



GOVERNMENT SHAREHOLDING AND FINANCIAL HEALTH OF COMPANIES

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ABSTRACT

The use of accounting information to analyze the financial performance of companies using financial indicators is widely studied in the literature. This study investigates the relation between government shareholding and financial health for listed companies. Financial health is defined here by indicators of profitability and operational. I analyze companies listed on stock exchanges in the United States in the period from 2004 to 2014. I also analyze the period surrounding elections, firm size and financial control variables. I use content analysis and to test hypotheses I use regression analysis with panel data. I found negative relation between government shareholding and both profitability and operational efficiency. The relation varies dependent upon whether the government was among the largest five or largest shareholders. I found a negative relation between the percentage of stocks held by government and the profitability and operational efficiency of companies. In election years the percentage of stocks held by government was negatively related to operational efficiency.

Keywords: government shareholding; profitability; operational efficiency

Thematic Area: Mercado Financeiro, de Crédito e de Capitais (MFC).

1 INTRODUCTION

The use of accounting information to analyze the financial performance of companies using financial indicators is widely studied in the literature. Among these studies are some about the effects of privatization to reduce governmental participation in the market such as: Laffont & Tirole (1991), Salm, Candler & Ventriss (2006), Bortolotti & Faccio (2009), Barbosa, Costa & Funchal (2012). However, more recent literature indicates that governments still have large holdings in firms in some markets such as: Australia, Belgium, Greece, Ireland, Mexico, Netherlands, New Zealand, Norway, Sweden, and Turkey (Bortolotti & Faccio, 2009). Government shareholding may increase the conflict of interest between different groups.

Government shareholding is reported in the literature, especially before the 1980s, in OECD countries. The resources of companies in which the government held shares were often widely appropriated by politicians, for individual gain or by parties to pay for election campaigns (Salm, Candler and Ventriss, 2006). The use of companies' resources by political



parties was one of the reasons prompting demand for privatization (Laffont & Tirole (1991). The privatization was complete in some places such as “Australia, Ireland, New Zealand, Turkey, the UK and the US” (Bortolotti & Faccio, 2009, p. 18). However, the government still had “10% voting rights in all privatized firms, it held golden shares in 85% of privatized companies” in the UK. (Bortolotti & Faccio, 2009, p. 18).

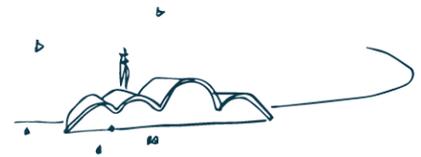
In the United States (the USA), the government has much lower participation in the stock market than in some OECD countries (Tirole, 2006; Bortolotti & Faccio, 2009). The conflict of interest may increase when shareholding control (or concentration) is in the hands of the government. (Laffont & Tirole, 1991; D’Acunto, 2012). Such conflicts can have a particularly negative effect on the performance of companies if institutional investors are not active (Gilson & Gordon, 2013). Gilson & Gordon (2013) documented that institutional investors are not active.

After the great wave of privatization, in many countries governments acquired shares of companies through the market, to maintain a continued influence over decision-making. Government shareholding may cause inefficiency in costs and revenues, thus impairing the financial health of firms (Laffont & Tirole, 1991). Laffont & Tirole (1991) argue that government shareholding may damage the financial health of firms due to: soft budget constraints, expropriation of investments, lack of precise objectives, lobbying, social welfare, and centralized control. Piotroski (2000) recommends the use of financial indicators such as profitability, operational efficiency and capital structure to analyze firms’ financial health. Therefore, I investigate whether firms with more government participation tend to have poorer financial indicators, and whether this situation becomes worse in periods surrounding elections.

Current profitability and cash flow “provide information about the firm’s ability to generate funds internally” (Piotroski, 2000, p. 7). Therefore, in this study I use indicators of profitability to discern the effect of government shareholding on the ability of firms to generate funds. Profitability was represented by financial indicators such as: variation of quality of earnings, revenue divided by assets, net income divided by gross revenue, net income/ equity, and return on financial leverage;

Operational efficiency indicators are “constructs underlying a decomposition of return on assets”. In this study I use the operational efficiency indicators to show changes in operational efficiency of firms before and after the government became a shareholder. Operational efficiency - administrative expenses divided by assets; inventory turnover, profit margin, property, plant & equipment turnover, receivables turnover, and average age of receivables;

I also study the period surrounding elections because the literature indicates that in an election year companies are exposed to an increased possibility of expropriation by political parties and regulatory agencies (Watts & Zimmerman, 1978; Bortolotti & Faccio, 2009; and Ramanna & Roychowdhury, 2009). Politicians do not care about the welfare of voters or shareholders of companies. Politicians only cares about themselves. (Person & Tabelini, 2000). The literature highlights also that the government is an inefficient manager compared to the private market and this can influence the perception of shareholders and other external stakeholders (Laffont & Tirole, 1991; Salm, Candler & Ventriss, 2006). Thus, I observe a relation between government shareholding and profitability and operational efficiency of firms.



The contribution of this study is to present empirical evidence about the political risk brought by government shareholding in private companies traded on stock exchanges. This differs from previous studies that were limited to the context before and after privatization.

I found a negative relation between the percentage of stocks held by government and the profitability and operational efficiency of companies. In election years the percentage of stocks held by government was negatively related to operational efficiency.

The paper is organized as follows. The next section reviews relevant prior research. Section 3 presents the research design. Section 4 reports and analyzes the results. Section 5 concludes.

2 PRIOR LITERATURE

2.1. CONCEPTUAL FRAMEWORK FOR FINANCIAL REPORTING AND FINANCIAL ANALYSES AND GOVERNMENT SHAREHOLDING

2.1.1 CONCEPTUAL FRAMEWORK FOR FINANCIAL REPORTING AND FINANCIAL ANALYSES

Financial analysis can enable stakeholders make better decisions using the past and current financial position of the company, by indicating the performance of the firm and its managers.

Internally, managers use accounting information to make decisions about investment projects. Externally, accounting data can be used by stakeholders to monitor decisions of managers: shareholders can monitor managers and contracts involving investment or loans; the government can monitor tax compliance; unions can monitor the viability of wage increases and other benefits; lenders can monitor creditworthiness; and all stakeholders can monitor the general financial health of companies.

