Golden Shares and their impact on privatization

Abstract The relationship between the ownership structure and the performance of companies has been a subject of interest among academics, mainly to understand the efficiency of the Golden Share that makes government ownership a control mechanism. This study aims to analyze the influence of Golden Shares on the accounting and market performance of European public traded companies that underwent privatization between 1980 and 2024. To achieve this objective, the dynamic Difference-in-Differences (DID) method was used with Kernel Propensity Score Match (PSM). We find that privatized companies with clauses for Golden Shares have experienced a more positive impact on market performance than other privatized companies. These results suggest that a privately controlled company with state veto power may represent an efficient path to achieving a better market valuation. Governments and policymakers may consider using Golden Shares as a strategy to maintain control in privatized companies without compromising market performance.

1. Introduction

Privatization is an important source of revenue, through the partial or total sale of government assets, in recent decades. However, there is controversy in the literature regarding whether private companies outperform state-owned enterprises and whether privatization improves the performance of companies (Hanousek et al., 2007; Hu et al., 2024). This transition of property rights and control from the government to private sector can reduce political interference and intensify the focus on profit (Ben-Nasr, 2012; Bulfone, 2024). On the other hand, politically connected companies are more likely to receive assistance in times of crisis than their unconnected counterparts (Faccio et al., 2006).

This focus on the performance of companies is closely related to the quality of their management, that tends to increase with privatization (Sun, 2024). For this reason, Corporate Governance has become the focus of debates about this theme. Among the main advantages for companies adopting good practices are value optimization, management of conflicts of interest, longevity and sustainability. However, privatization does not always eliminate the ties between the state and the companies involved. In this context, Golden Shares (GS) emerge when the state seeks funding by transferring control to the private sector, but without renouncing special rights, as it considers these companies to be strategic. The control of the government through this instrument can influence corporate decision-making, governance dynamics, and internal organizational structures (Gabrielli, 2024).

Empirical studies, such as those by Boardman and Laurin (2000), Ben-Nasr (2014) and Iljeblom et al. (2019), demonstrate that governments maintain interference in privatized companies through Golden Shares, a mechanism where holders of this special share can make decisions in the company, even if they are minority shareholders. In general, the use of this instrument seeks to maintain the government's decision-making power in companies without state control (Liljeblom et al., 2020). However, the use of GS is viewed negatively by the market, as investors do not want to depend on government decisions, that could go against the interests of the company (Pela, 2017).

Based on this assumption, the study aims to analyze the influence of Golden Shares on accounting and market performance in European publicly traded companies that underwent privatization between 1980 and 2024. To achieve this objective, the dynamic difference-in-differences (DID) method was used with Kernel Propensity Score Match (PSM). We find that privatized companies with clauses of golden shares have experienced a more

positive impact on market performance than other privatized companies. These results suggest that a privately controlled company with state veto power may represent an efficient path to achieving a better market valuation. Governments and policymakers may consider using Golden Shares as a strategy to maintain control in privatized companies without compromising market performance.

This paper contributes whit the literature in several ways. Firstly, expands the understanding of the role of Golden Shares, as Gabrielli (2024) identify that this topic is underdeveloped in the finance area. Secondly, a European sample allows us to examine how political institutions, which vary between countries, can affect firm-specific information in the presence of government participation (Ben-Nasr & Cosset, 2014). Finally, this study provides practical contributions to different stakeholders, enabling investors to identify the effect of the presence of Golden Shares on the accounting and market performance of companies. Likewise, it can provide evidence for governments and companies undergoing privatization to negotiate control structures that maximize the company's performance.

2. Governance and privatization of firms

The separation between ownership and control and the effects of agency conflicts have been widely debated in academia since Berle and Means (1932). However, beyond the agent-principal agency problems that generate costs for companies (Jensen & Meckling, 1976), principal-principal conflicts may also occur when controlling shareholders abuse their power to expropriate minority shareholders (La Porta et al., 1999; Kanojia & Bhatia, 2022), who receive little information and are often ignored in decision-making (Loch et al., 2020).

These conflicts of interest can be costly for governments that decide to privatize companies in strategic sectors of their country. Over the past decades, numerous privatizations have occurred; however, merely selling a majority stake is not enough to prevent government interference in privatized companies. This happens because governments can increase their power after privatization using Golden Shares (GS), which allows the state to control certain decisions in privatized companies. Generally, these GS clauses are included in the company's bylaws and can only be changed with government consent (Bortolotti & Faccio, 2009; Gabrielli, 2024).

Golden Shares emerged in the United Kingdom in the 1970s as an instrument for the privatization process of state-controlled companies. Margaret Thatcher's government implemented this policy of transferring companies to the private sector, which was believed to be better equipped to manage them while relieving public finances in crisis, without relinquishing certain controls (Sun, 2024). Through GS, the state allows private sector control of companies while maintaining specific prerogatives within the company to safeguard the state's strategic interests, without disrupting business operations (Schwind, 2018).

Before the existence of GS, British Petroleum (BP) was privatized between 1977 and 1987. However, in 1988, the Kuwait Investment Office (KIO) reached a 21.7% stake in BP, alarming UK authorities who feared losing control to a foreign shareholder, potentially acting against public interests. Consequently, KIO was forced to reduce its stake to 9.9% of BP's shares (Bortolotti & Siniscalco, 2004). Typically, GS clauses are applied to companies in strategic sectors, where losing state control could be detrimental to the economy or national security. They are concentrated in privatizations in defense (100%), telecommunications (83%), oil and gas (62%), utilities (64%) and transportation (40%), which often occurs without adequate liberalization and regulation (Bortolotti & Siniscalco, 2004).

GS are frequently used by states to control changes in ownership, requiring government authorization for acquisitions exceeding foreign investment ceilings or voting limits. They also grant veto power over strategic decisions, mergers, spin-offs, asset disposals, changes to the company's bylaws, and appointments to the Board of Directors, auditors, among others. This veto power may be temporary or indefinite, creating a separation between ownership and company control (Pela, 2017). Governments may intervene to deter foreign buyers that could threaten strategic national sectors by using GS in privatized companies, as well as implementing legislative barriers through specific laws or regulations that make the proposed deal unfeasible (Alcalde & Powell, 2022).

