



GOVERNMENT SHAREHOLDING AND SHARE PRICES

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ABSTRACT

This study investigates if government shareholding is related to abnormal returns for listed companies in the United States. I also apply fundamental analysis, election periods, firm size, and price-to-book as additional variables. Additionally, I studied why is the government investing on stock market? The research includes firms listed on stock exchanges, covering the period from 2004 to 2014. I used content analysis. The hypotheses are tested by regression analysis in panel data and by logistic regression. Using regression analysis in panel data, I found positive reaction of the market in the context in which the government is among the top five shareholders or is the largest shareholder. Overall, the signal emitted for TOP 1 and TOP 5 firms was positive and higher than fundamental analysis.

Keywords: government shareholding; abnormal return; fundamental analysis.

Thematic Area: Mercado financeiro, de crédito e de capitais

1 INTRODUCTION

Since the 1980s, citizens in the Organization for Economic Cooperation and Development (OECD) countries, including the United States (USA) have demanded the creation of laws that hold governments accountable for mismanagement of state-controlled companies.

Studies including Laffont & Tirole (1991) and Salm, Candler & Ventriss (2006) point out that government representatives of state-owned companies may be tempted to use their power to expropriate resources for their own benefit or that of their political parties. This has prompted society to demand rules placing restrictions regarding the management of public resources (Laffont & Tirole, 1991). However, governments can acquire shares of companies through the stock market, to continue using the shareholding to influence the decisions of these companies and divert resources for their own benefit, in the same way practiced in originally state-owned companies.



The study is based on moral hazard as related to government shareholding (Laffont & Tirole, 1991). By studying the effect of government shareholding on abnormal returns, I aim to verify the perception of the market about government shareholding on stock market. Laffont & Tirole (1991, p.90) said: “Expropriation also reduces the value of the shares”. I expect government action in private companies to be perceived negatively by the stock market. The practice of expropriations registered in literature may affect the financial health of firms, represented in this study by fundamental analysis (Piotroski, 2000).

The use of fundamental analysis to classify companies using financial indicators is also recommended by the literature to analyze abnormal returns, since prior empirical evidence shows a relation between abnormal return and fundamental analysis (Ball & Brown (1968), Fama & French (1992), Baruch & Thiagarajan (1993), Fama & French (1995), Fama & French (1996), Abarbanell & Bushee (1997), Ali & Hwang (2000), Bird et al (2001) Piotroski (2000, 2005). Another motivation to include indicators that represent the health of companies are the arguments from Laffont & Tirole (1991) and Salm, Candler & Ventriss (2006) about expropriation of resources and inefficiency of firms in which the government is a shareholder.

The literature about election period effects indicated that in this period companies are more exposed to the possibility of expropriation by political parties and regulatory agencies, as observed by Watts & Zimmerman (1978), Jones (1991), Ramanna & Roychowdhury (2009), Bortolotti & Faccio (2009). Politicians do not care about the welfare of shareholders of companies or voters. The preoccupation of government is “only about winning the elections” and “care extracting tangible rents for themselves.” Person & Tabelini (2000, p. 10). To winning the elections the government could use resources of firms to help “organized interest groups” in the period surrounding election. (Person & Tabelini, 2000, p. 173)

Bortolotti & Faccio (2009) found that in OECD countries, governments usually transfer ownership rights without relinquishing proportional control, and this happens differently in common and code law countries. In this study the focus is on the political risk posed by government equity participation in private companies traded on stock exchanges, so this study differs from previous studies that were limited to the context before and after firms were privatized.

The data were obtained using the WRDS, Compustat and Capital IQ databases. The hypotheses are tested by regression analysis with panel data. In addition, fundamental analysis is used to classify companies by Fscore, following the proposal of Piotroski (2000). I also study the effects of election.

Based on the moral hazard theory I expect that the government expropriates resources of firms, as it reduces the operational efficiency, reduces the profitability of companies, and increases the debt of companies. Consecutively this context reduces the return of firms on stock markets.

My results indicate that the market appears to react positively when the government is among the top five shareholders (hereafter TOP 5) or when the government is the largest shareholder (hereafter TOP 1). These results are contrary to those highlighted by prior literature.

This Research is organized as follows. The next section discusses relevant prior literature. Section 3 presents the research design. Section 4 present analysis and results. Section 5 presents conclusions.



2 PRIOR LITERATURE

2.1. SHAREHOLDING AND CONTROL

2.1.1 GOVERNMENTAL SHAREHOLDING

In the business environment, managers can compromise the interests of companies, shareholders and other stakeholders in the long term for their personal interests (Jensen & Mecking, 1976). According to Jensen (2001), executives should make decisions in a clear and logical manner to maximize firm value, and managers should be evaluated and monitored (Jensen & Mecking, 1976).

Until the 1990s it was common for governments to control companies in OECD countries, but as society demanded greater accountability, laws on privatization and fiscal responsibility increased. This may have driven governments to find new ways to continue using the resources of companies for their own benefit. Privatization is a process that replaces political control with private control, i.e., control by investors that do not make decisions based on political considerations (Shleifer & Vishny, 1997). The results found by Bortolotti & Faccio (2009) run counter to the proposition of Shleifer & Vishny (1997) since at the end of century, governments still had major equity stakes or substantial powers in nearly two-thirds of companies privatized in OECD countries.