The analysis of financial indicators is influenced by the accounting standards applicable to the firm. The FASB and IASB are working together to create a common conceptual framework to help firms to report financial information. As stated by Dyckman, Magee & Pfeiffer (2014, p. 26), “The fundamental goal of financial accounting is to provide information that promotes the efficient allocation and use of economic resources”.

The use of indexes (ratios) helps to solve the measuring unit problem because the monetary units cancel each other. Among the comparisons that can be made through financial ratios are behavior of a particular firm over time (time series or intertemporal analysis) and comparison versus similar companies (cross sectional analysis) (Piotroski, 2000; Dyckman et al., 2014). In this respect, “vertical analysis is a method that attempts to overcome this obstacle by restating financial statement information in ratio (or percentage) form” (Dyckman et al. 2014, p. 218). On the other hand, “horizontal analysis examines changes in financial data across time. Comparing data across two or more consecutive periods is helpful in analyzing company performance and in predicting future performance” (Dyckman et al., 2014, p. 219).

Piotroski (2000) recommends the use of both vertical and horizontal analyses to verify the financial health of companies. Additionally, Piotroski (2000, p. 7) recommends the use of:

- current profitability to analyze the firm's ability to generate funds internally;
- operational efficiency to observe the decomposition of return on assets; and

Myers & Majluf (1984), Miller & Rock (1985), and Piotroski (2000) all state that a sudden increase in long-term or short-term debt can signal inability of firms to generate sufficient internal funds to pay future obligations.



2.1.2 GOVERNMENT SHAREHOLDING & MORAL HAZARD

The accounting concept of a separate economic entity indicates that “for accounting purposes, the activities of a company are considered independent, distinct, and separate from the activities of stockholders and from other companies” (Dyckman et al., 2014, p. 28). When the government is a shareholder, the separation of activities may be not so clear in practice. Several studies have shown that it is common for government agents and political groups to use equity holdings to their own benefit (Laffont & Tirole, 1991; Salm, Candler & Ventriss, 2006).

The moral hazard context suggests potential damage to companies due to:

(Soft budget constraints): a government owned/controlled firm will be “not subject to the discipline of bankruptcy”, due to the presence of government to help the company in case of difficulty (a government bailout). This attitude may “reduce managerial incentives” (Laffont & Tirole, 1991, p.88).
“(Expropriation of investments): Managers of public enterprises refrain from investing because once investments are sunk the government may expropriate these investments” (Laffont & Tirole, 1991, p.88).
“(Lack of precise objectives): the multiplicity, fuzziness, and changing character of government goals that are complex and vary over time will also affect the behavior of firms” and “exacerbates the problem of managerial control in public enterprises” where the government is a shareholder.” (Laffont & Tirole, 1991, p.88).
(Lobbying): Governments may “help political parties due the pressure of interest groups, using resources of firms for their own benefit” (Laffont & Tirole, 1991, p.88; Salm, Candler & Ventriss, 2006).
“(Social welfare): public ownership gives governments the means to achieve social goals that include, but are not confined to, profit maximization”. (Laffont & Tirole, 1991, p.88).
“(Centralized control): By letting the government be responsible for both internal and external control, a nationalization prevents conflicts of objectives of the firm’s regulators and owners” (Laffont & Tirole, 1991, p.88).

Figure 1: moral hazard contexts

In some OECD countries, it was common for the government to be a major, or even sole shareholder in key firms and to use resources of these firms in their self-benefit before 1990. However, the problems caused by this state ownership (political meddling in company policy, lack of investment resources, etc.) prompted a global movement in the 1990s toward privatization. In some countries this worked very well, but not in all places (Bortolotti and Faccio, 2009). In Australia, Belgium, Greece, Ireland, Mexico, Netherlands, New Zealand, Norway, Sweden, Turkey the government is a large shareholder (Bortolotti & Faccio, 2009).

Furthermore, in many cases even after privatization, governments retained strong control powers (e.g., through ownership of “golden” shares), and in other cases, governments repurchased substantial stakes through the stock market. Indeed, by the late 2000s, governments were major shareholders or had substantial powers in almost two-thirds of privatized firms in Australia, Belgium, Greece, Ireland, Mexico, Netherlands, New Zealand, Norway, Sweden and Turkey (Bortolotti & Faccio, 2009). After the privatization period and scandals with companies, laws were created in most markets to give more protection to investors (Tirole, 2006, p. 38). This might have changed the scenario of use of business resources for the benefit of government and political groups. This question can be studied using financial indicators before and after the government became a shareholder.

2.2 – ELECTION YEAR

This section presents results of studies about effects of an election year on government shareholding. In countries with presidential systems, where there are regular elections, incumbent administrations typically use economic policies (particular fiscal policy) to try to curry short-term voter approval to remain in power. There is ample empirical evidence that governments tend to have more expansive fiscal and monetary policies in the run-up to elections (Person & Tabelini, 2000, Shi and Svensson, 2006, Brender and Drazen, 2005, and Vergne,



2009). (Shi and Svensson, 2006, Brender and Drazen, 2005, and Vergne, 2009) found that before elections, government spending increases, and revenues fall. Governments often create large budget deficits in election years. The increase of expenses one year before an election year as found in the literature corroborates Nordhaus (1975, p. 66), when he said: the focus of governments is the use of expansionary fiscal or monetary policies before elections to increase their popularity in election years. By the same logic, when the government is a major or controlling shareholder, it can be tempted to use its influence to divert resources from the company to pay for political campaigns or programs that benefit certain key special interest groups (Person & Tabelini, 2000; Shi and Svensson, 2006; Brender and Drazen, 2005; and Vergne, 2009). Examination of changes in financial ratios in the periods around elections can reveal this behavior for firms in which the government has influence due the lack of precise objectives. Even without government ownership, elections can affect companies' balance sheets due to political donations, often under the influence of regulators. For example, while in some countries like the USA firms need to disclose these donations; this is not the practice in all countries. Irrespective of the level of disclosure required, due to the possibility of obtaining donations, regulators and political parties can put pressure on firms, especially ones that show strong profits, creating a risk of suffering political costs from regulators (Watts & Zimmerman, 1978; Ramanna & Roychowdhury, 2009).

3. RESEARCH DESIGN

In this study, I examine companies listed on stock exchanges the USA, from 2004 to 2014. The data were obtained using Capital IQ and Compustat databases.

