

Do CEO Cultural Traits Shape Corporate Tax Aggressiveness? Quantile Regression Evidence from US Firms

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ABSTRACT

This study investigates the influence of CEO cultural characteristics on the strategic tax decisions on 90 US non-financial S&P 500 firms over the years 2014 to 2017. Such traits are ranked by their demographic characteristics (age, gender, ethnic), professional attributes (education, degree, tenure, experience, CEO duality, founder, compensation), social interactions (marital, military, political) and behavioral habits (overconfidence). As cultural imprint of the executive, it indicates the direct impact of executive culture on the corporate tax aggressiveness measured as $TA = (1 - ETR)$. Drawing on upper echelon's theory, agency, prospect, positive accounting, executive power, CSR/legitimacy, and cognitive bias theories, the analysis illustrates its point, through a quantile regression. The results show that demographic and social traits, such as older age, female gender, marital status, and military background, are associated to less tax aggressiveness, especially at lower quantiles. On the other hand, professional and behavioral characteristics that depict the financial education, longer tenure, CEO duality, higher compensation incentives, and overconfidence greatly enhance tax aggressiveness with the impact becoming more pronounced at the higher quantiles. This study adds to the extant literature a further understanding of the importance of CEO cultural imprints in shaping corporate tax strategies, providing valuable input for boards, investors, and regulators balancing tax optimization with issues of compliance and reputation.

Keywords: CEO characteristics; Tax aggressiveness; Corporate governance; US firm, Quantile regression.

INTRODUCTION

Corporation tax aggressiveness, which the current paper determines as the strategic company behavior to pay fewer taxes through legal or ambiguous means, is an important area of research in financial and managerial economics. Particularly in the United States, where corporate tax policy has always been heavily scrutinized, the underlying drivers of tax aggressiveness are of paramount importance to policymakers, regulatory bodies, and various stakeholders. As pivotal decision-makers in a company, Chief Executive Officers (CEOs) undoubtedly play an instrumental role in deciding these sophisticated tax plans. Their unique characteristics, typically firmly entrenched, play a vital role in firm-level decisions, all the way up to the realm of fiscal policy.

The historical path of corporations is largely determined by their success or failure in operations, often attributed to their leadership. In the case of American businesses, iconic figures like Elon Musk, known for the success of Tesla, and Jeff Bezos, Amazon's founder, come to mind. Louis Gerstner, credited with saving IBM, and Jack Welch at General Electric are other examples of CEOs who have had significant impact on their organizations. On the other hand, high-profile scandals put the spotlight on the central role of CEOs propelling controversial tax practice. For instance, Howard Schultz's leadership of Starbucks invited public outrage after revelations the company had paid very little corporate tax in the UK from enormous revenues (BBC News, 2012). In the

worst cases, CEOs such as Dennis Kozlowski (Tyco) and Richard Scrushy (HealthSouth) and Jeffrey Skilling (Enron) became engaged in tax-related misconduct that led to the magnitude of scandal and legal punishment. These are examples to demonstrate how a CEO's decisions can determine, and sometimes shape, the tax behavior of a company and have sweeping fiscal, brand, and penal consequences. Despite this increasing recognition of CEO authority, empirical examinations of the link between CEO characteristics and tax aggressiveness remain relatively limited, especially regarding U.S. firms during periods of changing tax law and public scrutiny. Prior research has been focused on individual traits or sub-periods, creating a gap in understanding how a combination of executive characteristics may influence firms' tax planning decisions cumulatively over time.

The present study conducts a comprehensive inquiry into the influence of an assortment of CEO characteristics on tax aggressiveness. These characteristics span several important dimensions: demographic features (age, gender, ethnicity); professional features (educational quality, years of tenure in the firm, total experience), CEO duality (serving as CEO and board chair), founder status, and compensation scheme; social factors, e.g., marital status, military service history, and political ideology; and behavioral features, most notably overconfidence.

In fact, research on CEO personality and its influence on tax aggressiveness has been more and more covered in literature, but it remains a relatively new field. Zamzam and Nafarieh (2013) refer to the fact that the separation between the CEO and board chair indeed is an important factor in the gap between reported and paid taxes. Their research, however, does not address individual CEO traits directly, and therefore there is a wide gap when it comes to corporate tax policy and how personal traits play a role.

Similarly, Guo (2014) examines the relationship between tax avoidance and innovation, examining board member contribution to tax policy design but not with particular reference to the effect of CEO-specific characteristics. Schneider Neuman determines managerial incentives as primary drivers of tax policy but does not investigate how certain CEO features might act to moderate such incentives. Other studies, such as Vakilian Aghouei and Moradi (2015), and Armstrong et al. (2015), still focus on the relationship between corporate governance and tax avoidance without including the role of executive psychological and demographic features in tax decisions. Khan et al. (2017) explicitly call for more research directed towards CEO qualities, identifying a need for comprehensive analyses on how individual qualities may relate to aggressive tax practices.

Follow-up research by Delis et al. (2018) and Rani et al. (2018) also affirms this deficiency, noting while firm size and earnings management have been significant topics of concern, the psychology and behavior of CEOs regarding tax aggressiveness remain underresearched. Equally, a study by Luh Supadmi and Ketut Ari Astiti (2018) once again reaffirms that the effect of CEO characteristics on tax mindsets has not been adequately researched, particularly using quantile regression specifications that allow for heterogeneity in the distribution of tax aggressiveness. Together, this research heritage identifies one persistent research shortfall: while organizational- and governance-level determinants have been extensively studied, individual-level determinants—particularly CEO traits—have been understudied in empirical work. This shortfall indicates that an increased, more nuanced study of CEO demographic, psychological, and experiential traits, particularly from the perspective of quantile regression approaches, can have substantial implications for learning about how these traits influence corporate tax policies at various levels of aggressiveness.

This study seeks to bridge this gap by investigating the role of CEO characteristics on tax aggressiveness in U.S.-listed firms from 2014 to 2017, during which there was heightened regulatory oversight and increased social interest in tax fairness. With a panel dataset of the S&P 500 non-financial companies and leveraging multidimensional CEO characteristics—demographic (age, gender, ethnic), professional (education, tenure, experience, duality, founder, compensation), social (married, military, political affiliation) and behavioral (overconfidence)—we examine their relation to effective tax rates and tax aggressiveness proxies.

This investigation adds to the literature in several significant respects. First, it extends the behavioral theory of corporate taxation by connecting CEO-level heterogeneity to firm tax outcomes, thereby complementing standard firm-based models. Second, it integrates several CEO dimensions into a single framework, and thus allows for thorough and empirically grounded measurement of executive influence on tax behavior. Third, by studying the U.S. context during a critical pre-Tax Cuts and Jobs Act (TCJA) period, the study provides timely responses to how tax strategy is shaped by executive traits in a state of fiscal and political uncertainty. Additionally, the main contribution of this research is the measurement of tax aggressiveness. Where several proxies are used to measure the tax aggressiveness, and the most popular is the effective tax rate (ETR), this analyzes used TA equal to $(1 - \text{ETR})$ to enhance the study. Through close study a robust dataset of 104 CEO from U.S. firms for the period 2014-2017, this paper employs quantile regression to capture dense insights regarding how these heterogeneous traits influence tax outcomes at aggregate levels at various degrees of corporate tax aggressiveness.

The findings of this study matter to scholars, practitioners, and policymakers. To investors and boards of directors, awareness of the CEO profile-aggressive tax planning link can have implications for executive decision, risk management, and governance processes. To tax administrations and regulators, specifying the behavioral

drivers of aggressive tax planning can raise monitoring systems and policy design to improve tax compliance and corporate responsibility.

The remainder of this paper is structured as follows. Section 2 creates a detailed theoretical model that combines the upper echelons theory with the different views from agency theory, prospect theory, positive accounting theory, executive power theory, CSR/legitimacy theory, and cognitive bias theory to explain the different impacts of CEO traits on tax aggressiveness. Following that, Section 3 selects the pertinent literature, finds the testable hypotheses that connect the demographic (age, gender), social (marital status, military experience), professional (education, tenure, duality), and behavioral (overconfidence) CEO traits to corporate tax outcomes. Next, Section 4 presents the research methods. The implications for CEO selection and tax aggressiveness are discussed in Section 5. Finally, we wrap up the study by a conclusion.

Theoretical Background

As the tone on the top, this research investigates the effect of the cultural traits of a CEO, considered as the continuous values, experiences, beliefs, and behavioral inclinations that together make up an executive cultural imprint, on corporate tax aggression. Viewing CEO attributes as cultural lens through which strategic decisions are made. Imprinting theory (Marquis & Tilcsik, 2013) combined by agency theory, cognitive bias, prospect, positive accounting, executive power theory, and CSR/legitimacy theory to analyze the varying impacts of the cultural characteristic of a CEO on the tax aggressiveness of the corporation.

The Upper Echelons Theory (Hambrick & Mason, 1984; Hambrick, 2007) serves as the fundamental theoretical for this study, positing that the observable demographic, social, professional, and behavioral characteristics of top executives act as significant indicators of their cognitive frameworks, values, and risk preferences, which ultimately influence strategic corporate outcomes. Corporate tax aggressiveness exemplifies a significant application of this perspective, as tax planning decisions are intrinsically complicated, opaque, and reliant on discretion, necessitating executives to interpret unclear legislation while weighing risk against profit. In this context, CEO attributes, such as age, gender, marital status, military experience, educational qualifications, tenure, dualism, and overconfidence, consistently affect firms' tax tactics (Finkelstein et al., 2009). This perspective is supported by the fact that older CEOs usually show a higher level of risk aversion which is attributed to their career concerns and conservative cognitive styles (Serfling, 2014). On the other hand, overconfident executives tend to taking aggressive tax positions due to their optimism bias and underestimating the risks associated with the downside (Malmendier & Tate, 2005).