In 2008, the financial crisis required the help from government to rescue companies to avoid collapse of the market. Therefore, the federal government created the Capital Purchase Program (CPP). The CPP was created in 2008 to rescue companies in financial difficulties. The government invested \$205 billion in this fund that was later closed. (Duchin & Sosyura, 2012; EUA (2017)). On (CPP), had “application status of 537 public firms eligible to participate in the program (89.5% of all eligible public firms)”. (Duchin & Sosyura, 2012, p. 25). Duchin & Sosyura (2012) “document a strong relation between a firm’s political connections and its access to government capital”.

4.2.1.2 GOVERNMENT OWNERSHIP

Government ownership occurs when a company is created by the government or when stocks of firms are purchased by the government on the stock market. Government ownership may be either controlling or non-controlling. Control occurs when a shareholder or group of shareholders (blockholders) owns the majority of shares with voting rights. Shareholding may ensure the power of decision in the management of the company, including the right to appoint members to the board of directors (D'acunto, 2012).

Bortolotti & Faccio (2009) studied 98% of companies privatized in OECD countries before 1997. Their results indicate that governments usually transferred ownership rights without relinquishing proportional control, i.e., governments still maintained control of 62.4% of companies.

In 2000, the government was still the largest shareholder in all former state-owned companies in Finland and Greece, but the privatization process was more complete in Australia, Ireland, Mexico, New Zealand, Turkey, UK and USA (Bortolotti & Faccio, 2009).

Laffont & Tirole (1991, p. 88) and Salm et al (2006) highlight that the government machine was used for government representatives to drain corporate resources for their own benefit. This scenario has been changing since the 1990s, after the great wave of privatization (Bortolotti & Faccio, 2009).



Errors in conducting reforms and resolving management problems were committed in public-sector companies when the government had control. These types of reforms and resolution of management problems can be implemented by the government not only in state-owned firms, but also in private companies in which the government holds a major stake (Miller 1991 and Myers, 2001). The conflict between managers and shareholders may affect the share price of companies. “The multiplicity, fuzziness, and changing character of government objectives exacerbates the problem of managerial control in public enterprises” (Laffont & Tirole, 1991, p.88). Thus, news related to political parties and uncertain economic factors, such as news regarding elections, can bring more risk and this can influence abnormal returns.

Bortolotti & Faccio (2009) found evidence that the sector in which the company operates does not seem to affect the level of residual government control. They also found that government holdings in financial institutions were significantly lower than those in non-financial companies even after the great wave of privatization of the 1990s. These results contradict the findings of La Porta, Lopez de Silanes & Shleifer (2002), who based on 1995 data, found evidence that state ownership of privatized banks remained very large even after the wave of privatizations in the 1980s. Companies in the utilities sector in OECD countries, such as electricity, gas and telecommunications companies, are often regulated due to their importance to the nation and therefore are more likely to be under government influence (Bortolotti & Faccio, 2009).

2.1.3 EFFICIENT MARKETS AND GOVERNMENT INFLUENCE

Bortolotti & Faccio (2009) state that the USA does not invest in the stock market the same way as in other OECD countries. Government shareholding may influence the level of market efficiency.

The Government may intervene in competitive markets to make prices more favourable to politically influential suppliers or demanders. The influence may provide a floor or ceiling. The government may intervene on the price of soybeans, corn, beans, minimum wage, gasoline, ethanol, bank salaries, all wages, rent, and many others. The level of government influence may create an entry barrier in a market (Nicholson & Snyder, 2011).

The argument used to apply price ceilings influence is that consumers need to be protected from excessive prices. Because of this ceiling prices are normally applied for food, fuel, bank atm fees and many others. For Nicholson & Snyder, (2011), government influence may generate barriers that prevent efficient outcomes in competitive markets such as:

- Government interventions and controls: when there are restrictions, taxes and tariffs that are paid by market participants;
- Market power: a demander or supplier is large enough to influence prices;
- Externalities: where the well-being of individuals depends directly on the actions of others: e.g., air pollution, general pollution, neighborhood quality, environmental accidents, and many others;
- Non-rival goods: where consumption by one individual does not diminish the availability of the good for consumption by others: e.g., sunrises, football games and other spectator events, radio signals, internet sites, information, knowledge;



- Asymmetric information: where buyers and sellers may have private information: e.g., driving habits, medical history, job attitudes, skill level, and many others that would affect prices and quantities if all information were publicly known.

Government influence may generate asymmetric information, which “can lead to market inefficiencies relative to the first-best benchmark, which assumes perfect information” (Nicholson & Snyder (2011, p.676). Nicholson & Snyder, (2011, p.676) said that:

- Asymmetric information - “a principal offers a contract to an agent who has private information”.
- In a hidden-action model (called a moral hazard model) - “the principal tries to induce the agent to take appropriate actions by tying the agent’s payments to observable outcomes”.

