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Competition, Credit Risk and Banks' Franchise Value: Evidence from Kuwait and COVID-19 Policy Insights

Abstract

Purpose: This paper investigates the franchise-value paradigm theory proposed by Keeley (1990) in relation to the competition-credit risk nexus in Kuwait's banking sector before and during the COVID-19 pandemic. The study explores the theories of fragility hypothesis, stability, and the non-linear argument, which are subjects of controversy to assess the competitive behavior regarding credit risk.

Study design/methodology/approach: Panel data techniques were utilized (OLS, Random and Fixed effects). We divided the sample into two periods: 2010-2019 and 2020-2021 to capture the impact of the external shock.

Sample and data: The sample includes five commercial banks operating in Kuwait, with data sourced from annual reports spanning 2010 to 2021.

Results: The findings support the "neutral view", indicating that intensified competition among banks erodes banks' franchise value and induces credit risk, as posited by the "fragility hypothesis". Furthermore, higher concentration increases credit risk and insolvency, aligning with the too-big-to-fail and competition-stability notions (Boyd & De Nicolo, 2005; Mishkin, 2006). Notably, during the COVID-19 period, banks' capital buffers succeeded in absorbing credit risk, nonetheless failed to diversify away from interest-income activities.

Originality/value: The study contributes by examining competitive behavior and pricing strategies above marginal costs. It also explores the impact by considering a combination of bank-control variables such as banks' capital, size, profitability, solvency, and diversification, in relation to competition dynamics and the presence of COVID-19.

Research limitations/implications: These findings offer perceptions for policymakers towards dealing with the competition-stability nexus and provide a policy implication on how regulators ought to behave during financial turmoil.

Keywords: Franchise Value, Competition, Credit Risk, COVID-19.

JEL classification: G21, G18, G32, G38

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الملخص

العلاقة بين المنافسة ومخاطر الائتمان وقيمة امتياز البنوك: أدلة من قطاع البنوك في الكويت ورؤى وسياسات كوفيد-19

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هدف الدراسة: تتناول هذه الدراسة نظرية قيمة الامتياز التي اقترحها Keeley (1990) بشأن العلاقة بين المنافسة ومخاطر الائتمان في قطاع البنوك في الكويت قبل جائحة كوفيد-19 وبعدها. تستكشف الدراسة نظريات جدل لتقييم السلوك التنافسي فيما يتعلق بمخاطر الائتمان. تصميم/ منهجية/ طريقة الدراسة: استخدمت الدراسة تقنيات بيانات اللوحة؛ مثل الانحدار الخطي العادي، والتأثيرات العشوائية والثابتة، قسّمت العينة إلى فترتين: 2010-2019 و2020-2021 لالتقاط الصدمة الخارجية.

عينة الدراسة وبياناتها: تتضمن العينة خمسة بنوك تجارية تعمل في الكويت، وقد جمعت البيانات من التقارير السنوية خلال الفترة من 2010 إلى 2021.

نتائج الدراسة: تدعم النتائج "الحجة غير الخطية"، مشيرة إلى أن التنافس المكثف بين البنوك يؤدي إلى تآكل قيمة الامتياز لها ويحفز مخاطر الائتمان، كما يفترض ذلك فرضية الهشاشة. فضلاً عن ذلك، يزيد التركيز الأعلى من مخاطر الائتمان والإفلاس؛ مما يتفق مع الفكرة الشهيرة بأن البنوك الكبيرة لا يمكن أن تفشل وأن المنافسة تسهم في الاستقرار (Boyd & De Nicolo, 2005; Mishkin, 2006). ومن الجدير بالذكر ان رؤوس الأموال الاحتياطية للبنوك نجحت في استيعاب مخاطر الائتمان خلال فترة كوفيد-19، لكنها فشلت في التنوع بعيداً عن الأنشطة المتعلقة بالدخل من الفوائد.

أصالة الدراسة: تعرض الدراسة للسلوك التنافسي وإستراتيجيات التسعير فوق التكاليف الحدية. وتستكشف التأثير من خلال مراعاة مجموعة من المتغيرات التحكمية للبنك؛ مثل رأس المال والحجم والربحية والسيولة والتنوع فيما يتعلق بديناميكيات التنافس ووجود كوفيد-19.

حدود الدراسة وتطبيقاتها: تقدم هذه النتائج تصورات لصناع السياسات بشأن كيفية التعامل مع العلاقة بين التنافس والاستقرار وتقدم توصيات سياسية حول سلوك الرقابة في أثناء التعامل مع التقلبات المالية.

الكلمات المفتاحية: قيمة الامتياز التجاري، المنافسة، مخاطر الائتمان، كوفيد-19.

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Introduction

The banking sector, in general, is one of the key factors behind the development and stability of countries' economies (Atyeh & Yasin, 2015). As a crucial part of the financial system, banks create liquidity by playing the role of financial intermediary between borrowers and lenders of the funds (Gorton & Winton, 2017). In Kuwait, the banking system has a particular importance in relation to its economy to become knowledge-based economy and reduce the high dependency on oil and gas export revenue. Similarly, in the Gulf Cooperation Council region, all banks have historically been protected from foreign competition because of the restrictions and regulations imposed by governments (Chowdhury & Rasid, 2016).

The debate on the “franchise value paradigm”¹ and the relationship between competition and banking stability is still ambiguous since the 1990s (Khattak & Ali, 2021). There are three views on the impact of competition on credit risk². The first view is the “competition fragility” by Keeley (1990), which argues that excessive competition contributes to the erosion of banks' franchise value and increases bank risk-taking, while a concentrated banking sector (low competition) leads to a solid banking system. In contrast, “competition stability” argued by Boyd and De Nicolo (2005) denotes that intensified competition reduces credit risk in banking, and the reduction in lending rates lowers the probability of default and hence, lowers the average credit risk. Lastly, the “non-linear” view argued by Martinez-Miera and Repullo (2010) states that it's not necessarily true that the competition fragility and stability views produce contradictory results; both concentrated and highly competitive conditions may hold. The non-linear view supports the “risk-shifting effect” argued in the competition stability view; however, the reduction in lending rates results in pressure on bank revenues, which would drive banks to moral hazard and risk-taking. This is called the “margin-effect”, which may hold when banks lower lending rates, and thus result in banking instability. Generally, the availability of previous studies in this nexus is abundant, because of its importance to competition policy (Zigraiova & Havranek, 2016). However, the previous findings didn't tackle the research gap with clear proof.

