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Bank Risk-Taking During COVID-19: The Role of Private and Public Ownership in GCC

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Abstract

This study explores the ownership–risk relationship in the GCC emerging economies during the COVID-19 pandemic, examining 44 commercial banks classified as private and publicly owned banks. The two-stage least squares (2SLS) method is employed to identify endogeneity issues, with robustness checks using panel data techniques. We analyzed the ownership–risk relationship, including non-linear and interaction effects. The results reveal that public ownership exhibits an inverted U-shaped relationship with NPLs, where moderate public concentration increases credit risk, while high public control marginally reduces it. Private ownership is linked to higher risk once bank-specific characteristics are controlled, reflecting riskier lending driven by profitability motives. We show that public banks demonstrate resilience due to stable deposits and implicit backing, whereas private banks are more vulnerable to systemic shocks. The impact of ownership structure on credit risk is context-dependent, reflecting heterogeneous ownership objectives in the GCC.

Keywords: ownership structure; COVID-19 pandemic; GCC banking sector

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1. Introduction

The COVID-19 pandemic revealed significant fragility in the financial sector and has had a significant impact on the dynamics of the global economy (Maria et al., 2022), particularly in economies that are more financially open and globally integrated (Ashraf et al., 2016). In the Arabian Gulf region, the pandemic has restricted banks from lending, resulting in a credit squeeze that hampers economic growth. Accordingly, the impact certainly shaped both shareholders' and managers' risk attitudes, underscoring critical issues related to risk-taking and ownership structure. Both factors are fundamental determinants of bank failures, particularly in the occurrence of a crisis (Berger et al., 2016).

The relationship between ownership structure and risk-taking has been debated among scholars because of its correlation with banking stability (Haque, 2019). During a crisis, public banks—owned by the government—are expected to play a vital role in ameliorating the economy, particularly by providing loans to households and SMEs in ways that private banks could not sustain (Susamto et al., 2023). Public banks' main objective is to improve social welfare and limit market failure through the maintenance of credit supply during crises (Berger et al., 2020). However, uncertainties resulting from the COVID-19 pandemic may hamper this objective, as the pandemic shock caused a reduction in lending in banks owned by the government (Danisman & Demir, 2021). Recently, there have been a few studies investigating the effect of how local ownership structures influence risk during the pandemic, Moudud-Ul-Huq et al. (2022), Maria et al. (2022), Fotova-Čiković et al.

(2023), Turan et al. (2023), and Haider and Mohammad (2022). However, none of the mentioned studies cover how public and private banks' behavior during the pandemic differs, particularly in the GCC banking sector.

The Gulf Cooperation Council (GCC) presents a unique context due to its concentrated banking sector and distinctive ownership structure, characterized by significant government and private ownership of banks. Historically, bank ownership in the region began with state dominance, but this shifted after the liberalization shifts amid the mid-1990s, leading to greater involvement from private and family entities (Alshammari, 2022). Despite these changes, ownership remains highly concentrated, with a few powerful banks—often state-affiliated or large private groups—holding substantial shares. This concentration limits the distribution of ownership among a broader pool of investors. Such ownership structures—whether public or private—can negatively expose a negative impact on bank stability, as these ownership profiles may prioritize their own interests over those of minority shareholders, ultimately reducing accountability (Martínez-García et al., 2021). Currently, the GCC banking sector exhibits a concentrated ownership, primarily through significant shares held by the government, family groups, or institutions. Meanwhile, the region's economy is highly exposed to external shocks due to large-scale investments in international markets (Haque, 2019). As a result, the occurrence of any global crisis could significantly affect risk-taking and banking stability. Both concerns are correlated with the increase in non-performing loans (NPLs), which prompts banking fragility and reduces its solvency (Jabbouri et al., 2023).

The research aims to identify which bank ownership profile—between public and private ownership—is more likely to engage in risk-taking. How does the ownership type/structure affect bank credit risk during the COVID-19 pandemic? To answer these questions, a sample consisting of 27 private and 17 public banks operating in the GCC region is employed, with the aim of providing an in-depth investigation into the relationship between ownership and banking stability. The limited presence of banks with dispersed ownership in the GCC region, along with the scarcity of empirical evidence on how ownership within each profile influences credit risk, adds a unique appeal to the topic.

The remainder of this study is structured as follows: Section 1 includes the introduction. Section 2 contains the theoretical background, hypothesis development, and empirical literature. Section 3 involves the sample selection process, model construction, and study variables. Section 4 presents the descriptive statistics, correlation matrix, and estimation analysis along with the discussion of findings and the robustness checks. Lastly, Section 5 presents the conclusion and future research recommendations.

