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 56% 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, fewer strengths, and more weaknesses. Finally, we document that CSR scores in firms with non-materialistic CEOs are positively associated with accounting and market performance. In contrast, CSR scores in firms with materialistic CEOs are unrelated to profitability on average; however this association is decreasing in CEO power.

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

I. Introduction

Corporate social responsibility (CSR) has become an important business practice in recent years, with Fortune Global 500 firms investing over $15 billion a year on corporate philanthropy and countless hours and dollars on a host of CSR activities. Academic interest on this topic has also intensified and become more widespread over the last decade. 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: economic, legal, ethical, and discretionary responsibilities. The latter two dimensions imply that morals or values of individual managers are an important factor in a firm's CSR practices (Jones 1995), and bring into focus the point that key individuals may be instrumental in formulating and implementing firms' CSR policies.[1]

The importance of individuals' values, traits and motives in pursuing CSR has long been recognized by researchers (Wood et al. 1986; Swanson 2008; Waldman and Siegal 2008). In fact, Waldman and Siegal (2008) argue that studies ignoring the leadership dimension may "yield imprecise conclusions regarding the antecedents and consequences of these activities". Given the growing popularity of CSR initiatives in corporations, and the key role of individual leaders in CSR decisions, examining which traits, and why, in corporate leaders explain the variation in CSR investments offers important research opportunities. Our objective is to add to the knowledge on these issues.

Several studies in marketing and psychology have investigated this notion and found correlations between observable CEO demographics such as age, gender, and education as well as (survey-based) measures of moral values on CSR (Manner, 2010; Godoz-Diez et al., 2011;

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[1] For instance, Mosley et al. (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".

Borghesi et al., 2014). Our purpose is to contribute to this conversation by examining how one characteristic of a firm's CEO, his materialism, is related to the firm's CSR activities. Additionally, we aim to examine whether CEO materialism moderates the relation between CSR investments and firm performance.

We argue that CEO materialism is particularly pertinent in the case of CSR outcomes for the following reasons. First, materialism is a unique characteristic posited as a fundamental element of an individual's value system, and the role of values has been argued as being critical in explaining CSR outcomes (Jones 1995; Hambrick and Mason 1984). Second, there is evidence that materialistic people are less sensitive to behaviors that might negatively affect others. Kilbourne and Pickett (2008) find that materialism is associated with reduced concern about the environment. This raises the possibility that materialistic CEOs will pursue profits at the expense of the environment and other social values.

We interpret a CEO's ownership of luxury goods, including expensive cars, boats, and real estate, as an indication of relatively high "materialism". 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). Materialistic individuals are more likely to value expensive objects, items that convey prestige and social status, that signal accomplishment, and enhance the owner's appearance (Richins, 1994). 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 analysis 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 56% of the variation in their firms' overall net CSR scores across all social dimensions (Community, Diversity, Employee Relations, Environment and Product Safety). Additional analysis suggests that about 10% of this CEO effect can be attributed to materialism. In contrast, firm fixed effects explain 24% 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 overall net CSR score. This relation is driven by firms with materialistic CEOs having both fewer CSR strengths and 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 several additional analyses. We document that CSR scores increase when a non-materialistic CEO replaces a materialistic CEO and that CSR scores decrease when a materialistic CEO replaces a non-materialistic CEO (true for all CEO turnovers as well as for more routine turnovers only, i.e., turnovers due to retirement or death). These results are robust to the timing of a CEO's revelation of his type (before or after he became CEO) and do not appear to be the result of a CEO's sole pursuit of status rewards.

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Finally, we investigate whether the link between CSR and firm 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 non-materialistic CEOs are positively associated with (current and long term) accounting profitability and current abnormal returns. In contrast, we find that CSR scores in firms led by materialistic CEOs have no relation to accounting or market performance on average. We document that non-materialistic CEOs seem to positively affect profitability through CSR strengths; CSR weaknesses are negatively associated with performance for both materialistic and non-materialistic CEOs. We probe further into the relation between CSR scores, performance, and CEO type, and find that in firms run by materialistic CEOs, the link between CSR scores and performance is more negative for CEOs that are more powerful. However, the link between CSR and performance actually increases with CEO power for firms run by non-materialistic CEOs.

In sum, our results indicate a compelling link between CEO materialism and firms' CSR activities. 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 (although our sorting analysis suggests this is not likely to be the case). Our results are robust to several identification strategies which help in mitigating (though not eliminating) this concern. Nevertheless, our results should be interpreted with this caveat in mind.

Subject to the above, our paper makes several contributions to the literature. First, we extend the CSR literature by providing evidence consistent with CEO materialism (a key element of one's value system) influencing CSR scores, strengths and weaknesses. As such, we add to the set of studies that examine CEO attributes that influence CSR decisions. Given the importance of

leadership in this context, our study enhances the understanding of what attributes of CEOs may drive CSR choices and why. Further, our AKM analysis provides statistical validation to arguments presented by researchers that leaders are likely to be the primary drivers of social and environmental decisions in companies. In fact, we show that the CEO is responsible for 56% of the variation in a firm's overall net CSR scores, while firm effects explain 24% of the variation. As such, these results have the potential to inform boards and corporate investors who consider social responsibility an important goal while making hiring or investment decisions.

Second, we provide evidence that the mapping from CSR investments to corporate performance varies with CEO materialism. We document that this mapping from CSR to performance is different for CSR strengths versus weaknesses. These results 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 performance.

Next, we contribute to the literature on materialism and provide large sample 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. Our results also complement the findings in Davidson et al. (2015). The papers examine the link between materialism and two unrelated corporate outcomes, fraud and social responsibility, and present results that are interesting and intuitive. This indicates that the measure of luxury asset ownership captures meaningful differences in materialism and can be useful in explaining variation in numerous and disparate corporate outcomes, thus paving the way for further research.

Finally, our findings add to the growing research on CEO heterogeneity which documents the importance of latent factors such as a CEO's ability, risk preferences, and personality in shaping corporate outcomes.[2]

II. Prior Research and Hypothesis Development

Four main theoretical frameworks been advanced in the literature to describe CSR activities (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 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, *ethical* theories imply that the morals or ethics of the individual in charge of decisions regarding social responsibility become an important factor in a

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[2] 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 et al. 2010; Kaplan et al. 2012; Malmendier and Tate 2009; Davidson et al. 2015).

firm's CSR practices (Jones 1995). The notion that the leaders of the firm are the primary decision makers for corporate strategy, in particular for social and environmental issues, and that this leadership dimension needs to be examined in more depth in the context of CSR activities has been proposed by several researchers (Davis 1980; Waldman and Siegal 2008).

Consistent with these arguments several studies document interesting correlations between a firm's CSR characteristics and various demographic and other traits of the CEO, such as age, gender, education, tenure, political contributions, and compensation (Manner 2010; Huang et al. 2013; Borghesi et al. 2014). Demographics are in many cases used to proxy for the underlying values of an individual, because as Hambrick and Mason (1984) argue, we want to understand and examine values and cognitive biases of individuals in examining these strategic choices.[3] Some researchers attempt to directly capture the moral values of CEOs through surveys, and document interesting evidence (Godos-Díez et al. 2011; Papagiannakis and Lioukas 2012). In general, this body of research documents that female CEOs, CEOs with certain bachelors and advanced degrees, younger CEOs, those who make political contributions are more likely to make CSR investments.

Our objective is to contribute to this rich and evolving body of research by examining whether another aspect of a CEO, his materialism, significantly explains cross-sectional variations in CSR investments, including CSR strengths and weaknesses, and whether this characteristic plays a role in how CSR investments map into firm performance. We focus on CEOs as they are the firm's key decision-maker, are charged with the responsibility of

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[3] While we find the correlations between the demographic traits of CEOs and CSR interesting evidence, it is not clear what the mechanism is through which features like age/ education/ gender relate to CSR choices. We could not find concrete and consistent theoretical or archival evidence as to why and how demographics should be correlated to values. For example, research on gender and ethics has produced mixed results, which questions this relation as well as the directional predictions (see for example, Robin, Donald, and Laurie Babin. "Making sense of the research on gender and ethics in business: A critical analysis and extension." *Business Ethics Quarterly* 7.04 (1997): 61-90.; McCabe, A. Catherine, Rhea Ingram, and Mary Conway Dato-On. "The business of ethics and gender." *Journal of Business Ethics* 64.2 (2006): 101-116.)

formulating corporate strategy, and are often deeply involved in promoting the image of their respective firms through social responsibility.

A few factors motivate our examination of materialism in the context of CSR. First, materialism is a unique characteristic that has been posited as a fundamental component of an individual's value system, allowing a more direct examination of the values of individuals in explaining CSR outcomes (Hambrick and Mason 1984). In fact, we find that our measure of CEO materialism is unrelated to the list of characteristics documented in the studies discussed above, as well as other personal traits examined in the literature.[4] Second, research on materialism has documented interesting experimental findings that motivate compelling hypotheses regarding an executive's commitment to socially responsible behavior. Finally, an individual's materialistic tendencies in his personal life can disentangle any effects of firm level incentives that may be driving some associations documented in prior studies, and thus permit us to isolate a core trait in a person.[5]

The literature on materialism is vast, where discussions of materialism are found in various disciplines including philosophy, political economy, theology, economics, anthropology, sociology, psychology, and consumer research. Scholars in this field describe 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

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[4] Specifically, we test the correlations between the materialism measure and demographic characteristics of CEOs whenever data is available. These traits include wealth, MBA degree, top MBA degree, age, gender, overconfidence, military experience, whether one was born during a recession, whether one's career began during a recession, criminal record, and narcissism. We also estimate a regression with our measure of materialism as the dependent variable and the above characteristics as independent variables. We do not find statistically significant associations between materialism and these traits (other than gender; however, only 4% of our sample comprises female executives and our results continue to hold once we eliminate these observations). These results are presented in the Internet Appendix.
[5] For instance, it is not clear how measures used in some studies, such as self-reported responses to surveys, past CSR in the firm, and the compensation awarded to executives map into values of individuals or are unrelated to firm level factors (Godoz-Diez et al. 2011; Manner 2010; Ormiston and Wong 2013).

things" (Bredemeier and Toby 1960). Materialistic individuals place the acquisition of material goods at the center of their lives, and for such individuals a lifestyle with a high level of material consumption serves as a primary goal (Fournier and Richins 1991, Richins and Dawson 1992, Daun 1983). It is the single-minded pursuit of happiness through acquisition or possession rather than through other means that distinguishes materialism (Richins and Rudmin 1994).

