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Effect of Ownership on Firm Performance in Selected G-20 Countries Across the Development Spectrum.

Abstract *This study investigates the effect of ownership on firm performance of state-owned and non-state-owned enterprises in elected G20 countries and across the development spectrum. Annual financial and accounting data from the period 2011-2015 are compiled for 252, state-owned and 6503, non-state-owned enterprises. The empirical results show that state ownership and firm performance are negatively associated with selected G-20countries. This is also confirmed when countries are considered with respect to their level of development except for High-Income countries. The poor performance of state-owned enterprises in less developed countries can be justified by the argument that state-owned enterprises suffer from the intervention of self-oriented politicians, which leads to lower-than-expected performance.*

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Introduction

Debate on the existence of a relationship between ownership structure and firm performance is not new. The effect of ownership structure on firm performance started from principal-agent relationship firstly studied by Smith (1776) and further investigated by and Berle and Means (1932). Later on, Jensen and Mackling (1976) describe potential problems and benefits of ownership structure to the performance of the firm. These studies are followed by a stream of literature providing evidence of a difference in public and private enterprises that can affect the performance (Kang & Kim 2012; Ahuja & Majumdar 1998; Dinc, 2004; Shah et al., 2011; Driffield et al., 2005; Dang and Vu, 2018). Considering ownership of an important characteristic, this study investigates the effect of ownership on the firm performance of state-owned and non-

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state-owned enterprises in selected G-20 countries with respect to the development level.

Arguments for the existence of firm performance differences between state and non-state-owned enterprises have been developed in the following way. Although, agency conflict and cost between manager and shareholder can be reduced through debt financing at the same time as ownership structure varies, a principal-agent issue arises. Property-right over the enjoyment and disposal of assets are less protected in state-owned enterprises because of the absence of corporate control in the market. Also, the owner's incentive to monitor managers reduces, because capitalization of future outcome into current share price is inhabited or restricted (Putterman, 1993) d. Alchian (1977) argued that differences in performance of state-owned and non-state-owned enterprises are not because of differences in objectives but because of the differences in specifying individual rights, that how cost and benefit will be distributed among the shareholder or the participants of the company. These arguments based on property rights and agency theories are just a subset of broader view in literature. Sheshinski & López-Calva (2003) support the idea of poor efficiency and performance of state-owned enterprises in the light of agency theory, under managerial and political perspectives. From the managerial perspective, it is very hard to observe and monitor the management behaviour of state-owned enterprises compared to non-state-owned enterprises because state-owned enterprises are not market players. From a political perspective, state-owned enterprises managers make efforts to achieve their political prestige and political career on the shareholder(s) cost generally called empire-building hypothesis. Hence, state-owned enterprises managers tend to invest in such projects which may be profitable or not leading to poor efficiency and performance. Boycko, Shleifer, & Robert (1996) argued that inefficiencies and poor performance caused by agency issues in state-owned enterprises are related more to politicians then managers. Politicians use state-owned enterprises for their personal interest in order to gain more political benefit. Therefore, management engages in empire building instead of maximizing the shareholder wealth. Sometimes, citizens in a democracy cannot find it easy, and neither have incentives to control the state-owned enterprise managers.

A number of studies have provided empirical evidence that state ownership has more advantages than private in terms of performance, efficiency and optimality of capital structure (see Dewenter & Malatesta, 2001; Ting & Lean, 2011; Fraser, Zhang, & Derashid, 2006; Dong, Liu, Shen, & Sun, 2010) while other founded that private ownership has more advantages in terms profitability and optimality of capital structure (see Boardman & Vining, 1989; Davis, 1971; Caves & Christensen, 1980; Vining & Broadman, 1992; Majumdar, 1996; Ting, 2001; Vickers & Yarrow, 1998; Zhengwei, 2013).

Most of the studies reviewed above were conducted to investigate the impact of ownership on the profitability and efficiency of state-owned and non-state-owned enterprises in the European Union and other advanced countries. Unlike other studies, this study aims to investigate the differences in firm performance of state and non-state-owned enterprises for selected G-20 countries and across the development spectrum, High-Income countries (HI), Upper Middle-Income countries (UMI) and Lower Middle-Income countries (classification of World Bank). This study also investigates the effect of various firm-specific variables (leverage, tangibility, size and growth) on firm performance.

