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# Privatization in the Banking System and its Impact on the Profitability Indices

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Privatization provides the possibility of achieving higher benefits for firms due to the increase of efficiency. This paper studies whether the banks privatization has created any benefits. The study has been conducted using data of 11 banks during a 13-year period (2006-2017). For the timing of major privatization (2009) and the imposition of restrictions on the country's banking system in the form of sanction, two dummy variables are used to distinguish their effects. Also, three groups of panel regression tests, parametric and non-parametric tests are used. Panel regression model is used to examine the impacts of privatization on the profitability of the whole banking system and its results show that privatization has a positive and significant impact on the profitability of banks. Parametric and non-parametric tests are conducted with two objectives: comparing the performance of privatized banks with private and state banks and comparing the performance of the privatized banks in the periods before and after the privatization. The results indicate that there are significant differences during these two periods. The comparison of the performance of the privatized banks in the periods before and after the privatization with state and private banks show that the performance of the privatized banks are promoted compared to the state banks and is almost similar with private banks.

**Keywords:** Privatization, Profitability, Panel Data.
**JEL Classification:** C23, G00, G21

## 1 Introduction

Today, many experts in the field of economics consider privatization as an important factor in the economic development of any country. The general belief is that privatization, by making a safe competitive environment and relying on market mechanisms, leads to the increase of efficiency of enterprises. This is based on the principle that greater efficiency is a fundamental result of competition. Since one of the basic preconditions to link to the global markets and the processes of globalization and liberalization of

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financial markets is efficiency, and in addition, with the growing number of private banks and non-bank financial and credit institutions in recent years, state banks have been forced to improve their efficiency in domestic and foreign markets in order to survive and maintain their market share (Moheby et al., 2013).

Empirical studies have shown that there is a significant relationship between the ownership structure of banks and their performance. In recent years, governments have attempted much to assign state economic units, such as state banks, to the private sector in order to improve their performance. A glance at the privatization experience of countries shows that there are significant differences in the methods and means of privatization in these countries. For example, in developing countries, privatization has been generally considered for rival firms and has been rarely deployed for their strategic sectors, such as public utilities, communications, and banks (Boubakri et al., 2005). However, the implications and results of privatization of banks in countries with broad plans in banks privatization have been very diverse and varied (Beck, et al., 2005).

In Iran, following the announcement of the general policies of Article 44 of the Constitution by the Supreme Leader in 2006, new changes occurred in the structure of banking industry. Based on these policies, 80 percent of the shares of Iranian state commercial banks (Mellat, Tejarat, Saderat and Postbank) should be assigned to the private sector. This was achieved during the years of 2002 and 2003, and part of the shares of the mentioned banks was listed on the stock exchange. Now, after a decade of the assignment and creating a series of structural changes in the banking industry in Iran and the assignment of state commercial banks to the private sector, we seek to study the performance of privatized banks in the period after privatization, and examine the impact of privatization on bank profitability indicators. Given the fact that privatized banks are still in their transition stage and the shadow of government is dominant, banks are divided into three private, privatized and state-owned groups in order to allow more coordination and symmetry in the performance of banks.

The present study analyzes the differences in the performance level of the privatized banks in the periods before and after privatization by studying the banks performance through variables such as profitability ratios. The importance of this study is because Tejarat, Mellat and Saderat banks-subjected to privatization-are among the big and influential banks of the country from the macroeconomic perspective. Therefore, the efficiency of their performance is effective in the economy. The process of privatization in

Iran has been highly emphasized and many actions have been carried out in this regard. Therefore, it is necessary to study the impact of the privatization process on the economy by examining the companies' performance after the assignment. Banks, as one of the most influential enterprises, are a good example to examine the impact of the ownership structure changes from the state sector to the private sector on the firms' performance.

Considering its novelty, the present study is considered an innovative research. On the other hand, given the wide range of the banks stakeholders (shareholders, customers including depositors and borrowers, employees, foreign creditors, government and society), the conditions governing the optimal provision of their interests are complex, and this study provides explanations in this regard.

The present paper is structured in six sections. After the introduction, in the literature review section, theoretical foundations of privatization and the method of measuring banks performance are presented. Thereafter, a review of theoretical foundations and empirical studies will take place in the background of the research. In the research methodology section, the proposed methodology is presented and in the next section, the proposed model and data sources are introduced. Subsequently, the estimation method and finding analysis are provided. Finally, summaries, conclusions and suggestions are presented.

# 2 Literature Review

## 2.1 Theoretical Foundations

### 2.1.1 Privatization

The concept of privatization includes broad aspects, therefore there is no single definition for it. For example, in the economic encyclopedia it is defined as: "privatization is an economic policy to balance the governmental and other economic sectors with the aim of meeting the conditions for full competition and achieving more economic and social efficiency." But in some economic texts, privatization is an equivalent to deregulation and sometimes liberalization.

