

CEO Materialism and Corporate Social Responsibility

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Abstract

We study the role of individual CEOs in explaining corporate social responsibility (CSR) scores. We show that CEO fixed-effects explain 63% of the variation in CSR scores, a significant portion of which is attributable to a CEO's "materialism" (relatively high luxury asset ownership). Specifically, firms led by materialistic CEOs have lower CSR scores, and increases in CEOs' materialism are associated with declining scores. Finally, CSR scores in firms with non-materialistic CEOs are positively associated with accounting profitability. In contrast, CSR scores in firms with materialistic CEOs are unrelated to profitability on average; however this association is decreasing in CEO power.

Keywords: Executive materialism; corporate social responsibility, accounting profitability.

JEL Classification Codes: G30; G34; G38

Internet Appendix: <http://rhdavidson.com/research/>

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I. INTRODUCTION

Fortune Global 500 firms spend over \$15 billion a year on corporate philanthropy and countless hours and dollars on a host of social responsibility (CSR) activities. As such, a growing academic literature on CSR has developed over the last 15 years. Despite the literature on this topic, there is still ambiguity regarding the precise definition of CSR. The most widely accepted notion of CSR is offered by Carroll (1979) who identifies four components that need to be present in order for a business to claim it is socially responsible. These are economic, legal, ethical and discretionary responsibilities. The latter (discretionary) set of responsibilities are “purely voluntary”, and can be thought of as exceeding the requirements of the law. Mosley, Pietri and Megginson (1996) states that “corporate social responsibility refers to managements’ obligation to set policies, make decisions and follow courses of action beyond the requirements of the law that are desirable in terms of the values and objectives of society”. Further, the ethical component of CSR proposed in the literature implies that morals or ethics of individual managers are an important factor in a firm’s CSR practices (Jones 1995).

This aspect of CSR brings into focus the point that key individuals may be instrumental in formulating and implementing firms’ CSR policy. This raises the question of the importance of individuals’ values, traits and motives in pursuing CSR. The literature on CSR, however, does not examine the role of individual executives in shaping CSR strategies and investments in their firms. We take a first step (that we are aware) in this direction, and examine how CEO behavior outside the workplace, as measured by their materialism (relative ownership of luxury goods) is related to their firms’ CSR performance.

We interpret a CEO’s ownership of luxury goods, including expensive cars, boats, and real estate, as an indication of relatively high “materialism” (analogously, we interpret the refrain

from ownership of such goods as an indication of high frugality). The psychology literature defines materialism as a way of life where an individual displays an attachment to worldly possessions and material needs and desires (Richins and Rudmin 1994).¹ This literature documents experimental findings on how materialism is related to an individual's behaviors towards other people and society, and motivates intriguing theories regarding an executive's commitment to CSR.

We begin our analyses by first examining whether materialistic CEOs sort into firms that are socially responsible, but find no evidence to support this notion. While materialistic CEOs do not sort into firms based on CSR scores, it is possible that they sort into firms based on other observable and/or unobservable firm characteristics which could explain variation in firms' CSR scores. To interpret the role of individual CEOs (vs. their firms) on their firm's CSR, we employ the fixed effects model developed by Abowd, Kramarz and Margolis (1999; hereafter AKM) to estimate how much of the variation in CSR scores is attributed to CEO effects versus firm effects. We find that CEO fixed effects explain 52%-74% of the variation in their firms' CSR scores across all social dimensions (Community, Diversity, Employee Relations, Environment and Product Safety). In contrast, firm fixed effects explain 11%-32% of the variance in CSR scores. These results imply that the CEO effect on the variation in CSR scores is likely to be first-order and provide additional motivation to analyze the implications of CEO materialism for firms' CSR activities.

We predict and find that firms led by materialistic CEOs have lower CSR scores in all five CSR categories and a lower aggregate score. This relation is driven by firms with materialistic

¹ In the remainder of the paper we use the terms "materialistic" and "unfrugal" (or "frugal" and "non-materialistic") interchangeably.

CEOs having fewer CSR strengths as well as more CSR weaknesses, although the magnitude is greater with regards to CSR strengths.

The above result on the link between CEO materialism and CSR scores is corroborated through further analyses. We document that CSR scores increase when a frugal CEO replaces a materialistic CEO and that CSR scores decrease when a materialistic CEO replaces a frugal CEO. Analyzing within CEO variation, we find that increases in a CEO's level of materialism during his tenure are associated with decreases in the CSR scores in his firm, driven by both decreases in CSR strengths and increases in CSR weaknesses.

Finally, we investigate whether the link between CSR and operating performance varies with CEO materialism. Prior research on the relation between CSR scores and firm performance has produced mixed results; however these studies do not account for the possibility that the link between CSR and performance varies with CEO type. We find that CSR scores in firms run by frugal CEOs are positively associated with accounting profitability. In contrast, we find that CSR scores in firms led by materialistic CEOs have no relation to accounting performance on average. We probe further into the relation between CSR scores, operating performance, and CEO type, and find that in firms run by materialistic CEOs, the link between CSR scores and operating performance is more negative for CEOs that are more powerful (as measured by the pay slice of the CEO relative to other top five executives developed by Bebchuk, Cremers and Peyer (2011)). However, the link between CSR and performance actually increases with CEO power for firms run by frugal CEOs.

In sum, our results indicate an intriguing and compelling link between CEO materialism and firms' CSR scores. We note, however, that we cannot conclusively establish a causal link between the two, given that the endogenous sorting of executives to firms may bias our results.

However, our results are robust to several identification strategies, including instrumental variables regressions, analyses using CEO turnovers, robust to the timing of revelation of a CEO's type and intra-executive changes in materialism, mitigating this concern.

Subject to the above caveat, our paper makes three primary contributions. First, this paper contributes to the CSR literature by providing the first empirical study on the role of unobserved managerial heterogeneity in explaining the variation in CSR scores across firms. Examining the role of individual CEOs in explaining CSR scores is especially important given the voluntary nature of CSR activities and the critical role that individual CEOs play in determining the CSR practices in their firms. In fact, we show that the CEO is responsible for 63% of the variation in a firm's overall net CSR scores, while firm effects explain 20% of the variation. Our findings add to the growing research on the importance of latent factors such as a CEO's ability, risk preferences, and personality in shaping corporate outcomes.

Second, we are the first study to provide evidence that firms' CSR scores vary with one specific measure of a CEO's personality, i.e., his materialism. Results suggest that materialism is responsible for a significant portion of the "CEO effect" (approximately 15%) in explaining variation in firms' net CSR scores. Our cross sectional models and predecessor-successor analyses indicate that firms led by materialistic CEOs (vs. frugal CEOs) have lower CSR scores. Further, CSR scores decline with the acquisition of luxury goods over the tenure of materialistic CEOs.

Finally, our results analyzing the link between CSR scores and firm performance highlight the importance of incorporating executive type in CSR research, and provide one possible explanation for the mixed results in the prior literature on the relation between CSR and accounting performance.

Overall, the results in this paper provide empirical support for the experimental findings on an individual's acquisition of luxury goods in his personal life and his behaviors towards other people and society, as reflected in a specific setting, i.e., firm's CSR scores. These results also complement those in Davidson, Dey and Smith (2015) and indicate that our measure of luxury asset ownership captures meaningful differences in materialism and can be useful in explaining variation in numerous and unrelated corporate outcomes.

II. PRIOR RESEARCH AND HYPOTHESES DEVELOPMENT

We follow the definition of CSR offered by Carroll (1979) which is the most widely accepted view in the literature (Waddock and Graves 1997; Kim, Park and Wier 2012). According to this view, the social responsibility of a business is “a multidimensional construct that encompasses the economic, legal, ethical and discretionary expectations that society has of organizations at a given point in time.”

The theoretical frameworks that have been advanced in the literature to describe CSR activities can be classified into four groups (Garriga and Mele 2004). First, *instrumental* theories assume that the corporation is an instrument for wealth creation and that is its sole social responsibility. Under this theory only the economic aspect of the interactions between a firm and society is considered and any proposed social activity is accepted if and only if it is consistent with wealth creation (Friedman 1970; McWilliams and Siegel 2001). Second, *political* theories emphasize the social power of a firm specifically in its relationship with society and its responsibility in the political arena associated with this power. Under this view a firm needs to take into account the community where it is operating and is responsible to find ways to improve that society (Matten and Crane 2005). Third, *integrative* theories argue that firms need to integrate

social demands into their business because its success is dependent on society (Wood 1991; Swanson 1995; Agle and Mitchell 1999). Finally, *ethical* theories suggest that a firm must accept social responsibility as an ethical obligation, and there is a moral imperative for managers to “do the right thing” (Carroll 1979; Jones 1995).

The above theories suggest that firms/ managers have an incentive to pursue CSR activities and be honest, trustworthy and ethical in their business practices because such behavior is beneficial to the firm. Further, the *ethical* theories proposed in the literature imply that the morals or ethics of the *individual* in charge of decisions regarding social responsibility become an important factor in a firm’s CSR practices (Jones 1995). The conjecture that an individual’s personal characteristics can shape firms’ CSR activities has largely been unexplored in the CSR literature. In fact, research on management styles suggests that heterogeneity in corporate practices can result from differences in personal preferences and that managers’ experiences, values, and cognitive styles, affect their choices and consequent corporate decisions (Bertrand and Schoar 2003). In line with this, several studies have documented that executive characteristics are associated with several aspects of corporate behavior and outcomes (Bamber, Jiang and Wang 2010; Kaplan, Klebanov and Sorensen 2012; Malmendier and Tate 2009; Davidson et al. 2015).

We take a first step in examining how one aspect of a CEO’s personality (materialism) can shape the CSR activities in their firms. We focus on CEOs as they are the firm’s key decision-makers, are charged with the responsibility of formulating corporate strategy and are often deeply involved in promoting the image of their respective firms through social responsibility. We focus on a CEO’s materialism and measure materialism using data on the CEO’s ownership of luxury goods.

Our focus on materialism is motivated by the psychology literature, which describes materialism as a way of life characterized by a “devotion to material needs and desires” (Richins and Rudmin 1994), “the importance one attaches to worldly possessions” (Belk 1985), and “the worship of things” (Bredemeier and Toby 1960). This stream of research has documented experimental findings that motivate hypotheses regarding an executive’s commitment to socially responsible behavior.²

Richins and Dawson (1992) conceptualize materialism as a consumer value with three main components - acquisition centrality, happiness, and success - and finds that those who scored higher on their scale are less willing to share what they have in terms of both money and possessions. This unwillingness goes beyond just contributions to charitable and environmental organizations to also include providing help to family and friends. Greater materialism is also argued to be related to a loss of a sense of community which may in turn make people less sensitive to behaviors that might negatively affect others (Belk 1988). Kilbourne and Pickett (2008) document that materialism has a negative effect on environmental beliefs, and these beliefs affect environmental concern and environmentally responsible behaviors.³ While causal interpretations are difficult, the inferences from this literature present interesting implications for corporations and their investments in CSR.

Based on the above evidence, we expect materialistic CEOs to be relatively less generous, have lesser concern for others, and be less sensitive to how their actions affect the community and

² The notion of materialism is likely indistinct from a lack of “frugality”. The psychology literature defines frugality as a distinct trait characterized by the degree to which an individual is both restrained in acquiring and resourceful in using good and services to achieve long-term goals (DeYoung 1996; Lastovicka, Bettencourt, Hughner and Kuntze 1999).

³ Kilbourne and Pickett (2008) focus on specific environmental beliefs and define them as beliefs an individual has regarding the existence of environmental problems such as water shortages, ozone depletion and global warming. They argue that concerns about the environment would not arise unless preceded by the belief that environmental problems exist.

environment. Our first prediction can thus be considered a test of the three-part joint hypothesis: our measure of luxury goods ownership captures meaningful variation in CEOs' materialism, the experimental results suggesting that materialistic people are likely to have less concern for others holds outside the laboratory setting, and a CEO's lesser concern for others will manifest in lower CSR scores in his firm.⁴ Our first hypothesis is formally stated as follows:

H1: Firms led by materialistic CEOs have lower corporate social responsibility scores as compared to the corresponding scores in firms led by frugal CEOs.

Our next set of tests examines how CEOs influence the relation between CSR and firm profitability. Numerous studies examine how socially responsible activities in firms affect financial performance. However, the link between CSR and corporate financial performance is tenuous at best, with studies documenting positive, negative or neutral relations (Margolis, Elfenbein and Walsh 2007; Orlitzky, Schmidt and Rynes 2003; McWilliams and Siegel 2000). Researchers attribute such mixed results to important theoretical and empirical limitations, measurement errors and/or overall flawed empirical analysis (McWilliams and Siegel 2000).

To the extent that a firm's CEO is the primary decision maker regarding CSR initiatives, it is reasonable to question whether the CEO's character, personal motives and objectives will also determine how CSR investments affect the firm's operating performance. The mixed results in the literature on this link may be in part due to omitted correlated factors related to the personal attributes or qualities of the CEO. For instance, if a CEO invests in CSR with the motive of enhancing shareholder wealth (we refer to this as the "shareholder value" argument), then we

⁴ Note that our reliance on "off-the-job" behavior to measure frugality offers two advantages over the use of manager fixed effects. First, executives' off-the-job behavior is less likely than on-the-job behavior to be affected by characteristics of the firm such as incentive plans and the control environment, facilitating the identification of executive type. Second, manager fixed effects do not identify specific characteristics of executives, but rather capture all relevant managerial time invariant characteristics such as preferences, ability, and backgrounds.

would expect a positive relation between each dollar invested in CSR and operating performance. On the other hand, as Friedman (1970) argues, managers may also invest in CSR solely for their own personal benefit (building personal reputation or deriving higher personal utility from socially responsible activities) but not necessarily to enhance shareholder value (we refer to this as the “private benefits” argument). The company may experience losses as these activities are not likely to be profitable. In this case, we would observe a negative (or no) relation between CSR activities and operating performance.

Frugal CEOs are more disciplined in how they spend money and tend to do so in ways consistent with long-term corporate goals (Anderson and Lillis 2011). Conversely, if materialistic CEOs are relatively less disciplined in this regard, then we expect investments in CSR to either be unrelated to operating performance or negatively related, particularly if CSR initiatives are undertaken with the goal of achieving personal goals (such as developing personal reputation) instead of for achieving corporate objectives and increasing shareholder value. In this case, we expect CSR investments by materialistic (vs. frugal) CEOs to be negatively related to operating profits.

Alternatively, frugal individuals are also characterized as being more generous and having more concern for others and the environment. Thus, in addition to being concerned for their shareholders, frugal CEOs may also be concerned for other stakeholders, such as employees, customers, external communities etc. Therefore, such executives may “over-invest” in CSR not with corporate profitability motives in mind but rather to “do the right thing” as per their nature. While such over-investments in CSR likely provide the CEO with greater personal satisfaction, they may not add to (and may even reduce) shareholder value. In this case, CSR investments by frugal executives may also be negatively related to operating profits.

In sum, the overall impact of CEO materialism on the relation between CSR scores and operating performance is an empirical question. Formally, we hypothesize the following (stated in the null form):

H2: The association between corporate social responsibility scores and operating performance is unrelated to the materialism of the firm's CEO.

To further examine whether the shareholder value versus the private benefits arguments vary with CEO type, we next examine if CEO *power* tempers the relation between CSR scores and operating performance for each CEO type.

We measure CEO power using CEO Pay Slice (CPS), developed by Bebchuk et al. (2011). CPS is the fraction of the aggregate compensation of the firm's top-five executive team captured by the CEO, and is generally identified with the power and influence a CEO has in the company and thus his ability to extract rents. For instance, Bebchuk et al. (2011) document evidence consistent with the hypothesis that higher CPS is associated with agency problems. Several papers in the CSR literature explore how CEO power affects various aspects of social responsibility. Wilhelm (1993) finds that inequities between the pay of CEOs and that of other employees and escalating CEO pay contribute to employee neglect, lower employee commitment and lower product quality. Wiggernhorn, Pissaris and Gleason (2014) find, somewhat surprisingly, that higher CEO power (measured by the high pay disparity between the CEO and next top four executives) positively affects some measures of Employee Relations; although this positive relation does not hold when they measure power as the CEO holding the dual role of CEO and board chairman.

In our context, to the extent CPS captures CEO power/entrenchment in the company, we examine whether for each type of CEO (frugal and materialistic), the link between CSR and operating performance varies with CEO power. If frugal CEOs primarily invest in CSR to increase

shareholder value, then the relation between CSR and operating performance in firms led by frugal CEOs should not vary with CEO power. Alternatively, it is possible that as a frugal CEO gets more powerful he is able to use this additional power to over-invest in CSR activities to a far greater extent (in order to “do the right thing”), which can negatively affect shareholder value. In this case, we would expect the link between CSR and operating profits to be decreasing in CEO power for firms with frugal CEOs.

