




## THE STATE OF COMPETITIVENESS IN KUWAIT BANKING SECTOR

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### ABSTRACT

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The aim of this study is to examine the competitiveness in the Kuwaiti banking sector for the period 2010 - 2020. The methodology of study assessed the degree of competition among nine national Kuwaiti banks using the Panzar and Rosse model, or the H statistic approach. The study assessed how close the banking sector in Kuwait is to perfect competition. It built a model for the revenues of the banking sector in Kuwait. The model considered various specifications that affect the banking sector's performance like revenues, risk, deposits, and bank size. In addition, this study analyzed the major factors affecting this sector's performance. Using the panel data methodology of estimation, the results revealed that the market structure for the banking sector in Kuwait is close to monopolistic competition. Though the banking sector in Kuwait is still in its development stages, the results provided a signal to policy makers regarding their policies. One main implication of the study is to keep strong competition among banks which requires maintaining the stability within the banking system.

**Contribution/Originality:** This research contributes by evaluating the degree of competitiveness of the Kuwaiti banking sector, using the Panzar-Rosse model or the H-statistic approach. In particular, the study assessed how close the banking sector in Kuwait was to perfect competition, considering various variables that affect the banking sector's performance.

## 1. INTRODUCTION

The banking sector in Kuwait had witnessed huge changes that were expected to have major impacts on the banks' structures. The banking sector in Kuwait consists of domestic and foreign banks, in addition to Islamic and commercial banks. This diversity is expected to increase the competition among these banks. Therefore, it would be of interest to study the effect of this progress on banks' activities.

There are four different market structures which any industry can face. These market structures are: perfect competition, monopolistic competition, oligopoly, or monopoly. These markets rank or differ in the degree of competition according to a number of features like, the number of producers, the homogeneity of the good, and the degree by which a company can enter and exit the market. Therefore, in order to recognize the level of competition in the banking industry in Kuwait, it is very important to examine the type of the market structure this industry faces in order to recognize its features and how it works.

The main goal of this research was to measure the level of competitiveness in the banking sector in Kuwait. One way to measure this was to use the [Panzar and Rosse \(1987\)](#) model, or the H statistic. The idea behind this

approach was to employ the differences of banking price strategies with respect to the change in the costs of inputs to determine the market structure (Al-Muharrami, 2008a). Another goal of this study was to determine those variables that affect the performance of banks in Kuwait, specifically the level of revenues. To achieve that goal, an empirical model was used to incorporate those variables that affect and contribute to revenues in Kuwaiti banks. The model was assessed using panel data methodology. The rest of this paper is organized in the following order. Section 2 presents theoretical overview of the concept of competition. Section 3 includes the literature review related to our study. Section 4 presents the methodology for analyzing competitiveness in Kuwaiti banks. In Section 5, the descriptive statistics are presented. Section 6 analyzes the empirical results, and conclusions are addressed in section 7.

## 2. COMPETITION THEORY

According to Al-Qaisi (2016) there are two methods to examine the level of competition in an industry. The first method is: Structure Conduct Performance method. This method assumes that a highly concentrated market will lead to a kind of secret and unlawful cooperation among large corporations that aimed at deceiving or gaining extra advantages over others. However, this behavior, according to this method, will result in a better performance of the market. The second method is the efficiency method. In this one, it is assumed that the efficiency and the performance of the large firms working in a concentrated market will improve. As a result, this would lead to higher levels of profits and better benefits to the owners of the firms. Other researchers suggested new methods for measuring the competition among entities in a specified market. Examples of these methods are: Iwata model, the Bresnahan method, the Panzar-Rosse approach, and contestable market theory (Al-Qaisi, 2016). Panzar-Rosse method tests the competitiveness firms working in different sectors through “H statistic.” This method depends on assuming that firms will apply different strategies when pricing their products. This pricing policy depends on the input prices which is affected by the type of the market structure in which these firms work (Panzar & Rosse, 1987).