A definition which is more used by various organizations, including the World Bank, considers privatization in the same sense as the transfer of ownership and control of economic units from government to the private sector. The main idea behind the concept of privatization is that the competitive atmosphere and market system force firms and private entities to

have more efficient performance. Based on this idea, several definitions and theories which cover various dimensions and objectives of privatization have been presented (Motavasseli, 1994). Littlechild and Beesley (1989) believe that privatization is a method to improve the performance of economic activities through increasing the market forces, if at least 50% of their shares have been transferred to the private sector.

Veljanoski (1987) considers privatization as doing economic activities by a private sector or transferring the ownership of assets to the private sector. Schwartz (1991) believes that the definition of privatization for countries with a centralized economy is far beyond transferring the ownership and regulatory adjustments and he states that "privatization" means making a new system based on the market and, consequently, transformations in various economic aspects. Privatization is a comprehensive and diverse term that refers to the assignment of operational or financial control of state institutions to the private sector. In other words, privatization means eliminating any controls and interventions in establishing supply and demand mechanisms (Komijani, 2003). In the economic development of countries, privatization is used in three areas of transferring state ownership to the private sector, reducing government services, and making contracting conventions. (Barghandan, 2012).

**2.1.2 Banks Privatization**

The importance of the banks is because of their key role in the economy. According to Levine (1997), the ownership structure of banks and their fundamental role in the national economy is a crucial variable in the process of financial development and economic growth. The main task of the banking sector is to ensure that financial resources are directed towards more productive and efficient projects to help future growth. The role of the government in the financial system is to ensure that banks do this vital task as efficiently as possible through their rules and regulations. Due to this important role, governments in developing countries tend to have the ownership of the banks in their own hands (Boubakri, et al., 2005).

However, there is much evidence that the state ownership is inherently less efficient than private ownership (Motalebi Asl, 2006). Various political and economic reasons, including inadequate rewards and incentives for managers and supervisors, lack of required commitments to improve performance and noneconomic goals are among the issues mentioned for government management inefficiencies (Megginson, 2005). Banks' privatization is one of the biggest challenges faced by most governments around the world. Governments resist exiting from banks and credit systems and decreasing their

intervention. On the other hand, the state banking system is dangerous in almost every country where state-owned banks are inclusive. However, if the government's goal is to create a more efficient and market-oriented economy, it is important to reduce government's impact on the credit allocation decisions (Motalebi Asl, 2006).

Although the incentives to privatize commercial banks are not the same in different countries, at least four types of incentives to privatize banks around the world are identified (Megginson, 2003):

1) Transition to the market economy: In socialist countries, privatization took place in a wide level of industries (Megginson & Netter, 2001). In this condition, privatization of banks took place as a part of the process of moving to the market economy. Of course, in these countries, during privatization, banks faced many problems due to the issues related to the quality of assets and liabilities.
2) Plans to exit from national state of firms to increase efficiency: Some countries may have specific plans to take out industries from national and governmental states. These countries are privatizing to increase the competition between banks, thereby improving their performance and efficiency.
3) Deregulation for development: In some countries there are attempts to deregulate the financial markets.
4) Earning money out of privatization: In some countries, governments use privatization of banks as a means of earning money.

State enterprises are ineffective because politicians encourage them to consider political goals rather than economic ones (Pakravesh & Givarian, 2014). The political priorities of state enterprises make their managers to have less incentives to minimize costs and maximize profits (Yao &Jiang, 2010).

### 2.1.3 Assessment of Banks Performance

So far, various methods have been presented to assess the performance of banks. One of these methods is the data envelopment analysis method. For the first time, Lee et al. (1995) used the Data Envelopment Analysis (DEA) method to examine the efficiency of the banking sector of Malaysia in the financial crisis of 1997 in Asia. In his analysis, he used variables such as bank size, profitability, and ownership. Another method is used to evaluate the performance of the bank is the Analytical Hierarchy Process (AHP). Some of these studies have been conducted to determine the factors affecting performance, performance evaluation, and credit assessment of different units (Lee et al., 1995, Suwignjo et al., 2000, Wang et al., 2004).

## 2.2 Research Background

Generally, studies have been conducted in two categories. The first category includes studies before the banks privatization about the effects of implementing this policy and most of them include the political aspect to provide optimal solutions for the implementation of this process by using the experience of other countries. The second category include studies of the variations in the performance indicators of banks in post-privatization periods compared to the previous period.

Since the present study is also part of the banking performance survey, and is specifically in the second category, it is worthy to compare the study's results with the experience of different countries on the relationship between privatization and the performance of banks.