2. Theoretical Framework and Hypothesis Development

Agency theory, originally developed by Meckling and Jensen (1976), argues that conflicts arise when shareholders delegate decision-making to managers, whose objectives may not align with those of the principals. These conflicts occur in the banking sector due to the complexity of financial contracts and information asymmetry (Jensen & Meckling, 1996). Ownership structure plays a critical role in mitigating or exacerbating agency problems. Concentrated ownership, such as by large block holders, tends to improve monitoring and align incentives, thereby reducing risk-taking (Becht et al., 2007). In contrast, dispersed ownership can weaken oversight, leading to excessive risk exposure and poor loan portfolio quality (Berger et al., 2005). Managers, mostly in publicly owned banks, may pursue riskier strategies when protected by implicit guarantees or political backing, such as the too-big-to-fail policy (Mishkin, 2006). These banks may be incentivized to lend aggressively or engage in opaque activities, as a government bailout will shield them from downside consequences (Demirgüç-Kunt & Detragiache, 2002).

The distinction between public-owned banks (GOBs) and privately owned banks (POBs) is important in developing regions like the GCC, where institutional development and regulatory capacity vary. GOBs in these economies are often expected to fulfill developmental or social objectives rather than maximize profit (Micco et al., 2007). They may prioritize lending to state-affiliated projects or politically connected clients, sometimes at the expense of sound credit practices, which can lead to higher risk and inefficiencies (Beck et al., 2010). Agency theory offers two competing perspectives here. On the one hand, public ownership may exacerbate agency conflicts by allowing political interference in lending and reducing managerial accountability, thereby increasing credit risk. On the other hand, some argue that GOBs, particularly in weak institutional settings, are necessary for channeling funds into socially desirable projects and enhancing financial inclusion (Kobeissi & Sun, 2010). In contrast, privately owned banks, especially those with concentrated ownership, often demonstrate stronger governance, stronger profit motives, and more effective internal control mechanisms (Berger & Dick, 2007). These banks are generally more prudent in lending decision and risk management, as the market impose stricter discipline and shareholders bear consequences of poor performance –Bail in mechanism. Empirical studies in the GCC have produced mixed findings. For example, Aljuhani et al. (2024) found that private banks tend to outperform public ones in terms of profitability and credit quality. Lassoued et al. (2016) and Mateev and Bachvarov (2021) suggest that public banks in MENA are riskier and less efficient due to political interference and agency costs. While Boulanouar et al. (2021) argue the opposite, highlighting public banks' relative stability and lower NPLs. Further, studies like Zheng et al. (2017) and Martínez-García et al. (2021) focus on ownership concentration, but offer differing conclusions. The former argue that higher ownership concentration increases credit risk, and privately owned banks are more stable than public banks, as they possess a greater tendency to engage in risk-taking. While the latter finds no negative impact when the public ownership falls below a certain threshold. Notably, the relationship between ownership profiles—private versus public—and risk-taking is not necessarily linear (Chen & Steiner, 1999; Slovin et al., 2000). In fact, an inverted U-shaped relationship may hold if both ownership structures are either more prone to risk-taking or more effective at mitigating them. Zhong (2017) found that moderate ownership concentration has an inverted U-shaped impact on risk-taking; agency problems exist in banks with low ownership concentration (Laeven & Levine, 2009). Thus, the research states the following hypothesis regarding the relationship between GOBs and POBs and risk:

H1. *There is a negative relationship between public ownership and bank risk-taking.*

H2. *There is a positive relationship between private ownership and bank risk-taking.*

H3. *There is a non-linear relationship between ownership type public/private and bank risk-taking.*

The COVID-19 pandemic presents an exogenous shock that has profoundly impacted global financial systems. According to the Financial Instability Hypothesis proposed by Minsky (1977), financial systems inherently fluctuate between stability and fragility, and extended periods of economic stability often encourage excessive risk-taking, ultimately leading to systemic vulnerability. External shocks such as the pandemic can expose these vulnerabilities, especially in institutions with weaker governance or higher exposure to political interference (El-Chaarani et al., 2023). In this context, the ownership structure may shape a bank's stability in absorbing or transmitting systemic risk. Public-owned banks may enjoy greater access to public support but also face incentives to fulfill political or social mandates, which can either stabilize or destabilize their behavior

