Asian Economic and Financial Review
ISSN(e): 2222-6737
ISSN(p): 2305-2147
DOI: 10.18488/journal.aefr.2019.93.402.418
Vol. 9, No. 3, 402-418

URL: www.aessweb.com

HAS EQUITIZATION ACTUALLY LED TO IMPROVE FIRM PERFORMANCE IN A TRANSITION ECONOMY?

Nguyen Van Tan[1+]
Trinh Quoc Trung[2]

[1]*Eastern International University, Becamex Business School, Binh Duong, Vietnam*
Email: tan.nguyen@eiu.edu.vn Tel: (+84) 919 118 113
[2]*University of Economics and Laws, Vietnam National University-Ho Chi Minh, Ho Chi Minh City, Office of Research Management, Vietnam*
Email: tqtrung@uel.edu.vn Tel: (+84) 886 457 668

(+ Corresponding author)

Article History
Received: 20 December 2018
Revised: 25 January 2019
Accepted: 4 March 2019
Published: 2 April 2019

Keywords
Equitization
Privatization
Firm performance
Propensity score matching
PSM
State-owned enterprises.

JEL Classification:
G34, P31.

ABSTRACT

This paper determines the impact of equitization on firm performance in Vietnam. With research data including the majority of large-scale equitized enterprises in the third period of equitization in Vietnam, this research plays an important role in explaining whether large-scale enterprises can improve firm performance after equitization or not. With a new approach to assess the direct impact of equitization on firm performance through a combination of the with-without comparison method and the weighted regression method, the study has revealed that equitization does not help to improve firm performance in Vietnam if compared with non-equitized SOEs in the same period, typically in terms of profitability and operating efficiency. Thus, these results explain why most SOEs are not interested in joining equitization programs in Vietnam. The results of this study are in contrast to previous studies in developed and developing countries but there are some similarities with studies in China by Liao *et al.* (2014) and Wei *et al.* (2003).

Contribution/ Originality: This study contributes to existing literature in determining the relationship between equitization and firm performance. This is the first study to assess the direct impact of equitization on firm performance through a combination of the with-without comparison method and the weighted regression method in a transition economy.

1. INTRODUCTION

The history of privatization actually began with large scale SOEs in 1957 and was first implemented in Germany, under the direction of West German Prime Minister Konrad Adenauer. The British Prime Minister Margaret Thatcher continued to privatize SOEs in the UK in the early 1980s. According to Megginson and Netter (2001) privatization is known as the transfer of assets from state ownership to private ownership. Privatization is an indispensable process for SOEs because it facilitates the reallocation of SOEs' resources through the involvement of private ownership. In Vietnam, the term "equitization" is more commonly used by Vietnamese government because the State still holds dominant shares of equitized SOEs after equitization in some cases.

China has implemented "economic reform" policy since 1978. Privatization has been considered an economic reform method in China. Many developing countries have conducted their privatization programs and many countries have not fully finished privatizing SOEs, including China, Vietnam, and Myanmar.

According to the statistics of the Steering Committee for Enterprise Renovation and Development, Vietnam (2017), the equitization of SOEs in Vietnam has been conducted in three phases. The first phase took place from 1992 to 2000 with 558 equitized enterprises. The second phase (from 2001 to 2007) consisted of 3,021 equitized enterprises and the third period has lasted from 2008 to now but the number of enterprises participating in equitization also decreased sharply in this period. The reasons for SOEs to postpone participating in equitization in this period include the fact that because the remaining enterprises are mainly large-scale ones operating across multiple industries it is difficult to pricing assets for equitization. In addition, managers from SOEs have not realized the benefits of participating in equitization programs. Therefore, this study aims to determine the impact of equitization on firm performance of equitized SOEs compared to non-participating enterprises in Vietnam.

According to Megginson (2017) the number of research works studying the impact of privatization on firm performance has been voluminous in recent years. Most empirical studies have used the pre-post comparison method, including studies by Megginson *et al.* (1994) in developed countries, Liao *et al.* (2014) in China, and Carlin and Pham (2009); Pham (2017) in Vietnam or the with- without comparison method, including studies by Claessens and Djankov (2002) in developed countries, and Hung *et al.* (2017); Loc *et al.* (2006); Loc and Tran (2016) in Vietnam.

The pre-post comparison method allows researchers to identify whether privatized SOEs improve firm performance after privatization while the with-without comparison method considers firm performance improvement when including both privatized SOEs and non-privatized SOEs in the same period. However, these two approaches do not assess the direct impact of equitization on firm performance after privatization. Therefore, a number of other studies have used the multiple regression method to identify the determinants of firm performance changes after privatization, such as studies by Liao *et al.* (2014); Wei *et al.* (2003); Chen *et al.* (2006); Zhang *et al.* (2012) in China, studies by D'Souza *et al.* (2005) in developed countries and studies by Loc *et al.* (2006); Tran *et al.* (2015) in Vietnam. In this study, the authors used only the regression method because this method assesses the direct impact of equitization on firm performance in Vietnam.

In general, the studies using the regression method mentioned above have certain limitations, including:

(1) using cross-sectional data and not considering the direct impact of privatization/ equitization on firm performance of participating SOEs in relation to on-participating SOEs in the same period and this fails to explain whether firm performance of participating SOEs is actually improved or not; and,

(2) not applying with-without comparison method before applying the regression method, so it is impossible to select participating SOEs and non-participating SOEs that have similarities in the same period to fully assess the impact of equitization on firm performance, typically the study by Tran *et al.* (2015).

This study not only hopes to overcome some of those limitations, but also proposes to use the weighted regression method proposed by Hirano *et al.* (2003) to efficiently estimate the equitization effect on firm performance for more accurate results. The study also provides empirical evidence to prove whether the related privatization theories are still relevant or not to explain the privatization impact on firm performance. The structure of this research is in five parts, including (1) Introduction; (2) Related theories and literature review; (3) Methodology; (4) Empirical findings and (5) Conclusions and implications.

2. RELATED THEORIES AND LITERATURE REVIEW

2.1. Related Privatization Theories

There are many theories explaining the central roles of the state in the economy, privatization timing and the impact of privatization on firm performance. However, there are three theories that can explain the role of

privatization and firm performance: the public choice theory, the property rights theory and the theory of competitive advantage.

Tullock and Buchanan (1972) proposed the public choice theory to explain the benefits of privatization. The public choice theory suggests that private enterprises are more efficient than state-owned enterprises because the operating objectives of state-owned enterprises are not for maximizing profits but for political purposes and strengthening political groups' power or benefits. Alchian and Demsetz (1973) were the first authors to propose the property rights theory and Demsetz (1983) developed this theory further. The property rights theory explains that private enterprises have more advantages than state-owned enterprises in the same sector, which comes from the ownership nature of private ownership and that this helps them to clearly define the operational objectives or create a clearer strategic plan than state-owned enterprises.

