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Article

Financial Performance of Iranian Banks from 2013 to 2019: A Panel Data Approach

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Abstract: It is widely believed that the financial system is dependent on the banking industry, and its strength and development are vital for economic prosperity. This paper tried to show the financial performance of Iranian banks listed on the Tehran Stock Exchange (TSE) during 2013–2019, as the research population. The statistical population included 18 banks listed on the TSE from 2013 to 2019, which were sampled using a screening method. The results indicated a significant relationship between explanatory variables of capital ratio and the financial performance of banks in all models. However, a significant negative relationship was found between the inflation rate and the financial performance of banks in all models. Furthermore, it seems that banks with high asset strength are more profitable than the others. Regulators should guarantee that banks remain highly capitalized for a viable banking sector in Iran.

Keywords: financial performance; bank-specific factor; macroeconomic factors; panel data



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1. Introduction

It is widely believed that the financial system is dependent on the banking industry and its strength and development are vital for economic prosperity (Bouzari et al. 2020). The efficiency of banks has been reported as one of the important factors of economic success. Moreover, as different banks have different management levels, the various types of financial intermediation are expected to have different performances (Chen 2020).

According to Rengasamy, the word “performance” means carrying into the execution or achievement or performing specific activities or fulfilling obligations. Therefore, “bank performance” can be defined as “the reflection of the way a bank uses its resources in a form which enables it to achieve its goals. In addition, the bank performance also implicates employing a series of indicators to reflect the status of the bank and, in a way, its ability to achieve the desired objectives (Rengasamy 2012). It is possible to investigate the financial performance of the banks of an economy to evaluate their economic health (Haque and Sharma 2011).

It has been reported that bank profitability can be assessed at the micro and macrolevels of the economy. At the microlevel, profit is vital for a competitive banking institution and the most inexpensive source of funds. It is also a requirement for successful banking in a period of growing competition in financial markets (Aburime 2008). At the macrolevel, a profitable banking sector is capable of bearing the negative shocks and it can help boost the stability of the financial system (Athanasoglou et al. 2008). Banks are looking for new techniques for boosting their services. To figure out the achievement of superior performance, managers and policymakers have raised this question: “What drives performance?” To answer this question, researchers are looking for the operational details (Soteriou and Zenios

1999). An important prerequisite for answering this question is to measure profitability. Return on total assets, return on total equity and net interest margin are the main tools for evaluating Islamic and Conventional banks (Abduh and Alias 2014; Robin et al. 2018).

According to the recent profitability of the banks in Iran, some elements have been observed clearly by The Central Bank of Iran (CBI) as the specifications of banks (such as re-assessment of assets and increased capital, significant growth of common and noncommon properties, sale of excess property, clearance of government debts, and overdue receivables with overdraft from the central bank, increased net income and profit, and positive monetary indicators). Thus, these banks boosted their status in the national banking system by enhancing their performance indicators, reforming the structure, and standardizing the financial statements.

Iran's economy has faced sanctions against the banking system since 2006. Due to its economic structure (the bank-oriented system), the performance of this sector will be very effective in the general situation of Iran's economy. Therefore, the possibility of Iran's economic vulnerability to sanctions increased because of the extensive financial support of the banking system for the government (Keimasi et al. 2016). The financial sanctions exclude Iran from the worldwide messaging system used to arrange international money transfers, making international payments very difficult and constraining other bilateral economic flows (Dizaji and Van Bergeijk 2013). Despite these important changes in the Iranian banking system, there has been no empirical research about the impact of the sanctions on the profitability of the Iranian banking industry due to the lack of accurate and publicly available statistics. It should be noted that Iranian banks are in specific conditions and their performance cannot be compared with other groups of banks worldwide because of some reasons, e.g., crippling US sanctions, no sustainable economy, and unstable inflation. Furthermore, it should be mentioned that some previous studies have emphasized capital adequacy (positive), loan intensity (negative), management efficiency (negative), lagged GDP growth (positive) and real interest rate (positive) had the same significant effect on banks' profitability in Iran. Meanwhile, liquidity had the positive effect on banks' profitability in Iran. On the other hand, size, credit risk and industry concentration had opposite effect on banks in Iran (Al-Harbi 2019). Meanwhile, Ebrahimi et al. (2016) shown that internal factors—the amount of capital and the size of the bank—have a positive impact on profitability. Besides, structural factors including market share and concentration are shown to have a positive impact on profitability whereas ownership appears to have no significant impact. Furthermore, inflation and economic cycles—among environmental factors—exhibit a positive impact on profitability.

Banks affect economic growth mainly through the capital accumulation channel. While it appears that the stock market does cause growth through the productivity channel as well (Taghipour 2009), Iranian banks can reduce transaction and acquisition costs by acquiring information about investment opportunities, aggregating and equipping savings, monitoring investments and corporate governance, facilitating the exchange of goods and services, distributing and managing risk. Finally, it leads to better allocation of resources and, ultimately, to increased economic growth.