### 2.2.1 Foreign Studies

Madadi et al. (2014), examine the effect of privatization on profitability in state-owned companies. The research sample consists of 67 companies during the period of 2006-2012. The results indicate that there is a significant but negative relationship between privatization and profitability. Abokaresh et al. (2013) evaluated the performance of state-owned firms in relation to private banks during the period of 1995-1995 and used indicators such as Return On Assets (ROA), capital adequacy, income, and profitability. The results show weaker indicators in terms of profitability in state banks than private banks.

In their study, Choi and Hasan (2011) examine the deviation of privately owned banks from private banks established in 30 countries for the period of 1994-2005. They examine the role of bank supervision and control laws, the competitive environment of the market, the ownership structure, the deposit insurance plan, and the structure of the bank's administration. Empirical evidence show that privatization in the first year improves the performance of banks, but in general, their performance decreases over the next few years. Other results of their study indicate that the management, foreign ownership, banking freedoms (regulations), and deposit insurance programs in the studied economies have a significant effect on performance.

Wen (2010) examines three categories of major shareholders, including government, private and foreign sectors. The results of the study generally do not confirm a definite correlation between the ownership structure and the performance of banks. He states that there is no significant linear relationship between the concentration of banks and their performance in commercial state banks, commercial banks and municipal commercial banks in China. Also, he fails to prove a better performance for the banks owned by foreigners or private sector than state banks.

Fiorentino et al. (2009) examine the effects of the ownership change of Italian and German banks on productivity by using the 1994 to 2004 panel data and a fixed effect method. They calculate productivity on the basis of three components of technical change, efficiency and economies of scale changes. Finally, the results of the estimates indicate that the privatization of banks has led to an increase in their productivity, especially when banks are privatized based on the integration strategy.

Sanyal and Shankal (2008) investigate the effects of ownership and competition on the productivity and productivity growth of Indian banks after the liberation of the banking system in 1991. They estimate the model using panel data from 1992 to 2004 for 107 different banks in India and conclude that the productivity of private banks is higher than state banks, and in all cases, the privatization of banks have a positive effect on productivity growth. But, only the privatization of new banks has a positive effect on productivity.

Omran (2007) also explores the effect of the privatization and ownership structure of the bank on their performance in Egypt. In his study, he concludes that the performance of some profitability indicators, such as Return On Assets (ROA) and Return On Equity (ROE), has fallen in the case of privately owned banks. Other indicators related to asset and risk quality have not changed much. It is concluded that banks with a higher percentage of private ownership have better performance.

### 2.2.2 Domestic Researches

Due to the fact that the privatization of banks in Iran was much later than the privatization of other enterprises, the research is very limited for the companies changing ownership from state to private, and among domestic studies, no study can be found which examines the impact of privatization on the performance of the country's banks. Only the two following studies are related to the impacts of privatization on the banking industry of Iran.

Soroush (2007) examines banks profitability by using criteria such as income, ROE, ROA and profit margin. The results of the study indicate that, for the average profitability, banks have a higher performance after privatization.

In a descriptive study, Lashkary and Hozhabrossadati (2011), investigate the effects of privatization of Iranian banks for their performance improvement. The results of the study indicate that privatization alone do not lead to an increase in efficiency, since the government retains a small part as its share. So attention to the assignment of decision-making and supervision to the private sector is important.

Shakarami (2011) examines the effect of privatization on the efficiency of Iran's banking system using 2001 to 2009 panel data and the fixed effect method. The results show that the percentage of shares left by banks to the private sector increases their productivity. Using the data of 18 banks during the period of 2007-2011, Shahiki Tash et al. (2016), have concluded that bank productivity after privatization have growth using the DEA method, and the Malmquist productivity index and the use of combined data.

Heydari and Fatemi Varzaneh (2016), study the performance of private banks of Iran with Islamic banks of the Gulf region based on indices of CAMEL. The results show that selected Islamic banks are better than privately owned banks in terms of capital adequacy, management quality and liquidity index.

## 3 Research Methodology

The research question is whether privatization has been able to generate positive benefits for banks. These three questions are studied based on two functional angles, the entire banking system, as well as the performance of privatized banks. Therefore, the following three hypotheses are proposed for this research:

1) The change of ownership from the state to private has improved the profitability indicators of the banks in Iran.
2) The change of ownership from state to private has improved the profitability indicators of privatized banks in the periods before and after privatization.
3) The change in ownership from state to private has improved the profitability indicators of privatized banks compared to the private and state banks in the period before and after the privatization.