Another theory explaining performance of private enterprises and state-owned enterprises is the theory of competitive advantage proposed by Porter (1990). This theory was initially based on the industry-level competitive advantage and then developed into a national competitive advantage. This theory states that every business in every different industry will face a different competitive environment. Environmental factors affecting the competitiveness of industries include human resources, tangible resources, knowledge, finance, etc. Therefore, the impact of equitization on firm performance is different if considered in different industries. Sheshinski and López-Calva (2003) argue that enterprises in highly competitive industries have significant improvement in post-privatization performance.

In general, these three theories explain only the superiority of private ownership over state ownership, and that privatization will help enterprises transform from state ownership to private ownership, after which, firm performance is stated to be improved after privatization. However, these theories cannot explain whether privatization can help privatized SOEs improve firm performance compared to non-privatized SOEs in the same period or not.

2.2. Literature Review and Hypothesis Development

Since Megginson *et al.* (1994) proposed using seven measures of firm performance when considering the impact of privatization on the firm performance of privatized enterprises, most following empirical measures and analysis have also used these measures, such as studies by Liao *et al.* (2014); Claessens and Djankov (2002); Hung *et al.* (2017); Loc *et al.* (2006); Loc and Tran (2016).

These seven firm performance measures include:

(1) profitability (ROE, ROA and ROS);

(2) operating efficiency (sales / number of employees, net income / number of employees);

(3) capital investment (capital expenditures / sales, capital expenditures / total assets);

(4) output (nominal sales / consumer price index);

(5) employment (total number of employees);

(6) leverage (total debt / total assets, long-term debt / equity); and,

(7) payout (cash dividends / sales, cash dividends / net income).

In this study, the authors do not use payout measures because most equitized SOEs in Vietnam are not listed immediately after equitization. This study also does not use capital investment measures due to data limitation in Vietnam. Thus, the authors only use the following measures, of:

(1) profitability (ROE, ROA and ROS);

(2) operating efficiency (sales / number of employees, net profit / number of employees);

(3) Output (real sales);

(4) labor (total employees); and,

(5) leverage (total debt / total assets).

The public choice theory and the property rights theory state that private enterprises operate more efficiently than state-owned ones and that privatization helps SOEs transform into private ones, after which they will operate more efficiently than state-owned enterprises. The study by Megginson *et al.* (1994) also affirmed that privatization helps SOEs to perform better in profitability (ROE, ROA, ROS) and operating efficiency. In particular, the operating efficiency and the profitability of enterprises after privatization were improved significantly in developed and developing countries (Dewenter and Malatesta, 2001; Boubakri *et al.*, 2004). Wei *et al.* (2003) suggested that privatized enterprises in China do not help privatized SOEs to improve profitability (ROS) after privatization, despite a significant increase in operating efficiency. In fact, privatized SOEs in China are still controlled by the state in some cases, so the ability to improve profitability is negligible. Liao *et al.* (2014) also had a similar conclusion that privatized SOEs have reduction in profitability (ROS) and operating efficiency (EBIT / sales) after privatization.

Cuervo and Villalonga (2000) stated that privatization is only an event that marks the transformation of SOEs ownership and does not help privatized SOEs improve their firm performance. Hung *et al.* (2017); Loc *et al.* (2006); Loc and Tran (2016) concluded that equitized enterprises do improve in profitability and operating efficiency in Vietnam, and Tran *et al.*, (2015) argued that equitized enterprises have a significant improvement in profitability after equitization when compared with non-equitized enterprises in the same period.

Carlin and Pham (2009); Pham (2017) affirmed that the profitability of equitized SOEs could not be improved after equitization, but that their operating efficiency could be improved a little. Thus, most empirical studies suggested that privatized SOEs have significant improvement in profitability and operating performance, especially compared to non-privatized SOEs in the same period. Therefore, the authors propose the first research hypothesis as follows:

Hypothesis 1: *Compared with non-equittized SOEs in the same period, equitization helps enterprises improve profitability and operating efficiency.*

The total employees of equitized SOEs can be reduced after privatization because managers of these enterprises tend to expand their business due to a clear operational strategy (Megginson *et al.*, 1994). This is the reason why privatized SOEs tend to increase output after privatization. Dewenter and Malatesta (2001) also confirmed that the number of employees could be increased significantly after privatization. Claessens and Djankov (2002); Boubakri *et al.* (2004) also made similar comments when there is significant increase in total employees after privatization for privatized SOEs. Wei *et al.* (2003) argued that the total employment of post-privatized SOEs in China has not increased, while the real output has been increased significantly after privatization. Liao *et al.* (2014) also proved that there is no increase in total employees of privatized enterprises compared to non-equitized enterprises in the same period.

Nhan and Son (2017) concluded that equitized enterprises in Vietnam have not improved in real sales compared to non-equitized SOEs in the same period, while there was decline in the total employees of equitized SOEs compared to the non-equitized SOEs in the same period. This result shows that enterprises focus more on profitability and do not focus on output after equitization in Vietnam, and that enterprises after equitization often focus on maximizing profit and raising labor productivity, so that they can reduce total employees in the short term. From empirical studies, the authors propose the following research hypothesis as follows:

Hypothesis 2: *The number of total employees of equitized SOEs will be significantly reduced, while there is no evidence that there is a change in the output of equitized SOEs compared to non-equitized SOEs in the same period.*

According to Megginson *et al.* (1994) SOEs often have high debt before privatization, but that the managers of these enterprises review firm performance after privatization and reduce the debt level. Wei *et al.* (2003) suggested that post-privatization enterprises also reduce the use of leverage in China, so the ratio of total debt to total assets is decreased after privatization. Managers of privatized SOEs reduce leverage after privatization because they can use more equity (due to easy share issuance). Studies by Loc *et al.* (2006); Loc and Tran (2016) in Vietnam also had similar conclusions that there is a reduction in the leverage of equitized SOEs if compared with non-equitized enterprises in the same period. However, Nhan and Son (2017) argued that the equitized SOEs in Vietnam have a higher leverage compared to non-equitized enterprises in the same period (14.2 % on average). In general, most empirical studies proved that privatized SOEs have the ability to reduce leverage after equitization. Therefore, the next research hypothesis is as follows:

Hypothesis 3: *Equitization helps equitized SOEs significantly reduce leverage after equitization compared to non-equitized SOEs in the same period.*

3. METHODOLOGY

3.1. Data

Previous studies have mostly used the pre-post comparison method, the with-without comparison method and some studies have applied the multiple regression method. The pre-post comparison method only allows researchers to test whether there is improvement in firm performance after privatization without considering non-equitized SOEs in the same period. The with-without comparison method can consider both equitized SOEs and non-equitized SOEs through the selection of research samples that include the two groups with some similar characteristics.