This paper aims to show the financial performance and profitability of Iranian banks from 2013 to 2018 using a panel regression framework. Although the financial performance has been comprehensively studied in the theoretical and empirical literature, there is scant specific research simultaneously investigating the impact of bank-specific, industry-related, and macroeconomic factors on the financial performance in Iran. The study applied a distinctive balanced panel data set covering bank-level annual data of Iranian banks. Contrary to numerous empirical studies on profitability, corporate governance along with variables controlling for other bank-specific, industry-related, and macroeconomic factors are also taken into consideration in this framework, following Robin et al. (2018) and Ekinici and Poyraz (2019).

In the second part of the study, the focus is on a literature review related to the topic. The third section provides information related to data collection and methods. In the fourth

section, a panel data approach is used to analyze the data obtained from banks listed on the Tehran Stock Exchange (TSE), which were sampled using a screening method. The conclusion and discussion parts are focused on important notes, managerial implications, some limitations, and suggestions for future research.

2. Literature Review

It has been argued many times that financial development enhances economic growth by enabling efficient intertemporal allocation of resources, capital accumulation, and technological innovation. The activities of the banking sector further accelerated through an extended banking network and credit expansion with strengthened risk management practices as depicted in the improved asset quality, healthy liquidity ratios, adequate profitability, and high-quality capital levels ensuring sufficient risk absorption capacity (Jahfer and Inoue 2014).

Banking supervision is an essential aspect of modern financial systems, seeking crucially to monitor risk taking by banks to protect depositors, the government safety net, and the economy as a whole against systemic bank failure and its consequences (Davis and Obasi 2009). Effective banking supervision is one of the basic preconditions for ensuring the correct functioning of the country's economic system. The main purpose of banking supervision is to maintain the stability of the financial system and increase its confidence by reducing the risk for depositors and other creditors.

The bank profitability and performance shows the use of the bank resources to achieve its goals (Mirbargkar et al. 2020) and covers a set of indicators showing the bank status and its ability to achieve the objectives (Mommel and Raupach 2007). The performance of banks is assessed to determine their operational results and their overall financial condition, measure their asset quality, management quality, efficiency, and the achievement of their objectives, and determine their earning quality, liquidity, capital adequacy, and the level of bank services (Kamandea et al. 2016). So far, several ratios, such as return on assets (ROA) (Flamini et al. 2009), return on equity (ROE) (Saona Hoffmann 2011), and the net interest margin (NIM) (Ben Naceur and Goaid 2008) have been applied for the bank profitability measurements.

Banks are different in terms of profitability. Several factors affect the profitability and financial performance of banks (Tharu and Shrestha 2019). Empirical studies investigating the financial performance of banks use variables that fall into three groups: (1) individual bank-specific factors, (2) banking sector/industry-specific factors, and (3) macroeconomic indicators (Alfadli and Rjoub 2020).

The bank performance determinants have been investigated by several empirical studies (Bourke 1989; Athanasoglou et al. 2008; Salim et al. 2016). There are internal and external determinants, with the former covering bank-specific management decisions, for instance, the level of liquidity, credit exposure, capital ratio, operational efficiency, and bank size. The external determinants are industry-related, such as reform policies or regulations, ownership or concentration, and macroeconomic indicators, e.g., inflation, GDP growth, and broad money growth (Robin et al. 2018). The management of commercial banks, stakeholders, and other interest groups, such as the central bank and the government, can benefit from identifying the bank-specific factors and their influences on the bank profitability and performance. Several internal bank-specific factors, external, and industry-specific factors (Kamandea et al. 2016) have been identified by evaluating the internal aspects that determine the profitability and financial performance of commercial banks. Profitability can be influenced by several macroeconomic indicators, such as economic growth (Kosmidou 2008), financial market structure, and macroeconomic conditions (Pasiouras and Kosmidou 2007).

According to Kosmidou (2008), a significant negative effect of inflation on profitability was reported in Greek banking during the EU financial integration. According to Athanasoglou et al. (2008), macroeconomic factors shape the profitability of Greek banks. A study by Sufian and Kamarudin (2012) revealed that profitability was affected greatly by the

growth in GDP and inflation. [Ongore and Kusa \(2013\)](#) found that macroeconomic variables did not influence the performance of commercial banks in Kenya at a 5% significance level.