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.[6] While causal interpretations are difficult, the lack of concern for the environment and other societal values documented in this literature present clear 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 environment. We measure materialism as the relative ownership of luxury assets by a CEO. Our first prediction can thus be considered a test of the three-part joint hypothesis: our

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[6] 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.

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.[7] 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 non-materialistic CEOs.

Alternatively, if our measure fails to adequately capture the construct of materialism in CEOs, then we should observe no systematic relation between our measure and CSR activities. It is plausible, however, that our measure may be capturing differences in the pursuit of status by CEOs, versus their materialism. It is challenging, however, to distinguish between these two constructs because materialistic people are also argued to indulge in status pursuit (Richins 1994). Nevertheless, we can still isolate materialism and status pursuit in this setting because the predictions for CSR would be opposite if our measure were capturing materialism versus status pursuit. Status is defined in the literature as the prestige, respect, and esteem that a party has in the eyes of others (Anderson and Kilduff 2009; Fiske 2010; Fiske and Berdahl 2007). Individuals possessing status will greatly value—and actively seek to maintain—their high-status position (Blader and Chen, 2011; Huberman et al. 2004). While efforts to maintain one's status can have a variety of consequences, a particularly important one is that status-maintenance concerns can draw an individual's attention outward to social targets in the environment (Flynn et al. 2006). As a result, such feelings prompt high-status individuals to be concerned about the impressions

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[7] Note that our reliance on "off-the-job" behavior to measure materialism 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.

they cultivate with social targets, to consider these parties' perspectives, and to act in ways that will be regarded as respectable and commendable.

Therefore, if indeed our measure is purely capturing status pursuit, then we would expect to observe a positive relation with CSR activities, as status seeking CEOs may pursue CSR activities to further enhance their position of respect and admiration in society. On the other hand, if our measure is capturing the trait of materialism, where people have a lack of concern for others and the environment, then we would expect a negative correlation between our measure and CSR.

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 et al. 2003; McWilliams and Siegel 2000). Researchers attribute such mixed results to important theoretical and empirical limitations, measurement errors 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 performance. The mixed results in the literature 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 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

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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 it is unlikely these activities are profitable. In this case, we would observe a negative (or no) relation between CSR activities and operating performance.

Non-materialistic 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 CEOs to be negatively related to operating profits.

Alternatively, non-materialistic 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, non-materialistic 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 non-materialistic 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).[8] 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. Wiggenhorn et al. (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 (non-materialistic and materialistic), the link between

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[8] Our results are robust to an alternative definition of CEO power, which is whether the CEO is also Chairman of the Board (Morck et al., 1989).

CSR and operating performance varies with CEO power. If non-materialistic CEOs primarily invest in CSR to increase shareholder value, then the relation between CSR and operating performance in firms led by non-materialistic CEOs should not vary with CEO power. Alternatively, it is possible that as a non-materialistic 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 may 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 non-materialistic 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 non-materialistic 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.[9]

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.[10]

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[9] Our acquisition and use of asset data conforms to all provisions of the Driver's Privacy Protection Act (DPPA).
[10] 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

Jenks natural breaks classification method (Jenks 1967), suggests that $75,000 represents a natural break in the distribution of values for car prices. 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, 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.[11]

The literature makes clear that if an individual is materialistic then that individual is not non-materialistic and vice versa, but is silent on how many people may be neither. To consider this possibility we measure materialism/ non-materialism and attempt to exclude individuals who

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materialistic CEOs classified otherwise. We note that our measure of materialism is based on an individual's luxury asset ownership as of December 31, 2012 because we purchased our data during 2013.

[11] 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.

are 'in between'. 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 non-materialistic, 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.[12] 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 that 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 et al. 2011).[13] 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 and 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 by the company, and the corporate website, to produce a CSR rating for the company for each year.

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[12] We also create another binary measure of materialism where non-materialistic 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.

[13] For a detailed description please go to www.msci.com.

We focus on five main categories of CSR investments included in the KLD database: Community, Diversity, Employee Relations, Environment, and Product Safety.[14] 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 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

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[14] We report results for all five categories for our main cross-sectional tests (Table 4, Panel A); other results using the individual categories are provided in the Internet Appendix for brevity.

ratings 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 the Internet Appendix). In tests that separately examine CSR strengths and weaknesses, we calculate the *CSR Strengths* as the sum of the strength ratings for each category and *CSR Weaknesses* as the sum of the weakness ratings for each category.

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).[15]

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).[16] 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 we have 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

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[15] 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.

[16] We include indicators for fraud in all relevant analyses to allow for different behavior in these subsamples of firms. This indicator is never statistically significant and is not reported for brevity.

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.

<div align="center">**[Insert Table 1 Panel A here]**</div>

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 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.

<div align="center">**[Insert Table 1 Panel B here]**</div>

Our sample firms have significantly larger mean and median market capitalization as

compared to the CSR-ExecuComp population. The sample firms are also more 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 measure of CEO wealth based on the total value of the CEO's equity

holdings (from Execucomp) and an estimate of non-firm based wealth following Dittmann and

Maug (2007). 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. 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 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. We conduct this analysis for both our full sample of 947 CEOs as well as a reduced sample of 227 CEOs which we use in subsequent tests that examine CEO versus firm fixed effects in explaining CSR scores (the AKM sample).

Table 1, Panel C presents the results of this analysis, which is similar across the full and the AKM samples. 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 four through 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 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 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

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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 equations to examine sorting of CEOs into firms and industries:

$$Material_i = \beta0 + \beta1 \; CSR \; Net \; Score_{it} + \beta2 \; Size_{it} + \beta3 \; Return \; on \; Assets_{it}$$
$$+ \; \beta4 \; Market\text{-}to\text{-}Book_{it} + \beta5 \; Debt\text{-}to\text{-}Equity_{it} + \beta6 \; Industry \; Compensation_{it} \; + \; \varepsilon_{it} \quad (1a)$$

$$Material_i = \beta0 + \beta1 \; Sin \; Industry_i + \beta2 \; Size_{it} + \beta3 \; Return \; on \; Assets_{it}$$
$$+ \; \beta4 \; Market\text{-}to\text{-}Book_{it} + \beta5 \; Debt\text{-}to\text{-}Equity_{it} + \beta6 \; Industry \; Compensation_{it} \; + \; \varepsilon_{it} \quad (1b)$$

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 weaknesses) calculated across all CSR categories. In equation (1b), *Sin Industry* 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 (log of market capitalization), performance (return on assets), growth (market-to-book ratio), leverage (debt-to-equity) 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.[17] All variables are defined in detail in Appendix A at the end of the paper.

[Insert Table 2 here]

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[17] 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.

Table 2 presents the results of equations (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 (2) in Table 2 suggests that materialistic CEOs are significantly more likely to be employed in firms 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.[18]

Firm versus CEO Effects on Corporate Social Responsibility Scores

Next, we examine how much influence CEOs have on CSR scores, after controlling for firm fixed effects. We follow the approach in AKM which has been used in recent studies (Graham et al. 2012; Albuquerque et al. 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 fixed effects in the specification.[19] 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

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

[19] 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.

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 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 et al. (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. Our control variables follow other studies in the literature (Roberts 1992; Manner 2010). To control for industry effects and time trends in this equation, we calculate industry- and year-adjusted CSR z-scores (*ZCSR Net Score*) instead of using the raw CSR net scores:[20]

$$ZCSR\ Net\ Score_{it} = \beta1\ Financial\ Constraint_{it} + \beta2\ Size_{it} + \beta3\ Return\ on\ Assets_{it}$$
$$+\ \beta4\ Market\text{-}to\text{-}Book_{it} + \beta5\ Debt\text{-}to\text{-}Equity_{it} + \beta6\ Abnormal\ Return_{it}$$
$$+\ \beta7\ CEO\ Tenure_{it} + \beta8\ CEO\ Wealth_{it} + CEO\ FE + FIRM\ FE + \varepsilon i,t \qquad (2)$$

Table 3, Panel A presents the results. The table includes the proportion of variance in the model that is attributable to the CEO (i.e., the R-squared for the CEO component) and that which is attributable to the firm (i.e., the R-squared for the firm component).[21] Our results indicate that

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[20] Note that the AKM model cannot provide a separate R-square for a 3rd fixed effect as it does for the CEO and the firm effects. This model employs a two-way fixed effect technique, and adding a 3rd industry fixed effect would require having a sample of multiple CEOs who switched to multiple firms and switched to multiple industries, which is operationally not feasible for a reasonable number of observations. Additionally, firms rarely switch industries so separating a firm fixed effect from its industry can rarely be done in this specification.

[21] The phrase 'proportion of variance' is just an R-squared for separate components of the model. The AKM method basically takes the R-squared for the model and breaks it into an R-squared for the CEO fixed effect, an R-squared for the firm fixed effect, and an R-squared for any time varying controls included in the regression. The tabulated R-squared values computed in the AKM model are calculated as 1 minus the residual sum of squares divided by the total sum of squares. We could also calculate the 'within R-squared' which calculates how much of the variance

a significant part of CSR scores is determined by CEO-specific attributes. CEO fixed effects explain 56% of the variation in overall CSR scores in firms, while firm fixed effects explain 24% of the variation. The control variables in total explain 0% of the variance in overall CSR scores.[22]

To examine whether there are similar differential effects for CSR strengths and weaknesses, we repeat equation (2) by replacing the dependent variable with *ZCSR Strengths* and *ZCSR Weaknesses*, and find dominant CEO effects in both cases. Specifically, CEOs explain 56% of the variation in CSR strengths and 67% of the variation in weaknesses, while the firm effect explains 27% and 10% for these categories respectively.