Rest of the article is as follows: section two analytical framework and data description. Descriptive statistics and analytical outcomes are discussed in section three. While conclusion and policy consequences are discussed in section four.

Analysis Framework and Data Description

Data

This study includes 12 (Argentina, Brazil, China, France, Germany, Italy, India, Indonesia, Russia, Republic of Korea, Saudi Arabia, and Turkey) countries from G-20 countries. We selected publically state-owned and non-state-owned firms in these countries. Other countries in G-20 (Australia, Canada, Japan, Mexico, South Africa, United Kingdom and the United States) were excluded from the sample because of the unavailability of information on state-owned firms. Annual financial and accounting data of 252, state-owned and 6503, non-state-owned firms are extracted from Orbis. The sample selection period is from 2011 to 2015, based on the latest availability of updated data. This gets us a sample of 1260 observation of state-owned and 32,515 observations of non-state-owned firms.

We further classified the selected G-20 countries according to High-income countries (Germany, Italy and France), upper-middle-income countries (Argentina, Brazil, China, Russia, Saudi Arabia and Turkey) and lower-middle-income countries according to the classification of WB (World Bank) in order to analyse the impact of ownership on firm performance in these three types of economies.

Empirical Model

In the light of the discussion presented in the previous section it is postulated that Profitability(ROA_{icsy}) is determined by the leverage (L_{icsy}), tangibility (T_{icsy}), size ($\ln A_{icsy}$), profitability(ROA_{icsy}) and growth (TQ_{icsy}) of firm i in country c of sector $s$in year y. Profitability(ROA_{icsy}) is the dependent variable, employed as a proxy for firm performance and is equal to the ratio of earnings before interest and taxes-to-total assets Dewenter and Malatesta (2001). Leverage (L_{icsy}) is measured by the book value of a firm's total debt-to-total asset ratios. Tangibility (T_{icsy}) equals the ratio of net tangible assets-to-total assets, Size ($\ln A_{icsy}$) is equal to the natural logarithm of total assets, growth (TQ_{icsy}) is equal to the market-to-book ratio of equity. This study focuses on highlighting firm performance differences in state and non-state-owned enterprises. Therefore a dummy, DO_{ics}, equals to unity if a firm is state-owned and zero otherwise is also considered in the analysis. The empirical model is given as follows:

$$ROA_{icsy} = \alpha_{icsy} + \gamma_1 \ln A_{icsy} + \gamma_2 LEV_{icsy} + \gamma_3 TQ_{icsy} + \gamma_4 T_{icsy} + \gamma_5 DO_{ics} + \delta_c + \delta_y + \delta_s + \mu_{icsy} \quad (1)$$

whereδ_c, δ_s Andδ_y represent the country, sector and year-specific fixed effects, ln represents natural logarithm andμ_{icsy} represents error term assumed to be randomly distributed with mean zero and homoscedastic variance. The parameterγ_5 shows the effect of ownership on the performance of a firm. Particularly, it is the intercept shifter of a state-owned firm as compared to the base case of non-state-owned enterprises. Equation-1 is our base model and statistical significance ofγ_5 answers the question raised in the introduction. Whereas$\gamma_1, \gamma_2, \gamma_3$ *and* γ_4 represents the coefficient for leverage, tangibility, size and growth. In order to investigate the effect of ownership on firm

performance across the development spectrum, two steps are carried. First, dummy variables representing different categories of countries classification, including high income, upper middle income and lower-middle-income countries are created. Second, these dummies are then interacted with the variableDO_{ics} as follows to create dummies representing SOEs and Non-SOEs in these economies.

$$SHI = DO_{ics} * Hi$$
$$SUMI = DO_{ics} * UMI$$
$$SLMI = DO_{ics} * LMI$$

Hence, *SHI* is a dummy, equals to unity if a firm is a state-owned in high-income economies and zero otherwise. Rest of the variables can also be defined in the same way. Separate model with each of these variables is estimated. The estimated parameters of each of these models are used to investigate the effect of ownership on firm performance in High Income (HI), Upper Middle Income (UMI) and Lower Middle Income (LMI) countries (Amin et al., (2019); Haq (2013); Haq et al., (2013) and Haq et al., (2010)).

