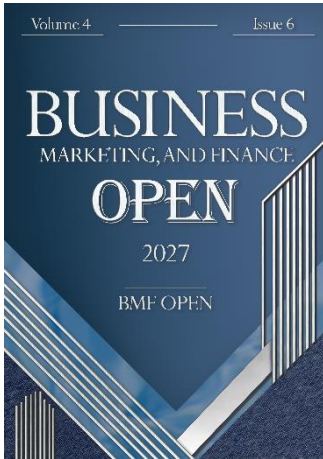


Determinants of Bank Risk-Taking: The Role of Regulation, Competition, and Financial Disclosure

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Abstract: This study aimed to examine the determinants of risk-taking behavior among Iraqi commercial banks by assessing the effects of regulation, competition, financial disclosure, bank-specific characteristics, macroeconomic conditions, and institutional quality. This study employed a quantitative causal-explanatory design using a dynamic panel-data framework. The study population included licensed Iraqi commercial banks operating between the first quarter of 2010 and the fourth quarter of 2024. After data screening, the final unbalanced panel included 38 commercial banks and 2,036 bank-quarter observations. Bank-level data were extracted from audited quarterly financial statements, while regulatory and sector-level indicators were obtained from Central Bank of Iraq reports. Macroeconomic variables, including real GDP growth, inflation, exchange-rate volatility, and oil-price volatility, were collected from international databases. Institutional quality indicators were also incorporated. Data were analyzed using descriptive statistics, correlation analysis, static panel regressions, and dynamic System-Generalized Method of Moments estimation. Semi-structured expert interviews were used only to contextualize the quantitative findings. The inferential results showed that regulatory intensity had a significant negative effect on bank risk-taking in both static and dynamic models. Financial disclosure quality, capital adequacy, liquidity, profitability, and institutional quality also significantly reduced risk-taking. In contrast, banking competition pressure, bank size, inflation, exchange-rate volatility, and oil-price volatility significantly increased risk exposure. The dynamic System-GMM results confirmed strong persistence in bank risk-taking over time. Institutional quality significantly strengthened the risk-reducing effect of regulation, while financial disclosure significantly weakened the risk-enhancing effect of competition. Ownership-based robustness analysis indicated that privately owned banks were more sensitive to competition-driven risk, whereas foreign-affiliated banks benefited more strongly from disclosure discipline. The study concludes that bank risk-taking in Iraq is shaped by the interaction of regulatory enforcement, competitive pressure, disclosure transparency, internal financial resilience, institutional quality, and macroeconomic instability. Strengthening prudential regulation alone is insufficient unless accompanied by improved disclosure standards, stronger governance mechanisms, and more credible institutional enforcement.

Keywords: Bank risk-taking; banking regulation; competition; financial disclosure; institutional quality; System-GMM; Iraqi commercial banks.

1. Introduction

Bank risk-taking remains one of the most consequential issues in banking research because the banking sector performs the dual function of supporting economic growth through credit intermediation while simultaneously

carrying the potential to transmit financial instability across firms, households, markets, and public institutions. Banks are inherently exposed to risk because their business model depends on maturity transformation, leverage, liquidity provision, and the allocation of funds to borrowers whose repayment capacity is uncertain. In developing and transition economies, this risk is often intensified by macroeconomic volatility, institutional fragility, concentrated sources of national income, weak disclosure regimes, and uneven supervisory enforcement. Iraq provides a particularly important context for examining these issues because its commercial banking sector operates within an economy shaped by oil revenue dependence, exchange-rate sensitivity, changing regulatory expectations, and gradual institutional modernization. In such an environment, the risk behavior of banks cannot be understood only through internal financial ratios; rather, it must be examined through the combined effects of regulation, competition, financial disclosure, governance, and macroeconomic conditions.

Bank risk-taking is a multidimensional phenomenon that includes credit risk, liquidity risk, solvency risk, operational risk, and systemic risk. Credit risk is especially central because lending remains one of the core functions of commercial banks and because deterioration in loan quality directly affects profitability, capital adequacy, and financial stability. Evidence from banking markets shows that bank-specific characteristics such as asset quality, capital structure, profitability, efficiency, and market location can significantly shape credit-risk outcomes [1]. These bank-level determinants are particularly relevant in economies where banks differ widely in ownership type, managerial capacity, lending practices, exposure to government-related borrowers, and ability to implement modern risk-management systems. A bank with weak capitalization, poor asset screening, or inadequate liquidity buffers may accept higher risk either because of managerial incentives or because of limited capacity to absorb macroeconomic shocks. Conversely, a bank with stronger capital, better liquidity, and more disciplined governance may be better positioned to resist excessive risk-taking even under competitive or macroeconomic pressure.

Regulation is one of the most important institutional mechanisms designed to constrain excessive bank risk-taking. Prudential rules, capital requirements, liquidity standards, supervisory inspections, deposit insurance arrangements, and disclosure obligations are intended to reduce moral hazard, improve loss-absorption capacity, and protect the financial system from destabilizing behavior. International evidence suggests that capital regulation and deposit insurance can affect bank risk differently across normal and crisis periods, indicating that regulatory tools do not operate in isolation but depend on broader financial conditions and crisis expectations [2]. Recent theoretical and empirical research also emphasizes that optimal bank regulation must account for both credit risk and run risk, since banks may face losses from deteriorating loan portfolios as well as liquidity pressure from depositor withdrawal or funding instability [3]. This is especially relevant for banking systems where confidence, liquidity, and solvency are closely linked and where shocks can rapidly move from credit markets to depositor behavior.

However, regulation can also create unintended incentives when banks attempt to avoid regulatory constraints or shift risk into less visible areas. Research on capital regulation and regulatory avoidance shows that banks may respond to stricter rules not only by reducing risk but also by adjusting their balance sheets in ways that preserve profitability while potentially increasing systemic vulnerability [4]. This implies that the effectiveness of regulation depends not merely on the existence of formal rules but also on enforcement quality, supervisory capacity, transparency, and the ability to detect risk migration. In developing banking environments, where supervisory resources and disclosure quality may be uneven, regulatory avoidance may become particularly important. Banks may formally comply with capital or liquidity requirements while maintaining risky lending practices,

underreporting asset-quality problems, or relying on opaque exposures. Therefore, the regulatory dimension of bank risk-taking must be studied empirically rather than assumed to be uniformly protective.

The relationship between regulation and bank behavior is further complicated by internal governance mechanisms. Internal risk governance, board oversight, audit committees, risk-management committees, and executive accountability can either reinforce or weaken external regulation. Evidence from the Chinese banking sector indicates that both internal risk governance and external capital regulation influence bank risk-taking and performance, suggesting that the most effective control of risk occurs when internal and external governance mechanisms operate together [5]. Similarly, research on Islamic banks shows that risk governance may mediate the relationship between governance structures, risk management, and bank performance, highlighting the role of internal institutional arrangements in translating formal controls into actual risk outcomes [6]. These findings are important for the Iraqi banking sector because regulatory reforms may not achieve their full effect if banks lack effective internal governance systems, qualified risk committees, transparent reporting structures, and disciplined managerial accountability.