I used content analysis to find firms with government shareholding by examining the list of name of owners. I used information from Bloomberg (2015) and the electronic address of owners to verify whether the owner is government or not. I used key-words such as: county, state, federal, federated, public, government, treasury to find names of government shareholders among the 1,231.303 names of owners. The government shareholder is analyzed in this research in three contexts: the government as the largest shareholder (TOP 1), and the government among the top five shareholders (TOP 5). These different levels are employed to verify the influence of the level of government investment on the health of companies. When the government is a TOP 1 shareholder, afterward this firm is also included in the TOP 5. subsamples. In Table 1, I present information about variables used in this research.

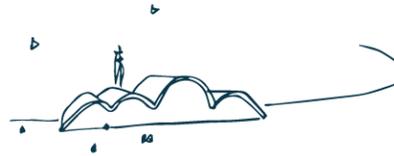


Table 1: Sample information and variable measurement - to study the relation between the presence of government as shareholder and financial health

Proxy to	Variable	Description	Expected	Unit of measure	Inefficiency: coefficient	source
Profitability	revenue by assets	$revenue_{it}/assets_{it-1}$	Between zero and k, where k is greater than 1	Percentage	negative	Piotroski (2000) and Dyckman et al. (2014)
	net income by gross revenue	$net\ income_{it}/gross\ revenue_{it}$	Between k and minus k	Percentage	negative	
	net income by equity	$net\ income_{it}/equity_{it-1}$	Between k and minus k	Percentage	negative	
	return on financial leverage	$[(net\ income_{it}/equity_{it-1}) - (net\ income_{it}/assets_{it-1})]$	Between k and minus k	Percentage	negative	
	quality of earnings	$Operational\ cash\ flow_{it}/net\ income_{it}$	Between k and minus k	Percentage	negative	
Operational efficiency	Variation of administrative expenses by assets	$[(administrative\ expenses_{it} - administrative\ expenses_{it-1}) / assets_{it-1}]$	Between k and minus k	Percentage	positive	Piotroski (2000) and Dyckman et al. (2014)
	profit margin	$(Gross\ revenue_{it}/revenue_{it}) - (Gross\ revenue_{it-1}/revenue_{it-1})$	Between minus k and k	Percentage	positive	
	inventory turnover	$[cost\ of\ goods\ sold_{it}/((inventory_{it} - inventory_{it-1})/2)]$	Between zero and k	Percentage	negative	
	property, plant & equipment turnover	$[(revenue_{it}/\ property\ plant\ and\ equipment_{it}) - (revenue_{it-1}/\ property\ plant\ and\ equipment_{it-1})]$	minus k and k	Percentage	negative	
	receivables turnover	$[(receivables_{it} - estimated\ doubtful\ about\ receivables_{it})/receivables_{it}) - (receivables_{it-1} - estimated\ doubtful\ about\ receivables_{it-1})/receivables_{it-1}]$	Between -1 and 1	Percentage	positive	
	average of age of receivables	$[254/ (receivables_{it} - estimated\ doubtful\ about\ receivables_{it}) - (receivables_{it-1} - estimated\ doubtful\ about\ receivables_{it-1})]$	Between -1 and 1	Percentage	positive	
Presence of government	Governmental shareholder 5	governmental shareholder participation among the 5 largest shareholders	Zero or one	Dummy and percentage		
Presence of government	Governmental shareholder 1	Governmental shareholder participation as largest shareholder	Zero or one	Dummy and percentage		
Presence of government	Percentage of stocks hold by government 1	Governmental shareholder participation as largest shareholder	Between 0.001 and 100	percentage		
Presence of government	Percentage of stocks hold by government 5	Percentage of stocks hold by government among the top five shareholders	Between 0.001 and 100	percentage		
Electoral Year	Electoral Year	Dummy 1 on electoral Year and zero otherwise	Dummy 1 on electoral Year and zero otherwise	Dummy 0 or 1		(Shi and Svensson, 2006; Brender and Drazen, 2005; and Vergne, 2009).
Control by Size	Size _{it}	Revenue of firm I, in year t, divided by assets from firm I on prior year	Between zero and one	Rational number		Titman & Wessels (1988)
Control by debt	Debt _{it}	Total liabilities of firm i in year t divided by total assets of firm I, on prior year	Between 0 and 1	Rational number		Titman & Wessels (1988)



I test the hypotheses by regression analysis in panel data, as described by Wooldridge (2013), to capture the effect of government shareholding on the financial health of companies. Financial health was proxied by indicators of profitability, operational efficiency and capital structure. I included controls in the regression equation, using dummy to analyze data before and after government acquisition of significant equity holdings. Companies whose shares were purchased by the government and firms not purchased by government were analyzed to discern if there is a difference in financial health before and after acquisition (Wooldridge, 2013). The group of firms where the government is not a shareholder (hereafter NO GOV).

The ratios that were used as control variables such as firm size and debt were winsorized at 1% and 99% to mitigate the possible influence of outliers, as recommended by Ball & Brown (1968) and Cardillo (2011). When I winsorized, "the extreme values are instead replaced by certain percentiles (the trimmed minimum and maximum)" (Cardillo, 2011).

To build the financial indicators I use the definition of Accounting from the patrimonial structure: where Assets equal the sum of liabilities plus equity. Therefore, in this analysis there is no negative asset. A negative asset is considered a liability. Both revenue and expenses are positive numbers. The other assumption used in my analysis is: all values used are considered rational numbers. I adopted the definition of k as a rational number greater than 1 (Table 1).

To establish the context of government shareholding, I collected data from the Capital IQ database, for the fourth quarter of each fiscal year. I include a dummy variable to indicate government influence, with a value of one for firms in which the government is among the largest shareholders and zero in other cases. The percentage of shares owned by the government is multiplied by the dummy variable. Thus, in cases where the government is not among the largest shareholders, the result of multiplying the percentage of shares held by the government is zero. For each company, I add a dummy that represents government shareholding at the state and federal levels to represent the full government shareholding.

The election year is represented by a dummy that equals one for the election year and zero in other years. I employ similar dummies for one year before and one year after the election year. The variable total government shareholding is multiplied by these election year dummies. The intuition is that if in the period just before, during and after elections the government owns more shares, it can make use of company resources for political benefit, for example through donations to political parties (Watts & Zimmerman, 1978; Ramanna & Roychowdhury, 2009). I also verify the possibility of using blockholders, as proposed by Bortolotti & Faccio (2009).

I present the description of each variable where I found a relation with government shareholding.