The special rights over privatized companies, arising from GS, varying by country. In the UK, they were used in about 20 companies, including Rolls-Royce and National Grid, allowing vetoes and shareholder limitations. In Portugal, they covered sectors such as banking, energy, and transportation. In Italy, companies like ENI and Telecom Italia require government approval for major decisions, with no defined expiration for these powers. Italian GS regulations have become increasingly strategic, especially during the COVID-19 crisis, when the government expanded their scope to safeguard domestic strategic investments (Pugliese, 2024).

In Spain, companies like Repsol and Telefonica faced restrictions on acquisitions and mergers, where Villalonga (2000) demonstrated that privatization does not necessarily increase corporate efficiency. In France, the government could intervene in decisions of companies such as Elf-Aquitaine and Thales, allowing it to appoint an advisor with veto power over any board resolution. The European Union permits such measures if justified by public interest, but considers them a barrier to the free movement of capital (European Commission, 2005).

In Brazil, several companies were privatized between 1995 and 2003, leading to increased profitability and operational efficiency (Anuatti-Neto et al., 2005). Nowadays, only seven companies retain GS: Vale do Rio Doce, Embraer, IRB, Celma, Eletrobras, Copel, and Sabesp. In the same way, in India, the most profitable companies are privately owned, followed by mixed-ownership firms (Kumar, 2004). Mixed-ownership resembles GS, as political interference may occur (Boubakri et al., 2009), increasing agency problems and reducing corporate performance post-privatization and firm value (Ben-Nasr, 2012). In the Russian context, Liljeblom et al. (2020) found that state-controlled companies through GS generally perform better than other state-owned enterprises.

Clearly, these special rights significantly benefit the state by ensuring its decisions are respected. Additionally, they create an incentive effect, as investors are motivated to invest in these profitable companies as long as they maintain operational efficiency, which is harder to achieve under government control. State-owned enterprise (SOE) managers may be induced to pursue political objectives rather than profit maximization (Ben-Nasr, 2012). Moreover, in privatization, large shareholders have greater incentives to gather information and monitor managers (Claessens & Fan, 2002), ensuring their interests are respected and partially solving agency problems (Jensen & Meckling, 1976; Shleifer & Vishny, 1986).

Thus, privatization with GS enhances corporate governance by serving as a mechanism through which external investors safeguard against management abuses (La Porta et al., 1999), while curbing deviations in voting and cash flow rights (Gompers et al., 2003). Specifically, the negative effects of state control can be mitigated through GS, which function as passive state control, maintaining influence despite relinquishing cash flow rights. Ownership via GS can reduce the negative effects of state ownership, improving corporate governance (Liljeblom, 2020).

Numerous empirical studies compare pre and post-privatization performance. Megginson et al. (1994) showed that privatized companies increased sales, profitability, and operational efficiency. Boubakri and Cosset

(1998) reported significant increases in profitability, operational efficiency, capital expenditures, and dividends. D'Souza & Megginson (1999) documented significant increases in profitability, output, operational efficiency, and dividend payments.

However, Hanousek et al. (2004, 2007) found that GS presence stimulates profitable restructuring, positively affecting ROA. In Russia, Liljeblom et al. (2020) found that GS positively impact firms' accounting performance, preventing government expropriation of decisions while providing strategic benefits. Based on these arguments, the following hypothesis is formulated:

Hypothesis 1: Privatized companies with Golden Shares experience a greater positive impact on accounting performance than those without this clause.

The government's ability to leverage its voting power through GS impacts the company's market valuation, as the government is guided by social altruism, which may not align with profit-driven interests (Razak et al., 2008). Zeitun and Tian (2007) studied the performance of companies with different ownership structures listed in Jordan from 1989 to 2002, presenting results positively related to market performance, based on Tobin's Q.

In the same context, Mrad and Hallara (2012) demonstrated the relationship between the government's residual ownership, performance and value creation of French companies in the post-privatization period. Their results reveal that government ownership levels are associated with an increase in performance and value creation within privatized firms. Government involvement in private companies can be valuable, as Boubakri et al. (2017) found strong and robust evidence that companies with GS exhibit higher market valuation than non-governmental companies in a sample of publicly listed firms in East Asia. Moreover, state-owned enterprises experienced less severe declines in stock prices and market-to-book ratios during times of crisis, compared to private firms in countries with strong investor protections (Beuselinck et al., 2017). In China, state-owned enterprises generally have greater access to various resources than private companies (Zhou, 2023).

Supporting this argument, Bortolotti and Faccio (2004) identified that, when governments do not relinquish control after privatization, these companies increase their adjusted market value or stock price. In this line, Muhamed et al. (2014) demonstrated a positive and significant association between GS and market performance. Liljeblom et al. (2020) found that the market value of state-controlled companies is lower than privately controlled companies with GS, indicating that GS do not increase conflicts between ownership groups, while allowing the government to help companies access alternative revenue sources. Based on this, the following hypothesis is formulated:

Hypothesis 2: Privatized companies with Golden Shares experience a greater positive impact on market performance than privatized companies without this clause.

However, despite presenting advantages for the government, this measure can generate inefficiencies. Kočenda and Hanousek (2012) documented that the presence of special rights in privatized companies negatively affects corporate performance. The failure to transfer full control and implement appropriate incentives, combined with uncertainty regarding government intervention and the costs of imposing certain conditions, impacts firms'

market valuation and may result in stock undervaluation. Moreover, these special rights often lack clear criteria for the government to follow when exercising discretionary powers granted by GS, leading to suboptimal management (Ben-Nasr, 2012). GS can also create costs due to the entrenchment of government representatives within firms, who may pursue private control benefits at the expense of other investors, given their job stability (Silveira, 2006).

As GS typically grant the state the right to appoint board members, government-affiliated directors may be selected to maintain corporate control, reducing board independence. Government behavior may underlie the significant negative relationship between GS and board transparency measures, as the state seeks to control audit decisions and related-party transactions (Guedhami & Mishra, 2009). Overall, studies indicate that government access to GS has a detrimental effect on corporate governance quality due to the state's ability to leverage its voting power (Borisova et al., 2012).

