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liquidity

In the study, it has been investigated the influence of privatization on financial and operational performance of state-owned companies privatized in 1379-1390. The study is radically aiming at probing the privatization plan success to improve the performance of privatized corporate. In the study, the performance of corporate privatized in stock public offering were investigated using the criteria such as accounting profit quality, profitability, liquidity, operational efficiency, investment in capital assets, and employment. Accounting private quality was applied to probe the effect of privatization on corporate financial performance for the first time in Iran. To calculate the accounting profit quality, Dichow & Dichev model presented in 2002 was applied. After data normalization test and with regard to the test results, parametric and non-parametric paired comparison test was used to test the hypothesis. Accounting profit quality indicated the significant decrement at financial and operational performance alongside one of the operational indices as the ratio of sale to human forces. However, the other operational efficiency indices—net income—represented the human forces a significant decrement in operational performance. The difference consequently can be due to the fact that the result may be demonstrated contrariwise, since the net income more fall victim to the management than the sale. The total study results suggest that state-owned corporate privatization has caused the corporate financial and operational performance to be debilitated in Iran.

INTRODUCTION

Over the past twenty years, we have observed privatization plans in both developed and developing countries. The different political group with various ideological backgrounds seriously pursues the transformation of the state-owned corporate from the state socialism to the market-based capitalism. More than one hundred countries in the world have pursued the privatization policies in two past decades [57].

Pro-market economists generally address the competition as the only solution to obviate the state inefficiencies. Therefore, when they make economic policy, market-oriented policy is selected rather than the state-based policy by too much reliability had been granted to the private section role in economy.

The undeveloped countries, especially after the eighties have proceeded towards the privatization of industries and state-owned corporate with an increasingly pace. The socialist ideology collapse and empirical failure of making the economy governmental and/or the central economy in one hand and the successful experience of some countries in the world, particularly the south East Asia reinforced the belief that there is no second way to reach the economic sustainable growth, but joining the free market economy and reducing the government intervention through privatizing the state enterprises. However, some devices are required to probe if the privatized enterprises have achieved the goals—financial and operational performance improvement. As it was referred in the researches forenamed, one of the devices is enterprises financial data. The corporate performance nature during the transformation can be figured out by analyzing the data in the circumstances before and after the privatization and foregoing criteria could be measured. Since the data are historical and audited, the analysis reliability will increase and the study result can be used to giving the feedback of the privatization process. With regard to the influence of enterprises on the individuals life and the debates exist about the corporate governance, addressing this issue is very sensitive and crucial, since material and spiritual
resources owned by the enterprises and the corporate social viability with either state-owned property or private property involve any researcher mind in accuracy of transformation of the enterprises property. So, the study attempts to evaluate the enterprises financial and operational performance before and after privatization.

**Objective:**

The study is sought to determine the relationship between the privatization and the state-owned enterprises financial and operational performance privatized which has been accepted in Tehran Stock Exchange through accumulating the evidences. Accordingly, the objectives are posed as follow:

1. To determine the influence of privatization on the accounting profit quality of the privatized enterprises.
2. To determine the influence of privatization on the profitability of the privatized enterprises.
3. To determine the influence of privatization on the liquidity of
4. To determine the influence of privatization on the operational efficiency of the privatized enterprises.
5. To determine the influence of privatization on the investment in the capital assets of the privatized enterprises.
6. To determine the influence of privatization on the employment of the privatized enterprises.
7. To determine the influence of privatization on the financial and operational performance of the privatized enterprises.

**Hypothesis:**

*The main hypothesis:*

Privatization affects the enterprises financial and operational performance.

*Secondary hypothesis:*

The first secondary hypothesis: there is difference between the enterprises accounting profit quality before and after privatization.

The second secondary hypothesis: there is difference between the enterprises profitability before and after privatization.

The third secondary hypothesis: there is difference between the enterprises liquidity before and after privatization.

The fourth secondary hypothesis: there is difference between the enterprises operational efficiency before and after privatization.