Revenue divided by assets ($revenue_{it}/asset_{it-1}$)

The indicator asset turnover measures the variation of revenue by assets and represents the profitability of companies generating revenue using assets. The indicator revenue by assets is a rational number that may be between zero and k . A negative relation between an event and asset turnover means that on average an inefficient use of assets by the company. A positive relation between an event and revenue by assets means on average an efficient investment by the firm.

Return on financial leverage [$(net\ income_{it}/equity_{it-1}) - (net\ income_{it}/assets_{it-1})$]



Return on leverage is the difference between net income divided by equity and net income divided by assets. Net income divided by equity was defined above. The indicator net income divided by assets will depend on the numeric characteristics of net income and assets:

- 1) If both net income and assets are greater than zero. The indicator will be between zero and K.
- 2) If net income is a negative number and assets are positive, the indicator will be between zero and minus K. Zero is not included.
- 3) If net income is zero, the indicator will be zero;
- 4) If assets are zero, the indicator will be a missing value.

A negative relation between an event and return on leverage means that on average an inefficiency. A positive correlation between an event and return on leverage means on average an efficiency.

Net income divided equity (net income_{it}/equity_{it-1})

Net income is a rational number that could be greater than zero, less than zero, or zero. Equity is a rational number that could be greater than zero, less than zero, or zero. The indicator net income by equity will depend upon the numeric characteristics of net income and equity:

- 1) If both net income and equity are greater than zero. , the indicator will be between zero and K.
- 2) If net income is a positive number and equity is a negative number, the indicator will be between zero and minus K. Zero is not included.
- 3) If net income is a negative number and equity is a positive number, the indicator will be between zero and minus K. Zero is not included.
- 4) If net income is zero, the indicator will be zero;
- 5) If equity is zero, the indicator will be a missing value.

A negative relation between an event and net income/equity means on average an inefficiency. A positive correlation between an event and net income/ equity means on average an efficiency.

Property, plant and equipment turnover was built using [(revenue_{it}/ property plant and equipment_{it}) - (revenue_{it-1}/ property plant and equipment_{it-1})]

The property, plant & equipment turnover (hereafter ppeturnover) “measure(s) the sales revenue produced for each Dollar of investment in PP&E.” (Dyckman et al., 2014, p.428)

Positive variation of PPE turnover means the company is efficient in generating revenue. Ppeturnover is a rational number that may be between minus k and k. A negative relation between an event and ppeturnover means on average an inefficiency. A positive relation between an event and ppeturnover means on average an efficiency.

The panel regression analysis uses the within estimator because the time series is long enough (2004 to 2014) and the dependent variable in the estimation equation employs continuous data. To mitigate endogeneity problems I chose explanatory variables from the literature to encompass the possible factors that might be correlated with the explained variables in all estimations: profitability and operational efficiency.



The study of the relation between profitability, and operational efficiency and government stockholding is justified because as Laffont & Tirole (1991) and Salm et al. (2006) point out, governments can use their influence in companies to withdraw resources for their own benefit, as well as to influence management decisions of companies. Government shareholding may bring inefficiency to companies (Laffont & Tirole (1991). Ball & Brown (1968) Baruch & Thiagarajan (1993), Abarbanell & Bushee (1997), Abarbanell & Bushee (1998), Ali & Hwang (2000), Bird, Gerlach & Hall (2001), Piotroski (2000, 2005), Piotroski (2012), Dyckman et al. (2014) all say that financial indicators can help to measure firms' health.

The intuition of this study is that the financial health of firms can suffer influence of good or bad management, influenced by large shareholders. In this study, the focus is on government shareholding in the period surrounding elections. This relation can be captured by an econometric model that uses financial indicators and information about the period surrounding the election and government shareholding. The reason for using the regression analysis in panel data is that it allows a single equation to join the dependent variables (profitability and operational efficiency) and the explanatory variables indicated by the literature in the period before and after the government was a shareholder (Wooldridge, 2013).

For each regression, I present the results, descriptive statistics and autocorrelation table. For each estimation I use the F-test to verify the best model, between panel data regression and Pooled regression (Wooldridge, 2013). For each estimation I also use the Hausman test to verify the best model between panel data with fixed effects and panel data with random effects (Wooldridge, 2013; Greene, 2008). Finally, for each estimation I use the Breusch-Pagan test to check for heteroscedasticity. When heteroscedasticity is present, I use the Robust routine of Stata to adjust the results (Wooldridge, 2013).

To reduce the stochastic error I use control variables for adjacent period to the election year, and firm size. These variables are highlighted in the literature as control variables.

I apply the estimation to study the relation between government shareholding and profitability and operational efficiency of firms, based on financial data available in WRDS (Compustat and Capital IQ) for the period 2004 to 2014. The methodological structure presented is used to test 2 hypotheses as follows:

H₁₀: There is no relation between government shareholding and the profitability of public companies.

H₂₀: There is no relation between government shareholding and the operational efficiency of public companies.

To test these hypotheses I used robustness on proxies to:

- Profitability - variation of quality of earnings, revenue/ assets, net income/ gross revenue, net income/ equity, and return on financial leverage;
- Operational efficiency - administrative expenses/assets; inventory turnover, profit margin, property, plant & equipment turnover, receivables turnover, and average age of receivables; and

Equation 1 describes the general regression where I test the hypotheses of a relation between profitability and government shareholding.



$$\begin{aligned}
 \text{Profitability}_{it} = & \beta_0 + \beta_1 \text{Size}_{it} + \beta_2 \text{Debit}_{it} + \\
 & \beta_3 (\text{PartGov}_{it} \times \text{percentage of stocks}) + \\
 & \beta_4 (\text{PartGov}_{it} \times \text{percentage of stocks} \times \text{Electoral Year}) + \beta_5 \text{Electoral Year} + \\
 & \beta_6 \text{One Year before Election} + \\
 & \beta_7 (\text{PartGov}_{it} \times \text{percentage of stocks} \times \text{Year before Election}) + \\
 & \beta_8 \text{oneyear after election} + \\
 & \beta_9 (\text{PartGov}_{it} \times \text{percentage of stocks} \times \text{year after election}) + \\
 & \beta_{10} (\text{oneyear after election} \times \text{PartGov}_{it}) + \\
 & \beta_{11} (\text{oneyear before election} \times \text{PartGov}_{it}) + \beta_{12} (\text{electoral year} \times \text{PartGov}_{it}) + \\
 & \beta_{13} \text{PartGov}_{it} + \varepsilon_{it}
 \end{aligned}
 \tag{1}$$

Where profitability is represented by quality of earnings (operational cash flow/net income), revenues/assets, net income/gross revenues, net income/average stockholders' equity and return on financial leverage (ROFL). I use these financial ratios based on Piotroski (2000) and Dyckman et al. (2014).