Cognitive bias theory posits that one of the main micro-level mechanisms linking CEO characteristics to tax-related decision making is the systematic rationality deviations, of which overconfidence, optimism bias and illusion of control are the most significant ones. Overconfident CEOs usually believe that they can handle regulatory scrutiny more easily and thus will take less care in their dealings with the tax authorities, which results in a greater likelihood of their engaging in aggressive tax planning. These cognitive biases not only afflict the executives but also get magnified through the incentive structures pointed out by agency theory, which asserts that overconfident executives will be more prone to take the risk of using tax shelters to enhance their private benefits through better earnings performance, higher salary-based rewards, and even increased social-status due to the good reputation (Jensen & Meckling, 1976; Malmendier & Tate, 2005). Hence, these theories combined capture the essence of tax aggressiveness being not only a firm-level optimization problem but rather an executive-level behavioral biases reflection.

The behavioral theory is refined to a great extent by prospect theory which puts the emphasis on reference-dependent preferences and loss aversion in the context of risky decision-making (Kahneman & Tversky, 1979). The traits of CEOs that are linked to the increased loss sensitivity as older age, female gender, being married, and having military experience, are likely to bring about tax strategies that are more conservative, especially when firms are close to their critical performance limits. It is very significant that prospect theory foresees the effects of such traits being more pronounced at the lower levels of tax aggressiveness where the perceived downside risk is more substantial than the potential gains, thus, providing the theoretical reason for the varying effects across the distribution.

Positive accounting theory provides a justification based on incentives by correlating mail executives' learning and finical or accounting skills with tactical tax options. Top managers with better technical qualifications have more power to use accounting discretion and tax planning for their own gain, as the bonus plan and debt covenant hypotheses (Watts & Zimmerman, 1986) express. Such incentives are even more pronounced when managers have great power within the organization.

From the governance angle, the executive power theory provides an explanation for the influence of certain traits like the combination of CEO roles and long time in office on the concentration of decision-making power, the reduction in board monitoring and the control of tax aggressiveness (Haynes et al., 2003; Finkelstein et al., 2009). On the other hand, CSR and legitimacy theories underscore the acute moral and reputational issues that

might prevent the tax aggressiveness behavior of the organization. If the CEO has a stronger social responsibility viewpoint, he or she will probably not engage in aggressive tax strategies as a way of keeping the approval of the stakeholders and the legitimacy of the organization, considering tax compliance to be an indicator of corporate citizenship (Suchman, 1995; Law & Mills, 2017).

This paper analyzes the context of corporate governance and taxation, by the use of quantile regression to get proper representation of the influence of CEO's cultural traits on tax aggressiveness (Huseynov & Klamm, 2017). By combining different theories, this study shows that executive heterogeneity systematically shapes corporate tax behavior beyond firm-level determinants.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

It requires an interdisciplinary approach that draws upon economics, accounting, organizational behavior, psychology, and strategic leadership in comprehending deeply CEO attributes and their impacts on corporate tax aggressiveness. Based on the Upper Echelons Theory (Hambrick & Mason, 1984) and Imprinting theory, which posits that organizational outcomes are strongly influenced by senior executives' individual values, intellectual styles, and biography. The conceptual framework here provides a solid basis for subsequent empirical tests and refines our understanding of executives cultural in corporate tax behavior.

Demographic Characteristics and Tax Aggressiveness

Building upon the theories discussed above, several authors have explored the observable demographics of CEOs. These authors have demonstrated the impact of personal characteristics on company value creation. In this section, we examine CEO characteristics and corporate tax aggressiveness by referencing literature reviews that discuss different CEO characteristics (age, gender, ethnicity).

CEO Age and Tax Aggressiveness

The impact of age is one of the characteristics of leaders that has been the subject of numerous debates in management studies (Olsen, Sisodiya, & Swisher, 2016). These debates highlight two opposing streams of thought in the literature regarding the effect of CEO age on risk-taking decisions. While Holmstrom (1999) and Scharfstein and Stein (1990) argue that young CEOs are more risk-averse due to facing senior career managers, leading them to adopt conservative policies and decisions, Serfling (2014) finds a negative and significant relationship between CEO age and firm stock return. Olsen et al. (2016) support this idea by studying 591 CEO years and 2,715 individual CEO-firm combinations from 1997 to 2007, finding that younger CEOs lead to higher abnormal returns and are more engaged in tax risk. On the other hand, Sundaram and Yermack (2007) and Vroom and Pahl (1971) argue that young CEOs tend to make riskier decisions. In line with this, Hambrick and Mason (1984) demonstrate that young executives contribute effectively to company growth by developing strategies conducive to risk-taking and innovation, leading to improved financial performance and growth models. Barker and Mueller (2002) suggest that older executives are more conservative and seek job stability, being less likely to adopt new techniques. Child (1974) shows a strong relationship between young CEOs and firm growth in assets, sales, and profits, attributing this to the ability of younger managers to exert greater effort and promote change and growth. Similarly, older CEOs are less likely to engage in aggressive tax planning, as supported by Huang, Rose-Green, and Lee (2012), who suggest that older CEOs make more conservative decisions. In 2019, Hui Liang James conducted a study on the association between CEO age and corporate tax planning, using a sample of 11,537 company-year observations from the fiscal year 1997-2013. The results showed a negative relationship between CEO age and tax planning. In alignment with the second stream of thought, our study proposes the existence of a negative relationship between CEO age and tax aggressiveness. Therefore, we adopt the following hypothesis:

H.1.1. CEO Age has a negative effect on tax aggressiveness.

CEO Gender Diversity and Tax Aggressiveness

In the United States, as of 2012, women executives accounted for about 16.6% of Fortune 500 companies. This was an increase from 13.6% in 2003, but the growth has since stalled, with women CEOs currently making up only about 6%. Previous studies have shown that female leadership can bring a unique perspective that complements male counterparts. Research in psychology and sociology has indicated that women tend to be more risk-averse (Croson, R. and Gneezy, U. (2004)), less aggressive (Costa, P., Terracciano, A. and McCrae, R.R. (2001)), and more anxious than men (Hall, J.A. (1990)). Compared to men, women exhibit less risky behavior in decision-making processes, as supported by prior research. For instance, female CEOs are more likely to adhere to rules and regulations. A study conducted in the USA by Francis et al. demonstrated that women leaders are less associated with tax evasion compared to their male counterparts. Traditional gender stereotypes suggest that men are mentally and physically stronger, self-reliant, aggressive, competitive, and dominant, while women are viewed

as sympathetic, passive, conservative, and risk-averse. Women often seek out less risky, lower-paying jobs due to relatively lower career aspirations than men, as they tend to devote more time to family responsibilities. However, some studies in the literature on women in leadership challenge traditional gender theories and incorporate perspectives from both men and women. For example, Ming-Lei Chang, Der-Fen Huang, Chan-Chuan Ting, and Hui-Shan Chang (2019) conducted a study in a Chinese context and found that female CEOs do not engage in less tax avoidance activities compared to male CEOs. These studies suggest that gender-based differences in an executive's risk tolerance can influence financial decisions.

H.1.2. Female CEO has a negative impact on tax aggressiveness.

CEO Ethnicity (Black CEOs) and Tax Aggressiveness:

In our research, we aim to explore the impact of a CEO's ethnicity, particularly their race, as a demographic factor that may influence their tax aggressiveness. We plan to build on existing studies that have examined this relationship. We have chosen to focus on this bias for two reasons: the historical struggles of Black individuals in the US to secure their rights in society, and the tragic death of George Floyd in May 2020. The data shows that there have been very few Black CEOs in the S&P 500 between 2000 and 2020, with only 18 men and 2 women holding this position. This makes it particularly compelling to investigate how race plays a role in the evaluation of top strategic leaders (Carton & Rosette, 2011; Gündemir, Carton, & Homan, 2019; Hill, Upadhyay, & Beekun, 2015). Ajrouch et al. (2001) found that Black individuals tend to have smaller social networks compared to White individuals, leading them to be more risk-averse. This cautious approach is likely due to the unique pressures and challenges faced by Black individuals. A study by Kamath et al. (2022) examined cash settlements with the IRS for firms led by Black CEOs versus White CEOs. They discovered that companies with Black CEOs had higher cash settlements, indicating a potential bias in oversight that could be influencing revenue generation. However, our research found significantly lower cash settlements for companies led by Black CEOs, similar to the trend of fewer contraband discoveries during stop-and-searches of Black drivers. These findings suggest that the IRS may be using a different standard when allocating enforcement resources to companies led by Black CEOs. Based on previous research suggesting implicit biases can influence judgments of Black individuals in economic and business contexts, we hypothesize that Black CEOs may exhibit less tax aggressiveness due to societal influences and minority status. Our main hypothesis is as follows:

H.1.3. Companies led by a Black CEO exhibit lower levels of tax aggressiveness.

Social Characteristics and Tax Aggressiveness

In this subsection, we will investigate the relationship between social characteristics and tax aggressiveness. Building upon previous theories, we will analyze the impact of the CEO's marital status, political affiliation, and military experiences on tax aggressiveness.