¹ “Franchise value paradigm” is the notion that banks limit their risk-taking incentives to protect the monopoly rents granted from the government charters. The value of these rents is being eroded by increased competition, which would lead to greater bank instability (Jimenez et al., 2013).

² Credit risk is the potential loss resulting from a borrower who fail to meet his financial obligations, its described as one of the main important risks that banks encounter and the main reason behind financial instability occurred previously (Demirguc-Kunt & Detragiache, 2005)

Summary of Kuwait Banking Sector & COVID-19 Pandemic Association

Kuwait is a country located in the Middle East and is a member of the Gulf Cooperation Council (GCC) countries which consists of Saudi Arabia, Oman, UAE, Bahrain, Qatar, and Kuwait. The economy of Kuwait is characterized by the reliance on large oil exports (Al-Muharrami, 2008). The main contributor to Kuwait's GDP is the oil and gas exports, then the banking sector comes as the second main contributor to the country's economy and as the first contributor to the non-oil and gas GDP. The banking sector in Kuwait is highly capitalized, liquid, concentrated, and restricted from foreign competition. Further, this sector is comprised of 11 banks, including 5 Islamic, 5 commercial, and 1 industrial bank. The largest bank in Kuwait in terms of total assets is the National Bank of Kuwait (NBK) with a market capitalization of \$4.56 billion, followed by the Kuwait Finance House (KFH), which operates under Islamic banking principles with a market capitalization of \$3.4 billion (AlAli, 2019).

The banking sector has undergone major and severe events since the 1982 Souk Al Manakh crisis, the 2007-2008 mortgage crisis, and the COVID-19 pandemic crisis. However, the recovery of the banking sector was supported by substantial government prudential monetary policies (Saad & El Moussawi, 2006). As mentioned by Kuwait Banking Association, that during the COVID-19 pandemic, the government postponed payments for borrowers and compensated banks for this postponement. However, banks like Gulf Bank of Kuwait and Commercial Bank of Kuwait, both inform that the average non-performing loans were zero for the years 2020-2021. For instance, Gulf Bank of Kuwait lost around USD 1.2 billion in 2009 due to losses in derivative markets and loan portfolios, and the Kuwait government brought these losses to prevent the collapse of the banking system (Hayati et al., 2022). These government reinforcements are not a new custom, in January 2004, the National Assembly of Kuwait accepted an amendment to the 1968 banking law restricting foreign banks from setting up operation in Kuwait (Al-Karasneh & Fatheldin, 2005). Consequently, the safety net that banks have been granted from the government in the last two decades benefits banks to enhance their financial standings (Al-Shamali et al., 2012). Therefore, this confirms the role of government and policy regulators in protecting banks' franchise value in the presence and absence of crisis. However, based on the Central Bank of Kuwait (CBK), it seems that the situation now is different since many new banks have entered the market such as HSBC, First Abu Dhabi Bank, Mashreq Bank,

Al-Rajhi Bank, Bank Muscat, Industrial Bank of China, Citi Bank, Qatar National Bank and Doha Bank. This shift might be an indication of transforming the economy and allowing for foreign banks' entry.

Since the mid-nineties, Kuwait has proven a commitment and discipline to the process of transforming the economy from rent-seeking to a knowledge-based economy (Al-Obaidan, 2008). The Kuwait stock market exchange law was liberalized in August 2000 to allow foreign investors to participate in the market (Saad & El Moussawi, 2006). It's argued by Khattak and Ali (2021) that overall GCC governments were subjected to structural liberalization shifts since the mid-1990s. These changes have improved the banking sector in term of market stringency, competitiveness, and risk-taking behavior. Saif-Alyousfi et al. (2020) argues that the banking sector in Kuwait is dominated by a few privately and stately owned banks and signifies that the market is highly concentrated and capitalized. Based on the World Bank data, the level of asset concentration of the five largest GCC commercial banks for the period 2010-2016, in Kuwait reached 99%, in comparison with its peers in GCC: Saudi Arabia concentration (82%), UAE (82%), Oman (100%), Qatar (99%), and Bahrain (95%). This concentration level is significantly higher than that of developing economies. Furthermore, the non-performing loans indicator, considered a proxy for credit risk, for the period 2010-2016, showed that in Kuwait, the average NPL stood at 5.8%, Qatar at 2%, KSA at 2.2%, UAE at 6.01%, Oman at 3.6%, and Bahrain at 4.6%.

Table 1
Kuwait Commercial Banks Performance During (2019-2020)

Indicator	2020	2019
Growth in total assets	5.3%	5%
Banks' net profit	10.2%	19.3%
Cost-to-income ratio	41.1%	37.9%
Average banks capital	17.9%	18.3%
Return on equity	4.4%	10.1%
Return on assets	0.5%	1.2%
Non-performing loans ratio	1.6%	1.3%

Source: KPMG Annual Report FY 2019-2020

The numbers in Table 1 illustrates how the Kuwaiti banking sector is highly correlated with the global financial markets, with more invested funds in the U.S and E.U. (Almarzoqi et al., 2015). However, Table 1 highlights the vulnerability of Kuwait's banking sector to the global financial markets and economic conditions. Therefore, it is crucial to examine the impact of the COVID-19 pandemic, given that Kuwait's economy is significantly affected by these global dynamics. The decline in banks' profits, average bank capital, return on equity, and return on assets is noticeable, while the increase in the NPL ratio during the pandemic is explained in the estimation analysis part. It's argued by Al-Kharusi and Murthy (2020) that the pandemic year wasn't productive for all GCC countries and globally as well. Because of COVID-19 many individuals, firms, and governments were adversely influenced. However, its impact on economies varies and depends on the monetary policy response to the pandemic shock and the regulatory action in adopting potential resolutions versus bank fragility (Beck, 2020).

