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Article

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CEO turnover in public and private organizations: analysis of the relevance of different performance horizons

CEO turnover
in public and
private
organizations

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Abstract

Purpose – This paper investigates how past performance changes, prior CEO replacements and changes in the chairperson impact CEO turnover in public and large private businesses.

Design/methodology/approach – We analyze 1,679 CEO replacements documented in a sample of 1,493 Spanish public and private firms during 1998–2004 by computing dynamic binary choice models that control for endogeneity in CEO turnovers.

Findings – The results reveal that different performance horizons (short- and long-term) explain the dissimilar rate of CEO turnover between public and private firms. Private firms exercise monitoring patience and path dependency characterizes the evaluation of CEOs, while public companies' short-termism leads to higher CEO turnover rates as a reaction to poor short-term economic results, and alternative controls—ownership and changes in the chairperson—improve the monitoring of management.

Originality/value – Our results show the importance of controlling for path dependency to examine more accurately top executives' performance. The findings confirm that exposure to market controls affects the functioning of internal controls in evaluating CEOs and shows a short-term performance horizon that could be behind the recent moves of public firms going private or restraining shareholders' power.

Keywords CEO turnover, Dynamic binary choice models, Path dependency, Private firms, Public firms

Paper type Research paper

1. Introduction

Organizations have always faced the challenge of managing the process of replacing the chief executive officer (CEO). CEO turnover is one of the most researched topics in the finance and management fields and constitutes a “trendy topic” among scholars and practitioners (see, e.g. [Chen *et al.*, 2019](#); [Dalton *et al.*, 2007](#); [Dasgupta *et al.*, 2018](#); [Hermalin and Weisbach, 2003](#); [Jenter and Kanaan, 2015](#); [Jenter and Lewellen, 2021](#); [Kim *et al.*, 2020](#)). Most empirical evidence

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comes from the study of public firms. But, how different is the CEO turnover-performance sensitivity in private businesses compared to public firms?

High-profile corporate scandals—e.g. Enron, WorldCom or Lehman Brothers—fuelled the debate over what governance structures provide incentives to directors to effectively monitor the CEO's management. But, the debate is open and the governance of privately held businesses has increasingly drawn scholarly attention (Coles *et al.*, 2003; Gao *et al.*, 2017; He and Sommer, 2011). Problems derived from poor oversight of management and self-serving practices by CEOs are not the exclusive domain of public firms, and some recent cases (e.g. Arthur Andersen or FIFA) give ammunition to the argument that the study of CEO turnover in private organizations is also needed.

The analysis of how past performance changes triggers CEO turnover in public and large private firms is the focus of this study. By examining the effect of different performance horizons—i.e. short- and long-term performance changes—on CEO turnover in publicly traded and privately-owned businesses, we seek to address the following research question: are CEO turnover in publicly traded companies different from privately-owned ones? In our approach, CEO turnover is modeled as a dynamic process in which the effects of past performance changes matter, but also past CEO turnover and changes in the chairperson play important roles [1].

Literature rooted in finance and corporate governance has mostly adopted agency theory postulates to analyze CEO turnovers (e.g. Adams *et al.*, 2010; Dalton *et al.*, 2007; Jenter and Lewellen, 2021). The CEO-board dynamics are important and have started to be more analyzed recently with longer panel data (Graham *et al.*, 2020). There is important evidence consistent with the idea that CEOs are monitored less intensely and gain power over their tenures, especially conditional on a strong performance. To explore further these issues of successful CEOs being more protected and to see if long tenure affects a firm's value, we start examining CEO replacement conditional on performance. Traditionally, existing studies emphasize that boards learn the quality of their CEOs from past performance records and that, in conjunction with other mechanisms, CEO turnover follows poor performance (see, e.g. Dasgupta *et al.*, 2018; Chen *et al.*, 2019; Denis *et al.*, 1997; Finkelstein *et al.*, 2009; Huson *et al.*, 2001; Graham *et al.*, 2020, Jenter and Lewellen, 2021). Nevertheless, and although private businesses represent the overwhelming majority of firms in the economy, existing work on the negative relationship between performance and CEO turnover has mostly focused on public firms.

But, can we expect a different CEO turnover-poor performance pattern in private vis-à-vis public businesses? In our approach to CEO turnover, we argue that discrepancies in the performance horizon (short- and long-term performance changes) between public and private firms may condition the directors' responsiveness to poor performance results.

In the case of private businesses, the absence of market controls gives boards a broader spectrum of information to evaluate the quality of their CEOs, which creates a fertile ground to harmonize financial and non-financial goals (Gómez-Mejía *et al.*, 2011). In public businesses, CEO turnover is affected by the board's responsiveness to shareholder pressures (Dasgupta *et al.*, 2018; Fisman *et al.*, 2014). Investors have been criticized for excessive short-termism which is detrimental to both the development of long-term projects and the evaluation of CEOs (Jenter and Lewellen, 2021). This may explain why some public firms are taking actions to escape the quarterly demands and the short-term horizon imposed by stock markets (e.g. Alliance Boots in the UK or Panera Bread and H. J. Heinz in the United States). Private businesses enjoy a greater level of managerial freedom that opens a window of opportunity for developing long-term, and high-risk, high-return ventures. The 2013 decision to take Dell private constituted an example of how a (formerly) public business shifts its strategic focus to prioritize the maximization of long-term results [2]. Also, many public businesses—e.g. Google and Facebook—have introduced non-voting shares to reduce

shareholders' power and unchain their strategic choices from the market's quarterly demands (Fisman *et al.*, 2014).

Concerns about excessive shareholder influence seem at odds with agency notions that increased alignment between boards and investors is good for performance (Fama and Jensen, 1983; Huson *et al.*, 2001). In the context of our study, this would imply that CEOs' monitoring is consistently efficient across firms. This assumption lacks theoretical and empirical support, which may explain the mixed results in prior studies linking performance to CEO turnover (Aguilera, 2005; Chen *et al.*, 2019; Jenter and Kanaan, 2015; Jenter and Lewellen, 2021).

In this study, we adopt a management perspective to CEO turnover. By evaluating how different performance horizons (short- and long-term performance changes) as well as other relevant governance features (prior CEO turnovers and changes in the chairperson) impact CEO turnover, we seek to unveil how managers are evaluated in public and private firms. The empirical application considers a sample of 1,493 Spanish public and large private firms during 1998–2004, a period during which we documented 1,679 CEO replacements. We employ the dynamic binary choice technique developed by Bover and Arellano (1997) to model CEO turnover.

The Spanish context is particularly suitable for studying the sensitivity of CEO turnover to different performance horizons in public and private businesses. In Spain, similar to most developed economies, capital markets are less predominant—compared to the US and UK—and ownership concentration levels in public and private businesses are high (Cuomo *et al.*, 2013). Additionally, during the analyzed period many capital offerings by private firms have swelled Spain's stock market. This is especially relevant for this study. In a scenario dominated by large owners, the analysis of how short- and long-term performance changes impact CEO turnovers gains relevance to evaluate the effectiveness of governance systems in public and comparable private businesses.

This article extends the existing literature on CEO turnover in two main ways. First, to the best of our knowledge, the specific analysis of the role of different performance horizons (short- and long-term) on CEO turnover in public and private businesses has been largely side-lined in prior work (Gao *et al.*, 2017). Therefore, our study contributes to fill this gap by specifically looking into the role of different performance horizons on CEO turnover in publicly traded and private-owned businesses. Our study is in line with the call made by Hermalin and Weisbach (2003) and Adams *et al.* (2010) for more research addressing the processes behind executive turnovers in different organizational scenarios. Second, decisions related to CEO turnover have important economic and strategic implications. Existing literature suggests that, as a result of investors' pressure, boards can make flawed turnover decisions (Fisman *et al.*, 2014). We show that CEO turnover works differently in public vis-à-vis private businesses. By examining the outcomes that flow from the monitoring of CEOs in different organizational contexts—i.e. public and private firms—this research contributes to a richer understanding of the forces shaping real-world CEO turnovers.

2. Theoretical underpinning and hypotheses development

Literature on CEO turnover has traditionally explored how directors can simultaneously monitor management and provide value-creating advice to the business (e.g. Adams *et al.*, 2010; Chen *et al.*, 2019; Dasgupta *et al.*, 2018; Hermalin and Weisbach, 2003; Jenter and Lewellen, 2021; Kim *et al.*, 2020; Zhang, 2008). Boards play a central role in the monitoring of managers, and research generally supports the notion that performance metrics provide valuable information to evaluate the CEO's ability and the quality of management (Graffin *et al.*, 2013; Jenter and Lewellen, 2021; Tuggle *et al.*, 2010).

Empirical research examining the relationship between firm performance and executive turnover is extensive and has been carried out in different countries. Examples include Huson

et al. (2001), Zhang (2008), Wiersema and Zhang (2011), Graffin *et al.* (2013), Dasgupta *et al.* (2018) and Jenter and Lewellen (2021) for the United States; Conyon and Florou (2002), Dahya *et al.* (2002), Florou (2005) and Chen *et al.* (2019) for the United Kingdom; Kaplan (1995) for Germany; Brunello *et al.* (2003) for Italy; Crespi *et al.* (2004) for Spain; or Lafuente and García-Cestona (2019) for Costa Rica, among others. These studies support the assumption that boards use performance-based variables to monitor managers, and that the negative relationship between performance and CEO turnover is indicative of the quality of the governance system. Notwithstanding the increased relevance of governance for scholar and policymakers, the vast majority of studies analyze CEO turnover in publicly traded companies whose organizational and ownership structures are representative of a small portion of the population of businesses worldwide.