The fifth secondary hypothesis: there is difference between investment in the enterprises capital assets before and after privatization.

The sixth secondary hypothesis: there is difference between the enterprises staff number before and after privatization.

**Method:**

The research is applied in purpose and descriptive in method (then, event or causality after occurrence). The enterprises financial and operational performance before and after privatization are compared by the historical information regarding to the previous periods.

**Spatial and temporal scope of study:**

The study temporal scope includes 1379 to late 1390. The study spatial scope also involves the privatized enterprises accepted in Tehran Stock Exchange.

**Study population:**

The study population is the privatized enterprises accepted in Tehran Stock Exchange which have been announced on behalf of Tehran Stock Exchange and the privatization organization over 1382 and 1383. The sample was selected using the available information.

**Data collection:**

Accumulating the required data is the critical stage of any research. If the required certitude does not exist regarding the gathered data accuracy, the study results would be under question.

In the present study, the library method was used to gather the data. Thus, the required data for the study literature and its theoretical principle are collected through books, magazines, papers, and dissertations. The statistical data required to test hypotheses are also collected through the organization resources of Tehran Stock Exchange. The data are extracted from the audited financial statement of companies.
Data analysis:

To investigate and analyze the transformation in the financial and operational performance of the privatized enterprises before and after privatization process paired tests were used, so that T-test is used for paired sample in case the data are normal and Wilcoxon nonparametric statistical techniques are used to paired comparison if the data don’t follow a normal distribution. The financial and operational performance of privatized companies was compared for two years before and after privatization. The total statistical stages and testing the hypothesis to all population were analyzed using software SPSS and EXCEL.

Results:

Descriptive statistics for variables:

In descriptive method, we seek to describe the research data by presenting tables and using descriptive statistical measures such as the central and scatter indices in order to explicit the issue. Descriptive statistics of regression model to calculate the accounting earnings quality has been presented in table 1-4.

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Observations number</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCA</td>
<td>100</td>
<td>853E5</td>
<td>5866E3</td>
</tr>
<tr>
<td>CFO</td>
<td>100</td>
<td>1,1546E6</td>
<td>3,2955E6</td>
</tr>
<tr>
<td>CFO_t-1</td>
<td>100</td>
<td>1,2292E6</td>
<td>3,6019E3</td>
</tr>
<tr>
<td>CFO_t+1</td>
<td>100</td>
<td>1,7123E6</td>
<td>4,7282E3</td>
</tr>
</tbody>
</table>

The data have been extracted out of company financial statements for five years in table 1-4 and has been put in software SPSS, so that 20 companies observations reach 100.

Research data descriptive statistics to the age after privatization also has been presented in table 3-4.
4-3 data normality test:
In this section, we present the normal test to both dependent variables within regression model to calculate accounting earnings quality and the study variables to Kolmogrov-Smirnov test.

The null hypothesis is as follow:
H₀: data distribution is normal.
H₁: data distribution is not normal.

According to table 4-4 the test is significant at error level 0.05% to dependent variable within the regression model in order to calculate the accounting earnings quality. Then, H₀ is rejected and H₁ is accepted, that is dependent variable distribution is not normal.

Table 4-4: Test result of Kolmogrov-Smirnov for variable related to regression model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>TCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance level</td>
<td>0.000</td>
</tr>
</tbody>
</table>

It was stated in chapter three, in case the data are not normal, you make the data normal using Ln(1/V²) formula and then estimate the regression model. As it is observed in table 4-4 the data has been normal by taking logarithm of the dependent variable.