This is an applied research and in terms of data collection, this research is descriptive. The statistical population of the research includes 11 active banks in the banking industry. The criterion for choosing banks is based on the bank's activity during the period under review. Therefore, banks that have been active since 2005 or before, are included in the sample. It should be noted that specialized banks will not be compared due to their significant performance differences. These banks include:

- Melli, Sepah, Refah (commercial state banks)
- Eghtesad Novin, Parsian, Karafarin, Saman and Pasargad (private banks)
- Mellat, Tejarat and Saderat (privatized banks through the stock exchange market)

The main purpose of the present study is to investigate the impact of privatization on the profitability indicators of assigned banks in accordance with the general principles of Article 44 of the Constitution in Iran.

The data used are belonged to the period of 2005-2017. Also, considering that major privatization was carried out in late 2008, then 2009 is considered as the basic year of the privatization. In this study, the performance of four years before and four years after privatization are compared.

Based on the CAMEL model, the main indicators of bank profitability are summarized in the following five indicators (Saghafi & Seif, 2005):

- Return on Assets (ROA)
- Return on Equity (ROE)
- Interest Revenue on Loans (ROL)
- Ratio of Interest Revenue on Total Revenue (ROR)
- The Income Cost Ratio (ROC)

Based on the available information, five indicators are used as profitability indicators. To reduce the variables and reduce the need for multiple regressions, using the Principal Component Analysis (PCA) technique for the combination of five mentioned indicators, profitability indicator is selected as PROF, which is a main component of both ROA and ROE indicators.

The first hypothesis of the research is based on panel data modeling and the second and third hypotheses are tested using the paired and nonparametric statistical Wilcoxon t tests.

## 4 Variables

Based on numerous studies in this area, the factors affecting the profitability of banks are shown in Table 1. The selection of independent variables is based on the empirical studies of the bank which investigate the factors affecting the profitability. An example of these studies is presented in column 3 of Table 1.

The PROF variable, the main component extracted from the five variables of ROA, ROE, ROL, ROC and ROR, is the dependent variable. Due to the fact that different banks have been restricted in the years under review, the SANB has been used as a dummy variable of limitation. LNGDP represents the country's economic strength and LNBRANCH, is the number of bank branches as the main points of sale in the banking system. In order to smooth the data, these two variables are used logarithmically.

Table 1
*Research Variables*

| Type | Name | Study Sample |
|---|---|---|
| Dependent Variable | PROF (Profitability) | --- |
| Independent Variables | SANB (dummy variable of sanction of banks) | Delis, Staikouras and Tsoumas (2013) |
| | CONT | Clarke, Cull and Shirley (2005), Omran (2007) |
| | NPL | Messai and Jouini (2013) |
| | LNGDP (gross domestic product) | Dietrich and Wanzenried (2011) |
| | LNBRANCH (number of bank branches) | Coccorese and Pellecchia (2009) |
| | CAP (capital ratio) | Dietrich and Wanzenried (2011) |
| | RLIR (real loan interest rate) | Bayraktar and Wang (2004), García-Herrero, Gavilá and Santabárbara (2009) |

*Source:* Research Findings.

NPL shows the ratio of non-bank claims and according to the business cycle, non-performing loans receive direct effects from conditions of the boom and recession. RLIR is the real loan interest rate, and the increase in the interest rate of the loan leads to an increase or decrease in bank interest income (depending on the elasticity of demand for the loans) (Keimasi et al., 2016). Also, the CAP represents the ratio of equity to bank assets; generally, the increase of this ratio means the bank is safer and has less risks.

## 5 Model Estimation and Interpretation of Results

Given that the multiplicity of profitability indicators will increase the number of estimated models, the principal component analysis technique is used, which includes the characteristics of all 5 variables introduced as profitability indices.

### 5.1 Principal Component Analysis (PCA) Method

Principal Component Analysis (PCA) method reduces the dimensions of all observations based on the combined indicator and classifies similar observations. Regarding the multiplicity of indicators related to profitability, PCA method is used to reduce the number of indicators. 5 indicators of Return

on asset (ROA), Return on Equity (ROE), ROL, ROR and ROC are changed to the profitability indicator using the Principal Component Analysis method. To do this, Bartlett's test is used to examine the correlation between the indicators. The results of this test are presented in the following table:

Table 2
*The Results of Bartlett Test*

| Description | Value |
|---|---|
| Chi-square | 357.412 |
| Degrees of freedom | 10 |
| p-value | 0.000 |

*Source:* Research Findings.