Results and Discussion

We have categorized the selected G-20 countries according to World Bank Classification in High Income, Upper Middle Income and Lower Middle-Income countries. Table 1 provide descriptive statistic of High Income, Upper Middle Income and Lower Middle-Income countries and shows averages of firm-specific variables of state-owned and non-state-owned enterprises. On average, from 2011 to 2015 ROA, leverage, tangibility and size of state-owned enterprises in high-income countries are significantly higher than non-state-owned enterprises. In upper-middle-income countries, leverage, tangibility and size of state-owned enterprises are significantly higher than non- state-owned enterprises. Whereas growth of non-state-owned enterprises in upper-middle-income countries is significantly higher than state-owned enterprises. The results of lower-middle-income countries indicate that on average ROA, Leverage and size of state-owned enterprises are significantly higher than non-state-owned enterprises. These results indicate that differences do exist between the financial performance of state and non-state-owned enterprises.

Table 1. Descriptive Statistics Across the Development Spectrum

High Income						
Variable	**Ownership**	**Number of observations**	**Mean**	**Median**	**SD**	**T-test**
ROA	SOE	105	0.052	0.043	0.128	2.060**
	non-SOE	11340	0.031	0.038	0.103	
Leverage	SOE	105	0.579	0.604	0.274	4.308***
	non-SOE	11340	0.491	0.507	0.208	
Size	SOE	105	14.440	14.339	1.985	10.713***
	non-SOE	11340	12.399	12.113	1.942	
Tangibility	SOE	105	0.948	0.989	0.077	3.402***
	non-SOE	11340	0.899	0.969	0.147	
Growth	SOE	105	0.916	0.574	1.229	0.334
	non-SOE	11340	0.872	0.546	1.330	
Upper Middle Income						
ROA	SOE	950	0.042	0.039	0.083	1.273
	non-SOE	9760	0.046	0.040	0.078	

Leverage	SOE	950	0.564	0.587	0.217	12.802***
	non-SOE	9760	0.468	0.475	0.220	
Size	SOE	950	14.736	14.590	1.754	32.283***
	non-SOE	9760	13.140	13.046	1.422	
Tangibility	SOE	950	0.950	0.972	0.082	4.596***
	non-SOE	9760	0.936	0.963	0.091	
Growth	SOE	950	0.755	0.416	0.901	-7.276***
	non-SOE	9760	1.437	0.844	2.876	
Lower Middle-Income Countries						
ROA	SOE	205	0.071	0.060	0.093	3.452***
	non-SOE	11415	0.045	0.032	0.107	
Leverage	SOE	205	0.539	0.539	0.212	2.838**
	non-SOE	11415	0.491	0.518	0.241	
Size	SOE	205	14.272	14.174	1.674	23.580***
	non-SOE	11415	10.694	10.635	2.161	
Tangibility	SOE	205	0.968	0.998	0.116	0.0856
	non-SOE	11415	0.969	1.000	0.094	
Growth	SOE	205	1.041	0.619	1.369	0.6552
	non-SOE	11415	0.937	0.372	2.279	

** and *** show significance at 95 and 99 percent levels, respectively. ROA is equal to the ratio of earnings before interest and taxes to total assets. Leverage is the book value of the firm's total debts to total assets. Tangibility is the ratio of net tangible assets to total assets. The natural log of total assets is equal to Size. Growth is measured as market capitalization to total assets. A state-owned enterprise is represented by SOE and is equal to one if a state owns 50.01% shares.