Existing studies on the relationship between performance and CEO turnover in private organizations are very limited, mainly due to the difficulties in obtaining reliable data for private firms. Kaplan (1995) found, for a small sample of German public and private firms (42 firms), that CEO turnover is more sensitive to poor stock returns and earning losses in public firms, but is unrelated to accounting growth measures. The work by Bennedsen and Wolfenzon (2000) is one of the first attempts to theorize the optimal governance structure in closely-held businesses and its main differences relative to that of public firms.

In the context of the US hospital industry, Brickley and Van Horn (2002) concluded that the negative effect of financial performance on CEO turnover is stronger in non-profit than in for-profit hospitals. In their analysis of public and private firms included in the Forbes 500 list, Coles *et al.* (2003) found that the negative relationship between performance and CEO turnover is weaker in private firms. In the US insurance industry, He and Sommer (2011) found that CEO turnover follows poor performance in stock insurers, while this relationship turns not significant among mutual insurers which arguably respond to different goals. Using a sample of large US public and private firms, Gao *et al.* (2017) find that poor accounting results make CEO turnover more likely in public than in private firms. These authors also observe that sometimes CEOs of public firms are fired sub-optimally early.

Monitoring and evaluating the CEO's actions are not the exclusive domain of public firms. Boards of private firms also face monitoring and managerial challenges that, if not taken care of, may mitigate the potentially positive effects of internal control mechanisms. This is the focus of this study.

From a management view, certain differences emerge when analyzing CEO turnovers in public vis-à-vis private firms. First, managers of public firms respond to both directors and shareholders. Furthermore, public firms must follow strict regulatory rules and disclose detailed financial data on a frequent (quarterly) basis, which increases the informative power of performance signals. On contrary, CEOs of private firms are exclusively monitored by the board, which gives managers incentives to ensure their own job security by tampering with the board's ability to monitor their performance (Walsh and Seward, 1990).

Second, and connected with the previous point, public and private businesses pursue different goals and we suggest that discrepancies in CEO turnover rates between public and private firms may result from differences in performance horizons. Managers of public firms tend to cater to the short-term economic tastes of shareholders (Jenter and Kanaan, 2015), which will likely increase the sensitivity of CEO turnover to short-term performance variations. In private firms, evidence on family firms—the most common type of private firm—reveals that managers often harmonize financial and non-financial goals (Gómez-Mejía *et al.*, 2011). In a context of reduced market pressures, it seems plausible to expect a stronger relationship between CEO turnover and short-term performance changes in public firms. On contrary, long-term performance changes and the achievement of other non-financial goals seem more relevant metrics to evaluate CEOs in private organizations.

Additionally, prior works on the governance of private firms support the notion that these firms have stronger incentives to exercise direct monitoring because of their more concentrated ownership structure and smaller boards, compared to public firms (Gao *et al.*, 2017).

Third, the quality of monitoring might be affected by the directors' professionalism and reputational concerns (Sliwka, 2007; Tuggle *et al.*, 2010). Business performance has reputational consequences for directors (Fama and Jensen, 1983). While the reputation of boards of high-performing firms may be enhanced, the opposite is also true. Indeed, reputational costs might be a greater concern for directors of public firms, especially if the value of the business is conditioned by short-term results and if directors serve on other boards or compete in the market of directors. Thus, in public firms, the directors' motivations to monitor managers more intensively in the short term might be partially based on self-interested protection of their reputations and future earnings.

This logic and evidence suggest the following relationship between performance changes and CEO turnover.

- H1a.* The negative relationship between short-term performance changes and CEO turnover is stronger among publicly traded firms.
- H1b.* The negative relationship between performance changes in longer time periods and CEO turnover is stronger among private firms.

Predictions of CEO turnover improve when factors other than performance are taken into account (Adams *et al.*, 2010; Graffin *et al.*, 2013). In this study, and due to data availability, we evaluate if the tenure of the incoming CEO and changes in the Chairperson influence CEO turnover.

Theoretical arguments point to poor performance as the main driving force behind CEO replacements. Nevertheless, in the early stage of the CEO's tenure performance metrics might be of little analytical value for various reasons. First, during this time, few objective performance variables are available to boards because performance is highly path-dependent. In the context of this study, path dependence means that firm performance is largely determined by decisions adopted by the prior CEO. Thus, path dependence results not only from the different investments that the former CEO may or may not have made but also from the existing organizational capabilities which can limit the strategic choices of the incoming CEO (Graffin *et al.*, 2013). The dynamics of board and CEO have been explored also showing that less independent boards are associated with significantly lower performance sensitivity of CEO turnover and board independence decreases as a given CEO's tenure increases (Graham *et al.*, 2020). Second, directors have little day-to-day contact with the new CEO which limits their ability to evaluate his (her) actions. Third, in the early stage of the CEO's tenure boards have to be "patient" and allow for a learning period as new CEOs familiarize themselves with the new position, regardless of whether they were internally promoted or hired from outside (Finkelstein *et al.*, 2009).

These arguments suggest that the survival prospects of new CEOs may be time-dependent (Zhang, 2008). In this scenario, directors can be tempted to exercise "more patient" monitoring as they learn how to evaluate the ability of the incoming CEO, while he (she) uses this adjustment period to fully understand the firm's routines and capabilities (Finkelstein *et al.*, 2009).

But, does this argument imply that newly appointed CEOs are less likely to be dismissed? Additionally, once we distinguish between private and public firms, can we expect a similar level of "patience" in the monitoring path over newly appointed CEOs? Or, does the short-termism often attributed to public firms condition the turnover probability of recently appointed CEOs?

On the one hand, public firms are run by managers whose decisions might be endorsed (or repudiated) by shareholders—who prioritize short-term economic results—and by directors whose monitoring “patience” is conditioned by a combination of factors, including legitimate monitoring on behalf of owners, market pressure (e.g. quarterly investment reports), reputation-based interests and future earnings expectations. Evidence supports these arguments. For instance, [Shen and Canella \(2002\)](#) found that—in large US public firms—the probability of dismissal is higher for recently appointed CEOs, compared to that of long-tenured CEOs who may catch up the board (entrenchment problems). Also, [Zhang \(2008\)](#) concluded that, among large public US manufacturers, information asymmetries between directors and managers increase the likelihood to dismiss a new CEO, especially if he (she) is an outsider. Therefore, empirical evidence suggests a potential disconnect between monitoring “patience” and the directors’ interests in public firms. That is, CEOs of public firms can be replaced at any time regardless of their tenure, and regardless of whether the firm has recently replaced the CEO. As a result, the fact that the new CEO’s tenure is not time-dependent can be considered as an additional manifestation of the prioritization of short-term goals (short-sightedness) by public companies.

On the other hand, boards of private firms are not exposed to capital market controls—e.g. owners’ pressure, rating evaluations or stock recommendations by investment analysts ([Wiersema and Zhang, 2011](#))—and they likely adopt a more advisory role by increasing their involvement in management tasks ([Adams et al., 2010](#)). From a management perspective, we conjecture that directors of private firms will acknowledge the difficulties to evaluate the early stage of new CEOs that result from the low informative power of (financial) performance metrics (i.e. path dependence). In a context where private firms’ managers have a different performance horizon, it seems plausible that directors will base their early-stage evaluation of the new CEO on heuristic tools, which will likely be replaced when new and more reliable performance data become available later in the CEO’s tenure ([Finkelstein et al., 2009](#); [Graffin et al., 2013](#)). Replacing a newly appointed CEO is not only a potential waste of managerial talent but also a costly process to private firms that hampers the development of reliable practices that are highly regarded by the business ([Hannan and Freeman, 1984](#)).

Taken together, these arguments and empirical evidence suggest that boards of public and private firms have different temporal horizons and that monitoring “patience” is much less compatible with public firms’ short-term orientation. Therefore, we hypothesize:

- H2.* The probability of replacing a recently appointed CEO—that is, appointed in period $t-1$ —is greater among public firms.

We now turn our attention to the effect on CEO turnover of changes in the leadership structure of the board. Boards may improve the quality of monitoring and advisory tasks by increasing their independence, which usually refers to a balance of executive and non-executive directors, to the separation of the roles of chairperson and CEO and to changes in the board’s leadership, namely the chairperson. Existing studies propose that these actions give boards the objectivity necessary to exercise their monitoring more independently (see e.g. [Haleblian and Rajagopalan, 2006](#); [Hillman et al., 2008](#); [Wiersema and Zhang, 2011](#)).

We focus on changes in the chairperson because his (her) role is closely tied to the CEOs. Top executives, regardless of whether the board is dominated by the CEO or not, have incentives to divert the board from monitoring management ([Walsh and Seward, 1990](#)); but, certain important decisions—e.g. strategic design and financial and dividend policies—are mostly reserved to the board, and in these cases, the chairperson plays a key role. [Hillman et al. \(2008\)](#) note that monitoring top management requires both ability and motivation on the part of the directors; functions that might be enhanced by introducing a change in the board’s leadership position. A new chairperson may adopt enhanced practices and monitoring to demonstrate his (her) professionalism and abilities to the shareholders. Consistent with these

arguments, management research shows that a period of perceived positive economic results may lead boards to conclude that management is acting in the best interest of shareholders and directors, thus reducing the intensity of monitoring (Tuggle *et al.*, 2010). We argue that a change in the board's leadership may influence the attributions it makes for perceived performance by providing fresh perspectives or strong monitoring.