[Gautam \(2018\)](#) believed that gross domestic product could significantly affect the financial performance of commercial banks. A nonsignificant positive relationship was found between the GDP growth rate and the performance of banks, whereas this parameter was negatively and nonsignificantly influenced by the interest rate ([Nyabakora et al. 2020](#)). Both the inflation rate and the exchange rate had nonsignificant negative influences on the bank performance at a 10% significance level. It has been reported that the capital and assets of banks are significantly involved in determining profitability ([Robin et al. 2018](#)). [Bourke \(1989\)](#) and [Molyneux and Thornton \(1992\)](#) reported a positive relationship between the level of capital (capital ratio) and profitability. [Jha and Hui \(2012\)](#) showed that the capital adequacy ratio (CAR) negatively influenced ROA while it had a positive influence on ROE.

According to [Adam \(2014\)](#), the financial performance of the Erbil Bank was influenced by the positive behavior of its financial position and some variables of its financial factors. Then, it was reported that the total financial performance of the Erbil Bank was boosted regarding liquidity ratios, asset quality ratios or credit performance, and profitability ratios (NPM, ROA, and ROE). According to [Alshatti \(2016\)](#), bank profitability is influenced positively by the variables of capital adequacy, capital, and leverage, but it is negatively influenced by the variable of asset quality. Profitability is believed to be driven mainly by capital strength and asset quality in Bangladesh ([Robin et al. 2018](#)). Therefore, a suitable banking policy or raising capital base and asset quality are essential to guarantee a viable banking sector in this country. [Gautam \(2018\)](#) found a positive relationship between ROA and CDR, with the latter affecting the financial performance of commercial banks; the interest margin was positively affected by the bank size ([Demirgüç-Kunt and Huizinga 1999](#)).

[Pasiouras and Kosmidou \(2007\)](#) argued that the specific characteristics of banks are influenced by the profitability of both domestic and foreign banks. According to [Athanasoglou et al. \(2008\)](#), bank-specific and macroeconomic factors, except for bank size, form the profitability of Greek banks, and other industry structure variables do not significantly influence the profitability. Higher levels of technical efficiency can be observed in larger and more profitable banks.

[Olson and Zoubi \(2011\)](#) conducted an empirical study on MENA banks and revealed a positive correlation between bank size and accounting profitability. [Sufian and Kamarudin \(2012\)](#) reported that profitability was influenced by bank size. According to [Tharu and Shrestha \(2019\)](#), bank size is not affected by profitability (ROA). [Rao and Lakew \(2012\)](#) argued that the key determinants of bank profitability in Ethiopia were the internal factors being under the control of the bank management. [Bouaziz and Triki \(2012\)](#) highlighted a significant effect of board features on the financial performance of Tunisian companies. [Ongore and Kusa \(2013\)](#) revealed that the board and management decisions were the key drivers of the financial performance of commercial banks in Kenya.

[AlQudah et al. \(2019\)](#) showed that politically connected directors were a stumbling block in the way to positively improve performance. They also found board independence was not significantly linked with ROA. [Haris et al. \(2019\)](#) argued that the presence of politically connected directors in the board negatively influenced the bank profitability.

[Haris et al. \(2020\)](#) reported an inverted U-shaped relationship between capital ratio and profitability. This indicates profitability increases with an increase in capital ratio up to a certain level, while a further increase in capital ratio beyond that level decreases profitability. [Lucky and Nwosi \(2015\)](#) showed a significant relationship between asset quality and the profitability of commercial banks in Nigeria. [Mule et al. \(2015\)](#) reported a positive association between ROE, profitability, and firm size. [Ali and Puah \(2019\)](#) also indicated that bank size, credit risk, funding risk, and stability had statistically significant impacts on profitability. The term “concentration” originates from the structure-conduct performance theory, indicating that a high concentration is positively related to profitability. [Ekinici and Poyraz \(2019\)](#) found a significant positive relationship between bank concentration (CR3)

and profitability. Stančić et al. (2014) found that the proportion of independent directors on the board is negatively but insignificantly related to bank profitability. Kaymak and Bektas (2008) and Pathan et al. (2007) presented evidence of a significant positive relationship between the board independence and the performance of Turkish and Thai banks. Al-Harbi (2019) suggested that equity, foreign ownership, real gross domestic product growth, and concentration could foster bank profitability. Ameer and Mhiri (2013) and Yanikkaya et al. (2018) reported a negative correlation between profitability and GDP growth. Rahman et al. (2015) found that GGDP to be an important factor for NIM and conversely, inflation was found as an important determinant of ROA and ROE. Aburime (2008) revealed that political affiliation had a positive nonsignificant impact on the bank profitability in Nigeria. Saeed (2014) concluded that the inflation rate negatively affected bank profitability whereas it had a positive influence on bank size.