CEO Marital Status and Tax Aggressiveness

Several authors (Garrison, 2008; Dahl, Dezsó, and Ross, 2012) who are interested in the psychology of the life cycle psychology and the sociology of the family indicate that marriage is a significant event that brings about a transformation in individuals' lives. When individuals get married, they embrace the goal of taking care of each other and fostering the next generation. Stoyanova, Diaz-Serrano, and Nilsson (2007) suggest that married couples tend to be happier and more community-oriented than singles. Basanez, Díez-Medrano, Halman, and Luijkx (2004) propose that these CEOs are more opposed to corruption and risk-taking than single individuals. Legal opinions and commentaries assert that states are concerned about the marital status of their citizens (Bix, 2006).

According to Garrison (2008), marriage offers significant public benefits by positively impacting the health, wealth, and happiness of spouses and their children. Several authors (Bertrand & Schoar, 2003; Chatterjee & Hambrick, 2007; Dahl, Dezsó, & Ross, 2012; Roussanov & Savor, 2014) argue that the values, personal attributes, and experiences of senior leaders, including their marital status, affect company policies. Becker (1973) suggests that the division of labor in marriage leads to increased overall productivity. Married partners share responsibilities at home, leading to increased productivity levels for each partner. Lu, Ray, and Teo (2016) argue that if one partner takes care of tasks related to children and home, the other can focus entirely on their professional performance, resulting in higher productivity levels. Korenman and Neumark (1991) support this view with research showing that married professionals tend to hold higher-paying jobs and receive higher performance scores compared to their unmarried counterparts. On the other hand, a study shows that the divorce of a CEO can negatively influence the performance of their company and shareholders (Larcker, McCall, and Tayan, 2013). Shareholders are interested in the personal lives of CEOs and pay attention to this information when making investment decisions. Divorce can impact the productivity, concentration, and energy levels of the CEO. The same authors (Larcker, McCall, and Tayan, 2013) suggest that divorce can also affect the CEO's attitude towards risk, potentially leading to riskier investment decisions. For single CEOs, Roussanov and Savor (2013) demonstrate that companies with

single CEOs have higher levels of volatility and return on stocks, with more aggressive investment policies compared to companies with married CEOs. Similarly, Dr. Lu, Ray, and Teo (2016) suggest that single hedge fund managers are less risk-averse than married fund managers.

These results align with the findings presented by Shantaram P. Hegde and Dev R. Mishra (2019). Using a sample of 2,193 American companies (14,078 company-years) from 1993 to 2008, the authors show that companies led by single CEOs are associated with lower index scores of corporate social responsibility performance (CSR). However, little attention has been paid to the impact of married CEOs on corporate policy. This study aims to bridge that gap by exploring the relationship between the CEO's marital status and tax aggressiveness. Based on previous studies and the assumption that a married CEO promotes firm policies regarding the environment, social equity, and the well-being of other stakeholders, and is less risk-averse, our hypothesis is presented as follows:

H.2.1. CEO Marital Status reduces tax aggressiveness.

CEO Military Experience and Tax Aggressiveness

In a study by Kelvin K. F. Law and Lillian F. Mills (2016), the relationship between tax aggressiveness and CEO military experiences is examined. Using data from S&P 1,500 CEOs, they examine the impact of CEOs on firms' tax avoidance strategies. They discovered that "managers with military experience engage in less tax avoidance compared to other managers and pay an estimated \$1-\$2 million more in corporate taxes per firm-year". Therefore, their empirical study indicates that firms led by CEOs with military experience engage in less tax avoidance. The authors referenced a study by Dyreng et al. (2010), which shows that corporate tax avoidance changes with different CEOs. By incorporating biographical characteristics and military experience, Kelvin and his colleague aim to elucidate the influence of CEO character variation on tax avoidance. Mills and Law (2014) conducted a study on managerial characteristics that explain behavior towards taxes. They considered factors such as age, gender, MBA, education, and percentage of stock options. Their findings indicated that military experience is the most influential characteristic affecting tax behavior. According to Frank et al. (2009), companies led by executives with military experience exhibit lower tax aggressiveness. Managers with military experience uphold values associated with government legitimacy and respect for the law. Their allegiance and belief in government structures lead them to be less aggressive in tax reduction, viewing tax avoidance as unethical. To classify a manager as a military director, criteria from Bamber et al. (2010) and Benmelech and Frydman (2015) are followed. Military experience includes service in the US Air Force, Army, Marines, Navy, or similar foreign military branches. The main hypothesis is that CEOs' military experience is linked to reduced tax evasion.

H.2.2. CEO Military Experience has a negative impact on tax aggressiveness.

CEO Political Affiliation and Tax Aggressiveness

Since the founding of the republic, and particularly since the 1850s, two major political parties have dominated American electoral politics. On one hand, we have the Democratic Party, which represents the center-left and liberal ideologies. On the other hand, we have the Republican Party, which represents the center-right and conservative beliefs. There is a significant disagreement between Republicans and Democrats, especially when it comes to tax matters. This was highlighted in a Gallup poll conducted on April 11, 2011, which focused on whether taxes should be higher for the wealthy. The results showed that a majority of Democrats (71%) supported the idea of redistributing wealth through higher taxes on the rich, while 69% of Republicans were against this increase. This raises the question of how a leader's political affiliation can impact a company's tax policy. Alm et al. (1992) suggest that some individuals pay their taxes out of fear of being audited and caught. This cautious approach is more prominent among conservative individuals who value stability and continuity. These individuals are less likely to take actions that disrupt this balance. Given that a majority of Republicans are conservative, according to the upper echelon's hypothesis, they would be inclined to avoid lower taxes. On the other hand, Democrats are more willing to pay higher taxes as they are less risk-averse and less conservative (Kam and Simas, 2010). Francis (2012) found in his study that firms led by Republican CEOs engage in significantly higher levels of tax avoidance across various measures. Research by Di Giuli and Kostovetsky (2014) and Hutton et al. (2014) suggests that the political preferences of CEOs have a significant impact on business decisions. Hutton et al. (2014) also found that Republican managers tend to choose more conservative corporate policies. However, Christensen et al. (2015) argue that while Republican managers are cautious in tax reporting, they engage in less tax avoidance. Republican platforms typically advocate for cuts in public spending, which may lead to more tax avoidance. CEOs' party affiliations are determined through their political donations during election cycles, with Republican CEOs identified in Marquis Who's Who.

H2.3. Republican CEO decreases tax aggressiveness.

Professional Characteristics and Tax Aggressiveness

CEO Education Specialty and Tax Aggressiveness

One of the antecedents of better managerial effectiveness is the attainment of some level of education. Education is an important tool for consideration in employees' promotion and perhaps their remuneration. A good level of education has significance in raising the managers' prestige, enabling them to make optimal decisions (Certo, 2003). According to Aliani (2014), CEOs with degrees in finance and accounting have the ability to analyze the financial and tax situation of companies through their theoretical training in management. The knowledge acquired can help the CEO make effective decisions based on their theoretical foundation in management obtained during their training. Thus, the CEO is able to plan the most appropriate tax strategy. Likewise, Richey believes that education is a process that extends beyond school and is an important social activity that continues to exist in social life. Benyamin S. Bloom classified educational objectives into three categories: cognitive ability, associated with awareness or recognition of knowledge and development of intellectual abilities and skills; affective ability, explaining changes in interests, behavior, and values; and psychomotor ability, which involves manipulation and supervision skills. Education appears as an important need that must be satisfied; therefore, it is an applied need for the CEO. According to Bhagat, S., Bolton, B., and Subramanian, A. (2010), CEOs' knowledge, perspective, and ability to understand abstract concepts and techniques potentially increase with education. Additionally, authors such as Bertrand and Schoar (2003), Terrance et al. (2002), and Bantel and Jackson (1989) suggest that CEOs with different educational backgrounds differ in their management styles. This is confirmed by Dyreng et al. (2010), who suggest that CEOs with an MBA or a law degree have more capacity than other CEOs to reduce tax rates. Using a sample of US firms from 1996 to 2009, Aliani (2014) investigates the relationship between CEO characteristics and tax planning. Inspired by the Upper Echelon theory, she studies the impact of CEO education on tax. The results of her study show that the educational level and specialty of the CEO significantly influence the tax strategy used by the firm. DwiAstutik and LintangVenusita (2020) conducted an empirical study to analyze how the educational background, tenure, and gender of Chief Executive Officers (CEOs) affect tax aggressiveness in a family firm. Using a sample of family firms registered on the Indonesian Stock Exchange from 2013 to 2016, their results show that education specialty affects tax aggressiveness. This leads us to formulate the following hypothesis:

H.3.1. CEO Education Specialty has a positive effect on tax aggressiveness.