Once we distinguish between public and private firms, we note that private firms often benefit from greater involvement of owners in decision-making processes and, in their more advisory role, changes in the chairperson may not exclusively stem from performance evaluations, but rather from conflicts, unrelated to performance, between owners and the board (Adams *et al.*, 2010). On contrary, chairperson changes in public firms result from different considerations. Boards of public firms are seen as the shareholders' first line of defense against potentially self-serving management (Mellahi, 2005). Thus, poor economic results give owners the incentives to replace the chairperson (and other directors) as a reaction to the board's ineffective monitoring. In this scenario, the new chairperson will likely monitor the CEO more intensively, in order to signal competence and expertise to both owners and the market (Chen *et al.*, 2019; Graffin *et al.*, 2013; Tuggle *et al.*, 2010). We thus hypothesize:

- H3.* The positive relationship between appointing a new chairperson and subsequent CEO turnover is stronger among public firms.

3. Data, variable definition and method

3.1 Data

The information used in this study comes from two sources. First, we used the Spanish database SABI (Spanish acronym of Iberian Balance Sheet Analysis System) provided by Bureau Van Dijk, as well as annual reports from the Spanish Stock Exchange. Accounting and organizational data were collected for a sample of 3,254 public and large private companies. Given our research purposes, we conducted a sampling procedure aiming to ensure the robustness of the results. First, private firms were included in the sample if their total assets and sales placed them in the bottom quartile of Spanish public companies or higher in each analyzed period (between 1998 and 2004). In this first step, 1,127 private firms were dropped from the sample either because data were not available or because their assets or sales did not fall into the first quartile of the public sample in one or more of the analyzed periods. In the second step, we included in the sample only those private firms with a board in which the CEO's and chairman's identities were clear. Based on this second criterion, 619 private firms were excluded [3].

Concerning public firms, note that we excluded 14 financial institutions because they are subject to a different regulatory regime, and they show significant operating differences with respect to firms in other industries. In addition, we dropped the public company Telepizza due to a lack of reliable information on CEO replacements.

The final sample consists of 1,493 public and large private Spanish companies for the period 1998–2004. The robustness and comparability of the results are further validated by the industry configuration of the sample. For illustrative purposes, we grouped businesses into five industry categories: manufacturing, distribution (communication, public utilities and wholesale trade), retail, consumer services and business services. The highest proportion of firms was found in consumer-oriented sectors (excluding financial services), which represent 48 and 33% of public and private businesses, respectively. Manufacturing firms account for nearly 29% of the public sample, while this proportion stands at 37% among private businesses. The proportion of businesses in distribution sectors is similar in both samples (public firms: 19%, private firms: 21%). In retail and trade sectors the proportion of

private firms (8%) almost triples that reported for the public sample (nearly 3%). Finally, business services sectors represent 1 and 0.20% of public and private firms, respectively. It should be noted that the number of public firms in the final sample varies between 89 in 1998 and 103 in 2004. This variation reflects only new incorporations into Spanish stock markets.

Furthermore, we obtained information concerning the market-to-book value for Spanish public companies from Thomson Reuters Datastream©. Keep in mind that the Spanish public firms in our sample are heterogeneous, and firms registered in the main Spanish index (IBEX-35) show important differences with respect to other public firms. As shown below, IBEX firms not only are larger but often are international players with different governance characteristics. Therefore, for analytical purposes, we split the sample of public firms into two groups: IBEX and non-IBEX firms.

3.2 Variable definition

3.2.1 Dependent variable. We measure CEO turnover as a dummy variable taking the value of one if the CEO was removed from one year to the next. Note that, given the characteristics of our data, CEO turnover refers to all types of replacements because data on the type of departure and the exact replacement date are not available for private businesses. Nevertheless, [Huson et al. \(2004\)](#) note that voluntary turnovers—usually linked to retirement or promotions—are likely uncorrelated to previous performance and this type of replacement only adds noise to the dependent variable, leading to downward-biased results.

Our final sample allows us to document 1,679 CEO replacements between 1998 and 2004, 127 of which occurred in public companies and 1,552 in private firms. Because the comparisons between public and private firms represent key theoretical predictions in this study, we introduced in all model specifications a dummy variable to identify public firms (1 = public, 0 = private). [Table 1](#) shows that between 1998 and 2004 public companies have a slightly higher CEO turnover rate (18.42%) than do private firms (15.90%). Nevertheless, trends in average CEO turnover may veil important differences across the distribution of this variable. Although the similarity in the average CEO turnover rate among the sampled firms, further analysis in [Table 2](#) reveals the relevance of examining CEO turnovers at different points of the frequency distribution. First, we note that 21% of public firms (31% of private firms) did not replace the CEO in the analyzed period. Second, nearly 44% of public firms report one CEO replacement (37% in private firms), while 26% changed their CEOs two times (22% in private firms). Third, private businesses show slightly higher values in the top categories (three or more changes) of the frequency distribution of CEO turnover.

3.2.2 Firm performance. We examine two dimensions of business performance based on accounting and market variables. First, economic performance is measured through the rate of return on assets (ROA) which is calculated, for each firm (i) and each period (t), as the operating profit divided by total assets. Descriptive statistics in [Table 3](#) show that public firms are larger in terms of assets and that private firms show significantly higher ROA (6.13%) than public firms (3.97%). Second, we use a market-oriented performance measure for public companies: the market-to-book value (M-to-B) measured as the current share price divided by the book value per share. For this variable, information from Thomson Datastream© is incomplete for five public companies. Performance changes are more directly related to CEO replacements than absolute performance values are. Therefore, all model specifications use the variation rate in the focal performance variable prior to the dismissal event distinguishing between short-term performance changes (from period $t-2$ to period $t-1$) from changes reported for longer time periods (from period $t-3$ to period $t-1$ and from period $t-4$ to period $t-1$) [\[4\]](#).

3.2.3 Chairperson replacement (COB). We create a dummy variable that accounts for changes in the board's leadership position. More concretely, this variable takes the value of

	Private firms		Public firms		Overall	
	Mean (Std. Dev.)	Obs	Mean (Std. Dev.)	Obs	Mean (Std. Dev.)	Obs
Number of CEO replacements	1.1157 (0.9886)	1,390	1.2451 (0.9058)	103	1.1246 (0.9833)	1,493
CEO turnover	0.1590 (0.3657)	9,766	0.1842 (0.3879)†	685	0.1607 (0.3627)	10,451
Size (millions of euro)	180.29 (966.83)	9,762	1,854.54 (5776.34)***	675	288.47 (1787.92)	10,437
Leverage (debt to assets ratio)	0.6149 (0.2214)	9,771	0.4706 (0.2154)***	675	0.6054 (0.2238)	10,446
Return on assets (ROA)	0.0613 (0.1166)	9,771	0.0397 (0.0858)***	675	0.0599 (0.1150)	10,446
Market-to-book ratio			2.6312 (5.6949)	643		
Chairperson turnover	0.0802 (0.2716)	9,766	0.0833 (0.2766)	685	0.0804 (0.2720)	10,451
CEO duality	0.1845 (0.3879)	9,771	0.1023 (0.3033)***	685	0.1791 (0.3835)	10,456
Stake held by the CEO	0.3966 (0.3455)	1,812	0.0159 (0.0010)***	685	0.2922 (0.3255)	2,497
Stake held by the largest shareholder	0.7801 (0.3000)	9,357	0.3210 (0.2415)***	685	0.7488 (0.3181)	10,042
Stake held by the second largest shareholder	0.2280 (0.2154)	3,497	0.1205 (0.0756)***	632	0.2116 (0.2042)	4,129
Stake held by the third largest shareholder	0.1108 (0.0913)	1,356	0.0748 (0.0469)***	611	0.0996 (0.0819)	1,967

Note(s): The sample includes information for 103 public and 1,390 large private Spanish firms for the period 1998 and 2004. Size is expressed in millions of euros. Leverage is the ratio of debt to total assets. Return on assets is the ratio of operating profit to total assets, whereas the market-to-book value is measured as the current share price divided by the book value per share (end of year values). Chairman turnover is a dummy equal to one if a chairman change took place. CEO duality is a dummy variable taking the value of one if the CEO also serves as chairman. The variable “stake held by the CEO” captures the CEO’s ownership only for those observations where the CEO is an owner. The variables related to ownership concentration show the average stake held by the three largest shareholders. The number of observations changes due to the presence of some missing values. The univariate test compares, for each variable, the difference in the mean values between public and private firms. Standard deviation is presented in brackets. †, *, **, *** indicate that the difference in the mean values between public and private firms is significant at the 0.10, 0.05, 0.01, and 0.001 levels, respectively

Source(s): Authors’ elaboration

CEO turnover
in public and
private
organizations

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Table 1.
Descriptive statistics
for the selected
variables

	Private firms		Public firms		Overall	
Number of CEO changes	Number of firms	%	Number of firms	%	Number of firms	%
0	431	31.01	22	21.36	454	30.34
1	519	37.34	45	43.69	564	37.78
2	308	22.16	27	26.21	335	22.44
3	113	8.13	8	7.77	121	8.10
4	17	1.22	1	0.97	18	1.21
5	2	0.14			2	0.13
	1,390	100	103	100	1,493	100