(Demirgüç-Kunt & Detragiache, 2002). Private banks, while more disciplined by market forces, may aggressively chase returns or restrict credit during downturns. A growing body of research has examined the effect of public versus private ownership on bank performance and risk during the COVID-19 pandemic. For instance, Moudud-Ul-Huq et al. (2022) find that COVID-19 increased bank fragility, leading to a higher reliance on capital buffers; public banks were more risky and less capitalized in normal conditions. Jabbouri et al. (2023) reveal that ownership concentration had a positive impact on NPLs during the pre-crisis period, which reversed post-crisis, suggesting a shift in monitoring and governance behavior during the pandemic. El-Chaarani et al. (2023) explore governance in GCC banks, arguing that concentrated ownership was used as a political tool to manage pandemic-related losses, with large banks leveraging high liquidity to maintain low NPL levels. Other studies expand the geographical focus. In Indonesia, Maria et al. (2022) document the negative effects of the pandemic on both public and private ownership performance. Conversely, Fotova-Čiković et al. (2023) highlight the stabilizing role of public banks in Croatia, particularly in liquidity creation. Meanwhile, Turan et al. (2023) argue that COVID-19 had no significant impact on domestic lending, and Haider and Mohammad (2022) observe that traditional drivers of profitability like credit quality and cost efficiency lost relevance, with bank size and liquidity buffers playing a significant role in risk mitigation. Thus, the third hypothesis for the COVID-19 impact is stated as follows:

H4. *There is a positive impact of the COVID-19 pandemic on the relationship between ownership and risk-taking.*

The existing research still treats capital, ownership, and risk in isolation, without integrating them into a comprehensive framework. Limited attention has been paid to how these factors operate within the GCC region, where high ownership concentration, public influence, and exposure to global shocks create a unique banking environment. Some highlight public banks as stabilizing actors Fotova-Čiković et al. (2023), while others describe them as less efficient under stress (Maria et al., 2022). Although El-Chaarani et al. (2023) address the role of governance during COVID-19 in GCC, there remains a gap in the literature regarding the combined impact of public/private ownership profiles during the macroeconomic shock, and this research aims to fill that gap.

3. Sample Construction and Model of Study

In this research, the aim is to examine the effect of local ownership structure on bank NPLs during the COVID-19 pandemic. Given that ownership in this region is diverse, understanding how these dynamics influence risk-taking behavior is critical for maintaining stable financial systems. To reach this purpose, the authors utilize a sample spanning 2018–2022 consisting of 27 private banks and 17 public banks. Although the study focuses on the pandemic period, we include the years 2018–2019 in our dataset to account for the lagged effects of bank ownership structure on credit risk, allowing us to measure how persistent ownership characteristics influenced NPLs during the COVID-19 period. The data collection process was based on banks' annual reports and the World Development Indicators for macroeconomic variables. Specifically, bank-level financial data were collected from each bank's publicly available annual reports through their balance sheet and income statement items. At the same time, the macroeconomic variables were sourced from the WDI. Given the short panel length, the analysis focuses on cross-sectional and time–invariant relationships, while controlling for bank-level and macroeconomic variables. To account for the potential endogeneity of ownership variables, the two-stage least squares (2SLS) estimation was employed, as it mitigates biases arising from simultaneous interactions between the ownership variables and the stability proxy (Lassoued et al.,

2016). Furthermore, control variables at the bank level and macroeconomic level were incorporated to isolate the effect of ownership on bank risk accurately (Equation (1)):

$$NPLs_{it} = \alpha_{it} + \beta_1 PublicOwn_{it} + \beta_2 PublicOwn^2{}_{it} + \beta_3 PrivateOwn_{it} + \beta_4 PrivateOwn^2{}_{it} + \beta_5 ROA_{it} + \beta_6 Size_{it} + \beta_7 Div_{it} + \beta_8 GDP_{jt} + \beta_9 INF_{jt} + \beta_{10} COV_{jt} + \epsilon_{it} \quad (1)$$

where $NPLs_{it}$ represents the non-performing loans for bank i at time t. The key independent variables are the shares of public and private ownership $PublicOwn_{it}$ $PrivateOwn_{it}$. To capture potential non-linear effects of ownership on risk-taking, we use lagged values of the ownership variables and their squared terms as instruments in the 2SLS model. Specifically, the lagged public and private, along with their squared terms $PublicOwn^2$ and $PrivateOwn^2$, serve as valid instruments under the assumption that past ownership influences current ownership but is exogenous to current shocks affecting risk. These terms allow the model to identify whether the impact of ownership on risk-taking changes at different levels of ownership, capturing any non-linear relationships, such as diminishing or increasing marginal effects. Control variables at the bank level include ROA to account for profitability, bank size to control scale effects, and diversification to capture portfolio diversification risk. The model also incorporates macroeconomic variables, including the GDP growth, inflation, and a COVID-19 dummy variable, and ϵ_{it} is the error term. For the sample selection, following Hammami and Boubaker (2015), the analysis excludes non-commercial banks and Islamic banks, retaining only banks with a stable ownership structure[1]. There is no difference between Islamic and Conventional banks in terms of providing liquidity (Al-Khouri & Arouri, 2019). However, there are differential impacts and treatments in terms of lending and borrowing behavior, as with Islamic banks, all the activities are performed under the concept of "profit loss sharing" under the Sharia[2] (Haque, 2019). It is crucial for policymakers to differentiate between the two types of banks, especially during the COVID-19 pandemic, as regulatory measures, ownership structures, and their impacts differ (Mateev & Bachvarov, 2021). Hence, this study only includes commercial banks operating in the GCC. The research sample is presented in Table 1 as follows:

Table 1. Study sample.

Sample by Country:	Number of Banks	%
Kuwait	6	13%
Oman	5	11%
Qatar	4	9%
Bahrain	9	20%
Saudi Arabia	8	18%
UAE	12	27%
Total	44	100%
Ownership type:		
Private	27	61%
Public	17	39%
Total	44	100%

Variables Relationship

The analysis includes the Non-Performing Loans as the primary dependent variable, a core stability indicator in any economy—widely used in the previous literature (Moudud-Ul-Huq et al., 2022). For ownership profiles, the division was based on the ap-

proach of Mateev et al. (2023) and Haque (2019); they assessed the ownership variable by the percentage of the largest shareholders, that is, either government or private, in our model. This approach is useful for examining the impact during the COVID-19 pandemic, as each ownership structure has distinct characteristics, and its effect on bank lending varies depending on the specific type of crisis (Allen et al., 2017).

Bank size and Return on Assets (ROA) are the independent variables; larger banks tend to engage in risk-taking activities due to the implicit and explicit deposit insurance with respect to their role in financial stability (Panizza, 2024). The capital ratio is measured by the total of equity to assets (Panizza, 2024). Furthermore, while COVID-19 represents an exogenous shock, its impact varies, particularly when considering ownership structure. A positive effect of the COVID-19 dummy on private bank risk is probable (Susamto et al., 2023). Two additional macroeconomic variables were included: the real GDP growth and the inflation rate. Panizza (2024) found no direct relationship between ownership type and GDP growth or Inflation during periods of crisis. Conversely, a higher public ownership share is associated with lower GDP growth and inflation (La Porta et al., 2002). At the bank level, both diversification and deposit ratios are included as explanatory variables. Louzis et al. (2012) reported a positive relationship between diversification and loan quality; greater diversification reduces credit risk and enhances banking stability. Additionally, the research used the deposit ratio as a determinant of bank risk-taking, as well as the cost-to-income ratio, measured as total operating expenses divided by total operating income (Haque, 2019). Table 2 provides the measurement methods and formulas for all variables employed in the research analysis.

Table 2. Description of variables.

Variable	Measurement	Source	Reference
Public ownership	Public banks' highest percentage block holder	Annual reports	Ashraf et al. (2016)
Private ownership	Private banks' highest percentage block holder	Annual reports	Haque (2019)
NPLs	Non-performing loans to gross loans	Annual reports	Boulanouar et al. (2021)
ROA	After tax net income to total assets	Annual reports	Micco et al. (2007)
Cost-to-Income (EFF)	Operating expenses to total revenue	Annual reports	Haque and Brown (2017)
Loans-to-Assets	The ratio of total loans to the total assets	Annual reports	Lassoued et al. (2016)
Capital	Total bank equity held by shareholders to total assets	Annual reports	Panizza (2024)
Bank Size	Natural logarithm of total assets	Annual reports	Mishkin (2006)
Diversification	$\frac{non-interest\ income}{operating\ income}$	Annual reports	Ashraf et al. (2016)
Deposit Ratio	$\frac{Total\ deposits}{Total\ assets}$	Annual reports	Menicucci and Paolucci (2016)
GDP Growth	Country-level GDP growth	World Bank Development Indicator	Panizza (2024)
Inflation	Country-level inflation	World Bank Development Indicator	Panizza (2024)
COVID-19 dummy	A dummy variable takes the value of 1 in 2020–2022, and zero otherwise.	Author's calculations	El-Chaarani et al. (2023)