Nouri Nouri Borojerdi et al. (2010) showed that the banking industry concentration had a positive relationship with bank profitability. In the banks of Iran, Arjomandi et al. (2012) showed that the banking industry's technical efficiency level—which had improved between 2003 and 2006—deteriorated after regulatory changes were introduced in Iran. The results obtained also show that during 2006–2007, the industry's total factor productivity increased by 32 percent. Hami (2017) showed that inflation has a negatively significant effect on financial depth and also a positively significant effect on the ratio of total deposits in banking system to nominal GDP in Iran during the observation period. Moreover, the existence of an equilibrium relationship between inflation and other three indicators of Iran's financial development used in this study was rejected. Shahchera and Jozdani (2012) indicated profitability increased up to a certain level with an increase in the capital ratio, while a further increase in the capital ratio beyond that level decreased the profitability. The current study addresses the following hypothesis:

There is a significant relationship between the explanatory variables (capital ratio, asset quality, bank size, concentration ratio, political director, independent director, GDP growth rate, and Inflation) and the profitability of banks.

3. Methodology

3.1. Data Collection

There are 8 public banks and 18 private banks operating in Iran, among which only 19 banks are listed on the Tehran Stock Exchange. The required information was obtained from the TSE software. All data are categorized in this software for every year and every bank separately. Thus, the statistical population included the banks listed on the TSE from 2013 to 2019, which were sampled using a screening method. Due to the severe financial sanctions against Iran, especially the banking sanctions, the focus of the present research was on the selected years. In the last 7 years, Iranian banks have experienced various conditions after the crippling financial sanctions. Although it was hoped that the situation would improve with the advent of the joint comprehensive plan of action (known as Barjam in Iran), the results of internal and statistical analyses show that Iranian banks have experienced complex conditions in the context of financial sanctions, which was the main reason for reviewing the data in the selected period. Because the statistical population was probably limited, the following inclusion criteria were considered for sample selection:

1. The final fiscal year of the bank should be until the last day of the year.
2. The bank should have unceasingly operated in the TSE from 2013 to 2019.
3. Comprehensive information and notes, along with the financial statements of the bank, should be accessible.
4. The equity share of the bank should be positive during the study period.
5. The fiscal year of the bank should be unchanged during the study period.

Ultimately, data from 18 banks were analyzed after screening the banks. The websites of TSE (www.tse.ir) (accesses on 15 February 2019) and CBI (www.cbi.ir) (accesses on 15 February 2019) were visited to gather the data related to the research variables.

3.2. Variable Description

3.2.1. Dependent Variables

This study employs three measures of profitability as follows. ROA is defined as the ratio of net profit after tax divided by total assets (Rivard and Thomas 1997; Pasiouras and Kosmidou 2007), ROE is measured by net profit after tax to shareholders' equity, and net interest margin (NIM) is measured by net interest income (interest income minus interest expense) divided by total assets (Dietrich and Wanzenried 2011).

3.2.2. Independent Variables

Following the literature discussed in Section 2, and based on the empirical studies of Robin et al. (2018) and Ekinci and Poyraz (2019), the major factors influencing profitability measures are listed as follows:

Capital ratio (TC/TA): This reflects the bank's capability to absorb losses incurred due to poor asset quality. The capital ratio is measured as the total capital divided by total assets.

Asset quality (TL/TA): This variable, which is used to represent the asset quality, is also an indicator of liquidity. It is defined as the ratio of total loans to total assets.

Bank size (SIZE): Bank size is measured by the natural logarithm of total assets.

Concentration ratio (CR3): The three-bank deposit concentration ratio (CR3) is included in our model to capture the effect of market concentration.

Political director in the bank board (PD): This variable is a dummy variable defined as PD = 1 if any politically linked person is on the bank board and zero otherwise.

Independent director in the bank board (ID): This variable is a dummy variable defined as ID = 1 if any independent director is on the bank board and zero otherwise.

GDP growth rate (GDPG): This variable is measured by the real GDP growth rate.

Inflation (INF): CPI inflation rate is used as a proxy.

3.3. Data Analysis

The main research hypothesis was tested using the panel data approach (Al-Homaidi et al. 2020) initiated by doing the unit root test for stationary. To ensure the use of the panel method, a likelihood ratio test (LRT) was used (Ebrahimi et al. 2019).

A Hausman test (Hausman 1978) was used to differentiate between fixed and random effects. In addition, Pearson's correlation test was done (Appendix A) to eliminate any multicollinearity. The research model is based on those introduced by (Trabelsi and Trad 2017) and (Tan and Floros 2012). The relationship between research variables was tested using the following model based on (Robin et al. 2018).

$$Z_{it} = \beta_0 + \gamma_1(TC/TA)_{it} + \gamma_2(TL/TA)_{it} + \gamma_3SIZE_{it} + \gamma_4CR3_t + \gamma_5PD_{it} + \gamma_6ID_{it} + \gamma_7 GDPG_t + \gamma_8INF_t + e_{it} \quad (1)$$

where z is expressed as the measure of profitability in terms of either ROA, ROE, or NIM. The explanatory variables are capital ratio (TC/TA), asset quality (TL/TA), bank size (SIZE), concentration ratio that is calculated based on deposits (CR3), a dummy for political director (PD) in the bank board, a dummy for independent director (ID) in the bank board, GDP growth rate (GDPG), and inflation (INF).