According to the value of the H statistic, the structure type of the market is determined. If the value of the H statistic is close to zero, the market is characterized by monopolistic behavior. The reason for that is because any change in the cost of the factors of production will be transferred completely to the revenue calculations. On the other hand, if the value of the H statistic is close to 1, then the market is characterized by the perfect competition conditions. In this case, changes in the costs of the factors of production are not transferred to the revenues, a case that is consistent with the actions of the monopolistic. However, if the value of the H statistic lies between 0 and 1, then the market is characterized by a monopolistic competition behavior.

## 3. LITERATURE REVIEW

Literature on the banking industry contains several topics. Some research focuses on the factors that affect the profitability of banks. Other studies emphasize measuring the concentration ratio. Others focus on whether concentration affects the performance of the banking sector. This literature review will briefly discuss some papers that measure the concentration ratio in the banking sector and that study the factors affecting banking profitability. However, this section is divided into two main sections. The first one is the literature on countries outside MENA (Middle East and North Africa) region. The second part is literature on countries inside MENA region, where Kuwait is among the second group.

### 3.1. Literature on Countries outside MENA Region

Gelos and Roldos (2002) examined competitive conditions during the 1990s in eight Latin American and Eastern European countries. They found that the H statistic is lower as the penetration of foreign banks increases; however, that is not due to the increase in market concentration. Similarly, Yuan (2006) found perfect competition

within China's financial market, before foreign banks entered the Chinese banking industry. Furthermore, [Yeyati and Micco \(2007\)](#) found that foreign banks' penetration weakened competition.

[Afolabi \(2018\)](#) examined data for ten banks in Togo for the period of 2000 - 2015. The results of the panel regressions present a clear tendency to oligopoly in the banking industry. The results show also that customer loans and inter-bank loans appear to be the main factors affecting competitiveness. However, the size of the bank was found to have no impact on the competitiveness.

[Mishra, Kandel, and Aithal \(2021\)](#) tried to evaluate the impact of size, loans and deposits, inflation, and capital on the profitability of the banks in Nepal for the period of 2013 - 2019. The sample of this study covered seven commercial banks. The results of the regression model showed that the performance of banks was heavily affected by macroeconomic variables like inflation.

Other literature examined the factors that affect the performance of the banking sector. [Zogjani, Kelmendi, Humolli, and Raçi \(2016\)](#) analyzed the impact of performance in the banking sector of Kosovo for the period 2009 - 2014. The results showed that the interest rate of loans and capital adequacy ratio have a positive impact on the banking sector but the nonperforming loans ratio had a negative impact.

[Tailab \(2014\)](#) studied the factors affecting financial performance in the United States for the period 2009 - 2013. The financial performance was proxied by the return on assets. The results of the paper found that inventory, growth, and leverage have negative significant impacts on return on assets, while size and liquidity have positive significant impacts on profitability.

Finally, [Kiseláková, Hečková, and Chapčáková \(2013\)](#) examined the variables that affect the competitiveness level of the banking sector in Slovakia. The methodology of this paper included using various simple and multiple regression models that incorporated a number of economic variables. The aim of using these models was to obtain the real impacts on the banking sector in Slovakia. The study covered two overlapping periods: (2004 - 2010) and (2001 - 2010). The findings of the paper revealed that development and the competitiveness of the banking sector was affected by a number of variables. Examples of these factors are: the liquidity levels, the types of assets especially the item loans, the interest policy, and the progress profitability rates.

### 3.2. Literature on the MENA Region

[Turk-Ariss \(2009\)](#) analyzed competition in MENA countries and reported that the Middle East market structure is characterized as near monopolistic, while the North Africa structure could be characterized as monopolistic. Another study by [Anzoategui, Pería, and Rocha \(2010\)](#) examined the level of competition in banking sector in the MENA region during the period 1994– 2008. They used two different methodologies: Lerner index and H statistic. The results of both models confirm that the level of competition in the banking sector in the MENA region is lower relative to other regions. According to the authors, one possible explanation for that result could be the region's bad credit information environment.