Conducting this study on this nexus is crucial since financial instability occurrence surge up bad loans, reluctance among banks to invest in profitable projects, and significant abnormalities of asset prices from their real value. For clarity, this paper doesn't compare this nexus pre and post COVID-19 due to the insufficient time for such comparisons. Therefore, this is not a comparative study. Instead, our main contribution is to provide an in-depth investigation from the period of 2010-2019 and to highlight and capture the significant impact of COVID-19 for the years 2020-2021 as an economic shock, as well explore how this shock constrained banks from competing effectively and protecting their franchise value.

This paper is divided into 5 chapters. First, we argue the competition and credit risk impact and how it is associated with Kuwait banking sector with addressing COVID-19 pandemic impact. Then, in chapter 2, we discussed the theoretical background supported by empirical evidence related to the research problem and hypothesis development. Chapter 3 covers the methodology and variable description table, while chapter 4 includes descriptive statistics, regression tables, findings, discussions of findings, and policy implications. Lastly, chapter 5 includes the robustness check, conclusion, research limitations, and future research recommendations.

Theoretical Background

In this chapter, the author provides an explanatory theoretical background with empirical studies related to our study problem. Since the impact of competition

on bank credit risk is not examined solely in the Kuwaiti banking sector, in the meantime the COVID-19 pandemic is newly well-established in the literature. The authors tried within hands to bring evidence from GCC and MENA countries, including Kuwait results, and global evidence related to the COVID-19 epidemic. Even though the literature is abundant on the association between competition and bank credit risk, previous literature hasn't provided a clear confirmation of the relationship between competition and risk.

Initially, in the argument of “competition fragility view” Keeley (1990) argued that there is a trade-off between competition and banking sector stability. Intensified competition increases bank credit risk and erodes the franchise value, which enhances bank risk-taking. In a concentrated banking sector, the level of riskiness is lower. Banks in a competitive industry obtain a risky asset decision, for instance they increase the capital levels and lending to borrowers without inspecting their creditworthiness. This exacerbates the challenges for banks in monitoring borrowers' credit conditions. Additionally, highly capitalized banks are riskier (Hellmann et al, 2000; Jimenez et al., 2013). However, as competition increases, the presence of moral hazard issues and information asymmetries tends to rise, which worsens the access to credit (Marquez, 2002).

On the contrary, Boyd and De Nicolo (2005) argued that increased competition contributes to the reduction in lending rates (risk-shifting effect), which results in a lower probability of default and reduced credit risk for both parties, the bank, and the borrower. However, government support in a concentrated market and low competition scenario results in an increase in moral hazard behavior and increased bank risk-taking. In a highly concentrated market with lower competition, Mishkin (2006) argued that the concentrated market supports the “too-big-to-fail”³ notion since that large banks are likely to take on greater risks, thereby making bank failures more likely. The negative relationship between competition and credit risk is the viewpoint of “competition stability view” (Amidu & Wolf, 2013).

Lastly, “non-linear argument” Martinez-Miera and Repullo (2010) developed the risk-shifting effect in the competition stability view and argued that when the competition increases and banks reduce lending rates, this will help borrowers

³ “Too-big-to-fail” is when the government provide banks with “Unlimited deposit guarantees, open-ended liquidity support, repeated capitalization, debtor bailouts, and regulatory forbearance” during financial panics which contributes positively to the fiscal cost of financial crisis (Mishkin, 2006; Stern & Feldman, 2004).

in paying back their financial obligations. However, this might also increase the pressure on banks' revenue to compensate for the lower lending rates, which is known “margin-effect”.

It is worth revealing that the government role is associated with the above relationship since they provide a safety net for banks. It's argued by Chowdhury and Rasid (2016) that all banks in the GCC, including Kuwait, have historically been protected from foreign competition because of the regulations imposed by the governments. Limiting the market to exclude foreign competition can be beneficial for banks, as it helps them to build and strengthen their own franchise value (Demsetz, 1973; Peltzman, 1977). For instance, Mishkin (2006) signified that in the U.S., the government provides a safety net for banks as a deposit insurance, while in some countries, they provide direct support to state-owned banks. It's good news perhaps to prevent economic panics, however, this paper will explore whether such behavior encourages moral hazard and undermines financial stability, or if it has the opposite effect. Consequently, the “too-big-to-fail” notion suggests that when banks are rescued, they tend not to operate in a cost-efficient manner. This scenario can lead to lower level of innovation, as bailout regimes foster a dependency on government support (Tan et al., 2017). Therefore, this heterogeneity of findings and opinions draw the attention of scholars to uncover the optimal nature of the competition-stability nexus which varies from region to region.

Literature Review

This empirical literature review includes a mixture of viewpoints related to this research problem. The findings of these papers are backed with solid empirical and theoretical evidence. We divided the literature into four parts: the first presents the fragility view supporters, the second covers the stability view, the third part discusses the non-linear “neutral view”, and the last includes studies on banks' performance during crises.

Firstly, the “competition fragility view” was initially proposed by Keeley (1990) who studied the impact of market power on banks including a sample of 150 banks in the U.S. from 1970 to 1986. The findings indicate that competition, measured by Tobin's Q, affect negatively on bank stability, and erode banks' franchise values which hamper stability in the sector. Al-Muharrami (2008) examined Kuwait banking sector contestability using H-statistic by Panzar and Rosse and HHI, the findings suggest that Kuwait banking sector has a moderately concen-

trated market and operates under perfect competition. Berger et al. (2009) examined commercial banks' market power in the U.S. from 1995 to 2005 and found that a lower Lerner index, with a high concentration level, contributes positively to the banking system stability. Similarly, Maghyereh and Awartani (2014) explored the impact on 70 banks in the GCC from 2001 to 2011. The two-step GMM suggests that positive competition increases the average non-performing loans. In the Turkish banking sector, Kasman and Kasman (2015) measured competition using Boone indicator and found that an increase in competition increases bank insolvency, although large banks with high non-interest income are more stable. Similarly, in Kuwait, Bioumy (2024) analyzed the competition for Kuwaiti banks using the Boone indicator and revealed that competition is very low among banks. There is a positive impact of HHI on Return on Average Assets (ROAA) and Return on Average Equity (ROAE), which aligns with the “fragility hypothesis”.