4. Results

Table 1 shows the descriptive statistics of the research variables. In the first step, it is essential to test the stationary of the series using the LLC test (Levin et al. 2002). Table 2 shows that all variables are stationary.

Table 1. Descriptive statistics of research variables.

Variables	Mean	Std. Dev.	Min.	Max.
ROA	0.149	0.196	0.001	0.859
ROE	0.284	0.257	0.001	1.054
NIM	0.235	0.238	0.035	1.243
TC/TA	1.514	3.852	0.001	22.410
TL/TA	0.447	0.481	0.001	3.607
SIZE	6.318	0.760	5.232	8.014
CR3	88.259	19.834	52.635	111.000
PD	0.634	0.483	0.000	1.000
ID	0.619	0.487	0.000	1.000
GDPG	437.107	25.994	385.874	467.414
INF	18.471	9.510	9.000	34.700

Table 2. Unit root test for stationary.

Variables	Trend & Intercept		Decision
	Level		
	LLC Test		
ROA	−16.716 (0.000) *		I(0)
ROE	−8.198 (0.000) *		I(0)
NIM	−9.638 (0.000) *		I(0)
TC/TA	−31.694 (0.000) *		I(0)
TL/TA	−10.433 (0.000) *		I(0)
SIZE	−16.091 (0.000) *		I(0)
CR3	−4.185 (0.000) *		I(0)
PD	−8.848 (0.000) *		I(0)
ID	−8.396 (0.000) *		I(0)
GDPG	−7.782 (0.000) *		I(0)
INF	−6.456 (0.000) *		I(0)

Note: * signify 1%. Prob. values are shown in brackets and the other values are the statistics.

Before the model estimation, the presence/absence of multicollinearity between independent variables was verified using Pearson's correlation. Here, H_0 and H_1 show the absence and presence of multicollinearity between the independent variables, respectively. H_0 is accepted, rejecting the presence of multicollinearity between independent variables that have values less than 0.8 (Tabachnick et al. 1996; Ebrahimi and Mirbargkar 2017).

Afterward, considering the significance of cross-section F (prob. < 0.05) in the tests of redundant fixed effects (Table 3), the Hausman test was done for selecting the model type in the panel. The probability of cross-section random (prob. < 0.05) in the Hausman test inspires the fixed effect model. Table 3 shows the analysis of fixed effect panel data regression with the use of WLS linear regression to overcome the equality of variances between series.

Table 3. Estimation results of the panel regression analysis.

Variables	Model 1: ROA	Model 2: ROE	Model 3: NIM
TC/TA	3.292 (0.001) *	1.636 (0.088) ***	4.327 (0.000) *
TL/TA	0.655 (0.513)	0.039 (0.968)	0.289 (0.772)
SIZE	−7.812 (0.000) *	1.450 (0.149)	0.855 (0.394)
CR3	−1.501 (0.136)	3.212 (0.001) *	1.042 (0.299)
PD	−0.448 (0.654)	0.499 (0.618)	1.390 (0.167)
ID	3.279 (0.001) *	2.012 (0.000) *	1.441 (0.243)
GDPG	1.434 (0.154)	1.188 (0.236)	3.261 (0.001) *
INF	−1.663 (0.099) ***	−1.674 (0.096) ***	−3.129 (0.002) ***
C	7.561 (0.000) *	5.565 (0.000) *	4.454 (0.000) *
R-squared	58.6%	50.6%	51.4%
Probability (F)	0.000	0.000	0.000
Durbin-Watson (DW)	1.778	2.030	1.715
Probability (Cross-section F)	0.008	0.000	0.000
Probability (Hausman test)	0.000	0.000	0.006
Total observations	126	126	126

Note: * and *** represent 1% and 10%, respectively. Prob. values are shown in brackets and the other ones are the t-statistic values.

Table 3 shows the results of the model estimation using the cross-section method and fixing the heteroscedasticity problem through cross-section weights. According to the F-statistic significance level, the model is verified at a 99% confidence level.