[Açıklım and Sakiñç \(2015\)](#) aimed at measuring the degree of competition in the Turkish banking sector during the period of 2002-2013. This time period is very important especially it follows the major reforms which were introduced into this sector after 2000. The paper analyzed the data of 22 banks. The paper used the [Panzar and Rosse \(1987\)](#) model, which was assessed using the method of pooled generalized least square. The value of the H statistic was 0.599. This shows that the type of market that applies to the Turkish banking sector is close to the monopolistic competition market.

The Jordanian banking sector was examined by [Al-Qaisi \(2016\)](#) during the time period 2009 - 2015. The study evaluated the degrees of competition in this sector using the Panzar-Rosse model. The sample of the study comprised 13 banks and the methodology used to assess the model was the pooled data regression. The main result of the paper was finding the value of the H statistic to be 0.311. This value indicates that the banking sector works in monopolistic competitive conditions and is still very close to the monopoly behavior. [Abugamea \(2018\)](#) examined

the impact of some banking indicators' main macroeconomic variables on the profitability and performance of the banking sector of Palestine over the period 1995-2015. Using the Ordinary Least Square method, Abugamea found that size, loans, and capital had positive impacts on the performance of banks as represented by either return on assets or return on equities. On the other hand, deposits were negatively related to the profitability of the banks. Another attempt to examine the competitive conditions for the banking industry in the MENA region for the period (1999-2012) was done by Elfeituri and Vergos (2019). They used the method of Panzar–Rosse model. The question was whether the market of the banking sector is characterized by monopoly, monopolistic competition or perfect competition market. The technique used in this study is the panel data analysis. The main result of this paper shows that competition level in the MENA banking sector is low and the markets function under the monopolistic competitive conditions. Similar result was found by Anzoategui et al. (2010).

Finally, when we discuss the literature about the area of competitive conditions in the banking sector, especially in the Gulf region, it is vital to recall the work done by Al-Muharrami (2008a); Al-Muharrami (2008b) investigated the market structure and the monopoly power of banks in Kuwait during the period 1993-2002. His methodology involved using the  $k$ -bank concentration ratio, the Herfindahl-Hirschman Index, and the H statistic by Panzar-Rosse model. The main result indicated that Kuwait had a moderately concentrated market. In addition, Kuwaiti banks worked under the structure of perfect competition. Al-Muharrami (2008b) examined the concentrations in the banking sectors in the Gulf Cooperation Countries (GCC) over the period 1993-2002. He used the methods of Herfindahl-Hirschman index and the  $k$ -bank concentration ratio. The results of this paper showed that concentration does not appear to have increased in this region. Actually, except for in Oman and Qatar, the banking sector of the GCC witnessed decreased concentration.

#### 4. METHODOLOGY

For assessing the pattern of competition in the Kuwaiti banking sector and to evaluate the level of competition among the banks, this paper implemented the H statistic method of Panzar and Rosse (1987). The H statistic is calculated from the reduced form of revenue function. It depends on the sum of the elasticities of the revenue reduced function with respect to the costs of the factors of production. These factors of production are basically, labor, capital, and the finance of the production operations. The model of this paper drew an estimate using the panel data method for nine Kuwaiti banks over the period 2010 - 2020.

This study tested the revenue function, where the dependent variable is the revenue ratio ( $R$ ). This ratio is presented by either return on assets or return on equities. Equation 1 illustrates the general behavior of the revenue equation in response to the explanatory variables that assumed to affect banks' revenues:

$$R = f(LABOR, CAPITAL, FUNDS, EQUITY, LOANS, DEPOSITS) \quad (1)$$

$R$  is the dependent variable measured by the ratio of total revenues from interest to total assets (i.e., return on assets,  $ROA$ ) or to equities (i.e., return on equities,  $ROE$ ). The independent variables are as follows:  $LABOR$  represents the cost of labor measured by the ratio of personnel (managerial) expense to total assets.  $CAPITAL$  is the cost of fixed capital measured by the ratio of other operating and administrative expenses to total assets, and  $FUNDS$  is the price of deposits measured by the ratio of interest expense to total deposits. Other variables were included to control for banking factors.  $LOANS$  was measured by the ratio of net loans to total assets.  $DEPOSITS$  is the ratio of total deposits to total assets, and  $EQUITY$  represents equity capital measured by the ratio of equity to total assets.