Secondly, evidence supporting the “competition stability view” is relatively limited in the Gulf region. For instance, Al-Karasneh and Fatheldin (2005) explored the market structure in Kuwait, Saudi Arabia, and the UAE from 1999 to 2002. By utilizing cross-sectional OLS regression and the Herfindahl-Hirschman Index (HHI), their findings revealed that higher market concentration led to increased profitability, as measured by Return on Assets (ROA), yet also resulted in higher credit risk. Similarly, Almarzoqi et al. (2015) investigated the effect of competition proxied by Lerner in the MENA region and discovered that a positive Lerner index effects negatively on banks' non-performing loans, which aligns with the “competition stability hypothesis”. Evidence from the Romanian banking industry has been provided by Dinu and Bunea (2022), who argued that during 2020, the impact of competition on banks' NPL was direct and significant and in the meantime the level of concentration was high, in 2020 as well the increase in ROA led to an increase in banks' non-performing loans, which worsens the credit conditions.

Thirdly, the “non-linear” or U-shaped relationship view, where Albaity et al. (2019) found evidence of non-linearity in GCC banking since high competition is positively associated with high concentration, and both significantly contribute adversely to banking stability. In a comprehensive study of the GCC, Saif-Alyousfi et al. (2020) found evidence of a non-linear relationship between competition and stability whereas the high level of competition, proxied by Boone, and high concentration increase bank fragility and risk-taking. Moreover, evidence

for MENA countries provided by Mateev et al. (2022) who argued that the market power effect pre-COVID-19 on commercial banks' credit risk, proxied by NPL, is positive, capitalization increase is negatively linked with credit risk only when the level of concentration is high in parallel with competition.

We added this fourth section since the impact of the COVID-19 pandemic in term of economic behavior is quite close to the previous global financial crisis impact (Dinu & Bunea 2022), and meanwhile the COVID impact is still well established in the literature. In the context of performance during a crisis, Atyeh et al. (2015) used financial ratios to examine Kuwait banks performance for the period (2006-2012) and found that banking sector performance post the financial crisis increased considerably in terms of profitability. Elnahass et al. (2021) signified that the COVID-19 pandemic resulted in severe impact on banks' credit risk in MENA countries. Al-Kharusi and Murthi (2020) also supported the same notion. Alfaihani et al. (2023) found that the previous global financial crisis in 2007-08 controlled the increase in the market power of banks, but after the crisis, it increases.

Despite the plenty of results in the literature, there is no obvious evidence about the direction of the relationship between competition and credit risk, particularly in the Kuwaiti banking sector. This paper diverges significantly from previous studies. The selection of commercial banks stems from the Boyd and De Nicolo (2005) and Martinez-Miera and Repullo (2010) views, which are based on commercial banks' lending and borrowing behavior. Therefore, the author focused solely on the impact on Kuwaiti commercial banks.

The previous research attempts in the Kuwaiti banking sector have been focused on the market structure. They measured competition using one structural indicator, such as Al-Karasneh and Fatheldin (2005) and Al-Muharrami (2008), who employed market share squared HHI and H-statistics, or employing indicators like the Boone indicator (Bioumy, 2024). Measuring competition using one indicator which is considered a weakness since the structural indicators only gives a quick snapshot of the competitive situation in the banking system (Demsetz, 1973). Hence, in this paper, the authors relied on the structural indicator (Concentration ratio) and the non-structural indicator (Lerner index).

Table 2
Previous Studies in Kuwait Banking Sector

Author (s)	Model/Competition Proxy	Period	Findings and Results
Al-Karasneh and Fatheldin (2005)	Parametric and non-parametric tests/ HHI market concentration	1999-2002	Concentration fragility
Al-Muharrami et al. (2006)	P-R model/ H-statistics, HHI and (CRk)	1993-2002	Unconcentrated (perfect competition)
Al-Muharrami (2008)	P-R model/ H-statistics, HHI and (CRk)	1993-2002	Moderate competition
Bioumy (2024)	Risk model/ Boone indicator and HHI	2013-2022	Low competition/ high concentration

Hypotheses Development

From an economic standpoint, when banks possess market power, they generally raise prices and either limit access to funds or lend extremely to achieve economies of scale, thereby expanding their revenue gains and size. Many sectors in the economy consider competition as a tool for enhancing quality and service (Kasman & Kasman, 2015). However, it is not necessarily true that rivalry among banks produces good outcomes (Fu et al., 2014). In Kuwait, the level of competition from 2012-2018 remained stable among banks, ranging from 33% to 42% (Ali et al., 2023). However, Al-Muharrami (2008) observed that the banking sector in Kuwait is characterized as unconcentrated. Therefore, in this section, we present the development of hypotheses in null form for each perspective.

The traditional competition fragility posits that increased competition in the banking industry tends to cause economic distress, leading to instability and fragility (Nasir et al., 2023). In such scenarios, banks experience declining market power and reduced profit margins. Consequently, they invest in higher-riskier portfolios and engage in risky asset decisions (Jimenez et al., 2013). In the GGC region, including the Kuwait banking sector, El-Moussawi and Mansour (2022) found that increased rivalry among banks favors the decline in the quality of loan portfolios. Banks opt for riskier assets, which results in instability and deterioration. Similarly, reduced competition leads to a highly concentrated banking sector

dominated by large banks. Large banks are likely to take on greater risks as they have sufficient loss absorption capacity (Fiordelisi et al., 2011; Mishkin, 2006).

H1: *Intensive Competition erodes banks' franchise value, increases bank risk-taking, hampers financial stability, and induces credit risk (Bank Fragility).*

In contrast, in the “competition stability view” proposed by Boyd and De Nicolo (2005), it is argued by Goetz (2018) that increased competition enhances bank safety by improving asset quality, resulting in a lower proportion of non-performing loans and consequently reducing the likelihood of bank failure. Additionally, Amidu and Wolf (2013) observed that banks operating in diversified and competitive markets tend to adopt less risky portfolios, as their stability is directly linked to increased diversification activities. In a dual banking study involving Kuwaiti banks, Ali et al. (2023) observed that a positive Lerner index is negatively associated with NPL, implying that competition contributes to the reduction in credit risk. They also noted that commercial banks were found to be riskier than other types of banks.