3.2. Methodology and Model Specification

To identify the two groups of SOEs with similarities, the propensity score matching (PSM) technique was applied to determine the common support area between the two groups of enterprises. This study is different from previous studies by Liao *et al.* (2014); Tran *et al.* (2015); Wei *et al.* (2003); Chen *et al.* (2006); Zhang *et al.* (2012) in applying a with-without comparison method before applying the regression method (through PSM technique to identify two groups of enterprises participating in equitization and non-participating enterprises having similar characteristics). The application of PSM technique to identify two groups with similar characteristics will help the evaluation of equitization impact on firm performance to be more accurate. Similar characteristics between the two groups of enterprises include the operating year of the SOEs, the firm size (number of employees), the equitization year and the industry. Tran *et al.* (2015) did not consider industry in determining a general support area, so the results of this study is questionable because the authors could have compared two enterprises in two different industries. Enterprises in different industries face different competitive environments, so their performance cannot be compared (Porter, 1990).

Previous studies by Liao *et al.* (2014); Tran *et al.* (2015); Wei *et al.* (2003); Chen *et al.* (2006); Zhang *et al.* (2012) also have some limitations when applying the regression method because these authors mainly uses the least square method for cross-sectional data. This approach cannot assess the direct impact of equitization policy on firm performance but can only assess the factors affecting performance change measures of privatized SOEs after privatization. Only one study by Tran *et al.* (2015) applied a "pseudo" panel data with a two "period" windows (pre- and post- privatization) to assess the direct impact of equitization on firm performance. However, this author did not use the PSM technique before applying the regression method, as well as using only the least square regression model without explaining why it was chosen.

Therefore, this study overcomes some limitations of previous studies when applying the PSM technique to identify two similar enterprise groups, then using the weighted regression method. According to Hirano *et al.* (2003) the weighted regression method with weights calculated based on propensity scores can fully assess the impact on performance of participants compared with non-participants. The weight is determined by 1 for treatment group (participants) and the weight is $\hat{P}(x)$ / (1-$\hat{P}$(x)) for the control group (non-participants). In addition, this study also tests the impact of equitization policy on firm performance in many cases, such as general assessment, firm size, industry groups and unlisted status to test robustness of research results.

The research regression model is proposed as follows:

$$\mathbf{Y_{it} = \beta_0 + \beta_1 T_i t + \beta_2 T_i + \beta_3 t + \eta X_{it} + \varepsilon_{it}}$$

Table 1 presents the description of the variables and measurement. The dependent variables are measures of firm performance, including:

(1) profitability;

(2) operating efficiency;

(3) employment;

(4) leverage; and,

(5) output.

Independent variables include time variable t (t = 0 for pre-equitization period and t = 1 for post-equitization period); Ti is the equatization dummy (equitized enterprises are coded as 1, otherwise 0). T_i * t is the interaction term of privatization dummy and period dummy adapted form model proposed by Hirano. X_{it} is a vector of control variables including firm size (LNASSET and LNEMP). The estimator of $T_i t$ will be embedded in the β_1 coefficient which represents the effect of equitization program on firm performance of equitized SOEs after equitization, ceteris paribus.

Table-1. Variable description.

Variables	Proxies	Measurement
Dependent variables (firm performance measures- Y_{it})		
P(1) Profitability	Return on Assets (ROA)	Net Income / Total Assets
	Return on Equity (ROE)	Net Income/ Equity
	Return on Sales (ROS)	Net income /Sales
P(2) Operating efficiency	Sales Efficiency (SALEF)	Sales/ Number of employees
	Net Income Efficiency (NIEFF)	Net Income/ Number of employees
	Total assets turnover (TAS)	Total sales/ total assets
P(3) Employment	Total employees (EMPL)	Total Number of employees
P(4) Leverage	Debt to Assets (LV)	Total Debt/ Total Assets
P(5) Ouput	Real sales	Natural logarithm of real sales, with nominal sales = sales / consumer price index
Independent variable (equitization impact)		
t	Time dummy (period dummy)	t = 0 for pre-equitization period and t = 1 for post-equitization period
T_i	Equatization dummy	equitized enterprises are coded as 1, otherwise 0
$T_i t$	Estimator measuring the impact of equitization on firm performance	$T_i t = T_i * t$
Control variables		
X_{it}	LEMPL	Natural logarithm of total employees
	LNASSET	Natural logarithm of total assets

Source: Megginson *et al.* (1994).

4. EMPIRICAL FINDINGS

4.1. Descriptive Statistics

Before applying the regression method, the authors used the with- without comparison method through the PSM technique. In order to identify the two groups of participating and non-participating SOEs with similar characteristics, this study used the number of operating years, firm size (number of employees), equitization year and industry. After applying the PSM technique, 40 observations (including 20 non-equitized enterprises) were eliminated. This study also played an important role in determining the impact of equitization on firm performance of large-scale enterprises since previous authors have mainly studied equitized enterprises in the first phase and the second phase of equitization in Vietnam while most large-scale enterprises did not participate in the equitization program during these two phases.

Table-2. Descriptive statistics.

Variable	Obs.	Mean	Standard deviation	Min	Max
ROS	704	0.769	0.707	-11.224	0.842
ROE	704	0.061	0.312	-4.790	1.235
ROA	704	0.031	0.098	-0.992	0.767
SALEF	704	1,635.354	5,995.416	0.753	88,939.28
NIEFF	704	149.843	1,566.095	-3,267.073	33,170.57
TAS	704	1.254	1.910	0.002	24.458
EMPL	704	508.444	1,219.38	7	22,991
LV	704	0.527	0.438	0.001	3.331
OP	704	1,177,772	7,479,254	220	$1.24x10^{08}$
AGEe	704	11.608	5.094	4	42
ASSETe	704	1,518,907	7,059,094	2,764	$7.98x10^{07}$
EMPLe	704	491.741	925.621	7	8,165
ASSET	704	1,317,983	8,932.378	2,203	$7.63x10^{07}$

Notes: employment unit is number of employees, real sales (OP) and asset (ASSETe) units are in millions VND and other units are in percentage.
Source: author's data analysis.

Table 2 shows that the state-owned enterprises are different in terms of profitability, operating efficiency, number of employees, output and total assets. The net income of some SOEs is negative in some cases, which leads to negative profitability and this indicates that the SOEs operated inefficiently during 2012-2014.

Table-3. Frequency statistics.