The variables  $LABOR$  and  $CAPITAL$  represent the input for the banking operations. We expect a positive sign for the coefficients of each variable. Higher levels of inputs help increase the level of output, and this should increase the revenues of the banks.  $FUNDS$  represent a cost to banks, so an increase in the cost of obtaining funds should depress revenues. On the other hand,  $LOANS$  represent the lending amount of the bank to its customers, and it is expected to positively affect the revenues of the bank.  $EQUITY$  indicates the relationship of owner's equity to total

assets. This ratio is an indicator of the leverage, or debt, used to finance the bank's operations. A higher rate indicates a lower dependency on outside sources for financing the bank's operations and vice versa. In addition, this ratio is an indicator of the risk faced by the bank. The higher this rate, the safer is the financial position of the bank.

To test the impact of different explanatory variables on the dependent variable measured by the ratio of total revenues, the panel model methodology was used to give a clear vision for the relationship among the variables. When utilizing the panel data regression as the first phase, it included applying both random effects and fixed effects models. The next phase included the use of the Hausman test. This test helped to decide which model to be considered. The Hausman test has a null hypothesis that the best model is the random effects model. The test depends on the Chi square statistic to decide which model is the best.

In the fixed effects model, we found that the coefficients are fixed or non-random. On the other hand, in the random effects model, the coefficients are non-fixed or random. The fixed effects model considers a regression in which the group means are fixed. In the random effects model, the group means are a random sample from a population.

Equation 2 gives the reduced form of the model that was estimated in order to explain the behavior of the revenue equation in response to the variables assumed to affect banks' revenues. The reduced equation of the model that examined the behavior of the competitive condition in Kuwait was in the following form:

$$R_{it} = \alpha_i + \beta_1 LABOR_{it} + \beta_2 CAPITAL_{it} + \beta_3 FUNDS_{it} + \gamma_1 EQUITY_{it} + \gamma_2 LOANS_{it} + \gamma_3 EQUITIES_{it} + \mu_{it} \quad (2)$$

$\beta_i$  and  $\gamma_i$  are the coefficients of the elasticities of the independent variables to the dependent variable,  $\mu$  is the disturbance term,  $\alpha$  denotes bank-level fixed effects,  $i$  stands for the specified bank and  $t$  stands for the time period.

To measure competitiveness in the banking sector in Kuwait, this paper used the H statistic technique by Panzar and Rosse (1987) following Turk-Ariss (2009). First, we regressed the returns of banks on their main determinants as they appear in Equation 2. Simply, the H statistic is the sum of the first 3 coefficients;  $\beta_1 + \beta_2 + \beta_3$ . If this sum is close to zero, this satisfies the equilibrium condition. This means that the return on assets is not related to the costs of labor, capital, and funds, or input prices. In other words, this would be clear evidence of pure monopoly. On the other hand, if the value of the H statistic is close to 1, this would indicate a perfectly competitive market structure (Olszak, Świtła, & Kowalska, 2013).

## 5. DESCRIPTIVE STATISTICS

Table 1 shows the average values of each variable of this study during the period of 2010 - 2020. The data of this study include the largest nine banks in Kuwait. The available data indicate a minimum of 95 observations for each variable.

Table 1. Mean values of the variables.