Source(s): Authors’ elaboration

Table 2.
Sample frequencies for
CEO turnover

Table 3.
CEO turnover in public
and large private
Spanish firms

	(1)	(2)	(3)	(4)	(5)	(6)
Size _{<i>t-1</i>} (ln assets)	0.0137 (0.0125)	0.0145 (0.0125)	0.0138 (0.0125)	0.0132 (0.0125)	0.0112 (0.0198)	0.0112 (0.0199)
Leverage _{<i>t-1</i>}	-0.0137 (0.0450)	-0.0139 (0.0450)	-0.0132 (0.0450)	-0.0131 (0.0449)	0.0082 (0.0622)	0.0089 (0.0623)
CEO duality _{<i>t-1</i>}	0.0205 (0.0193)	0.0201 (0.0192)	0.0202 (0.0193)	0.0188 (0.0192)	0.0362 (0.0227)	0.0363 (0.0227)
Stake held by the CEO _{<i>t-1</i>}	-0.0216 (0.0691)	-0.0215 (0.0690)	-0.0213 (0.0691)	-0.0210 (0.0688)	0.0011 (0.0859)	0.0012 (0.0860)
Public	0.0001 (0.1160)	0.0040 (0.1161)	0.0001 (0.1160)	-0.0077 (0.1158)	0.0034 (0.1491)	0.0021 (0.1497)
CEO turnover _{<i>t-1</i>}	-0.0246* (0.0115)	-0.0241* (0.0120)	-0.0244* (0.0115)	-0.0239* (0.0119)	-0.0227† (0.0126)	-0.0222† (0.0131)
Public × CEO turnover _{<i>t-1</i>}		-0.0019 (0.0439)		-0.0146 (0.0438)		-0.0060 (0.0468)
Chairperson turnover _{<i>t-1</i>}	0.0125 (0.0159)	0.0108 (0.0165)	0.0123 (0.0159)	0.0104 (0.0164)	0.0060 (0.0173)	0.0048 (0.0180)
Public × Chairperson turnover _{<i>t-1</i>}		0.0198 (0.0614)		0.0639 (0.0615)		0.0165 (0.0648)
turnover _{<i>t-1</i>}						
ΔROA _{<i>t-2,t-1</i>}	-0.0003* (0.0001)	-0.0002† (0.0001)				
Public × ΔROA _{<i>t-2,t-1</i>}		-0.0104*** (0.0020)				
ΔROA _{<i>t-3,t-1</i>}			-0.0014† (0.0008)	-0.0016* (0.0007)		
Public × ΔROA _{<i>t-3,t-1</i>}				0.0021 (0.0026)	-0.0001 (0.0008)	
ΔROA _{<i>t-4,t-1</i>}						
Public × ΔROA _{<i>t-4,t-1</i>}						
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	-1.3653*** (0.0607)	-1.3653*** (0.0607)	-1.3664*** (0.0607)	-1.3611*** (0.0605)	-1.3733*** (0.0918)	-1.3736*** (0.0919)
F-test	382.27***	382.27***	381.87***	316.98***	49.26***	38.69***
R Square (within)	0.4010	0.4010	0.4008	0.4061	0.1086	0.1086
Observations	8,922	8,922	7,435	7,435	5,948	5,948
Average VIF	1.30	1.30	1.22	1.30	1.17	1.32

Note(s): The table presents the fixed-effects regression results of CEO turnover as presented in [equation \(2\)](#). Robust standard errors are presented in brackets. †, *, **, *** indicate significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively

Source(s): Authors' elaboration

one if the chairman's identity changed in two consecutive years, and zero otherwise. In all model specifications, this variable was lagged one period to avoid estimation problems.

3.2.4 Ownership concentration. To measure ownership concentration we consider the stake held by the largest, the second-largest and the third-largest shareholders. Table 3 shows that large shareholders govern Spanish firms. Whereas in public companies the main shareholder controls, on average, 32% of shareholder's equity, in private firms this figure stands at 78%. Shareholders other than the largest seem to have some power: the stake held by the second-largest and the third-largest shareholders is, on average, 12% and nearly 7.5%, respectively for public firms, and a little larger for private firms when they are present. In all models, these variables were lagged one period to avoid estimation problems.

3.2.5 Control variables. We control for size, debt structure, CEO duality, CEO shareholding and time in the different model specifications. Business size is measured by total assets. This variable was logged to reduce skewness. The ratio of debt to assets was used to control the firm's debt structure. CEO duality—i.e. the CEO also serves as chairperson—is often viewed as an impediment to the board's monitoring over management (Tuggle *et al.*, 2010; Wiersema and Zhang, 2011). Thus, we introduce a dummy variable taking the value of one if the CEO chairs the board (CEO duality), and zero otherwise. As for the CEO's shareholding, and similar to Brunello *et al.* (2003), we include the equity's stake held by the CEO. Note that, due to data availability, the result reported in Table 3 for the sample of private firms (39.66%) refers to the CEO's shareholding in those businesses where the CEO is among the five largest shareholders (302 firms). Finally, we include a set of year dummy variables to rule out the effect of time and other environmental changes on CEO turnover. All time-varying control variables are lagged one period to avoid potential endogeneity problems.

3.3 Method: dynamic discrete choice models

We employ panel-data techniques to estimate the proposed models that emphasize differences in CEO turnovers in public and private firms. In the context of our analysis, the inclusion of all the analyzed firms—i.e. those that report CEO dismissals and those that do not—along with the adoption of a technique that controls for endogeneity and path dependence are critical issues for our analysis. We model CEO turnover as a dynamic process where past CEO turnover (Graffin *et al.*, 2013), changes of the chairperson (Haleblian and Rajagopalan, 2006) and performance path dependency (Hannan and Freeman, 1984) play important roles.

Pooling repeated observations on the same firms violates the assumption of independence of observations, rendering cross-sectional binary choice estimates inefficient and biased (Wooldridge, 2002). Therefore, one would be tempted to consider the econometric problem analyzed in this study a perfect candidate for a fixed-effect logit model. However, empirical concerns arise if a longitudinal binary choice model is used to estimate dynamic models that include lags of the dependent variable (Honoré and Kyriazidou, 2000). A fixed-effects logit model imposes both strict exogeneity on the independent variables—which counts against the path dependence argument by Hannan and Freeman (1984)—and time-varying responses in the dependent variable, which implies that the model excludes firms that report no CEO changes or replaced the CEO in all time periods. Also, the inclusion of the lagged dependent variable as an explanatory variable is not trivial, and breaking the exogeneity assumption brings about some computational considerations (Arellano and Honoré, 2001).

Consistent with the previous arguments, we estimate a dynamic discrete choice model following the methodology proposed by Bover and Arellano (1997). Through this method, we compute a two-step within (fixed-effects) estimator for limited dependent variables, which includes lagged terms of the dependent variable and other endogenous explanatory variables.

The first step of the proposed fixed-effects model incorporates a vector of endogenous variables ($\mathbf{Z} = z^1, \dots, z^k$) in the CEO turnover variable (y). Following our arguments in [Section 2](#), we consider three endogenous factors (\mathbf{Z}) to compute the CEO turnover variable: prior CEO turnovers, past performance changes and a lagged term accounting for changes in the chairperson. Also, interaction terms between past performance changes and chairperson replacements were included in the models. By modeling the firm-specific effect (η) as a function of \mathbf{Z} ($\eta_i = f(\mathbf{Z}) = \lambda_0 + \lambda_1 z_{it=1}^1 + \dots + \lambda_T z_{it=T}^k + \mu_i$) we generate the function for the decision to replace the CEO. [Bover and Arellano \(1997\)](#) show how to derive consistent and asymptotically normal estimations of CEO turnover (y^*) through conventional period-by-period probit models that include lags and leads of the endogenous variables (\mathbf{Z}). Thus, y^* is the estimated time-varying CEO turnover variable and it represents a good linear approximation of the observed CEO turnover (y).

Note that the parameterization of the firm-specific heterogeneity term (η), conditional on the endogenous variables (\mathbf{Z}), breaks the strict exogeneity assumption that underlies longitudinal binary choice models ([Arellano and Honoré, 2001](#)). Additionally, and contrary to fixed-effects logit models, the approach adopted in this study allows the inclusion in the different models of all possible pairs of businesses in the string of the dependent variable, irrespective of whether the business replaced the CEO or not. In a second step we formulate the dynamic (fixed-effects) discrete choice model with the following form:

$$y_{it}^* = \gamma y_{it-1} + \beta \mathbf{X}_{it-1} + \delta \mathbf{Z}_{it-1} + \eta_i + \varepsilon_{it} \quad (i = 1, \dots, N; \quad t = 1, \dots, T) \quad (1)$$

where y_{it}^* is the linear prediction for CEO turnover (ΔCEO_{it}^*) computed in the first step of the proposed method, \mathbf{X} is the vector of exogenous variables, \mathbf{Z} refers to the endogenous variables, η_i is the unobserved firm-specific effect and ε_{it} is the normally distributed error term. In the context of this study, the full model explaining CEO turnover in public and private firms is computed via a fixed-effects panel data estimator:

$$\begin{aligned} \Delta \text{CEO}_{it}^* = & \beta_1 \text{Control variables}_{it-1} + \beta_2 \Delta \text{CEO}_{it-1} + \beta_3 \text{Public}_{it-1} + \beta_{23} \Delta \text{CEO}_{it-1} \\ & \times \text{Public}_{it-1} + \beta_4 \Delta \text{COB}_{it-1} + \beta_{34} \text{Public}_{it-1} \times \Delta \text{COB}_{it-1} \\ & + \beta_5 \Delta \text{Performance}_{it-1} + \beta_{35} \text{Public}_{it-1} \times \Delta \text{Performance}_{it-1} \\ & + \beta_6 \text{Ownership}_{it-1} + \beta_{36} \text{Public}_{it-1} \times \text{Ownership}_{it-1} + \beta_7 \text{Time}_t + \eta_i + \varepsilon_{it} \end{aligned} \quad (2)$$