Nonetheless, state control through GS generally outperforms companies totally controlled by the government, indicating that GS should not have a negative effect on profitability, efficiency or value. This is because such control does not typically increase conflicts between ownership groups while allowing companies to secure off-market revenues (Razak et al., 2008). This performance effect may occur because GS can shield management from market discipline, fostering better corporate governance.

3. Methodological Aspects

The study is designed as a quasi-experimental quantitative analysis based on secondary data. To achieve the research objective, the sample comprises European companies that underwent privatization. These companies were divided into a treatment group (those with Golden Share clauses) and a control group (those without Golden Share clauses) over the period from 1980 to 2024, covering three years before and three years after the event (year of the companies' privatization).

Data were collected on all privatization processes involving European companies. However, after applying for the Propensity Score Matching (using variables such as size, country and industry), only companies from five countries yielded results. The final sample consisted of 46 companies, totaling 276 observations, 23 companies in the treatment group (138 observations) and 23 in the control group (138 observations). The distribution by country was as follows: (i) France: 8 companies (48 observations), with 4 in the treatment group (24 observations) and 4 in the control group (24 observations); (ii) Italy: 8 companies (48 observations), with 4 in the treatment group (24 observations) and 4 in the control group (24 observations); (iii) Portugal: 8 companies (48 observations), with 4 in the treatment group (24 observations) and 4 in the control group (24 observations); (iv) Spain: 6 companies (36 observations), with 3 in the treatment group (18 observations) and 3 in the control group (18 observations); and, (v) United Kingdom: 16 companies (96 observations), with 8 in the treatment group (48 observations) and 8 in the control group (48 observations). We obtained data from the Thomson Reuters® database and the companies' websites.

Since most assumptions of the OLS model were not met, the Difference-in-Differences (DID) method was chosen. This method has been widely used since its introduction in the study by Ashenfelter and Card (1985) and is one of the most common approaches for comparative analysis in experiments. It examines before-and-after

differences between treatment and control groups and is extensively applied in fields such as economics, public policy and health research (Shi & Zhao, 2024).

DID involves two key calculations: first, it computes the difference in the mean of the variable before and after privatization for both the treatment and control groups. Second, it calculates the difference between these first differences for both groups (Fredriksson & Oliveira, 2019). This approach allows for assessing the effect of an event on the study subject by comparing the two groups before and after the event, mitigating endogeneity concerns (Zhang et al., 2016).

The impact under analysis is the difference between companies that had Golden Share clauses before and after privatization and those that did not have such clauses before and after privatization (Fredriksson & Oliveira, 2019). For the analysis to be robust, two key assumptions must be met: parallel trends and no-anticipation effects (Chowdhury et al., 2020). In the absence of an exogenous shock, the average change in the variable would follow a similar trend for both treated and untreated companies. However, after the shock, these trends should diverge (opposite is also valid). Confirmation of the parallel trends' assumption supports the argument that exogenous shock is the primary factor driving changes in the outcome variable in the treatment group (Villa, 2016; Dyck et al., 2023).

Although the presence of an exogenous event allows for distinguishing between the treatment and control groups, the DID method does not inherently ensure that the control group is fully comparable to the treatment group. To address potential biases, the Kernel Propensity Score Matching (K-PSM) statistical matching technique was applied (Yuan et al., 2023). This method uses a set of covariates to identify companies in the treatment and control groups with similar characteristics, except for the distinguishing variable.

The event in this study is dynamic, meaning that each company has its own benchmark based on its privatization year (time). The value "1" is assigned to the year of privatization and the two subsequent years, while "0" is assigned to the three preceding years. Similarly, the sample was divided into two groups (treated). The number "1" represents companies in the treatment group (those privatized with Golden Share clauses), while the number "0" represents companies in the control group (which were privatized without such clauses). To analyze these effects, we applied a linear regression model using the DID approach, as shown in Equation (1).

$$Y_{it} = \alpha + \delta_1 . \ time_t + \delta_2 . \ treated_i + \delta_3 . \ (treated_i \times time_t) + \varepsilon_{it} \tag{1}$$

Where i represents the company, t denotes time, Y_{it} is the dependent variable, α represents the average outcome of the control group in the pre-treatment period, while δ_1 is the coefficient before and after the event, δ_2 captures permanent differences between the treatment and control groups, δ_3 represents the coefficient of interest, and ε_{it} is the standard error. The DID coefficient δ_3 corresponds to the Difference-in-Differences estimator, as presented in Equation (2). It is calculated as the average difference between the treatment and control groups before and after the benchmark period.

$$\delta_3 = \left(\hat{y}_{(treat, \ time=1)} - \hat{y}_{(treat, \ time=0)}\right) - \left(\hat{y}_{(control, \ time=1)} - \hat{y}_{(control, \ time=0)}\right) \tag{2}$$

To validate the DID model and in accordance with Roberts and Whited (2013), robustness and sensitivity tests were conducted, as outlined below: (i) Differences-in-DiD: This involves defining multiple treatment and

control groups to apply a third difference in addition to the original estimation. This approach provides internal validation of the initial DID estimation; (ii) Falsification Test: This test alters the period of the shock, assuming that the effects of the legal benchmark began earlier than their actual implementation; (iii) Multiple Treatment and Control Groups: By using multiple comparisons across treatment and control groups within different dimensions, this approach aims to reduce noise and biases associated with a single comparison.

To further enhance the analysis, we applied the Ordinary Least Squares (OLS) method as a complementary approach. Using an OLS estimation of the DID estimator's effect is more efficient when incorporating additional exogenous controls, as it helps reduce error variance (Roberts & Whited, 2013). Also, we can analyze the impact of control variables on the model. Equation (3) presents the OLS econometric model.

$$Y_{igt=} \ \alpha + \delta_3 \,.\, treated_i \, x \, time_t + \beta \,.\, X_{igt} + Y_g + \lambda_t + \varepsilon_{it} \tag{3}$$

Where Y_{igt} is the dependent variable, i refers to the company, g to the segment, and t to the period. δ_3 represents the Difference-in-Differences (DID) estimator, while X_{igt} denotes the vector of control variables, ρ_g and λ_t indicate industry and time fixed effects, respectively. Finally, ε_{it} represents the error term.

