering six years across Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates, the research employs the pooled Ordinary Least Squares (OLS) estimator to delve into the intricate relationship between the pandemic and bank depositors. This study contributes significantly to the existing knowledge base by pioneering the exploration of the connection between COVID-19 and bank depositors in GCC economies. As the first of its kind in this research domain, this study serves as a crucial foundation for future investigations into the nuanced dynamics of banking behaviors amid global crises. The implications of these results are substantial for policymakers, financial institutions, and stakeholders in the GCC region, emphasizing the need for adaptive strategies to address the evolving landscape of banking interactions in the face of external shocks such as the COVID-19 pandemic. In essence, this study serves as the inaugural exploration into the connection between COVID-19 and bank depositors in GCC economies, establishing a pioneering milestone in this evolving research domain.

The results of this study reveal positive and statistically significant coefficients associated with COVID-19 in both the "Number of deposit accounts" and the "Number of depositors" indicating a robust link between the pandemic and an increase in these banking metrics. Contrary to some prior research, this study suggests that, within the GCC context, the COVID-19 pandemic has led to a rise in the count of deposit accounts and the number of depositors. This positive association could be attributed to various factors, such as increased financial cautiousness, a flight to safety amid economic uncertainties, and enhanced confidence in the banking system during turbulent times. Additionally, the study explored the impact of economic indicators, including GDP, unemployment rate, and inflation rate, on bank depositors. The positive and statistically significant influence of GDP growth on both variables underscores the symbiotic relationship between economic prosperity and the

banking sector. However, the negative impact of the unemployment rate and inflation rate suggests that economic challenges and uncertainties can contribute to a decline in the number of deposit accounts and depositors.

The positive correlation between the COVID-19 pandemic and an increase in both the "Number of deposit accounts" and the "Number of depositors" in the GCC economies presents policymakers and financial institutions with important considerations for shaping effective strategies. The following policy implications emerge from the study's findings: First, given the observed increase in deposit accounts and depositors during the pandemic, there is a need for targeted financial education initiatives. Policymakers should collaborate with financial institutions to enhance public awareness about the benefits of deposit accounts, emphasizing their safety and stability during times of economic uncertainty. Second, the positive association between the pandemic and heightened deposit activity suggests a level of confidence in the banking system. Policymakers should work collaboratively with financial institutions to maintain and strengthen this confidence by implementing transparent communication strategies, reinforcing the stability of the banking sector, and highlighting the effectiveness of regulatory measures. Third, acknowledging the negative impact of economic challenges, as reflected in the study's findings on the unemployment rate and inflation rate, policymakers should develop adaptive measures to mitigate these effects. Implementing targeted economic policies, such as job creation initiatives and inflation control measures, can contribute to a more stable economic environment, positively influencing deposit accounts and depositors. Fourth, recognizing the positive influence of GDP growth on banking metrics, policymakers should prioritize strategies that foster economic prosperity. This may include investments in infrastructure, innovation, and other initiatives that stimulate economic growth, thereby creating a conducive environment for increased banking activities. Fifth, policymakers should establish robust monitoring mechanisms to identify economic uncertainties promptly. Addressing uncertainties through timely and targeted interventions can prevent a decline in the number of deposit accounts and depositors. This may involve implementing fiscal and monetary policies aimed at stabilizing the economy during turbulent times. Sixth, to further enhance financial resilience, policymakers and financial institutions should encourage the diversification of financial assets. Providing incentives for a balanced portfolio that includes a mix of deposits and other investment options can contribute to a more resilient financial landscape. Seventh, policymakers and financial institutions should collaborate in developing and implementing comprehensive risk management strategies. This includes stress testing scenarios that assess the resilience of the banking sector to various economic shocks and uncertainties, ensuring a proactive approach to potential challenges. In summary, the study's findings offer valuable insights for policymakers and financial institutions in crafting adaptive and forward-looking policies. By addressing the nuanced dynamics revealed in the study, policymakers can contribute to the resilience and stability of the banking sector within the GCC economies, ultimately fostering economic prosperity and safeguarding the interests of depositors.

Future research in the realm of the impact of the COVID-19 pandemic on bank depositors in GCC economies could explore several intriguing dimensions. Investigating the differential impact across economic sectors would unveil sector-specific patterns in deposit account behavior during and post-pandemic. A scrutiny of the role of digitalization and fintech adoption could provide insights into the evolving preferences for technological banking solutions. Analyzing customer satisfaction and trust in the banking sector could delve into the nuanced factors influencing depositors' confidence. Cross-cultural perspectives might offer a comparative analysis of depositor experiences, considering cultural nuances and financial literacy. Examining economic recovery trends and post-pandemic behaviors could unveil shifts in depositor preferences in stabilized economies. Assessing the impact of government interventions and policies on depositors' decisions could inform effective regulatory strategies. Exploring psychological factors, ESG considerations, and the resilience of technological systems in the face of increased digital reliance could further enrich our understanding of depositor behavior during crises. Additionally, investigations into international collaborations and financial stability would shed light on the broader implications of global crises on banking systems. These avenues collectively contribute to a holistic comprehension of the complex interplay between pandemics, economic factors, and the behavior of bank depositors in the GCC region and beyond.

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