The results show that (a) the R-squared value of 58.6 reveals that 58.6% of the data fit the ROA's regression model, (b) the R-squared value of 50.6 reveals that 50.6% of the data fit the ROE's regression model, and (c) the R-squared value of 51.4 reveals that 51.4% of the data fit the NIM's regression model. Moreover, Durbin-Watson statistics (DW) did not show any autocorrelation

There is a significant relationship between the explanatory variables with the capital ratio and the financial performance of banks in all models (ROA: t-statistic = 3.292; prob = 0.001; ROE: t-statistic = 1.636; prob = 0.088; NIM: t-statistic = 4.327; prob = 0.000). Size has a significant relationship with the financial performance of banks (t-statistic = −7.812; prob = 0.000) only in the ROA model. A negative coefficient shows that the financial performance of banks decreases with increased size. A significant relationship is established between three-bank deposit concentration ratio and the financial performance of banks in the ROE model (t-statistic = 3.212; prob. = 0.001). ID has a significant positive relationship with the financial performance of banks in ROA and ROE models. GDP growth rate has a significant relationship with dependent variables (t-statistic = 3.261; prob = 0.001) only in the NIM model. There is a significant negative relationship between inflation rate and the financial performance of banks in all models (ROA: t-statistic = −1.663; prob = 0.099; ROE: t-statistic = −1.674; prob = 0.096; NIM: t-statistic = −3.129; prob = 0.002).

5. Discussion

To achieve the research objectives, six-year panel data for 18 banks were analyzed using the multiple linear regression model. The panel data of banks were applied to observe the effects over years and across banks. The effects of determinants on the financial performance of banks, as expressed by ROA, ROE, and NIM, were assessed in this study.

A significant positive relationship was found between the capital ratio (TC/TA) and the financial performance of banks (ROA, ROE, and NIM), revealing that well-capitalized banks earn more profits as they possibly use less external funding and, consequently, the cost of funding is low and profits are high. This result is in agreement with some other empirical studies, e.g., [Berger \(1995\)](#); [Pasiouras and Kosmidou \(2007\)](#); [Kosmidou \(2008\)](#); and [García-Herrero et al. \(2009\)](#). No significant relationship was found between the asset quality (TL/TA) and the financial performance of banks. This is not consistent with the empirical studies by [Robin et al. \(2018\)](#) and [Ekinci and Poyraz \(2019\)](#).

The industry-related factor, i.e., concentration, was positively linked with the bank profitability (ROE). Increased concentration led to reduced competition and increased profitability. According to the structure conduct performance paradigm, the key profitability determinant is increased by market power, driven by increased market growth and concentration. [Smirlock \(1985\)](#); [Molyneux and Thornton \(1992\)](#); [Robin et al. \(2018\)](#), and [Ekinci and Poyraz \(2019\)](#) also showed that there is a positive relationship between concentration and profitability.

According to one of the estimated regressions (ROA), bank size and profitability ratios were negatively linked. [Pasiouras and Kosmidou \(2007\)](#) also found a negative relationship between bank size and performance. However, [Hauner \(2005\)](#); [Kosmidou \(2008\)](#), and [Robin et al. \(2018\)](#) found a positive relationship between bank size and profitability. In the other two regressions, no significant relationship was found between bank size and performance (ROE and NIM). This is because small banks can develop better relationships with local businesses and customers and provide them with favorable proprietary information in setting contract terms and making better credit underwriting decisions, and thereby increasing the profitability ratios of banks. There was a significant relationship between independent directors and bank profitability (ROA and ROE). It could be concluded that independent directors are adequate in Iranian banks, and they can effectively monitor the management of the bank, resulting in increased bank profit. However, [Robin et al. \(2018\)](#) found that the relationship between independent director and bank profitability is not statistically significant.

Politically connected directors in banks can extract resources at a lower cost, through their political connections. On the other hand, from a moral hazard perspective, politically connected banks have fewer incentives to be efficient because they expect their political connections to be used to collect deposits under two different deposit insurance regimes (blanket guarantee and limited guarantee) or these banks should be bailed out due to their political connections in the event of difficulty ([Nys et al. 2015](#); [Abdelsalam et al. 2017](#)). In a politicized economy, banks with politically connected directors on the board tend to lend more money at a lower cost and offer favorable terms to firms linked to politicians. Politically connected directors influence board decisions by allowing more political interference to pursue political objectives at the expense of banks, which adversely affects the performance ([Liang et al. 2013](#)). Politically connected directors sitting on bank boards may have political goals to achieve, which leads the bank to perform poorly ([Haris et al. 2020](#)). The results show that the relationship between PD and profitability was not significant in all the three estimated regressions. This is consistent with an empirical study by [Robin et al. \(2018\)](#). However, several other studies found that there is a relationship between political directors and bank profitability ([Hung et al. 2017](#); [Haris et al. 2019](#)).