In the estimation of OLS models, a matching process was conducted between companies in the treatment and control groups using the Kernel Propensity Score Matching (K-PSM) method. The matching criteria included one-to-one pairing (without repetition) and nearest-neighbor matching, ensuring similar treatment and control groups based on total assets (size), industry and country. This approach allowed for the creation of a subsample, which was employed in the Ordinary Least Squares (OLS) method.

To run the OLS model, the following tests were applied to validate the basic OLS assumptions: (i) Doornik-Hansen and Shapiro-Wilk Tests: Ensures that the data distribution is normal, minimizing the impact of outliers; (ii) Variance Inflation Factor (VIF): Assesses multicollinearity among independent variables; (iii) Breusch-Pagan Test: Commonly used in regression models to evaluate heteroskedasticity; (iv) Wooldridge Test: Checks for autocorrelation in panel data; and, (v) Durbin-Wu-Hausman Test: Assesses endogeneity, ensuring the robustness of the estimations.

Table 1
Dependent Variables

Definition	Equation	Authors
Return On Assets (ROA)	$ROA = \dfrac{EBIT}{Total\ Assets}$	Krivogorsky (2006); Razak, Ahmad and Aliahmed (2008); Boubakri, Cosset and Guedhami (2009); Ben-Nasr (2012); Borisova (2012); Ben-Nasr and Cosset (2014); Chen (2017); Liljeblom et al (2020).
Return On Equity (ROE)	$ROE = \dfrac{Net\ Profit}{Equity}$	Krivogorsky (2006); Bortolotti and Faccio (2009); Liljeblom et al. (2020).
Tobin's Q (Qt)	$QT = \dfrac{(MVE + PS + D)^*}{Total\ Assets}$	Razak, Ahmad and Aliahmed (2008); Chen (2017); Liljeblom et al. (2020).
Market-to-book (MB)	$MTB = \dfrac{Market\ Value}{Book\ Value}$	Krivogorsky (2006); Bortolotti and Faccio (2009); Ben-Nasr (2012); Ben-Nasr and Cosset (2014)
Return on Shares (RS)	$RS = \dfrac{Price_t - Price_{t-1}}{Price_{t-1}}$	Boardman and Laurin (2000); Bortolotti and Faccio (2004).

* Suggested by Chung and Pruitt (1994): MVE - the market value of equity, obtained by multiplying the company's stock price by the number of outstanding common shares, PS - the liquidating value of outstanding preferred stock and D - total debt (defined as current liabilities minus current assets plus inventories and long-term debt).

Source: Elaborated by the authors (2025).

Table 2
Control Variables

Definition	Equation	Authors	Signal
Leverage (Lev)	$Lev = \dfrac{Short\ and\ Long\ Term\ Debt}{Total\ Assets}$	Jensen and Warner (1988), Boubakri and Cosset (1998), Brick, Palia and Wang (2006); Borisova (2012); Liljeblom et al. (2020).	-
Size (TA)	$TA = \ln (Total\ Assets)$	Fama and French (1995); Pedersen and Thomsen (1997); Borisova (2012); Liljeblom et al. (2020).	+
Time Fixed Effects	*Dummies*: 1 indicates that the company belongs to the year in which the data is generated and 0 otherwise.	Sonza and Kloeckner (2014); Liljeblom et al. (2020).	
Country Fixed Effects	*Dummies*: 1 indicates that the company belongs to the year in which the data is generated and 0 otherwise.	Sonza and Kloeckner (2014); Liljeblom et al. (2020).	
Industry Fixed Effects	*Dummies*: 1 indicates that the company belongs to the year in which the data is generated and 0 otherwise.	Sonza and Kloeckner (2014); Liljeblom et al. (2020).	

Source: Elaborated by the authors (2025).

Table 1 presents the dependent variables, their descriptions and key studies that have utilized them. To analyze companies' accounting performance, the selected variables are Return on Assets (ROA) and Return on Equity (ROE) (Krivogorsky, 2006; Bortolotti & Faccio, 2009; Liljeblom et al. 2020). Regarding market performance, the variables used include Market-to-Book (MB) (Krivogorsky, 2006; Bortolotti & Faccio, 2009; Ben-Nasr, 2012; Ben-Nasr & Cosset, 2014), Tobin's Q (Qt) (Razak et al., 2008; Chen, 2017; Liljeblom et al., 2020) and Stock Returns (Boardman & Laurin, 2000; Bortolotti & Faccio, 2004), which reflect the growth opportunities of firms. Table 2 presents the control variables.

4. ANALYSIS OF RESULTS

This section presents the results obtained, highlighting the effects of Golden Shares on companies' accounting and market performance. The first part of this section includes descriptive statistics and the correlation test. Next, the main findings are presented through a graphical analysis of accounting and market performance, comparing treatment and control groups. Following this, the model results and their discussion are provided. Lastly, we reported the robustness tests.

4.1 Descriptive Statistics and Correlation Analysis

This section presents the descriptive statistics for the treatment group (companies that underwent privatization and had Golden Share clauses) and the control group (privatized companies without Golden Share clauses), comparing them before and after privatization. All variables were winsorized at 1% to reduce the impact of outliers.

Table 3 shows that, when analyzing market performance variables before and after privatization for the control group, market indicators (Tobin's Q and Market-to-Book) had lower values before privatization (0.62 and 0.79) compared to post-privatization (0.87 and 1.02), with a statistically significant difference at the 5% level. However, for Stock Returns, the opposite occurred, dropping from 94.33% to 32.24%, also with a significant difference of 5%.

Regarding accounting performance variables, Return on Assets (ROA) decreased slightly from 2.97% before to 2.92% after privatization, with a statistical significance of 5%. In contrast, Return on Equity (ROE) showed that control group companies were more profitable before privatization, with a decline from 17.39% to 8.81% post-privatization, though this difference was not statistically significant in the t-test. In terms of firm size, companies in the control group had total assets of 12.8 billion before privatization, which decreased to 12.5 billion afterward, with a statistically significant difference at the 10% level, indicating a reduction in firm size. However, leverage measures did not show significant differences.