Characteristics	Frequency	Percent (%)	Cumulative percent (%)
General information			
Number of observations before equitization	352	50	50
Number of observations after equitization	352	50	100
Number of non-equitized SOEs	510	72.44	72.44
Number of equitized SOEs	194	27.56	100
Equitization year			
2012	74	10.51	10.51
2013	362	51.42	61.93
2014	268	38.07	100.00
Industry group			
Group 1	308	43.75	43.75
Group 2	234	33.24	76.99
Group 3	162	23.01	100.00
Listing status			
Non-listing	636	90.34	90.34
Listing	68	9.66	100.00
Firm size			
Small and medium-sized SOEs	284	40.34	40.34
Large SOEs	420	59.66	100.00

Source: author's data analysis

Therefore, the operating efficiency is also negative if considered as the ratio of net income to total employees (minimum value of -3,267,073 million VND). The firm size of SOEs is also different in the total number of employees, real revenue and assets The average assets of enterprises reaching 1,518,907 million VND in equitization years shows that the sample mostly includes large-scale SOEs in this period.

Table 3 shows the frequency statistics for the number of equitized SOEs and non-equitized SOEs used in this research. Among 97 SOEs equitized in the period of 2012-2014, the number of equitized SOEs in 2012, 2013, and 2014 is 9, 47 and 41 respectively. The authors also tested the equitization effect on firm performance by different industry groups[1].

4.2. Results for the Full Sample

Table-4. Collinearity testing.

Variables	VIF	1/VIF
Tit	3.04	0.329
LNEMPL	2.74	0.365
LNASSET	2.74	0.365
T	2,04	0.491
Ti	2.00	0.499
Mean VIF	2.51	

Source: author's data analysis

The results of the multicollinearity testing from Table 4 show that the variance inflation factors of the independent variables in the research model are less than ten, showing that there is no multicollinearity (Hair *et al.*, 1998). Wald testing results for heteroskedasticity show that there is heteroskedasticity (with a significance level of <5%). According to White (1980) the research model can accept heteroskedasticity if the robust standard errors are applied. Therefore, the authors continued to use the estimation of the robust standard errors for the multiple regression models.

Table-5. General regression results with Robust Standard Errors.

Variables	ROS	ROE	ROA	SALFF	NIEFF
Ti*t	-1.754	.079	.014	-844.949	-191.098**
	(0.349)	(0.286)	(0.288)	(0.193)	(0.027)
Ti	-0.121	-0.090	-0.015	562.114	N/A
	(0.77)	(0.193)	(0.193)	(0.504)	
T	1.944	-0.007	-0.012*	107.712	76.184*
	(0.316)	(0.622)	(0.081)	(0.535)	(0.088)
LNASSET	-2.408	0.014	0.028***	574.613***	216.337*
	(0.338)	(0.412)	(0.000)	(0.002)	(0.072)
LNEMPL	1.536	0.003	-0.031***	-393.978	-552.103*
	(0.353)	(0.907)	(0.000)	(0.446)	(0.077)
_cons	3.789	-0.014	0.066***	783.996	2,003.474*
	(0.317)	(0.854)	(0.004)	(0.717)	(0.073)
R square	0.031	0.015	0.102	0.018	0.0001
F-statistic/ Wald chi2(5)	0.22	2.29**	29.82***	18.89***	1.60
	(0.956)	(0.044)	(0.000)	(0.002)	(0.174)
N	704	704	704	704	704
Model	OLS	OLS	REM	REM	FEM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

[1]SOEs in each group have similar operating environment. According to the Decision no. 10/2007/QĐ–TTg issued on Jan, 23th 2007 in Vietnam, there are 21 different industries. However, the authors realize that there are SOEs with the first 12 industries in the sample, therefore the authors group these firms into three industry groups. The first group includes agriculture, mining and manufacturing industries, the second group includes power, water supply and construction industries and the third group includes transportation, retailing, hospitality, telecommunication, banking, insurance and real estate industries.

The authors examined the appropriate models between the OLS (ordinary least square model) and the FEM (fixed effect model), as well as the Hausman test to choose between the FEM (fixed effect model) and the REM (random effect model). The authors only used the weight regression method for the OLS and FEM models. Tran *et al.* (2015) did not test model selection and only used the OLS model, so the research results are questionable.

Table-6. General regression results with Robust Standard Errors *(cont).*

Variables	TAS	EMPL	LV	LOUT
Ti*t	.028 (0.854)	-70.717 (0.392)	-0.016 (0.100)	0.016 (0.863)
Ti	N/A	-117.929** (0.043)	N/A	0.183 (0.222)
t	-0.036 (0.656)	51.351 (0.475)	0.004 (0.336)	.233 (0.000)
LNASSET	.951*** (0.000)	9.067 (0.843)	0.002 (0.570)	0.458 (0.000)
LNEMPL	-1.448*** (0.000)	515.447*** (0.000)	-0.005 (0.173)	0.598 (0.000)
_cons	4.130*** (0.000)	-2,264.153*** (0.000)	0.539 (0.000)	5.919 (0.000)
R square	0.349	0.353	0.008	0.616
F-statistic/ Wald chi2(5)	8.89*** (0.000)	65.90*** (0.000)	0.81 (0.521)	541.71*** (0.000)
N	704	704	704	704
Model	FEM	REM	REM	FEM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

4.3. Hypothesis Testing and Discussions

Table 5 and Table 6 show the general regression results with the robust standard errors. The statistical results of the F test and the significance level for the coefficient of policy impact shows that equitization has no impact on the firm performance of equitized SOEs in terms of profitability (ROS, ROE, ROA), operating efficiency (NIEFF, SALFF, TAS), labor (EMP), leverage (LV) and real output (LOUT). The results of this study show that the initial research hypotheses are rejected, ie there is no statistical evidence to prove that equitization helps equitized SOEs improve firm performance compared to non-equitized SOEs in the same period.

This conclusion is inconsistent with previous studies by Megginson *et al.* (1994); Hung *et al.* (2017); Loc *et al.* (2006); Loc and Tran (2016); Tran *et al.* (2015). However, the results of this study are quite similar to previous studies by Carlin and Pham (2009); Pham (2017) in Vietnam or Liao *et al.* (2014); Wei *et al.* (2003); Chen *et al.* (2006) in China. The Chinese authors argue that privatized SOEs are also dominated by the state after privatization in some cases, especially those in important sectors, after which the firm performance of those privatized SOEs could not be improved significantly after privatization. The Vietnamese authors also argue that the equitization policy as well as the characteristics of SOEs in Vietnam have many similarities with China, so the state still dominates equitized SOEs in the years after equitization. For example, PetroVietnam Ca Mau Fertilizer Joint Stock Company conducted equitization in 2014 but the state still held 75.56% of its total shares until June 30th, 2016 and the Vietnam National Petroleum Group (Petrolimex) has been equitized since 2011 but the state still held 84.71% of total shares until April 3th, 2017.

In addition, the results of this study have many characteristics contrary to some studies by Megginson *et al.* (1994); Loc *et al.* (2006) because these studies did not consider the privatization impact on the firm performance of privatized SOEs when compared with non-privatized SOEs in the same period. In addition, the authors have also assessed the impact of equitization policy on the firm performance in terms of firm size, industry groups and unlisted status. The results of this impact assessment are presented in the subsample results.