## 5.2 Model Selection

The result of the first hypothesis test for the direct effect of privatization on the performance of the banking system, shows that there are significant differences between the performances of different groups of banks in terms of profitability with regard to its ownership structure. Therefore, in order to investigate this hypothesis, we use the following regression to examine the studied period (2006-2017) with various control variables and variables for the structure of the ownership:

$$\mathrm{PROF}_{i,t} = \alpha_0 + \beta_1 \mathrm{SANB}_{i,t} + \beta_2 \mathrm{CONT}_{i,t} + \beta_3 \mathrm{LNGDP}_{i,t} + \beta_4 \mathrm{LNBRANCH}_{i,t} + \beta_5 \mathrm{NPL}_{i,t} + \beta_6\, \mathrm{RLIR}_{i,t} + \beta_7 \mathrm{CAP}_{i,t} + \upsilon_i + \eta_t + \varepsilon_{i,t} \quad (1)$$

In the above relation, the indices t and i represent the time and sections (banks), respectively, the values of β are model parameters, $\eta_t$ and $\upsilon_i$ are the invisible effects between time and sections (banks), respectively. It is assumed that error term ($\varepsilon_{it}$) has a standard normal distribution and non-serial-correlation. Further, according to the methodology of the panel data, the existence of joint effects or specific effects are examined and, if necessary, a distinction between specific, fixed or random effects is specified.

## 5.3 Results

### 5.3.1 Effect of Privatization

According to the tests presented in the previous section, the results of the model selection are summarized in Table 3:

Table 3
*The Results of Chaw, Hausman and Breusch-Pagan Tests*

| Test | Statistic | Value |
|---|---|---|
| Chaw | F | 8.22 *** |
| Hausman | $\chi^2$ | 8.85 |
| Breusch-Pagan | $\chi^2$ | 47.31*** |

*** Represents the significance in the error level of 1%.
*Source:* Research Findings.

According to the results of Table 3, the model with random effects is preferred to the model with fixed effects. The results of model estimation using random effect method are presented in Table 4:

Table 4
*Results of Model Estimation with Random Effects*

| | |
|---|---|
| **Constant** | -19.82 |
| **SANB** | -0.51 ** |
| **CONT** | 0.52 * |
| **LNGDP** | 1.38 |
| **LNBRANCH** | -0.51 *** |
| **NPL** | -0.31 |
| **CAP** | 0.35 * |
| **RLIR** | -0.03 *** |
| **Observation** | 108 |
| **Wald $\chi$2** | 66.03 *** |

*, **, *** represent significance in the error level of 10%, 5% and 1%, respectively.
*Source:* Research Findings.

In this study, in order to discover the heteroskedasticity of variance and serial-correlation, common tests including the Modified Wald Test and the Likelihood Ratio (LR) are used for the analysis of the heteroskedasticity of variance and for the first order serial-correlation test, Wooldrige test is used and the results indicate the existence of heteroskedasticity of variance and lack of serial-correlation that are shown in Table 5.

Table 5
*Results of Variance Heteroskedasticity and Serial-Correlation Tests*

| Test | Statistic | Value | Result |
|---|---|---|---|
| Likelihood Ratio | $\chi^2$ | 92.15*** | Existence of heteroskedasticity of variance |
| Modified Wald | $\chi^2$ | 257.34*** | |
| Wooldrige | F | 11.371*** | Existence of first-order serial-correlation |

Represents significance in the error level of 1%.
*Source:* Research Findings.

According to the results presented in Table 5, the Feasible Generalized Least Squares Estimation (FGLS) method is used. Using this model and conducting the regression, the results obtained are presented in Table 6:

Table 6
*The Results of FGLS Model Estimation*

| | |
|---|---|
| **Constant** | -17.80 |
| **SANB** | -0.44 *** |
| **CONT** | 0.69 *** |
| **LNGDP** | 1.24 * |
| **LNBRANCH** | -0.47 *** |
| **NPL** | -0.84 ** |
| **CAP** | 0.40 *** |
| **RLIR** | -0.02 *** |
| **Observation** | 108 |
| **AR(1)** | 0.2332 |
| **Wald $\chi^2$** | 82.242 *** |

*, **, *** represent significance in the error level of 10%, 5% and 1%, respectively.
*Source:* Research Findings.

Based on the results of the model, imposing the limitations on banks have had a negative and significant effect on the profitability of the banking system. As it is shown in Table 6, when there is higher economic growth, considering better business situation in the country, the profitability of banks is also affected and has a positive and significant relationship with GDP growth.

The results of the model indicate that the number of branches has had a negative effect on the profitability of banks. This indicates that the productivity of the bank branches in Iran is not satisfactory. As it has been shown in various studies, NPL have a significant and negative effect on banks by imposing additional costs on banks and locking resources and upsets the

profitability of banks. RLIR has a negative effect on profitability, which is due to the fact that in recent years, in which the income of banks typically have increased, the costs have increased too, so the banking system have a downward trend in terms of profitability.

In addition, the inverse relationship between profitability and the real loan interest rate reflects the demand for loans among the community (Keimasi et al., 2016).[1] The ratio of capital CAP also has a positive and significant effect, which means that higher capital ratio makes the banking sector more secure and causes the avoidance of riskier activities.