If materialistic CEOs primarily invest in CSR for personal benefits, without regard to shareholder wealth, then in firms led by materialistic CEOs, we expect the link between CSR and operating profits to be decreasing in CEO power. On the other hand, given the results in the psychology literature, materialistic CEOs may be indifferent to CSR investments. In this case the link between CSR and operating performance will be unrelated to CEO power.

The overall relation between CEO type, CSR and operating performance is therefore an empirical question. Formally, our hypothesis can be stated as follows (in null form):

H3a: For firms run by frugal CEOs, the association between corporate social responsibility scores and accounting performance is unrelated to CEO power.

H3b: For firms run by materialistic CEOs, the association between corporate social responsibility scores and accounting performance is unrelated to CEO power.

III. SAMPLE, DATA AND DESCRIPTIVE STATISTICS

Sample and Data

Our data on CEOs’ ownership of vehicles, boats, and real estate are obtained from numerous federal, state and county databases accessed by licensed private investigators. We

augment our real estate data by hand collection of public information primarily from county tax assessor websites.⁵

We follow a rigorous procedure to ensure our asset data is as complete and accurate as possible. We collect real estate data from title/ownership searches and by looking up property records from an individual's address history. The latter procedure allows us to include property that may be in the name of a spouse or held by a trust. It also allows us to look up properties that the individual may have built from the ground up (for which we use an estimated property value based on an average of several real estate databases). For individuals who rent instead of own real estate, we obtain estimates of property values based on the records for the condominium units in the building. The various steps we take to attest to the veracity of real estate values are described in detail in Appendix B. Our vehicle data is based in part on insurance documents which show an individual is insured to drive a vehicle. This allows us to consider vehicles that may be listed in the name of a spouse. The above process limits any bias in the data that may arise if certain individuals place some assets in the name of a trust or family member.

We measure an executive's materialism by setting an indicator variable, *MATERIAL*, equal to 1 if the CEO owns luxury assets prior to December 31, 2012, where luxury assets include cars with a purchase price greater than \$75,000, boats greater than 25 feet in length, primary residences worth more than twice the average of the median home prices in the metropolitan area of his firm's corporate headquarters (as defined by the Core Based Statistical Area (CBSA)), or any additional residences worth more than twice the average home prices in that metropolitan area (as defined by the CBSA), and 0 otherwise.⁶

⁵ Our acquisition and use of asset data conforms to all provisions of the Driver's Privacy Protection Act (DPPA).

⁶ We include a CEO's luxury asset purchases regardless of when they occur to define *MATERIAL* for that CEO. This is based on our assumption that type is stable and revealed with a delay, and our desire to minimize the number of materialistic CEOs classified otherwise. We note that our measure of materialism is based on an individual's luxury

Cluster analysis, including Jenks natural breaks classification method (Jenks 1967), suggest that \$75,000 and 25 feet represent natural breaks in the distribution of values for car prices and boat lengths respectively. In sum, the Jenks method attempts to arrange data into groups by reducing variance within groups and maximizing variance between groups. Step detection, though often used for time series data, identifies jumps in the levels of a distribution and yields similar inferences to the Jenks method. Nevertheless, in order to verify whether the statistical and economic significance of our results on materialism are sensitive to these measurement choices, we verify that our results are robust to using an alternative measure, where the indicator *MATERIAL* takes a value of 1 if the CEO owns cars with a purchase price in excess of \$110,000, boats greater than 40 feet in length, a primary residence worth 5 times the average of the median home price in the metropolitan area of his firm's corporate headquarters (as defined by the CBSA) or additional residences worth 5 times the median value of homes in that property's CBSA, and 0 otherwise. We also obtain similar results in our analyses when we use a continuous measure of materialism, *MATERIAL CONT*, defined as the sum of the dollar values of an executive's car(s), boat(s) and primary residence in excess of twice the average of the median home prices the metropolitan area of the corporate headquarters (as defined by the CBSA), and the value of any additional residences as of December 31, 2012.⁷

asset ownership as of December 31, 2012 because we purchased our data during 2013. Note also that given that most CEOs earn relatively high salaries it is possible that our primary measure of *MATERIAL* represents a "high bar" for an executive to be deemed frugal, and this less stringent requirement could better capture the difference in CSR scores for firms run by frugal and materialistic CEOs.

⁷ We choose to report our results using the binary measure for the following reasons. First, a binary measure is needed in our model of CEO transitions. Second, analyses requiring the summation of coefficients are more meaningful and offer a clearer interpretation with a binary measure. Third, boat prices were not provided to us and need to be estimated which calls into question the accuracy of that component. And finally, summing the dollar values of different assets on a one-to-one basis is not likely an accurate measure of the degree of materialism (for instance, someone with a \$300,000 car and \$700,000 home may not represent the same level of materialism as someone with a \$50,000 car and a \$950,000 home). Our analyses using a continuous measure of materialism need to be interpreted with these caveats in mind.

The literature makes clear that if an individual is materialistic then that individual is not frugal and vice versa, but is silent on how many people may be neither. To consider this possibility we measure materialism/ frugality and attempt to exclude individuals who are neither. To do this we consider the total estimated dollar value of all assets owned by our sample CEOs, set *MATERIAL* equal to 0 for CEOs previously defined as frugal, set *MATERIAL* equal to 1 for the top half of materialistic CEOs in terms of peak dollar value of assets owned, and exclude the bottom half of materialistic CEOs. We acknowledge that simply looking at the top 50 percent of materialistic CEOs is somewhat arbitrary but have verified the robustness of the results to different cutoffs.⁸ Our results are robust to these alternative measures and are available in the Internet Appendix. We also check the robustness of our results to several other measures to capture the materialism of an executive; we discuss these alternate measures in detail in Appendix B.

We obtain our measures of Corporate Social Responsibility (CSR) scores from a database originally constructed by Kinder, Lydenberg, Domini Research & Analytics, Inc. (KLD), which was subsequently acquired by Morgan Stanley Capital International (MSCI). This is currently the most widely used source of CSR data (Waddock and Graves 1997; Dhaliwal, Li, Tsang and Yang 2011).⁹ Beginning in 1991, KLD rated approximately 650 companies every year, comprising all firms in the S&P 500 and Domini 400 Social SM Index. During 2001 to 2002, KLD expanded its coverage to include the largest 1,000 U.S. companies (by market capitalization) and since 2003, it increased its coverage to incorporate the largest 3,000 U.S. companies. KLD reviews several company documents, such as the annual report, the corporate social responsibility reports produced

⁸ We also created another binary measure of materialism where frugal CEOs are measured in the same manner, CEOs defined as materialistic on the basis of one and only one asset are discarded, and *MATERIAL* is set equal to 1 for the remaining CEOs. The results are unchanged.

⁹ For a detailed description please go to www.msci.com.

by the company, and the corporate website, to produce a CSR rating for the company for each year.

We focus on five main categories of CSR investments included in the KLD database: Community, Diversity, Employee Relations, Environment, and Product Safety.¹⁰ Some examples of investments in these categories include donations to charities, expenditures towards pollution control, and employing a more diverse work force.

KLD also lists Corporate Governance and Human Rights as major categories. Generally, corporate governance is about the mechanisms that allow principals (shareholders) to reward and exert control on agents (managers). CSR, on the other hand, deals with social objectives and stakeholders other than shareholders. We do not believe that governance deals with social objectives and stakeholders other than shareholders, as per the objectives and definitions of CSR activities, and hence we leave this category out of our CSR measure. The Human Rights category primarily focuses on whether firms have substantial business relationships (e.g. production facilities) in countries that had human rights concerns at certain points in time (e.g. North Ireland, South Africa). These individual categories are often only measured for a few years at a time and therefore we have little data to analyze. Further, concerns regarding this category have been raised in prior research. We exclude this category from our analysis.

For each of the categories considered, KLD contains data on the number of strengths and concerns (also referred to as weaknesses). For each strength or concern rating applied for a company, KLD has a “1” or a “0” depending on whether that strength or concern is present or absent in the firm respectively. We use the difference between the strengths rating and concerns rating to compute the net score for each category for a firm (for example, the net Community score

¹⁰ We report results for all five categories for our main cross-sectional tests; other results using the individual categories are provided in the Internet Appendix for brevity.

is the Community strengths rating minus the Community concerns rating). We also consider an overall measure of CSR, *CSR NET SCORE*, computed as the sum of the strengths ratings across all five categories minus the sum of the concerns ratings across all five categories (an overview of the strengths and concerns used to calculate CSR scores is included in Appendix C).

Financial accounting data employed to compute various firm characteristics are obtained from the Compustat database. CEO compensation data are obtained from the Execucomp database, and other CEO-level information is collected from BoardEx. We merge the ExecuComp database with the KLD database to obtain the initial sample employed in this article (the CSR-ExecuComp population).¹¹

Due to the high cost of background checks on asset ownership we follow the following steps to obtain our final sample. We randomly select and purchase data for CEOs at 515 firms from the initial sample. Then we add data for CEOs and firms which we had previously obtained from prior studies. The latter sample includes 134 CEOs and firms, including 59 firms that were subsequently involved in fraud (and 75 non-fraud firms that had been matched to the fraud firms).¹² Our final sample, described in Table 1, Panel A comprises 649 firms and 947 CEOs in total over the period 1992 – 2010 (our sample period end is determined by our KLD data which runs through 2010). This includes 203 firms for which we have data for at least two CEOs, which allows us to analyze the changes in CSR policy at a firm when a CEO transition takes place. Table 1, Panel A also provides a summary of the distribution of luxury assets. Of the 947 CEOs in the sample, approximately 56% are materialistic.

¹¹ For firms with a fiscal year end in December, we merge the KLD Stats data with financial accounting data for the same year, so that CSR activities and performance are measured concurrently. For firms with fiscal year end prior to December, we merge KLD Stats data with financial accounting data for the following year to make sure that the CSR data precede the performance data. As such, we are more certain that causality goes from CSR to performance and not vice versa.

¹² We include indicators for fraud in all relevant analyses to allow for different behavior in these subsamples of firms.

[Insert Table 1 Panel A here]

Summary Statistics

Given that some of our sample is not randomly selected, we compare some key firm characteristics of our final sample with the CSR-ExecuComp population of firms. Table 1, Panel B presents these comparisons for the measures of CSR employed in our analyses, as well as the performance and control variables employed in our main regression models. See Appendix A for a detailed description of all variables.

[Insert Table 1 Panel B here]

Our sample firms have significantly larger mean and median market capitalization as compared to the CSR-ExecuComp population. The sample firms are also less financially constrained as compared to the CSR population. We measure financial constraint using the proxy developed by Kaplan and Zingales (1997). They construct the measure as a linear combination of five variables including cash flows, cash dividends, cash balances, book leverage, and Tobin's Q.

The CEOs in our sample firms are wealthier than those in the CSR-ExecuComp population. We calculate a firm-based measure of CEO wealth using data from ExecuComp that considers: historical cash compensation, the value of current option and restricted stock holdings, the value of stock holdings, deferred compensation, the value of long-term incentive plans and profits from open market transactions. The average pay slice – the total compensation paid to the CEO as a proportion of the total compensation paid to the top five executives of the firm - of the sample CEOs is however, similar to the average pay slice of the CSR-ExecuComp CEOs. The sample CEOs have slightly shorter tenures as compared to those in the CSR-ExecuComp sample, although only the median tenure is significantly different (at the 10 percent level). The two samples are similar in all other firm and CEO dimensions.

The average overall CSR net score, the net CSR strengths as well as the net CSR weaknesses (or concerns) for our sample are significantly higher than those for the CSR-ExecuComp population. Among the five individual categories, the average net scores for Employee and Diversity are significantly higher for our sample, whereas the average net scores for Product Safety is significantly lower for our sample. The scores for Community and Environment are not significantly different across the two samples.

One question that may arise is whether wealthier executives are more likely to be materialistic because they have the means to acquire luxury assets, and whether it is possible that our materialism measure is capturing the actions of CEOs who accumulated more wealth over their tenures. We note that all CEOs in our sample can easily afford the luxury assets considered in our materialism measure, so it is not the lack of wealth that prevents some of them from possessing these items. Nevertheless, to examine the relation between an executive's wealth and his materialism we conduct the following analyses. Using our above measure of an executive's wealth, we form executive wealth deciles and examine whether the proportion of materialistic CEOs are more highly concentrated in the higher wealth buckets. Table 1 Panel C presents the results of this analysis. We find that the percentage of materialistic CEOs is similarly distributed across the various wealth deciles (in fact the highest percentages of materialistic CEOs seem to be concentrated in the middle deciles, i.e., deciles five, six and seven). Further, the percentage of materialistic CEOs is similar in the top 50% and the bottom 50% of the wealthiest CEOs. We also find that the correlation between *MATERIAL* and executive wealth is insignificantly different from zero and include controls for an executive's wealth in all our regressions, further reducing any potential concern that an executive's wealth is likely to be affecting our results.

[Insert Table 1 Panel C here]

Finally, we also examine the industry distribution of our final sample (based on the Fama-French seventeen-industry classification scheme) and find that it is similar to that of the CSR-ExecuComp population (reported in the Internet Appendix). Our sample has a notably higher percentage of financial institutions and is reasonably similar to the population for other industries.

IV. CEO INFLUENCE ON CORPORATE SOCIAL RESPONSIBILITY

Before examining how CEO materialism is related to CSR, we first examine two issues that serve as a logical prelude to testing our hypotheses. First, we investigate whether certain types of CEOs select (or are hired) into firms with certain levels of CSR or into firms in specific industries. With regards to industry, we examine whether CEOs sort into certain industries that are generally not considered to be socially responsible, i.e., the “sin” industries (KLD categorizes these industries to include Alcohol, Gambling, Tobacco, Firearms and Nuclear). This examination will not only help provide interesting insights into the self-selection of executives into firms and industries, but (if such selection exists) also inform us on the research design required to control for this sorting. Second we examine the direct influence of the CEO (independent of firm fixed effects) on CSR scores. This will tell us the extent to which the CEO is responsible for shaping the firm’s CSR activities, and will further highlight the importance of examining how materialism affects CSR policies.

CEO Sorting

We estimate the following models to examine sorting of CEOs into firms and industries:

$$\begin{aligned}
 MATERIAL_i = & \beta_0 + \beta_1 CSR\ NET\ SCORE_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} \\
 & + \beta_4 IND\ COMP_{it} + \varepsilon_{i,t}
 \end{aligned} \tag{1a}$$

$$MATERIAL_i = \beta_0 + \beta_1 SIN_i + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 IND\ COMP_{it} + \varepsilon_{i,t} \tag{1b}$$

The dependent variable *MATERIAL* is a dummy variable which equal 1 if the CEO owns luxury assets (as defined earlier), and 0 otherwise. In equation (1a) *CSR NET SCORE* is the net overall CSR score (strengths less concerns) calculated across all CSR categories. In equation (1b), *SIN* is a dummy variable that equals 1 if a firms belongs to either the Alcohol, Gambling, Tobacco, Firearms or Nuclear industry, and 0 otherwise. The control variables in both equations include measures for firm size (market capitalization), performance (return on assets) and the median industry total compensation paid to CEOs. We include the latter to allow for any sorting due to the level of pay offered in firms in certain industries. All continuous variables are measured in the year before the CEO joins the firm as CEO.¹³ All variables are defined in detail in Appendix A at the end of the paper.

[Insert Table 2 here]

Table 2 presents the results of models (1a) and (1b). Column (1) in Table 2 reveals that the coefficient on *CSR NET SCORE* is not significantly different from zero, providing no evidence that CEOs sort into firms based on firms' prior CSR scores. However, Column (3) in Table 2 suggests that materialistic CEOs are significantly more likely to be employed in firms in sin industries. The marginal effects (Column (4)) indicate that materialistic CEOs are approximately 26% more likely than frugal CEOs to work in sin industries. Being a sin industry firm in and of itself can be considered an aspect of CSR. Therefore, while our analyses fail to document support for an endogenous matching between CEO materialism and CSR scores, they do suggest an association between materialism and CSR as it pertains to product type/industry affiliation.¹⁴

¹³ We have relatively few observations to analyze sorting by CSR scores because many CEOs in our sample began their tenure before 1992, the first year for which we have CSR data (or before KLD covers the firm). We also estimate models in which we take a 3 year average of CSR scores in the 3 years before the CEO joined the firm as CEO but this reduces the sample even further and does not yield different results.