Table 2 shows the correlation between firm performance and other firm-specific variables in the selected G-20 countries. The results indicate a significant correlation between profitability and other firm-specific covariates. The correlation between profitability and leverage is negative and statistically significant, while size, tangibility, and growth are significantly positively correlated with leverage. The correlation between the state dummy and firm performance is also tested, which is the main scope of this study. The result indicates that the state dummy is negatively correlated with the firm performance in selected G-20 countries.

Table 2. Correlation Matrix

Variables	**ROA**	**Leverage**	**Size**	**Tangibility**	**Growth**	**SOE**
ROA	1					
Leverage	-0.230***	1				
Size	0.119***	0.282***	1			
Tangibility	0.049***	-0.037***	-0.187***	1		
Growth	0.129***	-0.192***	-0.0658*	-0.0324*	1	
SOE	-0.014**	-0.065***	-0.226***	-0.029***	0.021*	1

*, ** and *** show significance at 90, 95 and 99 percent levels, respectively. ROA is equal to the ratio of earnings before interest and taxes to total assets. Leverage is the book value of the firm's total debts to total assets. Tangibility is the ratio of net tangible assets to total assets. The natural log of total assets is equal to Size. Growth is measured

as market capitalization to total assets. A state-owned enterprise is represented by SOE and is equal to one if a state owns 50.01% shares.

Table 3 shows the correlation matric of High Income, Upper Middle Income and Lower Middle-Income countries. The result shows that size, tangibility and growth are significantly positively correlated with the firm's profitability, while the correlation between leverage and the firm's profitability is negative and statistically significant. These results are similar across the development spectrum. The correlation between state dummy and firm profitability is also tested across the development spectrum. The result shows that state dummy is significantly and negatively correlated with firm's profitability in upper middle income and lower-middle-income countries, whereas no significant correlation can be found between state dummy and firms' profitability in high-income countries. These results suggest that differences do exist in firm performance across the development spectrum. However, these results are estimated without controlling the fixed effects and development spectrum, a limitation removed in the following section.

Table 3. Correlation Matrix Across the Development Spectrum

High Income						
Variables	**ROA**	**Leverage**	**Size**	**Tangibility**	**Growth**	**OS**
ROA	1					
Leverage	-0.223***	1				
Size	0.159***	0.310***	1			
Tangibility	0.060***	-0.129***	-0.138***	1		
Growth	0.094***	-0.291***	-0.163***	-0.041***	1	
SOE	0.019	-0.040***	-0.099***	-0.031***	-0.0031	1
Upper Middle Income						
ROA	1					
Leverage	-0.306***	1				
Size	0.047***	0.384***	1			
Tangibility	0.010*	0.055***	-0.066***	1		
Growth	0.073***	-0.171***	-0.237***	-0.068***	1	
SOE	-0.012*	-0.122***	-0.297***	-0.044***	0.070***	1
Lower Middle Income						
ROA	1					
Leverage	-0.191***	1				
Size	0.17788*	0.330***	1			
Tangibility	0.029***	0.004	-0.183***	1		
Growth	0.210***	-0.173***	-0.006	-0.016*	1	
SOE	-0.032***	-0.026**	-0.213***	0.008	-0.006	1

*, ** and *** show significance at 90, 95 and 99 percent levels, respectively. ROA is equal to the ratio of earnings before interest and taxes to total assets. Leverage is the book value of the firm's total debts to total assets. Tangibility is the ratio of net tangible assets to total assets. The natural log of total assets is equal to Size. Growth is measured as market capitalization to total assets. A state-owned enterprise is represented by SOE and is equal to one if a state owns 50.01% shares.

We use techniques of Ordinary Least Square (OLS) to examine the effect of ownership on firm performance. To examine the effect, we use profitability as our

dependent variable in our models. Each column in table three refers to a different set of regression; the table shows that all models are statistically significant with high explanatory power. The value of R-squared shows the proportion of variation of the dependent variable explained by the variation in the independent variables. The base model in table three shows the impact of ownership and other explanatory variable on firm performance in selected G-20 countries. The regression result shows that the estimated coefficient of state dummy is negative and significant, indicating that state-owned enterprises are not better in accounting performance in G-20 countries. These findings are in support of property right theory and are in line with earlier findings (Dewenter and Malatesta, 2001; Sun et al., 2003; Vining and Boardman, 1992). The results of a firm-specific variable in the base model show that tangibility, size and growth have a positive and significant effect on firm performance. Whereas leverage has a negative and significant effect on firm leverage indicating that firm having a higher level of debt are more likely to have lower performance.