H2: *The increase in competition supports banking sector stability, increases banks' credit quality, and decreases the average credit risk (Bank Stability).*

The non-linear “neutral view” that is proposed by Martinez-Miera and Repullo (2010) discusses that both competition and stability can coexist without imposing a trade-off. This notion is frequently supported in previous literature. In the GCC region, Saif-Alyousfi et al. (2020) found that the impact of competition and concentration is positive on credit risk “NPL” and insolvency “Z-score”, this result supports both “fragility and stability” hypothesis. Increased competition can lead to greater financial stability through promoting efficiency and reducing credit risk, but it can also foster banks' risk-taking behavior as they pursue higher revenue gains (Berger et al., 2017).

H3: *The effect of competition on credit risk is non-linear, (either high or low competition is associated with high or low concentration).*

The final hypothesis concerns the impact of the COVID-19 epidemic, which has been active during the years 2020 and 2021. During crises, banks typically reduce lending and strengthen their capital position to enhance their competitive position (Saif-Alyousfi et al., 2020). Capital reduction during crises negatively affects banks' franchise value and may lead to make imprudent lending decisions (Mishkin, 2006). Saif-Alyousfi et al. (2020) observed that banks in the Gulf

region were significantly affected during the 2007-2008 global financial crisis, which increased their riskiness compared to their pre-crisis levels, as the average credit risk was very low during the crisis period. Despite a decline of 2.1% in loan growth for banks in the Gulf region, these findings lead us to formulate the final null hypothesis as follows:

H4: The effect of competition on credit risk during the COVID-19 period is positive.

Based on the previous literature and findings, we expect the impact of competition on credit risk in the Kuwaiti banking sector is non-linear since the commercial banks are operating under highly concentrated environment. In the meantime, the liberalizations movements that Kuwait government and central bank undertook previously, support the competitiveness and rivalry among banks. Hence, we expect that large banks are the ones who acquire the gains from both scenarios as indicated by Kasman and Kasman (2015).

Methodology and Sample Construction

This chapter presents the research model and variables definition, along with the descriptive statistics for the Lerner index and other study variables. Additionally, it includes the pairwise correlation matrix and the coefficient estimates of the marginal cost translog function. The selected data were collected from banks' annual reports covering the period from 2010 to 2021. Unlike previous research, which relied heavily on databases which results in homogeneity of results, all the data in this paper are handpicked from the banks' annual reports. The selected variables in this study are unique as they represent banks' credit risk, non-intermediation activities, bank size, loans and deposit channels, along with macroeconomic variables such as COVID-dummy and GDP growth. To ensure the originality of our results, we avoided using the GMM estimator, which has been extensively employed in the literature (Nasir et al., 2023), and refrained from collecting data from Bank Scope to prevent replication. Consequently, all the data in this paper were meticulously handpicked for consistency.

Table 3
Sample of Study

Bank	ID	Observations
National Bank of Kuwait	NBK	12
Commercial Bank of Kuwait	CBK	12
Burgan Bank of Kuwait	BBK	12
Al Ahli Bank of Kuwait	ABK	12
Gulf Bank of Kuwait	GBK	12
Total	5	60

To analyze the relationship between competition and credit risk, we followed the methodology of (Elmarzouky et al., 2022; Tayem & Al-Azzam, 2023). We employed panel data with fixed and random effects estimation methods, and the Hausman test to choose between them for the regression analysis covering the periods from 2010 to 2019 and 2020 to 2021. These techniques are selected due to their ability to control for unobserved heterogeneity, capturing both cross-sectional and time-series variations within data. As well, we used the Pooled Ordinary Least Square regression for a robust check and to measure the translog function of the Lerner index based on the Fixed effect estimator. Besides, we controlled for bank size and bank-level variables to capture the nonlinear relationships between variables. Hence, the model of this paper is as follows:

$$Credit Risk_{it} = \alpha + \sum \beta_1 X_{it} + \beta_2 Control Variables + \varepsilon_{it}$$

The credit risk is the dependent variable, proxied by the non-performing loans divided by total loans, and the competition is proxied by the Lerner index. The panel data regression stipulates the application of fixed effect and random effect approaches. After obtaining the Hausman test and determining the significance, and non-significance conditions. The fixed effect method is as follows:

$$Credit Risk_{it} = (\alpha_0 + u_i) + BX_{it} + v_{it}$$

If the Hausman test does not validate the use of fixed effect, the pooled OLS or random effect methods are obtainable. Random effect in this case is estimated as follows:

$$Credit Risk_{it} = \alpha_0 + BX_{it} + (u_i + v_{it})$$

Further, the X matrix includes bank control variables as follows (see Table 4):

Table 4
Variable Description

Variable	Description	Formula	Source	Reference
Credit risk (NPL)	Ratio of non-performing loans to total loans	$\frac{NPL}{(total\ loans)}$	Banks Annual reports	Jimenez et al. (2013) Martinez-Miera and Repullo (2010)
Lerner index	A bank-level indicator of market power determines the bank's ability to charge over its marginal costs. High value reveals low competition. Lerner index range is from 0 (perfect competition) to 1 (Monopolistic competition)	$\frac{(Bank\ price-Marginal\ Cost)}{(Bank\ Price)}$ The price is comprised of two items: bank interest + non-interest income divided by total assets. The marginal cost is estimated from the total cost translog function including the three inputs and our main output (see Table 5&7).	Calculated by Author	Berger et al. (2017) Kasman and Kasman (2015) Tan et al. (2017) Tayem and Al Azzam (2023)
Bank size	Natural logarithm of bank total assets	Natural logarithm of total assets	Banks Annual reports	Khattak and Ali (2021), Tayem and Al-Azzam (2023)
Diversification	Ratio of non-interest income to total operating income	$\frac{(non-interest\ income)}{(operating\ income)}$	Banks Annual reports	Maghyereh and Awartni (2014)
Return on asset	Profit after tax to total assets	$\frac{(after\ tax\ net\ income)}{(total\ assets)}$	Banks annual reports	Albaity et al. (2019) Tan et al. (2017)
Capital ratio	Total equity-to-total assets	$\frac{(Total\ equity)}{(Total\ assets)}$	Banks annual reports	Kasman and Kasman (2015) Tan et al. (2017)