Competition is another major determinant of bank risk-taking, but its effect remains theoretically and empirically contested. On one hand, competition can improve efficiency, reduce monopoly power, enhance service quality, and discipline banks through market pressure. On the other hand, intense competition can reduce profit margins and encourage banks to search for yield by expanding risky lending, weakening screening standards, or entering unfamiliar market segments. In dual banking systems, where conventional and Islamic banks coexist, research shows that competition and regulation interact in shaping systemic risk, indicating that the risk effects of competition may vary across institutional and regulatory arrangements [7]. In the Iraqi banking sector, competition may be influenced by ownership structure, bank size, customer concentration, public-sector relationships, and differences between state-owned, privately owned, and foreign-affiliated institutions. Therefore, competition should not be treated simply as a market-structure variable but as a behavioral pressure that interacts with governance, disclosure, and regulatory enforcement.

Corporate governance and diversification also matter in explaining how competition is translated into bank risk-taking. Research has shown that diversification, corporate governance, and regulation are associated with bank risk-taking, suggesting that banks' strategic choices and governance quality can condition the risk implications of market pressure [8]. A bank facing strong competition may respond prudently if it has effective governance, adequate risk controls, and disciplined disclosure practices. In contrast, a bank with weak governance may respond to competition through aggressive credit expansion, concentration in risky borrowers, or insufficient provisioning. This distinction is particularly important in transitional banking systems where some banks may have modernized their risk-management systems while others continue to rely on relationship-based lending or informal credit assessment. Thus, the competition-risk relationship must be examined together with institutional and bank-level controls.

Financial disclosure is a third central pillar in understanding bank risk-taking. Disclosure improves transparency, reduces information asymmetry, strengthens market discipline, and allows regulators, investors, depositors, and other stakeholders to assess risk exposure more accurately. In banking, risk disclosure is especially important because many sources of risk are difficult for outsiders to observe directly. Credit quality, provisioning adequacy, liquidity mismatches, off-balance-sheet exposure, and governance weaknesses may remain hidden unless banks provide detailed and reliable information. A methodological contribution to this literature emphasizes that credit-risk disclosure can be measured through content-analysis frameworks, enabling researchers to assess

the completeness and quality of bank reporting more systematically [9]. This approach is valuable for studies of developing banking systems because formal disclosure requirements may exist, but the depth, clarity, and comparability of actual reporting can vary substantially across banks.

Risk disclosure is closely related to governance quality. Studies of Islamic banks in Indonesia show that corporate governance mechanisms are associated with risk disclosure, indicating that better-governed banks tend to provide more transparent reporting of their risk exposures [10]. Similar evidence from Nigerian banks demonstrates that corporate governance can influence risk disclosures, reinforcing the argument that disclosure is not merely a technical accounting practice but also a governance outcome [11]. The role of audit committees is particularly relevant, as research on listed Nigerian commercial banks suggests that audit committees contribute to corporate risk disclosure by strengthening oversight and improving the credibility of reported information [12]. These findings indicate that disclosure quality depends on internal monitoring structures and that weak governance may lead to incomplete, delayed, or selective risk reporting.

Disclosure also has implications for bank value, earnings quality, and operational risk transparency. Empirical evidence from Jordan shows that risk disclosure and risk-management committees are related to bank value, suggesting that markets and stakeholders may reward banks that communicate risk more effectively and maintain stronger oversight structures [13]. In the Indonesian banking industry, risk disclosure has also been linked to earnings quality, fair value, diversification, and financial stability, indicating that transparent risk reporting can improve the informational quality of financial statements and reduce uncertainty about bank performance [14]. Research on ASEAN-5 banks further shows that risk governance and market competition are associated with operational risk disclosure quality, demonstrating that competitive conditions and governance systems influence how banks communicate operational vulnerabilities [15]. Together, these studies support the view that disclosure quality may not only directly reduce risk-taking but may also moderate the effects of competition and regulation by making bank behavior more visible.

Liquidity risk is another essential dimension of banking stability and is particularly relevant in economies exposed to macroeconomic shocks. Regulation from a liquidity-risk perspective emphasizes that liquidity requirements and supervisory standards help banks maintain resilience against funding stress and sudden withdrawals [16]. In Iraq, liquidity conditions can be influenced by public spending cycles, oil revenue flows, exchange-rate expectations, depositor confidence, and monetary policy adjustments. Banks with weak liquidity positions may become more vulnerable to shocks and may engage in riskier behavior to compensate for funding pressure or profitability constraints. Conversely, adequate liquidity buffers may reduce the need for aggressive asset strategies and provide banks with greater flexibility during periods of instability. Therefore, liquidity must be included as a core bank-specific control when investigating the determinants of risk-taking.

Transparency and accountability are also important channels through which regulation influences risk control. A case study of a Swedish bank shows that regulation can shape risk control through transparency and accountability mechanisms, suggesting that regulatory influence is partly mediated through changes in internal reporting, documentation, and organizational responsibility [17]. This insight is highly relevant for banking systems undergoing institutional reform because formal regulatory adoption may be less important than the extent to which regulation changes actual practices inside banks. If regulation improves accountability, clarifies responsibility for risk decisions, and increases the visibility of risk exposure, it is more likely to reduce excessive risk-taking. However, if regulation remains procedural or symbolic, its effect on risk behavior may be limited.

Therefore, the study of regulation in the Iraqi banking sector should consider not only the formal intensity of supervisory rules but also their relationship with disclosure, governance, and institutional quality.

The Iraqi banking sector provides a meaningful setting for integrating these strands of literature because banks operate at the intersection of prudential reform, competitive restructuring, disclosure modernization, and macroeconomic volatility. The period from 2010 to 2024 includes major economic and institutional changes, including fluctuations in oil prices, fiscal pressures, exchange-rate adjustments, banking-sector reforms, and increasing expectations regarding transparency and compliance. These conditions make it possible to examine whether risk-taking is primarily driven by internal bank characteristics or whether it is shaped more strongly by regulation, competition, disclosure quality, and institutional context. A dynamic panel approach is especially appropriate because bank risk-taking tends to persist over time; a bank with high non-performing loans, weak capital discipline, or aggressive lending behavior in one period may continue to show elevated risk in later periods. Ignoring this persistence may lead to biased estimates and incomplete conclusions.