Variables	ROA	ROE	LABOR	FUNDS	CAPITAL	CREDIT	DEPOSIT	EQUITY
2010	0.033	0.386	0.011	0.023	0.016	0.601	0.701	0.102
2011	0.035	0.298	0.045	0.018	0.021	0.524	0.640	0.204
2012	0.037	0.318	0.017	0.016	0.019	0.579	0.668	0.152
2013	0.035	0.334	0.012	0.014	0.018	0.601	0.707	0.121
2014	0.030	0.285	0.012	0.015	0.014	0.615	0.676	0.116
2015	0.032	0.305	0.012	0.015	0.014	0.632	0.666	0.111
2016	0.030	0.291	0.011	0.020	0.013	0.635	0.665	0.112
2017	0.031	0.294	0.012	0.021	0.013	0.637	0.661	0.113
2018	0.032	0.292	0.011	0.025	0.012	0.643	0.645	0.114
2019	0.029	0.262	0.011	0.029	0.012	0.627	0.653	0.117
2020	0.025	0.249	0.009	0.021	0.011	0.646	0.678	0.107

Note: Data represent the average of each variable. Variables are calculated using the definition reported in the methodology.

Source: Calculations are based on data retrieved from the annual reports of the commercial banks themselves.

Table 2 shows a summary of the main statistics for the variables used in this study. The data show that the banks included in the sample are profitable. The mean value of *ROA* is around 3.2 percent, and the mean value of *ROE* is around 30.1 percent. Examining the minimum and maximum values of the variables indicates that there is consistency among the numbers. The standard deviations have very low numbers, indicating the close performance among different indicators for Kuwaiti banks. This indicates a huge level of competition among them.

Table 2. Descriptive statistic of the variables.

Variables	ROA	ROE	LABOR	FUNDS	CAPITAL	CREDIT	DEPOSIT	EQUITY
Mean	0.032	0.301	0.015	0.020	0.015	0.613	0.669	0.124
Median	0.032	0.294	0.012	0.020	0.014	0.627	0.666	0.114
Max	0.037	0.386	0.045	0.029	0.021	0.646	0.707	0.204
Min	0.025	0.249	0.009	0.014	0.011	0.524	0.640	0.102
Std. Dev.	0.003	0.036	0.010	0.005	0.003	0.036	0.021	0.029
Skewness	-0.232	1.103	3.105	0.713	0.818	-1.669	0.631	2.417
Kurtosis	0.569	2.287	9.895	-0.098	-0.469	2.987	-0.048	6.003
Observations	99	95	95	95	98	95	95	95

Source: Calculation based on data retrieved from the annual reports of the commercial bank themselves.

## 6. EMPIRICAL RESULTS

To compare between the results of the fixed effects and random effects models, the paper utilized the Hausman test. The null hypothesis of the test indicates that the random effects is the appropriate model, while the alternative hypothesis indicates that the fixed effects model is better for estimation. The Chi square statistic of the Hausman test is calculated as 1.888. According to this result, we could not reject the null hypothesis of the random effects model being the appropriate model. The results (as appear in Table 3) showed that the cost of labor has a negative effect on revenues, and that effect is significant at the 1% level. On the other hand, the cost and investment in capital showed a positive effect on revenue at the 1% significance level. This result is consistent with the behavior of banks in Kuwait, which try to invest in all technologies available to attract new customers.

Table 3. Fixed effect model and random effect model results.

(Dependent variable: ROE).		
Variables	Fixed effects	Random effects
Constant	0.015 (1.377)	0.017 (1.442)
LABOR	-0.182 *** (-4.135)	-0.182 *** (-4.165)
CAPITAL	0.730 *** (8.242)	0.728 *** (8.256)
FUNDS	-0.008 (-0.106)	-0.005 (-0.069)
CREDIT	-0.007 (-0.573)	-0.009 (-0.688)
DEPOSIT	0.010 (0.950)	0.009 (0.854)
EQUITY	0.051 *** (2.978)	0.050 *** (2.907)

Note: t-statistics are reported inside the parentheses.  
\*\*\* Significant at 1%.