Table 5-4: Result of Kolmogrov-Smirnov to dependent variable of regression model

<table>
<thead>
<tr>
<th>Variable</th>
<th>LnTCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance level</td>
<td>0.747</td>
</tr>
</tbody>
</table>

After testing for normality to dependent variable in regression model to calculating the accounting earnings quality, the test has been performed to other research variables. The linear regression model and low autocorrelation of regression model errors are of the other assumptions. To evaluate linearity, SPSS output for Variance Inflation Factor (VIF) (the output is presented in the appendix) equals to 1.08, 1.05, and 1.04 respectively to the dependent variables CFOₜ₋₁, CFOₜ, CFOₜ₊₁. VIF indicates us how much variance of coefficient evaluation has been created among dependent variables through co-linearity. A rule states that VIF with the value higher than 10 is concerning. Durbin-Watson test (1951) also has been used to investigate the autocorrelation of regression model error (this output also has been presented in the appendix).

The output value of the test to the study regression model equals 1.4 which is closer to ideal situation. The value less than 1 is concerning and 2 is ideal. The test demonstrates the autocorrelation degree between the regression model errors.

The results of Kolmogrov-Smirnov test to the research variables have been presented in table 6-4. With regard to significance level of each variable data distribution, the appropriate test is conducted to compare the mean before and after privatization. As it is illustrated in table, the test is significant in error level 0.05% for ROA and net earnings to human force indices. The H₀ to these indices is rejected in error level 0.05%. Therefore, the data distribution of the variables is not normal. Thus, Wilcoxon nonparametric test for pair sample will be utilized to test the hypothesis regarding two variables.

Regarding not being significant Kolmogrov-Smirnov test to data distribution in error level 0.05 and rejecting H₀, T-test for paired samples will be used to test the other variables hypothesizes.

Table 6-4: Results of Kolmogrov-Smirnov to the research variables.

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Significance level, before privatization</th>
<th>Significance level, after privatization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting earnings quality</td>
<td>0.433</td>
<td>0.144</td>
</tr>
<tr>
<td>Return on assets</td>
<td>0.644</td>
<td>0.596</td>
</tr>
<tr>
<td>Return on equity</td>
<td>0.962</td>
<td>0.004</td>
</tr>
<tr>
<td>Return on sales</td>
<td>0.883</td>
<td>0.936</td>
</tr>
<tr>
<td>Acid ratio</td>
<td>0.375</td>
<td>0.372</td>
</tr>
<tr>
<td>Capital expenditure to sales</td>
<td>0.367</td>
<td>0.132</td>
</tr>
<tr>
<td>Capital expenditure to assets</td>
<td>0.168</td>
<td>0.284</td>
</tr>
<tr>
<td>Human force</td>
<td>0.151</td>
<td>0.338</td>
</tr>
<tr>
<td>Sales to human force</td>
<td>0.166</td>
<td>0.164</td>
</tr>
<tr>
<td>Net earnings to human force</td>
<td>0.295</td>
<td>.003</td>
</tr>
</tbody>
</table>

4-4 results from testing the hypotheses:
We use deductive statistical methods to test hypothesizes. As it was stated in the previous section, the appropriate test is determined to each hypothesis after probing the data normality. Te test the first secondary hypothesis due to not being significant Kolmogrov-Smirnov test, the appropriate method to T-test is paired samples.

4-4-1 testing the first secondary hypothesis:
The research and statistical hypothesizes for the first hypothesis is as follow:
The first secondary hypothesis: there is difference between accounting earnings quality before and after privatization.

H₀: μ₂ = 0
H₁: μ₂ ≠ 0

In the above statistical hypothesizes μ₂ represents the paired data mean of accounting earnings quality. As it is observed in table 7-4 the test results for this index indicates the test significance. Then, H₀ is rejected and H₁ is accepted. In other words, the first secondary hypothesis cannot be rejected at significance level 0.05% and the accounting earnings quality after public companies privatization is different from the era before privatization.

| Table 7-4: T-test results of paired samples for accounting earnings quality index. |
|-----------------------------------------------|-----------------|-----------------|---------------|-----------------|
| Paired differences                          | mean            | Standard deviation | Standard deviation error | Confidence interval |
| D     | 1.20301E6 | 2.26308E6 | 5.06041E5 | -2.26216E6 | 1.43853E5 | -2.377 | 19 | 0.228 |

4.4.2 -Testing the secondary second hypothesis:

The second secondary hypothesis is as follow:

H₀: μ₃ = 0
H₁: μ₃ ≠ 0

In the above statistical hypothesis μ₃ indicates the paired data mean of profitability index.