Despite the growing literature on bank risk-taking, several gaps remain. First, many studies examine regulation, competition, governance, or disclosure separately, while fewer studies evaluate their combined and interactive effects within a single empirical framework. Second, much of the existing evidence comes from advanced economies, large emerging markets, Islamic banking systems, or cross-country samples, while country-specific evidence from Iraq remains limited. Third, disclosure is often treated as a compliance outcome rather than as a potential determinant or moderator of bank risk-taking. Fourth, institutional quality is frequently discussed as background context but is less often modeled as a factor that may strengthen or weaken regulatory effectiveness. Addressing these gaps is important because policy recommendations for banking stability depend on knowing whether risk-taking responds more strongly to prudential rules, competitive conditions, reporting quality, bank-level resilience, or macroeconomic instability.

Accordingly, the present study aims to investigate the determinants of risk-taking behavior among Iraqi commercial banks from the first quarter of 2010 to the fourth quarter of 2024 by examining the roles of regulation, competition, financial disclosure, bank-specific characteristics, macroeconomic conditions, and institutional quality within a dynamic panel-data framework.

2. Methodology

The present study was designed as a quantitative-dominant, causal-explanatory study with a dynamic panel-data structure, supported by qualitative expert interviews for contextual interpretation. The purpose of the design was to examine how regulation, banking competition, financial disclosure, macroeconomic conditions, and institutional quality determine risk-taking behavior among Iraqi commercial banks. The study covered the period from the first quarter of 2010 to the fourth quarter of 2024, allowing the analysis to capture long-term regulatory, economic, and banking-sector developments across different macro-financial conditions. A quarterly data structure was adopted because bank risk-taking, capital adequacy, liquidity, disclosure behavior, and regulatory responses may change considerably within a financial year, especially in an economy exposed to oil-price volatility, exchange-rate fluctuations, and institutional transition. The use of panel data enabled the study to observe both cross-sectional differences among banks and changes within each bank over time.

The statistical population consisted of all licensed Iraqi commercial banks operating during the study period, including state-owned banks, privately owned domestic banks, and foreign-affiliated commercial banks. Banks were included in the final panel if their quarterly financial statements and core supervisory indicators were

sufficiently available for the variables required in the econometric models. Banks with severe data gaps, incomplete reporting across key periods, or discontinuous operational status that prevented reliable longitudinal measurement were excluded from the final analytical sample. The unit of analysis was the bank-quarter observation, meaning that each observation represented the financial, regulatory, competitive, and macroeconomic condition of a given bank in a specific quarter. This structure allowed the study to model the persistence of bank risk-taking and to examine whether changes in regulation, competition, and disclosure practices were associated with subsequent changes in risk exposure.

In addition to the bank-level panel dataset, the study incorporated semi-structured interviews with senior risk managers, financial analysts, banking-sector specialists, and supervisory officials familiar with the Iraqi banking environment. These interviews were not used as the primary basis for statistical inference but were included to enrich the interpretation of the quantitative results and to clarify institutional and operational mechanisms that may not be fully observable in financial statements. The qualitative component was particularly relevant for understanding informal lending practices, supervisory enforcement challenges, perceived regulatory pressure, competition among banks, and the practical implications of International Financial Reporting Standards adoption and disclosure compliance. Participants for the interviews were selected purposively based on professional experience, direct involvement in risk management, banking supervision, financial reporting, or banking-sector analysis, and familiarity with the Iraqi commercial banking system.

Data collection was based on multiple documentary and institutional sources in order to construct a comprehensive and reliable dataset of bank-specific, macroeconomic, regulatory, competitive, disclosure-related, and institutional variables. The primary source of bank-level data consisted of audited quarterly financial statements of Iraqi commercial banks. These statements were used to extract information on total assets, loan portfolios, non-performing loans, capital adequacy, liquidity, profitability, asset quality, deposit structure, funding composition, equity ratios, leverage, and other balance-sheet and income-statement indicators relevant to risk-taking behavior. The main dependent variable of the study was bank risk-taking, operationalized through indicators such as non-performing loan ratios, risk-weighted asset exposure, loan-loss provisions, and capital-risk measures, depending on data availability and model specification. These indicators were selected because they reflect different dimensions of banking risk, including credit risk, solvency pressure, asset-quality deterioration, and risk-bearing capacity.

Regulatory variables were collected from supervisory reports, bulletins, and regulatory documents issued by the Central Bank of Iraq. These data included information on prudential requirements, capital adequacy standards, compliance indicators, supervisory intensity, countercyclical capital measures, liquidity requirements, and regulatory enforcement conditions. Regulatory intensity was treated as a central explanatory construct because prudential supervision can influence banks' incentives to expand risky lending, adjust capital buffers, improve disclosure practices, or shift risk exposure across asset classes. Where direct regulatory indicators were not available in uniform numerical form, regulatory measures were constructed using documented supervisory events, compliance-related indicators, policy changes, and standardized scoring procedures to ensure comparability across time.

Competition in the banking sector was measured using market-structure and bank-level indicators derived from financial statements and Central Bank of Iraq sectoral data. These indicators included measures of market concentration, bank market share, asset concentration, deposit concentration, and lending concentration. The study treated competition as a key determinant of risk-taking because competitive pressure may either discipline banks

by improving efficiency and disclosure quality or encourage excessive risk-taking through lower lending standards and aggressive asset expansion. Financial disclosure was measured through disclosure-related indicators obtained from annual and quarterly reports, audit statements, financial notes, and compliance with reporting standards. Particular attention was given to the completeness, timeliness, and transparency of financial reporting, especially in relation to risk exposure, non-performing loans, capital adequacy, liquidity, and governance-related disclosures.

Macroeconomic variables were collected from international financial and development databases, including the International Monetary Fund and the World Bank. These variables included quarterly real GDP growth, inflation, exchange-rate volatility, oil-price fluctuations, and other macro-financial indicators relevant to Iraq's economic structure. The inclusion of macroeconomic variables was necessary because Iraq's banking sector operates within an oil-dependent economy in which external shocks can influence government spending, borrower repayment capacity, liquidity conditions, credit demand, exchange-rate stability, and bank portfolio risk. Institutional quality and governance-related variables were obtained from international governance datasets, including indicators of regulatory effectiveness, political stability, rule of law, control of corruption, and corruption perception. These variables were incorporated to examine whether the institutional environment strengthened or weakened the effects of regulation, competition, and disclosure on bank risk-taking.

The qualitative data collection tool was a semi-structured interview guide developed in accordance with the main objectives of the study. The guide included open-ended questions on the practical meaning of bank risk-taking in Iraq, the perceived effectiveness of regulatory supervision, the competitive behavior of commercial banks, challenges in disclosure and financial transparency, credit-risk assessment practices, informal lending relationships, and obstacles to the implementation of international reporting standards. The interview format allowed participants to describe their professional experiences while also ensuring that all interviews addressed comparable thematic areas. Interviews were conducted with informed consent, and participants were assured that their responses would be used only for academic purposes and reported without identifying personal or institutional information. The interview data were used to support the interpretation of the econometric findings rather than to replace the statistical analysis.