Equation 2 specifies the general regression where I test each hypothesis of the relation between operational efficiency and government shareholding.

$$\begin{aligned}
 \text{Operational efficiency}_{it} \\
 = & \beta_0 + \beta_1 \text{Size}_{it} + \beta_2 \text{Debit}_{it} \\
 & + \beta_3 (\text{PartGov}_{it} \times \text{percentage of stocks}) \\
 & + \beta_4 (\text{PartGov}_{it} \times \text{percentage of stocks} \times \text{Electoral Year}) \\
 & + \beta_5 \text{Electoral Year} + \beta_6 \text{One Year before Election} \\
 & + \beta_7 (\text{PartGov}_{it} \times \text{percentage of stocks} \times \text{Year before Election}) \\
 & + \beta_8 \text{oneyear after election} \\
 & + \beta_9 (\text{PartGov}_{it} \times \text{percentage of stocks} \times \text{year after election}) \\
 & + \beta_{10} (\text{oneyear after election} \times \text{PartGov}_{it}) \\
 & + \beta_{11} (\text{oneyear before election} \times \text{PartGov}_{it}) \\
 & + \beta_{12} (\text{electoral year} \times \text{PartGov}_{it}) + \beta_{13} \text{PartGov}_{it} + \varepsilon_{it}
 \end{aligned}
 \tag{2}$$

Where operational efficiency is represented by administrative expenses/assets, inventory turnover, profit margin, asset turnover, property, plant & equipment turnover (PPET), receivables turnover and average age of receivables.

The use of the methodological structure presented permits an analysis of the relation between government shareholding and financial health of companies.

4 RESULTS

This section presents my results and analysis of the panel regressions, to answer the research questions and verify the interaction with the results already found in prior research. In the USA, the federal government and state governments at times buy and sell stocks. Firstly, I present descriptive statistics about public companies. Secondly, I present the results of estimation of the relation between profitability and government shareholding. Afterward, I present the estimation of the relation between operational efficiency and government shareholding. Finally, I present the estimation of the relation between debt and government shareholding.



4.2.1 ANALYSIS OF RESULTS - PROFITABILITY – REVENUE/ASSETS

Government shareholding may influence contracts and opportunities of companies and financial indicators of profitability could capture this. Thus, in Table 2, I present the estimation of the results obtained about the relation between government shareholding and revenue/assets in years when the government owned stocks.

The revenue/assets indicator increases when revenue increases more than assets.

The revenue/assets indicator in this study was a proxy for profitability, using information from the income statement. “The income statement is the primary source of information about recent company performance” (Dyckman et al., 2014, p. 268). Information on revenue is “used to predict future performance for investment purposes and to access the credit worthiness of a company” (Dyckman et al., 2014, p. 268).

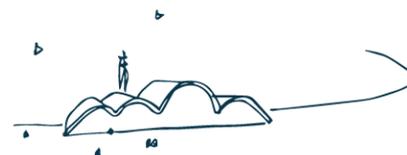


Table 2: Profitability (revenue/assets) and the presence of government as shareholder

Explained variable: Revenue by asset

	N. of obs = 39871 N. of groups = 5368 R ² : b. = 0.0220 F(13,5367) = 7.25 Prob > F = 0.0000		N. of obs = 39871 N. of groups = 5368 R ² : b. = 0.0019 F(13,5367) = 6.96 Prob > F = 0.0000	
Government shareholder	TOP 1		TOP 5	
Explanatory variables	Coefficients	P-value	Coefficients	P-value
One year before electoral year	0.0287 (4.20)	0.000	0.0303 (4.40)	0.000
Electoral year	0.0193 (2.59)	0.010	0.0199 (2.66)	0.008
One year after electoral year	-0.0002 (-0.11)	0.915	-0.0010 (-0.05)	0.957
Size _{it}	-0.1339 (-8.01)	0.000	-0.1333 (-7.95)	0.000
Debt _{it}	0.0009 (0.22)	0.557	0.0008 (0.22)	0.826
PartGov _{it}	-0.0905 (0.94)	0.347	0.1004 (2.32)	0.020
PartGov _{it} x percentage of stocks	0.0104 (1.98)	0.048	-0.0005 (0.09)	0.925
Electoral year x part gov _{it}	-0.4772 (-0.93)	0.351	-0.1194 (-1.39)	0.166
One year after election x part gov _{it}	0.2562 (1.50)	0.135	-0.0557 (-0.90)	0.370
One year before election x part gov _{it}	0.1242 (1.16)	0.246	-0.1159 (-2.21)	0.027
PartGov _{it} x percentage of stocks x electoral year	0.0101 (0.48)	0.630	-0.0034 (-0.50)	0.619
PartGov _{it} x percentage of stocks x year after election	-0.0099 (-1.39)	0.165	0.0012 (0.23)	0.821
PartGov _{it} x percentage of stocks x year before election	-0.0121 (-2.25)	0.024	0.0026 (0.50)	0.615
constant	1.8172 (17.28)	0.000	1.811 (17.16)	0.000
Post estimation test	F test Prob > F = 0.0000 Hausman: = 0.000 B.Pagan P-value = 0		F test Prob > F = 0.0000 Hausman: = 0.0000 B.Pagan P-value = 0	

Where:

Revenue by asset = revenue of firm i in year t divided by total assets of firm i in year t-1;

Size_{it} = natural logarithm of assets in the previous year

(Piotroski, 2000; Ho, Liu & Ramanan, 1997; Lopes & Galdi 2007);

Debt_{it} = total liabilities of firm i in year t divided by total assets of firm i in year t-1 (Titman & Wessels, 1988)

Electoral year = dummy that is one in an electoral year and zero otherwise;

One year after electoral year = dummy that is one in the year after an election year and zero otherwise;

One year before electoral year = dummy that is one in the year before an election year and zero otherwise;

PartGov_{it} = dummy that is one for the case where the company has Governmental participation in stocks and zero otherwise;