[Insert Table 3 Panel A here]

The above results support the argument that CSR scores are determined primarily by the CEO. However, this analysis does not tell us 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 non-materialistic 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 R-squared in CSR scores in each of these subsamples and an overall random sample of non-materialistic and materialistic CEOs (with a similar sample size) will give us an (admittedly crude) estimate of influence of materialism on CSR scores.

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within the panel units the model accounts for. However, the accuracy of a within R-squared calculation in a fixed effects specification has been criticized for producing inaccurate estimates. Still, we did compute the within R-squared and found comparable results.

[22] Further in untabulated results we find that 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 for the five individual CSR categories (Community, Diversity, Employee, Environment, and Product).

Table 3, Panel B presents the results. Focusing on the non-materialistic and materialistic CEO subsamples, we find that when we hold type constant, the CEO effect explains approximately 49% of the variation in CSR scores on average (52% for non-materialistic subsample, and 45% for the materialism subsample). However, for the random sample where we allow type to vary, the CEO effect explains 55% of the variation in CSR scores. One way to interpret these variances is that materialism is responsible for about 10% of the CEO effect on CSR scores.[23]

[Insert Table 3 Panel B here]

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 large 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.

V. Empirical Results: CEO Type and 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

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[23] We acknowledge that we cannot test the statistical significance of differences in the R-squared values across these models and that the 10 percent estimate for materialism is just that, an *estimate*. However, the results are consistent with materialism being an important component of the CEO effect on CSR scores.

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 present several analyses to address potential endogeneity or other explanations of our results.

Cross-Sectional Model

To test our first hypothesis, we estimate the following equation with industry and year fixed effects[24]:

$$CSR\ Net\ Score_{it} = \beta1\ Material_i + \beta2\ Financial\ Constraint_{it} + \beta3\ Size_{it}$$
$$+ \beta4\ Return\ on\ Assets_{it} + \beta5\ Market\text{-}to\text{-}Book_{it} + \beta6\ Debt\text{-}to\text{-}Equity_{it}$$
$$+ \beta7\ Abnormal\ Return_{it} + \beta8\ CEO\ Tenure_{it} + \beta9\ CEO\ Wealth_{it} + \varepsilon i,t \qquad (3)$$

We estimate equation (3) separately for each of the CSR categories: Community, Diversity, Environment, Employee, and Product Safety.

[Insert Table 4 Panel A here]

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[24] 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. However all of our models in the paper include industry and year fixed effects, and all results are robust to using industry- and year-adjusted CSR z-scores as well. Also, in equation (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. We also verify that our results in all models hold when we include institutional investment as another control (but including this results in a severe loss in observations, hence we do not include this in the main tables but report results with this control in the Internet Appendix). 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.

Table 4, Panel A presents the results of equation (3).[25] We find that the coefficients on *Material* are significantly negative for all of the CSR categories (at the .05 level or better). Specifically we find that materialistic CEOs are associated with lower CSR scores by 0.083, 0.194, 0.146, 0.178 and 0.092 in the Community, Diversity, Employee, Environment and Product Safety categories respectively.

In Table 4, Panel B we examine these relations for the overall CSR score, and find that the net CSR score is lower by 0.707 in firms run by materialistic CEOs (Column (1)). The sample average for the overall CSR score is 0.40, indicating that the effect 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. Next, to isolate the specific channels through which CEO materialism 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 equation (3) by replacing net CSR scores by CSR strengths and CSR weaknesses as the dependent variable.

[Insert Table 4 Panel B here]

Columns (2) and (3) in Table 4, Panel B presents these results. The statistical and economic significance suggests that the primary difference in net CSR scores between firms with materialistic and non-materialistic CEOs is due to materialistic CEO firms having fewer CSR strengths (by 0.505; significant at the .01 level). That said, we also find evidence that materialistic CEO firms have more weaknesses (by 0.202; significant at the .05 level).

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[25] In all models we exclude observations from the first year of a CEO's tenure. Given that transitions occur during the year it is possible 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.

For the sake of brevity, we discuss a few key findings for the control variables. Financial constraint is negatively associated with CSR scores for the Community and Employee categories (significant at the .10 level .05 levels), and positively for the Diversity category (significant at the .01 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 et al. (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 .05 level).

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 individual and overall CSR scores,

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CSR strengths and weaknesses are generally negatively associated with abnormal returns (except for Environment and Product Safety). The lack of consensus in the above performance metrics is consistent with the literature which reports mixed results on the association between measures of firm financial performance (including accounting measures) and corporate responsibility (e.g., Margolis et al. 2007).

While our cross-sectional tests support the conclusion that CSR scores are lower in firms run by materialistic CEOs, we recognize that these results do not conclusively establish a causal link between the two. 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 conduct several tests below in order to verify the robustness of these results to various identification strategies.

Predecessor-Successor Analysis

To provide more evidence on how firms' CSR scores vary by CEO type and to further reduce 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:

$$
\begin{aligned}
\textit{CSR Net Score}_{it} = &\ \beta 0 + \beta 1\ \textit{New CEO Material}_i + \beta 2\ \textit{Successor}_{it} \\
&+ \beta 3\ \textit{Change CEO Type}_i + \beta 4\ \textit{New CEO Material}_i * \textit{Successor}_{it} \\
&+ \beta 5\ \textit{New CEO Material}_i * \textit{Change CEO Type}_i + \beta 6\ \textit{Successor}_{it} * \textit{Change CEO Type}_i \\
&+ \beta 7\ \textit{New CEO Material}_i * \textit{Successor}_{it} * \textit{Change CEO Type}_i + \beta 8\ \textit{Financial Constraint}_{it} \\
&+ \beta 9\ \textit{Size}_{it} + \beta 10\ \textit{Return on Assets}_{it} + \beta 11\ \textit{Market-to-Book}_{it} + \beta 12\ \textit{Debt-to-Equity}_{it} \\
&+ \beta 13\ \textit{Abnormal Return}_{it} + \beta 14\ \textit{CEO Tenure}_{it} + \beta 15\ \textit{CEO Wealth}_{it} + \varepsilon i,t \qquad (4)
\end{aligned}
$$

where *New CEO Material* is an indicator variable that equals 1 if the successor CEO is materialistic, 0 otherwise, *Successor* is an indicator variable that equals 1 if the CSR score is measured once the successor CEO is in office, 0 otherwise, and *Change CEO Type* is an indicator variable that equals 1 if there is a change in materialism from the predecessor to the successor CEO, 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.

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 is too small (17 firms) to analyze. We thus conduct this analysis by analyzing turnovers that are classified as routine (versus forced) using the methodology developed in Bushman et al. (2010).[26] All turnovers resulting from CEO retirements and deaths are classified as routine. 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.[27] 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.

[Insert Table 5 here]

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[26] We are very grateful to Robert Bushman, Zhonglan Dai and Xue Wang for sharing the CEO turnover data with us.
[27] Bushman et al. (2010) conduct several robustness checks to verify that their classification scheme is not incorrectly classifying voluntary turnovers as forced.

Table 5 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 non-materialistic 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) when a non-materialistic CEO replaces a materialistic CEO; we also find a decline in CSR weaknesses when a non-materialistic CEO replaces a materialistic CEO, but the coefficient is not significant. The corresponding changes in overall CSR scores associated with other transitions (materialistic -> materialistic and non-materialistic –> non-materialistic) are not significant. These results indicating the change in CSR scores following routine changes in CEO type further increase our confidence in the inferences on CEO materialism and CSR choices.

We note also that 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. Therefore we repeat our analysis by using all CEO turnovers (routine and forced), and ensure that our results continue to hold (and are in fact marginally stronger) in this larger turnover sample (slightly more than double the routine turnover sample). These results are available in the Internet Appendix.

Timing of Revelation of CEO Types

To further verify that our results are not driven by firms selecting CEOs who are visibly materialistic, we conduct the following sets of tests. First, we re-estimate equation (3) for two groups of firms: the first group comprises our sample of non-materialistic CEOs and only those 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 non-materialistic 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 6 here]

Table 6 presents the results. The first two columns report the results of re-estimating equation (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 CSR net scores (at the .01 level). This suggests that omitted firm characteristics are not likely driving our results. As a corroboration of the above results, we consider only our sample of materialistic CEOs, and estimate equation (3) by adding an indicator variable, *Reveal Post CEO,* which equals 1 if the CEO revealed his type after joining the firm as CEO, 0 otherwise. Column (3) in Table 6 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 analysis of CSR strengths and weaknesses yields similar inferences, though are not tabulated (available on request).

Materialism versus Status Pursuit

Our results so far are more consistent with our measure capturing CEOs who are relatively more materialistic versus those that are pursuing status, because the CEOs in the latter category would more likely be associated with positive CSR scores. CEOs seeking status may more likely be affiliated with non-profit organizations (to draw more respect and admiration from society thus enhancing their status); however we fail to find any such correlations for our sample of materialistic CEOs, further mitigating our concern that we are capturing status pursuit.

To further reinforce our efforts at establishing discriminant validity, we repeat our cross-sectional analysis in equation (3) on our sample of materialistic CEOs by splitting them into two categories: those with asset ownership that is relatively more likely to be viewed negatively, and those with ownership that is less likely to draw as much unfavorable attention. If our measure is primarily capturing differences in status pursuit, then CEOs who are exposed to more negative attention due to ownership (hence face a higher threat to their status) are likely to invest more positively in CSR activities to overcome this threat in part, as compared to those that face relatively less unfavorable attention. We compute the sum of the dollar values of all luxury assets of our CEOs in the materialistic category and compute the median value of their luxury assets. We create an indicator variable, *Above Median Assets*, which is 1 for CEOs whose cumulative asset ownership falls above the sample median, 0 otherwise. If our measure is mainly capturing the pursuit of status, then we expect a positive coefficient on this dummy in the model for CSR net score and for CSR Strengths, and a negative coefficient in the model for CSR weaknesses.