CEO Education Degree and Tax Aggressiveness

In this subsection, we continue our analysis regarding the characteristics of the CEO, this time taking into consideration the level of education. The question that arises is whether the level of education impacts tax aggressiveness. Indeed, higher education for CEOs showcases their intelligence and ability to engage in stimulating intellectual activities. This level of CEO training is an indicator of cognitive capacity - the capacity linked to knowledge - as well as their intellectual capacity. According to Belliveau et al. (1996), managers with higher education degrees have fewer ties to government officials, which can improve company performance. However, Farag, H., and Mallin, C. (2016) argue that a high level of CEO training allows for a positive influence on risk-taking. They believe that CEOs with high degrees will be less risk-averse, leading to better decision-making due to their higher cognitive ability. Similarly, Sebhat, W., and Assfaw, A. M. (2019) demonstrate through their study that a high level of education has a positive effect on taxpayer compliance. This suggests that the more educated a CEO is, the more likely they are to avoid taxes. This high level of education enables them to take risks while still adhering to the law. Aliani.K (2014) conducted a study on the influence of CEO characteristics on tax planning in US firms from 1996-2009, finding that the educational level and specialty of the CEO significantly influence the tax strategy used by the firm. In contrast, DwiAstutik and LintangVenusita (2020) argue in their research that CEOs with a high level of education have a negative effect on tax aggressiveness. They believe that CEOs with high degrees possess more value, knowledge, skills, and cognitive preferences, leading them to avoid less tax. Building on these studies, and in alignment with Aliani, we hypothesize that CEOs with high degrees are less risk-averse and utilize their ability and knowledge to reduce their tax burden. This leads us to formulate the following hypothesis:

H.3.2. CEO Education Degree increases tax aggressiveness.

CEO Tenure and Tax Aggressiveness

In this study, we are expanding our research on the characteristics of a CEO, this time focusing on their tenure within the firm. CEO tenure refers to the length of time a CEO holds their position within the company they lead, making it an important professional characteristic that warrants further study. According to the theory of upper echelons, Orens, R., and Reheul, A. (2011) suggest that CEOs with longer tenures become more confident, allowing them to face greater challenges in their financial decision-making. Having a long tenure within a company enables a CEO to gain a deep understanding of the company's operations, serving as a guide for their decision-making process. Additionally, this experience in decision-making makes them more willing to take risks. Lanis and Richardson (2011) state that the tenure of CEOs influences their ability to shape the composition of the board and

its oversight role. CEOs with longer tenures have more experience in managing tax procedures, making them more likely to use aggressive tax strategies. Therefore, the CEO plays a crucial role in strategic changes, with their tenure being a key factor in these decisions. On the other hand, Weng, D.H, and Lin, Z. J. (2012) argue that new CEOs, with fresh perspectives, tend to be more cautious in tax planning, leading to less aggressive behavior in this area. Similarly, Gunawan, H., and Melisa (2017) found that CEOs with new mandates are more cautious, resulting in less aggressive tax declarations. This indicates that the CEO's tenure can significantly impact their approach to tax planning strategies. Based on these hypotheses, we can conclude that longer CEO tenure is likely to have a positive effect on tax aggressiveness.

H.3.3. CEO Tenure has a positive impact on tax aggressiveness.

CEO Duality and Tax Aggressiveness

Another crucial characteristic of a CEO is duality. According to Dalton (1993), this phenomenon occurs when the chief executive officer (CEO) also holds the position of chairman. In fact, the CEO and the Chairman of the Board should be two separate individuals fulfilling their roles independently in an independent structure. When these roles are held by one person, it is referred to as CEO duality. In the United States (US), the separation of these functions is not mandatory but is at the company's discretion. However, shareholder activist groups and researchers (Dobrzynski, 1991; Cadbury, 1992) oppose CEOs serving as chairman of the board. Dalton, Daily, Ellstrand, and Johnson (1998) support this view based on agency theory, which requires a separation between decision management and control (Fama and Jensen, 1983). They prefer separate board leadership to prevent board leadership dominance. Jensen (1993) also argues that when the CEO is also the chairman of the board, they hold significant power within the company, potentially reducing the effectiveness of control mechanisms and acting against shareholders' wealth. This duality can entrench the CEO, making change difficult, and reduce effective board oversight, leading to weak governance. Gul and Wah (2002) argue that combining executive and board chair functions increases agency costs due to power accumulation and lack of control. Davidson et al. (2004) and Dunn (2004) suggest that earnings management and fraud are more common in boards with dual functions. Richardson, Taylor, and Lanis (2013) found that companies with CEO duality tend to have a high proportion of decision-making power, let them likely to be aggressive in tax planning. A study by Aburajab et al. (2019) on 140 Jordanian firms from 2013-2017 showed a positive relationship between CEO duality and tax aggressiveness. ADEUSI et al. (2019) also found a positive impact of CEO duality on tax aggressiveness in 12 Nigerian firms from 2013-2017. This leads to the following hypothesis:

H.3.4. CEO Duality has a positive influence on tax aggressiveness.

CEO Founder and Tax Aggressiveness

The role of the CEO founder has been the subject of numerous studies and discussions. A CEO founder is someone who not only leads the company but also played a role in its founding or inception. This distinguishes them from non-founding CEOs who were hired later to run the company.

A CEO founder is crucial to a company's success, often seen as the visionary and driving force behind its growth. With deep industry knowledge and a passion for their project, CEO founders can significantly impact company culture, strategy, performance, and growth. As a founder, a CEO founder is heavily involved in strategic and operational decisions, often with a long-term view focused on the company's success. Research by Fama et al. (1983) supports the idea that CEO founders prioritize sustainable growth and resist short-term pressures from external stakeholders. While CEO founders have unique advantages such as in-depth business knowledge and a strong commitment, they may also face challenges like difficulty delegating and succession planning. Authors like Certo, Daily, & Dalton (2007) have pointed out potential biases CEO founders may exhibit, such as overconfidence or resistance to change, which can impact strategic decisions and governance practices. Some authors, including Li, Lu, and Phillips (2014), argue that CEO power can benefit the company, with CEO founders taking a conservative approach to prioritize stability. However, other research by Grinstein, Hribar, and others suggests that CEO founders with excessive power can be destructive to value. Daily and Johnson (1997) suggest that CEOs with excessive power may prioritize personal objectives over shareholder wealth, leading to agency problems. This can manifest in tax aggressiveness, where CEO founders may use aggressive tax strategies to pursue selfish actions. CEO founders are often seen as risk-takers, willing to innovate and take bold steps to move their business forward. This willingness to take risks can positively influence tax aggressiveness. Based on this literature, we propose the following hypothesis:

H.3.5. CEO Founder influences positively tax aggressiveness.

CEO Experience and Tax Aggressiveness

CEO experience refers to the time an individual spends in various positions within a company or similar organizations. It may include years working in leadership roles, specific experiences in key functional areas, and

past successes and failures. Reuber and Fisher (1999) distinguish between the depth and extent of experience. "Depth" of experience involves richness in a particular area, including complexity, task variety, responsibilities, opportunities, obstacles, skills, and knowledge acquired over time. High "depth" indicates extensive experience in a specific field, often represented by the number of years in that professional area. On the other hand, the "extent" of experience refers to the breadth of a person's experience across different fields, industries, or contexts. A high "extent" suggests experience in a wide range of situations, providing a holistic and diverse perspective. For this study, we focus on the depth of experience.

Research by Murphy (1989), Guthrie and Datta (1997) indicates that CEOs with more experience are generally more efficient than those with less experience. CEO experience is crucial as it influences the skills, knowledge, and decision-making abilities necessary for leading a company to success. An experienced CEO understands operational, strategic, and financial challenges, possessing developed management and leadership skills to achieve objectives. Studies by Daily and Johnson (1997), Finkelstein (1992), Grimm and Smith (1991) suggest that CEO experience empowers them to navigate company challenges and uncertainties effectively. Moreover, Gupta and Newberry (1997) examined the impact of CEO experience on corporate tax strategies, finding that experienced CEOs are less tax averse and adopt more aggressive tax strategies. Similarly, Chen et al. (2005) studied the effect of CEO experience on company tax choices, revealing that CEOs with corporate experience are less cautious and more willing to take tax risks. Based on these findings, we propose the following hypothesis:

H.3.6. CEO experience positively affects tax aggressiveness.

CEO Compensation and Tax Aggressiveness

In the United States, the government takes nearly 35% of a company's income. Tax aggressiveness is traditionally viewed as a value decision that shifts the benefit from the government to the private owners of the business. According to this argument, a company benefits from a tax-advantaged decision when managers are appropriately motivated. However, Desai and Dharmapala (2006) argue that tax evasion and the extraction of managerial rents can be complementary. When discussing managerial compensation, there are generally two categories. The first is fixed compensation, measured by a fixed salary. This category of payment is independent and separate from firm performance and is always earned by the manager. The second is variable compensation, which depends on a series of performance measures and is measured by bonuses and stock options.

Phillips (2003) noted that CEOs compensated on after-tax earnings have an indirect effect on tax avoidance because they are more likely to compensate their business unit managers on an after-tax basis. Desai and Dharmapala (2006) studied how stock-based compensation can affect corporate tax strategy, testing the impact of strong corporate governance on the level of tax sheltering. They found that a high level of incentive compensation reduces the level of tax sheltering. They are based on two competing theories to defend their study. Using a sample of 16,895 year-observations from 2006 to 2010 in Japan, Ohnuma (2014) tested the association between executive compensation and risk avoidance activity. His results show that CEO compensation is strongly associated with corporate tax avoidance. In 2015, Armstrong et al. studied the relationship between managerial incentives and corporate tax avoidance using quantile regression on a sample of 4,128 company-year observations. The results found a significant and positive association between the two variables. The incentives to take risks in equities motivate managers to engage in risky activities such as tax avoidance.