PartGov_{it} x percentage of stocks = interactive variable resulting from the product of the two variables identified;

PartGov_{it} x percentage of stocks x electoral year = interactive variable resulting from the product of the three variables identified;

PartGov_{it} x percentage of stocks x year after election = interactive variable resulting from the product of the three variables identified;

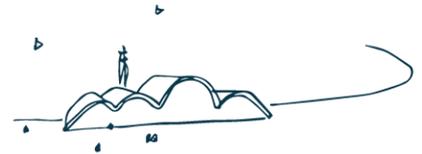
PartGov_{it} x percentage of stocks x year before election = interactive variable resulting from the product of the three variables identified;

One year after election x part gov_{it} = interactive variable resulting from the product of the two variables identified;

One year before election x part gov_{it} = interactive variable resulting from the product of the two variables identified;

Electoral year x part gov_{it} = interactive variable resulting from the product of the two variables identified;

E = Stochastic error



In this study, I used the concept of revenue and assets presented by Dyckman et al. (2014, p. 42): “Revenue is a primary indicator of how customers view the company’s product and service offerings.” Moreover, “an asset is a resource that is expected to provide a company with future economic benefit.”

The ratio of revenue-to-assets could bring information about how customers view the company’s product and service offerings. The manager can make decisions that can be captured on revenue-to-assets ratio. According to Dyckman et al. (2014, p. 271), managers “can improve profits by reducing costs, but the effects of those improvements are limited unless revenues are increasing.” Because of this, they indicate that “growth in revenue is carefully monitored by management and by investors.”

In election years and the year before, on average the revenue/assets of firms increased between 2% and 4%. The year after elections was not statistically significant in relation to profitability. Size was negatively related with the profitability in all analyzed contexts. The reduction of revenue/assets on average was between 13.33% and 13.52% (Table 2).

Government shareholding was statistically significant at 5% in relation to profitability, but only for TOP 5 firms. Government shareholding increased the revenue/assets of firms by an average of 10%. (Table 2)

The interaction between government shareholding and the year before an election was negatively related to revenue/assets. This means that government shareholding in the period before an election on average reduced the revenue/assets to the TOP 5. (Table 2).

The interaction between government shareholding for TOP 1 firms and the period before an election, and the percentage of stocks retained by government was negatively related with the revenue/assets of companies. Comparing the revenue/assets of the TOP 1 firms with NO GOV firms, I found a reduction of revenue/assets in the period before an election on average of 1.21% (Table 2).

The results presented in Table 2 are aligned with the observations of Laffont & Tirole (1991). When government is a shareholder, firms perhaps are “not subject to the discipline of bankruptcy”, due to the implicit guarantee of government to help (bailout) in case of difficulty. This attitude may “reduce managerial incentives” (Laffont & Tirole, 1991, p.88). Another possible explanation is that governments may help political parties due the pressure of interest groups, using resources of firms in their own benefits (Laffont & Tirole, 1991, p.88; Salm, Candler & Ventriss, 2006).

ANALYSIS OF RESULTS - PROFITABILITY – RETURN ON LEVERAGE

In Table 3, I present the empirical results about the relation between net return on leverage and government shareholding. The return on leverage indicator increased in the context in which ROE (return on equity) was greater than ROA (return on assets). The return on leverage captures the amount ROE that can be attributed to financial leverage (Dyckman et al., 2014, p. 223). ROFL represents the advantage or disadvantage that occurs as the result of earning a return on equity.

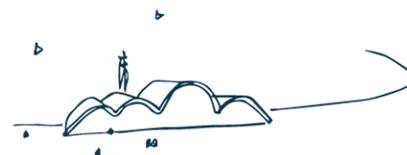


Table 3: Profitability (return on leverage) and the presence of government as shareholder

Explained variable: return on leverage

	TOP 1		TOP 5	
Explanatory variables	Coefficients	P-value	Coefficients	P-value
Government shareholder				
One year before electoral year	-0.2609 (-1.44)	0.151	-0.2666 (-1.44)	0.149
Electoral year	-0.1500 (-0.62)	0.533	-0.1736 (-0.71)	0.477
One year after electoral year	-0.1329 (-0.73)	0.466	-0.1737 (-0.95)	0.340
Size _{it}	-0.0088 (-0.005)	964	0.008 (0.00)	0.996
Debt _{it}	-0.2501 (-2.73)	0.006	-0.2501 (-2.73)	0.006
PartGov _{it}	0.0721 (0.34)	0.735	-0.072 (-0.20)	0.844
PartGov _{it} x percentage of stocks	-0.0302 (-1.87)	0.061	-0.0308 (-0.98)	0.329
Electoral year x part gov _{it}	-0.0967 (-0.22)	0.824	1.2278 (1.26)	0.209
One year after election x part gov _{it}	0.0564 (-0.13)	0.897	1.9694 (1.25)	0.212
One year before election x part gov _{it}	1.1776 (1.07)	0.287	0.387 (1.06)	0.288
PartGov _{it} x percentage of stocks x electoral year	0.0173 (0.88)	0.381	-0.0364 (-0.64)	0.524
PartGov _{it} x percentage of stocks x year after election	-0.0158 (0.72)	0.472	-0.0767 (0.61)	0.365
PartGov _{it} x percentage of stocks x year before election	-0.0053 (0.18)	0.861	0.0304 (1.06)	0.289
constant	1.0241 (0.84)	0.403	0.961 (0.79)	0.432
Post estimation test	F test Prob > F = 0.0000 B.-Pagan = 2.e-237		F test Prob > F = 0.0000 B. Pagan = 0	

Where:

Return on leverage = ROE – ROA

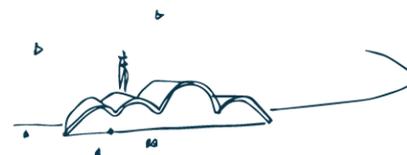
ROE=Net income of firm i in year t divided by total equity of firm i in year t-1;

ROA=Net income of firm i in year t divided by total assets of firm i in year t-1;

All other variables were presented in Table 2

The percentage of stocks held by TOP 1 firms was negatively related with return on leverage. The return on financial leverage declined on average by 3% compared with the financial leverage of NO GOV companies (Table 3). In the context TOP 5 and TOP 1, there was no relation (Table 3).