¹⁴ There is no difference in CSR scores in sin versus non-sin industries. So, the association between materialism and sin industry affiliation does not influence analyses on the association between materialism and CSR scores. That said,

Firm versus CEO Effects on Corporate Social Responsibility Scores

Next, we examine how much influence CEOs have on CSR scores while controlling for firm fixed effects. Such an examination is difficult, because in addition to observable factors (which can be controlled for), there are unobservable firm and manager characteristics that can affect CSR investments.

To examine the influence of CEOs controlling for firm fixed effects we follow the approach in AKM which has been used in recent studies (Graham, Li and Qiu 2012; Albuquerque, De Franco and Verdi 2012). This approach involves separately identifying CEO and firm fixed effects by considering a panel of CSR data comprised of both CEOs who have changed firms (“movers”) as well as CEOs who have not changed firms (“non-movers”) but are in firms that have employed at least one mover, and including CEO and firm dummies in the specification.¹⁵ The AKM method identifies manager and firm fixed effects through “group connection” which allows one to separate firm and manager fixed effects not only for mover but also for non-mover CEOs, as long as the non-movers work in firms that have hired at least one mover. AKM define group connection as follows. They start with an arbitrary individual and include all the companies for which he or she has ever worked. Next, they add all the individuals who have ever worked in any of those companies. They continue adding all additional firms for which any of these individuals has ever worked and all additional individuals in any of those firms until no more individuals or firms can be added to the current group. This process is repeated for the next group and so on until all data are exhausted. Hence, every person and firm belongs to exactly one group and within every group

we repeat our analyses excluding sin industry firms and find the statistical and economic significance of the results are unchanged.

¹⁵ The AKM method is superior to the method used in studies such as Bertrand and Schoar (2003) that only consider movers in their estimation, because the AKM method can employ data using both movers and non-movers thus increasing sample size and power.

all the persons and firms are connected somehow. AKM prove formally that group connectedness is necessary and sufficient for the separate identification of person and firm fixed effects. For detailed information on the algorithm of forming groups see Abowd, Creedy and Kramarz (2002). We follow this method and estimate the following model for 96 mover and 131 non-mover CEOs who were at firms where mover CEOs were present:

$$\begin{aligned}
 CSR\ SCORE_{i,t} = & \beta_0\ FIN\ CONSTRAINT_{it} + \beta_1\ SIZE_{it} + \beta_2\ ROA_{it} + \beta_3\ TENURE_{it} \\
 & + \beta_4\ WEALTH_{it} + CEO\ FE + FIRM\ FE + \varepsilon_{i,t}
 \end{aligned} \tag{2}$$

Table 3, Panel A presents the results. The table includes the proportion of variance in the model that is attributable to the CEO and that which is attributable to the firm. Our results indicate that a significant part of CSR scores is determined by CEO-specific attributes. For the five CSR categories between 52% and 74% of variance in CSR scores is attributed to CEO fixed effects while only 11% to 32% of the variance is attributed to firm fixed effects. CEO fixed effects explain 63% of the variation in overall CSR scores in firms, while firm fixed effects explain 20% of the variation. The control variables in sum explain 3% of the variance in overall CSR scores; further (untabulated) analysis suggests firm size explains most of this 3%.

[Insert Table 3 Panel A here]

The above results support the argument that CSR scores are determined primarily by the CEO. This analysis does not tell us, however, which specific CEO traits determine CSR choices. Next we attempt to tease out how much of the CEO effect is driven by materialism. We first divide the sample firms into those that have frugal CEOs and those that have materialistic CEOs. So in each subsample we keep CEO type constant. Now, we repeat the AKM procedure in each of these subsamples. The comparison of the portion of variation in CSR scores in each of these subsamples

and an overall random sample of frugal and materialistic CEOs (with a similar sample size) will give us an admittedly crude estimate of influence of materialism on CSR scores.

Table 3, Panel B presents the results. Focusing on the frugal and materialism subsamples, we find that when we hold type constant, the CEO effect explains approximately 51% of the variation in CSR scores on average (54% for frugal subsample, and 48% for the materialism subsample). However, for the random sample where we allow type to vary, the CEO effect explains 61% of the variation in CSR scores. One way to interpret these variances is that materialism is responsible for about 15% of the CEO effect on CSR scores.¹⁶

[Insert Table 3 Panel B here]

We note from the above results that firm fixed effects accounts for about 20% and CEO fixed effects accounts for about 63% of the variation in CSR scores. We expect that industry membership is responsible for some cross-sectional variation, and perform a quick analysis to examine this. We cannot include industry fixed effects in the models above; however we run a simple regression model with CSR scores as the dependent variable and industry fixed effects as the only independent variable. We find that the R-squared of this model is 5%.

Overall, the results in Table 3 suggest that CEOs explain a significant portion of the variation in CSR scores, and that CEO materialism represents a significant portion of this effect. This further motivates us to examine in more detail whether and how CEO materialism affects variation in CSR scores. We examine these questions in the next section.

¹⁶ We acknowledge that we cannot test the statistical significance of differences in the R-squared values across these models and that the 15 percent estimate for frugality is just that, an *estimate*. However, the results are consistent with materialism being an important component of the CEO affect on CSR scores.

V. EMPIRICAL RESULTS: CEO TYPE AND CORPORATE SOCIAL RESPONSIBILITY

Given the above evidence that CEOs are the primary determinant of CSR scores in their firms, we examine whether CSR scores in firms vary with CEO materialism in a multiple regression framework. Figure 1 plots how CSR net scores vary with CEO materialism. This visual representation of the data provides preliminary support for our first hypothesis. Materialistic CEOs are less likely to have net positive CSR scores (i.e., net strengths) and more likely to have net negative CSR scores (i.e., net weaknesses).

[Insert Figure 1 here]

The potential endogenous selection of CEO types into firms may affect our inferences on the relation between CEO materialism and CSR scores. Our sorting results indicate that CEOs do not sort into firms based on the CSR scores. However, certain types of firms may hire (or attract) materialistic CEOs, and these same firms may be more or less likely to invest in CSR activities. To the extent that we are unable to control for such firm-specific characteristics, we will suffer from a correlated omitted variables problem. We note that even though certain firms may attract certain types of CEOs, CSR decisions are mostly at the discretion of the CEO and our 2-way fixed effects results show that the primary driver of CSR activities is the CEO (vs. the firm). Nevertheless, we conduct a battery of tests to mitigate (though not eliminate) the possibility that our results are driven by the endogenous selection of CEOs by firms. We start by presenting OLS regressions and then address any potential endogeneity via an instrumental variables analysis, a CEO turnover analysis, an analysis of the timing of CEOs' revelation of their types, and an intra-executive analysis.

Cross-Sectional Model

To test our first hypothesis, we estimate the following model with industry fixed effects¹⁷:

$$\begin{aligned} CSR SCORE_{it} = & \beta_0 + \beta_1 MATERIAL_i + \beta_2 FIN CONSTRAINT_{it} + \beta_3 SIZE_{it} \\ & + \beta_4 ROA_{it} + \beta_5 TENURE_{it} + \beta_6 WEALTH_{it} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

Where the variables are as defined earlier. We estimate model (3) separately for each of the CSR categories, Community, Diversity, Environment, Employee and Product Safety and for the net overall CSR score.

[Insert Table 4 Panel A here]

Table 4, Panel A presents the results of model (3).^{18,19} We find that the coefficients on *MATERIAL* are significantly negative for all of the CSR categories, including the overall CSR score (at the .05 level or better). The coefficients on *MATERIAL* in columns (1) through (5) indicate that materialistic CEOs are associated with lower CSR scores by 0.092, 0.193, 0.138, 0.169 and 0.092 in the Community, Diversity, Employee, Environment and Product Safety categories respectively. The overall CSR score is lower by 0.703 in firms run by materialistic CEOs. The sample average for the overall CSR score is 0.40, indicating that the affect of CEO materialism on CSR ratings is economically significant. We interpret these results as support for the prediction that materialistic CEOs lead firms that score worse in socially responsible activities.

¹⁷ We cannot include firm fixed effects because we only have data on one CEO for most of our sample firms, and *MATERIAL* does not vary within CEO over time. Also, in model (3) and wherever applicable hereafter we include indicators for whether a firm has been involved in financial statement fraud to control for how these matters might affect CSR scores. We also repeat our analyses excluding these firms entirely. As these distinctions do not alter our results and because these indicators are never significant we tabulate results including all firms in our sample to maximize sample size.

¹⁸ In all models we exclude observations from the first year of a CEO's tenure. Given that transitions occur during the year it seems likely that part of CSR policy was set by the predecessor CEO and part of CSR policy was set by the successor CEO making it unclear which CEO to attribute CSR scores for the year.

¹⁹ In all models, t-statistics are computed using standard errors clustered by executive and year to correct for cross sectional and time series dependence. Results are robust to clustering by firm and year and by any individual dimension.

To isolate the specific channels through which CEO frugality is likely to impact CSR, we additionally examine whether CEO type is associated with CSR scores primarily through CSR strengths or weaknesses (or both) in a multiple regression framework. We re-estimate model (3) by replacing the CSR scores by CSR strengths and CSR weaknesses as dependent variables.

[Insert Table 4 Panel B here]

The results are reported in Table 4, Panel B. The statistical and economic significance suggests that the primary difference in net CSR scores between firms with materialistic and frugal CEOs is due to materialistic CEO firms having fewer CSR strengths (by 0.503; significant at the .01 level). That said, we also find evidence that materialistic CEO firms have more weaknesses (by 0.200; significant at the .05 level).

Among the control variables, financial constraint is negatively associated with CSR scores for the Community and Employee categories (significant at .10 level), and positively for the Diversity category (significant at the .05 level). Financial constraint is not significantly associated with Environment and Product Safety, nor with the firm's overall CSR score. This latter result is interesting given its inconsistency with the results in Hong, Kubik and Scheinkman (2012), who find a significant negative relation between financial constraints and net CSR scores (they consider both the overall difference between strengths and concerns across all categories, as well as a measure obtained through factor analysis). They argue that only firms that do well financially invest in socially responsible projects. Our results on this association are mixed. We suspect this is because of our earlier findings that CEOs, not firm specific factors, are the primary determinant of firms' CSR scores. It also is possible that firm-specific factors, including financial distress, are driven by CEO type. The results in Panel B suggest that financial constraints are unrelated to CSR strengths, but positively associated with CSR weaknesses (at the .10 level).

Some other key findings for the control variables are as follows. Firm size is positive and significant for the Community, Diversity and Employee categories as well as for the overall CSR score, and negative and significant for the Environment and Product Safety categories. Larger firms have more resources to invest in CSR, but may also have greater concerns by virtue of their larger scale of operations. This is supported by the results in Panel B where we find that larger firms have more CSR strengths, but also more weaknesses. Return on assets is not significantly associated with the overall CSR score, however, it is positively associated with Employee, Environment and Product Safety and negatively associated with Community and Diversity. Firms with more CSR weaknesses have lower ROAs, but interestingly, so do firms with more CSR strengths. The lack of consensus in this relation is consistent with the literature which reports mixed results on the association between measures of firm financial performance (including accounting measures) and corporate responsibility (Margolis et al. 2007).

Instrumental Variables Analysis

The main challenge we face is that the CEO of a firm is an endogenous choice made by the board of directors dictated by the various strategic needs of the firm. Those very same firm-specific factors may drive the CSR choices made in the firm. We feel that the possibility of such correlated omitted factors are less likely in this setting as CSR choices are mostly voluntary decisions dictated by the CEO (note also the results of our AKM analysis). Nevertheless we analyze the association between CEO materialism and CSR scores using an instrumental variables design to mitigate any concerns that endogeneity is driving our cross-sectional results.

While it is notoriously difficult to find valid instruments that are correlated with the choice of a materialistic CEO but that do not directly affect CSR decisions (except through the CEO), we identify the presence of directors with social connections to the CEO as an instrument. We define

social connections (*SOCIAL*) as the number of independent directors who are socially connected to the CEO because they have mutual alma maters, worked in the same company/ companies in the past, served in the military together, are currently members of the same clubs as the CEO, serve in the same charitable or belong to other non-professional organizations as the CEO (Hwang and Kim 2009). Davidson et al. (2015) find evidence that firms with materialistic CEOs are significantly more likely to have board members with whom they have social ties. However, ex ante, there is no clear prediction regarding a direct association between CSR scores and the presence of socially connected directors (except through the CEO).

[Insert Table 5 here]

We re-estimate Equation (3) using CEO-director social connections, *SOCIAL*, as an instrument for CEO materialism and present the results in Table 5. The first stage model (unreported) indicates that the instrument exhibits a statistically significant relation with the variable representing a materialistic CEO. The second stage results are consistent with our results in Table 4. The association between CEO materialism and net CSR scores is negative and significant at the 0.01 level. The associations between CEO materialism and both net CSR strengths and net CSR weaknesses are statistically significant in the predicted directions at the 0.05 level or better.

Given that the inferences drawn from the above analysis directly depend on the quality of the instrument, we test for a weak instrument problem and report the Cragg-Donald F-statistic from this test. The F-statistic is greater than 27 which suggests that CEO-director social ties is a strong instrument for CEO materialism. We also report the p-value from a Durbin-Wu-Hausman Chi-squared test which fails to reject a difference between the OLS model and the IV model, suggesting the endogeneity may not be a concern in our OLS analysis.

In sum, we acknowledge that the validity of any IV analysis relies on the assumption that the exclusion restriction holds and our results must be interpreted with that caveat in mind. However, our diagnostic tests and our results from the IV specification mitigate concerns related to endogeneity and provide further support for our inferences on the relation between CEO materialism and a firm's CSR scores.

Predecessor-Successor Analysis

To provide more evidence on how firms' CSR scores vary by CEO type and to further reduce any potential endogeneity concerns, we estimate equation (4) to examine the CSR scores before and after a change in CEO distinguished by predecessor and successor type:

$$\begin{aligned}
 CSR\ SCORE_{i,t} = & \beta_0 + \beta_1\ NEW\ CEO\ MATERIAL_i + \beta_2\ SUCCESSOR_{i,t} \\
 & + \beta_3\ CHANGE\ CEO\ TYPE_i + \beta_4\ NEW\ CEO\ MATERIAL_i * SUCCESSOR_{i,t} \\
 & + \beta_5\ NEW\ CEO\ MATERIAL_i * CHANGE\ CEO\ TYPE_i + \beta_6\ SUCCESSOR_{i,t} * CHANGE\ CEO \\
 & TYPE_i + \beta_7\ NEW\ CEO\ MATERIAL_i * SUCCESSOR_{i,t} * CHANGE\ CEO\ TYPE_i \\
 & + \beta_8\ FIN\ CONSTRAINT_{it} + \beta_9\ SIZE_{it} + \beta_{10}\ ROA_{it} + \beta_{11}\ TENURE_{it} \\
 & + \beta_{12}\ WEALTH_{it} + \varepsilon_{i,t}
 \end{aligned} \tag{4}$$

where *NEW CEO MATERIAL* is a dummy variable that equals 1 if the successor CEO is materialistic and 0 otherwise, *SUCCESSOR* is a dummy variable that equals 1 if the CSR score is measured once the successor CEO is in office and is 0 otherwise, and *CHANGE CEO TYPE* is a dummy variable that equals 1 if there is a change in materialism from the predecessor to the successor CEO and 0 otherwise. For the sake of brevity, hereafter we only report our analyses with the overall CSR net score and report the results with the individual categories in the Internet Appendix. Further, given our result that materialistic CEOs influence the overall CSR scores

differently through strengths and weaknesses, we also conduct the above test by examining the changes in CSR strengths and weaknesses following CEO transitions.

[Insert Table 6 Panel A here]

Table 6, Panel A reports the results of estimating equation (4) as well as an analysis of the change in CSR scores based on the transitions in CEO type. The overall CSR score decreases significantly (at the .05 level) after a frugal CEO is replaced by a materialistic CEO. While the coefficients suggest that strengths decrease and weaknesses increase after such a transition, the results are only statistically significant when analyzing changes in net scores. Analogously, the overall CSR score as well as CSR strengths increase significantly (at the .05 level or better) when a frugal CEO replaces a materialistic CEO; we also find a marginally significant decline in CSR weaknesses (significant at the .10 level) when a frugal CEO replaces a materialistic CEO. The corresponding changes in overall CSR scores associated with other transitions (materialistic → materialistic and frugal → frugal) are not significant.