Table 3
Descriptive Statistics: Treatment and control Groups

Control Group – Before the event

	ROA	ROE	Qt	MB	RS	Size¹	Lev
Mean	0.0297	0.1739	0.6191	0.7870	0.9433	12.8000	0.1585
Variance	0.0029	0.0911	0.4091	0.3336	2.8224	8,480.0000	0.0228
Min	-0.2068	-0.3754	-0.2129	0.1162	-0.2444	1,083.9000	0.0000
Max	0.1286	1.2120	2.0605	2.0831	5.4616	107.0000	0.5253
SD	0.0538	0.3018	0.6396	0.5776	1.6800	29.1000	0.1512

Control Group – After the event

	ROA	ROE	Qt	MB	RS	Size¹	Lev
Mean	0.0292	0.0881	0.8736	1.0176	0.3224	12.5000	0.1654
Variance	0.0040	0.0930	0.4665	0.4008	0.9808	9,070.0000	0.0280
Min	-0.2068	-1.0466	-0.2129	0.1162	-0.5853	1,083.9000	0.0000
Max	0.1425	1.1714	2.0605	2.0831	4.4673	107.0000	0.5253
SD	0.0632	0.3050	0.6830	0.6330	0.9903	30.1000	0.1674
t	**-2.3430****	-0.8280	**-2.2930****	**-2.1640****	**-1.9970****	**-1.4830***	1.2240
p	0.0100	0.2050	0.0120	0.0170	0.0250	0.0700	0.1110

Treatment Group – Before the event

	ROA	ROE	Qt	MB	RS	Size¹	Lev
Mean	0.0065	0.0371	0.1712	0.3630	0.2399	11.0000	0.2182
Variance	0.0115	0.4233	0.0943	0.0609	1.2774	3,910.0000	0.0224
Min	-0.2068	-1.0466	-0.2129	0.1162	-0.5853	1,083.9000	0.0000
Max	0.1425	1.2120	0.8816	1.0777	5.4616	77.8000	0.5253
SD	0.1076	0.6506	0.3072	0.2467	1.1302	19.8000	0.1497

Treatment Group – After the event

	ROA	ROE	Qt	MB	RS	Size¹	Lev
Mean	0.0470	0.1414	0.3566	0.5285	1.0142	17.8000	0.1856
Variance	0.0054	0.2004	0.0878	0.0920	3.0470	8,710.0000	0.0182
Min	-0.2068	-1.0466	-0.1408	0.1162	-0.5853	1,083.9000	0.0000
Max	0.1425	1.2120	0.9973	1.1083	5.4616	107.0000	0.5253
SD	0.0735	0.4477	0.2963	0.3034	1.7455	29.5000	0.1352
t	0.0570	**1.3330***	**-1.5100***	**-1.5010***	**1.7890****	0.0630	-0.2510
p	0.4770	0.0930	0.0660	0.0690	0.0390	0.4750	0.4010

Note: ROA – Return on Assets; ROE - Return on Equity; Qt – Tobin´s Q; MB – Market-to-Book; RS – Return on Shares; Size – Total Assets; Lev – Leverage; SD – Standard Deviation. ¹in bilions. * Significant at 10%; **Significant at 5%; ***Significant at 1%.

Source: Elaborated by the authors (2025).

When analyzing the treatment group in Table 3, the mean values of market performance variables were higher in the post-privatization period. Tobin's Q and Market-to-Book increased from 0.1710 and 0.3630 before privatization to 0.3560 and 0.5280 after privatization, with a statistical significance of 10%. Stock Returns rose sharply from 23.99% pre-privatization to 101.42% post-privatization, showing statistical significance at the 5% level. In terms of accounting performance, ROA increased from 0.65% to 4.70%, but the difference was not statistically significant. In contrast, ROE showed a significant rise from 3.71% to 14.14%. Regarding firm size and leverage, no statistically significant differences were found.