The results presented in Table 3 align with the observation of Lafond & Tirole (1991, p. 88). Companies in which the government has shareholding may suffer from soft budget constraints, expropriation of investments, lack of precise objectives, lobbying,



social welfare claims and centralized control.4.2.1.3 ANALYSIS OF RESULTS - PROFITABILITY – NET INCOME/EQUITY

The indicator net income/equity relates earnings to the investment made by the stockholders. The indicator net income/ equity increases in the context of debt increases more than equity or in the case in which the equity reduces less than debt. In Table 4, I present the relation between government shareholding and net income/equity.

Table 4: Profitability (net income/equity) and the presence of government as shareholder

	TOP 1		TOP 5	
	Coefficients	P-value	Coefficients	P-value
	N. of obs = 39871 N. of groups= 5368 R ² : b. = 0.00081 F(13,5367)= 1.72 Prob > F = 0.0499		N. of obs = 39871 N. of groups= 5368 R ² : b. = 0.0080 F(13,5367)= 6.96 Prob > F= 0.0175	
Government shareholder	TOP 1		TOP 5	
Explanatory variables	Coefficients	P-value	Coefficients	P-value
One year before electoral year	-0.2564 (-1.45)	0.147	-0.2599 (-1.45)	0.148
Electoral year	-0.1445 (-0.60)	0.546	-0.1671 (-0.69)	0.491
One year after electoral year	-0.0819 (-0.47)	0.641	-0.1210 (-0.69)	0.489
Size _{it}	-0.0841 (0.50)	0.614	0.0942 (0.57)	0.571
Debt _{it}	-0.2443 (-2.73)	0.006	-0.2443 (-2.73)	0.006
PartGov _{it}	-0.019 (-0.07)	0.947	0.0819 (0.24)	0.808
PartGov _{it} x percentage of stocks	-0.0309 (-1.25)	0.213	-0.0447 (-1.50)	0.135
Electoral year x part gov _{it}	-0.0103 (0.02)	0.982	1.1271 (1.17)	0.243
One year after election x part gov _{it}	0.0558 (-0.11)	0.913	1.8245 (1.16)	0.245
One year before election x part gov _{it}	1,2952 (1.03)	0.301	0.2394 (0.68)	0.496
PartGov _{it} x percentage of stocks x electoral year	0.0169 (0.64)	0.519	-0.0250 (-0.45)	0.656
PartGov _{it} x percentage of stocks x year after election	-0.0200 (0.66)	0.508	-0.0644 (0.77)	0.443
PartGov _{it} x percentage of stocks x year before election	-0.0059 (0.15)	0.885	0.0470 (1.74)	0.082
constant	0.3129 (0.29)	0.771	0.2461 (0.23)	0.818
Post estimation test	F test Prob > F = 0.0000 B. Pagan = 2.e-237		F test Prob > F = 0.0000 B. Pagan = 0	

Where:

Net income/equity = Net income of firm i in year t divided by total equity of year t-1;
All other variables were presented in Table 2

Debt was negatively related with the net income/equity in all contexts. All other control variables were not related with net income/equity (Table 4).

There was no relation between net income/equity and the percentage of stocks held by government in the TOP 5 or TOP 1 (Table 4).

For TOP 5 firms, considering the percentage of stock maintained by government in the period before an election, increased the net income/equity of firms by 4.70% compared with NO GOV companies. For the TOP 1, there was no relation (Table 4).



Overall, government shareholding was related to the net income/equity of firms. The relation was different for each indicator of profitability and different depending on the position of government as TOP 1 or TOP 5. These results align with those reported by Laffont & Tirolle (1991). The moral hazard context can harm companies due to soft budget constraints, expropriation of investments, lack of precise objectives, lobbying, social welfare claims and centralized control (Laffont & Tirole, 1991).

ANALYSIS OF RESULTS - OPERATIONAL EFFICIENCY

Some contracts and business opportunities of companies can be influenced by government. The financial indicators of operational efficiency can signal this. Thus, in Table 5 I present the estimation of the results obtained about relation between government shareholding and property, plant & equipment turnover in years in which the government owned stocks. I tested the relation between government shareholding and operational efficiency. Operational efficiency was represented by: administrative overhead/assets, inventory turnover, profit margin, property, plant & equipment turnover, asset turnover, receivables turnover, and average of receivables. I report only the results about financial indicators where I observed a statistically significant relation, namely property, plant & equipment turnover, inventory turnover and asset turnover.

Overall, government shareholding was related with operational efficiency of firms. This relation was different when the government was in the TOP 1, and the TOP 5.

ANALYSIS OF RESULTS - OPERATIONAL EFFICIENCY – PROPERTY, PLANT & EQUIPMENT TURNOVER

Government shareholding may influence contracts and opportunities of companies and financial indicators of operational efficiency can capture this. In Table 5 I present the estimation of the results obtained about the relation between government shareholding and the indicator of property, plant & equipment turnover in the years in which the government owned stocks.

Property, plant & equipment turnover “measures the sales revenue produced for each dollar of investment in PP&E” (Dyckman et al., 2014, p. 428). Property, plant & equipment turnover “provides insights into asset utilization and how efficiently a company operates given its production technology” (Dyckman et al., 2014, p. 428). This ratio measures a company’s ability to generate sales given an investment in fixed assets.

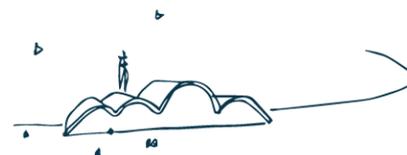


Table 5: Operational efficiency (property, plant & equipment turnover) and the presence of government as shareholder