In [equation \(2\)](#) the dependent variable (ΔCEO_{it}^*) is the linear approximation of CEO turnover. As a result of the use of four performance variables (changes in the market-to-book value, and ROA variations between period $t-2$ and $t-1$, between $t-3$ and $t-1$ and between $t-4$ and $t-1$), we computed four dependent variables, one for each performance measure [\[5\]](#). [Equation \(2\)](#) is applied to both the full sample and the group of public firms. In the full model, the variable “Public” is a dummy taking the value of one if the firm is public. Finally, note that we use lags of the observed CEO turnover (ΔCEO_{it-1})—instead of lags of the predicted probability of CEO turnover (y_{it}^*)—to avoid conditioning CEO turnovers on lagged effects of explanatory variables and past estimation errors ([Bover and Arellano, 1997](#)).

The estimation strategy adopted in this study combines fixed-effect models with the use of endogenous variables to model CEO turnover. This approach has the advantage of tackling endogeneity problems resulting from both omitted variable problems and reverse causality. In fact, [Wooldridge \(2002, p. 247\)](#) shows how the fixed-effects estimation yields consistent regression coefficients in the presence of omitted variables. Additionally, consistency in the fixed-effect estimation requires the use of instruments for the potential endogenous variables

to treat reverse causality problems (Wooldridge, 2002, p. 310). We have addressed reverse causality by lagging one period the vector of endogenous variables (\mathbf{Z}) used to estimate CEO turnovers. By the same token, all time-varying exogenous variables (\mathbf{X}) used in the different model specifications were lagged one period to avoid simultaneity problems.

4. Results

This section presents the fixed-effects estimates for the impact of the analyzed control mechanisms on CEO turnover in public and large private firms. Results in Tables 3 and 4 were obtained using as dependent variable the corresponding linear approximation for CEO turnover. Specification 1 in Table 3 is the baseline model which includes the control variables and the key variables linked to previous CEO dismissal, previous changes in the chairperson (COB) and short-term performance changes (ROA change from period $t-2$ to period $t-1$). Model 2 introduces the interaction terms between these key variables and the “public” dummy variable. In the same table, models 3 to 6 present the results when long-term ROA changes (from period $t-3$ to period $t-1$ and from period $t-4$ to period $t-1$) is the performance variable. Table 4 reports the results for the sample of public firms using the market-to-book (M-to-B) value (models 1 and 2) and ROA (models 3 and 4).

Also, Table A1 in Appendix shows that correlations among the study variables are generally in the low to moderate range. To address the threat of collinearity, we computed the variance inflation factor (VIF) for all variables, and summary results are presented in Tables 3 and 4. In all model specifications, average VIFs do not exceed 10—a generally accepted rule of thumb for assessing collinearity—and range between 1.17 (see Section 4.1) and 2.69 (see Section 4.2). The result of this diagnostic test does not raise collinearity concerns.

Note that, given the nature of the dependent variable (CEO turnover), coefficients cannot be directly interpreted. To obtain the predicted change in the probability of CEO turnover as a result of a change in any independent variable, we evaluate the standard normal c.d.f. at specific values of the focal independent variable (Wooldridge, 2002, p. 469) [6].

4.1 Dynamic CEO dismissals in public and private firms

First, we evaluate if CEO turnover is conditioned by past performance changes and previous changes in the CEO and the chairperson positions. Results in Table 3 show a negative relationship between past performance changes and CEO turnover. The sign and significance of the ROA coefficient (model 1: $\beta_5 = -0.0003$, $p = 0.028$) are consistent with the bulk of studies examining this effect (e.g. Dasgupta *et al.*, 2018; Huson *et al.*, 2004; Jenter and Lewellen, 2021; Kim *et al.*, 2020; Wiersema and Zhang, 2011; Zhang, 2008). The evaluation of the standard normal c.d.f. indicates for private firms that a ten-point fall in ROA increases the probability of CEO turnover by four percentage points, while for public firms this probability rises 14 percentage points as a result of a ten-point fall in ROA (model 2 in Table 3). For comparison purposes, a similar result is reported for public firms when the market-to-book value is the performance variable (models 1 and 2 in Table 4).

To corroborate that the effect of short-term performance changes on CEO turnover is stronger in public firms, we compared the coefficients of past ROA changes and its interaction with the public dummy (model 2 in Table 3). The two coefficients are significantly different at 1% level (F -test = 25.22, $p < 0.001$), indicating that the informative power of short-term performance changes to evaluate the quality of the CEO is stronger among public firms.

This result is in accordance with our hypothesis H1a that states that the negative relationship between short-term performance changes and CEO turnover is stronger among publicly traded firms. Also, note that the results from models 3 and 4 in Table 3 indicate that CEO turnover is negatively related to performance changes in longer performance horizons

Table 4.
CEO turnover in
public firms

	(1)	(2)	(3)	(4)
Size _{<i>t-1</i>} (ln assets)	-0.0210 (0.0697)	-0.0251 (0.0696)	0.0397 (0.0411)	0.0339 (0.0408)
Leverage _{<i>t-1</i>}	0.3496† (0.2121)	0.3659† (0.2121)	0.0850 (0.1417)	0.0584 (0.1411)
CEO duality _{<i>t-1</i>}	-0.0447 (0.1120)	-0.0514 (0.1123)	0.0149 (0.0759)	0.0161 (0.0755)
Stake held by the CEO _{<i>t-1</i>}	-2.0444 (2.5449)	-1.7948 (2.5432)	-1.6725 (1.7569)	-1.0505 (1.7447)
IBEX-35	0.0523 (0.1970)	0.0285 (0.1988)	-0.0276 (0.1263)	-0.0251 (0.1258)
CEO turnover _{<i>t-1</i>}	-0.1147 (0.0766)	-0.0816 (0.0649)	-0.0208 (0.0383)	-0.0329 (0.0445)
IBEX-35 × CEO turnover _{<i>t-1</i>}		-0.1334 (0.1314)		0.0345 (0.0839)
Chairperson turnover _{<i>t-1</i>}	0.1569* (0.0787)	0.1595† (0.0867)	0.0369 (0.0543)	0.0578 (0.0614)
IBEX-35 × Chairperson turnover _{<i>t-1</i>}		-0.0369 (0.1989)		-0.0678 (0.1265)
ΔMarket-to-Book _{<i>t-2,t-1</i>}	-0.1271*** (0.0356)	-0.1055** (0.0379)		
IBEX - 35 × ΔMarket-to-Book _{<i>t-2,t-1</i>}		-0.1549† (0.0897)		
ΔROA _{<i>t-2,t-1</i>}			-0.0108*** (0.0018)	0.0002 (0.0040)
IBEX - 35 × ΔROA _{<i>t-2,t-1</i>}				-0.0136*** (0.0045)
Time dummies	Yes	Yes	Yes	Yes
Intercept	-1.2780*** (0.3986)	-1.2549*** (0.3985)	-1.6002*** (0.2343)	-1.5526*** (0.2332)
F-test	15.76***	13.06***	30.11***	25.42***
R Square (within)	0.3242	0.3301	0.4636	0.4747
Observations	535	535	564	564
Average VIF	1.46	1.51	1.41	1.98
Note(s): The table presents the fixed-effects regression results of CEO turnover as presented in equation (2) . Models 1 and 2 use changes in the Market-to-Book value as performance variable, while change in ROA is the performance metric used in models 3 and 4. Robust standard errors are presented in brackets. †, *, **, *** indicate significance at the 0.10, 0.05, 0.01, and 0.001 levels, respectively				
Source(s): Authors' elaboration				

(model 3), and that this effect is only statistically significant for the group of private businesses (model 4). The findings for the models including performance changes between $t-4$ and $t-1$ are not significant (models 5 and 6). These results partially support our hypotheses [H1b](#) stating that in longer time periods (in our case, a three-year performance horizon) the negative relationship between performance changes and CEO turnover is stronger among private firms.

The findings for the full sample indicate that firms that previously dismissed the CEO are less likely to replace the newly appointed CEO (model 1: $\beta_2 = -0.0246$, $p = 0.033$). The evaluation of the standard normal c.d.f. indicates that the probability of CEO turnover falls by 0.38 percentage points for recently appointed CEOs, relative to the probability of CEOs with longer tenures. The interaction term between previous CEO turnover and the public dummy is not significant (model 2 in [Table 3](#)), and the comparison of the coefficients for past CEO turnover and the interaction term between the public dummy and past CEO turnover is statistically significant (F -test = 2.70, $p = 0.082$).