As it was explained in advance, profitability index is investigated by three other ratios in the study. Therefore, separated statistical hypothesizes are designed to three indices ROA, ROE, and ROS and each is probed in separate. As it is observed in tables 8-4, 9-4, and 10-4 none of the conducted test to the indices is significant. Then, H₀ cannot be rejected. In other words, there is no difference between the corporation profitability before and after privatization.

| Table 8-4: T-test results of paired samples for the total return on assets index. |
|-----------------------------------------------|-----------------|-----------------|---------------|-----------------|
| Paired differences                          | mean            | Standard deviation | Standard deviation error | Confidence interval |
| D     | 0.01777 | 0.18578 | 0.4154 | -0.10472 | 0.06917 | -0.428 | 19 | 0.674 |

| Table 9-4: Wilcoxon test results for return on equity index. |
|-----------------|-----------------|-----------------|---------------|-----------------|
| ROE mean after privatization – ROE mean before privatization |
| Significance level | 0.296 |

| Table 10-4: T-test results of paired samples for return on sales index. |
|-----------------------------------------------|-----------------|-----------------|---------------|-----------------|
| Paired differences                          | mean            | Standard deviation | Standard deviation error | Confidence interval |
| D     | 0.08301 | 0.23850 | 0.05333 | -0.19463 | 0.02862 | -1.556 | 19 | 0.136 |

4.4.3 testing the third secondary hypothesis:

To test the third secondary hypothesis, research and statistical hypothesizes are as follow:

H₀: μ₄ = 0
H₁: μ₄ ≠ 0

In the above statistical hypothesis μ₄ indicates the paired data mean of acid ratio. Acid ratio is defined as an index to corporation liquidity. Independent T-test results to paired samples have been presented in table 11-4. The results indicate that the test is not significant. In other words H₀ cannot be rejected at significance level 0.05%. Then, there is no difference in liquidity index as profitability index.

| Table 11-4: T-test results of paired samples for acid ratio. |
|-----------------------------------------------|-----------------|-----------------|---------------|-----------------|
| Paired differences                          | mean            | Standard deviation | Standard deviation error | Confidence interval |
| D     | 0.11763 | 0.42387 | 0.09478 | 0.08075 | 0.31600 | 1.241 | 19 | 0.230 |
4.4.4 testing the fourth secondary hypothesis:
The research and statistical hypotheses is as follow:
The fourth secondary hypothesis: there is different between the corporation operational efficiency before and after privatization.

\( H_0: \mu_d = 0 \)

\( H_1: \mu_d \neq 0 \)

In the above statistical hypotheses \( \mu_d \) indicates the paired data mean for operational efficiency. In the study, operational efficiency is investigated by two variables—sales to human force and net earnings to human force. The results have been presented in tables 12-4 and 13-4 respectively.

As it is observed the test is significant to both indices. Thus, \( H_0 \) is rejected and \( H_1 \) is accepted. In other words, comparing operational efficiency for privatized public companies, before and after privatization, it can be said the index is significantly different.

### Table 12-4: T-test results of paired samples for sales ratio to human force.

<table>
<thead>
<tr>
<th>Paired differences</th>
<th>Confidence interval</th>
<th>t Freedom degree</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>( D )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.4483E8</td>
<td>-</td>
<td>-</td>
<td>19</td>
</tr>
<tr>
<td>8.29008E8</td>
<td>1.99459E1</td>
<td>-</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>1.16231E9</td>
<td>3.2736E8</td>
<td>3.734</td>
</tr>
<tr>
<td></td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.4.5 testing the fifth secondary hypothesis:
The research and statistical hypotheses are as follow:
The fifth secondary hypothesis: there is difference between investment in companies capital assets before and after privatization.