PPE turnover	N. of obs = 16640 N.of groups=4172 R ² : b. = 0.00001 F(13,4171) = 12.08 Prob > F=0.0000		N. of obs = 16640 N.of groups=4172 R ² : b. = 0.00001 F(13,4171)= 1.37 Prob > F = 0.1654	
Government shareholder	TOP 1		TOP 5	
Explanatory variables	Coefficients	P-value	Coefficients	P-value
One year before electoral year	-0.4068 (-1.84)	0.065	-0.4005 (-1.80)	0.072
Electoral year	-0.2004 (-0.93)	0.355	-0.2201 (-1.00)	0.317
One year after electoral year	-0.6691 (-0.229)	0.022	-0.6872 (-2.31)	0.021
Size _{it}	-0.2591 (-0.96)	0.339	-0.2517 (-0.939)	0.354
Debt _{it}	0.0000 (0.01)	0.992	0.0000 (0.00)	0.997
PartGov _{it}	-0.6523 (-1.04)	0.298	0.1867 (0.35)	0.729
PartGov _{it} x percentage of stocks	0.0367 (1.75)	0.081	-0.0655 (-0.88)	0.380
Electoral year x part gov _{it}	1.6812 (0.84)	0.402	1.0202 (1.21)	0.227
One year after election x part gov _{it}	0.2175 (-0.08)	0.936	0.6320 (0.76)	0.446
One year before election x part gov _{it}	0.9804 (1.71)	0.087	-0.4756 (-0.33)	0.745
PartGov _{it} x percentage of stocks x electoral year	0.1367 (-0.96)	0.337	-0.1323 (-1.46)	0.145
PartGov _{it} x percentage of stocks x year after election	-0.1147 (-0.27)	0.789	-0.0701 (-0.31)	0.755
PartGov _{it} x percentage of stocks x year before election	-0.0237 (-1.10)	0.272	0.0177 (0.20)	0.843
constant	2.0945 (1.32)	0.188	2.0496 (1.29)	0.198
Post estimation test	F test Prob > F = 0.0000 Breusch-Pagan = 0		F test Prob > F = 0.0000 Breusch-Pagan = 0	

Where:

Property, plant & equipment turnover = variation of revenue divided by Property, plant & equipment from prior year;

Size_{it} = natural logarithm of assets in the previous year;

(Piotroski, 2000; Ho, Liu & Ramanan, 1997; Lopes & Galdi 2007);

Debt_{it} on equation 1 and 2 – total liabilities of firm i in year t divided by total assets of firm i in year t-1 (Titman & Wessels, 1988);

Electoral year = dummy that is one in an electoral year and zero otherwise;

One year after electoral year = dummy that is one in the year after an election year and zero otherwise;

One year before electoral year = dummy that is one in the year before an election year and zero otherwise;

PartGov_{it} = dummy that is one for the case where the company has Governmental participation in stocks and zero otherwise;

PartGov_{it} x percentage of stocks = interactive variable resulting from the product of the two variables identified;

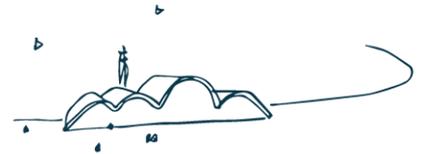
PartGov_{it} x percentage of stocks x electoral year = interactive variable resulting from the product of the three variables identified;

PartGov_{it} x percentage of stocks x year after election = interactive variable resulting from the product of the three variables identified;

PartGov_{it} x percentage of stocks x year before election = interactive variable resulting from the product of the three variables identified;

One year after election x part gov_{it} = interactive variable resulting from the product of the two variables identified;

One year before election x part gov_{it} = interactive variable resulting from the product of the two variables identified;



Electoral year x part gov_{it} = interactive variable resulting from the product of the two variables identified;
E = Stochastic error

In the period before an election on average companies reduced property, plant & equipment turnover between 40% and 59% in comparison to other periods. Nevertheless, in the period after an election the result was stronger: companies reduced property, plant & equipment turnover between 66% and 87% in comparison to other periods. The election year was not related with property, plant & equipment turnover in any context analyzed (Table 5).

For the TOP 5 and TOP 1, this presence was not related with the property, plant & equipment turnover (Table 5).

The interaction for TOP 1 firms and the percentage of stocks held by government was positively related with the property, plant & equipment turnover. The increase was of 3.67% on average in the property, plant & equipment turnover. But, analyzing the TOP 5 firms, considering the percentage of stocks hold by government, I did not find a statistically significant relation (Table 5).

The presence of government after and before elections was positively related with the property, plant & equipment turnover of firms (Table 5). Analyzing the TOP 5 or TOP 1, I did not find a statistically significant relation (Table 5).

Inclusion in TOP 1 was related with property, plant & equipment turnover of firms. The increase in property, plant & equipment turnover was 98% in comparison with NO GOV companies. Analyzing the TOP 5, I did not find a statistically significant relation (Table 5).

The reduction of the indicator of property, plant & equipment turnover was on average 12% compared with other periods and with NO GOV companies. Analyzing the TOP 5 or TOP 1, I did not find a statistically significant relation (Table 5).

These results Table 5 align with results reported by Laffond and Tirolle (1991, p. 88) and Salm, Candler & Ventriess, 2006).

5 CONCLUSION

In this paper, I study the relation between financial health and government shareholding in companies listed on stock markets in the USA.

Government shareholding was required by society in 2008 to bailout companies in financial difficulty. Government shareholding was started before the legal demand of 2008. Government shareholding includes both state and federal governments.

I analyze the financial health of companies. Financial health was represented in this study by profitability, capital structure, and operational efficiency. Profitability was proxied by: variation of quality of earnings, revenue/assets, net income/gross revenue, net income/equity, and return on financial leverage. Operational efficiency was proxied by administrative expenses/assets; inventory turnover, profit margin, property, plant & equipment turnover, receivables turnover, and average age of receivables. Capital structure was proxied by the variations of debit/equity, debit/assets, liquidity, current ratio, and quick ratio. The building of these financial indicator follows Piotroski (2000) and Dyckman et al. (2014).

I highlight considerations of Laffont & Tirole (1991) and Salm et al. (2006), as reported in the literature: I expect that government shareholding could damage the financial health of companies, due to soft budget constraints, expropriation of



investments, lack of precise objectives, lobbying, social welfare, and centralized control. My results show this was not the case in all contexts in the USA during the period analyzed.

Financial health represented by profitability reacted differently to the presence of government as TOP 1, and TOP 5. For the TOP 1 there is no relation between government and Revenue/assets. TOP 5 firms showed a positive relation to the revenue/assets, increasing the revenue/ assets by 10%, compared to NO GOV companies.

Overall, the relation between government shareholding for TOP 1 and TOP 5 firms and financial health emits signals to be addressed in future research analyzing contexts where companies contract with the government. I also recommend replication of this study in different countries to compare the effect of factors such as structure of law and accounting GAAPs. Finally, I recommend investigation as to why the government invests on stock markets in OECD countries.

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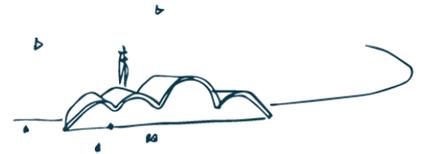
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