By examining the dummy variable of privatization, it is observed that privatization has a positive effect on the profitability of banks, which means privatization is a positive step towards more profitable banks.

### 5.3.2 Comparison of Performance

In this section, in order to test the second hypothesis that privatization has improved the profitability indicators of the privatized banks in the period before and after privatization, parametric and nonparametric tests are used to confirm or reject the hypothesis. If we consider 2009 as the middle year, by examining four years before and four years after 2009, the impact of privatization on the performance of privatized banks are examined. In this step, we use the parametric t test to examine the change in banks performance. We use this test to compare the mean of variables before and after privatization.

$H_0$: 0 = Average periodic variation of performance
$H_a$: 0 ≠ Average periodic variation of performance

Due to the small size of the sample and the fact that some of the performance indicators are not distributed normally, Wilcoxon's nonparametric test is used to have more robust results.

$$z = \frac{T - \frac{n(n+1)}{4}}{\sqrt{\frac{n(n+1)(2n+1)}{24}}} \quad (2)$$

in which T is the total of changed variable rank and n is the sample size.

By comparing the performance of privatized banks in the pre and post privatization period, using t and z statistics, in Table 7, t statistic shows a

[1] According to the microeconomic literature, the relationship between income and price is negative for elastic goods, and for inelastic goods there is a positive relationship.

significant difference, but by examining the z statistic, there is a significant difference between the two sections. In addition to studying the trend of profitability indicators in both sections, based on the significance of the amount of t statistics, the performance of privatized banks after privatization has improved.

Table 7
*Comparison of the Performance*

| Description | t-Statistic | z-Statistic |
|---|---|---|
| Comparing the period before and after privatization | -2.2880 ** | -1.46 |

** represents the significance in the error level of 5%.
*Source:* Research Findings.

### 5.3.3 Comparison of Performance Changes of Privatized Banks after Privatization Compared to the Group of Rival Banks

In this stage, regardless of other factors affecting banking performance, using Barber and Lyon (1996), we try to test the third hypothesis of the research that privatization improves the profitability indicators of privatized banks in comparison with state and private banks before and after privatization. But in the model by Barber and Lyon (1996), the size and type of industries are different. In order to solve this problem, we use the average performance of private banks and rival banks. Here the performance control variables are different banking groups. These different groups of banks are:

- PVB: Private Banks
- SOB: State Banks
- PRIV: Privately Owned Banks

In order to overcome the problem of differences between the performance of privatized banks and rival banks before or after privatization, we compute the average performance of each bank by using the difference between the performance of the privatized banks and the group of selected rival banks. This step is done using the t test and the nonparametric Wilcoxon test.

$$RPC_i = \left[(P_{i,t} - P_{i,t-1}) - P_{i,t-1}\right] - \left[(P_{Bench,t} - P_{Bench,t-1}) - P_{Bench,t-1}\right] \quad (3)$$

where $RPC_i$ is change of Bank Performance, $P_{i,t}$ is the average performance of the bank i after privatization, $P_{i,t-1}$ is the bank's average performance before privatization, $P_{Bench,t}$ is the average performance of the rival banks group (private, state) after privatization, $P_{Bench,t-1}$ is the average performance of a rival (private, government) group of banks before privatization.

By comparing the averages, we will be able to analyze the performance changes of each privately owned bank compared to the rival bank group. This is done using the t and z statistics. The results are shown in Table 8. In this table, the performance of privatized banks through profitability indicators with state banks and private banks has been investigated.

Table 8
*The Performance of Privatized Banks*

| Description | t-Statistic | z-Statistic |
|---|---|---|
| Comparison of private and privatized banks | -0.27 | -0.36 |
| Comparison of state and privatized banks | 4.43 ** | 1.82 * |

* And ** represent significance in the error level of 10% and 5%, respectively. *Source:* Research Findings.

Using z and t statistics, it is clear that there is a significant difference between the performance of private and state banks in terms of profitability indicators, but there is no significant difference between privatized and private banks performance; in fact, the performance of privatized banks have increased in comparison with rival state banks. By examining the average performance of these three groups, we find that privatized banks have a similar performance in comparison with private banks and, in comparison with state banks, have a better performance in terms of profitability, which indicates the positive effect of being private on the performance of banks through profitability indicators.

## 6 Summary and Conclusions

The purpose of this paper is to examine the effect of privatization on the profitability of the banking system, comparing the performance of privatized banks in terms of profitability before and after privatization. With various profitability indicators, such as ROA, ROE, ROL, ROR, and ROC some basic points about the effect of privatization on profitability of banks are identified:

- Privatization has a positive and significant effect on profitability indicators.
- The performance of privatized banks in terms of profitability has improved after privatization.
- The private banks have relatively similar performance to privatized banks, and privatized banks have better performance than state banks in their profitability indices.