Data analysis was conducted in several sequential stages. In the first stage, the raw bank-level, regulatory, macroeconomic, institutional, and disclosure-related data were reviewed, cleaned, standardized, and organized into a quarterly panel dataset covering the period from 2010 to 2024. Missing values were examined carefully to distinguish between temporary reporting gaps, structural non-availability, and bank-specific discontinuities. Where appropriate, variables were transformed into ratios, logarithmic forms, growth rates, or standardized indices to improve comparability across banks and over time. Descriptive statistics were first calculated to summarize the central tendency, dispersion, minimum and maximum values, and distributional characteristics of the main study variables. Correlation analysis was then conducted to examine preliminary relationships among risk-taking, regulation, competition, disclosure, institutional quality, and macroeconomic indicators.

The core analytical strategy relied on panel econometric modeling. Static panel models, including pooled ordinary least squares, fixed-effects models, and random-effects models, were estimated in the initial phase to identify baseline relationships among the variables. The fixed-effects model was used to control for unobserved time-invariant characteristics of banks, such as ownership culture, managerial traditions, organizational structure, and long-term business orientation. The random-effects model was also estimated for comparison, and model-selection procedures were applied to determine the most appropriate specification. However, because bank risk-taking is often persistent over time and may be affected by endogeneity, reverse causality, and omitted variables,

the study also employed dynamic panel modeling through the System-Generalized Method of Moments estimator. This approach was particularly suitable because current bank risk-taking may be influenced by previous levels of risk exposure, while regulation, disclosure, capital adequacy, and profitability may themselves respond to earlier risk conditions.

The dynamic models included lagged dependent variables to capture risk persistence and adjustment behavior over time. Explanatory variables included bank-specific factors such as capital adequacy, profitability, liquidity, bank size, non-performing loans, funding structure, and ownership type; regulatory variables such as supervisory intensity and capital requirements; competition variables such as market concentration and bank market share; disclosure variables reflecting financial transparency and reporting quality; macroeconomic variables such as GDP growth, inflation, exchange-rate volatility, and oil-price changes; and institutional variables such as regulatory effectiveness, political stability, and corruption perception. Interaction terms were introduced where theoretically justified, particularly to test whether institutional quality moderated the effects of regulation and competition on risk-taking. This allowed the analysis to determine whether stronger governance environments reduced excessive risk-taking or enhanced the effectiveness of prudential regulation.

Several diagnostic and robustness procedures were performed to ensure the reliability of the results. Multicollinearity was assessed using correlation matrices and variance inflation factors. Heteroskedasticity and serial correlation were examined using appropriate panel-data diagnostic tests, and robust standard errors were applied where necessary. Cross-sectional dependence was also considered because banks operating within the same national financial system may be affected by common shocks, regulatory changes, or macroeconomic pressures. For the dynamic System-GMM models, instrument validity and model specification were evaluated using standard post-estimation tests, including tests for serial correlation and overidentifying restrictions. The number and structure of instruments were controlled to reduce the risk of instrument proliferation and biased estimation.

Additional robustness checks were conducted by estimating alternative specifications of the dependent variable, using different measures of competition and disclosure, and comparing results across bank ownership categories, including state-owned, privately owned, and foreign-affiliated banks. The sample was also examined across different regulatory and macroeconomic periods to determine whether the determinants of risk-taking changed under different policy or economic conditions. Principal component analysis was used where necessary to construct composite indices from highly related regulatory, disclosure, or institutional indicators, thereby reducing dimensionality and improving measurement consistency. The qualitative interview data were analyzed thematically, with attention to recurring patterns related to regulatory enforcement, competition, lending practices, financial disclosure, and institutional constraints. The qualitative findings were used to contextualize the quantitative results and to explain mechanisms that could not be fully captured through numerical indicators alone. Through this integrated analytical strategy, the study produced a comprehensive empirical assessment of the determinants of risk-taking behavior in Iraqi commercial banks.

3. Findings and Results

The final analytical sample consisted of Iraqi commercial banks that had sufficient quarterly financial and supervisory data for the period from the first quarter of 2010 to the fourth quarter of 2024. After screening the original dataset for missing values, reporting discontinuities, and incomplete regulatory or disclosure indicators, the final unbalanced panel included 38 commercial banks and 2,036 bank-quarter observations. In terms of

ownership structure, 7 banks were state-owned, representing 18.4% of the sample; 24 banks were privately owned domestic commercial banks, representing 63.2%; and 7 banks were foreign-affiliated commercial banks, representing 18.4%. The average operational age of the banks was 18.6 years, with a standard deviation of 9.3 years, indicating that the sample included both long-established institutions and relatively newer market entrants. In terms of institutional presence, 21 banks were listed on the Iraq Stock Exchange, while the remaining banks operated as licensed commercial banks without active stock-market listing during the full study period. The qualitative component included 22 expert participants, consisting of senior risk managers, financial analysts, audit and disclosure specialists, and supervisory professionals familiar with the Iraqi banking sector. Their average professional experience was 12.7 years, with experience ranging from 6 to 24 years. These participants provided contextual insight into risk-management behavior, regulatory compliance, financial disclosure practices, competitive pressure, and practical challenges in applying prudential and reporting standards in Iraqi commercial banking.

Table 1. Descriptive Statistics of the Main Study Variables

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
Bank risk-taking index	2,036	0.214	0.117	0.032	0.681
Non-performing loan ratio	2,036	0.118	0.074	0.011	0.426
Capital adequacy ratio	2,036	0.167	0.052	0.083	0.342
Liquidity ratio	2,036	0.312	0.136	0.071	0.724
Return on assets	2,036	0.014	0.019	-0.062	0.086
Bank size, natural log of total assets	2,036	13.860	1.214	10.932	16.774
Regulatory intensity index	2,036	0.536	0.181	0.184	0.891
Banking competition pressure index	2,036	0.472	0.156	0.121	0.814
Financial disclosure quality index	2,036	0.614	0.173	0.203	0.918
Institutional quality index	2,036	0.407	0.126	0.169	0.672
Real GDP growth	2,036	0.023	0.041	-0.112	0.092
Inflation rate	2,036	0.048	0.036	-0.004	0.184
Exchange-rate volatility	2,036	0.052	0.031	0.006	0.167
Oil-price volatility	2,036	0.086	0.058	0.009	0.274