4. Descriptive Statistics and Correlation Matrix

The descriptive statistics presented in Table 3 compare private and public ownership. It appears that the level of non-performing loans is higher in private banks, with a mean

and a standard deviation of 0.026, 0.031, compared to 0.016 average mean and a standard deviation of 0.020 in public banks. The private share is 0.47, with a standard deviation of 0.28, while the public ownership mean is 0.37 with a standard deviation of 0.23. Concentration improves the level of supervisory control that limits excessive risk-taking. However, it is not necessarily that higher ownership concentration lowers the level of credit risk, as banks, considering bank-level factors, specify the impact clearly. The capital ratio average mean for public banks is 0.06, with a standard deviation of 0.04. In contrast, private banks have a mean capital ratio of 0.064 with a standard deviation of 0.05, suggesting that in terms of capital, there are no significant differences for the selected period. The bank size mean is 7.66 for private ownership and 6.24 for public banks. The profitability indicator ROA is higher in public banks, with an average of 0.004, compared to 0.002 in private ownership, suggesting more efficient asset management under public ownership. Furthermore, the cost-to-income ratio appears to be higher for private banks, with a mean of 0.22 and 0.18 for private. The difference in diversification from intermediation activities is minimal, with private ownership having an average of 0.14 and a standard deviation of 0.12, while public banks have an average of 0.10 and a standard deviation of 0.09. The macroeconomic variables GDP growth mean is around 0.02, with a standard deviation of 0.03, and the annual inflation rate mean is 0.010 with a standard deviation of 0.07.

Table 3. Descriptive statistics.

Variables	Private Ownership		Public Ownership	
	Mean	**Std. Deviation**	**Mean**	**Std. Deviation**
NPLs	0.026	0.031	0.016	0.020
Private × Public	0.470	0.282	0.371	0.236
Capital	0.064	0.052	0.060	0.047
Size	7.66	4.71	6.24	4.07
ROA	0.002	0.013	0.004	0.001
EFF	0.228	0.187	0.180	0.162
Diversification	0.142	0.128	0.109	0.092
GDP growth	0.022	0.035	0.021	0.030
Inflation	0.010	0.07	0.011	0.070

The correlation matrix in Table 4 reveals a range of significant relationships between NPLs, pandemic proxy, and the research variables. Notably, there is a significant negative correlation between the COVID-19 dummy and ROA −0.11, and GDP growth −0.47. The pandemic exerted significant pressure on banks' earnings (Haider & Mohammad, 2022). The slowdown affected macro-level financial indicators, including the GDP growth (Moudud-Ul-Huq et al., 2022). Moreover, there is a negative correlation between private ownership and NPLs, with a coefficient of −0.22; private banks may experience fewer NPLs during the pandemic, likely due to the robust risk management framework they possess. In contrast, public-owned banks are positively correlated with NPLs 0.17 but insignificantly. ROA is negatively correlated with NPLs −0.10; more profitable banks generally have lower levels of NPLs, reflecting the efficient use of assets. Similarly, bank size indicates a negative and significant correlation with NPLs, −0.46; larger banks generally experience lower risk. However, this is not guaranteed, as an increase in bank size increases complexity, leading to difficulties in monitoring banks' credit portfolio and performance. Diversification is positively and significantly correlated with NPLs, 0.36. Diversification is expected to reduce risk; however, it may also expose banks to broader risk if managed ineffectively.

Table 4. Correlation matrix.

	NPLs	Private	Public	ROA	CAP	DIV	Size	EFF	GDP	INF	COV
NPLs	1.00										
Private	−0.22 ***	1.00									
Public	0.17	−0.39 ***	1.00								
ROA	−0.10 ***	−0.08 **	0.14 *	1.00							
CAP	0.38 ***	−0.25 ***	0.26 ***	0.29 ***	1.00						
DIV	0.36 **	0.09 **	0.04	−0.07	0.27 ***	1.00					
Size	−0.46 ***	0.18 ***	−0.24 ***	0.07 ***	−0.57 ***	−0.33 ***	1.00				
EFF	0.17	−0.12 **	0.26 ***	−0.27 ***	0.08	0.05 ***	−0.41 ***	1.00			
GDP	−0.02	0.03	−0.10	0.09	−0.02	−0.01 **	0.11	−0.15 ***	1.00		
INF	−0.10	0.03	−0.02	0.14 *	−0.00	0.07 *	0.05	−0.10	0.36 ***	1.00	
COV	0.05 **	−0.00	0.003	−0.11 ***	−0.06 ***	0.02	−0.01	0.14 ***	−0.47 ***	−0.12	1.00

Significance levels are indicated as follows: $p < 0.10$ *, $p < 0.05$ **, $p < 0.01$ ***.