Alternatively, if we are indeed capturing materialism there should be no significant difference in the relation with CSR scores, strengths and weaknesses across the two groups of CEOs.

[Insert Table 7 here]

Table 7 presents these results. The coefficient for Above Median Assets is not statistically different from zero for models examining *CSR Net Score*, *CSR Strengths* or *CSR Weaknesses*. These results further increase our comfort in the ability of our measure to capture differences in materialism among CEOs in our sample.

In sum, our results in Tables 4 through 7 together provide compelling evidence on the relation between CEO materialism and CSR scores (providing support for H1). We conduct additional analyses: we verify that 1) our results are robust to using an instrumental variables design[28], and 2) CEO behavior (with respect to CSR activities) remains unchanged before and after the CEO acquired his first luxury asset, establishing that our measure is consistent with materialism (a more stable underlying trait) versus status (which would predict a change in behavior if the acquisition of assets somehow triggered some incentives to pursue status rewards). For the sake of brevity, we discuss these tests and report the results only in the Internet Appendix.

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[28] We identify CEO-director social connections (from past education/employment/ military/ memberships in clubs, charities and other non-professional organizations) as an instrument. 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). 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 suggesting that CEO-director social ties is a strong instrument for CEO materialism. Also, the p-value from a Durbin-Wu-Hausman Chi-squared test 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.

VI. CEO Type, Social Responsibility and Firm Performance

We next test whether/how the relation between CSR and performance is moderated by CEO materialism. We consider both accounting performance and market returns in analyzing this relation. We estimate the following equation:

$$Performance_{it/t+1} = \beta 1\ CSR\ Net\ Score_{it} + \beta 2\ Material_i + \beta 3\ CSR\ Net\ Score_{it}*Material_i$$
$$+ \beta 4\ Financial\ Constraint_{it} + \beta 5\ Size_{it} + \beta 6\ Market\text{-}to\text{-}Book_{it}$$
$$+ \beta 7\ Debt\text{-}to\text{-}Equity_{it} + \beta 8\ R\&D_{it} + \beta 9\ SG\&A_{it}$$
$$+ \beta 10\ CEO\ Tenure_{it} + \beta 11\ Board\ Independence_{it} + \varepsilon i,t \tag{5}$$

The dependent variable is either current or one year ahead operating performance (operating income before taxes and depreciation divided by the book value of debt and equity) or the current or one year ahead abnormal stock return (market-adjusted annual return).[29,30] In addition to our usual control variables, we also include controls to proxy for product differentiation (as captured by selling, general and administrative expenses) and the firm's governance environment (as captured by the independence of the board of directors). The control variables are based on prior research (Bernea and Rubin 2010). All variables are defined in Appendix A.

We re-estimate equation (5) using CSR strengths and weaknesses separately because the mapping of CSR into performance may vary across strengths and weaknesses. We further expect the effect of CEO type to influence this mapping differently for strengths versus weaknesses. If the motives behind CSR investments by CEOs vary with their type, then this may lead to differences in how these CSR investments map into firm performance. While this argument applies to CSR strengths, it is less likely true for CSR weaknesses which often result from

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[29] In equation (5) we exclude observations from a CEO's last year of tenure when looking at one year ahead performance as the measure the following year occurs during another CEO's tenure.
[30] In equation (5) we use lagged values of all independent variables to control for their effect on performance. However, we obtain similar results when we use contemporaneous values for all control variables.

regulatory violations. For example, the effect of a large oil spill on firm performance or returns is likely negative regardless of who the CEO is.

We are interested in coefficient β1, which represents the association between CSR scores (or strengths and weaknesses) and performance in firms with non-materialistic CEOs, the summation of β1 and β3, which represents the association between CSR scores and performance in firms with materialistic CEOs, and β3 which represents the difference in the association between CSR scores and performance between materialistic and non-materialistic CEO firms.

[Insert Table 8 Panel A here]

Table 8, Panel A presents the results for operating performance. We find that for both current and one year ahead results, the absolute relation between accounting performance and overall CSR score is not statistically significant in firms led by materialistic CEOs (see t-statistics for *CSR Net Score + CSR Net Score*Material*). In contrast, the relation between CSR scores and operating performance is positive and statistically significant (at the .05 level or better) in firms run by non-materialistic CEOs, and this effect persists in the current and year following the investments. From a relative point of view, we find that that interaction between *CSR Net Score* and *Material* is negatively related to operating performance (significant at the .05 level only for one year ahead profits), denoting a significant difference in the association between CSR scores and operating performance for firms with materialistic and non-materialistic CEOs.

As we conjectured, weaknesses are significantly negatively associated with current and one year ahead performance for both types of CEOs, while strengths are positively associated with one year ahead performance for non-materialistic CEOs only. From a relative point of view, as in the case of the net score, we find that interaction between *CSR Strengths* and *Material* is

negatively related to one year ahead performance (at the .01 level). These results are intuitive: CSR strengths (e.g., changing the employee benefit structures in order to attract higher quality employees) are likely to be incorporated into operating performance with a longer average lag whereas weaknesses (e.g., oil spills) are reflected immediately.

[Insert Table 8 Panel B here]

We find similar results in the case of returns (Table 8, Panel B) as discussed above, the only difference being that the implications for the CSR net score, strengths, and weaknesses are incorporated into returns in the current year (as one would expect under efficient markets). None of the coefficients of interest are significant in the following year. CSR investments by materialistic CEOs do not affect returns, but those by non-materialistic CEOs are positively associated with abnormal returns. As before, weaknesses by both types of CEOs are significantly negatively related to returns, while CSR strengths are significantly positively associated with returns only for firms run by non-materialistic CEOs.

We also attempt to examine whether CSR investments affect accounting performance over a longer horizon (exceeding one year). We note that modeling this relation is challenging given our result that CSR is associated with one year ahead performance as well as current period performance. Hence, we will need to control for the CSR in those future periods in any model looking at long term performance. For firms where there is a significant change in CSR scores say, from positive to negative, it is not clear that the effect of CSR practices which no longer occur at the firm will influence performance given that current practices are different. And for firms where there is no change in CSR it is difficult to disentangle whether the association with performance is driven by current or prior CSR activities. Nevertheless, in an attempt to look at this issue more thoroughly, we consider the average CSR net score, CSR

strengths, and CSR weaknesses over a 3 year period (periods t-1, t-2 and t-3) while making sure the 3 years are during the tenure of the same CEO. We then use these average values to examine their relation to performance by re-estimating equation (5).

[Insert Table 8 Panel C here]

These results are presented in Table 8, Panel C. The results are similar to those reported in Table 8, Panel A and are not repeated for brevity. In untabulated analyses we estimate equation (5) including several lags of CSR scores as independent variables but multicollinearity is certainly present. As mentioned above, when there is little variation in CSR scores over time it is difficult to attribute current performance to past CSR scores and when CSR scores change considerably there is little reason to expect an association between lagged CSR scores and performance.

The results in Table 8 provide evidence that investments in CSR by materialistic CEOs are not associated with performance in an absolute sense, and negatively associated relative to those by non-materialistic CEOs. However, CSR investments by non-materialistic CEOs are positively related to performance. This is consistent with the argument that non-materialistic executives are more conscious of corporate goals and performance when making CSR investments (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 equation separately for the subgroup of firms run by non-materialistic and materialistic CEOs:

$$
\begin{aligned}
Performance_{it/t+1} ={}& \beta 1\ CSR\ Net\ Score_{it} + \beta 2\ Pay\ Slice_{it} + \beta 3\ CSR\ Net\ Score_{it}*Pay\ Slice_{it} \\
& + \beta 4\ Financial\ Constraint_{it} + \beta 5\ Size_{it} + \beta 6\ Market\text{-}to\text{-}Book_{it} \\
& + \beta 7\ Debt\text{-}to\text{-}Equity_{it} + \beta 8\ R\&D_{it} + \beta 9\ SG\&A_{it} \\
& + \beta 10\ CEO\ Tenure_{it} + \beta 11\ Board\ Independence_{it} + \varepsilon i,t \qquad (6)
\end{aligned}
$$

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, *Performance* is either one year ahead operating performance or current year abnormal returns. All other variables are as defined earlier.

[Insert Table 9 here]

Table 9 presents the results. The results are similar for both performance measures. The interaction between *CSR Net Score* and *Pay Slice* is negative and statistically significant (.05 level) in firms run by materialistic CEOs. This result is consistent with the argument that materialistic CEOs invest in CSR for private benefits (at the expense of shareholder value), and such incentives are higher as they become more entrenched. In contrast, in firms run by non-materialistic CEOs we find that the interaction between *CSR Net Score* and *Pay Slice* is positive and statistically significant (.10 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 non-materialistic CEOs (at the .05 level).

Overall, our results in Tables 8 and 9 support the notion that CEO type is an important determinant of the link between CSR investments (in particular CSR strengths) and performance. Our evidence supports the hypothesis that materialistic CEOs are more likely to engage in CSR investments for their private benefit and that non-materialistic CEOs invest in CSR activities with an objective towards increasing shareholder value. As such, the mechanism through which CSR activities affect operating profits varies across these types of CEOs.

VII. Conclusion

We examine whether and how firms' 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 material possessions are less sensitive to how their behaviors affect others, less willing to share their possessions, and less likely to engage in environmentally responsible behaviors.

Our main findings can be summarized as follows. We find that CEO fixed effects explain 56% of the variation in their firms' CSR scores (and estimate that CEO materialism is responsible for approximately 10% of the CEO effect) whereas firm fixed effects explain 24% of this variance. Our cross-sectional tests indicate that firms run by materialistic CEOs have lower overall CSR net scores, fewer CSR strengths, and more CSR weaknesses.