Table 1 presents the descriptive statistics for the main variables used in the empirical analysis. The mean value of the bank risk-taking index was 0.214, with a standard deviation of 0.117, indicating moderate but heterogeneous levels of risk exposure across Iraqi commercial banks and across quarters. The non-performing loan ratio averaged 11.8%, suggesting that credit-risk exposure represented a substantial component of banking-sector vulnerability during the study period. The capital adequacy ratio had a mean of 16.7%, indicating that the average bank maintained capital levels above minimum prudential thresholds; however, the observed range from 8.3% to 34.2% shows that capital strength differed considerably across banks. The liquidity ratio averaged 31.2%, reflecting a relatively strong liquidity position in the aggregate, although the wide dispersion indicates that some banks operated with substantially weaker liquidity buffers. Profitability, measured by return on assets, averaged 1.4%, but the negative minimum value shows that some bank-quarter observations involved loss-making conditions. The average disclosure quality index was 0.614, suggesting a moderate level of financial transparency, while the minimum value of 0.203 indicates that some banks had weak disclosure practices, particularly in relation to risk exposure, asset quality, and governance-related reporting. The regulatory intensity index had a mean of 0.536, implying a gradual strengthening of prudential oversight during the study period, although the variation across quarters reflects changes in supervisory enforcement, compliance pressure, and regulatory reform. The banking

competition pressure index averaged 0.472, suggesting that competitive pressure was neither extremely weak nor uniformly strong, but varied across banks and over time. Macroeconomic conditions also displayed substantial volatility, especially in relation to GDP growth, exchange-rate volatility, and oil-price volatility, confirming the importance of controlling for macroeconomic instability in explaining bank risk-taking in Iraq.

Table 2. Correlation Matrix and Multicollinearity Diagnostics

Variable	Risk-taking	Regulation	Competition	Disclosure	Capital Adequacy	Liquidity	ROA	Bank Size	GDP Growth	Inflation	VIF
Risk-taking	1.000										
Regulation	-0.291	1.000									1.84
Competition	0.318	-0.164	1.000								1.72
Disclosure	-0.342	0.276	-0.219	1.000							2.03
Capital adequacy	-0.284	0.238	-0.141	0.251	1.000						1.96
Liquidity	-0.207	0.194	-0.118	0.212	0.263	1.000					1.67
ROA	-0.146	0.091	-0.074	0.162	0.184	0.135	1.000				1.41
Bank size	0.124	0.157	0.206	0.185	0.092	-0.066	0.118	1.000			1.58
GDP growth	-0.176	0.083	-0.092	0.064	0.119	0.087	0.133	0.051	1.000		1.49
Inflation	0.224	-0.106	0.137	-0.128	-0.162	-0.104	-	0.073	-0.214	1.000	1.62
							0.089				

Table 2 shows the correlation structure among the principal explanatory variables and the bank risk-taking index. The correlations were consistent with the theoretical expectations of the study. Regulatory intensity was negatively correlated with bank risk-taking, indicating that stronger supervisory pressure was associated with lower levels of risk exposure. Financial disclosure quality also had a negative correlation with risk-taking, suggesting that banks with more transparent and complete reporting practices tended to maintain more prudent risk profiles. Capital adequacy and liquidity were negatively related to risk-taking, showing that banks with stronger capital and liquidity positions were less exposed to excessive risk. By contrast, competition pressure was positively correlated with risk-taking, indicating that more intense competitive conditions may encourage banks to expand credit, reduce lending standards, or pursue higher-yielding but riskier assets. Inflation was also positively associated with risk-taking, suggesting that macroeconomic instability may weaken borrower repayment capacity and increase portfolio vulnerability. The variance inflation factor values ranged from 1.41 to 2.03, remaining well below the conventional threshold of concern. This confirms that multicollinearity did not represent a serious threat to the stability of the regression estimates, and that the explanatory variables could be included together in the panel models without producing excessive redundancy.

Table 3. Static Panel Regression Estimates for the Determinants of Bank Risk-Taking

Variable	Pooled OLS	Fixed Effects	Random Effects
Regulatory intensity index	-0.073*** (0.015)	-0.058*** (0.014)	-0.064*** (0.013)
Banking competition pressure index	0.052*** (0.014)	0.047*** (0.013)	0.049*** (0.012)
Financial disclosure quality index	-0.083*** (0.018)	-0.076*** (0.017)	-0.080*** (0.016)
Capital adequacy ratio	-0.214*** (0.052)	-0.198*** (0.049)	-0.205*** (0.047)
Liquidity ratio	-0.057** (0.024)	-0.048** (0.022)	-0.053** (0.021)
Return on assets	-0.612** (0.247)	-0.536** (0.231)	-0.574** (0.226)
Bank size	0.013** (0.006)	0.009* (0.005)	0.011** (0.005)
Institutional quality index	-0.039** (0.018)	-0.034** (0.017)	-0.037** (0.016)
Real GDP growth	-0.004** (0.002)	-0.003** (0.001)	-0.003** (0.001)
Inflation rate	0.003** (0.001)	0.002** (0.001)	0.002** (0.001)

Exchange-rate volatility	0.216*** (0.061)	0.184*** (0.056)	0.197*** (0.054)
Oil-price volatility	0.041** (0.019)	0.036** (0.017)	0.038** (0.016)
Constant	0.198*** (0.047)	0.162*** (0.041)	0.174*** (0.039)
Bank fixed effects	No	Yes	No
Quarter fixed effects	Yes	Yes	Yes
Observations	2,036	2,036	2,036
Number of banks	38	38	38
R-squared	0.421	0.374	0.402
F/Wald statistic	28.73***	24.16***	31.48***
Hausman test		36.52***	

Table 3 reports the static panel regression estimates using pooled ordinary least squares, fixed-effects, and random-effects specifications. The results were highly consistent across the three models, indicating that the direction and significance of the main relationships were not dependent on a single estimation technique. Regulatory intensity had a negative and statistically significant coefficient in all specifications, showing that stronger regulation was associated with lower bank risk-taking. In the fixed-effects model, a one-unit increase in the regulatory intensity index was associated with a 0.058-unit reduction in the risk-taking index, holding other factors constant. This result suggests that prudential supervision, compliance monitoring, and regulatory enforcement had a disciplining effect on Iraqi commercial banks. Banking competition pressure was positively and significantly associated with risk-taking, indicating that stronger competition may have encouraged banks to accept higher levels of credit or portfolio risk. This finding is consistent with the view that competition can reduce profit margins and push banks toward riskier lending strategies. Financial disclosure quality had a negative and statistically significant effect on risk-taking, confirming that more transparent banks tended to engage in more prudent behavior. Capital adequacy and liquidity were also negatively associated with risk-taking, indicating that better-capitalized and more liquid banks were less likely to adopt aggressive risk positions. Profitability, measured by return on assets, was negatively related to risk-taking, suggesting that financially stronger banks had less incentive to compensate for weak performance through risky asset expansion. Bank size had a small but positive coefficient, implying that larger banks may have greater capacity to undertake risk, possibly due to wider asset portfolios, stronger political connections, or expectations of supervisory support. Among macroeconomic variables, GDP growth reduced risk-taking, while inflation, exchange-rate volatility, and oil-price volatility increased it. This confirms that macroeconomic instability played a meaningful role in shaping the risk behavior of Iraqi commercial banks. The significant Hausman test supported the use of the fixed-effects model over the random-effects model, indicating that unobserved bank-specific characteristics were correlated with the explanatory variables and needed to be controlled in the estimation.