To investigate the effect of ownership on firm performance across the development spectrum, selected countries are further classified into High Income, Upper Middle Income and Lower Middle-Income countries. The classification of the countries according to their income level is based on the World Bank definition. The results are presented as model 1 to 3 in table 4. Result of model two and three shows that state-owned enterprises in Upper Middle Income and Lower Middle-Income countries have a significantly negative effect on firm performance. Whereas, the effect of state ownership on firm performance in High-Income countries is statistically insignificant. These results are in line with the earlier findings (Dewenter and Malatesta, 2001). These results indicate that countries which are less developed and have week institutional environments should encourage privatization of state-owned enterprises that have created in less performance and inefficiency. Addressing the property right theory and principal-agent problem associated with state-owned enterprises, it is argued that privatization of state-owned enterprise will improve both firm performance and efficiency. Estimated coefficients of tangibility, size and growth show a positive and significant effect on firm performance for High income, Upper Middle Income and Lower Middle-Income countries, while the coefficient of leverage is significantly negative in all models. These results are in line with earlier findings (Dewenter and Malatesta, 2001; Sun et al., 2003; Vining and Boardman, 1992).

Table 4. Impact of Ownership on Firm Performance in G-20 Countries and Across the Development Spectrum

Variables	Base Model	Model-1	Model-2	Model-3
Leverage	-0.131***	-0.144***	-0.141***	-0.116***
	(0.000)	(0.000)	(0.000)	(0.000)
Tangibility	0.079***	0.094***	0.014*	0.097***
	(0.000)	(0.000)	(0.062)	(0.000)
Size	0.014***	0.015***	0.014***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)
Growth	0.004***	0.003**	0.002***	0.007***
	(0.000)	(0.018)	(0.000)	(0.000)
State	-0.009***	-0.008	-0.008**	-0.013**
	(0.000)	(0.412)	(0.001)	(0.022)
Fixed Effects				

Country	105.740***	43.650***	42.040***	0.67
Industry	12.420***	10.530***	8.260***	8.040***
Year	55.620***	7.340***	64.130***	16.940***
Summary statistics				
N. of observation	33775	11445	10710	11620
F-Statistics	83.570***	35.970***	47.440***	49.900***
R-Squared	0.151	0.143	0.192	0.155
Adj R-Squared	0.15	0.14	0.189	0.153
RMSE	0.09	0.096	0.07	0.098

*, ** and *** show significance at 90, 95 and 99 percent levels, respectively. All standard errors are robust. ROA is equal to the ratio of earnings before interest and taxes to total assets. Leverage is the book value of the firm's total debts to total assets. Tangibility is the ratio of net tangible assets to total assets. The natural log of total assets is equal to Size. Growth is measured as market capitalization to total assets. SOE represents the state-owned enterprises according to the specification of each model.

Conclusion

This study investigates the effect of ownership on firm performance in selected G-20 countries and across the development spectrum. Due to historical and economic development differences among the countries, we categorized the selected countries into High Income, Upper Middle Income and Lower Middle-Income Countries according to World Bank definition. Annual financial and accounting data from the period 2011-2015 are compiled for 252, state-owned and 6503, non-state-owned enterprises. Ordinary Least Square are employed with country, year and industry fixed effect to estimate the effect of ownership on firm performance. Result of the study indicates that on average state ownership and firm performance are negatively associated in selected G-20countries. This is also confirmed when countries are considered with respect to their level of development except for High-Income countries. These results suggest that in less developed countries, state-owned enterprises are less profitable in comparison to non-state-owned enterprises. Poor performance and efficiency of state-owned enterprises in fewer development countries can be justified by the argument that state-owned enterprises suffer from the intervention of self-oriented politicians, which leads to lower than expected performance.

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