We also document that CSR scores in firms run by non-materialistic CEOs are positively associated with current and long-term operating performance and with current abnormal returns. In contrast, CSR scores in firms led by materialistic CEOs are generally not associated with performance. Further, in firms run by materialistic CEOs, the link between CSR scores and 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 non-materialistic 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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Figure 1 – CSR and CEO Materialism
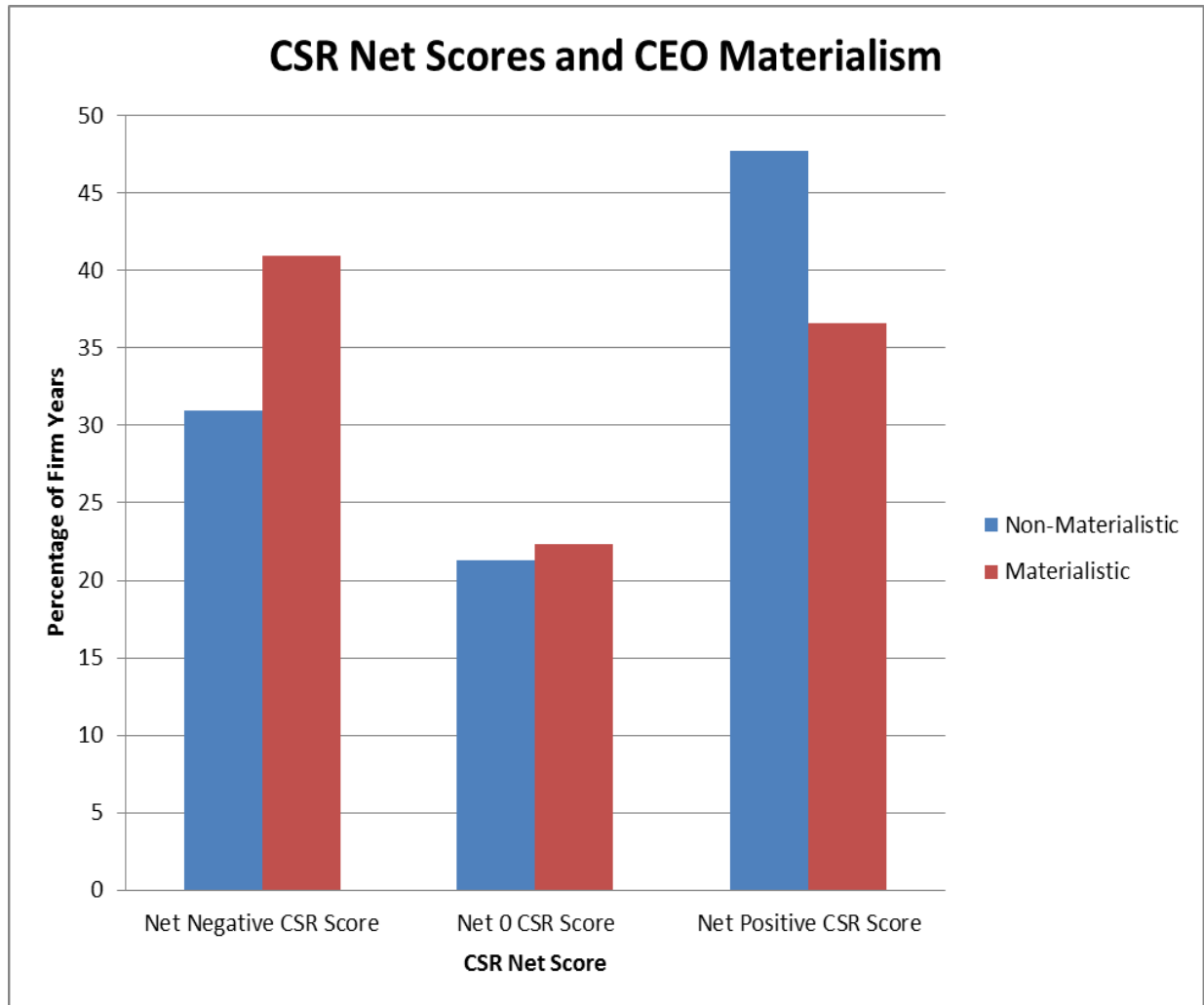
Legend Figure 1:

This figure shows how overall net CSR strengths and 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 (CBSA) of his corporate headquarters, or additional homes worth more than twice the average home price in the corresponding metropolitan area (CBSA). If a CEO owns none of these assets, he is defined as being non-materialistic.

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

	Total Number
Firms	
Firms in ExecuComp/ Compustat/ CRSP/ KLD over 1992-2010	649
Sample Composition:	
Fraud Firms	59
Non Randomly Selected Non-Fraud Firms	75
Random Firms	515
Executives	
Chief Executive Officers (CEOs)	947
Executive Composition:	
Materialistic CEOs	531
Non-Materialistic CEOs	416
Luxury Asset Ownership:	
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 materialistic and non-materialistic CEOs and the composition of asset ownership for the sample CEOs.

Table 1, Panel B
Descriptive Statistics

	CSR-Execucomp Firms Maximum Firms: 1,894 Max Observations: 12,064			Sample Firms Maximum Firms: 649 Max Observations: 4,745		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
Size	7.60	7.51	1.39	8.23**	8.13**	1.46
Financial Constraint	0.56	0.62	1.97	0.70**	0.78**	1.41
Return on Assets	0.14	0.13	0.11	0.13	0.12	0.10
Market-to-Book	3.33	2.21	54.25	2.61	2.23	24.08
Debt-to-Equity	0.74	0.38	30.65	0.40	0.49*	12.05
Abnormal Return	0.09	0.02	0.45	0.07**	0.02*	0.49
R&D	0.05	0.00	0.45	0.04	0.00	0.26
SGA	0.27	0.21	1.69	0.26	0.23	0.45
CEO Tenure	8.73	7.00	8.48	8.43	6.00*	7.55
CEO Wealth	10.08	9.96	1.59	10.33**	10.21**	1.56
Operating Profit	0.23	0.21	0.39	0.23	0.21	0.18
Pay Slice	38.30	38.16	10.84	38.90	39.93	11.65
CSR Net Score	-0.03	0.00	2.14	0.40***	0.00***	2.57
CSR Strengths	1.37	1.00	1.93	2.12***	1.00***	2.47
CSR Weaknesses	1.41	1.00	1.61	1.72***	1.00***	1.90
Community	0.09	0.00	0.56	0.22	0.00	0.77
Diversity	0.27	0.00	1.18	0.63***	0.00***	1.34
Employee	-0.11	0.00	0.90	0.02**	0.00**	1.00
Environment	-0.13	0.00	0.74	-0.15	0.00	0.90
Product	-0.20	0.00	0.61	-0.39**	0.00	0.82

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

Table 1, Panel B presents the mean, median and standard deviation 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; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Return on Assets* is operating income before depreciation divided by book value of total assets; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *Abnormal Return* is the market adjusted annual return; *R&D* is research and development expense divided by sales; *SGA* is selling, general and administrative expense divided by sales; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *CEO Wealth* is the natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007); *Operating Profit* is operating profit before taxes and depreciation divided by the sum of the book values of long term debt and equity; *Pay Slice* is CEO compensation divided by total compensation for the firm's top 5 executives; *CSR Net Score* is the net score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Strengths* is the net strengths calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Weaknesses* is the net weaknesses or concerns calculated for the Community, Diversity, Employee, Environment, and Product groups; *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.

Table 1, Panel C
CEO Materialism and Wealth

CEO Wealth Deciles	Percentage: Materialistic CEOs (Total N = 947)	Percentage: Materialistic CEOs - AKM Sample (Total N = 227)
1 (Highest)	57	56
2	58	52
3	59	59
4	60	59
5	64	58
6	62	55
7	63	59
8	59	45
9	55	58
10 (Lowest)	53	55
Mean	59	56
Top 50% of wealthiest CEOs	60	57
Bottom 50% of wealthiest CEOs	58	54

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 natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007). 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
CEO Materialism and Firm Sorting

	Sorting by CSR Net Score	Sorting by Sin Industry
	(1)	(2)
Intercept	-1.6187***	-1.0053***
	(-2.73)	(-3.03)
CSR Net Score	-0.0318	
	(-0.92)	
Sin Industry		1.1274***
		(2.61)
Size	0.1329**	0.0605
	(2.12)	(1.53)
Return on Assets	2.4097**	1.5663
	(2.29)	(2.45)
Market-to-Book	-0.0265*	-0.0223*
	(-1.81)	(-1.98)
Debt-to-Equity	0.0069	0.0073
	(0.47)	(0.61)
Industry Compensation	0.0001	0.0002
	(0.89)	(1.55)
Observations	554	953
Pseudo R Squared	0.04	0.02

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

Table 2 presents results of estimations of equation (1a) and (1b). The variables are defined as follows: the dependent variable, *Material,* is an indicator 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, Diversity, Employee, Environment, and Product groups; *Sin Industry* is an indicator variable that equals 1 if a firm belongs to the Alcohol, Gambling, Tobacco, Firearms or Nuclear industries, 0 otherwise; *Size* is the natural logarithm of market capitalization of the firm; *Return on Assets* is operating income before depreciation divided by the firm's book value of total assets; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *Industry Compensation* is the median total compensation in the firm's industry.