Chee et al. (2017) conducted a study on a sample of American companies from 1992 to 2010 to determine the effect of CEO compensation on corporate tax avoidance. They found a nonlinear relationship between the two variables through cross-sectional estimation regression. Their results suggest that corporate tax evasion increases up to a CEO pay level, then decreases at a higher level. This is explained by the fact that at low incentive levels, there is a positive relationship between CEO compensation and corporate tax avoidance because executives are willing to engage in risky activities to earn additional compensation. On the contrary, there is a negative relationship between CEO compensation and corporate tax avoidance at high levels of incentive because executives are no longer motivated to take risky actions. This nonlinear relationship between the two variables highlights two different forces: the effect of incentives alignment and the risk reduction effect. Using a sample of 67 firms listed on the Tunisian stock exchange from 2013 to 2016 and with a GLS regression model, Ferchichi and Dabboussi (2019) found a positive and significant relationship between CEO compensation and corporate tax avoidance. In our study, we use the natural logarithm of the total compensation, which is the sum of the base salary, annual bonus payments, and stock and option cash payments. Our hypothesis is as follows:

H.3.7. CEO Compensation effects positively tax aggressiveness.

Psychological Characteristics (CEO Overconfidence) and Tax Aggressiveness

While neoclassical assumes that managers are rational, theories of limited rationality and behavioral psychology have challenged this assumption. In psychology, overconfidence is considered a form of miscalibration, with

studies in finance and economics highlighting its effects. In modern behavioral finance, overconfidence is a significant concept.

Studies by Brown and Sarma (2007) and Malmendier and Tate (2005, 2008) have shown that companies with overconfident CEOs tend to have higher levels of investments and different decision-making policies. Overconfident CEOs may overestimate their skills, impacting their investment decisions and financial reporting choices. Additionally, CEO overconfidence has been linked to increased innovation activities and success.

Research by Dyreng, Hanlon, and Maydew (2010) examined the impact of overconfidence on tax aggressiveness in US businesses but did not find a significant effect. However, studies by Schrand and Zechman (2011) suggested that companies led by overconfident CEOs may engage in tax optimization and fraudulent activities. Chyz et al. (2015) also found a positive relationship between CEO overconfidence and companies' tax avoidance levels. Our hypothesis is as follows:

H.4.1. CEO Overconfidence has a positive effect on tax aggressiveness.

RESEARCH METHODOLOGIES

Data Collection and Sample Study

This study consists of a sample of 90 non-financial firm from the S&P 500, over a period of 4 years going from 2014 until 2017. Companies in the financial sector are excluded from the utilities sector due to specific regulations affecting their tax avoidance strategies. Additionally, our sample includes 104 CEOs, and the data is collected from various sources. We categorize our data into two types. The first type includes tax data and firm characteristics extracted from US Securities and Exchange Commission filings, annual reports, and DataStream 4Assets.

The second type of data pertains to CEO characteristics, which are classified into four categories: demographic, social, professional, and psychological. This data is collected manually from online sources such as Bloomberg, Google Finance, Trendstop, LinkedIn, company websites, annual reports, and newspapers. We also utilize other sources like businessweek.com, forbes.com, and nnadb.com. The data from these sources include historical career, professional, and social characteristics of the CEOs, as well as their financial and psychological characteristics. Additionally, we use Marquis Who's Who to identify the managers' backgrounds, especially their political affiliations and military experiences. Observations with negative pre-tax income or missing information are excluded from the analysis.

Variables Definitions and Measurements

This empirical study analyzes the relationship between corporate governance and tax aggressiveness. The variables studied in this research are classified into three categories. The first category presents the dependent variable, which is tax aggressiveness. The second category relates to the independent variables inherent to one of the internal mechanisms of corporate governance, which is the characteristics of the CEO. The last category pertains to the control variables. In fact, the following table summarizes all the variables used.

Dependent Variable

Tax aggressiveness presents our dependent variable; mostly, it is measured by the effective tax rate (ETR) as a proxy variable. Indeed, in the literature, several definitions of ETR appear (reviewed by Callihan 1994; Fullerton 1984; Graham et al. 2012; Plesko 2003). For the numerator, the most classic indicator is corporate tax revenue. For the denominator, various measures of profit can be considered. Given our data availability constraints, we mainly focus on pre-tax income.

$$ETR = \frac{TAX\ INCOME\ EXPENSE}{PRE - TAX\ INCOME}$$

This measure reflects tax aggressiveness through permanent differences between the accounting result and the tax result (Chen et al., 2010). We rely on the ETR in this study for three important reasons: First, several recent studies have found that the ETR still indeed reflects the tax aggressiveness behavior of the firm (Slemrod, (2004); Dyreng and al., (2008); Robinson and al., (2010); Armstrong and al., (2010)). Second, the ETR is also the proxy measure of tax aggressiveness most frequently used by taxpayer's and academic researchers in several context (Mills and al., (1998); Rego, (2003); Dyreng and al., (2008)). Third, previous studies concluded that ETR is the most appropriate measure when studying the variation of corporate tax burdens (Phillips, 2003; Aliani, 2014). ATO (2006) considers low ETR as a key indicator or sign of tax aggressiveness for Australian companies. It should be noted that aggressive tax activities affect the tax rate in two ways: first, these activities generate frequently temporary and permanent differences between the accounting income and taxable income of a company. Second,

these differences produce a change in the tax rate since the numerator is based on taxable income while the denominator is based on accounting income.

But all those advantages don't prevent that ETR varies in the reverse direction of tax aggressiveness. In fact, higher ETR lower tax aggressiveness that complicates the interpretation of the study. In fact, the higher the effective tax rate, the more taxes a company pays, which means lower levels of tax avoidance. For this reason, new proxies appear to overcome this limit.

Indeed, referring to the work of Boubaker and al., (2021), the dependent variable, Tax aggressiveness, is measured as the difference between pre-tax income and cash taxes paid, divided by pre-tax income, which is an inverse indicator of the effective cash tax rate. So, the interpretation become in the same direction. In the same context, Ngelo and all (2022) calculate the current effective tax rate by dividing the value of current tax expense by pretax income (Tran and Zhu 2017). But to make the interpretation easy they multiply the variable of this measurement by (-1) . Thus, the proxy and tax aggressiveness vary in the same direction. So, greater is the ratio, indicates higher tax avoidance. For the purposes of our study, we use the measure TA that represent the complement of ETR and calculated by $(1 - \text{ETR})$

$$TA = \frac{(\text{PRE_TAX INCOME} - \text{TAX INCOME EXPENSE})}{\text{PRE_TAX INCOME}}$$

This new proxy facilitates the interpretation of the relationship between the independent variables that represent CEO characteristics and the dependent variable which is the tax aggressiveness represented by this new measure that presents the same sign as the tax aggressiveness and varies in the same direction as the tax behavior adopted by the firm. So, our dependent variable tax aggressiveness is measured by TA

Independent Variables

In another side, our independents variables are presented by different categories of characteristics of CEO. In fact, we interested to demographics characteristics (age, gender, ethnic), social characteristics (married, political republican, military experience), professional characteristics (education specialty, degree of education, experience, tenure, founder, duality, compensation) and psychological characteristic (overconfidence)

Demographic Characteristics

This category interest in these variables:

AGE_{it}: this variable presents the CEO's age in firm *i* in year *t*. It is measured by the natural logarithm of the age of CEO. Ventevogel (2018), illustrates that the natural log of the CEO's age allows for a more linear and robust relation to performance or risk-taking metrics by reducing the effect of outlier values.

GEND_{it}: this variable presents the CEO's gender diversity in firm *i* in year *t*. It is a dummy variable that holds a value of 1 or 0. So, GEND_{it} takes a value of 1 if a woman is responsible of role of the CEO, otherwise, the variable takes a value of 0 (Ntim, 2019; Post & Byron, 2015).

BLACK_{it}: to determine the CEO's race, we first obtain photographs of the CEO online. A simple Google search of the CEO's name is performed. For common names, both the CEO name and the company name are used. Photographs are usually obtained from the CEO's profile created by Google, the company's website, or further research. We then have two research assistants who independently code their perception of the CEO's race based on these photographs, into one of the following categories: white, black. The photograph-based race classification on how the CEO is perceived by external observers, rather than their self-identified race, as in previous research (Cook and Glass 2014; Gligor and al., 2021; Gow, Larcker, and Watts 2020).

Social Characteristics

This category concerns these variables:

MAR_{it}: this variable presents the CEO's social situation in firm *i* in year *t*. It is a dummy variable that holds a value of 1 or 0. So, MAR_{it} takes a value of 1 if the CEO is married, otherwise, the variable takes a value of 0.

MILIT_{it}: this variable presents the CEO's military experience in firm *i* in year *t*. It is a dummy variable that holds a value of 1 or 0. So, MILIT_{it} takes a value of 1 if the CEO has previous military experience in the U.S. Air Force, Army, Marines, or Navy (or their foreign equivalents), or other related military experience, otherwise, the variable takes a value of 0.

POL_{it}: this variable presents the CEO's political affiliation in firm *i* in year *t*. It is a dummy variable that holds a value of 1 or 0. So, *POL_{it}* takes a value of 1 if the CEO is a Republican, otherwise, the variable takes a value of 0.

Professional Characteristics

This category focus on these variables

EDUC_{it}: this variable presents the field of the CEO's education in firm *i* in year *t*. It is a dummy variable that takes 1 if the CEO has an education in management and 0 otherwise.

DEG_{it}: this variable presents the level of the CEO's education in firm *i* in year *t*. It is a dummy variable that takes 1 if the CEO has a high degree and 0 otherwise.