When comparing the treatment and control groups, companies with Golden Shares experienced a significant improvement in both accounting and market performance after privatization, leading to a substantial increase in stock returns, a trend not observed in the control group. These findings support the initial hypotheses and align with previous research by Boubakri and Cosset (1998), D'Souza and Megginson (1999) and Hanousek et al. (2004, 2007), which highlighted significant increases in profitability and operational efficiency for privatized firms. Additionally, the results corroborate the findings of Muhamed et al. (2014) and Liljeblom et al. (2020) regarding market performance improvements. The Pearson correlation analysis revealed strong correlations (above 0.7) between Tobin's Q and Market-to-Book, as well as between ROA and ROE. However, since these are dependent variables in the model, they were not included in the same regression analysis.
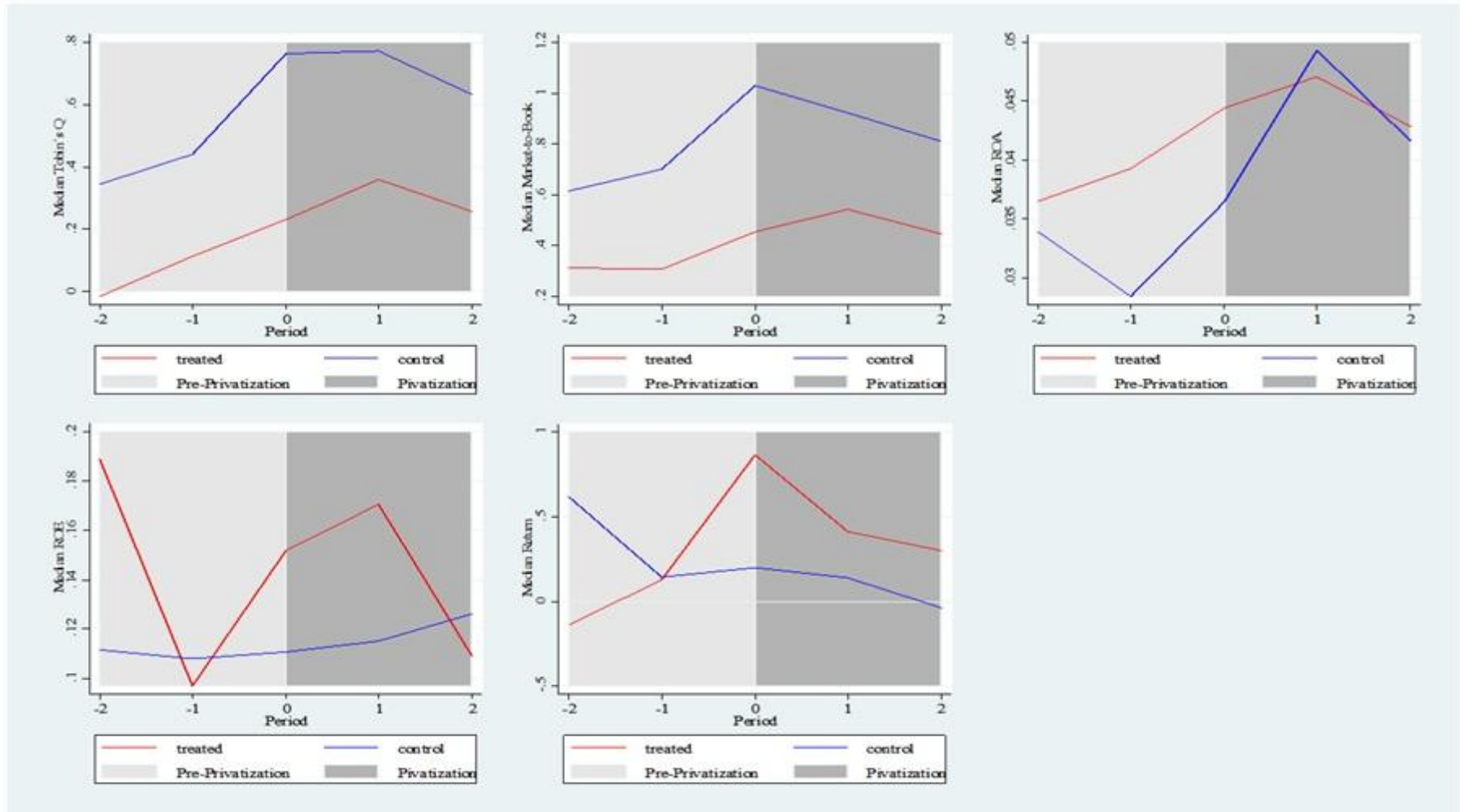
4.2 Difference-In-Differences Model Result

To achieve the study's objective, the Difference-in-Differences (DID) model was selected, as it allows for a comparison between two groups of companies in the pre and post-privatization periods. However, before applying this model, it is essential to verify whether the parallel trends and no-anticipation effects assumptions hold. For this reason, graphical analysis plays a crucial role. Figure 1 presents the treatment and control groups before and after privatization for both accounting (ROE and ROA) and market (Tobin's Q, Market-to-Book, and Stock Returns) performance variables.

According to Figure 1, the parallel trends assumption is confirmed for market performance variables (Tobin's Q and Market-to-Book) before privatization. In both cases, companies with Golden Shares (GS) exhibited stronger growth in the first year after privatization compared to those without GS, highlighting a positive effect of this mechanism on these variables. This result is consistent with the findings of Muhamed et al. (2014) and Liljeblom et al. (2020), who provided evidence that GS ownership can mitigate the negative effects of state ownership. However, for accounting performance (ROA and ROE), no significant patterns were identified that would suggest an impact of Golden Shares on these measures. This indicates that the parallel trends assumption does not hold for these variables.

The behavior of the Stock Return in the treated companies shows growth during the first two years, peaking at the event. In the control group, the variable follows a declining trend before the shock and, similarly to the treatment group, it experiences a downturn one year before. This similarity suggests that the exogenous shock reduced the difference in the variable's medians between the two groups, leading to the conclusion that there are parallel trends regarding stock returns in these companies. These results align with the findings of Bortolotti and Faccio (2004), which indicate that the presence of Golden Shares has a negative effect on stock prices.

Figure 1
Graphical Analysis (Median)

In the next stage, as shown in Table 4, the Difference-in-Differences (DID) model estimation is analyzed. The results obtained from the graphical analysis are consistent with the findings from the DID model, as statistically significant differences were identified in market performance variables: Tobin's Q, Market-to-Book (both at a 1% significance level) and Stock Return (5% significance level).

Table 4
Difference-in-Differences results

	Qt		MB		RS		ROA	ROE
			Before privatization					
Control	1,4610		1,5350		1,0530		0,0210	0,0140
Treatment	0,1750		0,3630		0,2660		0,0020	0,0410
Diff (T-C)	**-1,2860**	***	**-1,1720**	***	-0,7870		-0,0200	0,0260
SD	0,1750		0,1590		0,4770		0,0160	0,1310
t	-7,3300		-7,3700		-1,6500		-1,2600	0,2000
			After privatization					
Control	0,9850		1,1350		0,1010		0,0350	0,0990
Treatment	0,3570		0,5290		1,0140		0,0470	0,1410
Diff (T-C)	**-0,6280**	***	**-0,6060**	***	**0,9130**	**	0,0120	0,0420
SD	0,1570		0,1420		0,3930		0,0130	0,0880
t	4,0100		4,2700		2,3200		0,9500	0,4800
DID	**0,6580**	***	**0,5660**	***	**1,7000**	***	0,0320	0,0160
SD	0,2350		0,2130		0,6180		0,0200	0,1580
t	2,8000		2,6500		2,7500		1,5800	0,1000
R²	0,4000		0,4100		0,0700		0,0500	0,0100

Note: ROA – Return on Assets; ROE - Return on Equity; Qt – Tobin´s Q; MB – Market-to-Book; RS – Return on Shares; SD – Standard Deviation; Diff – First Difference; DID – Difference-in-Differences. R² - Model explanation level; t –Student t test. * Significant at 10%; **Significant at 5%; ***Significant at 1%.

Source: Elaborated by the authors (2025).

For Tobin's Q, before the event, the effect in treatment group was 0.1750, which was lower than in control group, where the impact was 1.4610. This resulted in a difference of -1.286, significant at 1%. After privatization, the treatment group's influence increased to 0.3570, while the control group's value declined to 0.985, yielding a difference of -0.628, also significant at 1%. Consequently, the Difference-in-Differences coefficient is 0.6580, statistically significant at 1%, indicating that Golden Share clauses positively influence Tobin's Q in companies.