	ZCSR Net Score	ZCSR Strengths	ZCSR Weaknesses
	(1)	(2)	(3)
Financial Constraint	-0.0318	-0.0123	0.0140
	(-1.42)	(-0.60)	(0.66)
Size	-0.0372	0.1192***	0.1882***
	(-0.75)	(2.64)	(3.99)
Return on Assets	0.3313	-1.3668***	-2.1533***
	(0.74)	(-3.37)	(-5.08)
Market-to-Book	-0.0044	-0.0061	-0.0031
	(-1.01)	(-1.54)	(-0.74)
Debt-to-Equity	0.0006	0.0024	0.0018
	(0.28)	(1.20)	(0.85)
Abnormal Return	0.0062	-0.0362	-0.0545*
	(0.20)	(-1.27)	(-1.83)
CEO Tenure	0.0353***	0.0929***	0.0755***
	(3.71)	(10.73)	(8.33)
CEO Wealth	0.0097	-0.0340	-0.0597**
	(0.39)	(-1.49)	(-2.50)
CEO Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
Observations	1,252	1,252	1,252
Firms	181	181	181
CEOs who do not switch	131	131	131
CEOs who switch	96	96	96
Proportion of Variance explained by:			
R Squared: CEO Fixed Effect	0.56	0.56	0.67
R Squared: Firm Fixed Effect	0.24	0.27	0.10
R Squared: Model	0.80	0.85	0.85

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

Table 3, Panel A presents the results of estimates of equation (2). The variables are defined as follows: *ZCSR Net Score* is the industry and year z-scored CSR Net Score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; *ZCSR Strengths* is the industry and year z-scored net strengths calculated for the Community, Diversity, Employee, Environment, and Product groups; *ZCSR Weaknesses* is the industry and year z-scored net weaknesses or concerns calculated for the Community, Diversity, Employee, Environment, and Product groups; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Return on Assets* is operating income before depreciation divided by the firm's book value of total assets; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *Abnormal Return* is the market adjusted annual return; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *CEO Wealth* is the natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007).

	Non Materialistic CEO	Materialistic CEO	Random CEO Sample
	(1)	(2)	(3)
Financial Constraint	-0.0238	-0.0695**	-0.0427
	(-0.62)	(-2.30)	(-1.22)
Size	0.2000**	-0.1848***	-0.0048
	(2.43)	(-2.88)	(-0.29)
Return on Assets	1.3581**	-0.5616	0.3648
	(2.18)	(-0.86)	(0.91)
Market-to-Book	-0.0249**	0.0025	-0.0081
	(-2.53)	(0.50)	(-1.20)
Debt-to-Equity	0.0079	-0.0011	0.0015
	(1.02)	(-0.47)	(0.44)
Abnormal Return	0.0086	-0.0336	0.0049
	(0.25)	(-0.52)	(0.25)
CEO Tenure	0.0463***	0.0080	0.0226**
	(3.43)	(0.59)	(2.26)
CEO Wealth	-0.0597*	0.0858**	0.0117
	(-1.86)	(2.15)	(0.37)
CEO Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
Observations	579	673	624
Firms	111	126	117
CEOs who do not switch	70	61	66
CEOs who switch	41	55	48
Proportion of Variance explained by:			
R Squared: CEO Fixed Effect	0.52	0.45	0.55
R Squared: Firm Fixed Effect	0.23	0.31	0.23
R Squared: Model	0.75	0.76	0.78

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

Table 3, Panel B presents the results estimates of equation (2). In this table we estimate the equation holding CEO type constant to assess how CEO materialism affects net CSR scores. The variables are defined as follows: *ZCSR Net Score* is the industry and year z-scored CSR Net Score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Return on Assets* is operating income before depreciation divided by the firm's book value of total assets; *Market-to-Book* market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *Abnormal Return* is the market adjusted annual return; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *CEO Wealth* is the natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007).

Table 4, Panel A
Cross-Sectional Analysis

	Community	Diversity	Employee	Environment	Product
	(1)	(2)	(3)	(4)	(5)
Material	-0.0830**	-0.1940***	-0.1458**	-0.1781***	-0.0923**
	(-2.04)	(-2.68)	(-2.51)	(-3.29)	(-2.21)
Financial Constraint	-0.0224*	0.0704***	-0.0398**	-0.0167	-0.0111
	(-1.70)	(2.94)	(-2.37)	(-1.22)	(-0.81)
Size	0.1400***	0.4578***	0.0617**	-0.0665***	-0.2202***
	(6.97)	(13.75)	(2.24)	(-2.93)	(-11.82)
Return on Assets	-0.5277**	-0.7083*	0.5277*	0.6732***	0.6671***
	(-2.48)	(-1.77)	(1.84)	(2.91)	(3.02)
Market-to-Book	0.0004	0.0007	0.0000	0.0008*	-0.0006
	(0.49)	(0.72)	(0.01)	(1.69)	(-0.66)
Debt-to-Equity	-0.0023	-0.0031	-0.0021	-0.0016	0.0022
	(-0.88)	(-0.96)	(-0.77)	(-1.41)	(1.02)
Abnormal Return	-0.0285*	-0.1269**	-0.0796***	0.0136	0.0474***
	(-1.71)	(-2.22)	(-3.58)	(0.76)	(2.65)
CEO Tenure	-0.0019	-0.0143***	0.0002	0.0051	0.0078***
	(-0.80)	(-2.75)	(0.05)	(1.50)	(3.11)
CEO Wealth	-0.0349***	-0.0761***	-0.0076	0.0010	0.0048
	(-2.71)	(-2.90)	(-0.33)	(0.06)	(0.29)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	4,745	4,745	4,745	4,745	4,745
Adjusted R Squared	0.15	0.29	0.11	0.19	0.34

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

Table 4, Panel A presents results of estimations of equation (3). 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; *Material* is an indicator 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; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Return on Assets* is operating income before depreciation divided by the firm's book value of total assets; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *Abnormal Return* is the market adjusted annual return; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *CEO Wealth* is the natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007).

Table 4, Panel B
Cross-Sectional Analysis

	CSR Net Score	CSR Strengths	CSR Weaknesses
	(1)	(2)	(3)
Material	-0.7069***	-0.5051***	0.2019**
	(-4.45)	(-3.66)	(2.10)
Financial Constraint	-0.0211	0.0619	0.0830**
	(-0.41)	(1.51)	(2.40)
Size	0.3972***	0.9899***	0.5927***
	(5.45)	(14.33)	(12.80)
Return on Assets	0.7563	-1.7981**	-2.5544***
	(0.85)	(-2.47)	(-4.73)
Market-to-Book	0.0017	0.0028	0.0011
	(0.61)	(1.21)	(0.93)
Debt-to-Equity	-0.0080	-0.0139	-0.0059
	(-1.09)	(-1.65)	(-1.36)
Abnormal Return	-0.1805***	-0.3129***	-0.1324**
	(-2.57)	(-3.16)	(-2.31)
CEO Tenure	-0.0020	-0.0107	-0.0087
	(-0.18)	(-1.02)	(-1.60)
CEO Wealth	-0.1203**	-0.1812***	-0.0610*
	(-2.07)	(-3.51)	(-1.85)
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	4,745	4,745	4,745
Adjusted R Squared	0.15	0.32	0.35

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

Table 4, Panel B presents results of estimations of equation (3). The variables are defined as follows: *CSR Net Score* is the net score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Strengths* is the net strengths calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Weaknesses* is the net weaknesses or concerns calculated for the Community, Diversity, Employee, Environment, and Product groups; *Material* is an indicator 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; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Return on Assets* is operating income before depreciation divided by the firm's book value of total assets; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *Abnormal Return* is the market adjusted annual return; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *CEO Wealth* is the natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007).

Table 5
Predecessor-Successor Analysis: Routine Turnovers

	CSR Net Score	CSR Strengths	CSR Weaknesses
	(1)	(2)	(3)
Intercept	-2.7536**	-6.4431***	-3.6895***
	(-2.11)	(-5.47)	(-3.71)
New CEO Material	-0.1689	-0.4830*	-0.3141
	(-1.51)	(-1.68)	(-0.96)
Successor	0.1447	0.1094	-0.0353
	(1.28)	(0.68)	(-0.37)
Change CEO Type	-0.0145	-0.0274	-0.0129
	(0.22)	(-0.40)	(-0.05)
*New CEO Material * Successor*	-0.2474**	-0.1763	0.0711
	(-2.24)	(-1.64)	(0.48)
*New CEO Material * Change CEO Type*	0.1791*	0.1002	-0.0789
	(1.75)	(1.26)	(-0.94)
*Successor * Change CEO Type*	0.376**	0.2558*	-0.1202
	(2.25)	(1.75)	(-1.42)
*New CEO Material * Successor * Change CEO Type*	-0.6021***	-0.4622**	0.1399*
	(-2.81)	(-2.40)	(1.84)
Financial Constraint	-0.2523	0.0091	0.2614**
	(-1.27)	(0.05)	(2.19)
Size	0.3669**	1.2630***	0.8962***
	(2.07)	(7.72)	(8.19)
Return on Assets	-4.9405**	-2.3074	2.6332
	(-2.37)	(-1.53)	(1.59)
Debt-to-Equity	-0.1121*	-0.0396	0.0725*
	(-1.78)	(-1.12)	(1.77)
Market-to-Book	0.1868**	0.0528	-0.1340**
	(2.29)	(1.25)	(-2.17)
Abnormal Return	-0.3369*	-0.4734***	-0.1365
	(-1.73)	(-3.52)	(-0.73)
CEO Tenure	0.0032	0.0099	0.0067
	(0.13)	(0.53)	(0.48)
CEO Wealth	-0.0147	-0.1967	-0.1821*
	(-0.10)	(-1.51)	(-1.71)

Table 5 - Continued

Analysis of Changes			
Materialistic CEO to Materialistic CEO	-0.1027	-0.0669	0.0358
	(-0.56)	(-0.29)	(0.42)
Non-Materialistic CEO to Materialistic CEO	-0.3288**	-0.2733	0.0555
	(-2.11)	(-1.39)	(-0.44)
Non-Materialistic CEO to Non-Materialistic CEO	0.1447	0.1094	-0.0353
	(0.75)	(0.78)	(-0.18)
Materialistic CEO to Non-Materialistic CEO	0.5207**	0.3652**	-0.1555
	(2.41)	(2.02)	(-1.48)
Observations	985	985	985
R Squared	0.10	0.21	0.19

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

Table 5 presents results of estiamtes of equation (4). The variables are defined as follows: _CSR Net Score_ is the net score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; _CSR Strengths_ is the net strengths calculated for the Community, Diversity, Employee, Environment, and Product groups; _CSR Weaknesses_ is the net weaknesses or concerns calculated for the Community, Diversity, Employee, Environment, and Product groups; _New CEO Material_ is an indicator variable that equals 1 if the new CEO hired is materialistic, 0 otherwise; _Successor_ is an indicator variable that equals 1 if the CSR score is measured during the successor CEO's tenure, 0 otherwise; _Change CEO Type_ is an indicator variable that equals 1 if there was a change in CEO type from the predecessor to the successor, 0 otherwise; _Financial Constraint_ is the measure of financial constraint developed by Kaplan and Zingales (1997); _Size_ is the natural logarithm of market capitalization of the firm; _Return on Assets_ is operating income before depreciation divided by the firm's book value of total assets; _Market-to-Book_ is market value of equity divided by book value of equity; _Debt-to-Equity_ is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; _Abnormal Return_ is the market adjusted annual return; _CEO Tenure_ is the number of years the CEO has spent in the firm in his role as CEO; _CEO Wealth_ is the natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007).