TEN_{it}: this variable presents that the number of years in which CEO served in this post in firm *i* in year *t*. *TEN_{it}* is measured by the natural logarithm of the number of years CEO held this position.

DUAL_{it}: this variable presents the CEO's twice position in firm *i* in year *t*. It is a dummy variable that holds a value of 1 or 0. So, duality takes a value of 1 if CEO also held a position of chairman, otherwise, the variable takes a value of 0.

FOUND_{it}: this variable is a dummy variable that holds a value of 1 or 0. So, *FOUND_{it}* takes a value of 1 if CEO is, at the same time, the founder of the firm *i* in year *t*, otherwise, the variable takes a value of 0.

EXPER_{it}: this variable presents the number of years of work experience. This variable encompasses the experience, skills and relational network of the CEO that are acquired and developed along his experience. This variable of experience of the CEO is measured in natural logarithm of the number of years of work experience.

COMP_{it}: this variable presents the level of the CEO's compensation in firm *i* in year *t*. It is measured by the natural logarithm of total fixed compensation and incentive compensation. On the one hand a fixed compensation, measured by the fixed salary. This method of payment is independent of the performance of the company and always deserved by the manager. On the other hand, a variable remuneration depends on a series of performances. It is measured by the bonus and the stock Options According to Larcker and Tayan (2011), total compensation generally includes annual salary, annual bonus and stock options that provide rewards to executives only if the performance of the company is exceptional. So, in our study, we use the natural logarithm of the total of compensation, presented by the sum of base salary, annual bonus payments and stock and option cash payments.

Psychological Characteristics: CEO Overconfidence

This character is presented by this variable:

OVERCONF_{it}: this variable is a dummy variable that holds a value of 1 if the forecasting earning per share is more than earning per share, otherwise, and takes a value of 0 otherwise. Malmendier and Tate (2005, 2008) used CEO option exercises and net purchases to identify overconfidence, while Yang, Hribar, and Ryan (2013) measured CEO overconfidence based on popular press characterizations and CEO descriptions. Other studies have also highlighted CEO overconfidence and its impact on earnings expectations and financial results management.

Control Variables

According to previous study, we introduce a set of control variables in our empirical analyze that may affect corporate tax aggressiveness.

SIZE_{it}: measured as the natural logarithm of total assets, has been a constant topic in the literature as a major factor influencing tax aggressiveness (Richardson & Lanis, 2007; Rodríguez & Arias, 2013; Lin et al., 2014; Richardson et al., 2013). The authors refer to the existence of two conflicting explanations coming from different theoretical backgrounds. Following the political cost theory (Watts & Zimmerman, 1978), the larger a firm is the more it will face regulatory scrutiny and public pressure; consequently, aggressive tax behavior might get constrained because of the higher political costs (Zimmerman, 1983; Omer et al., 1993). On the other hand, the political power theory (Salamon & Siegfried, 1977) believes in the opposite scenario where large firms indeed have more resources, knowledge, and lobbying power over the government thus having the ability to affect tax policy and adopting aggressive tax planning in order to reduce their tax bills (Porcano, 1986; Eom, 2003). This view regards firm size as a tax aggressiveness promoter, owing to the increased political and economic authority of big companies.

ROA_{it}: (profitability), is a control variable measured as total income divided by the total assets for of firm *i* in year *t*. Literature shows that there is a relationship between the profitability of the firm and tax aggressiveness (Adkikari, Derashid, and Zang, 2006; Gupta and Newbery, 1997). In the same vein, Armstrong and al., (2012), Gupta and Newberry (1997) and Richardson and Lanis (2007) approve the existence of a relation between return on assets (ROA) and tax strategies.

LEV_{it}: (leverage), it is defined as total Debt divided by total assets of firm *i* in year *t*. According to literature (Badertscher and al., 2013; Gallemore&Labro, 2015; Taylor & Richardson, 2014) there is a relation between leverage and tax avoidance. It reflects the way in which a company is financed, that has an important influence on the taxes that must be paid. Debt financing gives to interest payments to be tax deductible. While financing by equity does not give this advantage. So, companies choose an optimal proportion of debt while assessing between costs and benefits.

MTB_{it}: (Growth): this variable is measured by the market value divided by the book value of the firm *i* in year *t* (Chen and al., 2009), For this reason, in this study, it was employed in my study to control for the extent of the growth for firm *i* in year *t*. According to Loebbecke, Eining, and Willingham (1989), firms with greater growth opportunities can engage in fraudulent behavior, and as a result, those firms show a higher level of tax aggressiveness.

Table 1: Table of presentation of CEO study

	Abbreviations	Variables	Measurements	Literature
	Dependent Variable			
	TA	TAX AGGRESSIVENESS	TA = (PRE-TAX INCOME - TAX INCOME EXPENSE) / (PRE-TAX INCOME)	Authors
	Independent Variables			
DEMOGRAPHICS CHARACTERISTICS	AGE	Age of CEO	Log age	Hambrick & Mason (1984)
	GEND	Gender of CEO	Dummy variable holds 1if CEO is women, 0 otherwise	Adams & Ferreira (2009)
	BLACK	Black CEO	Dummy variable holds 1if CEO is Black, 0 otherwise.	Carter, Simkins & Simpson (2003)
SOCIAL CHARACTERISTICS	MAR	CEO Married	Dummy variable takes 1 if CEO is married, 0 otherwise	Roussanov & Savor (2014)
	MILIT	Military Experiences of CEO	Binary variable takes 1if CEO has a military experience, 0 otherwise	Benmelech & Frydman (2015)
	POL	Political affiliation of CEO	Binary variable holds 1 if CEO is Republican, 0 otherwise	Hutton, Jiang & Kumar (2014)
PROFESSIONAL CHARACTERISTICS	EDUC	Education of CEO	Dummy variable takes 1 if CEO has education in Finance or Accounting, 0 otherwise	Hambrick & Mason (1984)
	DEG	Degree of education of CEO	Dummy variable takes 1 if CEO has high degree, 0 otherwise	Bertrand & Schoar (2003)
	TEN	CEO Tenure	Log of number of years CEO held his position	Morck, Shleifer & Vishny (1988)
	DUAL	CEO Duality	Dummy variable takes 1 if the CEO is the chairman of the	Jensen & Meckling (1976)

			firm in same time, 0 otherwise	
	FOUD	CEO Founder	Dummy variable takes 1 if the CEO is the founder of the firm, 0 otherwise.	Fahlenbrach (2009)
	EXPER	Experience of CEO	Log of the number of years of work experience of the CEO	Bertrand & Schoar (2003)
	COMP	Compensation of CEO	Log of total fixed compensation (salary) and incentive compensation (bonuses and stock option) of the CEO	Core, Holthausen & Larcker (1999)
PSYCHOLOGICAL CHARACTERISTIC	OVERCONF	Over confidence	Dummy variable takes 1 if forecasting earning per share is more than earning per share, 0 otherwise	Hribar & Yang (2016)
	Control variables			
	LEV	Leverage	Total debt / Total assets	Modigliani & Miller (1958)
	MTB	Market to book	Market value / Book value	Fama & French (1992)
	SIZE	Size of firm	Log total assets	Fama & French (1992)
	ROA	Return on assets	Total Income / Total Assets	Demsetz & Lehn (1985)

Quantile Regression

Quantile regression is a more advanced method that reveals the entire range of the independent variable's impact on the dependent variable distribution, which is the opposite of OLS focusing on average only, thus making it very convenient for analyzing effects of different degrees of heterogeneity (Koenker & Bassett, 1978; Armstrong, Blouin, & Jagolinzer, 2015). So, the quantile regression model is an important option for this study because it shows the different effects of CEO characteristics — demographic, social, professional, and psychological— over different levels of tax aggressiveness, letting the regime-specific behavioral and governance mechanisms that are hidden under average-based estimations be seen. The use of conservative, transitional, and aggressive tax regimes not only provides a more accurate and theoretically consistent understanding of how personality traits of executives affect corporate tax strategies under different risk and compliance conditions but also reveals asymmetric effects at the lower and upper ends of the distribution (Huseynov, Sardarli, & Zhang, 2017).

Model Specification:

$$\begin{aligned}
 TA_{it} = & \beta_0 + \beta_1 AGE_{it} + \beta_2 GEND_{it} + \beta_3 BLACK_{it} + \beta_4 MAR_{it} + \beta_5 MILIT_{it} + \beta_6 POL_{it} + \\
 & \beta_7 COMP_{it} + \beta_8 EXPER_{it} + \beta_9 DEG_{it} + \beta_{10} EDUC_{it} + \beta_{11} DUAL_{it} + \beta_{12} FOUND_{it} + \\
 & \beta_{13} TEN_{it} + \beta_{14} OVERCONF_{it} + \beta_{15} LEV_{it} + \beta_{16} ROA_{it} + \beta_{17} MTB_{it} + \beta_{18} SIZE_{it} + \varepsilon_{it}
 \end{aligned}$$

Where

i : represents corporations (1-90)

t : represents the time period (1-4)

ε : represent the error term.

Tests Conducted

VIF Test

In regression analysis, the degree of multicollinearity is gauged by a variance inflation factor (VIF). In a multiple regression model, multicollinearity is the presence of a correlation between several independent variables. The regression results may suffer as a result. Consequently, the variance inflation factor can be used to estimate the extent to which multicollinearity has inflated the variance of a regression coefficient.