“Governments are subject to the pressure of interest groups to direct the behaviors of public enterprises to enhance the welfare of these groups.” (Laffont & Tirole, 1991, p.88). Government influence may extrapolate to cases where the government drains corporate resources for their own benefit according to Laffont & Tirole (1991) and Salm et al. (2006).

2.2 – ELECTION YEAR

Politicians are classified as “purely self-interested”. (Person & Tabelini, 2000, p. 10) Politicians “choose policy so as to further their goals, but otherwise do not care about what policy is implemented.” Precisely, “politicians are opportunistic” and they “care only about winning the elections, and “rent-seeking” politicians, who also care extracting tangible rents for themselves”. Person & Tabelini (2000, p. 10). In the period surrounding election, governmental expenses increases. Afterward, political parties/government may expropriate resources from companies to get them goal (winning election). (Person & Tabelini, 2000, p. 419-423)

Bortolotti & Faccio (2009) found evidence that the electoral system has a considerable effect on the control structure of privatized firms. Specifically, they found evidence of links between electoral rules and a wide range of choices of fiscal policies.

Watts & Zimmerman (1978) and Jones (1991) pointed out that companies viewed by regulators as overly profitable can suffer political costs imposed by regulators. Jones (1991) further argued that firms manage earnings in order to avoid first-order costs of regulation or to extract first-order benefits from regulators.

Ramanna & Roychowdhury (2009) examined the choices of accumulation of subcontractors linked to congressional candidates and parties during the 2004 elections, assuming that “larger firms are more likely to choose accounting procedures that defer reported earnings from current to future periods” (p. 2). Their intuition is that large companies, being more visible, are more likely to attract the attention of the public and regulators when they declare high profits and this can result in higher taxes and regulatory oversight, placing a heavier burden on these firms. So, by deferring current earnings to future periods, large companies could avoid the costs associated with high visibility and large profits, especially in an election year, a period in which this context intensifies.

Ramanna & Roychowdhury (2009) constructed a measure based on “abnormal” staff reductions, i.e., firms decrease the number of jobs in outsourced companies, not



associated with declining economic conditions of the company (healthy companies lay off large numbers of workers in election years). They found that larger corporate donors are more likely "to have incentives to understate reported income if they can be implicated in outsourcing...", especially adjacent to the election year (p.3).

Thus, I present following researches' hypothesis:

H₀₁: there is no relation between government shareholding and abnormal returns.

3 RESEARCH DESIGN

This is an empirical study that analyzes data of companies listed on stock exchanges in the period 2004-2014. I start with the observations made by Laffont & Tirole (1991) and Piotroski (2000), Salm, Candler & Ventriss (2006) and Bortolotti & Faccio (2009). A government may use resources of companies for its own benefits (Salm, Candler & Ventriss, 2006) and "expropriation also reduces the value of the shares" (Laffont & Tirole, 1991, p.90).

The objective is to verify the relation between government shareholding and abnormal returns of listed companies. I also apply fundamental analysis, election year, price-to-book, size, and debt to examine the effects of those control variables on abnormal returns.

I used content analyses to verify 1,231.303 names of owners to capture information about companies where the government is a shareholder. I used the Bloomberg Institutional investor database (Bloomberg, 2015) to analyze each name of owner.

I used for each company, a dummy that represents government participation on cases where I observed government shareholder through the city, state or federal government.

To answer the question of research, I apply regression analysis with panel data as described by Wooldridge (2013), to capture the effect of government shareholding on the abnormal return indicator.

Before to decide about use panel data, I tested about endogeneity about the variable percentage of stocks. Due simultaneous equation that could become the process endogenous. I was looking for law or privatization process to bring exogeneity, but it was not possible in The USA context. Therefore, I used as recommended by Wooldridge (2013): I included each variable from the model as instrumental variable and included independent variable from prior year as new instrumental variable. In other words, I applied the 2SLS and the result was qualitatively similar.

I observed that there is not multicollinearity among independent variables.

Controls are included in the regression equation through indicators using financial information for the period 2004 to 2014, through which it was possible to empirically test the proposal. The Dummy government shareholding is used to analyze data before and after the government acquired shares of the companies studied, compared with others that were not acquired by the government. Companies whose shares were purchased by the government are used to discern if there is a difference before and after such acquisitions. Companies for which government is not a shareholder (hereafter No GOV) or before the government buys shares are included in the panel regression too.

The ratios (debt, price-to-book, and firm size) used in this research were winsorized at 1% and 99% level in order to mitigate possible influence of outliers, as recommended by Ball & Brown (1968).



The data about abnormal return is from WRDS. The financial data were collecting from Compustat database. The institutional investor database was captured from Capital IQ (Standard & Poors). The financial data refer to information for the fourth quarter of the fiscal year. The abnormal returns follow the fiscal year. A dummy is used to indicate government influence, with a value of one for firms in which the government is among the TOP 5 and zero in other cases. The percentage of shares owned by the government is multiplied by this dummy variable. Thus in cases where the government is not among the TOP 5, the result of multiplying the percentage of shares held the government is zero.