Similarly, for Market-to-Book, companies in the treatment group had a coefficient of 0.363, which was lower than the control group, whose coefficient was 1.5350, resulting in a difference of -1.1720, significant at 1%. After the event, the treatment group's coefficient increased to 0.5290; however, despite a decline to 1.1350 in the control group, the difference remained at -0.6060, also significant at 1%. Thus, the resulting DID estimator is 0.5660, significant at 1%, indicating that Golden Shares positively influence Market-to-Book after privatization.

Regarding stock returns, the treatment group's coefficient was 0.2660, while the control group's coefficient was 1.0530. However, the difference of -0.7870 was not statistically significant, indicating no differences between the groups before privatization. After privatization, the treatment group's coefficient increased significantly to 1.0140, whereas the control group's coefficient dropped to 0.1010, resulting in a difference of 0.9130, significant at 5%. Consequently, the DID estimator reached 1.700, significant at 1%, suggesting that

Golden Shares positively impact stock returns, thereby supporting Hypothesis 2 of the study. These findings reinforce the idea that government involvement in private companies through GS can be valuable, as such firms tend to be valued higher in the market compared to fully private companies (Boubakri et al., 2017).

Finally, the regressions for accounting performance variables (ROA and ROE) did not show significant differences between the treatment and control groups. As a result, there is no evidence to suggest that Golden Shares influence accounting performance, leading to the rejection of Hypothesis 1. This finding aligns with Razak et al. (2008), who argue that the government's ability to leverage its voting power through GS, affects a company's market valuation, as government decisions are driven by social altruism, that may not be aligned with the pursuit of profit maximization.

Overall, the DID model results indicate that GS increase market value but does not impact firms' accounting value. The findings support the argument that privatization generates financial benefits for firms (Hu et al., 2024). However, for strategic national companies, while GS clauses do not affect accounting results, investors perceive them positively, leading to higher market valuation and stock returns. These results align with Bortolotti and Faccio (2004), who argue that the benefits of GS outweigh the costs of political interference, as the State typically has greater access to diversified financial resources (Zhou, 2023).

State-controlled firms generally have lower market value, whereas privately controlled firms with GS clauses do not face the same issue. This is mainly because GS clauses do not increase conflicts between ownership groups and may also allow the government to help firms access alternative revenue sources without compromising national sovereignty (Muhamed et al., 2014; Liljeblom et al., 2020).

Table 5 presents the OLS analysis of the results. However, OLS is not the most appropriate method since the model assumptions were not fully met, leading to the choice of a more robust model (DID). The Doornik and Hansen (2008) and Shapiro-Wilk (1965) tests rejected the normality assumption, and the hypothesis that the covariance matrix is diagonal was also rejected. The Wooldridge test rejected the null hypothesis, indicating the presence of serial autocorrelation. Similarly, the Breusch-Pagan test rejected the null hypothesis, confirming the presence of heteroskedasticity. However, the mean VIF was low, indicating no multicollinearity. The Durbin-Wu-Hausman test suggested endogeneity. Nonetheless, to examine the impact of control variables and country-specific effects, OLS regression is presented in Table 5, incorporating PSM and key model variables (time, treatment and DID, which were omitted for simplicity).

Regarding firm size, as shown in Table 5, the total assets is statistically significant at 5% and 10% for ROA and ROE, respectively. This result suggests that financial capital helps firms capitalize on competitive advantages and achieve higher profitability. Additionally, larger production scales are expected to yield higher returns (Fama & French, 1995; Pedersen & Thomsen, 1997; Nanda & Panda, 2018).

Leverage was found to be negative and significant for Tobin´s Q, ROA and ROE, supporting previous research (Brick, Palia & Wang, 2006; Borisova, 2012; Liljeblom et al., 2020). This finding indicates that more profitable firms tend to have lower debt levels, aligning with the Pecking Order Theory, which suggests that internally generated funds are preferable due to the absence of transaction costs (Nakamura et al., 2007).

Finally, analyzing the influence of countries on the results, we observed that the United Kingdom does not appear in the market performance variables due to collinearity issues, leading to their exclusion. Regarding France, firms from this country showed a negative impact on market value (measured by Tobin's Q and Market-to-Book) and on Return on Equity (ROE), all significant at 5%. This finding contradicts the results of Mrad and

Hallara (2012), who studied the French context and found that government ownership levels were associated with increased performance and value creation in privatized firms.

Table 5
OLS results

	Qt		MB		ROA		ROE		RS
Size	0.0140		0.0140		**0.0060**	**	**0.0920**	***	-0.0970
t	*0.3800*		*0.3700*		*2.0900*		*2.6400*		*-1.0700*
Leverage	**-1.7240**	**	-0.7280		**-0.2440**	**	**-0.8060**	**	-0.3540
t	*-2.4700*		*-1.0400*		*-5.2900*		*-2.1000*		*-0.1500*
France	**-0.6580**	**	**-0.6570**	**	-0.0050		**-0.9950**	**	-0.2100
t	*-2.3300*		*-2.3000*		*-0.2500*		*-2.4100*		*-0.3300*
Italy	-0.3140		-0.3240		0.0330		**-0.8110**	*	0.0320
t	*-1.1700*		*-1.1900*		*1.2800*		*-1.8300*		*0.0400*
Portugal	-0.2940		-0.3110		0.0200		**-1.1700**	**	-0.5220
t	*-1.1200*		*-1.1800*		*0.8000*		*-2.3600*		*-0.6100*
Spain	0.0030		0.0020		**0.0500**	**	-0.6630		0.1500
t	*0.0100*		*0.0100*		*2.2300*		*-1.3700*		*0.1800*
UK	-		-		**0.1400**	***	**0.7920**	**	-
t	-		-		*3.1700*		*2.4200*		-
Constant	0.9998		0.9196		-0.1078		**-1.2021**	*	2.9167
t	*1.3800*		*1.2600*		*-1.5300*		*-1.8600*		*1.2900*
Time FE	Yes		Yes		Yes		Yes		Yes
Industry FE	Yes		Yes		Yes		Yes		Yes

Note: ROA – Return on Assets; ROE - Return on Equity; Qt – Tobin´s Q; MB – Market-to-Book; RS – Return on Shares; SD – Standard Deviation; t – Student t test; FE – Fixed Effects. * Significant at 10%; **Significant at 5%; ***Significant at 1%.