\( H_0: \mu_d = 0 \)

\( H_1: \mu_d \neq 0 \)

In the above statistical hypotheses \( \mu_d \) indicates the paired data mean for investment in capital assets. To determine the investment degree in capital assets, two variables—capital expenditures to sales and capital expenditures to total assets—has been used. The results presented in tables 14-4 and 15-4 represent that the tests are not significant. Then, \( H_0 \) cannot be rejected in error level 0.05%. Therefore, it has not been any difference between investment in capital assets before and after privatization.

### Table 14-4: T-test results of paired samples for capital expenditures to sales.

<table>
<thead>
<tr>
<th>Paired differences</th>
<th>Confidence interval</th>
<th>t Freedom degree</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>( D )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.003</td>
<td>0.15333</td>
<td>0.03429</td>
<td>-0.03657</td>
</tr>
<tr>
<td>0.06860</td>
<td>0.07492</td>
<td>0.414</td>
<td>684</td>
</tr>
</tbody>
</table>

4.4.6 testing the sixth secondary hypothesis:
The research and statistical hypotheses are as follow:
The sixth secondary hypothesis: there is difference between employee number before and after privatization.

\( H_0: \mu_d = 0 \)

\( H_1: \mu_d \neq 0 \)

In the above statistical hypotheses \( \mu_d \) indicates paired data mean for company’s employee number. As shown in table 16-4, the test is not significant in error level 0.05%. Then \( H_0 \) cannot be rejected. In other words, it cannot be observed the significance different by comparing staff number or employment degree in privatized public companies before and after privatization.
Testing the research main hypothesis:

The research and statistical hypotheses are as follows:

Main hypothesis: privatization affects the corporation financial and operational performance.

\[ H_0: \mu_d = 0 \]

\[ H_1: \mu_d \neq 0 \]

In the above statistical hypotheses \( \mu_d \) indicates paired data mean for financial and operational performance. With regard to not being significant the test results of first and fourth secondary hypothesis, it could be concluded that \( H_0 \) is rejected and \( H_1 \) can be accepted in confidence level 95%, that is the corporation circumstances is different after privatization.

Discussion and conclusion:

The first research hypothesis was about privatization influence on company’s accounting earnings quality. The absolute value of company current accruals and the company operational cash flow were determined as a criterion to company accounting earnings quality. The first hypothesis test results as presented in chapter four suggest that the difference among corporation accounting earnings quality mean is significant. Since accounting earnings quality mean is less after privatization it could be concluded that privatizing the public companies has caused accounting earnings quality to be increased. The result is consistent with the results of Jivkin & Fengting study conducted in China in 2009. It has been used for the first time in Iran the criterion to evaluate the performance of privatized companies. Investigations conducted demonstrate that it is also unparalleled in the other countries. Regarding that in the vast majority of conducted research on privatizing public companies indices such as profitability, liquidity, employment, etc has been utilized, applying such indices looking by various approaches to the subject, it can be important for the researchers conducts the research on privatization. The other indices were also investigated to comparing better.

Profitability criterion as the most widely used to evaluate the performance of privatized companies has been applied in second hypothesis which is about privatization influence on companies profitability. The hypothesis test results for indices return on assets, return on equity, and return on return on sales suggest that these three tests are not significant. In other words, privatization has not had much effect on companies. The result is consistent with Tatahi & Heshmati research in 2009 titled “financial and operational performance of privatized companies in Sweden” and also the other study results in Hungary, Czech, Slovakia, and Poland by Asing and Jiling in 2006 titled “operational performance of companies privatized recently in economies developing in central Europe. However, many other researches represent the difference of company profitability before and after privatization including the research on privatization by Wolf titled “motivators of performance transformation during the privatization in England” in 2008 or Manoma & Tanko research titled “factors improving the performance for privatized companies in Nigeria” in 2008.