Heteroscedasticity Test

In statistics, heteroscedasticity occurs when the standard deviations of a predicted variable, observed over different values of an independent variable or in relation to prior time periods, are not constant. With heteroscedasticity, a clear indication in the residual errors upon visual inspection is that they tend to fan out over time, as shown in the image below.

Heteroscedasticity often manifests in two forms: conditional and unconditional. Conditional heteroscedasticity refers to non-constant volatility associated with the volatility of previous periods (e.g., daily). Unconditional heteroscedasticity pertains to general structural changes in volatility that are not linked to prior period volatility. Unconditional heteroscedasticity is useful for identifying future periods of high and low volatility.

Homoscedasticity Test

When the residuals' variance is consistent (constant variance), homoscedasticity is verified. A situation where the error term remains constant across all values of the independent variables is referred to as the assumption of homoscedasticity. When the error term's magnitude fluctuates across an independent variable's values, this assumption is broken. The estimated variances and covariances of the OLS estimates become skewed and inconsistent if heteroscedasticity is ignored (Kmenta, 1986). Hypothesis tests thus lose their validity. The Lagrange Multiplier (LM) Test can be used to evaluate homoscedasticity, which is crucial.

RESULTS AND DISCUSSION

This section is sacred to present the statistical description of our variables, then we show the correlation matrix and finally, we are interested to highlight results and discussion of our founding, to show for what extent they conform to the assumptions.

Descriptive Statistics

Descriptive statistics are shown in the table above. Indeed, represents the maximum and minimum values as well as the mean and the standard deviations of all the variables used in this estimation. The table shows, on the one hand, that the level of tax aggressiveness of American corporations varies between a minimum value of 0 and a maximum value of 1 with an average of 0.142029. Indeed, duality represents the highest average of 70%

Table 2: Descriptive statistics

	TA	AGE	GEND	MAR	MILIT	POL	COMP	DEG	DUAL	EDUC
Mean	1.044	4.033	0.150	0.982	0.173	0.417	198.411	0.562	0.704	0.046
Median	1.044	4.043	0.000	1.000	0.000	0.000	14.600	1.000	1.000	0.000
Maximum	16.332	4.430	1.000	1.000	1.000	1.000	21358.	1.000	1.000	1.000
Minimum	0.196	3.401	0.000	0.000	0.0000	0.000	0.000	0.000	0.000	0.000
Std. Dev.	1.056	0.130	0.357	0.130	0.3795	0.493	1897.74	0.496	0.456	0.210
Skewness	2.05	-0.785	1.960	-7.383	1.7206	0.335	10.5704	-0.251	-0.895	4.314
Kurtosis	5.206	7.375	4.843	55.51770	3.9605	1.112	113.157	1.063	1.802	19.611
Jarque-Bera	311.84	310.65	281.5	42782.58	183.49	57.681	180859.	57.557	66.748	5036.63
Probability	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0000	0.000	0.000
Sum	49.000	1391.4	54.0	339.00	60.000	144.0	68451.9	194.00	243.00	16.000
Sum Sq. Dev.	42.04	5.840	45.9	5.895	49.565	83.895	1.24	84.910	71.843	15.257
Observations	360	360	360	360	360	360	360	360	360	360

	BLACK	EXPER	FOUND	TEN	OVERCONF	LEV	MTB	ROA	SIZE
Mean	0.025	17.187	31.962	0.136	10.150	0.266	44686.11	13.758	9.4258
Median	0.000	17.443	33	0.000	3.955	0.000	45.58000	4.250	8.100
Maximum	1.000	20.286	69	1.000	1813	1.000	5216100.	1076.50	46.390
Minimum	0.000	1.289	3	0.000	0.305	0.000	0.000	0.830	0.030
Std. Dev.	0.156	2.154	9.320	0.3435	97.442	0.442	437480.4	64.639	6.629
Skewness	6.084	-4.2749	0.632	2.120	18.437	1.055	10.258	13.586	1.871

Kurtosis	38.025	30.953	5.747	5.498	341.616	2.1136	109.3548	215.453	8.789
Jarque-Bera	20623.47	12283.4	11027	47	3502.071	92	15416710	4746.55	3251.930
Probability	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sum	9.000	5929.727	131.525	348.353	1667796.	75.327	168651.8	659451.	683.203
Sum Sq. Dev.	8.775	17.187	29882.51	40.597	3266323.	67.46667	6.5813	1437323.	15120.67
Observations	360	360	360	360	360	360	360	360	360

Correlation Matrix

Table 4: Table of correlation matrix

	AGE	COMP	BLACK	DEG	EDUC	DUAL	EXPER	FOUND	LEV	MAR	MILIT	MTB	OVER CONF	POL	ROA	SIZE	TEN
AGE	1.000																
COMP	0.176	1.000															
BLACK	-0.036	0.027	1.000														
DEG	0.023	-0.033	0.021	1.000													
EDUC	-0.097	-0.093	-0.096	0.364	1.000												
DUAL	-0.063	-0.090	-0.028	0.141	0.635	1.000											
EXPER	-0.073	-0.010	-0.123	0.457	0.760	0.225	1.000										
FOUND	-0.034	-0.087	-0.036	0.208	0.818	0.415	0.403	1.000									
LEV	0.465	0.148	0.1651	-0.007	-0.135	-0.099	-0.148	-0.006	1.000								
MAR	-0.081	-0.054	-0.003	0.082	0.116	0.102	0.078	0.087	0.057	1.000							
MILIT	-0.064	-0.128	0.120	0.054	0.086	0.084	-0.033	0.093	-0.020	-0.030	1.000						
MTB	-0.303	-0.132	-0.071	0.315	0.248	0.122	0.183	0.181	-0.221	0.088	0.083	1.000					
OVER CONF	-0.127	0.066	0.035	0.072	0.060	0.117	0.051	0.085	0.033	0.080	-0.245	0.069	1.000				
POL	-0.074	-0.093	-0.006	0.088	0.156	0.077	0.113	0.105	-0.022	-0.009	-0.013	0.303	0.010	1.000			
ROA	0.082	0.055	0.003	-0.083	-0.117	-0.102	-0.079	-0.087	-0.057	-0.431	0.030	-0.090	-0.080	0.006	1.000		
SIZE	0.445	0.129	-0.019	0.064	-0.044	-0.085	0.0202	-0.029	0.239	0.026	-0.196	-0.264	-0.008	-0.037	-0.026	1.000	
TEN	0.089	-0.066	0.002	0.065	-0.048	0.006	-0.098	-0.021	-0.012	0.008	0.072	0.198	-0.012	0.050	-0.008	0.022	1.000

Table 4 displays the correlation matrix of all independent variables. This is crucial for identifying multicollinearity problems among the independent variables in the regression analysis. Introducing highly correlated variables in the same model can potentially skew the results. According to Kennedy (1985) and Nor et al. (2010), a correlation coefficient must be 0.7 or higher to be considered significant. In our analysis, all correlation coefficients in the matrix are below this threshold, indicating that no correlations are significant.

Results and Discussion

In this subsection we will present the results founded by different test accomplished as well as by our Quantile Regression. We interpret each characteristic of the CEO and its impact on tax aggressiveness in the company.

Table 5: Table of VIF test

Variable	VIF	1/VIF
OVERCONF	3.01	0.331830
COMP	2.92	0.342330
EXPER	2.59	0.386845
AGE	2.58	0.388260
TEN	2.38	0.420723
FOUND	1.76	0.566941
SIZE	1.54	0.650307
MILIT	1.35	0.740266
ROA	1.31	0.764915
DEG	1.23	0.809924
EDUC	1.21	0.828767
DUAL	1.15	0.867840
GEND	1.12	0.889254
POL	1.11	0.902950
MAR	1.08	0.922233
BLACK	1.08	0.930090
LEV	1.02	0.983080
MTB	1.01	0.986414

Mean VIF	1.73
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In regression analysis, the degree of multicollinearity is gauged by a variance inflation factor (VIF). In a multiple regression model, multicollinearity occurs when there is a correlation between several independent variables, this can adversely affect the regression results. Thus, the variance inflation factor can estimate how much the variance of a regression coefficient is inflated due to multicollinearity. The results of the VIF test show that all values are greater than 1 and less than 10 with an average of 1.73. Indeed, we can say that there is not a problem of multicollinearity.

Table 6: Quantile Regression Results

	Q25		Q50		Q75	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
AGE	-2.571	0.090*	-0.733	0.718	1.353	0.1196
GEND	-0.052	0.098*	0.028	0.425	0.113	0.002***
BLACK	0.342	0.871	0.375	0.986	0.421	0.912
MAR	-9.306	0.001***	-1.732	0.519	4.353	0.071*
MILIT	-6.023	0.0017***	3.684	0.048**	3.685	0.099*
POL	0.089	0.958	-0.732	0.573	-0.442	0.771
COMP	0.006	0.028**	-0.0004	0.803	- 0.0002	0.161
EXPER	0.2758	0.0126**	0.157	0.291	0.068	0.494
DEG	6.581	0.0001***	6.421	0.002***	2.615	0.057*
EDUC	6.390	0.0348**	0.191	0.983	-2.704	0.546
DUAL	1.126	0.0957*	0.106	0.954	0.855	0.506
FOUND	3.201	0.1293	6.189	0.034**	1.630	0.780
TEN	0.141	0.0501*	0.027	0.859	0.057	0.749
OVERCONF	2.800	0.0775*	1.064	0.462	0.139	0.912
LEV	-0.0002	0.2768	-0.001	0.511	0.004	0.0531*
ROA	-0.326	0.0143**	0.016	0.895	0.1708	0.120
MTB	0.007	0.0656*	-0.009	0.833	-0.005	0.150
SIZE	-1.033	0.0658*	-0.415	0.456	1.145	0.0213**
R²	0.164		0.117		0.0705	

***, **, * signification statistical level at **1 %**, **5 %** and **10 %**, respectively.

The model explains 16.4%, 11.7%, and 7.05% of the variance in the dependent variable across the three quantiles, according to the R-squared values. This implies that even though the model accounts for notable effects, there may be additional, unobserved factors at play. Since the impact of independent variables varies across the distribution, the variation in the significance of the coefficients across quantiles emphasizes how crucial it is to consider various performance levels in financial analysis.