4.4. Subsample Results

4.4.1. Larger Firms versus Smaller Firms

The results from Table 7 and Table 8 show that equitization also does not help the large-scale SOEs improve profitability (ROS, ROE, ROA), operating efficiency (NIEFF, SALFF, TAS), employment (EMP), leverage (LV) and output (LOUT). Large-scale SOEs often have complicated ownership structures and operate across many industries, so it is difficult for them to adapt to the competitive environment after equitization. Therefore, this research result is completely consistent with the reality in Vietnam and coincides with results of previous studies in China by Liao *et al.* (2014); Wei *et al.* (2003).

Table-7. Regression results of large scale SOEs with Robust Standard Errors.

Variables	ROS	ROE	ROA	SALFF	NIEFF
Ti*t	-0.024	-0.034	0.005	-1,153.598	-290.416**
	(0.762)	(0.751)	(0.746)	(0.225)	(0.031)
Ti	N/A	0.021	-0.007	652.960	51.212
		(0.781)	(0.594)	(0.607)	(0.804)
t	0.011	0.0119	0.0001	3.493	140.186
	(0.881)	(0.907)	(0.983)	(0.991)	(0.133)
LNASSET	-0.123	0.0031	0.025***	933.228***	136.496
	(0.275)	(0.968)	(0.004)	(0.009)	(0.214)
LNEMPL	0.105	0.008	-0.029*	-939.782	-362.285
	(0.352)	(0.930)	(0.053)	(0.326)	(0.141)
_cons	0.095	-0.042	0.069	2,709.128	1,612.979*
	(0.759)	(0.852)	(0.244)	(0.553)	(0.100)
R square	0.0001	0.0004	0.079	0.017	0.002
F-statistic/ Wald chi2(5)	0.45	0.12	14.32	12.04	7.92
	(0.775)	(0.989)	(0.014)	(0.034)	(0.160)
N	420	420	420	420	420
Model	FEM	OLS	REM	REM	REM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

Table-8. Regression results of large scale SOEs with Robust Standard Errors *(cont).*

Variables	TAS	EMPL	LV	LOUT
Ti*t	0.207	-152.484	-0.014	0.038
	(0.368)	(0.179)	(0.158)	(0.735)
Ti	-0.548***	N/A	-0.063	0.250
	(0.010)		(0.211)	(0.224)
t	-.095	95.580	.011	.193***
	(0.429)	(0.331)	(0.188)	(0.001)
LNASSET	1.243***	77.744	-0.013	0.373***
	(0.000)	(0.535)	(0.102)	(0.000)
LNEMPL	-1.532***	318.711***	0.004	0.678***
	(0.000)	(0.001)	(0.461)	(0.000)
_cons	3.636***	-1,670.455***	.632***	6.087***
	(0.000)	(0.000)	(0.000)	(0.000)
R square	0.449	0.393	0.015	0.402
F-statistic/ Wald chi2(5)	43.52***	17.47***	4.34	263.89***
	(0.000)	(0.000)	(0.501)	(0.000)
N	420	420	420	420
Model	REM	FEM	REM	REM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

Table 9 and Table 10 represents the regression results of small and medium - sized SOEs with the robust standard errors. The results show that equitization also does not help small and medium scale SOEs improve their operating efficiency but their operating efficiency (TAS) is less than 0.345 units compared to non-equitized SOEs in the same period. This result shows that small and medium-sized SOEs after equitization may reduce their total assets compared to non-participating SOEs (because there is no statistical evidence showing the change in total

employees of these enterprises compared with non-participating SOEs in the same period). This result shows that it is not always possible for equitized SOEs to expand the market, but they may reduce their operating scale to rearrange activities more effectively (Carlin and Pham, 2009).

Table-9. Regression results of small and medium-sized SOEs with Robust Standard Errors.

Variables	ROS	ROE	ROA	SALFF	NIEFF
Ti*t	-5.970	-0.013	0.016	-98.052	-33.006
	(0.336)	(0.633)	(0.188)	(0.162)	(0.349)
Ti	N/A	N/A	N/A	N/A	N/A
t	1.198	-.032**	-0.028***	108.940***	-3.629
	(0.516)	(0.047)	(0.004)	(0.001)	(0.847)
LNASSET	-6.146	0.057*	0.039***	187.558**	43.391
	(0.363)	(0.096)	(0.000)	(0.022)	(0.285)
LNEMPL	-16.114	-0.040*	-0.068***	-459.325*	-210.632*
	(0.275)	(0.096)	(0.003)	(0.057)	(0.099)
_cons	94.407	-0.040	0.172**	1,705.625**	756.016*
	(0.236)	(0.479)	(0.013)	(0.020)	(0.075)
R square	0.061	0.110	0.116	0.191	0.003
F-statistic/ Wald chi2(5)	0.35	3.62	10.03	3.80	0.84
	(0.842)	(0.0077)	(0.000)	(0.006)	(0.502)
N	284	284	284	284	284
Model	FEM	FEM	FEM	FEM	FEM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

Table-10. Regression results of small and medium - sized SOEs with Robust Standard Errors *(cont)*.

Variables	TAS	EMPL	LV	LOUT
Ti*t	-0.345*	52.784	-0.021	-0.045
	(0.098)	(0.259)	(0.331)	(0.718)
Ti	N/A	N/A	N/A	.0159
				(0.926)
t	-0.028	-8.654	-0.003	0.269***
	(0.656)	(0.426)	(0.488)	(0.000)
LNASSET	0.7004**	-82.168	0.009*	0.593***
	(0.022)	(0.231)	(0.098)	(0.000)
LNEMPL	-1.396	381.756*	-0.014	0.206***
	(0.113)	(0.071)	(0.343)	(0.008)
_cons	4.414*	-1,210.48*	.516***	6.806***
	(0.097)	(0.062)	(0.000)	(0.000)
R square	0.358	0.263	0.036	0.599
F-statistic/ Wald chi2 (5)	6.02	3.41	1.46	489.73
	(0.000)	(0.011)	(0.217)	(0.000)
N	284	284	284	284
Model	FEM	FEM	FEM	REM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

4.4.2. Results Based on Industry Groups

From the above results represented in Table 11 and Table 12, we can conclude that equitized SOEs in the first industry group have an even lower operating efficiency (NIEFF, TAS) and output (LOUT) compared to non-equitized SOEs in the same period. The enterprises in the first group operate in agriculture, mining and manufacturing industries. Normally, these enterprises focus on resource-based development and there is not much support from the state after equitization, so they face high competition which leads to a decrease in operating efficiency and real sales and their net income decreased by 264,118 million VND / employee, total asset turnover decreased by 0.221 units and natural logarithm of real sales decreased by 0.158 units compared to non-equitized SOEs in the same period. The research results are in contrast to previous studies by Megginson *et al.* (1994); Dewenter and Malatesta (2001); Boubakri *et al.* (2004).