Source: Elaborated by the authors (2025).

A similar negative impact on ROE was found for Italian and Portuguese firms, suggesting that state-imposed restrictions and strong veto powers in these countries negatively affect firm performance (European Commission, 2005). In contrast, for Spain, the results were positive for ROA, indicating that privately owned firms significantly improved their Return on Assets. This is likely due to the more flexible privatization laws implemented by the Spanish government (European Commission, 2005).

A positive trend was also found for the United Kingdom, where firms exhibited significant increases in ROA and ROE. These findings align with La Porta et al. (1998), who argue that common-law countries, such as the UK, develop environments with strong shareholder and creditor protections, trending to retain control through GS rather than holding large equity stakes (Ben-Nasr et al., 2014).

4.3 Robustness Checks

After discussing the study's results, this section tests the robustness of the DID model to ensure the reliability of the findings. Specifically, falsification tests (Placebo Test) and triple-difference tests with different events and groups were conducted. Table 6 presents the results of the Placebo Test, which evaluates the model's credibility.

Table 6
Falsification Test (Placebo)

	Qt		MB		RS	ROA	ROE
			Before Privatization				
Control	0.8710		1.0440		0.6930	0.0260	0.1010
Treatment	0.2820		0.4640		0.9000	0.0360	0.1190
Diff(T-C)	**-0.5890**	***	**-0.5800**	***	0.2070	0.0100	0.0180
SD	0.1350		0.1260		0.3750	0.0130	0.0930
t	-4.3600		-4.6100		0.5500	0.8200	0.2000
			After Privatization				
Control	1.1570		1.2510		-0.1490	0.0540	0.2320
Treatment	0.3910		0.5560		0.7250	0.0450	0.1190
Diff(T-C)	**-0.7650**	***	**-0.6950**	***	0.8740	-0.0090	-0.1130
SD	0.2020		0.1880		0.6300	0.0210	0.1370
t	3.7900		3.7000		1.3900	0.4200	0.8300
DID	-0.1760		-0.1150		0.6670	-0.0190	-0.1310
SD	0.2430		0.2260		0.7330	0.0240	0.1650
t	0.7300		0.5100		0.9100	0.7900	0.7900
R²	0.3000		0.3000		0.0400	0.0200	0.0100

Note: ROA – Return on Assets; ROE - Return on Equity; Qt – Tobin´s Q; MB – Market-to-Book; RS – Return on Shares; SD – Standard Deviation; Diff – First Difference; DID – Difference-in-Differences. R² - Model explanation level; t – Student t test. * Significant at 10%; **Significant at 5%; ***Significant at 1%.

Source: Elaborated by the authors (2025).

This test involves applying an alternative event (placebo), which should not show statistical significance. The goal is to confirm that the results stem from the actual event and are not driven by other endogenous firm-specific shocks or independent exogenous shocks affecting the studied relationship (Atanasov & Black, 2016). To perform the test, the core structure of the model is maintained, with the only change being the timing of the event. Roberts and Whited (2013) applied the placebo test using an alternative event two years before the actual one. Similarly, in the present study, the exogenous shock—the privatization period—was artificially shifted two years earlier. As shown in Table 6, the placebo test results reveal that, before and after the alternative event (placebo), market performance variables (Tobin's Q and Market-to-Book) were consistently higher for firms in the control group, with differences statistically significant at the 1% level.

However, the Placebo DID coefficient was not statistically significant for any model variable. This finding reinforces the validity of the primary model, as it suggests that the actual privatization event explains the differences identified in the main results. The absence of significance in the Placebo Test confirms that the primary model's findings were not driven by unrelated trends or external shocks. Additionally, triple-difference tests were performed using varied events and groups, yielding qualitatively similar results to the placebo test. These findings are not reported.

5. Final Remarks

This study aimed to analyze the influence of Golden Shares on the accounting and market performance of publicly traded companies that underwent privatization in Europe between 1980 and 2024. A quasi-

experimental approach was employed using the Difference-in-Differences (DID) model, comparing the performance of privatized companies with Golden Share clauses (treatment group) and those without it (control group).

Overall, the results from descriptive statistics, graphical analysis, and DID models converge in their assessment of Golden Shares' impact on firms' accounting performance. The findings indicate that GS do not have a significant effect on ROA and ROE, leading to the rejection of Hypothesis 1 of this study. However, regarding market value, the results show that GS positively influences firms' market performance.

These findings align with Liljeblom et al. (2020), who argue that Golden Shares enhance firms' market performance metrics, supporting the acceptance of Hypothesis 2. The results suggest that governments tend to shield privatized firms with GS, offering a favorable regulatory environment, subsidized loans and guaranteed contracts (Bortolotti & Faccio, 2004). Given the importance of GS, governments also tend to provide protectionist measures and financial support (Tan, 2007).

This study contributes to literature in several ways, expanding knowledge on GS, a mechanism used by governments to maintain control over privatized companies. This topic remains underexplored in accounting and finance research (Gabrielli, 2024). The findings suggest that a privately controlled company with state veto power may represent the most efficient path to achieving market valuation. Few studies have examined both accounting and market performance in privatized companies with Golden Shares across a broad sample of European countries. The inclusion of a diverse set of nations is crucial as it allows for an assessment of how political factors influence firm-specific information in the presence of government ownership (Ben-Nasr et al., 2014).

However, this study has some limitations. First, data collection was challenging due to difficulties in accessing an updated database. Additionally, the lack of prior research makes it difficult to compare results. The methods, instruments and techniques used may also present endogeneity concerns. Therefore, further research should explore alternative methodologies to validate the present findings. Given these limitations, future research should expand the analysis to countries not covered in this study and incorporate additional variables to gain a deeper understanding of accounting and market performance in firms with Golden Shares.

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