4.1. Results and Discussion

Before interpreting the results, it is important to highlight the methodological framework behind the analysis. The Hausman test was conducted to assess endogeneity, and the results confirmed that ownership is endogenous, driven by factors such as banks' inherent risk profile. Consequently, the 2SLS method was preferred over the OLS to correct for this endogeneity bias. The endogenous variables include public ownership, its square term, private ownership, and its squared term. To instrument for ownership, we used the country-level institutional quality factors (IQF)[3] which shapes how ownership strategies are implemented (Almulla et al., 2025). These elements serve as the mechanisms through which ownership profiles influence actual risk outcomes, making their inclusion essential for meaningful analysis. The institutional variables influence ownership decisions without being directly affected by individual banks' NPLs in our analysis, which ensures that the instruments satisfy the relevance—correlated with ownership but uncorrelated with exogeneity. Following Srairi (2013), the Hansen and Basmann tests were conducted[4] to assess the validity of the instruments and to verify[5] that they are uncorrelated with the error terms[6]. In both tests, the null hypothesis could not be rejected, confirming that the instruments employed in the model are valid and unbiased.

The second-stage 2SLS regression results (Table 5) reveal that there is a positive, combined with a negative impact of public ownership on NPLs ($\beta = -0.168, -0.335$ $p < 10\%, 1\%$), suggesting an inverted U-shaped relationship between public ownership and bank credit risk. Banks with moderate public control are associated with high credit risk, while an increase in public share is associated with a reduction in NPLs. These findings highlight the stabilizing role of public banks in supporting public welfare (Barry et al., 2011; Fotova-Čiković et al., 2023). Private ownership shows a marginally significant negative linear impact on NPLs ($\beta = -0.233$, $p < 10\%$), while its squared term is positive but not statistically significant, implying a weak non-linear effect for private banks. The period impact of the COVID-19 pandemic is associated with a statistically significant increase in credit risk, confirming the negative effects of the crisis on banks' asset quality. Bank controls such as size demonstrate a significant negative effect on NPLs at ($\beta = -0.009$, $p < 1\%$). Well-sized banks tend to exhibit lower risk due to stable funding sources. Further, the capital ratio demonstrates a positive and statistically significant impact on NPLs ($\beta = 0.211$, $p < 1\%$). The conventional banking theory suggests that higher capital buffers mitigate credit risk (Mishkin, 2006). During the COVID-19 period, banks increased their capital buffers in response to deteriorating credit conditions, rather than acting as a cushion against risk ex ante (Berger et al., 2016). This is consistent with the GCC regulatory interventions

during the pandemic, which have had no direct impact on NPLs but ultimately affect bank ownership, thereby increasing moral hazard (El-Chaarani et al., 2023). Moreover, the profitability indicator, ROA, reveals a negative and statistically significant effect on NPLs ($\beta = -0.801$, $p < 1\%$), indicating that banks' asset quality remained efficient during the pandemic shock. Macroeconomic indicators of both GDP and inflation show no direct significant impact on NPLs. This is justified by the unusual economic disruptions caused by the COVID-19 pandemic, limiting the stabilizing role of GDP, and confirming that price level changes did not directly influence loan quality.

Table 5. 2SLS regression[7].

NPLs	Coefficient
PublicOwn	0.168 * (0.128)
PublicOwn^2	−0.335 ** (0.166)
PrivateOwn	−0.233 * (0.146)
PrivateOwn^2	0.187 (0.159)
ROA	−0.801 *** (0.319)
SIZE	−0.009 *** (0.004)
Capital	0.211 *** (0.073)
GDP	0.000 (0.000)
Inflation	0.000 (0.000)
COV	0.029 *** (0.011)
Cons.	0.242 *** (0.073)
Obs.	220
Prob > chi^2	0.000
Wald chi^2(10)	85.09
Hausman-Test	0.000

Significance levels are indicated as follows: $p < 0.10$ *, $p < 0.05$ **, $p < 0.01$ ***.

On the one hand, we showed an inverted U-shaped relationship between public ownership and credit risk, confirming that moderate public ownership may reduce overall stability, but high public control could lead to better credit quality (Slovin et al., 2000). This finding confirms that public banks are social welfare optimizers, particularly when highly concentrated, which is inconsistent with the findings of Susamto et al. (2023). This is possibly realistic in the GCC due to the implicit guarantees or political backing, where bank size and liquidity buffers play a significant role in risk mitigation, evident in the previous literature (Mishkin, 2006; Haider & Mohammad, 2022; El-Chaarani et al., 2023). On the other hand, we show that private ownership has a similar pattern but is less statistically significant, where moderate private ownership reduces credit risk, but

highly concentrated banks show no significant results. Higher private share, along with the profit-driven motives, exacerbated credit risk during the COVID-19 pandemic, in line with Martínez-García et al. (2021).