Unlike the results of [Robin et al. \(2018\)](#) and [Ekinci and Poyraz \(2019\)](#), GDP growth positively influenced the bank performance (NIM) in this research, revealing that an improvement in the general income in the economy is profit-enhancing. GDP growth positively influenced loan demand and the supply of deposits; therefore, it positively

affected bank profitability. These outcomes are consistent with well-documented literature that GDP growth will boost bank profitability in the long run. Inflation enters negatively in all three regressions (NIM, ROA, and ROE). However, [Robin et al. \(2018\)](#) and [Ekinci and Poyraz \(2019\)](#) showed that this relationship is positive. These negative relationships between inflation and profitability in the Iranian banking sector show that predicting inflation in Iran is not easy and the interest rates are adjusted accordingly. Hence, the link between interest revenue and interest expense negatively influences profitability.

6. Conclusions

This study assesses the financial performance of banks in Iran from 2013 to 2018. It aimed to show the influences of bank-specific characteristics, industry-related, and macroeconomic indicators on the profitability of the sample banks. According to our results, large banks are less profitable (measured by ROA). Because the bank size is negatively related to ROA and it had a nonsignificant effect on increasing ROE and NIM, banks should not try to boost their growth for enhancing their performance. Besides, greater market power (i.e., higher concentration) brings about higher bank profit (measured by ROE). Moreover, the GDP growth effect passes through to higher banking profitability (measured by NIM), though CPI inflation reduces the profitability (measured by ROA, ROE, and NIM) of the sample banks. Thus, the government should adopt the relevant policies to accelerate economic development because a high GDP growth may increase the profitability of Iranian banks. Given the high inflation rate in Iran and its negative effect on the profitability of banks, the management and policymakers of banks in Iran are recommended to find better strategies to tackle the inflation effect to pave the way for surge of profits, attract investors, and avoid liquidation.

According to our findings, banks, where the board independence is largely observed, show a high financial performance (measured by ROA and ROE). Consequently, independent directors play an active and significant role in independent statements and recommendations during the corporate decision-making process. To form the board structure, the presence of non-executive directors is of tremendous importance. Therefore, if the purpose of board independence is to boost performance, such efforts might be right. A significant impact was not observed for the loan-to-asset ratio (TL/TA) and political directors in the bank board on profitability measures, though greater capital strength (TC/TA) brings about higher profitability (measured by ROA, ROE, and NIM). Thus, it seems that banks with high asset strength are more profitable than the others. Regulators should guarantee that banks remain highly capitalized for a viable banking sector in Iran.

The importance of the capital ratio in banks is so great that the international community has set a minimum for it. Banks rely on their capital to withstand losses due to nonrepayment of loans granted, poor market conditions, and some operational problems. Thus, larger capital ratios result in higher capital coverage against potential losses because banks with higher capital ratios are more stable and more secure, even in financial crises, against losses and debt repayments. They accept more risk and are encouraged to pay off loans and facilities in the hope of high returns and increased bank profits. As the bank size increases, the bureaucracy and other associated factors increase, which have a negative effect on the bank's profit. Therefore, it can be concluded that if the cost of banks does not decrease as banks become larger, the bank size will have a negative relationship with ROA. The bank concentration coefficient is positive and statistically associated with ROE. This result supports the view that banks with higher market power gain higher profits. The existence of competitive conditions will increase the risk of bank operations and, on the other hand, will reduce the bank returns. Thus, researchers conclude that centralized banking can be more effective than competitive banking. Therefore, it is clear that the intensity of focus on the banking industry can have significant consequences on the ROE of banks by affecting the efficiency and effectiveness of resources (in the desired or unfavorable direction).

The performance and profitability of the banking system is a vital issue. One of the most important challenges for the Iranian banks, which causes their constant disruption, is the prevailing economic sanctions in Iran. For this reason, this study collected and reviewed the data of Iranian banks during the economic sanctions from 2013 to 2019. This is what distinguishes this study and makes it innovative, important, and valuable because it can provide useful results to these banks. The results obtained in this study can help political decision-makers to evaluate the cost-benefit of making international decisions and provide appropriate theoretical and research foundations to deal with sanctions, reduce their impact, and consequently strengthen and stabilize the banking structure. According to the results of the research, in the conditions of severe economic fluctuations and sanctions under political conditions, Iranian banks with a higher capital ratio can take more risks. They increase their returns and income by providing more credits, facilities, and loans, and as a result, they will have better financial performance and maintain the competitive position of the banking system. Policymakers of Iranian banks must consider an optimal level for the banks' capital ratio so that they can remain profitable. The larger banks in Iran receive greater unilateral support from the central bank. They are able to hedge their risks by using central bank resources, and this support often leads to a reduction in the performance of banks. Moreover, due to the economic conditions of Iran in the last decade, the blocking of resources of some banks and the impossibility of paying new facilities have reduced the volume of financial transactions of customers and also the market share of banks. As a result, large banks were unable to manage scale costs and showed weaker financial performance than smaller banks. Therefore, the bank size should be considered in such a way as to be able to offer a diverse range of banking services based on market needs and effectively implement financial performance improvements by managing scale cost reduction and applying innovative methods.