Table 4. Dynamic System-GMM Estimates of Bank Risk-Taking

Variable	Model 1: Baseline Dynamic Model	Model 2: Interaction Model	Model 3: Ownership-Robust Model
Lagged bank risk-taking index	0.614*** (0.044)	0.589*** (0.047)	0.602*** (0.045)
Regulatory intensity index	-0.041*** (0.013)	-0.038*** (0.012)	-0.040*** (0.012)
Banking competition pressure index	0.034** (0.014)	0.031** (0.013)	0.033** (0.013)
Financial disclosure quality index	-0.052*** (0.016)	-0.049*** (0.015)	-0.051*** (0.015)
Capital adequacy ratio	-0.136*** (0.041)	-0.128*** (0.039)	-0.132*** (0.040)
Liquidity ratio	-0.032* (0.018)	-0.030* (0.017)	-0.031* (0.017)
Return on assets	-0.418** (0.204)	-0.397** (0.196)	-0.406** (0.198)
Bank size	0.009* (0.005)	0.008* (0.004)	0.009* (0.004)

Institutional quality index	-0.031** (0.014)	-0.029** (0.013)	-0.030** (0.013)
Real GDP growth	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)
Inflation rate	0.002* (0.001)	0.002* (0.001)	0.002* (0.001)
Exchange-rate volatility	0.142*** (0.049)	0.136*** (0.047)	0.139*** (0.048)
Oil-price volatility	0.026** (0.013)	0.025** (0.012)	0.025** (0.012)
Regulatory intensity × Institutional quality		-0.027** (0.012)	-0.026** (0.012)
Competition pressure × Disclosure quality		-0.034** (0.016)	-0.032** (0.015)
Private ownership × Competition pressure			0.018* (0.010)
Foreign affiliation × Disclosure quality			-0.024** (0.011)
Constant	0.091** (0.039)	0.087** (0.037)	0.089** (0.038)
Observations	1,998	1,998	1,998
Number of banks	38	38	38
Number of instruments	29	31	33
AR(1) test p-value	0.000	0.000	0.000
AR(2) test p-value	0.281	0.304	0.296
Hansen test p-value	0.327	0.351	0.338
Difference-in-Hansen test p-value	0.412	0.438	0.421

Table 4 presents the dynamic System-GMM estimates, which were used to address the persistence of bank risk-taking, unobserved heterogeneity, simultaneity, and potential endogeneity among the explanatory variables. The lagged risk-taking index was positive and statistically significant across all three models, with coefficients ranging from 0.589 to 0.614. This indicates that bank risk-taking in Iraq was strongly persistent over time, meaning that banks with higher risk exposure in one quarter were more likely to maintain higher risk exposure in subsequent quarters. Even after accounting for this persistence, regulatory intensity remained negative and statistically significant, confirming that stronger prudential regulation reduced risk-taking behavior. Financial disclosure quality also retained a negative and significant coefficient, demonstrating that transparency and reporting discipline were associated with lower risk exposure. Competition pressure remained positive and significant, suggesting that competitive market conditions continued to increase risk-taking even after controlling for dynamic adjustment and endogeneity. Capital adequacy, liquidity, profitability, and institutional quality all reduced risk-taking, while exchange-rate volatility, oil-price volatility, and inflation increased it. The interaction model provided additional insight into the conditional nature of the results. The negative coefficient for regulatory intensity interacted with institutional quality indicates that regulation became more effective in reducing bank risk-taking when institutional conditions were stronger. This means that prudential rules were not sufficient by themselves; their effectiveness depended on the credibility, consistency, and enforceability of the institutional environment. The negative interaction between competition pressure and disclosure quality shows that financial disclosure weakened the risk-enhancing effect of competition. In other words, when banks disclosed more complete and reliable information, competitive pressure was less likely to translate into excessive risk-taking. The ownership-robust model also showed that private ownership intensified the positive relationship between competition and risk-taking, while foreign affiliation strengthened the risk-reducing effect of disclosure quality. The diagnostic statistics supported the validity of the dynamic models. The AR(1) test was significant, as expected in first-differenced dynamic panel models, while the AR(2) test was not significant, indicating no evidence of second-order

serial correlation. The Hansen and Difference-in-Hansen tests were also non-significant, supporting the validity of the instruments and the appropriateness of the model specification.

Table 5. Summary of Hypothesis-Level Findings

Hypothesized relationship	Direction of estimated effect	Statistical support	Interpretation
Regulation reduces bank risk-taking	Negative	Supported	Stronger regulatory intensity was associated with lower risk-taking across static and dynamic models.
Competition increases bank risk-taking	Positive	Supported	Higher competitive pressure encouraged risk-taking, especially among privately owned banks.
Financial disclosure reduces bank risk-taking	Negative	Supported	Higher disclosure quality was associated with more prudent banking behavior and lower risk exposure.
Capital adequacy reduces bank risk-taking	Negative	Supported	Better-capitalized banks showed lower risk-taking, reflecting stronger loss-absorption capacity.
Liquidity reduces bank risk-taking	Negative	Supported	Banks with stronger liquidity positions were less likely to engage in aggressive risk-taking.
Macroeconomic instability increases bank risk-taking	Positive	Supported	Inflation, exchange-rate volatility, and oil-price volatility were positively associated with risk exposure.
Institutional quality reduces bank risk-taking	Negative	Supported	Stronger institutional conditions reduced excessive risk-taking and strengthened regulatory effectiveness.
Institutional quality moderates the regulation-risk relationship	Negative moderating effect	Supported	Regulation had a stronger risk-reducing effect when institutional quality was higher.
Disclosure moderates the competition-risk relationship	Negative moderating effect	Supported	Disclosure weakened the tendency of competition to increase risk-taking.
Ownership structure affects risk-taking behavior	Conditional effect	Supported	Private banks were more sensitive to competition-driven risk, while foreign-affiliated banks benefited more from disclosure discipline.