Considering the positive effect of the ratio of capital on profitability, it is necessary for the bank managers to increase the capital and have sufficient capital in order to increase the profitability. The negative effect of the number of branches on profitability shows the necessity for quantitative reduction, in addition to paying attention to productivity which is effective in improving the profitability.

Finally, given the low motivation of state firms in terms of profitability, they are less successful in acquiring profits than private firms (Yao and Jiang, 2010). Hence, privatization is considered as an important factor for the profitability and improvement of the performance of banks in the country. Given the fact that state banks in Iran are subject to government regulations, such as lending facilities, negotiating rates, significant government appeals, and so on, their low performance with respect to private banks is justifiable. The implementation of a proper privatization policy helps banks make their best efforts possible and pay attention to efficiency.

By implementing the privatization of Mellat, Saderat and Tejarat banks, the ownership of 20% of state-owned shares, 40% of equity shares, 20% of social security are devoted to the state sector and only 20% is devoted to the real private sector. In the privatization of banks, it seems that 80% of the shares are transferred from the state to the non-state sector, but in practice the management of these banks is exercised through the selection of members of the board of directors and the managing directors and is in the possession of the state monopoly. Because the authenticity of 20 percent of the government's shares and the bail of 40 percent of the equity shares (60 percent of which will always be the majority) is in the hands of the state, and issues the orders of the members of the board of directors and the executive directors. The social security organization, which owns 20% of the shares of these banks, is usually fully aligned with the government, and it is practically managed by at least four members of the board of directors, and only 20% of the shares belong to the real private sector, which is the minor stock and does not have a significant impact on the management of the bank.

Despite the fact that banks do not fully transfer the ownership and management to the real private sector, privately-owned bank managers are always faced with serious challenges of the active presence of small shareholders in public and their inquiries, so in interaction with governmental and quasi-governmental shareholders, they attempt to illustrate the accountability to small shareholders who make up a large population, and using the legal capacity of private companies management, they get away from the rules and limitations of state-owned companies. Therefore, it seems

that among three privatized banks of Mellat, Saderat and Tejarat, when the bank managers reduce the government influence in the banks, they have more success in achieving the bank goals.

## References

Abokaresh, M. S. M., Kamaruddin, B. H., & Mohd, R. (2013). Privatization and Efficiency: Once Upon a Time in Libya. *Journal of Emerging Economies and Islamic Research (JEEIR),* 1, 1-20.

Barber, B., & Lyon, J. (1996). Detecting Abnormal Operating Performance: The Empirical Power and Specification of Test Statistics. *Journal of Financial Economics*, 41, 359–399.

Barghandan, K. (2012). *The Study of the Relationship between Privatization and Economic Growth in Iran and Selected European Countries.* Master's thesis, University of Sistan and Baluchestan. (In Persian)

Bayraktar, N., & Wang, Y. (2004). Foreign Bank Entry, Performance of Domestic Banks, and Sequence of Financial Liberalization. *World Bank Policy Research* Working Paper, (3416).

Beck, T., Crivelli, J. M., & Summer Hill, W. (2005). State Bank Transformation in Brazil Choices and Consequnces. *Journal of Banking and Finance*, 29, 2223-2257.

Boubakri, N., Cosset, J. C., Fischer, K., & Guedhami, O. (2005). Privatization and Bank Performance in Developing Countries. *Journal of Banking and Finance*, 29(8–9), 2015–2041.

Choi, S., & Hasan, I. (2011). Bank Privatization and Convergence of Performance: International Evidence. *The Journal of Financial Research*. XXXIV(2), 387–410.

Fiorentino, E., De Vincenzo, A., Heid, F., Karmann, A., & Koetter, M. (2009). The effects of privatization and consolidation on bank productivity: comparative evidence from Italy and Germany.

Heydari, M. R., & Fatemi Varzaneh, S. M. (2016). The Financial Performance Analysis of Private Banks in Islamic Republic of Iran in Comparison With Selected Islamic Banks of Persian Gulf Region. *Quarterly Journal of Islamic Finance and Banking Studies*, 2(3), 33-62. (In Persian)

Keimasi, M., Ghaffari Nejad, A. H., & Rezaei, S. (2016). Effects of Sanctions of the Iranian Banking System on Profitability. *Journal of Monetary and Banking Research*, 9(28), 171-198. (In Persian)

Komijani, A. (2003). Evaluating the performance of Privatization Policy in Iran. *Tehran: Ministry of Economic Affairs and Finance, Department of Economic Affairs*.