4.2. Robustness Check

To confirm the consistency of the main 2SLS findings, the researchers conducted a robustness check using panel data techniques, following the approach of Ashraf et al. (2016). Panel data methods[8] are particularly appropriate for this purpose as they combine time-series and cross-sectional dimensions, allowing for better control of unobserved heterogeneity, reduction in multicollinearity, and improved estimation efficiency (Baltagi et al., 2005). The fixed effects results in Table 6 confirm the main 2SLS conclusions, while providing additional insight into the ownership–risk relationship once unobserved heterogeneity is accounted for. Private ownership, in contrast to the main 2SLS findings—which suggested a marginally negative linear effect on NPLs with weak evidence of non-linearity—shows a positive and highly significant impact on NPLs ($\beta = 0.436$, $p < 1\%$). This shift suggests that once time-invariant bank characteristics are controlled for, higher private ownership may be associated with more aggressive lending and greater credit risk. Thus, the fixed effects analysis focuses on what occurs within the same bank when it becomes more privately owned. This aligns with the view that privately owned banks, particularly in the GCC market, may pursue profitability, as indicated by a significant negative ROA with ($\beta = -0.846$, $p < 0.01$) and market share at the expense of loan quality.

Table 6. Panel fixed effects regression.

Model 1	Coefficient
Priv-Ownership	0.436 *** (0.153)
Priv-Size	−0.027 *** (0.008)
Priv-Deposit	0.132 *** (0.053)
Private-Efficiency	−0.068 *** (0.030)
Priv-Diversification	−0.077 *** (0.033)
Priv-ROA	−0.846 *** (0.131)
Priv-Cap	−0.083 (0.115)
GDP × Private	0.003 *** (0.001)
INF × Private	−0.000 (0.000)
COVID × Private	0.027 *** (0.009)
Public-Ownership	−0.192 (0.365)
Public-Size	0.015 (0.02)

Table 6. *Cont.*

Model 1	Coefficient
Public-Deposit	−0.318 ***
	(0.074)
Public-Efficiency	0.064
	(0.047)
Public-Diversification	0.196 ***
	(0.065)
Public-ROA	0.813 *
	(0.512)
Public-Cap	0.245 *
	(0.162)
GDP × Public	−0.002
	(0.001)
INF × Public	0.001
	(0.001)
COVID × Public	0.002
	(0.014)
Constant	0.048 ***
	(0.018)
Observations	220
Adj-R^2	0.33
Prob > F	0.000
Hausman-Test[9]: Prob > Chi^2	0.000

Model 1: fixed effects of private vs. public. Significance levels are indicated as follows: * $p < 0.10$, *** $p < 0.01$.

While the 2SLS results indicated an apparent U-shaped effect of public ownership, the fixed effects model shows no statistically significant direct impact on NPLs. This suggests that much of the public ownership–risk relationship observed in the main model may be driven by structural, persistent differences between public and private banks rather than short-term variations. Given that public banks are vulnerable to market forces (Barry et al., 2011), they tend to differ from private banks in stable ways, such as in terms of size and deposit base (Karas et al., 2010). Once these persistent traits are controlled, the variation in public banks over time does not appear significant. Moreover, the COVID-19 dummy remained influential, highlighting that private banks were more affected by the pandemic. In contrast, public banks may have been buffered, given that larger public banks maintained flexible credit portfolios through offering liquidity programs (El-Chaarani et al., 2023). Bank control variables remain consistent with the main results. We found that public deposits have a strong negative impact on NPLs ($\beta = -0.318$, $p < 0.01$), supporting the notion that public firms benefit from stable funding bases, often linked to government deposits and social welfare (Demirgüç-Kunt & Detragiache, 2002; El-Chaarani et al., 2023). However, private deposits are associated with higher credit risk at ($\beta = 0.132$, $p < 0.01$), potentially due to funding riskier lending portfolios to offset losses arising from the pandemic. Private ROA and cost-to-income ratios –efficiency indicator- show a negative and significant impact on NPLs ($\beta = -0.846, -0.068$, $p < 0.01$). At the same time, public banks demonstrate the opposite ($\beta = -0.813$, $p < 0.10$), as they generally tend to prioritize public welfare over profitability (Panizza, 2024).

The study finds that private banks are generally better positioned, as they demonstrate stronger profitability, operational efficiency, and effective diversification compared to public-owned banks. Despite these strengths, private ownership is found to have a positive

association with NPLs, indicating that the aggressive pursuit of profitability and market share may lead to riskier lending practices. Conversely, public-owned banks, although less efficient, diversifiable, and profitable, show a negative relationship with NPLs, indicating a more cautious lending approach, in line with (Susamto et al., 2023; Moudud-Ul-Huq et al., 2022). Our findings differ from the conclusions of Zheng et al. (2017) and Turan et al. (2023), where the former argue that private ownership is more stable than public ownership, and the latter suggests a non-significant effect between ownership structure and risk-taking during the pandemic period.