Ideally we would conduct this analysis on a sample of exogenous CEO turnovers (transition due to predecessor death being the strongest example). However, that sample of CEO deaths is too small (17 firms) to analyze. Using all CEO transitions in our sample does not preclude our identification purpose. Firms are unlikely to hire a new CEO for the purpose of performing worse on CSR dimensions (polluting the environment, discriminating against employees, etc.). Moreover, given that the two-way fixed-effects model we estimate provides strong evidence that CSR scores are primarily determined by CEOs, we argue that even if the CEO was hired to pilot a specific strategic change in the firm, it is more likely to be the new CEO and not the firm driving the changes in the CSR activities. Nevertheless, we verify the robustness of our results by analyzing turnovers classified as routine (versus forced) using the methodology developed in

Bushman, Dai and Wang (2010).²⁰ Based on Factiva news articles database, a turnover is classified as forced when a press article reports that a CEO is fired, demoted or retires / resigns under questionable circumstances (such as policy differences, lawsuits, suspected earnings manipulations or other pressures). Forced turnovers also include turnovers where the CEO retires at an age below 60 if the article does not report the reason for the retirement as death, poor health or the acceptance of another position.²¹ All turnovers resulting from CEO retirements and deaths are classified as routine.

We posit that routine turnovers are less likely the result of a desired change in the management style of the firm (vs. forced turnovers) and are likely to represent a (mostly) exogenous event. We repeat our predecessor-successor analysis using the sample of routine turnovers only, which constitutes about half of our sample of CEO turnovers. The results of this analysis are presented in Table 6, Panel B and confirm our conclusions from Table 6, Panel A. Specifically, net CSR scores decrease significantly when a materialistic CEO replaces a frugal CEO and net CSR scores increase when a frugal CEO replaces a materialistic CEO. As before, the corresponding changes in overall CSR scores associated with the other transitions are not statistically significant.

[Insert Table 6 Panel B here]

CEO Selection into Firms

To further verify that our results are not driven by firms selecting CEOs who are materialistic, we conduct the following sets of tests. First, we re-estimate our cross-sectional model (3) for two groups of firms: the first group comprises our sample of frugal CEOs and only those

²⁰ We are very grateful to Robert Bushman, Zhonglan Dai and Xue Wang for sharing the CEO turnover data with us.

²¹ Bushman et al. (2010) conduct several robustness checks to verify that their classification scheme is not incorrectly classifying voluntary turnovers as forced.

materialistic CEOs who revealed their type prior to joining the firm as a CEO (i.e., purchased one or more luxury assets prior to becoming CEO); and the second group comprises our sample of frugal CEOs and those materialistic CEOs who revealed their type after joining the firm as a CEO (i.e., they owned no luxury assets prior to becoming CEO). If omitted characteristics of firms' selecting CEOs based on their type is driving our results, then we should not observe a significant relation between the materialistic CEOs and CSR scores in the second group of firms because CEOs who did not reveal their type prior to joining the firm could not be selected based on that criterion.

[Insert Table 7 here]

Table 7 presents the results. The first two columns report the results of re-estimating model (3) for the above two groups of firms. Regardless of when the materialistic CEOs revealed their type, we find a negative and statistically significant relation between *MATERIAL* and the CSR net scores (at the .01 levels). This suggests that omitted firm characteristics are not likely to be driving our results. As a corroboration of the above results, we consider only our sample of materialistic CEOs, and rerun model (3) by adding a dummy variable *REVEAL POST CEO* which equals 1 if the CEO revealed his type after joining the firm as CEO. The third column in Table 7 reports an insignificant coefficient for *REVEAL POST CEO*, indicating that the timing of revelation of a CEOs' type is not correlated with the firm's CSR scores (thus firm selection is unlikely to be an issue). An analyses of CSR strengths and weaknesses yields similar inferences, and these are not reported for brevity (available on request).

Intra Executive Analysis

Next, we examine the relation between materialism and CSR scores by exploiting within CEO variation in materialism. Specifically, for a particular CEO, we examine whether CSR scores

decrease with increases in the CEO's materialism during his tenure at the firm (i.e., as he acquires more and more expensive luxury assets over time). This analysis allows us to examine changes in the degree or level of materialism in an executive and the changes in CSR scores holding the firm and individual constant, thereby increasing our confidence in the relation between an individual's materialism and CSR scores in a firm. We note that this intra-executive analysis also reassures us that our measure of materialism is capturing the construct adequately – if we are capturing some other omitted CEO characteristic through our measure of luxury assets, then this omitted characteristic has to change in a similar fashion with materialism over time in order to provide an alternative explanation for our results. However, we cannot think of any other construct that satisfies this criterion.

We estimate the following equation for our subsample of materialistic executives whose level of materialism increases during their tenure and include CEO fixed effects:

$$\begin{aligned}
 CSR\ SCORE_{it} = & \beta_0 + \beta_1\ MATERIAL\ CONT_{it} + \beta_2\ FIN\ CONSTRAINT_{it} + \beta_3\ SIZE_{it} \\
 & + \beta_4\ ROA_{it} + CEO\ FE + \varepsilon_{it}
 \end{aligned}
 \tag{5}$$

Given our prior findings, we also estimate equation (5) by replacing the dependent variable with CSR strengths and weaknesses. In this analysis, *MATERIAL CONT* is the estimated dollar value of luxury assets owned by the CEO as defined earlier. If CSR scores deteriorate (more specifically, strengths are lower and/or weaknesses are higher) over a CEO's tenure as his level of materialism increases ($\beta_1 < 0$), we will interpret the results as evidence of a direct link between CEO materialism and CSR.

[Insert Table 8 here]

Table 8 presents the results. We find a negative and significant coefficient for *MATERIAL CONT* for the overall CSR score ($\beta_1 < 0$ at the .01 level). As a CEO's level of materialism increases,

there is also a significant decline in CSR strengths (at the .10 level) and a significant increase in CSR weaknesses (at the .01 level) in his firm. These results support our hypothesis that there is a significant negative relation between a CEO's level of materialism and the CSR scores in his firm. The result is in contrast to results in Davidson, Dey and Smith (2015) who find that the abnormal trading profits of materialistic executives do not vary significantly with increases in materialism, suggesting that the relation between materialism and CSR is in some ways different than that of materialism and insider trading behavior. This also suggests more broadly that the relation between materialism and various corporate outcomes is not identical.

In sum, our results in Tables 4, 5, 6, 7 and 8 together provide compelling evidence on the relation between CEO type and CSR scores (providing support for H1). In cross-sectional analysis we find that firms with materialistic CEOs have significantly lower CSR scores across all categories; we find that this difference is driven by materialistic CEO firms having fewer strengths and more weaknesses, with the majority of the difference attributed to fewer strengths. This result corroborated by analyses using instrumental variables, in a setting where there is a CEO turnover with a change in CEO type and is robust to CEOs revealing their types prior to or after becoming CEOs of their firms. Finally in our intra-executive analysis with executive fixed effects, we find that as a CEO's level of materialism increases, his firm's CSR scores decrease, through a decrease in strengths and an increase in weaknesses.

VI. CEO TYPE, CORPORATE SOCIAL RESPONSIBILITY AND OPERATING PERFORMANCE

We next test whether the relation between CSR and operating performance is moderated by CEO materialism. We estimate the following model:

$$\begin{aligned}
OPER\ PROF_{it+1} = & \beta_0 + \beta_1 CSR\ SCORE_{it} + \beta_2 MATERIAL_{it} \\
& + \beta_3 CSR\ SCORE_{it} * MATERIAL_{it} + \beta_4 FIN\ CONSTRAINT_{it} \\
& + \beta_5 SIZE_{it} + \beta_6 R\&D_{it} + \beta_7 TENURE_{it} + \varepsilon_{i,t}
\end{aligned} \tag{6}$$

The dependent variable *OPER PROF* is the one year ahead operating income before taxes and depreciation divided by the book value of debt and equity.^{22,23} In addition to the above control variables, we also repeat our tests by including controls for the selling, general and administrative expenses (to proxy for product differentiation) of the firm and the firm’s overall corporate governance score (as measured by Governance Metrics International). These controls are based on prior research (e.g., Bernea and Rubin 2010). However, adding the latter two controls results in the loss of many observations, and as such we report results both with and without these variables. All other variables are as described earlier and are defined in Appendix A. We are interested in the summation of β_1 and β_3 , which represents the association between CSR scores and accounting performance in firms with materialistic CEOs, the coefficient β_3 which represents the difference in the association between CSR scores and accounting performance between materialistic and frugal CEO firms, and the coefficient β_1 which represents the association between CSR scores and accounting performance in firms with frugal CEOs.

[Insert Table 9 here]

Table 9 presents the results. Column (1) presents the results without controls for selling, general and administrative expenses and corporate governance, and column (2) presents the results including these controls. The results are similar across the two models. We find that the absolute relation between accounting performance and overall CSR score is not statistically significant in

²² In equation (6) we exclude observations from a CEO’s last year of tenure as the operating performance measure the following year occurs during another CEO’s tenure.

²³ In equation (6) we use lagged values of all independent variables to control for their effect on operating performance. However, we obtain similar results when we use contemporaneous values for all the control variables.

firms led by materialistic CEOs (see t-statistics for $CSR\ SCORE + CSR\ SCORE * MATERIAL$). In contrast, the relation between CSR scores and operating profits is positive and statistically significant (at the .05 level or better) in firms run by frugal CEOs. From a relative point of view, we find that that interaction between $CSR\ SCORE$ and $MATERIAL$ is negative and significantly related to operating profitability (significant at the .05 level), denoting a significant difference in the association between CSR scores and operating performance for firms with materialistic and frugal CEOs.²⁴

The results in Table 9 provide evidence that investments in CSR by materialistic CEOs are not associated with accounting performance in an absolute sense, and negatively associated relative to those by frugal CEOs. However, CSR investments by frugal CEOs are positively related to accounting performance. This is consistent with the argument that frugal executives are more conscious of corporate goals and performance when making CSR investments (and in support of the shareholder value argument).

We next test whether for each CEO type, the relation between CSR and operating performance varies with CEO power. We estimate the following model separately for the subgroup of firms run by frugal and materialistic CEOs:

$$\begin{aligned}
 OPER\ PROF_{it+1} = & \beta_0 + \beta_1 CSR\ SCORE_{it} + \beta_2 PAY\ SLICE_{it} \\
 & + \beta_3 CSR\ SCORE_{it} * PAY\ SLICE_{it} + \beta_4 FIN\ CONSTRAINT_{it} + \beta_5 SIZE_{it} \\
 & + \beta_6 R\&D_{it} + \beta_7 TENURE_{it} + \varepsilon_{i,t}
 \end{aligned} \tag{7}$$

In the above model, the variable $PAY\ SLICE$ is the percentage of the total compensation of the top five executives in the firm that is paid to the CEO. All other variables are as defined earlier.

[Insert Table 10 here]

²⁴ $CSR\ SCORE$ is measured in year t-1 so that causality can be interpreted as CSR scores affecting performance and not the other way around. Results hold when measuring $CSR\ SCORE$ in year t.

Table 10 presents the results. The interaction between *CSR SCORE* and *PAY SLICE* is negative and statistically significant (.05 level) in firms run by materialistic CEOs. This result is consistent with materialistic CEOs investing in CSR for private benefits and as they become more entrenched this becomes easier to do. In contrast, in firms run by frugal CEOs we find that the interaction between *CSR SCORE* and *PAY SLICE* is positive and statistically significant (.05 level). The result is somewhat surprising given that a CEO should not need to be powerful or entrenched to make performance increasing CSR investments but is still consistent with the shareholder value argument. Finally, the difference in the effect of CEO pay slice on the link between CSR scores and operating performance is significantly different in firms run by materialistic and frugal CEOs (at the .05 level).

Overall, our results in Tables 9 and 10 support the notion that CEO type is an important determinant of the link between CSR and operating performance. We find support for the hypothesis that materialistic CEOs are more likely to engage in CSR investments for their private benefit and that frugal CEOs invest in CSR activities with a motive towards increasing shareholder value. As such, the mechanism through which CSR activities affect operating profits will vary across these types of CEOs.

VII. CONCLUSION

We examine whether and how firms' corporate social responsibility (CSR) scores vary with CEO materialism. We measure the materialism of an individual through his ownership of luxury assets, including cars, boats, and real estate. Our examination is motivated by findings in the psychology literature which suggest that individuals who attach relatively high importance to worldly possessions and who indulge in the acquisition of material possessions are likely to be less

sensitive to how their behaviors affect others, less willing to share their money and possessions with charities or friends and family, and less likely to engage in environmentally responsible behaviors.

Our main findings can be summarized as follows. We find that CEO fixed effects explain 52%-74% of the variation in their firms' CSR scores (and estimate that CEO materialism is responsible for approximately 15% of the CEO effect) whereas firm fixed effects explain 11%-32% of this variance. Our cross-sectional tests indicate that firms run by materialistic CEOs have lower CSR scores, primarily because firms with materialistic CEOs have fewer CSR strengths. These results are corroborated in analyses using instrumental variables, in a sample of CEO transitions and robust to the timing of revelation of a CEO's type. Further, an examination of the changes in the level of a CEO's materialism reveals that an increase in the CEO's materialism over his tenure is associated with significant decreases in CSR scores and in CSR strengths and a significant increase in weaknesses in a model which controls for CEO fixed effects.

Finally, we document that CSR scores in firms run by frugal CEOs are positively associated with operating performance. In contrast, CSR scores in firms led by materialistic CEOs are generally not associated with operating performance. Further, in firms run by materialistic CEOs, the link between CSR scores and operating performance is decreasing in CEOs power. We interpret these findings as evidence that materialistic CEOs are more likely to invest in CSR activities to increase their own private benefits, while frugal CEOs invest in CSR activities with the goal of increasing shareholder value. These results also highlight the importance of incorporating executive type in studies that seek to examine the link between CSR activities and firm performance.

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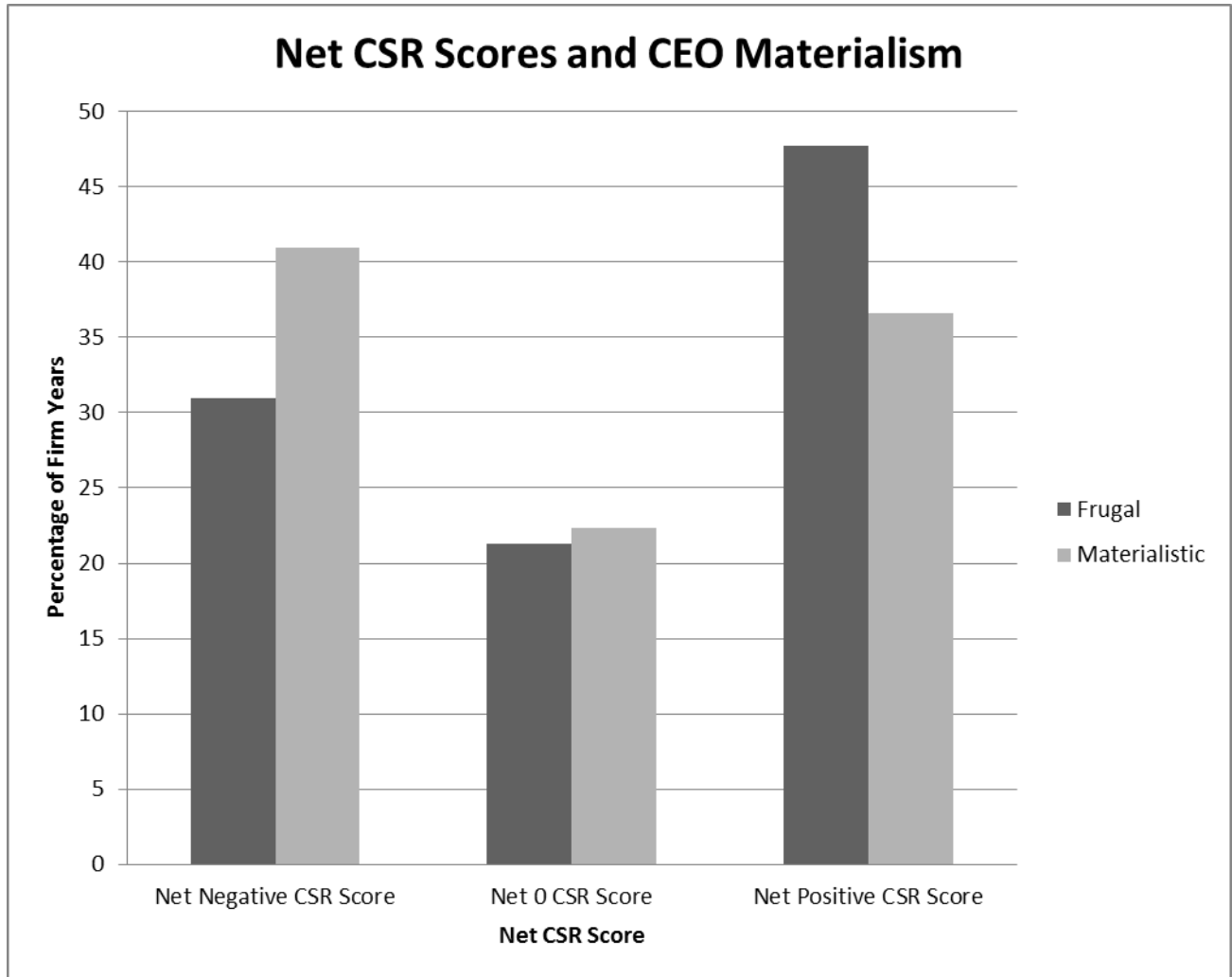
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Figure 1 – CSR and CEO Materialism



Legend Figure 1:

This figure shows how overall CSR strengths across all categories and overall CSR weaknesses across all categories vary with CEO type. A CEO is defined as being materialistic if the CEO owns luxury assets, where luxury assets include boats >25 feet, cars worth more than \$75,000, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area. If a CEO owns none of these assets, he is defined as being frugal.