Table 6
CSR Net Scores and Timing of Revelation of CEO Type

	Type Revealed Before Becoming CEO	Type Revealed After Becoming CEO	Materialistic CEOs Only: Comparison of Revelation
	(1)	(2)	(3)
Material	-0.6701***	-0.8097***	
	(-3.87)	(-3.46)	
Reveal Post CEO			-0.2435
			(-0.90)
Financial Constraint	-0.0288	-0.0138	-0.0465
	(-0.50)	(-0.20)	(-0.75)
Size	0.4985***	0.3893***	0.2245**
	(6.60)	(4.21)	(2.20)
Return on Assets	1.2456	0.3248	0.2807
	(1.24)	(0.29)	(0.27)
Market-to-Book	0.0078	0.0048	-0.0007
	(0.62)	(1.06)	(-0.36)
Debt-to-Equity	-0.0114	-0.0224	0.0007
	(-1.30)	(-1.32)	(0.16)
Abnormal Return	-0.2008**	-0.1018	-0.3124***
	(-2.52)	(-1.45)	(-2.90)
CEO Tenure	-0.0070	0.0011	0.0002
	(-0.54)	(0.08)	(0.01)
CEO Wealth	-0.1581**	-0.1333**	0.0064
	(-2.50)	(-2.01)	(0.07)
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	3,596	3,354	2,325
Adjusted R Squared	0.16	0.15	0.12

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

Table 6 presents results of estimations of equation (3). The dependent variable, *CSR Net Score,* is the net score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; *Material* is an indicator 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 an indicator variable that equals 1 if a materialistic CEO did not acquire assets until after becoming CEO, 0 otherwise*; Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Return on Assets* is operating income before depreciation divided by the firm's book value of total assets; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *Abnormal Return* is the market adjusted annual return; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *CEO Wealth* is the natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007).

Table 7
Cross Sectional Analysis: Above and Below Median Materialism

	CSR Net Score	CSR Strengths	CSR Weaknesses
	(1)	(2)	(3)
Above Median Assets	-0.1799	0.0035	0.1833
	(-0.78)	(0.02)	(1.30)
Financial Constraint	-0.0255	0.0260	0.0515
	(-0.43)	(0.56)	(1.12)
Size	0.2974***	0.9889***	0.6915***
	(2.91)	(10.25)	(9.96)
Return on Assets	-0.1179	-2.5431***	-2.4252***
	(-0.11)	(-2.86)	(-3.52)
Market-to-Book	-0.0001	0.0009	0.0010
	(-0.07)	(0.67)	(1.08)
Debt-to-Equity	0.0009	-0.0040	-0.0048
	(0.18)	(-0.96)	(-1.57)
Abnormal Return	-0.3273***	-0.4896***	-0.1623**
	(-3.00)	(-4.40)	(-2.04)
CEO Tenure	-0.0058	-0.0091	-0.0033
	(-0.38)	(-0.74)	(-0.39)
CEO Wealth	0.0263	-0.1021	-0.1285**
	(0.27)	(-1.27)	(-2.57)
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	2,325	2,325	2,325
Adjusted R Squared	0.09	0.26	0.27

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

Table 7 presents results of estimations of equation (3). The variables are defined as follows: *CSR Net Score* is the net score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Strengths* is the net strengths calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Weaknesses* is the net weaknesses or concerns calculated for the Community, Diversity, Employee, Environment, and Product groups; *Above Median Assets* is an indicator variable that equals 1 if the value of a materialistic CEOs assets are above the median, 0 otherwise; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Return on Assets* is operating income before depreciation divided by the firm's book value of total assets; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *Abnormal Return* is the market adjusted annual return; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *CEO Wealth* is the natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007).

	Current Year Operating Performance			One Year Ahead Operating Performance		
	(1)	(2)	(3)	(4)	(5)	(6)
CSR Net Score	0.0071**			0.0121***		
	(2.01)			(3.22)		
CSR Strengths		0.0037			0.0073**	
		(1.14)			(2.32)	
CSR Weaknesses			-0.0099**			-0.0130**
			(-2.43)			(-2.52)
Material	0.0104	0.0181*	0.0019	0.0215**	0.0357***	0.0054
	(1.20)	(1.76)	(0.15)	(1.98)	(2.81)	(0.41)
*CSR * Material*	-0.0049	-0.0051	0.0024	-0.0113**	-0.0101***	0.0047
	(-1.20)	(-1.38)	(0.63)	(-2.55)	(-2.72)	(0.98)
Financial Constraint	-0.0320***	-0.0326***	-0.0310***	-0.0323***	-0.0326***	-0.0313***
	(-6.68)	(-6.78)	(-6.27)	(-4.43)	(-4.56)	(-4.22)
Size	0.0219***	0.0225***	0.0289***	0.0193***	0.0198***	0.0282***
	(7.60)	(5.94)	(7.82)	(6.64)	(5.26)	(7.32)
Market-to-Book	0.0001	0.0001	0.0002	-0.0014*	-0.0014*	-0.0016*
	(0.46)	(0.45)	(0.55)	(-1.91)	(-1.93)	(-1.91)
Debt-to-Equity	-0.0010	-0.0010	-0.0012	0.0004	0.0004	0.0004
	(-1.41)	(-1.39)	(-1.48)	(1.50)	(1.46)	(1.57)
R&D	-0.1226**	-0.1359**	-0.1224*	-0.3250***	-0.3340***	-0.3373***
	(-1.98)	(-2.12)	(-1.94)	(-4.00)	(-3.91)	(-4.06)
SGA	0.0122	0.0212	0.0121	-0.0168	-0.0042	-0.0123
	(0.31)	(0.53)	(0.31)	(-0.40)	(-0.10)	(-0.28)
CEO Tenure	0.0000	0.0000	-0.0001	0.0003	0.0003	0.0000
	(0.05)	(0.05)	(-0.20)	(0.33)	(0.34)	(0.03)
Board Independence	0.0001	0.0001	0.0002	0.0002	0.0002	0.0004
	(0.32)	(0.44)	(0.90)	(0.60)	(0.74)	(1.30)
*CSR + CSR * Material*	0.94	-0.56	-2.34	0.29	-0.98	-2.46
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,487	3,487	3,487	3,119	3,119	3,119
Adjusted R Squared	0.21	0.21	0.21	0.24	0.23	0.23

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

Table 8, Panel A presents results of estimates of equation (5). The dependent variable, *Operating Performance*, is operating profit before taxes and depreciation divided by the sum of the book values of long term debt and equity; *CSR Net Score* is the net score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Strengths* is the net strengths calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Weaknesses* is the net weaknesses or concerns calculated for the Community, Diversity, Employee, Environment, and Product groups; *Material* is an indicator 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; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *R&D* is research and development expense divided by sales; *SGA* is selling, general and administrative expense divided by sales; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *Board Independence* is the percentage of independent board members.

	Current Year Abnormal Return			One Year Ahead Abnormal Return		
	(1)	(2)	(3)	(4)	(5)	(6)
CSR Net Score	0.0097***			-0.0020		
	(3.50)			(-0.63)		
CSR Strengths		0.0113***			-0.0068	
		(2.82)			(-1.02)	
CSR Weaknesses			-0.0215***			0.0042
			(-3.47)			(0.58)
Material	0.0142	0.0353**	0.0012	-0.0013	0.0215	0.0000
	(1.10)	(2.05)	(0.07)	(-0.10)	(1.22)	(0.00)
*CSR * Material*	-0.0112**	-0.0115**	-0.0001	-0.0055	-0.0038	-0.0020
	(-2.37)	(-2.24)	(-0.01)	(-0.65)	(-0.47)	(-0.26)
Financial Constraint	0.0137**	0.0133**	0.0111*	0.0198***	0.0215***	0.0207***
	(2.12)	(2.09)	(1.87)	(3.00)	(3.33)	(3.19)
Size	-0.0094	-0.0126	-0.0045	0.0458***	0.0623***	0.0563***
	(-1.57)	(-1.65)	(-0.64)	(7.47)	(8.64)	(9.18)
Market-to-Book	-0.0023	-0.0022	-0.0016	-0.0006	-0.0008	-0.0009
	(-1.64)	(-1.65)	(-1.35)	(-0.43)	(-0.54)	(-0.64)
Debt-to-Equity	0.0004	0.0004	0.0002	0.0004	0.0004	0.0005*
	(1.22)	(1.23)	(0.85)	(1.36)	(1.40)	(1.67)
R&D	0.2023**	0.1971**	0.0355	0.0599	0.0508	0.0498
	(2.50)	(2.49)	(0.35)	(0.48)	(0.41)	(0.62)
SGA	-0.1018*	-0.0984*	-0.0764	0.0298	0.0301	-0.0391
	(-1.94)	(-1.92)	(-1.38)	(0.49)	(0.51)	(-0.74)
CEO Tenure	-0.0014	-0.0013	-0.0018*	0.0011	0.0007	0.0001
	(-1.53)	(-1.42)	(-1.73)	(1.10)	(0.67)	(0.10)
Board Independence	-0.0008	-0.0008*	-0.0011**	-0.0006	-0.0002	-0.0004
	(-1.63)	(-1.71)	(-2.17)	(-1.14)	(-0.44)	(-0.91)
*CSR + CSR * Material*	0.26	0.40	-4.77	-0.77	-1.24	0.47
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,487	3,487	3,487	3,119	3,119	3,119
Adjusted R Squared	0.05	0.05	0.06	0.05	0.06	0.04

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

Table 8, Panel B presents results of estimates of equation (5). The dependent variable, *Abnormal Return*, is the market adjusted annual return; *CSR Net Score* is the net score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Strengths* is the net strengths calculated for the Community, Diversity, Employee, Environment, and Product groups; *CSR Weaknesses* is the net weaknesses or concerns calculated for the Community, Diversity, Employee, Environment, and Product groups; *Material* is an indicator 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; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *R&D* is research and development expense divided by sales; *SGA* is selling, general and administrative expense divided by sales; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *Board Independence* is the percentage of independent board members.