Lashkary, M., & Hozhabrossadati, S. M. (2011). Bank Privatization and Its Effects on Efficiency Increase and Performance Improvement of Banks. *Rahbord-e-Toussee*, No. 23, 135-148. (In Persian)

Lee, H., Kwak, W., & Han, I. (1995). Developing a Business Performance Evaluation System: An Analytic Hierarchical Model. *the Engineering Economist*, 40, 343-357.

Levine, R. (1997). Financial Development and Economic Growth: View and Agenda. *Journal of Economic Literature*, 35(1997), 688-726.

Littlechild, S. C., & Beesley, M. (1989). The regulation of privatized monopolies in the United Kingdom. Rand Journal of Economics, 20(3), 454-472.

Madadi, M., Sedaghat, P., & Pirayesh, R. (2014). The Evaluation On the Effect of Privatization On Earnings Management in Assigned Corporate. *Asian Journal of Research in Business Economics and Management*, 4(6), 308-317.

Megginson, W. (2005). Economics of Bank Privatization. *Journal of Banking & Finance*, No. 29, 1931–1980.

Megginson, W. L. (2003). *Financial Economics of Privatization*. New York: Oxford University Press, p. 2003.

Megginson, W. L., & Netter, J. N. (2001). From State to Market: A Survey of Empirical Studies on Privatization. *Journal of Economic Literature*, 39(2001), 321–389.

Messai, A. S., & Jouini, F. (2013). Micro and Macro Determinants of Nonperforming Loans. *International Journal of Economics and Financial Issues*. 3(4). 852-860.

Moheby, R., Fazel yazdi, A., & Taghizadeh Mehrjardi, R. (2013). Modeling and Predicting the Efficiency of Public and Private Banks in Iran Using an Artificial Neural Network Models, Fuzzy Neural Networks and Genetic Algorithms. *The Quarterly Journal of Asset Management and Financing*, 1(2), 103-126. (In Persian)

Motalebi Asl, S. (2006). Management on the Privatization Process in the Banking System. *Tadbir Monthly Magazine*, No. 175. (In Persian)

Motavasseli, M. (1994). *Privatization, Or, Best Combination of the State and the Market*. Institute for Trade Studies and Research, Tehran. (In Persian)

Omran, M. (2007). Privatization, State Ownership and Bank Performance in Egypt. *World Development*, 35(4), 714-733.

Pakravesh, A., & Givarian, H. (2014). A Study of the Effects of Privatization on Organizational Commitment of Employees in Mellat Bank of Tehran, Iran. *A journal of Multidiciplinary Resaech*, 3, 23-31.

Saghafi, A., & Seif, V. (2005). Identifying and Measuring Financial Ratios and Fundamental Economic Variables That Affect the Stability of the Banking System in Iran. *Economic Research*. 6(17), 65-111. (In Persian)

Sanyal, P., & Shankar, R. (2008). Ownership, Competition, and Bank Productivity: An Analysis of Indian Banking in the Post-Reform Period. *International Review of Economics and Finance*, 20, 225–247.

Schwartz, G. (1991). Privatization: Possible Lessons from the Hungarian Case. *World Development*, 19(12), 1731-1736.

Shahiki Tash, M. N., Abyari, Z., & Abyari, S. (2016). Evaluation of the Efficiency of Privatized Banks in Terms of Article 44 of Islamic Republic of Iran Constitution

before and After Privatization. *Quarterly Journal of Islamic Finance and Banking Studies*, 2(3), 1-31. (In Persian)

Shakarami, M. (2011). *Evaluation of the Impact of Privatization on the Efficiency of Iran's Banking System*. Master's thesis: Payam Noor University of Tehran Center. (In Persian)

Soroush, A. (2007). Reviewing the Performance of State Banks after Subsequent Depositing to the Private Sector (Case Study of Foreign Banks). *Economic Issue*, 65, 73-54. (In Persian)

Suwignjo, P., Bittici, U. S., & Carrie, A. S. (2000). Quantitative Models for Performance Measurement System (QMPMS). *International Journal of Operation Production Management*, 64, 231-241.

Veljanoski, C. (1987). *Selling the State: Privatization in Britain.* London: Weidenfeld and Nicolson.

Wang, G., Huang, S., & Dismukes, J. (2004). Product-Driven Supply Chain Selection Using Integrated Multi-criteria Decision-Making Methodology. *International Journal of Operations and Production Management*, 91, 1-15.

Wen, W. (2010). Ownership structure and banking performance: New evidence in China. Universitat Autònoma de Barcelona Departament D'economia de L'empresa. 2010 Sep;24.

Yao, S., & Jiang, C. (2010). Banking Reform and Efficiency in China: 1995-2008. *Journal of Operations and Production Management*, 91, 1-15.