The third hypothesis is about privatization influence on corporation liquidity. The criterion like the profitability is of the most widely used to investigate the performance of privatized companies. The results from the hypothesis test indicate that the test is not significant. In other words, there is not much difference between company liquidation before and after privatization. The result is also consistent with Tatahi & Heshmati research in 2009 titled “financial and operational performance of privatized companies in Sweden”. However, many other research results indicate the difference in company liquidity before and after privatization including Pham and Charlin study (2008) titled “financial performance of privatized companies in Vietnam” and Aqajani study (1380) titled “investigating the influence of privatization on financial dimension to continue the companies activity.

The fourth hypothesis was about privatization influence on operational performance of privatized companies. The index is also relatively the most widely used in various studies regarding privatization. The hypothesis test results indicate that the test is significant. In other words, operational efficiency is different from the era before privatizing the public companies. By more accurate investigation on means from both eras—before and after privatization—we figured out that the ratio of sales to human force has been declined after privatization, however the ratio of net earnings to human force is improved. The issue may be justified by the first research hypothesis test results—as the applied net earnings to calculation has been manipulated by more management than the company sales quantity, it is not been able to evaluate the performance of sales ratio to human force. Since the first hypothesis test result demonstrates the reduction of accounting earnings quality, it indicates that the company performance situation has been debilitated after privatization in Iran.
Various researches have investigated this criterion, however Tatahi & Heshmati research in 2009 titled “financial and operational performance of privatized companies in Sweden” is different from the results from the study and the results suggest that there was no significant transformation in operational efficiency. But the other study results on 116 active privatized companies in electricity distribution industry in Latin America by Androz et al [6] illustrate the significant transformation in efficiency. In a research conducted by Disooza et al [23]—company institutional and specific characteristic effect on performance after privatization—in 23 developed countries, the significant transformation was observed on efficiency.

The results from the fifth hypothesis test:

The fifth hypothesis is about the privatization effect on employment degree in capital assets and generator of privatized companies. The results from hypothesis test for capital expenditures to sales and capital expenditures to assets indicate that the test is not significant. In other words, it is not observed any difference in investment degree in capital assets and company generator by privatizing public companies. The result is consistent with the results of research in Hangray, Czech & Slovakia, and Poland by Asing & Jiling (2006)—operational performance of companies privatized recently in developing economies in central Europe—and Tatahi & Heshmati [57]—financial and operational performance of privatized companies in Sweden. However, studies such as Manoma & Tanko [45]—factors improving performance for privatized companies in Nigeria and a research on privatization by Wolf [61]—motivators transforming performance during privatization in England—indicates the significant transformation in the index.

The results from the sixth hypothesis test:

The sixth hypothesis represents the privatization effect on employment degree of privatized companies. Employment degree is also one of the most widely used indices to evaluate performance of privatized companies. As it was stated in chapter four, the hypothesis test result suggests that the difference is not significant. In other words, there is no difference in employment degree before and after privatization. The result is also consistent with Tatahi & Heshmati [57]—financial and operational performance of privatized companies in Sweden. However, the research result of Moslem F (2005)—financial and operational performance of privatized companies in Turkey cement industry suggests that the difference of the index is significant. In another study by Hanosk et al [32]—possession, control, and performance of companies after privatization—it was observed the transformation in the index. In another research by Karimi Petanlar (1383)—privatization, government size, and employment in Iran Islamic Republic—the significant difference observed in employment level.

With regard to analyzing the research hypotheses test results, it can be expressed that privatization of public companies in Iran causes debilitation of privatized companies performance. Various factors can be involved in the issue, however with regard to the study results and as it was stated in analyzing the results of the first and fourth hypotheses test, it appears that management of companies transferred to the private sector mange the interest and interest management is far done comparing to the past. Although the conclusion is not significant in static with regard to performance variables in the study such as profitability, liquidity, etc, it can be observed, that is mean of indices have been declined after privatization.

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