Table 1, Panel A
Sample Composition and Summary of CEO Luxury Asset Ownership

	TOTAL NUMBER (N)
FIRMS	
Firms in ExecuComp/ Compustat/ CRSP/ KLD over 1992-2010	649
<i>Sample Composition:</i>	
Fraud Firms	59
Other Firms	590
EXECUTIVES	
Chief Executive Officers (CEOs)	947
<i>Executive Composition:</i>	
Frugal CEOs	416
Materialistic CEOs	531
<i>Luxury Asset Ownership:</i>	
Cars worth more than \$75,000	608
Boats longer than 25 feet	391
Homes worth more than twice the average of median home prices of the relevant CBSA	651

Table 1 Panel A presents the types and number of firms included in the sample. The table also presents the number of frugal and materialistic CEOs and the composition of asset ownership for the sample CEOs.

Table 1, Panel B
Descriptive Statistics

	<i>CSR-EXECUCOMP FIRMS</i>			<i>SAMPLE FIRMS</i>		
	MEAN	MEDIA	STD.	MEAN	MEDIAN	STD. DEV.
<i>SIZE</i>	7.60	7.51	1.39	8.23**	8.13**	1.46
<i>ROA</i>	0.14	0.13	0.11	0.13	0.12	0.10
<i>R&D</i>	0.05	0	0.45	0.04	0	0.26
<i>SGA</i>	0.27	0.21	1.69	0.26	0.23	0.45
<i>GOV SCORE</i>	1.69	2	0.46	1.61	2.00	0.49
<i>FIN CONSTRAINT</i>	0.56	0.62	1.97	0.70*	0.78**	1.41
<i>WEALTH</i>	10.04	9.93	1.58	10.29*	10.19**	1.55
<i>PAY SLICE</i>	38.30	38.16	10.84	38.90	39.93	11.65
<i>TENURE</i>	8.73	7	8.48	8.43	6*	7.55
<i>OPER PROF</i>	0.23	0.21	0.39	0.23	0.21	0.18
<i>MATERIALISM</i>				4.41	3	4.86
<i>CSR NET SCORE</i>	-0.03	0	2.14	0.40***	0***	2.57
<i>CSR NET STRENGTHS</i>	1.37	1	1.93	2.12***	1***	2.47
<i>CSR NET WEAKNESSES</i>	1.41	1	1.61	1.72***	1***	1.90
<i>COMMUNITY</i>	0.09	0	0.56	0.22	0	0.77
<i>EMPLOYEE</i>	-0.11	0	0.90	0.02**	0**	1.00
<i>ENVIRONMENT</i>	-0.13	0	0.74	-0.15	0	0.90
<i>DIVERSITY</i>	0.27	0	1.18	0.63***	0***	1.34
<i>PRODUCT</i>	-0.20	0	0.61	-0.39**	0	0.82

***Significant at the 1% level; **5% level; * 10% level.

Table 1 Panel B presents the mean, median and standard deviations of key variables for the total merged CSR-ExecuComp population of firms and our sample. The significance of t-tests of differences in means and Wilcoxon/Chi-square tests of differences in medians are presented next to the corresponding variables for the sample firms. *SIZE* is the natural logarithm of market capitalization; *ROA* is operating income before depreciation divided by the firm's book value of total assets; *R&D* is research and development expense divided by sales; *SGA* is selling, general and administrative expense divided by sales; *GOV SCORE* is the corporate governance score developed by Governance Metrics International; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *WEALTH* is the natural logarithm of the fair value of the CEO's firm-based wealth measured as the sum of exercisable and unexercisable options, other compensation, pension value, unvested stock, all other shares held, and the salary and bonus received by the CEO over the previous 3 years; *PAY SLICE* is the percentage of total compensation to the top 5 executives in the firm that is paid to the CEO; *TENURE* is the number of years the CEO has spent in the firm in his role as CEO; *OPER PROF* is operating profit before taxes and depreciation scaled by the sum of the book values of long term debt and equity; *MATERIALISM* is the dollar amount of luxury assets expressed in millions, where luxury assets includes value of cars, estimated value of boats, excess value of primary residences beyond twice the average of the median home prices in the metropolitan area of the corporate headquarters, and value of additional residences or vacation homes; *CSR NET SCORE* is the net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups; *CSR NET STRENGTH* is the net strengths calculated for the Community, Employee, Environment, Diversity and Product groups; *CSR NET WEAKNESSES* is the net weaknesses or concerns calculated for the Community, Employee, Environment, Diversity and Product groups *COMMUNITY* is the net score (strengths less concerns) calculated for the Community group; *EMPLOYEE* is the net score (strengths less concerns) calculated for the Employee group; *ENVIRONMENT* is the net score (strengths less concerns) calculated for the Environment group; *DIVERSITY* is the net score (strengths less concerns) calculated for the Diversity group; *PRODUCT* is the net score (strengths less concerns) calculated for the Product group.

Table 1, Panel C
Executives' Wealth and Luxury Asset Ownership Data

<i>EXECUTIVE WEALTH DECILES</i>	<i>PERCENTAGE OF MATERIAL CEOS (TOTAL N = 947)</i>
1 (Highest)	55.78
2	58.35
3	59.24
4	60.35
5	64.50
6	62.28
7	62.77
8	57.69
9	56.27
10 (Lowest)	53.21
Mean	59.04
Top 50% of wealthiest CEOs	59.64
Bottom 50% of wealthiest CEOs	58.44

Table 1, Panel C presents the distribution of the sample materialistic CEOs over their wealth deciles. We measure the wealth of a CEO as the summation of his/her historical cash compensation, the value of current option and restricted stock holdings, the value generated from historical option exercises, deferred compensation and the value of long-term incentive plans, and profits from open market transactions. Materialistic CEOs are those who own boats >25 feet, cars worth more than \$75,000, primary residences worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area.

Table 2
Executive Sorting

	SORTING BY CSR SCORE		SORTING INTO SIN INDUSTRIES	
	$MATERIAL_i = \beta_0 + \beta_1 CSR\ NET\ SCORE_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 IND\ COMP + \epsilon_{i,t}$		$MATERIAL_i = \beta_0 + \beta_1 SIN_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 IND\ COMP + \epsilon$	
	(1)	(2)	(3)	(4)
	MATERIAL	MARGINAL EFFECTS	MATERIAL	MARGINAL EFFECTS
	COEF. (T)	COEF. (T)	COEF. (T)	COEF. (T)
<i>INTERCEPT</i>	-1.361** (-2.38)		-0.914*** (-2.80)	
<i>CSR NET SCORE</i>	-0.039 (-1.13)	-0.01 (-1.14)		
<i>SIN</i>			1.054** (2.50)	0.258** (2.53)
<i>SIZE</i>	0.122** (1.98)	0.03** (2.01)	0.055 (1.39)	0.013 (1.40)
<i>ROA</i>	1.132 (1.22)	0.279 (1.22)	0.856 (1.51)	0.210 (1.52)
<i>IND COMP</i>	0.001 (0.59)	0.001 (0.59)	0.001 (1.39)	0.001 (1.40)
NO. OF OBS.	554		953	
ADJ. R SQUARE	0.02		0.01	

***Significant at the 1% level; **5% level; * 10% level.

Table 2 presents the results of models examining the sorting of CEOs into firms based on prior CSR scores and into sin industries. The variables are defined as follows: *MATERIAL* is a dummy variable that equals 1 if the CEO owns luxury assets, where luxury assets include cars worth more than \$75,000, boats >25 feet, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, and any additional homes worth more than twice the average home price in the corresponding metropolitan area, 0 otherwise; *CSR NET SCORE* is the net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups; *SIN* is an indicator variable that equals 1 if a firm belongs to the Alcohol, Gambling, Tobacco, Firearms or Nuclear industries, and 0 otherwise; *SIZE* is the natural logarithm of market capitalization of the firm; *ROA* is operating income before depreciation divided by the firm's book value of total assets; *IND COMP* is the median total compensation in the firm's industry.

Table 3 Panel A
Two Way Fixed Effects Model: Firm versus CEO effects

$$CSR\ SCORE_{i,t} = \beta_0\ FIN\ CONSTRAINT_{it} + \beta_1\ SIZE_{it} + \beta_2\ ROA_{it} + \beta_3\ TENURE_{it} + \beta_4\ WEALTH_{it} + \epsilon_{i,t}$$

	COMMUNITY	DIVERSITY	EMPLOYEE	ENVIRON -MENT	PRODUCT	CSR NET SCORE
	<i>COEF.</i>	<i>COEF.</i>	<i>COEF.</i>	<i>COEF.</i>	<i>COEF.</i>	<i>COEF.</i>
	(<i>T</i>)	(<i>T</i>)	(<i>T</i>)	(<i>T</i>)	(<i>T</i>)	(<i>T</i>)
<i>FIN CONSTRAINT</i>	0.013 (0.88)	0.018 (0.78)	-0.018 (-0.81)	-0.002 (-0.16)	-0.020 (-1.30)	-0.011 (-0.25)
<i>SIZE</i>	-0.003 (-0.08)	0.049 (0.99)	-0.065 (-1.32)	-0.092*** (-2.74)	-0.020 (-0.59)	-0.133 (-1.44)
<i>ROA</i>	-0.192 (-0.66)	-1.284*** (-2.84)	0.811* (1.83)	0.518* (1.71)	0.940*** (3.06)	0.860 (1.03)
<i>TENURE</i>	-0.018*** (-2.86)	0.096*** (9.85)	-0.047*** (-4.93)	0.006 (0.87)	-0.050*** (-7.50)	-0.011 (-0.63)
<i>WEALTH</i>	0.005 (0.29)	-0.073*** (-2.83)	0.041 (1.63)	0.041** (2.38)	-0.021 (-1.17)	-0.002 (-0.04)
NO. OF OBS	1,252	1,252	1,252	1,252	1,252	1,252
CEO FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>Proportion of Variance explained by:</i>						
CEO Fixed Effect	0.52	0.64	0.58	0.65	0.74	0.63
Firm Fixed Effect	0.32	0.26	0.20	0.14	0.11	0.20

***Significant at the 1% level; **5% level; * 10% level.

Table 3 Panel A presents the results of the two way fixed effects model. This model includes 131 CEOs who do not switch firms and 96 CEOs who switch firms. The variables are defined as follows: *COMMUNITY* is the net score (strengths less concerns) calculated for the Community group; *DIVERSITY* is the net score (strengths less concerns) calculated for the Diversity group; *EMPLOYEE* is the net score (strengths less concerns) calculated for the Employee group; *ENVIRONMENT* is the net score (strengths less concerns) calculated for the Environment group; *PRODUCT* is the net score (strengths less concerns) calculated for the Product group; *CSR NET SCORE* is the net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *ROA* is operating income before depreciation divided by the firm's book value of total assets; *TENURE* is the tenure of the CEO; *WEALTH* is the natural logarithm of the fair value of the CEO's firm-based wealth measured as the sum of exercisable and unexercisable options, other compensation, pension value, unvested stock, all other shares held, and the salary and bonus received by the CEO over the previous 3 years.

Table 3 Panel B
Two Way Fixed Effects Model: Holding CEO Type Constant

$$CSR\ NET\ SCORE_{i,t} = \beta_0\ FIN\ CONSTRAINT_{it} + \beta_1\ SIZE_{it} + \beta_2\ ROA_{it} + \beta_3\ TENURE_{it} + \beta_4\ WEALTH_{it} + \varepsilon_{i,t}$$

	FRUGAL CEOs	MATERIALISTIC CEOs	RANDOM CEO SAMPLE
	<i>COEF. (T)</i>	<i>COEF. (T)</i>	<i>COEF. (T)</i>
<i>FIN CONSTRAINT</i>	0.078 (1.23)	-0.076 (-1.33)	-0.006 (-0.14)
<i>SIZE</i>	0.199 (1.33)	-0.368*** (-3.09)	-0.118 (-1.33)
<i>ROA</i>	2.777** (2.38)	-1.195 (-0.97)	0.902 (1.09)
<i>TENURE</i>	0.029 (1.15)	-0.075*** (-2.94)	-0.014 (-0.58)
<i>WEALTH</i>	-0.103* (-1.68)	0.104 (1.38)	-0.001 (-0.08)
NO. OF OBS	579	673	624
CEO FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
CEOs who don't switch	70	61	66
CEOs who switch	41	55	48
<i>Proportion of Variance explained by:</i>			
CEO Fixed Effect	0.54	0.48	0.61
Firm Fixed Effect	0.25	0.30	0.22

***Significant at the 1% level; **5% level; * 10% level.

Table 3 Panel B presents the results of the two way fixed effects model. In this table we estimate the model holding CEO type constant to assess how CEO materialism affects net CSR scores. The variables are defined as follows: Materialistic CEOs are those who own luxury assets, where luxury assets include cars worth more than \$75,000, boats >25 feet, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, and any additional homes worth more than twice the average home price in the corresponding metropolitan area (and vice-versa); *CSR NET SCORE* is the net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *ROA* is operating income before depreciation divided by the firm's book value of total assets; *TENURE* is the tenure of the CEO; *WEALTH* is the natural logarithm of the fair value of the CEO's firm-based wealth measured as the sum of exercisable and unexercisable options, other compensation, pension value, unvested stock, all other shares held, and the salary and bonus received by the CEO over the previous 3 years.

Table 4, Panel A
Cross-sectional Analysis

$$CSR\ SCORE_{it} = \beta_0 + \beta_1\ MATERIAL_i + \beta_2\ FIN\ CONSTRAINT_{it} + \beta_3\ SIZE_{it} + \beta_4\ ROA_{it} + \beta_5\ TENURE_{it} + \beta_6\ WEALTH_{it} + \varepsilon_{i,t}$$

	COMMUNITY	DIVERSITY	EMPLOYEE	ENVIRONMENT	PRODUCT	CSR NET SCORE
	COEF. (T)	COEF. (T)	COEF. (T)	COEF. (T)	COEF. (T)	COEF. (T)
<i>INTERCEPT</i>	-0.459*** (-3.22)	-1.949*** (-8.39)	-0.491*** (-2.63)	0.377** (2.42)	1.143*** (8.23)	-1.437*** (-2.92)
<i>MATERIAL</i>	-0.092** (-2.12)	-0.193*** (-2.66)	-0.138** (-2.29)	-0.169*** (-3.10)	-0.092** (-2.21)	-0.703*** (-4.41)
<i>FIN CONSTRAINT</i>	-0.021* (-1.72)	0.058*** (2.68)	-0.026* (-1.64)	-0.014 (-1.16)	-0.008 (-0.64)	-0.012 (-0.27)
<i>SIZE</i>	0.143*** (6.92)	0.438 (13.51)	0.098*** (3.63)	-0.063*** (-2.89)	-0.206*** (-11.33)	0.436*** (6.24)
<i>ROA</i>	-0.353* (-1.70)	-1.013*** (-2.61)	0.884*** (2.97)	0.679*** (3.03)	0.796*** (3.68)	1.159 (1.31)
<i>TENURE</i>	-0.001 (-0.36)	-0.016*** (-2.96)	0.004 (0.96)	0.006* (1.72)	0.009*** (3.74)	0.003 (0.29)
<i>WEALTH</i>	-0.038** (-2.17)	-0.067*** (-2.67)	-0.036 (-1.61)	-0.004 (-0.20)	0.002 (0.13)	-0.152*** (-2.64)
NO. OF OBS.	4,810	4,810	4,810	4,810	4,810	4,810
ADJ. R SQUARE	0.13	0.28	0.06	0.17	0.32	0.13
INDUSTRY FE	Yes	Yes	Yes	Yes	Yes	Yes

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by executive and year.