Table 5 summarizes the main hypothesis-level findings of the study. Overall, the results provide strong evidence that bank risk-taking in Iraq was shaped by a combination of regulatory, competitive, disclosure-related, institutional, macroeconomic, and bank-specific factors. The findings supported the central assumption that regulation plays a risk-reducing role, but they also showed that the effect of regulation depends on the broader institutional context in which supervision is implemented. The positive effect of competition on risk-taking indicates that competitive pressure may create incentives for banks to pursue higher-yielding and riskier activities, particularly in a developing banking system where disclosure discipline and enforcement mechanisms are still evolving. The consistent negative effect of financial disclosure quality demonstrates that transparency functions as an important governance mechanism by reducing information asymmetry, strengthening market discipline, and discouraging excessive risk-taking. The findings also confirm the importance of internal bank resilience, as capital adequacy, liquidity, and profitability were all associated with lower risk exposure. At the macroeconomic level, the results show that inflation, exchange-rate volatility, and oil-price volatility increased risk-taking, highlighting the vulnerability of Iraqi banks to broader economic instability. The moderating results are especially important because they show that regulatory and market mechanisms do not operate independently. Stronger institutions increased the effectiveness of regulation, while better disclosure reduced the harmful risk effects of competition. Therefore, the findings suggest that bank risk-taking in Iraq cannot be explained solely by internal bank characteristics; rather, it emerges from the interaction between prudential regulation, market structure, transparency, ownership, and macro-institutional conditions.

4. Discussion and Conclusion

The findings of the present study provide a comprehensive explanation of bank risk-taking behavior in Iraqi commercial banks by demonstrating that risk exposure is shaped by the combined influence of regulation, competition, financial disclosure, internal bank resilience, macroeconomic instability, and institutional quality. The descriptive results first showed that Iraqi commercial banks operated with moderate but heterogeneous levels of risk-taking during the period from the first quarter of 2010 to the fourth quarter of 2024. The average bank risk-taking index indicated that risk was not uniformly distributed across the sector, while the non-performing loan ratio confirmed that credit risk remained a major source of vulnerability. This pattern is consistent with evidence showing that bank-specific conditions, especially asset quality, profitability, capitalization, and local market characteristics, are central to explaining credit-risk exposure [1]. In the Iraqi context, variation across state-owned, privately owned, and foreign-affiliated banks suggests that risk-taking cannot be explained by macroeconomic conditions alone; rather, it reflects differences in ownership structure, governance systems, capital strength, lending practices, and capacity to comply with regulatory and disclosure requirements.

One of the most important findings of the study was the negative and statistically significant effect of regulatory intensity on bank risk-taking across both static and dynamic models. This result indicates that stronger prudential supervision, compliance pressure, capital regulation, and regulatory enforcement reduced excessive risk-taking among Iraqi commercial banks. The finding supports the broader argument that capital regulation and supervisory mechanisms can discipline bank behavior by increasing loss-absorption capacity and constraining incentives for excessive risk exposure [2]. It also aligns with the view that optimal bank regulation must consider multiple sources of financial instability, including both credit risk and run risk, because banks may become vulnerable not only through poor loan quality but also through liquidity pressure and confidence shocks [3]. In the present study, regulation remained significant even after controlling for capital adequacy, liquidity, profitability, bank size, and macroeconomic conditions, suggesting that regulatory pressure had an independent effect on risk-taking behavior.

However, the results also showed that regulation does not operate mechanically or uniformly. The negative interaction between regulatory intensity and institutional quality indicated that regulation became more effective in reducing risk-taking when institutional quality was stronger. This finding is theoretically important because it suggests that prudential rules require credible enforcement, transparent institutional procedures, and consistent supervisory authority to produce meaningful behavioral change. The result is consistent with research showing that banks may respond to regulation through avoidance strategies when monitoring is incomplete or when regulatory constraints can be bypassed through balance-sheet adjustments or risk migration [4]. Therefore, in Iraq, formal regulatory strengthening may not be sufficient unless it is supported by institutional credibility, supervisory consistency, and effective mechanisms for detecting hidden risk. This interpretation is also supported by studies emphasizing that regulation influences risk control through transparency and accountability mechanisms inside banking organizations [17]. Regulation reduces risk most effectively when it changes internal practices, improves responsibility for risk decisions, and strengthens documentation and reporting discipline.

The study also found that competition pressure had a positive and statistically significant effect on bank risk-taking. This means that stronger competition among Iraqi commercial banks was associated with higher levels of risk exposure. The result supports the competition-fragility perspective, which argues that intense competition can reduce margins and encourage banks to search for higher returns through riskier lending, weaker borrower screening, or more aggressive asset expansion. This finding is consistent with evidence that competition and

regulation jointly influence systemic risk in banking systems, particularly where different banking models and regulatory regimes coexist [7]. In the Iraqi banking sector, competitive pressure may encourage private commercial banks to expand lending or pursue higher-yielding clients in order to maintain profitability and market share. This mechanism was further supported by the ownership-robust model, which showed that private ownership intensified the positive association between competition and risk-taking. The result suggests that privately owned banks may be more sensitive to market pressure than state-owned banks, possibly because they face stronger profitability expectations and less implicit protection from public-sector structures.

At the same time, the effect of competition cannot be understood independently from governance and disclosure. The finding that financial disclosure quality weakened the risk-enhancing effect of competition indicates that transparency can act as a disciplining mechanism in competitive banking environments. When banks provide more complete, timely, and reliable information about their risk exposure, market participants and regulators are better able to monitor their behavior, reducing the likelihood that competitive pressure will lead to excessive hidden risk. This result is consistent with research in the ASEAN-5 banking sector showing that risk governance and market competition are associated with operational risk disclosure quality [15]. It also aligns with evidence that diversification, corporate governance, regulation, and bank risk-taking are interconnected, meaning that competition may produce different risk outcomes depending on the strength of internal control and governance systems [8]. Thus, competition is not inherently destabilizing, but it becomes more problematic when disclosure is weak, governance is ineffective, and regulatory monitoring is limited.

Financial disclosure quality emerged as one of the strongest risk-reducing determinants in the study. The negative and statistically significant coefficient of disclosure quality across the regression models indicates that banks with more transparent reporting practices had lower risk-taking levels. This finding supports the argument that disclosure reduces information asymmetry, enhances market discipline, improves supervisory monitoring, and discourages opportunistic or excessive risk behavior. The result is strongly aligned with methodological and empirical research emphasizing the importance of measuring bank credit-risk disclosure systematically through content analysis and structured disclosure indicators [9]. In the context of Iraq, disclosure quality is particularly important because risk may not be fully visible through aggregate financial ratios alone. Detailed reporting on non-performing loans, provisioning, liquidity, capital adequacy, related-party exposure, and risk-management procedures can help reveal the actual risk position of banks and improve accountability.