In line with our arguments in [Section 2](#), these findings corroborate that discrepancies in the temporal horizon of public and large private firms have a differentiated impact on CEO turnover, that is CEO turnover decisions are path-dependent. Directors of private firms, in their more advisory role, may exercise monitoring “patience” and base their early-stage evaluation of the CEO on information other than short-term performance until reliable performance data become available later in the CEO’s tenure ([Finkelstein et al., 2009](#); [Graffin et al., 2013](#)). On contrary, the lack of significance in both the interaction term between past CEO turnover and the public dummy ([Table 3](#)) and the past CEO turnover variable in [Table 4](#) indicate that CEOs of public firms can be replaced at any time, regardless of their tenure. Public firms are more short-sighted and their monitoring intensity is more conditioned by market pressures and quarterly results ([Shen and Canella, 2002](#)), thus making monitoring “patience” incompatible with short-term shareholders’ interests ([Zhang, 2008](#)). These results support our [hypothesis 2 \(H2\)](#) which states that the probability to replace a recently appointed CEO is higher for public firms.

To further validate the robustness of our results, we tested the CEO turnover–performance relationship among recently hired CEOs. Regression results, not presented here but available under request, confirm the path dependency of CEO turnover decisions. More concretely, we find that the effect of past short-term performance variations on the probability to replace a recently hired CEO is stronger in public firms (model 2: $\beta_{35} = -0.0077$, $p = 0.073$). Once more, this result reinforces our argument that public and private firms have different performance horizons. Public firms prioritize owners’ short-term interests and poor performance in the short-term drives CEO turnover decisions, irrespective of the incoming manager’s tenure.

[Hypothesis 3](#) states that the positive relationship between changes in the chairperson and subsequent CEO turnover is stronger in public firms. This hypothesis ([H3](#)) is partially supported. Results show that, for the full sample, the change of the chairperson does not significantly impact future CEO turnovers ([Table 3](#)). For public firms, results in [Table 4](#) show that past chairperson changes significantly influence future CEO turnovers, but only when M-to-B is the performance measure (model 1: $\beta_4 = 0.1569$, $p = 0.047$). The evaluation of the standard normal c.d.f. indicates that the probability of CEO turnover increases by 3.25 percentage points in public firms that recently replaced the chairperson ($t-1$), relative to the probability of CEO turnover in public firms that did not replace the chairperson in the period $t-1$.

The dissimilar findings when comparing market-oriented and accounting-based measures might result from the perceived informative power that each variable has for the board and investors. By construction, accounting measures partially reflect CEO’s performance, while M-to-B captures the actual and the expected value created by the CEO ([Engel et al., 2003](#)).

Thus, the apparent inconsistency in the results may signal that, in our sample, investors place a greater weight on market measures because they are more informative about managerial performance. On contrary, accounting ratios are weighted less heavily because boards and investors perceive these variables as less precise and more affected by firm-specific factors unrelated to managerial performance (Adams *et al.*, 2010). Also, we ran a supplementary analysis to verify if the impact of changes in the chairperson on CEO turnover originates from a relationship between chairperson turnover and poor performance. To test this, we computed a dependent variable for chairperson turnover following equations (1) and (2), where the endogenous variables (**Z**) are previous chairperson changes and past performance changes (i.e. market-to-book ratio and ROA). Regression results, not reported but available upon request, indicate that the probability to replace the chairperson is not related to past performance variations.

4.2 Robustness checks

This sub-section presents the results of a number of robustness checks evaluating the role of the businesses' ownership structure on CEO turnover decisions, as well as the consistency of our econometric approach to results obtained from alternative, more canonical, estimation methods.

4.2.1 The role of owners: active or apathetic players? We first examine the effect of ownership structure on CEO turnover. Tables 5 and 6 show the estimates for the effect of ownership concentration on CEO turnover for the full sample and the sample of public firms,

	(1)	(2)	(3)
Size _{<i>t-1</i>} (ln assets)	0.0164 (0.0134)	-0.0401 (0.0304)	0.0173 (0.0243)
Leverage _{<i>t-1</i>}	-0.0134 (0.0468)	0.1001 (0.0975)	0.0434 (0.0844)
CEO duality _{<i>t-1</i>}	0.0212 (0.0199)	-0.0364 (0.0335)	0.0325 (0.0330)
Stake held by the CEO _{<i>t-1</i>}	-0.0213 (0.0705)	-0.0049 (0.0982)	-0.0543 (0.1077)
Public	-0.0348 (0.1297)	-0.0581 (0.1671)	-0.0553 (0.1263)
CEO turnover _{<i>t-1</i>}	-0.0247* (0.0124)	-0.0186 (0.0210)	-0.0285 (0.0219)
Public × CEO turnover _{<i>t-1</i>}	-0.0005 (0.0449)	-0.0153 (0.0517)	-0.0076 (0.0375)
Chairperson turnover _{<i>t-1</i>}	0.0115 (0.0171)	-0.0059 (0.0296)	-0.0111 (0.0320)
Public × Chairperson turnover _{<i>t-1</i>}	0.0170 (0.0629)	0.0289 (0.0712)	0.0261 (0.0523)
ΔROA _{<i>t-2,t-1</i>}	-0.0002† (0.0001)	-0.0003 (0.0004)	-0.0030*** (0.0007)
Public × ΔROA _{<i>t-2,t-1</i>}	-0.0105*** (0.0021)	-0.0111*** (0.0022)	-0.0105*** (0.0014)
C1 _{<i>t-1</i>}	-0.0052 (0.0473)		
Public × C1 _{<i>t-1</i>}	0.1207 (0.1613)		
C2 _{<i>t-1</i>}		0.0201 (0.0573)	
Public × C2 _{<i>t-1</i>}		0.0981 (0.1775)	
C3 _{<i>t-1</i>}			0.0304 (0.0730)
Public × C3 _{<i>t-1</i>}			0.0835 (0.1212)
Time dummies	Yes	Yes	Yes
Intercept	-1.3760*** (0.0740)	-1.1687*** (0.1538)	-1.4368*** (0.1417)
F-test	255.34***	67.23***	82.52***
R Square (within)	0.3933	0.3129	0.5406
Observations	8,537	3,467	1,735
Average VIF	1.49	1.69	1.86

Table 5.
CEO turnover: the
alignment of large
shareholders (full
sample)

Note(s): The table presents the fixed-effects regression results of CEO turnover as presented in equation (2). The variable C1 refers to the stake held by the largest shareholder, while C2 and C3 are the ownership concentration by the two largest and three largest shareholders, respectively. Robust standard errors are presented in brackets. †, *, **, *** indicate significance at the 0.10, 0.05, 0.01, and 0.001 levels, respectively

Source(s): Authors' elaboration

	(1)	(2)	(3)	(4)	(5)	(6)
Size _{<i>t-1</i>} (ln assets)	-0.0248 (0.0692)	0.0347 (0.0404)	-0.0161 (0.0806)	0.0536 (0.0567)	-0.0201 (0.0818)	0.0499 (0.0586)
Leverage _{<i>t-1</i>}	0.2864 (0.2134)	0.0058 (0.1409)	0.3479 (0.2349)	0.0027 (0.1634)	0.3737 (0.2395)	0.0310 (0.1704)
CEO duality _{<i>t-1</i>}	-0.0713 (0.1116)	-0.0035 (0.0742)	0.0134 (0.1302)	0.0299 (0.0875)	0.0265 (0.1313)	0.0277 (0.0918)
Stake held by the CEO _{<i>t-1</i>}	-1.3285 (2.5223)	-0.7441 (1.7222)	-1.9203 (2.5823)	-2.4778 (1.8319)	-1.0030 (2.5823)	-2.5584 (1.8663)
IBEX-35	0.0252 (0.1971)	-0.0249 (0.1244)	-0.6425† (0.3662)	-0.3027 (0.2076)	-0.7505* (0.3760)	-0.2347 (0.2226)
CEO turnover _{<i>t-1</i>}	-0.0803 (0.0644)	-0.0323 (0.0439)	-0.0958 (0.0685)	-0.0441 (0.0485)	-0.1047 (0.0703)	-0.0460 (0.0509)
IBEX-35 × CEO turnover _{<i>t-1</i>}	-0.1364 (0.1303)	0.0316 (0.0828)	-0.1466 (0.1347)	0.0341 (0.0902)	-0.1396 (0.1356)	0.0398 (0.0942)
Chairperson turnover _{<i>t-1</i>}	0.1543† (0.0861)	0.0536 (0.0603)	0.1565† (0.0894)	0.0492 (0.0648)	0.1547† (0.0914)	0.0468 (0.0679)
IBEX-35 × Chairperson turnover _{<i>t-1</i>}	-0.0135 (0.1974)	-0.0750 (0.1253)	-0.0672 (0.2026)	-0.0638 (0.1343)	-0.0763 (0.2035)	-0.0877 (0.1371)
ΔMarket-to-Book _{<i>t-2,t-1</i>}	-0.1052*** (0.0376)		-0.1194** (0.0406)		-0.1216** (0.0407)	
IBEX-	-0.1541† (0.0889)		-0.1892* (0.0925)		-0.1993* (0.0925)	
35 × ΔMarket-to-Book _{<i>t-2,t-1</i>}						
ΔROA _{<i>t-2,t-1</i>}		0.0003 (0.0040)		0.0001 (0.0045)		-0.0001 (0.0046)
IBEX-35 × ΔROA _{<i>t-2,t-1</i>}		-0.0150*** (0.0044)		-0.0140** (0.0050)		-0.0136** (0.0051)
C1 _{<i>t-1</i>}	0.0576 (0.2147)	0.0164 (0.1470)				
IBEX-35 × C1 _{<i>t-1</i>}	2.8446** (0.9868)	2.1858*** (0.6094)				
C2 _{<i>t-1</i>}			0.0911 (0.2356)			
IBEX-35 × C2 _{<i>t-1</i>}			1.4990* (0.7033)			
C3 _{<i>t-1</i>}				0.0774 (0.1669)		
IBEX-35 × C3 _{<i>t-1</i>}				0.6790† (0.4004)		
Time dummies						
Intercept	Yes	Yes	Yes	Yes	Yes	Yes
F-test	-1.3882*** (0.4016)	-1.6676*** (0.2363)	-1.2973** (0.4750)	-1.6706*** (0.3390)	-1.2899*** (0.4870)	-1.6758*** (0.3533)
R Square (within)	12.30***	23.96***	10.01***	18.45***	9.69***	17.46***
Observations	0.3442	0.4905	0.3158	0.4493	0.3139	0.4437
Average VIF	535	564	502	521	492	505
	1.67	2.01	2.01	2.51	2.16	2.69