Table-11. Regression results of the first industry group with Robust Standard Errors.

Variables	ROS	ROE	ROA	SALFF	NIEFF
Ti*t	-0.0682	0.0688	-0.016	-2101.214	-264.118**
	(0.642)	(0.564)	(0.163)	(0.128)	(0.031)
Ti	0.062	-0.068	N/A	1489.704	N/A
	(0.519)	(0.539)		(0.411)	
t	0.002	-0.0176	0.003	123.066	53.558
	(0.988)	(0.496)	(0.57)	(0.322)	(0.335)
LNASSET	-0.197	0.019	0.060***	1,119.033**	439.957**
	(0.268)	(0.284)	(0.004)	(0.019)	(0.016)
LNEMPL	0.191	-0.015	-0.116***	-1,238.223	-1,192.584***
	(0.333)	(0.475)	(0.003)	(0.366)	(0.001)
_cons	0.025	0.071	0.367**	2,569.131	4,557.129***
	(0.936)	(0.250)	(0.017)	(0.707)	(0.004)
R square	0.048	0.008	0.072	0.017	0.017
F-statistic/ Wald chi2(5)	0.77	0.89	2.50**	12.11**	3.69***
	(0.570)	(0.485)	(0.044)	(0.033)	(0.007)
N	308	308	308	308	308
Model	OLS	OLS	FEM	REM	FEM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

Table-12. Regression results of the first industry group with Robust Standard Errors *(cont)*.

Variables	TAS	EMPL	LV	LOUT
Ti*t	-0.221***	-97.257	-0.021	-0.158*
	(0.006)	(0.531)	(0.259)	(0.072)
Ti	N/A	-78.751	N/A	N/A
		(0.501)		
t	0.143**	110.256	0.005	0.297***
	(0.022)	(0.439)	(0.484)	(0.000)
LNASSET	1.187***	230.855*	-0.012	0.476***
	(0.000)	(0.080)	(0.294)	(0.000)
LNEMPL	-1.501***	572.821***	0.002	0.179
	(0.000)	(0.000)	(0.710)	(0.170)
_cons	3.189***	-3,802.575***	0.543***	8.149***
	(0.008)	(0.001)	(0.000)	(0.000)
R square	0.572	0.381	0.0001	0.649
F-statistic/ Wald chi2(5)	8.71***	49.20***	1.07	19.61***
	(0.000)	(0.000)	(0.371)	(0.000)
N	308	308	308	308
Model	FEM	REM	FEM	FEM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

Table-13. Regression results of the second industry group with Robust Standard Errors.

Variables	ROS	ROE	ROA	SALFF	NIEFF
Ti*t	0.126	-0.001	0.014	762.535	0.452
	(0.399)	(0.974)	(0.322)	(0.125)	(0.991)
Ti	-0.181	-0.010	-0.031***	N/A	-21.463
	(0.307)	(0.658)	(0.009)		(0.411)
T	0.013	-0.032	-0.011	-351.965	-1.774
	(0.714)	(0.124)	(0.308)	(0.330)	(0.942)
LNASSET	0.260	0.037	0.022***	194.229	13.315
	(0.143)	(0.106)	(0.001)	(0.393)	(0.302)
LNEMPL	-.257	-.025	-.019**	187.483	-8.228
	(0.218)	(0.261)	(0.039)	(0.741)	(0.543)
_cons	0.095	0.0231	0.040	-457.622	21.882
	(0.744)	(0.617)	(0.223)	(0.813)	(0.699)
R square	0.159	0.071	0.115	0.05	0.014
F-statistic/ Wald chi2(5)	5.98	5.55	14.51**	2.80**	4.46
	(0.307)	(0.353)	(0.013)	(0.029)	(0.485)
N	234	234	234	234	234
Model	REM	REM	REM	FEM	REM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

Based on empirical results from Table 13 and Table 14, the authors conclude that equitization helps equitized enterprises increase output (LOUT) in the second industry group, specifically the natural logarithm of real sales increased by 0.321 units compared with non-equitized SOEs in the same period. The second industry group includes power, water supply and construction industries. These are essential industries in Vietnam, so there is little improvement in real sales after equitization because the demand of the market has not changed much.

Table-14. Regression results of the second industry group with Robust Standard Errors *(cont)*.

Variables	TAS	EMPL	LV	LOUT
Ti*t	0.437 (0.125)	-38.920 (0.341)	0.0002 (0.983)	0.321** (0.048)
Ti	N/A	-64.052 (0.267)	0.045 (0.566)	0.163 (0.498)
T	-0.412* (0.093)	33.623 (0.280)	0.002 (0.823)	0.101 (0.303)
LNASSET	0.940** (0.017)	-50.417*** (0.008)	0.007 (0.307)	0.462*** (0.000)
LNEMPL	-1.437** (0.024)	361.884*** (0.000)	-0.010 (0.293)	0.734*** (0.000)
_cons	4.196*** (0.006)	-1,268.061*** (0.000)	.578*** (0.000)	5.161*** (0.000)
R square	0.320	0.607	0.0006	0.635
F-statistic/ Wald chi2(5)	3.40** (0.011)	69.23*** (0.000)	4.64 (0.461)	355.54*** (0.000)
N	234	234	234	234
Model	FEM	REM	REM	REM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

Table-15. Regression results of the third industry group with Robust Standard Errors.

Variables	ROS	ROE	ROA	SALFF	NIEFF
Ti*t	-10.444 (0.394)	.364 (0.213)	0.101** (0.020)	-776.552 (0.223)	-194.810 (0.424)
Ti	N/A	-0.436 (0.202)	-0.063 (0.115)	-416.188 (0.589)	-229.033 (0.552)
t	11.1478 (0.202)	0.008 (0.832)	-0.039* (0.062)	701.713 (0.135)	292.748 (0.168)
LNASSET	-17.982 (0.256)	-0.028 (0.581)	0.0287** (0.018)	155.136 (0.411)	42.755 (0.685)
LNEMPL	1.099 (0.888)	0.085 (0.381)	-0.032** (0.030)	-148.798 (0.724)	-134.574 (0.541
_cons	74.642 (0.215)	-0.164 (0.502)	0.076** (0.041)	1,666.128* (0.088)	745.582 (0.110)
R square	0.166	0.083	0.114	0.004	0.0002
F-statistic/ Wald chi2(5)	0.44 (0.776)	0.88 (0.498)	11.19** (0.047)	6.83 (0.233)	7.63 (0.178)
N	162	162	162	162	162
Model	FEM	OLS	REM	REM	REM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

The third industry group includes SOEs in transportation, retailing, hospitality, telecommunication, banking, insurance and real estate industries and the results from Table 15 and Table 16 show that equitization helps equitized SOEs to improve profitability (ROA) compared with non-equitized SOEs in the same period (specifically, the ROA of equitized SOEs after equitization is 10.1% higher than those of non-equitized SOEs). This is also a remarkable finding for enterprises and IPO investors because enterprises in the service sector tend to increase ROA after equitizing compared with non-equitzed SOEs in the same period. According to Megginson *et al.* (1994) enterprises in different industries have different levels of performance improvement due to different competitive advantages. This result also contributes to reinforce the theory of competitive advantage by Porter (1990) and also

shows that the firm performance of equitized SOEs has changed according to the different industry groups in Vietnam.