Table 4 Panel A presents cross-sectional analyses of the relation between CEO frugality and CSR scores. The variables are defined as follows: *COMMUNITY* is the net score (strengths less concerns) calculated for the Community group; *DIVERSITY* is the net score (strengths less concerns) calculated for the Diversity group; *EMPLOYEE* is the net score (strengths less concerns) calculated for the Employee group; *ENVIRONMENT* is the net score (strengths less concerns) calculated for the Environment group; *PRODUCT* is the net score (strengths less concerns) calculated for the Product group; *CSR NET SCORE* is the net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups; *MATERIAL* is a dummy variable that equals 1 if the CEO owns luxury assets, where luxury assets include cars worth more than \$75,000, boats >25 feet, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area, 0 otherwise; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *ROA* is operating income before depreciation divided by the firm's book value of total assets; *TENURE* is the tenure of the CEO; *WEALTH* is the natural logarithm of the fair value of the CEO's firm-based wealth measured as the sum of exercisable and unexercisable options, other compensation, pension value, unvested stock, all other shares held, and the salary and bonus received by the CEO over the previous 3 years.

Table 4, Panel B
Cross-sectional Analysis with CSR Strengths and Weaknesses

$$CSR\ SCORE_{it} = \beta_0 + \beta_1\ MATERIAL_i + \beta_2\ FIN\ CONSTRAINT_{it} + \beta_3\ SIZE_{it} + \beta_4\ ROA_{it} + \beta_5\ TENURE_{it} + \beta_6\ WEALTH_{it} + \varepsilon_{i,t}$$

	CSR STRENGTH	CSR WEAKNESS
	<i>COEF.</i> (<i>T</i>)	<i>COEF.</i> (<i>T</i>)
<i>INTERCEPT</i>	-3.314*** (-7.50)	-1.878*** (-6.06)
<i>MATERIAL</i>	-0.503*** (-3.61)	0.200** (2.05)
<i>FIN CONSTRAINT</i>	0.042 (1.18)	0.055* (1.79)
<i>SIZE</i>	0.982*** (14.60)	0.545*** (11.97)
<i>ROA</i>	-2.022*** (-2.85)	-3.181*** (-5.87)
<i>TENURE</i>	-0.010 (-0.90)	-0.013** (-2.26)
<i>WEALTH</i>	-0.198*** (-3.92)	-0.046 (-1.43)
ADJUSTED R2	0.31	0.30
NO. OF OBS	4,810	4,810
INDUSTRY FE	Yes	Yes

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by executive and year.

Table 4, Panel B presents cross-sectional analyses of the relation between CEO frugality and CSR strengths and weaknesses. The variables are defined as follows: *CSR STRENGTH* is the net score based on the sum of all strengths calculated for the Community, Employee, Environment, Diversity and Product groups; *CSR WEAKNESS* is the net score based on the sum of all weaknesses calculated for the Community, Employee, Environment, Diversity and Product groups; *MATERIAL* is a dummy variable that equals 1 if the CEO owns luxury assets, where luxury assets include cars worth more than \$75,000, boats >25 feet, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area, 0 otherwise; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *ROA* is operating income before depreciation divided by the firm's book value of total assets; *TENURE* is the tenure of the CEO; *WEALTH* is the natural logarithm of the fair value of the CEO's firm-based wealth measured as the sum of exercisable and unexercisable options, other compensation, pension value, unvested stock, all other shares held, and the salary and bonus received by the CEO over the previous 3 years.

Table 5
IV Analysis: Cross-sectional Model with Net CSR, CSR Strengths and Weaknesses

$$CSR\ SCORE_{it} = \beta_0 + \beta_1\ MATERIAL_i + \beta_2\ FIN\ CONSTRAINT_{it} + \beta_3\ SIZE_{it} + \beta_4\ ROA_{it} + \beta_5\ TENURE_{it} + \beta_6\ WEALTH_{it} + \varepsilon_{i,t}$$

	CSR NET SCORE	CSR STRENGTH	CSR WEAKNESS
	COEF. (T)	COEF. (T)	COEF. (T)
<i>INTERCEPT</i>	-0.431 (-0.81)	-2.351*** (-4.72)	-2.580*** (-5.25)
<i>MATERIAL</i>	-1.718*** (-3.36)	-1.138** (-2.48)	1.250** (2.67)
<i>FIN CONSTRAINT</i>	-0.010 (-0.36)	0.031 (1.31)	0.044 (1.62)
<i>SIZE</i>	0.225*** (3.96)	0.525*** (10.34)	0.328*** (6.81)
<i>ROA</i>	0.634 (0.89)	-0.868 (-1.41)	-2.473*** (-3.39)
<i>TENURE</i>	0.006 (0.70)	-0.001 (-0.08)	-0.012 (-1.60)
<i>WEALTH</i>	-0.047 (-0.96)	-0.083* (-1.85)	-0.005 (-0.13)
ADJUSTED R2	0.06	0.18	0.02
NO. OF OBS	4,016	4,016	4,016
INDUSTRY FE	Yes	Yes	Yes
<i>Test for Weak Instrument: Craig-Donald F-Test</i>	27.72	27.64	27.6
<i>Durbin-Wu-Hausman Chi-Square Test (p-value)</i>	0.21	0.27	0.16

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by executive and year.

Table 5 presents cross-sectional analyses of the relation between CEO frugality and the CSR Net score, CSR strengths and weaknesses using an instrumental variables design. The instrument used is the existence of any social ties between the CEO and the board of directors. The variables are defined as follows: *CSR NET SCORE* is the net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups; *CSR STRENGTH* is the net score based on the sum of all strengths calculated for the Community, Employee, Environment, Diversity and Product groups; *CSR WEAKNESS* is the net score based on the sum of all weaknesses calculated for the Community, Employee, Environment, Diversity and Product groups; *MATERIAL* is a dummy variable that equals 1 if the CEO owns luxury assets, where luxury assets include cars worth more than \$75,000, boats >25 feet, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area, 0 otherwise; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *ROA* is operating income before depreciation divided by the firm's book value of total assets; *TENURE* is the tenure of the CEO; *WEALTH* is the natural logarithm of the fair value of the CEO's firm-based wealth measured as the sum of exercisable and unexercisable options, other compensation, pension value, unvested stock, all other shares held, and the salary and bonus received by the CEO over the previous 3 years.

Table 6, Panel A
Predecessor Successor Analysis: All Turnovers

$$\begin{aligned}
 CSR\ SCORE_{i,t} = & \beta_0 + \beta_1\ NEW\ CEO\ MATERIAL_i + \beta_2\ SUCCESSOR_{i,t} + \beta_3\ CHANGE\ CEO\ TYPE_i + \beta_4\ NEW\ CEO\ MATERIAL_i \\
 & *\ SUCCESSOR_{i,t} + \beta_5\ NEW\ CEO\ MATERIAL_i * CHANGE\ CEO\ TYPE_i + \beta_6\ SUCCESSOR_{i,t} * CHANGE\ CEO\ TYPE_i \\
 & + \beta_7\ NEW\ CEO\ MATERIAL_i * SUCCESSOR_{i,t} * CHANGE\ CEO\ TYPE_i + \beta_8\ FIN\ CONSTRAINT_{it} + \beta_9\ SIZE_{it} + \beta_{10}\ ROA_{it} \\
 & + \beta_{11}\ AGE_{it} + \beta_{12}\ WEALTH_{it} + \epsilon_{i,t}
 \end{aligned}$$

	CSR NET SCORE	CSR STRENGTH	CSR WEAKNESS
	<i>COEF.</i> (<i>T</i>)	<i>COEF.</i> (<i>T</i>)	<i>COEF.</i> (<i>T</i>)
<i>INTERCEPT</i>	-2.280*** (-2.65)	-5.193*** (3.15)	-3.275*** (2.74)
<i>NEW CEO MATERIAL</i>	-0.160* (-1.74)	-0.458* (-1.88)	-0.298 (-0.85)
<i>SUCCESSOR</i>	0.137 (1.58)	0.109 (0.68)	-0.028 (-0.26)
<i>CHANGE CEO TYPE</i>	-0.022 (0.28)	-0.084 (-0.38)	-0.062 (-0.24)
<i>NEW CEO MATERIAL × SUCCESSOR</i>	-0.261*** (-2.66)	-0.218** (-2.15)	0.043 (0.76)
<i>NEW CEO MATERIAL × CHANGE CEO TYPE</i>	0.205 (2.05)	0.105* (1.80)	-0.100* (-1.77)
<i>SUCCESSOR × CHANGE CEO TYPE</i>	0.483** (2.51)	0.309* (1.79)	-0.174 (-1.44)
<i>NEW CEO MATERIAL × SUCCESSOR × CHANGE CEO TYPE</i>	-0.722*** (-2.67)	-0.519** (-2.48)	0.203* (1.92)
<i>FIN CONSTRAINT</i>	-0.196 (-1.21)	0.119 (0.93)	0.176* (1.92)
<i>SIZE</i>	0.531*** (3.90)	1.124*** (8.94)	0.634*** (8.29)
<i>ROA</i>	0.359 (0.20)	-0.150 (-0.11)	-1.624** (-1.98)
<i>TENURE</i>	-0.008 (-0.43)	0.008 (0.52)	0.023 (0.66)
<i>WEALTH</i>	-0.102 (-1.01)	-0.194*** (-2.59)	-0.133** (-2.55)
<i>Analysis of Changes</i>			
Materialistic CEO to Materialistic CEO	-0.124 (-0.81)	-0.109 (-0.19)	0.015 (1.19)
Frugal CEO to Materialistic CEO	-0.363** (-2.35)	-0.319 (-1.35)	0.044 (-0.35)
Frugal CEO to Frugal CEO	0.137 (0.95)	0.109 (0.90)	-0.028 (-0.18)
Materialistic CEO to Frugal CEO	0.620*** (2.67)	0.418** (2.30)	-0.202* (-1.71)
ADJUSTED R2	0.08	0.15	0.11
NO. OF OBSERVATIONS	2,012	2,012	2,012

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by executive and year.

Table 6, Panel B
Predecessor Successor Analysis: Routine Turnovers Only

$$\begin{aligned}
 CSR\ SCORE_{i,t} = & \beta_0 + \beta_1\ NEW\ CEO\ MATERIAL\ i + \beta_2\ SUCCESSOR_{i,t} + \beta_3\ CHANGE\ CEO\ TYPE_{i,t} + \beta_4\ NEW\ CEO\ MATERIAL\ i \\
 & * SUCCESSOR_{i,t} + \beta_5\ NEW\ CEO\ MATERIAL\ i * CHANGE\ CEO\ TYPE_{i,t} + \beta_6\ SUCCESSOR_{i,t} * CHANGE\ CEO\ TYPE_{i,t} \\
 & + \beta_7\ NEW\ CEO\ MATERIAL\ i * SUCCESSOR_{i,t} * CHANGE\ CEO\ TYPE_{i,t} + \beta_8\ FIN\ CONSTRAINT_{it} + \beta_9\ SIZE_{it} + \beta_{10}\ ROA_{it} \\
 & + \beta_{11}\ AGE_{it} + \beta_{12}\ WEALTH_{it} + \epsilon_{i,t}
 \end{aligned}$$

	CSR_NET SCORE	CSR STRENGTH	CSR WEAKNESS
	<i>COEF.</i>	<i>COEF.</i>	<i>COEF.</i>
	<i>(T)</i>	<i>(T)</i>	<i>(T)</i>
<i>INTERCEPT</i>	-3.364** (-2.53)	-6.440*** (-5.56)	-3.076*** (-3.09)
<i>NEW CEO MATERIAL</i>	-0.176* (-1.64)	-0.491 (-1.57)	-0.315 (-0.88)
<i>SUCCESSOR</i>	0.142 (1.23)	0.111 (0.56)	-0.031 (-0.33)
<i>CHANGE CEO TYPE</i>	-0.029 (0.28)	-0.059 (-0.38)	-0.030 (-0.24)
<i>NEW CEO MATERIAL × SUCCESSOR</i>	-0.223** (-2.29)	-0.162 (-1.42)	0.061 (0.41)
<i>NEW CEO MATERIAL × CHANGE CEO TYPE</i>	0.183 (1.48)	0.098 (1.26)	-0.085 (-1.03)
<i>SUCCESSOR × CHANGE CEO TYPE</i>	0.348** (2.13)	0.242* (1.70)	-0.106 (-1.32)
<i>NEW CEO MATERIAL × SUCCESSOR × CHANGE CEO TYPE</i>	-0.582*** (-2.67)	-0.421** (-2.48)	0.161* (1.92)
<i>FIN CONSTRAINT</i>	-0.296 (-1.43)	-0.009 (-0.05)	0.287** (2.50)
<i>SIZE</i>	0.417** (2.31)	1.285*** (7.78)	0.868*** (7.95)
<i>ROA</i>	-3.236* (-1.78)	-1.915 (-1.22)	1.321 (0.94)
<i>TENURE</i>	0.001 (0.06)	0.012 (0.64)	0.011 (0.77)
<i>WEALTH</i>	0.025 (0.17)	-0.212 (-1.65)	-3.076*** (-3.09)
<i>Analysis of Changes</i>			
Materialistic CEO to Materialistic CEO	-0.081 (-0.48)	-0.051 (-0.34)	0.030 (0.26)
Frugal CEO to Materialistic CEO	-0.315** (-2.07)	-0.230 (-1.26)	0.085 (-0.47)
Frugal CEO to Frugal CEO	0.142 (0.83)	0.111 (0.92)	-0.031 (-0.24)
Materialistic CEO to Frugal CEO	0.490** (2.10)	0.353** (2.05)	-0.137 (-1.49)
ADJUSTED R2	0.09	0.17	0.12
NO. OF OBSERVATIONS	985	985	985

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by executive and year.

Table 6 (Cont.)

Table 6 presents results of a model that examines the relation between CSR scores, CSR strengths and weaknesses and changes in CEO type due to turnover. Panel A reports results when we consider all turnovers, and Panel B reports results when we consider only routine turnovers (i.e., turnovers due to CEO retirements and deaths). A CEO is classified as frugal if he does not own luxury assets (and vice versa), where luxury assets include cars worth more than \$75,000, boats >25 feet, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area. The CSR groups include the net scores (strengths less weaknesses), net strengths, and net weaknesses calculated for the Community, Employee, Environment, Diversity and Product groups; *NEW CEO MATERIAL* is a dummy variable that equals 1 if the new CEO hired is materialistic, and 0 otherwise; *SUCCESSOR* is a dummy variable that equal 1 if the CSR score is measured during the successor CEO's tenure, and 0 otherwise; *CHANGE CEO TYPE* is a dummy variable that equals 1 if there was a change in CEO type from the predecessor to the successor, and 0 otherwise; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *ROA* is operating income before depreciation divided by the firm's book value of total assets; *TENURE* is the tenure of the CEO; *WEALTH* is the natural logarithm of the fair value of the CEO's firm-based wealth measured as the sum of exercisable and unexercisable options, other compensation, pension value, unvested stock, all other shares held, and the salary and bonus received by the CEO over the previous 3 years.

Table 7
Net CSR Scores and Timing of Revelation of CEO Type

$$CSR\ SCORE_{it} = \beta_0 + \beta_1\ MATERIAL_{i}/REVEAL\ POST\ CEO_{i} + \beta_2\ FIN\ CONSTRAINT_{it} + \beta_3\ SIZE_{it} + \beta_4\ ROA_{it} + \beta_5\ TENURE_{it} + \beta_6\ WEALTH_{it} + \varepsilon_{i,t}$$

	TYPE REVEALED PRIOR TO BECOMING CEO	TYPE REVEALED AFTER BECOMING CEO	MATERIALISTIC CEOS ONLY: COMPARISON OF REVELATION TIMING
	<i>COEF.</i> (<i>T</i>)	<i>COEF.</i> (<i>T</i>)	<i>COEF.</i> (<i>T</i>)
<i>INTERCEPT</i>	-1.899*** (-3.60)	-1.170** (-2.10)	-1.99** (-2.27)
<i>MATERIAL</i>	-0.664*** (-3.80)	-0.581*** (-2.62)	
<i>REVEAL POST CEO</i>			-0.081 (-0.30)
<i>FIN CONSTRAINT</i>	-0.035 (-0.72)	0.016 (0.25)	0.002 (0.04)
<i>SIZE</i>	0.543*** (7.48)	0.409*** (5.01)	0.284** (2.55)
<i>ROA</i>	1.654* (1.67)	0.991 (0.92)	0.932 (0.86)
<i>TENURE</i>	0.000 (0.00)	-0.001 (-0.06)	0.015 (0.90)
<i>WEALTH</i>	-0.197*** (-3.13)	-0.159** (-2.48)	-0.046 (-0.47)
ADJUSTED R2	0.16	0.13	0.11
NO. OF OBS	3,596	3,398	2,626
INDUSTRY FE	Yes	Yes	Yes

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by executive and year.