Note(s): The table presents the fixed-effects regression results of CEO turnover as presented in [equation \(2\)](#). Model specifications 1, 3 and 5 use the Market-to-Book as a performance variable, while ROA is the performance metric in models 2, 4 and 6. The variable C1 refers to the stake held by the largest shareholder, while C2 and C3 are the ownership concentration by the two largest and three largest shareholders, respectively. Robust standard errors are presented in brackets. †, *, **, *** indicates significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively

Source(s): Authors' elaboration

Table 6.
CEO turnover: the
alignment of
shareholders in
public firms

respectively. Note that results in [Tables 5 and 6](#) were obtained using as dependent variable the corresponding linear approximation for CEO turnover.

From [Table 5](#) we observe that coefficients for ownership concentration are not significant for private firms, which suggests that the presence of large shareholders does not increase the monitoring of management. From the descriptive analysis we know that private firms are mainly controlled by a dominant shareholder holding, on average, more than 50%, irrespective of the number of large shareholders ([Table 2](#)). Thus, this result suggests that the high concentration level among private firms discourages other investors to exert any monitoring task and that the dominant shareholder—who arguably has access to better information about the organization and is more involved in managerial decision-making processes—will monitor management seeking to secure business operations and long-term performance ([Adams et al., 2010; Chen et al., 2019](#)).

Note that the negative relationship between current and past CEO turnover dilutes as we control for the presence of large shareholders in our regressions ([Table 5](#)). We further explored this result by testing for differences in CEO turnover rates in different size groups of private firms, according to the number of shareholders. The CEO turnover rate in firms with only one large shareholder is 14.98% (mean size: €166 million in assets), whereas this rate is 16.74% for firms with two large shareholders (mean size: €176 million in assets). We found no significant difference in the CEO turnover rate between these two groups. For private firms with more than two large shareholders (mean size: €285 million in assets), the mean CEO turnover rate (18.78%) is significantly higher (t -test = -2.11 and $p = 0.035$) than the CEO turnover rate of private firms with two large shareholders.

These findings corroborate that shareholders' role is conditioned by their control level. The pressure of shareholders on directors increases with the number of large shareholders. Thus, CEO turnover is not path-dependent in private firms with several controlling shareholders, and their monitoring turns less "patient" and as intense as that reported for public firms.

Next, we evaluate to what extent the largest shareholder in public firms relies on other large shareholders to replace the CEO. Results in [Table 6](#) show that the positive effects on CEO turnover of associations between several large shareholders are statistically significant for public firms listed in the main Spanish index (IBEX-35). Compared to the results for the M-to-B value (Models 1, 3, and 5), the interaction terms between the IBEX-35 dummy and ownership are weaker when ROA is the performance variable (Models 2, 4 and 6). These results support the argument that owners base their evaluation of CEOs on market-oriented variables, which might have superior informative power and are closely linked to shareholders' interests ([Chen et al., 2019; Halebian and Rajagopalan, 2006](#)).

For illustrative purposes, we interpret the results of model 3 in [Table 6](#). If we compare two identical firms—one listed in the IBEX-35 index and the other listed in another market—with two large shareholders holding average stakes ([Table 3](#): 32.10 and 12.05%, respectively), the evaluation of the standard normal c.f.d. indicates that the probability to replace the CEO rises by 1.69 percentage points for the firm listed in the IBEX-35, relative to that for the firm listed in another Spanish index. The relationship between ownership concentration and CEO turnover is stronger in public firms listed in the main stock market (IBEX-35), which typically present a dispersed ownership structure, and is governed by demanding investors who request more detailed information to evaluate managers.

4.2.2 Alternative estimation methods (fixed-effects logit model). Finally, we evaluated if our estimations—computed via a two-step within (fixed-effects) model with endogenous variables ([Bover and Arellano, 1997](#))—are consistent with the results obtained from alternative, more canonical, fixed-effects logit models. [Table A2 \(Appendix\)](#) presents the results of the fixed-effects model for the full sample and for the sub-sample of public firms. These results are partially comparable to those reported in [Tables 3 and 4](#). Note that the

results of our two-step within estimator are not directly comparable to those computed via a fixed-effects logit method because the latter imposes strict exogeneity on the independent variables. Also, contrary to the two-step within the model that includes all observations in the analysis, fixed-effects logit models compute parameters only for firms with time-varying responses in the dependent variable, that is, the model excludes firms that report no CEO turnover or replaced the CEO in all time periods (Honoré and Kyriazidou, 2000).

Overall, the results indicate that our estimation approach offers valid estimations on the role of past performance changes, past CEO turnover and past chairperson changes on CEO turnover.

The main findings of this supplementary analysis indicate that, for the group of businesses that report between one and six CEO turnovers during the analyzed period, the negative effect of short-term performance changes (from period $t-2$ to $t-1$) is stronger among public firms. Also, results for the full sample (model 2 of Table A2) show that past CEO turnover is negatively related to CEO turnover in subsequent periods. These results are consistent with the findings reported in Table 3.

But, the findings for the sub-sample of public firms suggest that newly appointed CEOs are less likely to be dismissed. As we indicated above, this result might be biased because fixed-effects logit models impose strict exogeneity on the independent variables. Within the business, CEO turnovers (taking place in previous and subsequent periods) are inter-connected events. Following Arellano and Honoré (2001), the inclusion of the lagged dependent variable in a regression model is not trivial, and accurate estimations—including those obtained from the two-step within model used in this study—should take into account the computational issues related to the breaking the exogeneity assumption.

5. Discussion, implications and concluding remarks

In this study, we proposed that private and public firms have different performance horizons and that boards follow different paths to evaluate top executives. Furthermore, we argued that CEO turnover is a dynamic process where endogenous factors linked to past performance changes, path-dependent CEO turnover and changes in the board play critical roles. More concretely, we hypothesized that businesses can use different mechanisms to monitor the CEO and that enhanced monitoring translates into benefits for the organization. Drawing on corporate governance and management frames, our approach to CEO turnover offers a compelling vision of how public and private firms evaluate managers differently, and how these processes affect CEO turnover decisions. To the best of our knowledge, this is the first study that evaluates differences in CEO turnover between public and private firms, while considering the endogenous nature of executive replacements.

Overall, the findings are consistent with prior studies that emphasize the negative relationship between performance and the probability to replace the CEO (e.g. Chen *et al.*, 2019; Dasgupta *et al.*, 2018; Fisman *et al.*, 2014; Jenter and Kanaan, 2015; Graham *et al.*, 2020; Jenter and Lewellen, 2021; Zhang, 2008). Also, our results reveal significant differences in the monitoring behavior of boards in private and public firms.

We argue that discrepancies may arise from differences in the temporal horizon of public and private firms, which affect both the path dependency of CEO turnover records and the level of monitoring “patience” exercised by boards. On the one hand, private firms may behave more “patiently” and allow for an adjustment period, as directors learn how to evaluate the abilities of the incoming CEO and collect reliable data about the new CEO’s outcomes. On the other hand, managers of public firms are monitored by both owners—who prioritize short-term economic results—and directors whose monitoring “patience” seems more connected with shareholders’ interests and their reputational concerns (Sliwka, 2007; Tuggle *et al.*, 2010). We have observed these differences in the performance horizon but the

deep reason driving the different results remains an unanswered matter: why is it the case that private firms are more reluctant to replace CEOs in the short term?

This paper has implications for how boards can efficiently match the owners' interests and the sustainability of the business with the need to accurately monitor and capitalize on the talent of managers. First, we suggest that directors need to turn their attention to the development of different quantitative—including aspects dealing with operational and financial aspects—and qualitative—including aspects related to strategy, product and innovation—metrics when evaluating the early stage of the CEO's tenure. In public firms, the directors' prioritization of short-term economic results may fulfill investors' desires. But, excessive short-termism might blur the analysis of the quality of management by underrating the CEO's efforts to pursue other, maybe more relevant, long-term strategic goals (Fisman *et al.*, 2014).