I include dummy and percentage for TOP 1 cases, and TOP 5 cases, and the TOP 1 cases. If the government is a TOP 1 shareholder, then this firm is also included in the TOP 5 subsamples. The purpose is to verify whether the market perceives difference between the presence of government in those different positions and due the reduced number of observations in which, the government is Shareholder as TOP 1 that could bring bias to may results.

The election year is represented by a dummy that equals one for the election year and zero in other years. There are also 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 has high equity participation, it can make use of company resources for political benefit, for example through donations to political parties, as well as to verify the possibility of formation of blockholders as proposed by Bortolotti & Faccio (2009).



Table 1: Sample information and variable measurement - analysis of relation between abnormal return and the presence of government as shareholder

Variable	Description	Unit of measure	Source
Return _{it}	$(\text{Exp}(\sum(\ln(1+r_{it}))) - 1)$	Percentage	Sloan (1996) and Campbell, Lo, and Mackinlay (1997)
Returndecil _{it}	$(\text{Exp}(\sum(\ln(1+r_{\text{decil}_{it}}))) - 1)$	Percentage	Sloan (1996)
Size adjusted abnormal return	Return _{it} - Returndecil _{it}	Percentage	Sloan (1996)
TOP 25	Government shareholder among the 25 largest shareholders	Dummy and percentage	(Laffont & Tirole, 1991; Salm, Candler & Ventriss, 2006). Bortolotti and Faccio, (2009)
TOP 5	Government shareholder among the 5 largest shareholders	Dummy and percentage	
TOP 1	Government shareholder as largest shareholder	Dummy and percentage	
Electoral Year	Dummy 1 on electoral Year and zero otherwise	Dummy 0 or 1	Zimmerman, (1978); Remmer, (1993); Shi and Svensson, 2006; Brender and Drazen (2005); and Vergne (2009). Watts & Ramanna & Roychowdhury, 2009).
FScore _{it}	Score on interval between 0 to 9 to each firm	Natural number between 0 and 9	Piotroski (2000)
Size _{it}	Revenue of firm I, in year t, divided by assets from firm I on prior year	Percentage	D'Mello & Shroff, 2000; Piotroski, 2000; Ho, Liu & Ramanan, 1997; Bortolotti & Faccio, 2009; Ramanna & Roychowdhury, 2009).
Price-to-book _{it}	Price of stock divided by equity by stock	Percentage	Fama & French (1996) and Bortolotti & Faccio (2009)
Debt _{it}	Total liabilities of firm i in year t divided by total assets of firm I, on prior year	Percentage	Piotroski (2000)

In Table 1, I present all variables used in this research, unit of measurement and source. I study all firms with available data in the Compustat annual industrial, the CRSP monthly stock returns file and CRSP decile monthly stock returns.

The panel regression analysis uses the OLS estimator because the dependent variable used to estimate the relation studied refers to continuous data. The explanatory variables are chosen to encompass the possible factors that might be correlated with abnormal returns.

The study of the relation between abnormal returns and government shareholding 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 listed companies.

Due to conflicts of interest between managers and shareholders, investors are often effectively precluded from decision making. In this respect, Ball & Brown (1968), Fama & French (1992), Baruch & Thiagarajan (1993), Fama & French (1995), Fama & French (1996), Abarbanell & Bushee (1998), Ali & Hwang (2000), Bird, Gerlach & Hall



(2001), and Piotroski (2000, 2005) agree that the use of accounting information (fundamental analysis) can preclude investors from decision-making to obtain positive abnormal returns. So fundamental analysis is applied to reduce the stochastic error due to prior evidence of a relation between abnormal returns and fundamental analysis.

The reason for using regression analysis in panel data is the possibility to analyze in cross section and time, represented by year. In panel data it allows a single equation to join the dependent variable (abnormal return) and the explanatory variables: governmental equity participation, election period (three dummy variables), financial health score indices (F-score) as well as other control variables highlighted in the literature. About heteroscedasticity, I use robust effect on regression (Wooldridge, 2013).

I work with longitudinal panel data from 2004-2014 period. I use the F-test to verify the best model, between panel data regression and Pooled regression (Wooldridge, 2013). I 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). In all cases I use fixed effect due not orthogonality between x and α (p-value less than 1% as presented on Table 7). In this context, the fixed effects are more consistent than random effects. Finally, I use the Breusch-Pagan test to check for heteroscedasticity. When heteroscedasticity is present, I use robust effect on regression (Wooldridge, 2013).

The calculation of abnormal return follows Sloan's (1996) Size-adjusted return. The size adjusted return was calculated using the abnormal return of each company, obtained by comparing the company's return with the average return of firms that are in the same return decile to which the company belongs in the respective group. Hence, there are 10 groups of firms with 10 deciles. The abnormal return is the difference between the rate of return of the stock and the average return of the decile group to which the company belongs.