Table 7 presents cross-sectional analyses of the relation between CEO materialism and the CSR Net scores, for cases when the CEO revealed his type prior to becoming the CEO and after becoming the CEO. The table also presents the results for conducting a similar exercise for the sample of materialistic CEOs only. The variables are defined as follows: *CSR NET SCORE* is the net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups; *MATERIAL* is a dummy variable that equals 1 if the CEO owns luxury assets, where luxury assets include cars worth more than \$75,000, boats >25 feet, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area, 0 otherwise; *REVEAL POST CEO* is a dummy variable if a materialistic CEO revealed his type (i.e., purchased his first luxury asset) after joining the firm as CEO; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *ROA* is operating income before depreciation divided by the firm's book value of total assets; *TENURE* is the tenure of the CEO; *WEALTH* is the natural logarithm of the fair value of the CEO's firm-based wealth measured as the sum of exercisable and unexercisable options, other compensation, pension value, unvested stock, all other shares held, and the salary and bonus received by the CEO over the previous 3 years.

Table 8
Intra-Executive Analysis

$$CSR\ SCORE_{it} = \beta_0 + \beta_1\ MATERIAL\ CONT_{it} + \beta_2\ FIN\ CONSTRAINT_{it} + \beta_3\ SIZE_{it} + \beta_4\ ROA_{it} + \varepsilon_{it}$$

	CSR NET SCORE	CSR STRENGTH	CSR WEAKNESS
	COEF. (T)	COEF. (T)	COEF. (T)
<i>INTERCEPT</i>	0.892 (1.18)	1.111 (1.88)	0.220 (0.37)
<i>MATERIAL CONT</i>	-0.086*** (-3.43)	-0.027* (-1.77)	0.059*** (3.07)
<i>FIN CONSTRAINT</i>	-0.021 (-0.37)	-0.032 (-0.63)	-0.012 (-0.28)
<i>SIZE</i>	-0.099 (-1.01)	0.128* (1.66)	0.227*** (2.98)
<i>ROA</i>	1.488 (1.60)	-1.298 (-1.57)	-2.786*** (-3.48)
ADJUSTED R2	0.78	0.86	0.79
NO. OF OBS	1,756	1,756	1,756
CEO FE	Yes	Yes	Yes

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by CEO-firm pair and year.

Table 8 presents the results of the relation between the changing materialism of CEOs over their tenure and CSR strengths and weaknesses. The variables are defined as follows: *CSR NET SCORE* is the net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups; *CSR STRENGTH* is the net score based on the sum of all strengths calculated for the Community, Employee, Environment, Diversity and Product groups; *CSR WEAKNESS* is the net score based on the sum of all weaknesses calculated for the Community, Employee, Environment, Diversity and Product groups; *MATERIAL CONT* is the dollar amount of luxury assets expressed in millions, where luxury assets includes the value of cars, estimated value of boats, excess value of primary residences beyond twice the average of the median home prices in the metropolitan area of the corporate headquarters, and value of additional residences or vacation homes; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *ROA* is operating income before depreciation divided by the firm's book value of total assets.

Table 9
Profitability Analysis

$$OPER\ PROF_{it+1} = \beta_0 + \beta_1 CSR\ SCORE_{it} + \beta_2 MATERIAL_i + \beta_3 CSR\ SCORE_{it} * MATERIAL_i + \beta_4 FIN\ CONSTRAINT_{it} + \beta_5 SIZE_{it} + \varepsilon_{i,t}$$

	<i>COEF.</i> <i>(T)</i>	<i>COEF.</i> <i>(T)</i>
<i>INTERCEPT</i>	0.057* (1.95)	0.062* (1.90)
<i>CSR NET SCORE</i>	0.011** (2.64)	0.012** (2.47)
<i>MATERIAL</i>	0.022* (1.78)	0.027* (1.85)
<i>CSR NET SCORE * MATERIAL</i>	-0.011** (-2.36)	-0.013** (-2.25)
<i>FIN CONSTRAINT</i>	-0.028*** (-3.25)	-0.026** (-2.52)
<i>SIZE</i>	0.022*** (7.43)	0.022*** (6.32)
<i>R&D</i>	-0.361*** (-6.66)	-0.385*** (-4.73)
<i>TENURE</i>	0.001 (0.47)	-0.001 (-0.44)
<i>SGA</i>		-0.010 (-0.23)
<i>GOV SCORE</i>		0.019* (1.72)
<i>T-Statistics:</i>		
<i>CSR NET SCORE + CSR NET SCORE * MATERIAL</i>	-0.29	-0.26
ADJUSTED R2	0.18	0.25
NO. OF OBS	4,290	3,140
INDUSTRY FE	Yes	Yes

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by executive and year.

Table 9 presents the results of the profitability analysis using overall CSR scores. The variables are defined as follows: *OPER PROF* is the one year ahead operating income before taxes and depreciation scaled by the sum of book values of long term debt and equity; *CSR NET SCORE* is the net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups; *MATERIAL* is a dummy variable that equals 1 if the CEO owns luxury assets, where luxury assets include cars worth more than \$75,000, boats >25 feet, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area, 0 otherwise; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *R&D* is research and development expense scaled by sales; *TENURE* is the tenure of the CEO; *SGA* is selling, general and administrative expense scaled by sales; *GOV SCORE* is the corporate governance score developed by Governance Metrics International.

Table 10
Profitability Analysis: Cross-sectional Variation with CEO Pay Slice

$$OPER\ PROF_{it+1} = \beta_0 + \beta_1 NET\ CSR\ SCORE_{it} + \beta_2 PAY\ SLICE_{it} + \beta_3 NET\ CSR\ SCORE * PAY\ SLICE_{it} + \beta_4 FIN\ CONSTRAINT_{it} + \beta_5 SIZE_{it} + \varepsilon_{i,t}$$

	FRUGAL	MATERIALISTIC
	<i>COEF.</i> (<i>T</i>)	<i>COEF.</i> (<i>T</i>)
<i>INTERCEPT</i>	0.078** (1.98)	0.112** (2.19)
<i>NET CSR SCORE</i>	-0.007 (-1.12)	0.012 (1.59)
<i>PAY SLICE</i>	-0.001 (-1.40)	-0.001 (-1.41)
<i>NET CSR SCORE * PAY SLICE</i>	0.001** (2.01)	-0.001** (-2.14)
<i>FIN CONSTRAINT</i>	-0.021*** (-4.19)	-0.033** (-2.45)
<i>SIZE</i>	0.022*** (5.75)	0.022*** (4.73)
<i>R&D</i>	-0.334*** (-4.15)	-0.408*** (-8.48)
<i>TENURE</i>	-0.001 (-0.05)	0.001 (0.44)
<i>P-Values:</i> <i>CSR SCORE * PAY SLICE for</i> <i>Frugal vs. Materialistic CEOs</i>	0.02	
ADJUSTED R2	0.40	0.31
NO. OF OBS	1,722	1,551
INDUSTRY FE	Yes	Yes

***Significant at the 1% level; **5% level; * 10% level. Standard errors are clustered by executive and year.

Table 10 presents the results of analysis of the relation between CSR scores, operating profits, and CEO power. The variables are defined as follows: *OPER PROF* is the one year ahead operating income before taxes and depreciation scaled by the sum of book values of long term debt and equity; *CSR SCORE* is overall net CSR score of the firm based on the sum of all strengths and weaknesses calculated for the Community, Employee, Environment, Diversity and Product groups; *PAY SLICE* is the percentage of the total compensation to the top five executives that is paid to the CEO; Materialistic (frugal) CEOs are those that own (do not own) luxury assets, where luxury assets include cars worth more than \$75,000, boats >25 feet, a primary residence worth more than twice the average of median home prices in the metropolitan area of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area, 0 otherwise; *FIN CONSTRAINT* is the measure of financial constraint developed by Kaplan and Zinglaes (1997); *SIZE* is the natural logarithm of market capitalization of the firm; *R&D* is research and development expense scaled by sales; *TENURE* is the tenure of the CEO.

Appendix A

Definition of Variables and Data Sources

Variable	Measurement	Data Source
CSR Net score. (<i>CSR NET SCORE</i>)	The net score (strengths less concerns) calculated for the Community, Employee, Environment, Diversity and Product groups.	KLD
Community net score. (<i>COMMUNITY</i>)	The net score (strengths less concerns) calculated for the Community group.	KLD
Employee net score. (<i>EMPLOYEE</i>)	The net score (strengths less concerns) calculated for the Employee group.	KLD
Environment net score. (<i>ENVIRONMENT</i>)	The net score (strengths less concerns) calculated for the Environment group.	KLD
Diversity net score. (<i>DIVERSITY</i>)	The net score (strengths less concerns) calculated for the Diversity group.	KLD
Product net score. (<i>PRODUCT</i>)	The net score (strengths less concerns) calculated for the Product group related to Product Safety.	KLD
Net CSR strengths. (<i>CSR STRENGTH</i>)	The sum of strengths calculated for the Community, Employee, Environment, Diversity and Product groups.	KLD
Net CSR weaknesses. (<i>CSR WEAKNESS</i>)	The sum of weaknesses calculated for the Community, Employee, Environment, Diversity and Product groups.	KLD
Firm size. (<i>SIZE</i>)	The natural logarithm of the market capitalization of the firm.	Compustat
Return on assets. (<i>ROA</i>)	The year's operating income before taxes and depreciation divided by the firm's book value of total assets.	Compustat
Research and development expense. (<i>R&D</i>)	The research and development expense divided by sales.	Compustat
Selling, general and administrative expense. (<i>SGA</i>)	The selling, general and administrative expense divided by sales.	Compustat
Governance quality of a firm. (<i>GOV SCORE</i>)	The governance score developed by Governance Metrics International. Firms receive a score of either 1 or 2 based on earnings restatements, regulatory incidents, corporate actions, officer and director profiles, compensation data, class action lawsuits, and other information. A score of 2 indicates better governance.	Governance Metrics International
Social ties between CEO and director. (<i>SOCIAL</i>)	The number of independent directors who are socially connected to the CEO because they have mutual alma maters, worked in the same companies in the past, served in the military together, are currently members of the same clubs as the CEO, serve in the same charitable or belong to other non-professional organizations as the CEO.	BoardEx
Operating profits. (<i>OPER PROF</i>)	The operating income before taxes and depreciation divided by the book value of long term debt and equity.	Compustat
CEO tenure. (<i>TENURE</i>)	The tenure of the CEO.	ExecuComp/ Boardex
CEO wealth. (<i>WEALTH</i>)	The natural logarithm of the fair value of the CEO's firm-based wealth measured as the sum of exercisable and unexercisable options, other compensation, pension value, unvested stock, all other shares held, and the salary and bonus received by the CEO over the previous 3 years.	ExecuComp
CEO Pay slice. (<i>PAY SLICE</i>)	The percentage of total compensation to the top five executives that is paid to the CEO.	ExecuComp
Industry compensation. (<i>IND COMP</i>)	The median of total compensation paid to CEOs in the firm's industry.	ExecuComp

Definition of Variables and Data Sources

Variable	Measurement	Data Source
Financial constraint. (<i>FIN CONSTRAINT</i>)	<p>The financial constraint proxy developed by Kaplan and Zingales (1997). Following Hong, Kubik and Scheinkman (2012), we construct the five variable KZ Score or financial constraint measure for each firm/year as the following linear combination:</p> $FIN_CONSTRAINT_{i,t} = -1.002 CF_{i,t} / A_{i,t-1} - 39.368 Di_{i,t} / A_{i,t-1} - 1.315 Ci_{i,t} / A_{i,t-1} + 3.139 Bi_{i,t} + 0.283 Qi_{i,t}$ <p>where $CF_{i,t} / A_{i,t-1}$ is cash flow over lagged assets; $Di_{i,t} / A_{i,t-1}$ is cash dividends over lagged assets; $Ci_{i,t} / A_{i,t-1}$ is cash balances over lagged assets; $Bi_{i,t}$ is book leverage which is total debt divided by the sum of total debt and book equity measured at year-end, and $Qi_{i,t}$ is Tobin's Q which is the market value of equity (price times shares outstanding) plus assets minus the book value of equity, divided by assets. All individual ingredients of the above financial constraint variable are winsorized before constructing the variable.</p>	Compustat/ CRSP
Luxury asset ownership. (<i>MATERIAL</i>)	A dummy variable that equals 1 if the CEO owns luxury assets and 0 otherwise. Luxury assets include cars costing more than \$75,000, boats greater than 25 feet in length, primary residences worth more than twice the average of the median home prices in the metropolitan area of the corporate headquarters (as defined by the Core Based Statistical Area (CBSA)), and additional residences worth twice the average home prices in that metropolitan area (as defined by the CBSA).	Find Out the Truth.com (FOTT)
Dollar value of luxury asset ownership. (<i>MATERIAL CONT</i>)	The dollar amount of luxury assets expressed in millions, where luxury assets includes values of cars, estimated values of boats, excess values of primary residences beyond twice the average of the median home prices in the metropolitan area of the corporate headquarters, and values of additional residences or vacation homes.	Find Out the Truth.com (FOTT)
Timing of revelation of CEO type. (<i>REVEAL POST CEO</i>)	A dummy variable that equals 1 if a materialistic CEO revealed his type (i.e., purchased his first luxury asset) after joining his firm as CEO; and 0 otherwise. Luxury assets include cars costing more than \$75,000, boats greater than 25 feet in length, primary residences worth more than twice the average of the median home prices in the metropolitan area of the corporate headquarters (as defined by the Core Based Statistical Area (CBSA)), and additional residences worth twice the average home prices in that metropolitan area (as defined by the CBSA).	Find Out the Truth.com (FOTT)

Appendix B

I] Discussion of the Real Estate Data

We define an executive as materialistic if they own a primary residence worth more than two times the average of median home prices in zip codes in the corresponding Core Based Statistical Area (CBSA) of their firm's headquarters or if they own a secondary residence worth more than 2 times the average of median home price in zip codes in that property's CBSA. Thus our measure of materialism depends heavily on the real estate values we can obtain for each executive. In the following pages we discuss the steps we have taken to assure ourselves of the veracity of the values of properties owned by an individual.

FOTT provides us with an address history for each executive, not just a summary of property title records or real estate transactions records. This means we have data on new construction, rentals, and properties held in the name of another entity. Our data also provides us with the years when the individual was associated with the property, so we can properly assign transactions through time to the correct individual.

We measure value using an average of estimated property values from Eppraisal.com, Zillow.com, Trulia.com, and Realtor.com or as of 12/31/2015. For robustness, we also measure value from a combination of sales prices or estimated values (in cases of rentals, new construction, or missing sales records) in the year the executive moved into the property.

We demonstrate using the Manhattan CBSA.

Manhattan Residential Zip Codes	
Central Harlem	10026, 10027, 10030, 10037, 10039
Chelsea and Clinton	10001, 10011, 10018, 10019, 10036
East Harlem	10029, 10035
Gramercy Park and Murray Hill	10010, 10016, 10017, 10022
Greenwich Village and Soho	10012, 10013, 10014
Lower Manhattan	10004, 10005, 10006, 10007, 10038, 10280
Lower East Side	10002, 10003, 10009
Upper East Side	10021, 10028, 10044, 10065, 10075, 10128
Upper West Side	10023, 10024, 10025
Inwood and Washington Heights	10031, 10032, 10033, 10034, 10040

Below we provide current median sales prices for each zip code as provided by Trulia.com. Median values provided by Zillow.com, Realtor.com, or Zipcodes.com (historical data is provided by Zipcodes.com and must be purchased) yields similar values.

Zip Code	Median Sales Price
10001	\$1,575,000.00
10002	\$1,525,000.00
10003	\$1,540,000.00
10004	\$1,200,000.00
10005	\$1,785,000.00
10006	\$740,000.00
10007	\$2,800,000.00
10009	\$1,284,375.00
10010	\$1,250,000.00
10011	\$1,812,500.00
10012	\$1,600,000.00
10013	\$3,150,000.00
10014	\$2,031,000.00
10016	\$925,000.00
10017	\$850,000.00
10018	\$1,200,000.00
10019	\$1,462,500.00
10021	\$1,730,000.00
10022	\$866,500.00
10023	\$1,773,469.00
10024	\$1,792,120.00
10025	\$1,300,000.00
10026	\$890,000.00
10027	\$837,500.00
10028	\$1,735,000.00
10029	\$477,000.00
10030	\$540,000.00
10031	\$651,068.00
10032	\$454,000.00
10033	\$415,000.00
10034	\$470,000.00
10035	\$750,000.00
10036	\$1,050,000.00
10037	\$477,867.00
10038	\$1,043,706.00
10039	\$797,800.00
10040	\$689,000.00
10044	\$540,000.00
10065	\$1,325,000.00
10075	\$998,000.00
10128	\$1,159,000.00
10280	\$765,000.00
Mean	\$1,196,604.88

Based on this data, an executive working in Manhattan would need to own/rent a home with an estimated value just under \$2,400,000 to be considered materialistic under our main measure of real estate. In robustness analysis we increase the threshold to 5 times the average of median home prices in the relevant CBSA. Under this criterion, an executive must own/rent a home with an estimated value just under \$6,000,000.