The findings also support previous studies connecting risk disclosure with governance and financial reporting quality. Evidence from Islamic banks in Indonesia indicates that corporate governance mechanisms influence the level and quality of risk disclosure [10]. Similarly, Nigerian banking evidence shows that corporate governance is associated with risk disclosure practices, suggesting that stronger oversight structures improve the transparency of banking institutions [11]. The role of audit committees is also relevant, as previous research has shown that audit committee structures contribute to corporate risk disclosure in listed Nigerian commercial banks [12]. The present study extends these findings to the Iraqi banking context by showing that disclosure is not only an outcome of governance but also a determinant of risk-taking behavior. Banks with higher disclosure quality appear less likely to maintain excessive risk, possibly because transparent reporting exposes risky behavior to regulators, investors, auditors, and market participants.

The significance of disclosure is also supported by research linking risk disclosure to bank value, earnings quality, financial stability, and fair-value reporting. The present results are consistent with evidence from Jordan showing that risk disclosure and risk-management committees are related to bank value [13]. This suggests that

disclosure can improve stakeholder confidence by signaling stronger governance and better risk oversight. The findings also align with research on Indonesian banking industries showing that risk disclosure is associated with earnings quality, diversification, fair value, and financial stability [14]. In the present study, disclosure reduced risk-taking directly and also moderated the relationship between competition and risk, indicating that financial transparency plays both a preventive and corrective role. It reduces the probability of hidden risk accumulation while also limiting the extent to which competitive pressure translates into destabilizing behavior.

Bank-specific resilience variables also produced results consistent with theoretical expectations. Capital adequacy had a negative and significant effect on risk-taking, indicating that better-capitalized Iraqi banks were less likely to engage in excessive risk exposure. This finding supports the regulatory logic that capital buffers reduce moral hazard and improve banks' ability to absorb losses. It is consistent with international evidence showing that capital regulation affects bank risk under both normal and crisis conditions [2]. Liquidity also had a negative effect on risk-taking, suggesting that banks with stronger liquidity positions were less likely to pursue aggressive risk strategies. This result aligns with research emphasizing the role of regulation from a liquidity-risk perspective and the importance of liquidity standards in promoting banking stability [16]. In Iraq, where liquidity conditions may be affected by oil revenue cycles, government spending, exchange-rate expectations, and depositor confidence, liquidity resilience appears especially important in reducing banks' need to compensate for funding pressure through risky asset expansion.

Profitability was also negatively associated with risk-taking, showing that more profitable banks tended to assume lower risk. This finding may indicate that financially stable banks do not need to pursue excessive risk to compensate for weak earnings. Conversely, less profitable banks may have stronger incentives to expand into riskier lending or high-yield assets. Bank size had a small positive effect on risk-taking, suggesting that larger banks may have greater capacity or willingness to assume risk. This may reflect broader portfolios, stronger market access, greater exposure to large borrowers, or expectations of institutional support. These findings are consistent with studies showing that internal governance and external regulation jointly affect bank risk-taking and performance [5]. They also support evidence that risk governance mediates the relationship between governance, risk management, and bank performance, indicating that internal systems are essential for transforming financial capacity into prudent behavior [6].

Macroeconomic variables were also significant determinants of risk-taking. Real GDP growth reduced risk-taking, while inflation, exchange-rate volatility, and oil-price volatility increased it. These findings are particularly meaningful in the Iraqi context because the national economy is strongly exposed to oil-price fluctuations and external shocks. During periods of economic expansion, borrowers may have stronger repayment capacity and banks may experience lower credit deterioration. In contrast, inflation and exchange-rate volatility can weaken borrower balance sheets, increase uncertainty, disrupt pricing decisions, and increase the probability of non-performing loans. Oil-price volatility can also affect fiscal stability, liquidity conditions, government-related payments, and business-sector performance. These results confirm that bank risk-taking in Iraq is partly a macro-financial phenomenon and cannot be explained only by bank-level governance or regulation.

The dynamic System-GMM models provided additional evidence that bank risk-taking was persistent over time. The significant lagged risk-taking coefficient indicates that banks with higher risk exposure in one quarter tended to maintain elevated risk in subsequent quarters. This persistence suggests that risk-taking is embedded in organizational routines, lending policies, client structures, governance quality, and balance-sheet composition. It also means that corrective regulation may require time before producing observable improvements. The absence

of second-order serial correlation and the validity of the instruments supported the reliability of the dynamic estimates. Taken together, the findings indicate that Iraqi bank risk-taking is best understood as the outcome of a dynamic interaction among regulatory enforcement, competitive incentives, disclosure quality, internal resilience, institutional strength, and macroeconomic instability.

The study has several limitations. First, although the panel dataset covered a long quarterly period from 2010 to 2024, the analysis depended on the availability and consistency of bank-level financial statements and supervisory data, which may vary across institutions and periods. Second, some constructs, such as regulatory intensity, disclosure quality, institutional quality, and competition pressure, required index construction, and although these indices were developed systematically, they may not capture all qualitative dimensions of regulatory enforcement, market behavior, or reporting transparency. Third, the qualitative interviews were used to contextualize the findings but were not designed as a full independent qualitative study. Fourth, because the study focused on Iraqi commercial banks, the findings are context-specific and should be generalized cautiously to other banking systems with different institutional, regulatory, and macroeconomic structures.

Future research should extend this study by comparing Iraqi banks with banks in other oil-dependent and post-conflict economies to determine whether similar mechanisms explain bank risk-taking in comparable institutional settings. Future studies may also examine differences between conventional and Islamic banking institutions if sufficient disaggregated data become available. More detailed research could investigate specific types of risk, including credit risk, liquidity risk, operational risk, market risk, and systemic risk, rather than relying on a composite risk-taking index. Future researchers should also consider using textual analysis of annual reports, machine-learning-based disclosure scoring, and more granular loan-level data to improve the measurement of risk disclosure and credit exposure. In addition, longitudinal qualitative research with regulators, bank executives, auditors, and borrowers could provide deeper insight into how formal rules are interpreted and implemented in practice.

The findings suggest several practical implications for regulators, bank managers, auditors, and policymakers. Regulators should strengthen supervisory enforcement while also improving institutional consistency, because regulation becomes more effective when supported by credible governance and transparent implementation. Banks should improve internal risk governance, capital planning, liquidity management, and disclosure systems to reduce excessive risk exposure and increase stakeholder confidence. Particular attention should be paid to the risk behavior of privately owned banks under competitive pressure, as these institutions may be more inclined to expand risk in order to preserve profitability and market share. Audit committees and risk-management committees should be strengthened to improve the completeness and reliability of risk reporting. Policymakers should also recognize that macroeconomic instability directly affects banking risk, meaning that financial-sector stability requires coordination between prudential regulation, monetary policy, fiscal management, and broader institutional reform.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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