The return and size average return are calculated by CRSP. I use the return and size average return calculated (return deciles) by CRSP available on WRDS database, following Sloan (1996, p. 16), using "buy and hold return in excess of buy-and-hold return on a value weighted portfolio of firms having similar market values". About market value I used the "market value of equity at the beginning of the calendar year in which the return accumulation period begins four months after the fiscal year-end of the year in which the financial variables are measured" Sloan (1996, p. 16). On CRSP data bases there are return about NYSE and Amex firms.

Government equity participation can bring political risk into the enterprise. This intuition is based on studies of Miller (1991), Laffont & Tirole (1991), Myers (2001), and Bortolotti & Faccio (2009). In these studies, the authors concluded that privatized companies are more efficient and less likely to face political risks. Thus, the higher the concentration of government shareholding, the worse the perception to the market should be, due to the possibility of mismanagement. Thus, using Equation 1, I investigate the relation between government shareholding and abnormal stock returns

$$AR_{it} = \beta_0 + \beta_1 DGov_{it} + \beta_2 Percent_{it} + \beta_3 BEYear_{it} + \beta_4 EYear_{it} + \beta_5 AEYear_{it} + \beta_6 EY_{it} \times Perc_{it} + \beta_7 BEY_{it} \times Perc_{it} + \beta_8 AEY_{it} \times Perc_{it} + \beta_9 \sum_{1}^4 Controls_{it} + \varepsilon_{it}$$

Where:

AR_{it}: Abnormal return using the stock price calculated using the proposal from Sloan (1996).



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

$Percent_{it}$: percentage of stocks hold by government;

$BEYear_{it}$: dummy that is one in the year before an election year and zero otherwise;

$EYear_{it}$: dummy that is one in an election year and zero otherwise;

$AEYear_{it}$: dummy that is one in after an election year and zero otherwise;

$EY \times Percent_{it}$: interactive variable resulting from the product of the three variables identified;

$AEY_{it} \times Perc_{it}$: interactive variable resulting from the product of the three variables identified;

$BEY_{it} \times Perc_{it}$: interactive variable resulting from the product of the three variables identified;

Controls:

$Fscore_{it}$: Score built using financial indicators (profitability, operational efficiency, and structure of capital) as show on Table 1.

$Size_{it}$: revenue of firm i in year t divided by its assets in the previous year (D'v & Shroff, 2000; Piotroski, 2000; Ho, Liu & Ramanan, 1997);

$Pricetobook_{it}$: share price of firm i divided by the book value of equity of firm i in period t (Brown, Lo & Lys. 1999);

$Debt_{it}$: (current liabilities of firm i in year t plus long-term liabilities of firm i in year t) divided by total assets of firm i in year $t-1$; and

E : Stochastic error

The literature indicates variables that can be related to abnormal return. Variables highlighted in the literature were included in the model as control variables to reduce the stochastic error, such as: firm size, price-to-book, debt, and financial score.

The variable size has been highlighted by D'Mello & Shroff (2000), Piotroski (2000), Ho, Liu & Ramanan (1997), price-to-book by Fama & French (1996); debt by Piotroski (2000), Barbosa, and Costa & Funchal (2012); and the ranking of firms into Fscore by Piotroski (2000).

The size variable, represented by net assets, needs to be included as a control variable in the study of the relation of financial indicators and stock returns. This context was studied by D'Mello & Shroff (2000), Piotroski (2000), Ho, Liu & Ramanan (1997), Bortolotti & Faccio (2009) and Gupta, Ham & Svejnar (2005). Also, Bortolotti & Faccio (2009) found that firm size is positively associated with increased government shareholding after privatization.

The price-to-book variable was studied by Fama & French (1996) as a control variable. Bortolotti & Faccio (2009) found evidence that the most profitable companies (measured by price-to-book) are more completely privatized than less profitable companies in OECD countries.

The debt variable, represented by total current and long-term liabilities divided by prior-year assets was studied as a control variable by Piotroski (2000), who found that the level of debt does not interfere in separating winners (high scorers) and losers (low scorers) in the USA.

The Fscore variable follows the proposal of Piotroski (2000), who observed empirically, through a score calculated with nine financial indicators, that it is possible to separate companies into High score and Low score. The relation with abnormal return (through fundamental analysis) was observed by Ball & Brown (1968), Baruch & Thiagarajan (1993), Fama & French (1995), Fama & French (1996), Abarbanell & Bushee (1998), Ali & Hwang (2000), Bird et al (2001), and Piotroski (2000, 2005). Piotroski (2000) built a portfolio of companies with high score that he called winners (USA). Based on these portfolios, by buying shares at the beginning of the year and selling them at the end, the investor could obtain abnormal returns of up to 23% greater than the market average.



The indicator framework of Piotroski (2000), as shown in Table 2, was used to separate the companies between high and low scores.