Table-16. Regression results of the third industry group with Robust Standard Errors *(cont)*.

Variables	TAS	EMPL	LV	LOUT
Ti*t	0.173	-56.549	-0.042*	-.089
	(0.463)	(0.391)	(0.078)	(0.642)
Ti	N/A	N/A	N/A	0.020
				(0.958)
T	-0.006	-24.734	-0.0001	0.275***
	(0.971)	(0.444)	(0.949)	(0.000)
LNASSET	0.852**	-139.301	0.005	0.401***
	(0.030)	(0.118)	(0.226)	(0.000)
LNEMPL	-1.578*	494.038***	-0.003	0.522***
	(0.061)	(0.010)	(0.785)	(0.001)
_cons	4.986**	-1,463.823***	0.454***	6.862***
	(0.031)	(0.005)	(0.000)	(0.000)
R square	0.374	0.371	0.007	0.395
F-statistic/ Wald chi2(5)	2.37*	8.66***	1.17	119.52***
	(0.059)	(0.000)	(0.328)	(0.000)
N	162	162	162	162
Model	FEM	FEM	FEM	REM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

4.4.3. Unlisted Equitized SOEs versus Non-Equitized SOEs

Table-17. Regression results based on unlisted status with Robust Standard Errors.

Variables	ROS	ROE	ROA	SALFF	NIEFF
Ti*t	-1.609	0.129	0.024*	-74.277	-97.531*
	(0.385)	(0.236)	(0.082)	(0.763)	(0.099)
Ti	-0.562	-0.162	-0.034***	-683.294*	-107.425
	(0.438)	(0.113)	(0.004)	(0.074)	(0.188)
T	1.922	-0.009	-0.012*	111.406	94.580*
	(0.316)	(0.602)	(0.082)	(0.512)	(0.085)
LNASSET	-2.654	0.004	0.025***	284.023**	26.540
	(0.336)	(0.831)	(0.000)	(0.039)	(0.560)
LNEMPL	1.653	0.017	-0.026***	118.496	-67.087
	(0.355)	(0.525)	(0.000)	(0.758)	(0.382)
_cons	4.384	-0.0367	0.056***	-508.454	324.14
	(0.314)	(0.568)	(0.003)	(0.721)	(0.122)
R square	0.033	0.029	0.102	0.026	0.000
F-statistic/ Wald chi2(5)	0.22	2.17*	29.54***	14.76**	4.63
	(0.954)	(0.056)	(0.000)	(0.011)	(0.462)
N	636	636	636	636	636
Model	OLS	OLS	REM	REM	REM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

According to the research results in Table 17 and Table 18, the authors can conclude that the unlisted equitized enterprises after equitization (1 year after equitization) do not have significant improvement in firm performance, except where the ROA has been improved 2.4% after equitization compared to non-equitized SOEs in the same period. This result is also consistent with the study by Megginson *et al.* (1994); Dewenter and Malatesta (2001); Boubakri *et al.* (2004). This also explains why equitized SOEs are often not listed early after equitization in Vietnam because the firm performance of these enterprises could not be improved much after equitization in the early years of post-equitization window (if compared with non-equitized SOEs in the same period). According to the research results, the total sample includes 97 enterprises participating in equitization in the period of 2012-2014, but there are only 34 listed companies within one year after equitization in Vietnam.

Table-18. Regression results based on unlisted status with Robust Standard Errors *(cont)*.

Variables	TAS	EMPL	LV	LOUT
Ti*t	-0.097 (0.386)	73.125 (0.423)	-0.017 (0.156)	0.088 (0.413)
Ti	N/A	-26.592 (0.705)	N/A	-0.093 (0.535)
t	-0.044 (0.599)	52.556 (0.468)	0.004 (0.343)	0.235*** (0.000)
LNASSET	0.748*** (0.000)	6.010 (0.896)	0.003 (0.377)	0.431*** (0.000)
LNEMPL	-1.121*** (0.000)	537.393*** (0.000)	-0.008* (0.074)	677882*** (0.000)
_cons	3.389*** (0.000)	-2,366.84*** (0.000)	.557*** (0.000)	5.628*** (0.000)
R square	0.353	0.353	0.015	0.646
F-statistic/ Wald chi2(5)	9.04*** (0.000)	52.37*** (0.000)	0.86 (0.485)	679.14*** (0.000)
N	636	636	636	636
Model	FEM	REM	FEM	REM

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively.

5. CONCLUSIONS AND IMPLICATIONS

In general, the research results have many findings contrary to most previous studies by Megginson *et al.* (1994); Dewenter and Malatesta (2001); Boubakri *et al.* (2004); Hung *et al.* (2017); Loc *et al.* (2006); Loc and Tran (2016); Tran *et al.* (2015). The results of this study are different due to the application of the PSM technique before assessing the impact of equitization on firm performance and the application of the weighted regression methods based on propensity scores. In other words, this study considers both equitized SOEs and non-equitized SOEs in the same period, so the authors can fully assess the impact of equitization on firm performance.

In addition, the research sample consists of a majority of large-scale SOEs participating in equitization in the third phase, so the firm performance of these equitized SOEs cannot be improved after equitization in the short term. Large-scale SOEs often operate across several different industries with complex management and ownership mechanisms and tend to be highly dependent on the State in operating activities in some cases, so it is difficult to improve the firm performance of these SOEs compared to non-equitized SOEs in the same period.

This study proves that equitization has not always helped equitized SOEs in improving firm performance in the short term if compared to non-equitized SOEs in the same period. The results of this research can assist the Vietnamese government, enterprises and investors with an overview of and new approach to the benefits of equitization.

In general, equitization does not help equitized SOEs, especially large-scale ones improve firm performance in Vietnam. According to Cuervo and Villalonga (2000) privatization is just an event that marks the transformation of SOE ownership and does not help privatized SOEs improve their firm performance after privatization and the firm performance improvement of privatized SOEs after privatization is determined by corporate governance, strategic plans, and the competitive environment. The results of this study explain why enterprises in Vietnam are not actively pricing assets and participating in the equitization process despite the Government's support. Therefore, the government should have reasonable support policies for these equitized SOEs in the early period of post-equitization to help them gradually adapt to the new competitive environment and improve firm performance.