Cont. Table 4
Variable Description

Variable	Description	Formula	Source	Reference
Concentration ratio	CR1 total assets = bank's total assets/ total assets of banking sector.	$\frac{(Bank\ i\ total\ assets)}{(Entire\ industry\ total\ assets)}$	Calculated by Author	Al-Muharrami et al. (2006) Kasman and Kasman (2015)
GDP growth rate	Annual GDP growth	-	WDI	Saif-Alyousfi et al. (2020) Khattak and Ali (2021)
Covid dummy	Takes the value of 1 in the years 2020-2021, and zero otherwise	-	Calculated by Author	Elnahass et al. (2021)

Variables Descriptive Statistics

Table 5
Lerner Index Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Lerner	60	0.5317914	0.1126153	0.1892119	0.6637138
Marginal cost	60	0.0141679	0.0003265	0.0134317	0.0148175
Log-assets	60	16.92934	0.6566802	16.16396	18.51369
(W1) Personnel expenses	60	0.0064349	0.0010056	0.0042889	0.0079901
(W2) funds expenses	60	0.0221101	0.0097462	0.0075341	0.0493965
(W3) Operating and other expenses	60	0.0115737	0.0022012	0.0077038	0.0168949
Bank price	60	0.0315545	0.0056592	0.0168	0.0425

Note: Personnel expenses ratio = staff expenses to total assets, funds expenses = interest expenses to total assets, operating and physical capital expenses = depreciation and other operating expenses to total assets. Bank price = total interest and non-interest income to total assets.

Table 5 presents the descriptive statistics for the Lerner index measurement. We employed the fixed effect method (see Table 8) to estimate the marginal cost coefficients from the total cost translog function. The personnel expenses and capital expenses average mean are 0.006 and 0.022, with standard deviations of 0.001 and 0.009. Notably, in Kuwait's commercial banking sector, the largest portion of total costs is attributed to fund expenses resulting from deposit channel expenses. The operating and other expenses average mean is 0.011, while the bank price average mean is 0.031. Finally, the Lerner index mean is 0.53 with a minimum value of 0.18 and a maximum value of 0.66.

Table 6
Study Variables Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
NPL (credit risk)	60	0.0445	0.0550015	0.00	0.21
Z-score	60	13.247	3.9612	5.399	23.759
ROA	60	0.00916	0.00925	-0.04	0.03
Concentration ratio	60	0.2	0.1660403	0.0755148	0.585
Capital ratio	60	0.113	0.0338926	0.0372	0.191
Diversification	60	0.316	0.1331686	0.10	0.690
Bank size	60	16.929	0.6566802	16.163	18.513
Lerner index	60	0.531	0.1126153	0.189	0.663
Covid dummy	60	0.166	0.375823	0	1
GDP growth	60	0.709	4.648418	-8.86	9.63

Table 6 includes the descriptive statistics for these research variables. Non-performing loans ratio, the proxy of credit risk average mean is 0.044 with a standard deviation 0.055. The level of concentration seems to be above the moderate level with a maximum value of 0.58 and an average mean 0.20. Bank capital and revenue diversification average means are 0.11 and 0.31 with standard deviations of 0.03 and 0.13. Moreover, the bank size and Lerner index average means are 16.29 and 0.53. The mean of Lerner index indicates that the commercial banks in Kuwait are able charge a price above their marginal cost, this signifies the existence of bank's monopolistic gains.

Table 7
Pairwise Correlation Matrix

	NPL	ROA	Capital	Diver~	Size	Lerner	K1	GDP%	Covid
NPL	1.00								
ROA	0.08	1.00							
Capital	-0.05	0.17	1.00						
Diver~	0.40	-0.02	0.30	1.00					
Size	-0.05	0.08	0.34	-0.00	1.00				
Lerner	0.02	-0.16	-0.23	-0.10	0.30	1.00			
K1	0.54	0.12	0.17	0.05	-0.14	0.06	1.00		
GDP%	0.49	0.43	-0.02	0.35	-0.09	-0.19	0.24	1.00	
Covid	-0.23	-0.34	0.13	0.00	0.10	0.21	-0.11	-0.44	1.00

Table 7 presents the correlation matrix between variables, as it appears above that NPL is positively correlated with the Lerner index and concentration ratio. Therefore, this correlation suggests a positive relationship between banks' market power and the level of credit risk. However, an inverse relationship between bank capital, bank size, and the COVID-19 dummy variable with the NPL, which assure that since Kuwait commercial banks are highly capitalized and complex in terms of size, they might mitigate credit risk by relying on their capital buffers. Bank profitability correlates negatively with the Lerner index and positively related to bank market power (K1). In the meantime, profitability is positively related to credit risk, which means as many banks engage in risk-taking credit risk might increase. The COVID-19 dummy variable is correlated negatively to bank profitability and credit risk, while it is positively related to capital. This information prompts us to investigate the reasons behind the negative effect of the COVID-19 pandemic on credit risk, despite the improvement in bank capital during that period. Further, the correlation between bank concentration and diversification is weak.

Estimation Results and Findings

Table 8
Fixed Effect Estimation for the Translog Cost Function

Log(output)	Coefficient
B_0	2.74** (1.21)
B_1	-0.199** (0.094)
α_1	12.26 (9.82)
α_2	4.55*** (1.357)
α_3	-2.91 (7.77)
B_2	-0.396 (0.721)
B_3	-0.325*** (0.078)
B_4	-0.001 (0.557)
α_4	-0.024 (0.335)
α_5	0.009 (0.803)
α_6	0.648** (0.307)
α_7	1.77 (1.35)
α_8	-0.372*** (1.31)
α_9	-1.33 (1.31)
Constant	16.71 (22.7)
Adjusted R	0.99

Note: Standard errors are in parenthesis p -value < 1% ***, < 5% ** and < 10% *

As declared before, that Lerner index measure requires an estimation of the first derivative of the translog cost function. In Table 8, the marginal cost coefficients were estimated using the fixed-effect estimator, then after combining the marginal costs of the three weights (labor, funds and capital, and operational weight), the Lerner index was measured based on the Lerner formula (see Table 4).