Table 2: Indicators for the construction of F_Score

Profitability	ROA	NP_{it} / TA_{it-1}	$\uparrow ROA_{it} > 0$ (1) $\downarrow ROA_{it} < 0$ (0)
	CF	OCF_{it} / TA_{it-1}	$\uparrow CF_{it} > 0$ (1) $\downarrow CF_{it} < 0$ (0)
	ΔROA	$ROA_{it} - ROA_{it-1}$	$\uparrow \Delta ROA_{it} > 0$ (1) $\downarrow \Delta ROA_{it} < 0$ (0)
	ACCRUAL	$(NP_{it} - OCF_{it}) / TA_{it-1}$	$\uparrow CF_{it} > ROA_{it}$ (1) $\downarrow CF_{it} < ROA_{it}$ (0)
capital structure	Δ Liquidity	$(CA_{it} / CL_{it}) - (CA_{it-1} / CL_{it-1})$	$\uparrow \Delta Liquidity_{it} > 0$ (1) $\downarrow \Delta Liquidity_{it} < 0$ (0)
	Δ Debt	$(TL_{it} / TA_{it}) - (TL_{it-1} / TA_{it-1})$	$\downarrow \Delta Debt_{it} < 0$ (1) $\uparrow \Delta Debt_{it} > 0$ (0)
	Offer Stocks	If the company issued shares in the last year before construction of the portfolio, then it receives zero, or one if no shares were issued	$\downarrow Offer_{it} = 0$ (1) $\uparrow Offer_{it} > 0$ (0)
operational efficiency	Δ Profit margin	$(GP_{it} / Rev_{it}) - (GP_{it-1} / Rev_{it-1})$	$\uparrow \Delta PPM_{it} > 0$ (1) $\downarrow \Delta PPM_{it} < 0$ (0)
	Δ Turnover	$(Rev_{it} / TA_{it}) - (Rev_{it-1} / TA_{it-1})$	$\uparrow \Delta Turnover_{it} > 0$ (1) $\downarrow \Delta Turnover_{it} < 0$ (0)

Source: Nossa, Teixeira & Lopes (2010, p. 8), adapted by Piotroski (2000)

Where:

CF = cash flow of firm i in year t;

TA = total assets of firm i in year t;

OCF=operational cash flow of firm i in year t

NP = net profit of firm i in year t;

CA = current assets of firm i in year t;

TL=total liabilities of firm i in year t;

CL = current liabilities of firm i in year t;

GP = gross profit of firm i in year t;

Rev = revenue of firm i in year t;

The reason for this classification of companies in Fscore was to verify whether governments tend to invest in companies with high score or low score, because as Bortolotti & Faccio (2009) found at the time of privatization in OECD countries, more profitable companies sold more completely than less profitable firms. In addition, another objective of this study is to use the Fscore as a control variable, due to evidence in prior literature of a relation with abnormal return. Portfolio analysis follows the proposal of Piotroski (2000). Thus, if the government buys shares of a firm in a year, abnormal return is examined in the year of acquisition.

4.4 RESULTS

This section presents the descriptive statistics and results found using analysis of the panel regression to answer the research questions and verify the interaction with the results already found by prior research.

4.4.1. DESCRIPTIVE STATISTICS

Table 3 presents the descriptive statistics about TOP 5, and TOP 1. In these three contexts, government shareholding holding includes both state and federal governments.



In the USA, there is no nationalization of firms. The government buys and sells stocks in the market like other investors. The presence of the government as a shareholder in these three contexts started in 2004 with a larger number of firms. In the context in which the government was the TOP 1 or TOP 5, their participation fell abruptly in 2008, probably due to the period of financial crisis. After 2008, the number of firms in which the government held stakes increased again, but fell again in 2014. The reasons for the reduction of government stock market investment are not clear and are not the subject of this study. I also do not consider government participation before 2004 because Standard & Poor's (Capital IQ) offers information only about institutional investors after 2004.

Table 3: Government investment on Stock market before merging the abnormal return and financial databases.

Government shareholder on Stock Market	Year	Number of firms (government invest)	Percentage of government shareholding		
			Average	Minimum	Maximum
TOP 1	2004	85	4.95	0.001	33.33
	2005	56	3.88	0.001	41.74
	2006	17	10.62	0.094	41.97
	2007	11	5.91	0.018	18.42
	2008	1	10.54	10.54	10.54
	2009	10	6.91	0.014	33.62
	2010	15	7.56	0.226	18.42
	2011	6	19.62	0.399	76.66
	2012	4	32.27	15.90	62.82
	2013	2	40.62	18.42	62.81
	2014	3	32.8	17.17	62.81
TOP 5	2004	414	1.52	0.001	33.33
	2005	364	1.25	0.001	41.74
	2006	99	3.70	0.007	41.97
	2007	89	4.05	0.001	18.42
	2008	22	7.49	0.002	18.42
	2009	93	1.94	0.001	33.62
	2010	92	2.91	0.001	52.40
	2011	71	3.81	0.004	76.66
	2012	56	3.42	0.015	62.82
	2013	44	3.67	0.022	62.81
	2014	28	7.46	0.066	62.81

After combining the abnormal return database with the financial database, the number of firms decreased due to data availability Table 4 presents information about firms with available data to test my hypothesis.