The coefficient of *FUNDS* showed the impact of the cost of borrowing revenue. As expected, the cost borrowing is affecting revenues negatively. However, that effect is insignificant. The effect of *EQUITY* is positive and significant at the 1% level. It is important to remember that a higher level of the variable *EQUITY* means less dependency on outside sources of funds. The positive coefficient indicates that higher *EQUITY* will affect the level of revenues positively. The results presented in Table 3 are estimated using the reduced-form of revenue equation. The H statistic was measured by summing the coefficients  $\beta_1$ ,  $\beta_2$  and  $\beta_3$ , as they appear in Equation 2. The H statistic was found to be 0.540 for the period of 2010 - 2020. These results indicate a moderate level in the

competitive environment of the Kuwaiti banking sector. The H statistic should lie between 0 and 1. If the value of the H statistic is close to zero, this indicates monopolistic behavior, specifically an oligopoly for the case of the banking industry. If the H statistic is close to 1, this is an indication of perfect competition (Schaeck, Cihak, & Wolfe, 2009). According to the result of the H statistic, we reject the hypothesis that the Kuwaiti banking sector is working under either a monopoly or perfect competition. In fact, we suggest that banks earn their revenues under a monopolistic competition market. This result is somewhat consistent with the reality of the banking industry. An H statistic value that is close to 1 will be unrealistic, since one of the main conditions of perfect competition is a large number of producers. The sample of this study included only nine banks, so that condition is unfulfilled in this sector. Though Kuwait has 23 local and international banks by the end of 2020, most of the banks were not included in the sample study since they were either small or had only one or two branches. These conditions indicated that the industry structure is far away from being perfect competition. On the other hand, the level of competition among banks is also far away from being monopolistic, since the monopolist does not pursue new customers as happens in other kinds of market structures. The high level of competition among banks for attracting new customers, borrowers, and depositors indicated that the market structure in the banking industry in Kuwait is a monopolistic competition. The sign of the coefficient of *CREDIT* was not what we expected. We anticipated that more loans provided to customers would enhance revenues. While not statistically significant, the results showed that loans and revenues have a negative relationship. One possible interpretation for that relationship could be excessive competition among local banks offering zero interest options to attract new customers and retain current customers. These operations were not executed in a profitable manner, which could affect the performance of some banks.

## 7. CONCLUSION

This study evaluated the competitiveness of the Kuwaiti banking sector using the Panzar-Rosse model or the H statistics approach. The study analyzed the data of the largest nine banks in Kuwait. The study built and tested a model for the revenues of the banking sector in Kuwait. The model includes a number of independent variables that explain the behavior of revenues for the banking sector during the study period (2010 - 2020), where each variable has a minimum of 95 observations. Furthermore, the paper applied the regression model using the panel data model and the Hausman test in order to check the results of both the fixed effects and random effects models.

The results indicated that the random effects model is a better model for estimation. The H statistic model, which is built on the sum of the first 3 coefficients of the model, suggest that the Kuwaiti banking sector is neither a perfectly competitive market nor an oligopoly. During the study period, banks proved to earn their revenues under a market structure of monopolistic competition. These results are consistent with the findings of Turk-Ariss (2009) and Al-Muharrami (2008a) which found varying degrees of monopolistic competition. Other results of the model showed that the cost of labor has a negative effect on revenues and the result was significant at the 1% level. Alternatively, the cost of investment in capital showed a positive effect on revenue at the 1% significance level. This result is consistent with the behavior of banks in Kuwait, which try to invest in all technologies available to attract new customers. Also, the variable *EQUITY*, which presents the equity raised by owners of the banks, affected the level of revenues positively and significantly. The higher level of variable therefore meant less dependency on outside sources of funds, and as a result less costs and higher revenues. Finally, the paper concluded that the level of competition in the Kuwaiti banking sector is very naïve as the banking industry is still in its development stages and the Kuwaiti financial sector is transforming with expansion of branches, number of operations, and banking institutions. Hence, in order to reach a higher and stronger stage of competition, it is essential that the banking sector reaches a stage of stability.

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