Table 9
Panel Fixed and Random Effect Regressions for the Period (2010-2019)

	Fixed Effect	Random Effect
ROA	0.930 (1.315)	0.827 (1.246)
Capital	-0.681** (0.332)	-0.651*** (0.205)
Diver~	0.331*** (0.066)	0.228*** (0.048)
Size	0.054 (0.041)	0.017** (0.008)
Lerner	0.496*** (0.128)	0.376*** (0.119)
K1	0.173*** (.034)	0.154*** (0.028)
GDP %	0.005*** (0.001)	0.005*** (0.001)
Observations	50	50
Hausman	No	Yes
Adjusted R	0.31	0.424

Note: Standard errors are in parenthesis p -value < 1% ***, < 5% ** and < 10% *

According to Table 9, the regression analysis shows that the number of banks' non-performing loans in the (2010-2019) period is positively and significantly af-

⁴ Table 9 signifies the random effect regression. OLS vs FE: (4, 38) = 2.71, prob > F = 0.044. On the other hand, OLS vs RE: (Wald chi-X2= 89.00), prob > X^2 = 0.000. F -test results are statistically significant at $\alpha = 0.05$ which means we fail to accept the H_0 : the OLS model is the appropriate estimation model for both random vs OLS and fixed vs OLS. In other words, the author is either to use fixed or random effect models. After obtaining Hausman test, FE vs RE, $X^2(9)$ prob X^2 > = 0.055) Hausman test shows that random effect is the appropriate model where we fail to reject H_0 : the Random Effect is the appropriate model at a statistical significance level of $\alpha = 0.05$.

ected by the Lerner index. An increase in the Lerner index leads to an increase on bank credit risk “fragility hypothesis”. Capital ratios affect credit risk negatively; we can conclude that an increase in the capital ratio results in less risk-taking, and leads to a reduction in NPLs, since bank capital provides banks with sufficient loss absorption capacity to reduce moral hazard and risk-taking, as argued by Fiordelisi et al. (2011). These findings for the (2010-2019) period also support the idea that well-capitalized banks are more stable and less risky. Further, the profitability indicator during high competition affects positively on the NPL ratio, implying that bank risk-taking increases when competition is high. The concentration ratio explains the presence of banks' market power; an increase in concentration leads to an increase in bank credit risk, which supports the “stability hypothesis”. The impact of Lerner and concentration ratio proves the “non-linearity” relationship in this study. These findings in Table 9 dispute the idea that the banking sector in Kuwait operates under perfect competition conditions and an unconcentrated market (Al-Muharrami et al., 2006), since the existence of concentration induces the level of credit risk and proves the presence of monopolistic earnings. From Table 9, we can conclude that banks possess market power and have the ability to price above their marginal cost in this specific period.

Table 10
Panel Regression for the Period (2020-2021)

	Fixed Effect	Random Effect
ROA	0.320** (0.105)	0.310* (0.179)
Capital	-0.064 (0.088)	-0.187** (0.088)
Diver~	0.041 (0.039)	0.066** (0.031)
Size	0.217*** (0.045)	0.002 (0.003)
Lerner	2.502** (0.640)	0.85*** (0.337)
Covid Dummy	0.004 (0.003)	0.001 (0.005)
GDP %	-0.002*** (< 0.001)	-0.001*** (< 0.001)

Cont. Table 10
Panel Regression for the Period (2020-2021)

	Fixed Effect	Random Effect
Observations	10	10
Hausman	Yes	No
Adjusted R	0.132	0.270 ⁵

Note: Standard errors are in parenthesis p -value < 1% ***, < 5% ** and < 10% *

From Table 10, it is evident that competition had a positive impact on NPLs during the COVID-19 period. The pandemic's restrictions prevented banks from expanding and reaching customers due to government-imposed limitations. However, banks increased their capital buffers as we expect a negative impact of capital on NPL, indicating that during financial distress, banks raise their capital buffers to absorb shocks (Khattak & Ali, 2021; Saif-Alyousfi et al., 2020). The bank size situation is similar: the higher competition, the higher the bank risk-taking ROA and credit risk NPL. This aligns with the finding that during the epidemic, intensified competition led banks to engage in risk-taking activities to expand their size (Kasman & Kasman, 2015).

However, banks' reliance on non-interest activities has no contribution to lowering non-performing loans. Competition pressures banks to adopt diversification strategies, potentially exposing them to riskier situations as non-traditional activities require further expertise to manage effectively, as argued by El-Moussawi and Mansour (2022). It's not necessarily that diversification contributes to reducing overall riskiness, which stands with (DeYoung & Torna, 2013). Our findings are consistent with those of (Fiordelisi et al., 2011; Kasman & Kasman, 2015; Maghyereh & Awartni, 2014; Saif-Alyousfi et al., 2020) and challenge the argument of (AlMarzoqi et al., 2015; Al-Muharrami, 2006, 2008; Beck et al., 2010; El-Moussawi & Mansour, 2022).

⁵ Table 10 signifies the fixed effect regression. OLS vs FE: $(4, 3) = 6.88$, $\text{prob} > F = 0.047$. On the other hand, OLS vs RE: (Wald chi-X² = 23.15), $\text{prob} > = 0.001$. F -test results are statistically significant at $\alpha = 0.05$ which means we fail to accept the H₀: the OLS model is the appropriate estimation model for both random vs OLS and fixed vs OLS. In other words, the author is either to use fixed or random effect models. After obtaining Hausman test, FE vs RE, $X^2(7)$ $\text{prob} X^2 > = 0.0003$) Hausman test shows that fixed effect is the appropriate model where we fail to accept H₀: the Random Effect is the appropriate model at a statistical significance level of $\alpha = 0.05$.

Discussion of Findings and Policy Implications

The findings for the period 2010-2019, based on the random effect model, indicate that increased competition among commercial banks in Kuwait has a positive impact on credit risk. This suggests that as banks vie for market share, they may engage in riskier lending practices. The positive relationship between concentration and NPL further implies a non-linear dynamic, where banks with greater market power also exhibit higher credit risk. This dual influence of competition and concentration underscores the complexity of managing credit risk in a competitive environment. The negative effect of the capital ratio highlights the crucial role of capital buffers in mitigating risk, particularly as competition intensifies. Additionally, the increase in bank size corresponds with higher credit risk, suggesting that larger banks may be more prone to risky behavior under competitive pressure. Interestingly, GDP growth is associated with increased credit risk, potentially due to more aggressive lending during economic expansions. The results for the period of 2010-2019 are in line with the findings of (Kasman & Kasman, 2015; Saif-Alyousfi et al., 2020) and dispute the findings of (Al-Karasneh & Fatheldin, 2005; Al-Muharrami, 2008).