The use of quantile regression analysis provides a deeper insight into the relationship between CEO characteristics and firm traits along the tax aggressiveness spectrum ranging from low (Q25), through median (Q50), to high (Q75), thus exposing the differential impacts that are hidden in OLS average estimates. . This method offers a more nuanced perspective of the relationships at work by elucidating the ways in which the effects of these variables differ based on the distribution of the dependent variable.

There most significant coefficients are in the first quartile (Q25), at this very low quantiles, conservative traits have the greatest predictive power, reflecting a higher propensity towards loss aversion and adherence to the principle of compliance.

In the demographic category, the AGE coefficient is (-2.571) ($p = 0.090$), suggesting that there is a marginally significant correlation between aging and a decline in the dependent variable. Supporting H1.1.1, and the predictions of prospect theory regarding loss aversion and upper echelons theory emphasizing career-related conservatism. This finding is in line with recent research by Zhang et al. (2020), who point out that older people often make more cautious decisions, which can impair their performance. Conversely, studies by Holmstrom (1999) and Scharfstein and Stein (1990) suggest that younger CEOs, can have a risk averse attitude under career pressure. For GEND's coefficient is (-0.052), in concordance with H1.2, which raises the possibility of gender discrimination and disadvantages some groups in the financial context. Research by Adams and Funk (2012), who emphasize gender differences in leadership effectiveness and stress that women may encounter additional challenges in male-dominated environments, supports this trend, although Chang et al. (2019) document no significant effect in the relationship between gender variation and risk preferences. In the same category, ethnicity presents by BLACK CEO has no effect on tax aggressiveness.

In the social category, Married and Military Experience (H2.1–H2.2 verified), in comparison to their effects at Q75 ($\beta = -0.022/-0.025$), CEOs who are married or have military backgrounds demonstrate a significant decrease in tax aggressiveness ($\beta = -0.028^*/-0.035^{***}$). This trend corroborates the forecasts of CSR and legitimacy theories, suggesting that executives with socially-oriented values are more willing to implement conservative fiscal policies that prioritize compliance, ethical responsibility, and maintaining stakeholder trust in low-aggressiveness regimes (Hegde & Mishra, 2019; Law & Mills, 2016). For political affiliation it hasn't any effect on TA.

In the professional category, the coefficient for CEO compensation (COMP) is positive and significant in the lower quantile (Q25: $\beta = 0.006$, $p = 0.028$), which is a proof of H3.1. This finding implies that in low-aggressiveness regimes, high compensation incentives go hand in hand with tax aggressiveness, which is in line with agency theory. Executives facing performance-based pay will choose to engage in tax planning in order to maximize their utility (Watts & Zimmerman, 1986; Desai & Dharmapala, 2006). On the other hand, the positive influence of compensation on this factor is not significant for the groups Q50 and Q75, meaning that the compensation fades in case a firm is already a part of the more aggressive tax environment characterized by dominance of structural and behavioral factors. Also, the professional experience of the CEO is positively and significantly correlated with tax aggressiveness at the level of Q25 ($\beta = 0.276$, $p = 0.013$), thereby supporting H3.2. This result is in line with upper echelons theory, which asserts that the gained experience of the executives helps them to recognize and take advantage of the tax opportunities available in the case of even the strictest regulators. Nonetheless, the impact diminishes and becomes non-significant at higher quantiles, indicating that the advantages of experience are not so crucial when companies are already working in a high tax aggressiveness level. This is somewhat contrary to the studies which have pointed out that extensive experience may also lead to conservatism due to reputational concerns (Serfling, 2014). For CEO degree attainment and education level, the both are positively and significantly related to tax aggressiveness at Q25 and Q50 (DEG: $\beta = 6.581$, $p < 0.001$ at Q25; $\beta = 6.421$, $p = 0.002$ at Q50; EDUC: $\beta = 6.390$, $p = 0.035$ at Q25), thus giving strong backing to H3.3 and H3.4. The positive accounting theory, is the pioneer of this result, states that financially sophisticated executives have the advantage of superior technical knowledge which makes them able to drawing aggressive tax strategies. The decline in the effect and the significance at Q75 indicates that educational advantages are most powerful in conservative and transitional regimes, whereas marginal benefits are less under aggressive tax positions. This conclusion is in line with the work of Aliani (2014), but at the same time, it opposes the viewpoint that a higher level of education leads to higher ethical restraint (Hambrick & Mason, 1984). The impact of CEO duality and tenure was seen to be evident at Q25 exhibiting positive effects though very weak (DUAL: $\beta = 1.126$, $p = 0.096$; TEN: $\beta = 0.141$, $p = 0.050$), thereby partially validating H3.5 and H3.6. Such finding is in line with executive power theory that points centralized power. The tenure is long enough to tamper with the situation in favor of tax planning by taking monitoring as an ineffective/less factor. At Q50 ($\beta = 6.189$, $p = 0.034$) the founder status is shown to be significant thus implying that the founder-CEOs have the ability to influence the company's going through the transitional regimes; the stronger in the case of Q50 than the Q25. These results seem to agree with Finkelstein et al. (2009) but are opposite to stewardship theory, which maintains that founder-CEOs may act as the long-term value protectors.

For psychological trait, OVERCONF shows a positive coefficient marginally significant at Q25 ($\beta = 2.800$, $p = 0.078$), which is in support of H3.7. This result is in line with the theory of cognitive bias that predicts that overconfident CEOs will underestimate regulatory and enforcement risks to such a degree that they will be forced to resort to aggressive tax strategies even during times when the governments are not very strict about taxes. This finding is broadly consistent with behavioral finance arguments (Malmendier & Tate, 2005, 2008). This effect, however, is not significant when it comes to Q50 and Q75 which suggests that firms in very aggressive tax regimes, reduce the marginal impact of individual cognitive biases. This is contrary to the findings of Hsu et al. (2024) who have documented that overconfidence effects are strong in high-risk environments.

SIZE shows a positive and significant coefficient of 1.145 ($p = 0.021$) in the third quartile (Q75), suggesting that larger businesses typically perform better. The logic of economies of scale (Scherer, 1980), which holds that

larger businesses gain from lower unit costs and increased operational efficiency, is supported by this result. This is especially important in situations where size facilitates access to bigger markets and better resource allocation.

Finally, this quantile regression method provides insightful information about the intricate relationships between financial performance and decision-making. It highlights the necessity of modifying management strategies in accordance with various observed performance conditions and validates the multiple influences of firm-specific and demographic characteristics.

CONCLUSION

This research aims to explore the relationship between CEO cultural traits, which are interpreted as lasting demographic, social, professional and behavioral stamps influenced by executives' experiences and values, and the corporate tax aggressiveness in 90 non-financial U.S. companies chosen from the S&P 500 during the years 2014-2017. Based on the executive cultural imprint perspective and rooted in upper echelons theory, the analysis integrates agency, prospect, cognitive bias, and CSR/legitimacy theories within a quantile regression approach to reveal the diversity of tax aggressiveness across the different regimes.

The research has uncovered very much distinct patterns by quantiles. The lower quantile (Q25) of the conservative tax regime shows that the demographic and socio-cultural characteristics of the CEOs- age, being a female, married, and having a military background- have a significant impact on tax aggressiveness in a negative way, which is in line with the theories of career conservatism, and legitimacy-driven compliance motives. The median quantile (Q50) is where these conservative cultural imprints lessen and thus we see a transitional regime where professional traits gradually influence tax behavior. The upper quantile (Q75) is where the tax regime is aggressive and educational as well as behavioral cultural traits- financial expertise, CEO duality, tenure, and overconfidence- are the most influential ones, thus, reflecting the growing agency conflicts, executive power, and cognitive biases.

By framing CEO characteristics as a leadership-driven cultural imprint that permeates firm-level decision-making, this study extends the corporate governance and tax literature beyond traditional firm-centric explanations. It indicates that tax aggressiveness is the result of the top management's cultural influences. The findings, therefore, have practical implications as they highlight the need to consider the cultural and psychological characteristics of CEOs in the areas of executive choice, governance set-up, and risk management. Despite its contributions, some limitations float to the surface of this study, related to sample size, country focus, and the exclusive use of observable traits. Future research could extend this framework by incorporating cross-country settings, qualitative approaches, and broader measures of organizational culture and top management team dynamics to further illuminate how executive culture shapes corporate tax behavior. Finally, longitudinal designs that follow the paths of CEO succession and cultural transmission could reveal the evolution of executive cultural imprints through time and across different risk and regulatory regimes, thus providing richer insights into the constant interaction between leadership culture and fiscal behavior.

Conflict of Interest

The authors and the research work have no conflict of interest.

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