Second, this research offers insights on how to cope with the incompatibilities that may emerge between directors' monitoring, investors' managerial involvement and the contributions of the CEO to business outcomes. Based on the arguments that performance and CEO turnover records are path-dependent and that the board adopts a more advisory role in private firms, the prescription is to balance monitoring tasks with actions that contribute to exploit the abilities of CEOs. The excessive implication of owners of private firms in decision-making processes limits managers' capacity to run the business and neutralizes their abilities as they—in this context—will likely invest more time and effort in low value-adding tasks. These practices count against business performance and produce biased assessments about CEOs' outcomes (Graffin *et al.*, 2013). To increase shareholders' value, we propose that directors and owners of private firms should learn how to balance monitoring tasks with strategic decision-making processes, such as the initiation of long-term projects that improve business operations or the formulation of expansion programs that enhance economic performance.

It must, however, be mentioned a series of limitations to the present study that, in turn, represent avenues for future research. First, like other studies, the lack of more detailed information for private firms limited the analysis of the determinants of different types of CEO departure. Further research on this issue would be valuable. For example, future studies should evaluate if the directors' monitoring "patience" varies according to the origin of the newly appointed CEO (insider or outsider). Additionally, future studies on executive turnover in private businesses should include in the analysis a greater number of governance-related variables, such as board size, CEO age, CEO tenure or the influence of controlling groups (e.g. families). Second, and concerning the presence of institutional investors, future research should introduce variables related to investors' identity. Cuomo *et al.* (2013) point that most large businesses in developed economies are governed by few controlling shareholders (including families, governments or a small group of large investors). From a management perspective, specifically designed future research can address this point by evaluating whether different types of institutional investors influence CEO turnover patterns and the boards' monitoring "patience". Third, in the analysis of executive turnovers in private and public firms, local shocks might play a relevant role. In the context of the global Covid pandemic that hit healthcare systems and, ultimately, countries' economic stability, the analysis of how the sensitivity of CEO turnover in the short- and long-term to this type of economic shock (i.e. originated in a health crisis) constitutes a promising topic that should be included in academics' research agenda. Among other things, from the 2008 economic crisis, we learned that businesses weigh different priorities and at different intensities when it comes to making relevant decisions heavily conditioned by the state of the economy (in our case, executive turnover). In this sense, future work should analyze if the factors used to evaluate CEOs' performance not only vary over time but also change in periods of unexpected shocks (e.g. the Covid pandemic) vis-à-vis periods of economic stability. Finally, cultural

contexts and different regulatory frameworks might affect the effectiveness of the monitoring of management. The geographic specificity of the study calls for obvious caution when generalizing its findings and similar studies from other countries and regulatory frameworks would be welcome.

Notes

1. Other variables connected to the firm's ownership structure as well as to the identity and typology of owners can be important determinants of CEO turnover; however, due to data availability issues our study focuses on the role of past performance, past changes in the CEO and past changes in the chairperson (see Section 3).
2. <http://www.wsj.com/articles/michael-dell-going-private-is-paying-off-for-dell-1416872851>. After five years, Dell Technologies Inc. decided the re-entry to public equity markets (<https://www.wsj.com/articles/dell-returns-to-public-equity-markets-11546011748>).
3. Note that, as in many European countries, Spanish private firms can operate without a board. Therefore, in this step, we excluded private firms that did not report the name of the CEO or the chairperson in all the analyzed periods because either data were missing or the business was run by a sole administrator.
4. We have estimated alternative model specifications considering other performance metrics: return on equity (ROE), industry-adjusted ROA and industry-adjusted ROE. Results, available on request, indicate that the effect of these performance variables on the probability to dismiss the CEO is not significantly different compared to the estimated effect of ROA and the market-to-book value.
5. For illustrative purposes we present the main descriptive statistics of the four dependent variables: ΔCEO (ROA changes from $t-2$ to $t-1$): Mean = -1.7461 , Std. dev. = 0.4793 , Min. = -4.3085 , Max. = 1.4341 ; ΔCEO (ROA changes from $t-3$ to $t-1$): Mean = -1.5885 , Std. dev. = 0.3760 , Min. = -3.7994 , Max. = 0.4109 ; ΔCEO (ROA changes from $t-4$ to $t-1$): Mean = -0.9448 , Std. dev. = 0.1983 , Min. = -2.4152 , Max. = 0.3965 ; and ΔCEO (M-to-B changes from $t-2$ to $t-1$): Mean = -0.0150 , Std. dev. = 0.2233 , Min. = -1.8605 , Max. = 1.9712 .
6. The dependent variable (CEO turnover) is the linear prediction obtained from the year-to-year probit models. Thus, the magnitude of the effect of an independent variable (x) on the probability of CEO turnover can be approximated by evaluating the standard normal cumulative density function (c.d.f.), $\Phi(\beta_0 + \beta_j x_i)$, where the constant term is the unconditional probability of CEO turnover and other variables are set at their mean values.

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	1	2	3	4	5	6	7	8	9	10	11	12
1 CEO turnover	1											
2 Size (ln assets)	0.132 ^{***}	1										
3 Leverage	-0.002	-0.054 ^{***}	1									
4 CEO duality	-0.003	0.040 ^{***}	0.004	1								
5 Public	0.039 ^{***}	0.223 ^{***}	-0.129 ^{***}	-0.039 ^{***}	1							
6 IBEX 35	0.020 ^{***}	0.213 ^{***}	-0.047 ^{***}	-0.010	0.532 ^{***}	1						
7 Chairperson turnover	0.065 ^{***}	0.105 ^{***}	0.001	-0.117 ^{***}	0.025 ^{***}	0.007	1					
8 ΔROA	-0.003	0.015 [†]	-0.002	0.016 [†]	0.023 [†]	-0.001	-0.004	1				
9 ΔMarket-to-book	-0.076 [†]	0.027	-0.002	0.013	-0.046 [†]	-0.036	0.007	-0.030	1			
10 Stake held by the CEO	-0.050 [†]	-0.084 ^{***}	0.058 ^{***}	0.005	-0.044 ^{***}	-0.023 ^{***}	-0.043 ^{***}	-0.003	-0.005	1		
11 Ownership (largest shareholder)	0.026 ^{***}	-0.020 ^{***}	0.142 ^{***}	0.042 ^{***}	-0.276 ^{***}	-0.146 ^{***}	0.041 ^{***}	-0.002	0.107 ^{***}	-0.026 ^{***}	1	
12 Ownership (second-largest shareholder)	0.022 [†]	-0.081 ^{***}	0.035 ^{***}	0.015	-0.157 ^{***}	-0.087 ^{***}	-0.004	0.012	-0.038	0.017	-0.072 ^{***}	1
13 Ownership (third-largest shareholder)	-0.007	-0.133 ^{***}	0.100 ^{***}	0.024	-0.191 ^{***}	-0.097 ^{***}	-0.002	0.006	-0.058	0.050 ^{***}	-0.236 ^{***}	0.263 ^{***}

	Full sample		Public firms	
	(1)	(2)	(1)	(2)
Size _{<i>t-1</i>} (ln assets)	0.6794*** (0.0999)	0.6874*** (0.1004)	0.1163 (0.3603)	0.3300 (0.3432)
Leverage _{<i>t-1</i>}	-0.1555 (0.3079)	-0.1464 (0.3082)	-0.7635 (1.1342)	-0.8089 (1.1497)
CEO duality _{<i>t-1</i>}	-0.2273† (0.1177)	-0.2261† (0.1176)	0.6419 (0.5971)	0.6860 (0.5986)
Stake held by the CEO _{<i>t-1</i>}	-0.1416 (0.1091)	-0.1315 (0.1070)	-1.4253 (1.5691)	-1.3910 (1.4588)
Public	1.8104 (1.1375)	1.8603 (1.1348)		
IBEX-35			0.0835 (2.2254)	0.4666 (2.4111)
CEO turnover _{<i>t-1</i>}	-1.8408*** (0.0867)	-1.7937*** (0.0879)	-3.0147*** (0.5636)	-2.7480*** (0.5713)
Public × CEO turnover _{<i>t-1</i>}		-1.2312* (0.5493)		
IBEX-35 × CEO turnover _{<i>t-1</i>}				
Chairman turnover _{<i>t-1</i>}	0.3373** (0.0988)	0.3303** (0.1011)	0.5698 (0.4849)	0.2478 (0.5693)
Public × Chairman turnover _{<i>t-1</i>}		0.0587 (0.4911)		
IBEX-35 × Chairman turnover _{<i>t-1</i>}				
ΔMarket-to-Book _{<i>t-2,t-1</i>}			-0.4881* (0.2065)	-0.4713* (0.2111)
IBEX-35 × ΔMarket-to-Book _{<i>t-2,t-1</i>}				-0.1847 (0.8245)
ΔROA _{<i>t-2,t-1</i>}	-0.0002 (0.0004)	-0.0002 (0.0004)		
Public × ΔROA _{<i>t-2,t-1</i>}		-0.1046† (0.0641)		
IBEX - 35 × ΔROA _{<i>t-2,t-1</i>}				
Time dummies	Yes	Yes	Yes	Yes
LR - test (chi ²)	749.07***	761.2***	68.83***	68.83***
Log likelihood	-2619.9060	-2613.7965	-119.7783	-118.3408
R Square (McFadden)	0.0128	0.0130	0.0131	0.2320
Observations	8,156	8,156	413	413
Average VIF	1.32	1.32	1.50	1.55
				2.04

Note(s): The table presents the results of the fixed-effects logit models as presented in equation (2). Robust standard errors are presented in brackets. †, *, **, *** indicate significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively

Source(s): Authors' elaboration

Table A2.
Fixed-effects logit
results: CEO turnover
in Spanish public and
large private firms