Comparing information from Tables 3 and 4 shows the reduction of the number of observations. This reduction can compromise the sample about government shareholding in the TOP 1. Note that in the TOP 1 subsample, the number of observations fell drastically. This reduction is due to cases where the company has missing values or cases in which the company is in the financial sector.



Table 4: Government investment on Stock market in USA after merging abnormal return and financial databases.

Government investment	Year	Number of firms (government invest)	Percentage of government participation as shareholder		
			Average	Minimum	Maximum
TOP 1	2004	32	8.57	0.002	33.33
	2005	18	9.91	0.015	41.74
	2006	14	11.32	0.564	41.97
	2007	8	5.84	0.086	18.42
	2008	1	10.54	10.54	10,54
	2009	6	9.91	0.218	33.62
	2010	8	7.76	0.491	17.6
	2011	4	23.32	0.399	76.66
	2012	3	36.88	23.85	62.82
	2013	0			
TOP 5	2004	180	2.21	0.002	33.33
	2005	109	2.58	0.007	41.74
	2006	81	3.87	0.07	41.97
	2007	63	4.43	0.009	18.42
	2008	17	8.37	0.01	18.42
	2009	62	2.29	0.001	33.62
	2010	65	1.99	0.001	17.60
	2011	55	3,68	0.004	76.66
	2012	42	3.83	0.015	62.82
	2013	28	2.43	0.022	17.46

I found the government was not investing solely in the utilities sector; on the contrary, the government's investment portfolio was diversified in various sectors such as: healthcare, aircraft, agriculture, automobiles and trucks, banking, beer & liquor, construction materials, books, business services, electronic equipment, apparel, construction, pharmaceutical products, electrical equipment, entertainment, precious metals, defense, consumer goods, insurance, measuring and control equipment, machinery, petroleum and natural gas, business supplies, personal services, real estate, retail, rubber and plastic products, shipbuilding, railroad equipment, candy & soda, steel works etc, communication, transportation, textiles, utilities, and wholesale.

4.4. RESULTS - TEST OF HYPOTHESIS - REGRESSION ANALYSIS WITH PANEL DATA

In this section, I present empirical results about the relation government shareholding and abnormal returns. I present three different contexts:

- 1) the government is TOP 1; and
- 2) the government is among the TOP 5.



Table 7: Relation between Government shareholding and abnormal return

Explained variable: Abnormal return

Government shareholder	TOP 1		TOP 5	
	Coefficients	P-value	Coefficients	P-value
Dgov	0.0762 3.29	0.001	0.09160 (10.04)	0.000
Percent	-0.0016 (-0.81)	0.416	-0.00099 (-0.49)	0.625
Beyear	-0.0536 (-63.58)	0.000	-0.05326 (-62.99)	0.000
Eyear	-0.1951 (-82.69)	0.000	-0.19462 (-82.69)	0.000
AEyear	-0.0496 (-53.73)	0.000	-0.04972 (-53.40)	0.000
BEYxPerc	0.0006 (0.34)	0.735	-0.00203 (-1.09)	0.278
EYxPerc	0.0045 (2.81)	0.005	-0.00540 (-1.31)	0.191
AEYxPerc	0.0007 (0.41)	683	0.00044 (0.36)	0.719
Size	0.0157 (4.96)	0.000	0.01512 (4.81)	0.000
Fscore	0.0026 (3.82)	0.000	0.00266 (3.84)	0.000
Debt	0.0134 (3.39)	0.001	0.01334 (3.38)	0.001
Pricetobook	0.0019 (11.18)	0.000	0.00194 (11.25)	0.000
constant	0.0136 (2.72)	0.006	0.01264 (2.54)	0.011
	N. of obs = 29854 N. of groups= 4666 R ² b = 0.1199 F(12,4665)=715.3 Prob > F=0.0000		N. of obs = 29854 N. of groups= 4666 R ² b = 0.0973 F(12,4665) = 713.71 Prob > F = 0.0000	
	F test: 0.000 Hausman: 0.000 B.Pagan: 0.000		F test: 0.000 Hausman: 0.000 B.Pagan: 0.000	

AR_{it}: Abnormal return using the stock price calculated using the proposal from Sloan (1996).

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

Percent_{it}: percentage of stocks hold by government;

BEYear_{it}: dummy that is one in the year before an election year and zero otherwise;

EYear_{it}: dummy that is one in an election year and zero otherwise;

AEYear_{it}: dummy that is one in after an election year and zero otherwise;

EYxPercent_{it}: interactive variable resulting from the product of the three variables identified;

AEY_{it}xPerc_{it}: interactive variable resulting from the product of the three variables identified;

BEY_{it}xPerc_{it}: interactive variable resulting from the product of the three variables identified;

Controls:

Fscore_{it}: Score built using financial indicators (profitability, operational efficiency, and structure of capital) as show on Table 1.