Table 8, Panel C
Profitability Analysis: 3 Year CSR Score Average

	One Year Ahead Operating Performance		
	(1)	(2)	(3)
CSR Net Score	0.0113***		
	(3.20)		
CSR Strengths		0.0079**	
		(2.30)	
CSR Weaknesses			-0.0106**
			(-2.40)
Material	0.0135	0.0299**	-0.0016
	(1.39)	(2.38)	(-0.11)
*CSR * Material*	-0.0116**	-0.0111***	0.0037
	(-2.56)	(-2.66)	(0.78)
Financial Constraint	-0.0344***	-0.0344***	-0.0332***
	(-4.67)	(-4.76)	(-4.39)
Size	0.0163***	0.0167***	0.0233***
	(4.97)	(4.07)	(6.25)
Market-to-Book	0.0007**	0.0007**	0.0008***
	(2.28)	(2.15)	(2.64)
Debt-to-Equity	-0.0030***	-0.0029***	-0.0034***
	(-3.29)	(-3.08)	(-3.67)
R&D	-0.4353***	-0.4425***	-0.4505***
	(-4.20)	(-4.12)	(-4.28)
SGA	0.0431	0.0527	0.0500
	(0.86)	(1.03)	(0.98)
CEO Tenure	0.0002	0.0003	0.0000
	(0.29)	(0.30)	(-0.02)
Board Independence	0.0001	0.0001	0.0002
	(0.22)	(0.32)	(0.84)
*CSR + CSR * Material*	-0.11	-0.98	-2.09
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	2,419	2,419	2,419
Adjusted R Squared	0.31	0.30	0.30

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

Table 8, Panel C presents results of estimates of equation (5). The dependent variable, *Operating Performance*, is operating profit before taxes and depreciation divided by the sum of the book values of long term debt and equity; *CSR Net Score* is the net score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups averaged over years t-3, t-2, and t-1; *CSR Strengths* is the net strengths calculated for the Community, Diversity, Employee, Environment, and Product groups averaged over years t-3, t-2, and t-1; *CSR Weaknesses* is the net weaknesses or concerns calculated for the Community, Diversity, Employee, Environment, and Product groups averaged over years t-3, t-2, and t-1; *Material* is an indicator 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; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *R&D* is research and development expense divided by sales; *SGA* is selling, general and administrative expense divided by sales; *Board Independence* is the percentage of independent board members.

Table 9
Performance Analysis: CEO Pay Slice

	One Year Ahead Operating Performance		Current Year Abnormal Return	
	Non Materialistic	Materialistic	Non Materialistic	Materialistic
	(1)	(2)	(3)	(4)
CSR Net Score	-0.0071	0.0123	-0.0204	0.0214
	(-1.04)	(1.57)	(-1.63)	(1.40)
Pay Slice	-0.0002	-0.0006	-0.0011	0.0015
	(-0.50)	(-1.11)	(-1.19)	(1.25)
CSR Net Score * Pay Slice	0.0004*	-0.0004**	0.0005*	-0.0007**
	(1.86)	(-2.13)	(1.78)	(-2.01)
Financial Constraint	-0.0258***	-0.0405***	0.0066	0.0117
	(-4.80)	(-4.42)	(0.70)	(1.39)
Size	0.0195***	0.0232***	0.0148**	0.0416***
	(4.76)	(4.82)	(2.14)	(3.71)
Market-to-Book	-0.0004	0.0007***	0.0022	0.0002
	(-0.15)	(2.92)	(1.13)	(0.49)
Debt-to-Equity	-0.0028	-0.0027**	-0.0190***	0.0002
	(-1.02)	(-2.26)	(-3.44)	(0.15)
R&D	-0.3266***	-0.3809***	-0.3596***	0.2619***
	(-3.93)	(-7.98)	(-2.93)	(3.97)
SGA	-0.0310	0.0739	-0.0901	0.1441
	(-0.54)	(1.11)	(-1.45)	(1.22)
CEO Tenure	0.0001	0.0005	0.0010	-0.0007
	(0.12)	(0.36)	(0.83)	(-0.41)
Board Independence	-0.0001	0.0000	-0.0008	-0.0015
	(-0.30)	(0.10)	(-1.23)	(-1.54)
P Value: Difference - CSR Net Score * Pay Slice	0.02		0.04	
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	1,253	1,170	1,403	1,267
Adjusted R Squared	0.30	0.37	0.08	0.05

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

Table 9 presents results of estimates of equation (6). The variables are defined as follows: *Operating Performance* is operating profit before taxes and depreciation divided by the sum of the book values of long term debt and equity; *Abnormal Return* is the market adjusted annual return; *CSR Net Score* is the net score (strengths less concerns) calculated for the Community, Diversity, Employee, Environment, and Product groups; *Pay Slice* is CEO compensation divided by total compensation for the firm's top 5 executives; *Financial Constraint* is the measure of financial constraint developed by Kaplan and Zingales (1997); *Size* is the natural logarithm of market capitalization of the firm; *Market-to-Book* is market value of equity divided by book value of equity; *Debt-to-Equity* is book value of long-term debt, including the current portion of long-term debt, divided by book value of equity; *R&D* is research and development expense divided by sales; *SGA* is selling, general and administrative expense divided by sales; *CEO Tenure* is the number of years the CEO has spent in the firm in his role as CEO; *Board Independence* is the percentage of independent board members.

Appendix A: Variable Definitions and Data Sources

Variable	Definition	Source
Material	Indicator 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 (based on the Core Based Statistical Area - CBSA), or additional homes worth more than twice the average home price in the corresponding metropolitan area (CBSA), 0 otherwise	FOTT
CSR Net Score	Net score (strengths less weaknesses) for the Community, Diversity, Employee, Environment, and Product CSR groups	KLD
CSR Strengths	Net strengths for the Community, Diversity, Employee, Environment, and Product CSR groups	KLD
CSR Weaknesses	Net weaknesses for the Community, Diversity, Employee, Environment, and Product CSR groups	KLD
ZCSR Net Score	Industry and year z-score of CSR Net Score	KLD
ZCSR Strengths	Industry and year z-score of CSR Strengths	KLD
ZCSR Weaknesses	Industry and year z-score of CSR Weaknesses	KLD
Community	Net score (strengths less weaknesses) for the Community CSR group	KLD
Diversity	Net score (strengths less weaknesses) for the Diversity CSR group	KLD
Employee	Net score (strengths less weaknesses) for the Employee CSR group	KLD
Environment	Net score (strengths less weaknesses) for the Environment CSR group	KLD
Product	Net score (strengths less weaknesses) for the Product CSR group for items related to product safety	KLD
Financial Constraint	Financial constraint proxy developed by Kaplan and Zingales (1997)	Compustat
Size	The natural logarithm of the firm's market capitalization	Compustat
Return on Assets	Operating income before depreciation divided by book value of total assets	Compustat
Market-to-Book	Market value of equity divided by book value of equity	Compustat
Debt-to-Equity	Long term debt plus the current portion of short term debt divided by the book value of equity	Compustat
Abnormal Return	Market adjusted annual return	CRSP
CEO Tenure	The CEO's tenure in the role of CEO at the current firm in years	Boardex
CEO Wealth	The natural logarithm of the CEO's firm based wealth and non-firm based wealth following Dittmann and Maug (2007)	Execucomp / Dittmann
Operating Performance	Operating profit before taxes and depreciation divided by the sum of the book values of long term debt and equity	Compustat
R&D	Research and development expense divided by sales	Compustat
SGA	Selling general and adminisrative expense divided by sales	Compustat
Board Independence	The percentage of independent board members	
Pay Slice	CEO compensation divided by total compensation for the firm's top 5 executives	Execucomp
Sin Industry	Indicator variable that equals 1 if the firm belongs to a 'sin' industry, as defined by KLD (firms in the following industries: alcohol, tobacco, gambling, firearms, and nuclear energy), 0 otherwise	KLD
Industry Compensation	Median compensation by industry defined using the Fama-French 17 industry classification scheme	Execucomp
New CEO Material	Indicator variable that equals 1 if the successor CEO is materialistic, 0 otherwise	FOTT
Successor	Indicator variable that equals 1 if the observation is during the successor's tenure, 0 otherwise	Execucomp
Change	Indicator variable that equals 1 if the predecessor and successor are of different type, 0 otherwise	FOTT
Reveal Post CEO	Indicator variable that equals 1 if a materialistic CEO did not acquire assets until after becoming CEO, 0 otherwise	FOTT
Above Median Assets	Indicator variable that equals 1 if the value of a materialistic CEOs assets are above the median, 0 otherwise	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 executing 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 non-materialistic CEOs under the original measure are still non-materialistic 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 non-materialistic 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 non-materialistic 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 non-materialistic 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 non-materialistic 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 non-materialistic. 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 – non-materialistic, 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 non-materialistic 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.