New construction, rentals, and properties held in the name of another entity provide potential issues with identification and estimation. Below, we discuss these properties.

New Constructions

Many executives choose to construct new homes. Our address history provides us with the address of the home but property records on purchase price will generally only have data on the price paid for the land. Internet resources provide us with information to determine if a home is in fact new construction, and provide an estimate of the property's value which we can use to compute our measure of materialism.

To illustrate our process to determine new construction and estimate the value, consider the following property: 1835 73rd Avenue Ne, Medina, WA 98039. This home belongs to Bill Gates and given that the home has its own Wikipedia page, it does not seem like an invasion of privacy to discuss it. To learn whether the home was new construction and get an estimated value for the property we can use the real estate aggregator Zillow.com. Below is the Zillow link to the Gates' property:

http://www.zillow.com/homes/1835-73rd-Ave-NE,-Medina,-WA-98039_rb/?fromHomePage=true&shouldFireSellPageImplicitClaimGA=false

Zillow notes that the original purchase was for \$2,050,000 in 1988. But, given that construction of the property itself did not begin until 1994, we have evidence that the purchase in 1988 was for land alone. We can verify whether the original purchase was for an existing home or for vacant land from information provided by the King County Department of Assessments. Below is the link to the Gates' property:

<http://info.kingcounty.gov/Assessor/eRealProperty/Dashboard.aspx?ParcelNbr=9208900079>

The department of assessment indicates that construction took place in 1994 and the tax roll history indicates the years taxable and appraised improvements to the land were first assessed to the property. Therefore, we know the purchase was for vacant land and the home subsequently built on the land.

Zillow also provides a current estimate of the value of the home at \$161,352,038. While this property might be particularly hard to value, most homes have several relevant comparison properties to aid in the process. Moreover, homes of such value that it is difficult to find relevant comparisons are almost certainly going to cost more than 2 times the average price of homes in the relevant core based statistical area, so even though the dollar estimate is noisy, this will not lead to classification issues regarding our main measure of materialism.

At this point, we have verified that the home itself was new construction, and have an estimated value to use to compute our measure of materialism. Similar information can be gleaned for all properties in our sample in that we can compare the year a home was constructed to the year land was purchased via Internet sources and from the county tax assessor. Because the data provided to us by FOTT is an address history, and not a home purchase history, it is highly unlikely that homes acquired through new construction are missing from our sample or have incorrect estimates for their value. Our data also provides us with the years an individual is associated with a particular address so we can determine if the individual was associated with the home when it was constructed, or purchased the home years later (and in such cases we can use the purchase price as an estimate in that year).

Given that values for new construction are always estimates, we have two options when computing our value of materialism. We can take the estimated value of all homes as of 2015 and scale by the CBSA of the area in 2015, or we can take an estimated value in the year of acquisition (or the purchase price when available) by solving for the estimated value in the year of acquisition using the following equation:

$$\frac{E_{t-acquisition}}{A_{t-acquisition}} = \frac{E_{2015}}{A_{2015}}$$

Where E equals the estimated value and A equals the assessed value. While the ratio of estimated to assessed value is not constant over time (and the variability can vary geographically), it is hard to think of a theoretical argument for how its variance could be related bank RMI scores or tail risk, which it would need to be in order for classifications based on the error to drive our results. Our estimates of CEO materialism are correlated at over 99% whether using 2015 estimated values or a combination of actual purchase prices and estimated values from the year of acquisition.

Rental Apartments

Many executives in our sample choose to rent. This is particularly common in Manhattan where an executive may rent an apartment close to the office. It is not clear if a property an executive lives in and rents should be treated identically to one which was purchased, but we are able to collect information on properties an individual rents and verify the accuracy of such information as follows.

Our address history provides information on where an executive lives even if the property is a rental. From this information we can gain estimates of property values the same way we do for all properties. One concern could be the ability to differentiate between different units in a given building. Our address history also provides apartment numbers/designations so we are able to differentiate a penthouse condominium from another living space and accurately look up the estimated value of the correct space.

For an example of information that can be collected on condominiums (which an executive may own or rent) consider the residential condominium building located at 3 Commonwealth Avenue, Boston MA, 02116. The following link provides data from the assessor's office for the city of Boston for this building.

<http://www.cityofboston.gov/assessing/search/?parcel=0502825000>

The building has a master parcel number 0502825000, but each unit has its own parcel number distinguished by changing the last digit of the master parcel. Each individual unit has separate information including assessed taxable values, so these units are not identical. Our address history provides apartment or unit numbers so if we were interested in this property we could gather information for the appropriate unit in the building. The following link provides Zillow information for Apartment 3 at 3 Commonwealth Avenue:

http://www.zillow.com/homedetails/3-Commonwealth-Ave-APT-3-Boston-MA-02116/59166810_zpid/

Zillow provides a current estimated value for this specific unit, and past sales prices and assessed values, which can be verified through the assessor's office indicating that the correct unit is presented.

Real Estate held in Another Entity's Name

In some cases an executive is living in a property for which legal title belongs to another entity. This could be a spouse, but is often commonly related to family trusts. This can occur to administer the estate of a deceased relative, or be an ongoing event for personal financial reasons. Additionally, individuals occasionally transfer property held in a controlled trust for nominal sums of money (\$1.00 in many cases). Of course this does not represent a true sales price or market value of the property. As noted before, our address history provides evidence that an executive was living at a home even if it is owned by another individual or trust. The address history also provides the dates the individual was associated with the property, so we can locate sales transactions if they exist and we can estimate property values at the time of transfer in addition to current estimated values. In these cases, transfer of title often does not coincide with the years an individual was present in the home. For example, an individual might occupy a home in 2000 while it is held in trust and then might purchase the home for a market or nominal fee in 2004. We can use estimated values for the year 2000, the year 2004, or the year 2015 and scale by the appropriate cost of real estate in the property's core based statistical area for that year. As discussed above, estimates of materialism using current or past property estimates are correlated at over 99%.

II] Measures of Materialism

Our primary measure of materialism is an indicator variable, *MATERIAL*, equal to 1 if the CEO owns luxury assets prior to December 31, 2012, where luxury assets include cars with a purchase price greater than \$75,000, boats greater than 25 feet in length, primary residences worth more than twice the average of the median home prices in metropolitan area of his firm's corporate headquarters (as defined by the Core Based Statistical Area (CBSA)), any additional residences worth more than twice the average home prices in that metropolitan area (as defined by the CBSA), and 0 otherwise.

To verify that we are adequately capturing the materialistic tendencies in an individual, we construct and verify the robustness of our results to several alternate measures of materialism. We discuss these alternate measures (some are already mentioned in the main body of the paper) in the following pages.

We recalculate a binary measure of materialism using different cut-off values – vehicles with a list price of \$110,000 or greater, boats 40 feet and longer, and homes worth at least 5 times the average of median home prices in the zip codes of their firm's CBSA. While the cutoff figures are significantly different, the measure is highly correlated with the original measure. Under these requirements, all frugal CEOs under the original measure are still frugal under this measure, and all materialistic CEOs under this measure are materialistic under the original measure. The only individuals who are classified differently are those who were originally classified as materialistic specifically because of assets within the higher and lower range of the two methods. As such, the measures are highly correlated and yield nearly identical results.

Next, we develop an ordinal measure of materialism by counting the number of materialistic assets an individual owns all individuals who are frugal using a binary measure have 0 lavish assets so this measure really just creates variation in the group defined as materialistic. We can calculate this measure in real time, or by choosing the peak level and applying that as a static measure. This measure has some appeal in that one aspect of materialism is this desire to keep acquiring more goods over time and the measure captures that. However, it is not clear that it is appropriate to treat an individual who has purchased two \$100,000 cars as more materialistic than an individual who has purchased one \$250,000 car. Results using an ordinal measure are highly correlated with results using a binary measure. Given that both measures classify frugal CEOs in the same manner, the only way this measure would create different results is if the associations between materialism and our dependent variables were distributed like an inverted U where “moderately” materialistic CEOs drove the results and highly materialistic CEOs behaved as frugal CEOs.

Given that our real estate data is more complete than data for vehicles or boats, we recalculate materialism only using real estate data. Under this measure, every individual classified as frugal is still classified as such, and all individuals who owned a materialistic home are classified as materialistic. Individuals classified as materialistic based solely on vehicle or boat ownership are now classified as frugal. The measure is highly correlated with our original measure and our empirical results are similar, though in some cases they are stronger when we use vehicle and boat data, suggesting that it is informative and that such individuals should be considered materialistic under our methodology. We also create three groups – frugal, materialistic without real estate, and materialistic with real estate – and compare results for these groups to one another. We find that the two materialistic groups are statistically similar to one another and significantly different from the frugal group.

We calculate a continuous measure of materialism based on the dollar value (or estimated value) of an individual's assets. We can calculate this measure in real time or as a static measure using the peak value of assets. Because we do not have boat prices available to us, they are estimated from a model that considers length, manufacturer, model, and year. While these inputs are all strong determinants of price, the unique nature of boats and the ability to customize means that individual observations could be poorly estimated. A continuous measure potentially offers advantages in that a \$20 million dollar home might be indicative of a higher level of materialism than a \$10 million dollar home (assume in the same geographic location). However, this is not a given. Particularly as it pertains to our hypotheses, it is possible that after a certain level of materialism increases are not predictive. Moreover, in our binary measure we have no reason to believe our classification is influenced by an individual's wealth as every CEO in our sample can easily afford a \$75,000 vehicle, a boat greater than 25 feet long, or a home worth twice the average of median home prices in their firm's CBSA. However, a CEO's wealth can influence a continuous measure. The richest CEOs in our sample can afford assets worth more than the entire net worth of the least rich CEOs in our sample. This potentially leads to mis-measurement. To address this we can scale the value of assets by an individual's wealth but now the

measure has numerator and denominator affects that can vary independently. Assume a CEO with a net worth of \$100 million (primarily from stock in his firm) owns assets worth \$10 million. If in the next year his firm's stock price increases by 20% and his net worth increases by \$20 million that individual has to spend another \$2 million on vehicles, boats, or homes or else his measured value of materialism will decrease even though there is no reason to believe the individual has become less materialistic simply because his net worth increased. Further, it is likely not reasonable to compare spending rates for ultra-rich individuals. As wealth increases an individual generally spends a smaller proportion of wealth on real estate, vehicles, or boats. While in theory there is no limit to the value of these assets an individual can purchase, in practice there likely is. Consider an individual worth \$50 million dollars. Such an individual might purchase a home worth \$10 million dollars, a yacht for \$4 million, and own \$1 million in vehicles. This individual has spent 30% of their net worth on these assets. Now consider an individual worth \$500 million. It is highly doubtful that this individual would need to spend \$150 million on real estate, vehicles, and boats to be considered as materialistic as the first individual. There is a practical limit on how much one spends on these things. Finally, it is not clear that the marginal dollar spent on a vehicle is equivalent to the marginal dollar spent on a home nor is an appropriate weighting factor obvious. While a continuous measure has intuitive appeal, it also has many limitations and weaknesses. That said, it still exhibits a strong correlation with our binary measure (the CEOs with more valuable assets are going to be classified as materialistic using a binary measure) and our results are similar. Results using a continuous measure are sensitive to outliers in terms of wealth or asset values and winsorizing the data produces more stable and consistent results.

To conclude, our choice of the primary measure of materialism using the binary model was motivated by the high correlation of this measure with all of the above alternative measures, the ease of its interpretation, the ability to estimate certain models using this measure, and last but not the least, the simplicity of the measure.

Appendix C

CSR Category Strengths and Concerns (KLD)

CSR Category	Strengths	Concerns
Community	<ul style="list-style-type: none"> - Charitable giving. - Innovative giving supporting nonprofit organizations, particularly those promoting self-sufficiency among the economically disadvantaged. - Non-US Charitable giving. - Support for housing for the economically disadvantaged. - Support for education for primary or secondary school education, particularly for those programs that benefit the economically disadvantaged, or support for job-training programs for youth. - Relations with indigenous peoples in the areas of its proposed or current operations that respect the sovereignty, land, culture, human rights, and intellectual property of the indigenous peoples. - Volunteer programs. - Other in-kind giving programs or notably positive community activities. 	<ul style="list-style-type: none"> - The company is a financial institution whose lending or investment practices have led to controversies. - Negative economic impact on the community, such as issues related to environmental contamination, water rights disputes, plant closings, "put-or-pay" contracts with trash incinerators, or other company actions that adversely affect the quality of life, tax base, or property values in the community. - Serious controversies related to disrespecting the sovereignty, land, culture, human rights, and intellectual property of indigenous peoples. - Tax disputes - Other noteworthy community controversies.
Diversity	<ul style="list-style-type: none"> - Promotion of women and minorities, particularly to line positions with profit-and-loss responsibilities in the corporation. - Women, minorities, and/or the disabled hold four seats or more (with no double counting) on the board of directors, or one-third or more of the board seats if the board numbers less than 12. - Work/life benefits for employee, <i>e.g.</i>, childcare, elder care, or flextime. - Subcontracting, with women and/or minority-owned businesses. - Employment of the disabled - Benefits for gay & lesbian employees. - Other notable commitments to diversity. 	<ul style="list-style-type: none"> - Fines or civil penalties related to affirmative action issues. - Non-representation of women on its board of directors or among its senior line managers. - Other diversity controversies.
Employee Relations	<ul style="list-style-type: none"> - Strong union relations. - No-layoff policy. - Cash profit sharing with a majority of the workforce. - Employee involvement and/or ownership through stock options; gain sharing, stock ownership, sharing of financial information, or participation in management decision making. - Strong retirement benefits. - Strong health and safety programs. - Other strong employee relations initiatives. 	<ul style="list-style-type: none"> - Poor union relations. - Fines or civil penalties for willful violations of employee health and safety standards, or involvement in major health and safety controversies. - Workforce reductions. - Under funded defined benefit pension plan, or inadequate retirement benefits program. - Other employee relations controversies.

CSR Category Strengths and Concerns (KLD)

CSR Category	Strengths	Concerns
Environment	<ul style="list-style-type: none"> - The company derives substantial revenues from innovative remediation products, environmental services, or products that promote the efficient use of energy, or it has developed innovative products with environmental benefits. - Pollution prevention programs. - Recycling programs. - Use of renewable energy and clean fuels, energy efficiency, and promotion of climate-friendly policies and practices. - The company is a signatory to the CERES Principles, publishes a notably substantive environmental report, or has notably effective internal communications systems in place for environmental best practices. - The company maintains its property, plant, and equipment with above average environmental performance for its industry. - Commitments to other environmentally proactive activities. 	<ul style="list-style-type: none"> - Liabilities/ fines / penalties for hazardous waste management violations. - Fines or civil penalties for violations of air, water, or other environmental regulations, or it has a pattern of regulatory controversies under the Clean Air Act, Clean Water Act or other major environmental regulations. - The company is among the top manufacturers of ozone depleting chemicals. - The company's legal emissions of toxic chemicals (as defined by and reported to the EPA) from individual plants into the air and water are among the highest of the companies followed by KLD. - The company is a substantial producer of agricultural chemicals, <i>i.e.</i>, pesticides or chemical fertilizers. - The company derives substantial revenues from the sale/ combustion of coal or oil and its derivative fuel products. - Other environmental controversies.
Product	<ul style="list-style-type: none"> - The company has a long-term, well-developed, company-wide quality program, or it has a quality program recognized as exceptional in U.S. industry. 	<ul style="list-style-type: none"> - Fines or civil penalties, or involvement in major recent controversies or regulatory actions, relating to the safety of products and services. - Fines or civil penalties relating to advertising practices, consumer fraud, or government contracting; or involvement in marketing or contracting controversies. - Fines or civil penalties for antitrust violations such as price fixing, collusion, or predatory pricing, or is involved in recent major controversies or regulatory actions relating to antitrust allegations. - Other product-related controversies.