For the period of 2020-2021, the fixed-effect method reveals that an increase in the Lerner index, indicative of higher market power, leads to higher average credit risk during the COVID-19 period. This period also saw bank capital continuing to play a vital role in reducing credit risk. However, the increase in size is again linked with higher amounts of bad loans. The positive impact of the COVID-19 dummy variable on credit risk highlights the heightened financial vulnerabilities during the pandemic. Conversely, GDP growth is shown to reduce average NPLs, suggesting that economic resilience can counterbalance some of the risks exacerbated by the pandemic. Our result in the COVID-19 period supports the non-linear hypothesis, which is consistent with the findings of (Maghyereh & Awartani, 2014; Mateev et al., 2022) and disagrees with (AlMarzoqi et al., 2015; El-Moussawi & Mansour, 2022).

Based on the findings of this paper, specific policy implications arise for Kuwait's banking sector, Central Bank, and the government. To address the positive impact of competition on credit risk observed during 2010-2019, the central bank should consider enhancing the regulatory frameworks that balance competition with prudent risk management, as argued by Elmarzouky et al. (2022). This could involve revising capital adequacy requirements to ensure banks maintain robust

buffers against increased risk-taking behaviors associated with intense competition. Additionally, the Central Bank of Kuwait should strengthen its oversight of market concentration by removing restrictions and allowing the entry of foreign banks to prevent monopolistic practice that could exacerbates credit risk. Supporting banks' non-interest income generation should also be a priority, given the growing banking markets in the GCC and the economic diversification goals of the 2030 vision. Moreover, as the COVID-19 period is characterized by increased credit risk and economic uncertainties, safeguarding financial stability must be a priority for policymakers in the government. While the National Assembly of Kuwait has previously passed an unlimited deposit guarantee to raise confidence in the country's banking sector and increase financial stability, it appears that additional measures are necessary. Implementing flexible loan restructuring programs for individuals and firms affected by the pandemic could mitigate the rise in the NPLs and support the economic recovery.

Robustness Check

In the robustness check, to ensure the model's stability, we substitute the proxy of credit risk with the Z-score, which is an estimate of bank's solvency. Additionally, we include the ratio loans-to-assets and deposit ratio to see the contribution of both variables on this relationship between competition and credit risk.

Table 11
Robustness Check Regression (Z-Score)

Ordinary Least Square Model	2010-2019	2019-2021
Z-score	Coefficient	Coefficient
Lerner	-148.71*** (37.57)	-134.19*** (38.73)
Size	2.52*** (0.81)	2.06*** (0.75)
Concentration	8.37*** (2.42)	7.52*** (2.55)
Deposit	-7.38 (9.08)	-1.64 (5.28)
Ratio loans	-18.58** (7.34)	-25.10*** (6.46)

Cont. Table 11
Robustness Check Regression (Z-Score)

Ordinary Least Square Model	2010-2019	2019-2021
GDP growth	-0.041 (0.10)	0.014 (0.093)
Covid-dummy	-	1.19 (1.15)
Constant	53.62*** (18.83)	55.35*** (18.70)
Adjusted R	0.52	0.46

Note: Standard errors are in parenthesis p -value < 1% ***, < 5% ** and < 10% *

In Table 11, we replaced the credit risk proxy with the bank solvency Z-score to ensure that our results are consistent with Table 9. Our results remained robust in both periods. The exaggerated competition pre and during COVID hampered bank solvency, and thus resulted in a fragile financial system. Further, the concentration impact on solvency positively, which seems to align with the fragility view. It is argued that a banking system dominated by a few large banks is stable, in line with (Fu et al., 2014; Keeley, 1990). Moreover, larger banks are more engaged in risk taking when competition is high. They engage in risk-taking and moral hazard lending to compensate for the lower lending rates. It is obvious that there was an imprudent lending decision during the COVID-crisis, since the loan-to-assets ratio is adversely affecting bank solvency, in line with (Petersen & Rajan, 1997; Saif-Alyousfi et al., 2020) and disputes (Das Gupta & Istiaque, 2023).

Conclusion

This study aims to investigate the impact of competition on credit risk in the banking sector of Kuwait. The sample includes five commercial banks for the period of (2010-2021). We split the periods into two groups (2010-2019) and (2019-2021) to capture the impact pre and during the pandemic. In this paper, the data are handpicked from banks' annual reports and analyzed using panel data techniques (ordinary least square, random effect, and fixed effect regressions) and the Hausman test to select the appropriate estimation method. The findings indicate that competition's impact on credit risk is positive both pre and during the pandemic. The banking sector is highly concentrated and capitalized. Since increased

competition induces credit risk, and the existence of market power is evidence of banks' ability to price above their marginal cost and enjoy monopolistic gains; this aligns with "competition fragility hypothesis". Banks were more encouraged to imprudent lending activities during the crisis, which made them riskier. Further, banks' credit risk and solvency were in a critical situation during COVID. These findings cast doubt on the idea which says that government restrictions in the GCC resulted in a rigid credit policy (Elnahass et al., 2021) and that a concentrated banking sector is more exposed to the probability of failure (El-Moussawi & Mansour, 2022), and align with (Ashraf et al., 2016; Saif-Alyousfi et al., 2020).

Limitations and Directions for Future Research

Lastly, in our recommendation for future studies, we recommend extending the sample to include more state-owned banks, foreign banks, industrial banks, and Islamic banks and extending the study period to compare the pre-COVID and post-pandemic periods could be advantageous. Since this study primarily focuses on the years 2010 to 2019, providing in-depth analysis and insights into the impact of the pandemic, it would be advantageous to add oil prices and other macroeconomic variables to capture any external shock. Therefore, we leave this issue to future research attempts.

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