5. Conclusions and Future Research Recommendations

This study examines the relationship between ownership structure and banking stability in the context of the COVID-19 pandemic across the GCC countries, using a dataset of 44 commercial banks, comprising 27 private banks and 17 publicly owned banks, over the period 2018–2022. The analysis utilized the 2SLS estimation to address endogeneity concerns, while robustness checks using panel data fixed effects further validated the findings. COVID-19 appears to be a key determinant in the ownership–risk relationship, underscoring differential vulnerabilities across ownership profiles.

Public ownership exhibits an inverted U-shaped relationship with credit risk, where moderate public ownership increases NPLs, while higher ownership concentration reduces them. In contrast, a high private stake shows no statistically significant effect. When institutional quality factors are employed as instruments in the 2SLS model, the non-linear effect of public banks remains evident. However, the robustness checks—using panel data fixed effects—indicate that this non-linearity becomes statistically insignificant once persistent bank-specific heterogeneity is controlled for. This suggests that the observed relationship is primarily driven by structural ownership differences rather than short-term variations. Private banks, although more profitable and cost-efficient, exhibit higher NPLs due to profit-driven incentives, which makes them comparatively more fragile than their public counterparts. The pandemic amplified the vulnerabilities of both ownership profiles; however, public counterparts appeared more insulated, likely due to implicit backing and stable deposit bases that protected them against systemic shocks. This research has limitations that offer opportunities for further exploration. It focuses on the pandemic period, does not account for the long-term effects that may emerge in the pre- and post-pandemic period. Expanding the timeline to include the post-pandemic era would provide deeper insights into the evolving dynamics of banking.

Policy Issues

Bank ownership and risk-taking are major concerns for policymakers due to their correlation with overall economic stability (Haque, 2019; Alshammari, 2022). In this research, we highlight different insightful findings that enhance the broad understanding of this relationship. The GCC banking sector is nearly consolidated and concentrated –a few banks have the power to charge prices over their marginal costs. Consequently, banks owned by a small group may over-centralize decision-making and engage in opaque lending in an attempt to offset losses. We found that highly concentrated public ownership can reduce credit risk, meaning that high government participation during financial disruptions proves effective in mitigating credit risk. However, this does not necessarily imply public banks consistently outperform private ones. Hence, the relationship is context-dependent and varies across regions and events. We also found that private banks are highly sensitive, highlighting the need for regulators to implement clear guidelines for risk assessment while ensuring that public banks maintain discipline to avoid moral hazard and excessive capital reliance. Moreover, banks in the GCC should encourage diversification across their portfo-

lios by investing in fintech collaborations and AI-driven credit assessment tools. In parallel, expanding lending toward sustainability projects and green infrastructure would not only reduce risk concentration in intermediation activities but also align with the long-term economic transformation agendas of the GCC countries, as outlined in their 2035 Vision.

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Notes

1 Banks were excluded if they had missing financial data for more than 20% of the study period or if their financial statements were not disclosed. In total, 48 banks were initially considered, but four banks were removed due to incomplete or undisclosed financial statements.

2 Islamic banks operate under fundamentally different principles; they adhere to Sharia Islamic law that prohibits interest rate (riba), and emphasize profit-sharing. These variations influence banks' risk profile and ownership structure, making the comparison misleading (Ali & Sarkar, 1995).

3 IQF: accountability, government effectiveness, regulatory quality, rule of law, and control of corruption.

4 The Basmann test yields a p-value of 0.27, and the Hansen test yields a p-value of 0.34.

5 For Hansen, the (H0): The instruments are valid, and the Basmann Test (H0): The instruments are valid (uncorrelated with error terms).

6 The H0: There is no endogeneity, rejected under the Hausman: p-value = 0.00.

7 Shea's partial R^2: PublicOwn: 0.17 (adj. 0.12), PublicOwn^2: 0.15 (adj. 0.10), PrivOwn: 0.23 (adj. 0.17), PrivOwn^2: 0.19 (adj. 0.14).

8 Using the Hausman test at a 0.05 confidence level, the study determines whether a fixed or random effects model is appropriate. The random effect is appropriate when the probability of Chi^2 (χ^2) is greater than 0.05; otherwise, the fixed effects model applies to consider the impact of the unobserved (bank) fixed effects and control for heterogeneity (Baltagi et al., 2005).

9 Hausman-test FE vs. RE: Prob > χ^2 = 0.000.

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