Due to the insignificant effect of the political directors on the board of directors on the financial performance of banks and their high salaries, the shareholders and members of the general meeting are suggested to think about removing and dismissing these directors.

Future researches are suggested to compare the results of this research with other banks in Islamic countries involved in sanctions. Researchers can also use other indicators to measure financial performance, such as the CAMEL index and re-interpret relationships with the new model. As with other studies, there are also limitations in the course of conducting this research, including the difficulty in access to some data from Iranian banks; hence, the validity of the data should be carefully extended to other investigations.

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Appendix A

Correlation matrix for the three research models:

Table A1. Correlation matrix for the ROA model.

	ROA	TC/TA	TL/TA	Size	CR3	PD	ID	GDPG	INF
ROA	1.000000	0.301803	0.206643	-0.451223	-0.069704	0.064017	0.132346	0.064295	-0.01240
TC/TA	0.301803	1.000000	0.056731	-0.107797	-0.110731	-0.053274	-0.007961	-0.028520	0.114952
TL/TA	0.206643	0.056731	1.000000	-0.454996	0.014656	-0.012935	0.019161	0.052354	0.058062
Size	-0.451223	-0.107797	-0.454996	1.000000	-0.063024	0.000542	-0.047887	-0.008440	0.061073
CR3	-0.069704	-0.110731	0.014656	-0.063024	1.000000	0.061691	-0.103782	-0.012081	-0.58303
PD	0.064017	-0.053274	-0.012935	0.000542	0.061691	1.000000	-0.085671	0.027157	-0.14202
ID	0.132346	-0.007961	0.019161	-0.047887	-0.103782	-0.085671	1.000000	0.090557	0.05129
GDPG	0.064295	-0.028520	0.052354	-0.008440	-0.012081	0.027157	0.090557	1.000000	0.13046
INF	-0.012402	0.114952	0.058062	0.061073	-0.583037	-0.142027	0.051290	0.130467	1.00000

Table A2. Correlation matrix for the ROE model.

	ROE	TC/TA	TL/TA	Size	CR3	PD	ID	GDPG	INF
ROE	1.000000	0.266544	-0.010970	0.038075	0.032470	0.033567	-0.008535	0.038068	-0.0122
TC/TA	0.266544	1.000000	0.056731	-0.107797	-0.110731	-0.053274	-0.007961	-0.028520	0.11495
TL/TA	-0.010970	0.056731	1.000000	-0.454996	0.014656	-0.012935	0.019161	0.052354	0.05806
Size	0.038075	-0.107797	-0.454996	1.000000	-0.063024	0.000542	-0.047887	-0.008440	0.06107
CR3	0.032470	-0.110731	0.014656	-0.063024	1.000000	0.061691	-0.103782	-0.012081	-0.5830
PD	0.033567	-0.053274	-0.012935	0.000542	0.061691	1.000000	-0.085671	0.027157	-0.1420
ID	-0.008535	-0.007961	0.019161	-0.047887	-0.103782	-0.085671	1.000000	0.090557	0.05129
GDPG	0.038068	-0.028520	0.052354	-0.008440	-0.012081	0.027157	0.090557	1.000000	0.13046
INF	-0.012299	0.114952	0.058062	0.061073	-0.583037	-0.142027	0.051290	0.130467	1.00000

Table A3. Correlation matrix for the NIM matrix.

	NIM	TC/TA	TL/TA	Size	CR3	PD	ID	GDPG	INF
NIM	1.000000	0.229434	0.051770	0.115590	0.048775	-0.065412	-0.011409	0.083408	-0.0980
TC/TA	0.229434	1.000000	0.056731	-0.107797	-0.110731	-0.053274	-0.007961	-0.028520	0.11495
TL/TA	0.051770	0.056731	1.000000	-0.454996	0.014656	-0.012935	0.019161	0.052354	0.05806
Size	0.115590	-0.107797	-0.454996	1.000000	-0.063024	0.000542	-0.047887	-0.008440	0.06107
CR3	0.048775	-0.110731	0.014656	-0.063024	1.000000	0.061691	-0.103782	-0.012081	-0.5830
PD	-0.065412	-0.053274	-0.012935	0.000542	0.061691	1.000000	-0.085671	0.027157	-0.1420
ID	-0.011409	-0.007961	0.019161	-0.047887	-0.103782	-0.085671	1.000000	0.090557	0.05129
GDPG	0.083408	-0.028520	0.052354	-0.008440	-0.012081	0.027157	0.090557	1.000000	0.13046
INF	-0.098055	0.114952	0.058062	0.061073	-0.583037	-0.142027	0.051290	0.130467	1.00000

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