The government also needs a mechanism to monitor and motivate equitized enterprises to participate in listing their stocks because they still postpone listing in the stock market. The research results also explain why investors in recent years no longer care much about IPO investment, especially for IPO of large scale SOEs and economic groups. Investors should choose to invest in equitized SOEs operating in the third industry group because equitization helps these SOEs improve firm performance after equitization. Managers of enterprises participating in

equitization also need to plan appropriate and clear strategies after equitization rather than waiting for planning to improve firm performance after equitization.

The research results show that the impact of equitization on firm performance of equitized SOEs is completely different according to the firm size, industry groups and unlisted status. In addition, related privatization theories still reveal certain limitations because they only explain post-privatization firm performance of privatized SOEs without considering the non-equitized SOEs in the same period.

Funding: This research is funded by the Eastern International University, Becamex Business School, Binh Duong, Vietnam.
Competing Interests: The authors declare that they have no competing interests.
Contributors/Acknowledgement: Both authors contributed equally to the conception and design of the study.

REFERENCES

Alchian, A.A. and H. Demsetz, 1973. The property right paradigm. The Journal of Economic History, 33(1): 16–27.Available at: https://doi.org/10.1017/s0022050700076403.

Boubakri, N., J.C. Cosset and O. Guedhami, 2004. Privatization, corporate governance and economic environment: Firm–level evidence from Asia. Pacific–Basin Finance Journal, 12(1): 65–90.Available at: https://doi.org/10.1016/s0927-538x(03)00016-7.

Carlin, T.M. and C.D. Pham, 2009. From public to private: Evidence from a transitional economy setting. Australian Accounting Review, 19(3): 207-216.Available at: https://doi.org/10.1111/j.1835-2561.2009.00058.x.

Chen, G., M. Firth and O. Rui, 2006. Have China's enterprise reforms led to improved efficiency and profitability? Emerging Markets Review, 7(1): 82–109.Available at: https://doi.org/10.1016/j.ememar.2005.05.003.

Claessens, S. and S. Djankov, 2002. Privatization benefits in Eastern Europe. Journal of Public Economics, 83(3): 307–324.Available at: https://doi.org/10.1016/s0047-2727(00)00169-9.

Cuervo, A. and B. Villalonga, 2000. Explaining the variance in the performance effects of privatization. Academy of Management Review, 25(3): 581-590.Available at: https://doi.org/10.5465/amr.2000.3363520.

D'Souza, J., W. Megginson and R. Nash, 2005. Effect of institutional and firm–specific characteristics on post–privatization performance: Evidence from developed countries. Journal of Corporate Finance, 11(5): 747–766.Available at: https://doi.org/10.1016/j.jcorpfin.2004.12.001.

Demsetz, H., 1983. The structure of ownership and the theory of the firm. The Journal of Law and Economics, 26(2): 375–390.

Dewenter, K.L. and P.H. Malatesta, 2001. State–owned and privately owned firms: An empirical analysis of profitability, leverage, and labor intensity. American Economic Review, 91(1): 320-334.Available at: https://doi.org/10.1257/aer.91.1.320.

Hair, J.F., R.E. Anderson, R.L. Tatham and W.C. Black, 1998. Multivariate data analysis. Upper Saddle River, NJ: Prentice Hall, 730.

Hirano, K., G.W. Imbens and G. Ridder, 2003. Efficient estimation of average treatment effects using the estimated propensity score. Econometrica, 71(4): 1161–1189.Available at: https://doi.org/10.1111/1468-0262.00442.

Hung, D.N., N.D. Thien and N.T. Liem, 2017. The impact of equitization on firm performance: The case of Vietnam. International Research Journal of Finance and Economics, 12(164): 68-74.

Liao, L., B. Liu and H. Wang, 2014. China′ s secondary privatization: Perspectives from the split-share structure reform. Journal of Financial Economics, 113(3): 500-518.Available at: https://doi.org/10.1016/j.jfineco.2014.05.007.

Loc, T.D., G. Lanjouw and R. Lensink, 2006. The impact of privatization on firm performance in a transition economy: The case of Vietnam. Economics of Transition, 23(3): 36–56.

Loc, T.D. and N.M. Tran, 2016. Impact of equitization on performance of enterprises in Vietnam. Journal of Economic Development, 23(3): 36-56.Available at: https://doi.org/10.24311/jed/2016.23.3.02.

Megginson, W.L., 2017. Privatization, state capitalism, and state ownership of business in the 21st century. Foundations and Trends in Finance, 11(1): 1–153.Available at: https://doi.org/10.1561/0500000053.

Megginson, W.L., R.C. Nash and M. Van Randenborgh, 1994. The financial and operating performance of newly privatized firms: An international empirical analysis. The Journal of Finance, 49(2): 403-452.Available at: https://doi.org/10.1111/j.1540-6261.1994.tb05147.x.

Megginson, W.L. and J.M. Netter, 2001. From state to market: A survey of empirical studies on privatization. Journal of Economic Literature, 39(2): 321-389.Available at: https://doi.org/10.1257/jel.39.2.321.

Nhan, N.T. and T.H. Son, 2017. Equitization and operating and financial performance: Empirical evidence from Vietnamese companies. International Research Journal of Finance and Economics, 12(164): 75-84.

Pham, C.D., 2017. The effects of privatization on the financial position and performance of firms in emerging markets: evidence from Vietnam. International Journal of Business, Economics and Law, 13(1): 38–46.

Porter, M.E., 1990. The competitive advantage of nations. Competitive Intelligence Review, 1(1): 14–14.

Sheshinski, E. and L.F. López-Calva, 2003. Privatization and its benefits: Theory and evidence. CESifo Economic Studies, 49(3): 429-459.Available at: https://doi.org/10.1093/cesifo/49.3.429.

Tran, N.M., W. Nonneman and A. Jorissen, 2015. Privatization of Vietnamese firms and its effects on firm performance. Asian Economic and Financial Review, 5(2): 202–217.Available at: https://doi.org/10.18488/journal.aefr/2015.5.2/102.2.202.217.

Tullock, G. and J.M. Buchanan, 1972. Reviews. Public Choice, 12(1): 119–126.

Wei, Z., O. Varela, J. D'Souza and M.K. Hassan, 2003. The financial and operating performance of China's newly privatized firms. Financial Management, 32(2): 107–126.Available at: https://doi.org/10.2307/3666339.

White, H., 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. Econometrica, 48(4): 817-838.Available at: https://doi.org/10.2307/1912934.

Zhang, X., Z. Tang and J. He, 2012. Impact of macro and firm–specific characteristics on postprivatization performance: Evidence from China. Chinese Economy, 45(5): 50–91.Available at: https://doi.org/10.2753/ces1097-1475450503.