Size_{it}: revenue of firm i in year t divided by its assets in the previous year (D'v & Shroff, 2000; Piotroski, 2000; Ho, Liu & Ramanan, 1997);

Pricetobook_{it}: share price of firm i divided by the book value of equity of firm i in period t (Brown, Lo & Lys. 1999);

Debt_{it}: (current liabilities of firm i in year t plus long-term liabilities of firm i in year t) divided by total assets of firm i in year t-1; and

EStochastic error



4.4.1 ANALYZING THE TOP 1

I analyzed 29,854 listed firms. The abnormal returns of TOP 1 firms were 7.6% higher than the abnormal returns of firms in the USA in general. This result is significant at 5% (Table 7).

Analyzing the TOP 1, I observed that the election year, year before election, and year after election are negatively related to abnormal returns. These relations are statistically significant at 1%. In election years, the price of stocks reduced by an average of 19.5%. On average, the relation between the period before and after an election is negative. The return fell 5% before and after elections (Table 7). This result aligns with prior literature: In election periods, companies are more exposed to the possibility of expropriation of resources by political parties and regulatory agencies, as observed by Watts & Zimmerman (1978), Jones (1991), Laffont and Tirole (1991), Ramanna & Roychowdhury (2009), and Bortolotti & Faccio (2009).

The variable generated by the interaction between dummies that represent the period before and after election and government shareholding is not related to abnormal returns. However, the interaction between dummies that represent the election year and the percentage of government shareholding is positively related to abnormal returns, and the increment on abnormal returns was less than 1%. The percentage of stocks acquired by government is not related to abnormal returns. The price-to-book, size, debt and financial health of firms are all positively related to abnormal returns for TOP 1 firms. The F-score result is consistent with that result found by Piotroski (2000) (Table 7).

4.4.2 ANALYZING THE TOP 5

Analyzing the TOP 5 indicates there is a relation between government shareholding and abnormal returns. This relation is significant, at 1%. The regression analysis in panel data show that government shareholding increased the average of abnormal returns of firms by 9% (Table 7).

The period surrounding elections is negatively related with abnormal returns. The election year reduces returns by 19.46%. The variable generated by the interaction between the percentage of stocks bought by the government and election year is not related to returns (Table 7). The price-to-book, debt, size, and financial health represented by F-score are positively related to abnormal returns, as found by Piotroski (2000) (Table 7). Analyzing the TOP 5 or TOP 1 context, the coefficient of relation between government shareholding and abnormal returns was higher than the coefficient of fscore. This means the signal emitted by government shareholding is positive and higher than fundamentalist analysis. (Table 7).

5 CONCLUSION

In this paper, I present three focus of study: I study the relation between government shareholding and abnormal returns in the USA; I study the relation between governmental decision about to invest or not on the stock market and variables such as: price to book, debt, fscore, size, and the period surrounding election; and finally I studied the quality of investment made by the government of The USA.

The focus on the USA is about the representativeness of this market and due to the period of crisis requiring government shareholding to rescue companies in financial difficulties.



My results show indications contrary to the expected result in two subsamples (TOP 5 and TOP 1). As reported in the literature, I highlight some considerations of Laffont & Tirole (1991) and Salm et al. (2006): I expected that the possibility of expropriation of investments and use of lobbying of government by special interest groups already registered in the literature could reduce the return of firms in which the government is among the shareholders. Thus, the market might react negatively to government shareholding. Nevertheless, the results show this was not the case in the USA during the period analyzed. On the one hand, the stock markets react positively for TOP 5 and TOP 1 firms. The positive relation between abnormal return and government shareholding (TOP 5 and TOP 1) could be justified due perception of the market about government shareholding as a kind of warranty. Thus in case of bad results in firms the government could help them due the high level of investment, made by government in such companies. The election period does not change the market perception about TOP 1 firms. My results about the interaction between election year and government shareholding are contrary to the expected result, following Watts & Zimmerman (1978), Jones (1991), Ramanna & Roychowdhury (2009), and Bortolotti & Faccio (2009). But the period surrounding election was negatively related with abnormal return, aligned with the literature.

Analyzing the TOP 1 firms, my results should be interpreted with caution, due to the limited number of observations in the group of companies in which the government is shareholder. The limited observations could bias my results and represents a potential weakness.

Overall, the signal emitted for TOP 1 and TOP 5 firms was positive and higher than fundamental analysis. Using fundamental analysis, I found the quality of the government investment portfolio is not higher (Figure 1 and 2). Overall, I provided evidence about the government shareholding in public companies and the perception of the market about this context. Additionally, I present empirical evidence about the quality of government investment. The findings in this paper might be of interest to regulators, investors and academics. After this, research might investigate the effect of government shareholding on the financial health of companies internally and externally.

In future research, I recommend analyses of the financial health of firms in which the government is a shareholder to investigate the impact of the level of participation on this variable. Specifically, I recommend the investigating the capital structure; profitability, operational efficiency, and earnings management. I also recommend investigating: This investigation could utilize either an empirical analysis or a survey. I also recommend investigating the effect of government shareholding on taxation of firms and on strategies adopted by companies before and after being owned by government. Finally, I recommend investigating commercial contracts between companies and government in the context in which the government was a shareholder and was not a shareholder; and investigating the relation between political donations and government shareholding. All future research could be developed in different countries where there is government shareholding on stock market.

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